ALLIED MACHINE & ENGINEERING

Holemaking Solutions for Today's Manufacturing

Drilling

Reaming

Burnishing

Threading

Specials

Wohlhaupter®

BORING

MultiBore® System Tools

WOHLHAUPTER®

SECTION

B10-A

Versatile Fine Boring

Wohlhaupter® Versatile Fine Boring

VarioBore | 249 (248) | PrimeBore | Digital 511 (510) | DigiBore

- **Diameter Range:** 0.016" - 8.189" (0.40mm - 208.00mm)

WOHLHAUPTER®

Precision boring at its finest.

From high precision to high production, Wohlhaupter has the right solution for your hole finishing applications. With the most reliable digital readout displays, the Wohlhaupter versatile boring product line offers the most precise and flexible modular system on the market.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.

This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury.

When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words.

WARNING (shown above) means that failure to follow the precautions in this message could result in tool failure and serious injury.

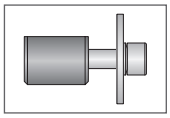
NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

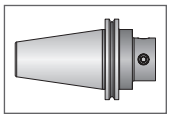
Visit www.alliedmachine.com for the most up-to-date information and procedures.

Applicable Industries

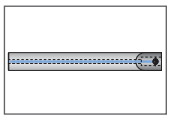
Reference Icons
The following icons will appear throughout the catalog to help you navigate between products.



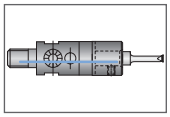
Clamping Elements
For use with insert holders and boring heads



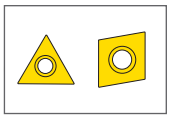
Shanks
A variety of shanks for different machines



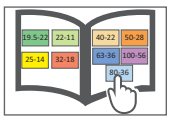
249 (248) Shanks
A variety of shanks for different machines



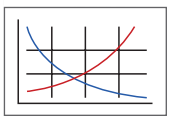
249 (248) Boring Head
249 (248) boring head that connects into the adapter shanks



Inserts
For use with insert holder boring heads and boring bars using indexable inserts



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s)



Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring

Coolant-Through Option
Indicates that the product is coolant -through

Series	Diameter Range	
	Imperial (inch)	Metric (mm)
VarioBore 563 (536)	0.016 - 5.984	0.40 - 152.00
249 (248) Boring Head	0.118 - 1.189	3.00 - 30.20
PrimeBore 451 (450)	0.118 - 8.189	3.00 - 208.00
Digital 511 (510)	0.016 - 1.339	0.40 - 12.00
DigiBore 504 (501)	0.118 - 8.189	3.00 - 208.00

Versatile Fine Boring Contents

VarioBore

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249 (248)

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PrimeBore

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Digital 511 (510)

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DigiBore

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VarioBore Product Overview

VarioBore with 3E^TECH
VERSATILE FINE BORING

Need more versatility?

The Wohlhaupter® VarioBore head offers precision and versatility, and the 3E^TECH docking port provides convenient and simple diameter adjustments.

Experience ***precision boring*** for yourself.

- Diameter range: 0.016" - 5.984" (0.40mm - 152.00mm)
- Offers outside turning capabilities: 0.157" - 2.598" (4.00mm - 66.00mm)
- Ease the stress of working on different day-to-day projects with boring kits
- 3E^TECH module provides a simple digital readout
- Max spindle speed: 27,500 RPM

NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

VARIO BORE with 3E TECH Universal Digital Readout Module

3E TECH
Universal Digital
Module

VarioBore Head

NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

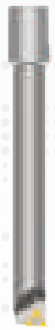
Coolant Delivery System

Insert Holder
Ø 2.047" - 4.016"
(Ø 52.00mm - 102.00mm)

Outside Turning
Ø 0.157" - 2.598"
(Ø 4.00mm - 66.00mm)

Serrated Tool Body

Serrated Tool Body



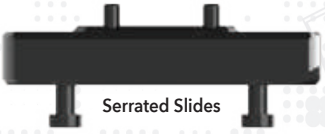
Carbide Boring Bar
Ø 0.394" - 0.787"
(Ø 10.00mm - 20.00mm)

Heavy Metal Boring Bar
Ø 0.236" - 0.394"
(Ø 6.00mm - 10.00mm)

Steel Boring Bar
Ø 0.236" - 1.063"
(Ø 6.00mm - 27.00mm)

Adapter

Reducing Sleeve



Serrated Slides

Insert Holder
Ø 1.142" - 2.087"
(Ø 29.00mm - 53.00mm)

Insert Holder
Ø 0.787" - 1.260"
(Ø 20.00mm - 32.00mm)

Mini-Boring Bar
Ø 0.118" - 0.394"
(Ø 3.00mm - 10.00mm)

Coated Carbide Mini-Boring Bar
Ø 0.016" - 0.118"
(Ø 0.40mm - 3.00mm)

Counter Weight

Outside Turning
Ø 0.079" - 2.283"
(Ø 2.00mm - 58.00mm)

Insert Holder
Ø 2.677" - 5.984"
(Ø 68.00mm - 152.00mm)

OPERATION **VERSATILITY**

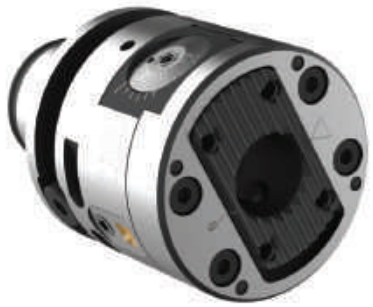
from **0.016"** to **5.984"** (**0.40mm** to **152.00mm**)
plus outside turning

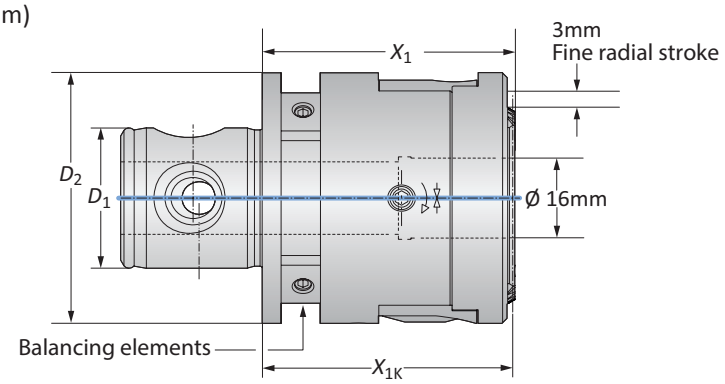
NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

Digital 3E^{TECH} Boring Heads

Diameter Range: 0.016" - 5.984" (0.40mm - 152.00mm)





VarioBore Digital 3E^{TECH} Boring Head

	MVS Connection D_2 | D_1	Boring Range	Boring Head X_1	Boring Head X_{1K}	Weight	Part No.
i	50 - 28	0.016 - 5.984	1.969	1.949	1.543 (lbs)	**563002**
m	50 - 28	0.40 - 152.00	50.00	49.50	0.70 (kg)	**536002**

NOTE: Balancing elements and 3E^{TECH} digital readout module must be ordered separately.
NOTE: VarioBore heads are compatible with Kaiser® connection

3E^{TECH} Digital Readout Module

	Part No.
i	**563010**
m	**536010**

NOTE: WEEE-Reg.-Nr. DE 15820388

NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

B10-M: 12-15 | B10-F | B10: vi-vii

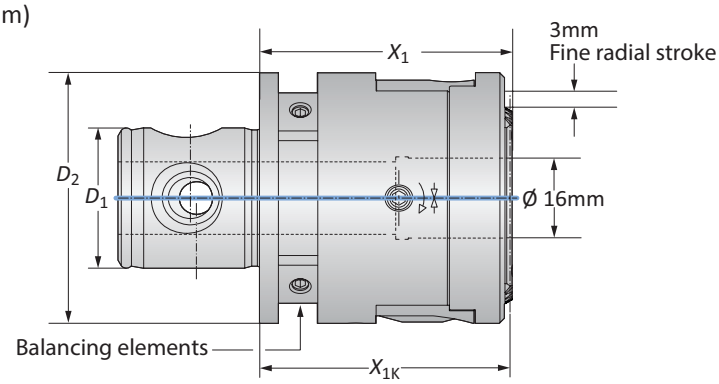
Key on B10-A: 1

i = Imperial (in)
m = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Non-Digital Boring Heads

Diameter Range: 0.016" - 5.984" (0.40mm - 152.00mm)



VarioBore Non-Digital Boring Head

	MVS Connection D_2 | D_1	Boring Range	Boring Head X_1	Boring Head X_{1K}	Weight	Part No.
i	50 - 28	0.016 - 5.984	1.969	1.949	1.543 (lbs)	**563001**
m	50 - 28	0.40 - 152.00	50.00	49.50	0.70 (kg)	**536001**

NOTE: Balancing elements must be ordered separately.
NOTE: VarioBore heads are compatible with Kaiser® connection

B10-M: 12-15 | B10-F | B10: vi-vii

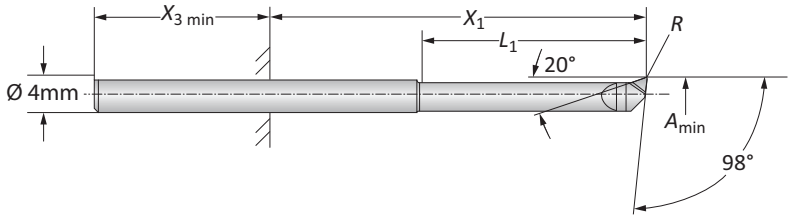
Key on B10-A: 1

i = Imperial (in)
m = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Mini Boring Bars

WHC126 Coated Carbide | Diameter Range: 0.016" - 0.118" (0.40mm - 3.00mm)



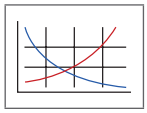
Mini Boring Bars

	Boring Range	Boring Bar*				
	A_{min}	X_1	$X_{3\ min}$	L_1	R	Part No.
i	0.016	0.118 - 0.669	0.980	0.079	0.0010	**081401WHC126**
	0.024	0.157 - 0.709	0.980	0.118	0.0020	**081402WHC126**
	0.031	0.197 - 0.748	0.980	0.157	0.0020	**081403WHC126**
	0.039	0.236 - 0.787	0.980	0.197	0.0025	**081404WHC126**
	0.059	0.335 - 0.886	0.980	0.295	0.0025	**081405WHC126**
	0.079	0.433 - 0.984	0.980	0.394	0.0025	**081406WHC126**
	0.098	0.531 - 1.083	0.980	0.492	0.0025	**081407WHC126**
	0.110	0.591 - 1.142	0.980	0.551	0.0030	**081408WHC126**
m	0.40	3.00 - 17.00	25.00	2.00	0.03	**081401WHC126**
	0.60	4.00 - 18.00	25.00	3.00	0.04	**081402WHC126**
	0.80	5.00 - 19.00	25.00	4.00	0.04	**081403WHC126**
	1.00	6.00 - 20.00	25.00	5.00	0.05	**081404WHC126**
	1.50	8.50 - 22.50	25.00	7.50	0.05	**081405WHC126**
	2.00	11.00 - 25.00	25.00	10.00	0.05	**081406WHC126**
	2.50	13.50 - 27.50	25.00	12.50	0.05	**081407WHC126**
	2.80	15.00 - 28.00	25.00	14.00	0.07	**081408WHC126**

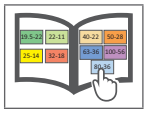
*Fixture-through reducing sleeve (B10-A: 17)

B10-M: 12-15

Key on B10-A: 1



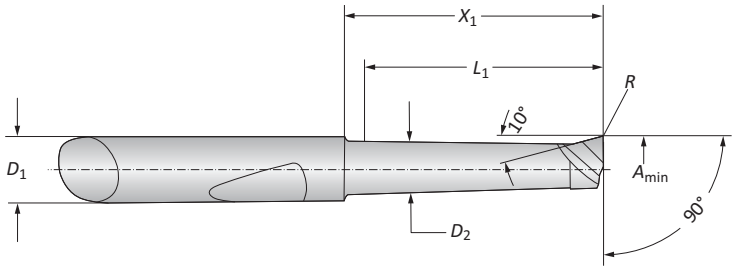
B10: vi-vii



i = Imperial (in)
m = Metric (mm)

Mini Boring Bars

WHC05 | WHW04 | WBN150 | Diameter Range: 0.118" - 0.394" (3.00mm - 10.00mm)

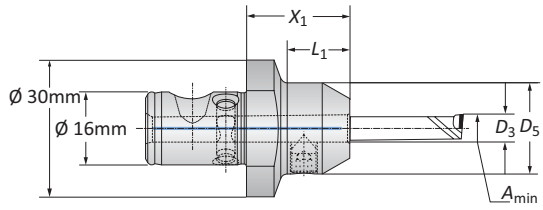


Mini Boring Bars

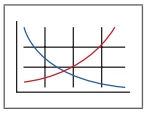
	Boring Range	Boring Bar					Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	0.118	0.236	0.102	0.452	0.393	0.003	**081306WHC05**	–	**081322WBN150**
	0.118	0.236	0.102	0.649	0.590	0.003	**081307WHC05**	**081307WHW04**	–
	0.157	0.236	0.141	0.472	0.393	0.007	**081308WHC05**	–	**081317WBN150**
	0.157	0.236	0.141	0.669	0.590	0.007	**081309WHC05**	–	**081341WBN150**
	0.157	0.236	0.141	0.866	0.787	0.007	**081310WHC05**	**081310WHW04**	–
	0.196	0.236	0.181	0.472	0.393	0.007	**081311WHC05**	–	**081318WBN150**
ⓘ	0.196	0.236	0.181	0.866	0.787	0.007	**081312WHC05**	–	**081319WBN150**
	0.196	0.236	0.181	1.259	1.181	0.007	**081313WHC05**	**081313WHW04**	–
	0.236	0.236	0.220	0.866	0.787	0.007	**081314WHC05**	–	**081320WBN150**
	0.236	0.236	0.220	1.259	1.181	0.007	**081315WHC05**	–	**081321WBN150**
	0.236	0.236	0.220	1.653	1.574	0.007	**081316WHC05**	**081316WHW04**	–
	0.315	0.315	0.229	0.984	0.905	0.007	**081323WHC05**	–	–
	0.315	0.315	0.229	1.968	1.889	0.007	**081324WHC05**	–	–
	3.00	6.00	2.60	11.50	10.00	0.10	**081306WHC05**	–	**081322WBN150**
	3.00	6.00	2.60	16.50	15.00	0.10	**081307WHC05**	**081307WHW04**	–
	4.00	6.00	3.60	12.00	10.00	0.20	**081308WHC05**	–	**081317WBN150**
	4.00	6.00	3.60	17.00	15.00	0.20	**081309WHC05**	–	**081341WBN150**
	4.00	6.00	3.60	22.00	20.00	0.20	**081310WHC05**	**081310WHW04**	–
	5.00	6.00	4.60	12.00	10.00	0.20	**081311WHC05**	–	**081318WBN150**
ⓜ	5.00	6.00	4.60	22.00	20.00	0.20	**081312WHC05**	–	**081319WBN150**
	5.00	6.00	4.60	32.00	30.00	0.20	**081313WHC05**	**081313WHW04**	–
	6.00	6.00	5.60	22.00	20.00	0.20	**081314WHC05**	–	**081320WBN150**
	6.00	6.00	5.60	32.00	30.00	0.20	**081315WHC05**	–	**081321WBN150**
	6.00	6.00	5.60	42.00	40.00	0.20	**081316WHC05**	**081316WHW04**	–
	8.00	8.00	7.60	25.00	23.00	0.20	**081323WHC05**	–	–
	8.00	8.00	7.60	50.00	48.00	0.20	**081324WHC05**	–	–

Adapters

	Boring Range	Adapter				
	A_{min}	D_3	D_5	X_1	L_1	Part No.
ⓜ	3.00	6.00	20.00	22.50	14.00	**319010**
	8.00	8.00	22.00	22.50	14.00	**236071**

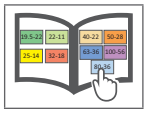


B10-M: 12-15



Key on B10-A: 1

B10: vi-vii

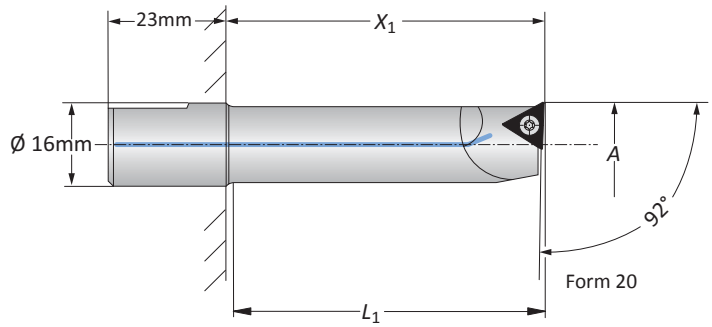


ⓘ = Imperial (in)
ⓜ = Metric (mm)

Boring Bars

Steel | Diameter Range: 0.236" - 1.063" (6.00mm - 27.00mm)

Form 101



Form 20

	Boring Range	Boring Bar						
	A	X_1	L_1	Weight	Insert Form	Part No.	Insert Form	Part No.
	0.236 - 0.315	0.866	0.748	0.070 (lbs)	–	–	211*	**081053**
	0.315 - 0.394	1.181	1.063	0.090 (lbs)	–	–	211*	**218071**
	0.394 - 0.472	1.772	1.654	0.110 (lbs)	–	–	20*	**081044**
	0.394 - 0.472	0.984	0.866	0.090 (lbs)	101	**218047**	20*	**218058**
	0.394 - 0.472	1.378	1.260	0.110 (lbs)	101	**218048**	20*	**218059**
	0.472 - 0.551	1.181	1.063	0.110 (lbs)	101	**218012**	20*	**218014**
	0.472 - 0.551	1.772	1.654	0.130 (lbs)	101	**218049**	20*	**218060**
	0.551 - 0.630	1.378	1.260	0.130 (lbs)	101	**218050**	20*	**218061**
ⓘ	0.551 - 0.630	1.969	1.850	0.180 (lbs)	101	**218051**	20*	**218062**
	0.591 - 0.669	1.457	1.339	0.130 (lbs)	–	–	20*	**081048**
	0.591 - 0.669	2.362	2.244	0.180 (lbs)	101	**081041**	20*	**081045**
	0.630 - 0.786	1.575	1.457	0.180 (lbs)	101	**218052**	20*	**218063**
	0.630 - 0.786	2.362	2.244	0.200 (lbs)	101	**218053**	20*	**218064**
	0.787 - 0.984	1.457	1.339	0.150 (lbs)	–	–	20*	**081049**
	0.787 - 0.984	2.756	2.638	0.240 (lbs)	101	**081042**	20*	**081046**
	0.984 - 1.063	1.457	1.339	0.150 (lbs)	–	–	20*	**081050**
	0.984 - 1.063	2.756	2.638	0.240 (lbs)	101	**081043**	20*	**081047**
	6.00 - 8.00	22.00	19.00	0.03 (kg)	–	–	211*	**081053**
	8.00 - 10.00	30.00	27.00	0.04 (kg)	–	–	211*	**218071**
	10.00 - 12.00	45.00	42.00	0.05 (kg)	–	–	20*	**081044**
	10.00 - 12.00	25.00	22.00	0.04 (kg)	101	**218047**	20*	**218058**
	10.00 - 12.00	35.00	32.00	0.05 (kg)	101	**218048**	20*	**218059**
	12.00 - 14.00	30.00	27.00	0.05 (kg)	101	**218012**	20*	**218014**
	12.00 - 14.00	45.00	42.00	0.06 (kg)	101	**218049**	20*	**218060**
	14.00 - 16.00	35.00	32.00	0.06 (kg)	101	**218050**	20*	**218061**
ⓜ	14.00 - 16.00	50.00	47.00	0.08 (kg)	101	**218051**	20*	**218062**
	15.00 - 17.00	37.00	34.00	0.06 (kg)	–	–	20*	**081048**
	15.00 - 17.00	60.00	57.00	0.08 (kg)	101	**081041**	20*	**081045**
	16.00 - 20.00	40.00	37.00	0.08 (kg)	101	**218052**	20*	**218063**
	16.00 - 20.00	60.00	57.00	0.09 (kg)	101	**218053**	20*	**218064**
	20.00 - 25.00	37.00	34.00	0.07 (kg)	–	–	20*	**081049**
	20.00 - 25.00	70.00	67.00	0.11 (kg)	101	**081042**	20*	**081046**
	25.00 - 27.00	37.00	34.00	0.07 (kg)	–	–	20*	**081050**
	25.00 - 27.00	70.00	67.00	0.11 (kg)	101	**081043**	20*	**081047**

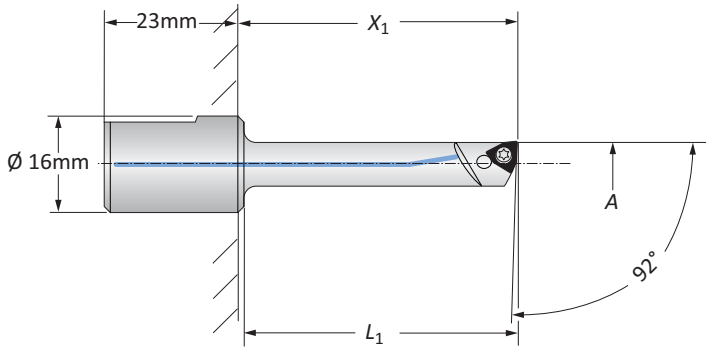
*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

B10-M: 12-15
Key on B10-A:1
B10-H
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

Boring Bars

Heavy Metal | Carbide

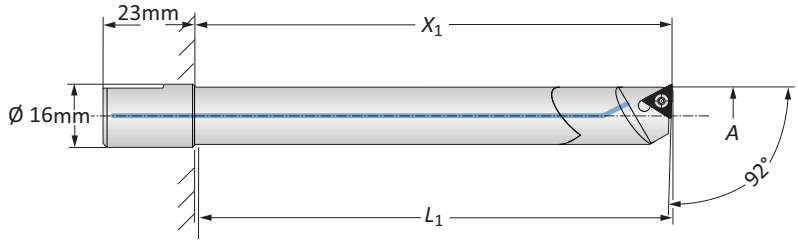


Heavy Metal Boring Bars | Diameter Range: 0.236" - 0.394" (6.00mm - 10.00mm)

	Boring Range	Boring Bar				
	A	X_1	L_1	Weight	Insert Form	Part No.
i	0.236 - 0.315	1.260	1.142	0.176 (lbs)	211*	**081055**
i	0.315 - 0.394	1.772	1.654	0.198 (lbs)	211*	**218072**
m	6.00 - 8.00	32.00	29.00	0.08 (kg)	211*	**081055**
m	8.00 - 10.00	45.00	42.00	0.09 (kg)	211*	**218072**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

Form 101



Form 20

Carbide Boring Bars | Diameter Range: 0.394" - 0.787" (10.00mm - 20.00mm)

	Boring Range	Boring Bar						
	A	X_1	L_1	Weight	Insert Form	Part No.	Insert Form	Part No.
i	0.394 - 0.472	2.165	2.047	0.154 (lbs)	101	**218042**	20	**218037***
i	0.394 - 0.472	2.953	2.835	0.198 (lbs)	101	**218032**	20	**218029***
i	0.472 - 0.551	2.756	2.638	0.220 (lbs)	101	**218043**	20	**218038***
i	0.472 - 0.551	3.543	3.425	0.331 (lbs)	101	**218033**	20	**218030***
i	0.551 - 0.630	2.953	2.835	0.353 (lbs)	101	**218044**	20	**218039***
i	0.551 - 0.630	3.937	3.819	0.441 (lbs)	101	**218045**	20	**218040***
i	0.630 - 0.787	3.543	3.425	0.573 (lbs)	101	**218046**	20	**218041***
i	0.630 - 0.787	4.724	4.606	0.728 (lbs)	101	**218034**	20	**218031***
m	10.00 - 12.00	55.00	52.00	0.07 (kg)	101	**218042**	20	**218037***
m	10.00 - 12.00	75.00	72.00	0.09 (kg)	101	**218032**	20	**218029***
m	12.00 - 14.00	70.00	67.00	0.10 (kg)	101	**218043**	20	**218038***
m	12.00 - 14.00	90.00	87.00	0.15 (kg)	101	**218033**	20	**218030***
m	14.00 - 16.00	75.00	72.00	0.16 (kg)	101	**218044**	20	**218039***
m	14.00 - 16.00	100.00	97.00	0.20 (kg)	101	**218045**	20	**218040***
m	16.00 - 20.00	90.00	87.00	0.26 (kg)	101	**218046**	20	**218041***
m	16.00 - 20.00	120.00	117.00	0.33 (kg)	101	**218034**	20	**218031***

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

B10-M: 12-15 | B10-H | B10: vi-vii

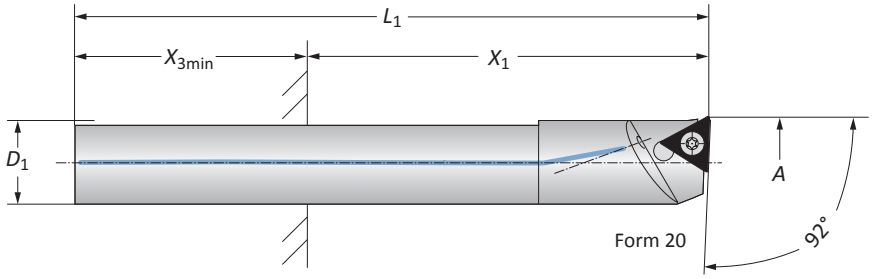
Key on B10-A:1

i = Imperial (in)
m = Metric (mm)
Inserts sold separately

Boring Bars

Steel | Diameter Range: 0.236" - 0.787" (6.00mm - 20.00mm)

Form 101



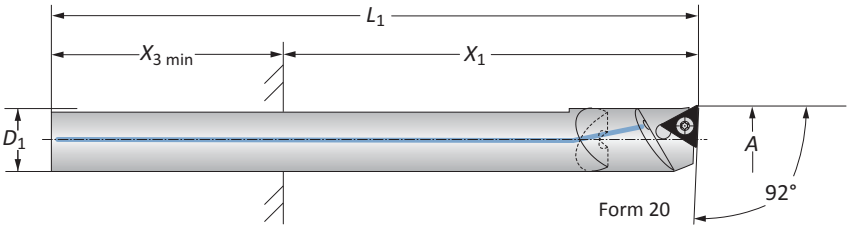
Form 20

Steel Boring Bars | Diameter Range: 0.236" - 0.787" (6.00mm - 20.00mm)

	Boring Range	Boring Bar					Part No.			
	A	D_1	X_1	$X_{3\ min}$	L_1	Weight	Insert Form	Boring Bar	Insert Form	Boring Bar
	0.236 - 0.315	0.197*	0.492 - 0.984	0.984	2.756	0.022 (lbs)	211**	**514032**	–	–
	0.315 - 0.394	0.276*	0.689 - 1.378	0.984	3.189	0.044 (lbs)	211**	**514033**	–	–
	0.394 - 0.472	0.315*	0.787 - 1.575	0.984	3.346	0.066 (lbs)	101	**514003**	20**	**514004**
i	0.472 - 0.551	0.394*	0.984 - 1.969	0.984	3.937	0.110 (lbs)	101	**514005**	20**	**514006**
	0.551 - 0.630	0.472*	1.181 - 2.362	1.181	4.488	0.198 (lbs)	101	**514007**	20**	**514008**
	0.630 - 0.709	0.551*	2.205 - 2.756	1.181	4.764	0.287 (lbs)	101	**514009**	20**	**514010**
	0.709 - 0.787	0.551*	2.205 - 2.756	1.181	4.764	0.287 (lbs)	101	**514011**	20**	**514012**
	6.00 - 8.00	5.00*	12.50 - 25.00	25.00	70.00	0.01 (kg)	211**	**514032**	–	–
	8.00 - 10.00	7.00*	17.50 - 35.00	25.00	81.00	0.02 (kg)	211**	**514033**	–	–
	10.00 - 12.00	8.00*	20.00 - 40.00	25.00	85.00	0.03 (kg)	101	**514003**	20**	**514004**
m	12.00 - 14.00	10.00*	25.00 - 50.00	25.00	100.00	0.05 (kg)	101	**514005**	20**	**514006**
	14.00 - 16.00	12.00*	30.00 - 60.00	30.00	114.00	0.09 (kg)	101	**514007**	20**	**514008**
	16.00 -18.00	14.00*	56.00 - 70.00	30.00	121.00	0.13 (kg)	101	**514009**	20**	**514010**
	18.00 - 20.00	14.00*	56.00 - 70.00	30.00	121.00	0.13 (kg)	101	**514011**	20**	**514012**

*Fixture-through reducing sleeve required (B10-A: 17)
**Not suitable for indexable inserts with a radius of 0.031" (0.8mm)

Form 101



Form 20

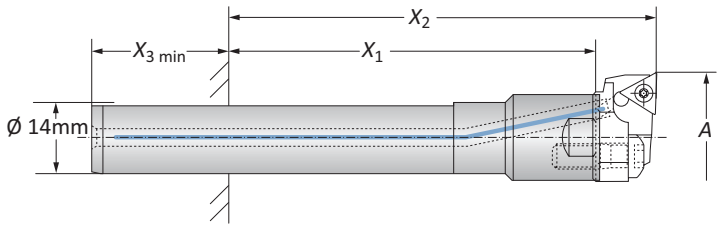
Carbide Boring Bars | Diameter Range: 0.236" - 0.787" (6.00mm - 20.00mm)

	Boring Range	Boring Bar					Part No.			
	A	D_1	X_1	$X_{3\ min}$	L_1	Weight	Insert Form	Boring Bar	Insert Form	Boring Bar
	0.236 - 0.315	0.197*	0.492 - 1.575	0.984	3.543	0.044 (lbs)	211**	**514034**	–	–
	0.315 - 0.394	0.276*	0.827 - 2.205	0.984	4.291	0.110 (lbs)	211**	**514035**	–	–
	0.394 - 0.472	0.315*	0.866 - 2.520	0.984	4.606	0.154 (lbs)	101	**514015**	20**	**514016**
	0.472 - 0.551	0.394*	2.008 - 3.150	0.984	5.512	0.287(lbs)	101	**514017**	20**	**514018**
i	0.551 - 0.630	0.472*	2.677 - 3.780	1.181	6.378	0.485 (lbs)	101	**514019**	20**	**514020**
	0.630 - 0.709	0.551*	3.031 - 4.409	1.181	5.591	0.573 (lbs)	101	**514021**	20**	**514022**
	0.630 - 0.709	0.551*	4.409 - 5.787	1.181	6.969	0.728 (lbs)	101	**514023**	20**	**514024**
	0.709 - 0.787	0.551*	3.031 - 4.409	1.181	5.591	0.573 (lbs)	101	**514025**	20**	**514026**
	0.709 - 0.787	0.551*	4.409 - 5.787	1.181	6.969	0.728 (lbs)	101	**514027**	20**	**514028**
	6.00 - 8.00	5.00*	12.50 - 40.00	25.00	90.00	0.02 (kg)	211**	**514034**	–	–
	8.00 - 10.00	7.00*	21.00 - 56.00	25.00	109.00	0.05 (kg)	211**	**514035**	–	–
	10.00 - 12.00	8.00*	22.00 - 64.00	25.00	117.00	0.07 (kg)	101	**514015**	20**	**514016**
	12.00 - 14.00	10.00*	51.00 - 80.00	25.00	140.00	0.13 (kg)	101	**514017**	20**	**514018**
m	14.00 - 16.00	12.00*	68.00 - 96.00	30.00	162.00	0.22 (kg)	101	**514019**	20**	**514020**
	16.00 - 18.00	14.00*	77.00 - 112.00	30.00	142.00	0.26 (kg)	101	**514021**	20**	**514022**
	16.00 - 18.00	14.00*	112.00 - 147.00	30.00	177.00	0.33 (kg)	101	**514023**	20**	**514024**
	18.00 - 20.00	14.00*	77.00 - 112.00	30.00	142.00	0.26 (kg)	101	**514025**	20**	**514026**
	18.00 - 20.00	14.00*	112.00 - 147.00	30.00	177.00	0.33 (kg)	101	**514027**	20**	**514028**

*Fixture-through reducing sleeve required (B10-A: 17)
**Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

Serrated Tool Bodies | Insert Holders

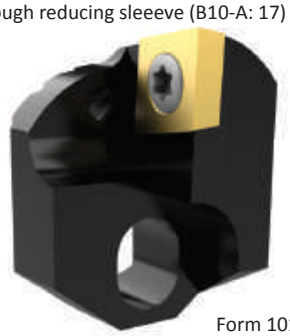
Diameter Range: 0.787" - 1.260" (20.00mm - 32.00mm)



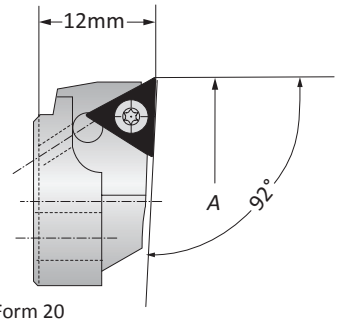
Serrated Tool Bodies

	Substrate	Boring Range A	Serrated Tool Body* X_1	X_2	$X_{3\ min}$	Weight	Part No.
i	Steel	0.787 - 1.260	1.457 - 2.835	1.929 - 3.307	1.181	0.287 (lbs)	**514029**
i	Carbide	0.787 - 1.260	2.550 - 3.937	3.031 - 4.409	1.181	0.551 (lbs)	**514030**
i	Carbide	0.787 - 1.260	3.937 - 5.315	4.409 - 5.787	1.181	0.728 (lbs)	**514031**
m	Steel	20.00 - 32.00	37.00 - 72.00	49.00 - 84.00	30.00	0.13 (kg)	**514029**
m	Carbide	20.00 - 32.00	65.00 - 100.00	77.00 - 112.00	30.00	0.25 (kg)	**514030**
m	Carbide	20.00 - 32.00	100.00 - 135.00	112.00 - 147.00	30.00	0.33 (kg)	**514031**

*Fixture-through reducing sleeeve (B10-A: 17)



Form 101



Form 20

Insert Holders

	Boring Range A	Weight	Insert Form	Part No.	Insert Form	Part No.
i	0.787 - 0.866	0.022 (lbs)	101	**502052**	20	**502046***
i	0.866 - 0.945	0.022 (lbs)	101	**502053**	20	**502047***
i	0.945 - 1.024	0.022 (lbs)	101	**502054**	20	**502048***
i	1.024 - 1.102	0.022 (lbs)	101	**502055**	20	**502049***
i	1.102 - 1.181	0.022 (lbs)	101	**502056**	20	**502050***
i	1.181 - 1.260	0.022 (lbs)	101	**502057**	20	**502051***
m	20.00 - 22.00	0.01 (kg)	101	**502052**	20	**502046***
m	22.00 - 24.00	0.01 (kg)	101	**502053**	20	**502047***
m	24.00 - 26.00	0.01 (kg)	101	**502054**	20	**502048***
m	26.00 - 28.00	0.01 (kg)	101	**502055**	20	**502049***
m	28.00 - 30.00	0.01 (kg)	101	**502056**	20	**502050***
m	30.00 - 32.00	0.01 (kg)	101	**502057**	20	**502051****

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

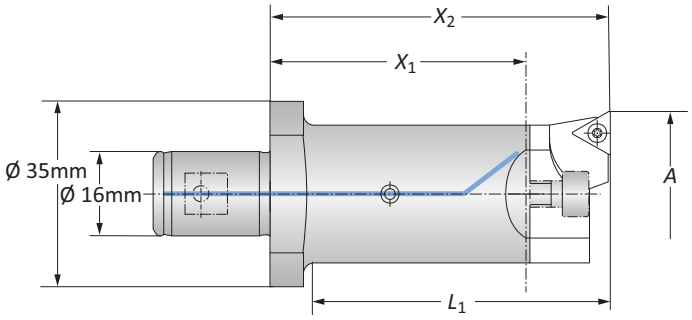
B10-M: 12-15 | B10-A: 18 | B10-H | B10: vi-vii

Key on B10-A: 1

i = Imperial (in)
m = Metric (mm)
Inserts sold separately

Serrated Tool Bodies | Insert Holders

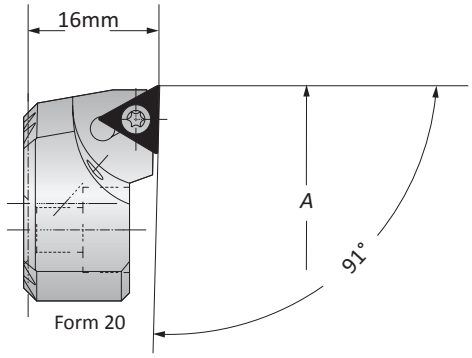
Diameter Range: 1.142" - 2.087" (29.00mm - 53.00mm)



Serrated Tool Bodies

	Boring Range A	Serrated Tool Body X_1	X_2	L_1	Weight	Part No.
i	1.142 - 2.087	1.890	2.520	2.205	0.441 (lbs)	**236021**
i	1.142 - 2.087	3.307	3.937	3.622	0.661 (lbs)	**236031**
m	29.00 - 53.00	48.00	64.00	56.00	0.20 (kg)	**236021**
m	29.00 - 53.00	84.00	100.00	92.00	0.30 (kg)	**236031**

Form 101



Form 20

Insert Holders

	Boring Range A	Weight	Insert Form	Part No.
i	1.142 - 1.614	0.088 (lbs)	101	**236023**
i	1.142 - 1.614	0.088 (lbs)	20*	**236022**
i	1.575 - 2.087	0.132 (lbs)	101	**236025**
i	1.575 - 2.087	0.132 (lbs)	20*	**236024**
m	29.00 - 41.00	0.04 (kg)	101	**236023**
m	29.00 - 41.00	0.04 (kg)	20*	**236022**
m	40.00 - 53.00	0.06 (kg)	101	**236025**
m	40.00 - 53.00	0.06 (kg)	20*	**236024**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

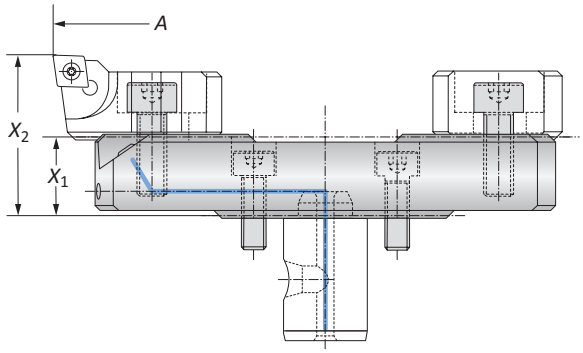
B10-M: 12-15 | B10-A: 18 | B10-H | B10: vi-vii

Key on B10-A: 1

i = Imperial (in)
m = Metric (mm)
Inserts sold separately

Alu-Line Serrated Slides | Insert Holders

Diameter Range: 2.677" - 5.984" (68.00mm - 152.00mm)

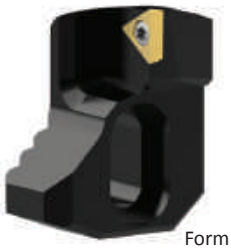


Alu-Line Serrated Slides

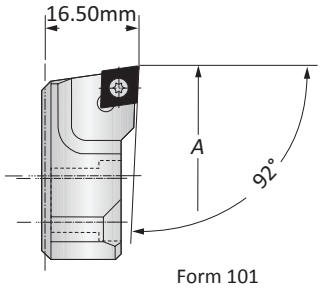
	Boring Range A	Serrated Slide X_1	Serrated Slide X_2	Weight	Part No.
i	2.677 - 3.780	0.630	1.279	0.220 (lbs)	**501054**
i	3.780 - 4.882	0.630	1.279	0.220 (lbs)	**501055**
i	4.882 - 5.984	0.630	1.279	0.440 (lbs)	**501056**
m	68.00 - 96.00	16.00	32.50	0.10 (kg)	**501054**
m	96.00 - 124.00	16.00	32.50	0.10 (kg)	**501055**
m	124.00 - 152.00	16.00	32.50	0.20 (kg)	**501056**

Insert Holders

	Boring Range A	Weight	Insert Form	Part No.
i	2.677 - 5.984	0.110 (lbs)	101	**502064**
i	2.677 - 5.984	0.110 (lbs)	20	**502069**
m	68.00 - 152.00	0.05 (kg)	101	**502064**
m	68.00 - 152.00	0.05 (kg)	20	**502069**



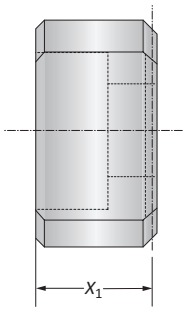
Form 20



Form 101

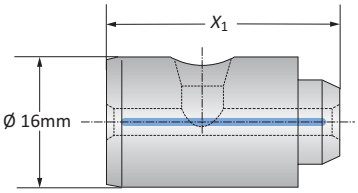
Counterweights

	Counterweight X_1	Weight	Part No.
i	0.528	0.110 (lbs)	**502165**
m	13.40	0.05 (kg)	**502165**



Alu-Line Coolant Delivery Sections

	Coolant Delivery X_1	Weight	Part No.
i	1.004	0.022 (lbs)	**450137**
m	25.50	0.01 (kg)	**450137**



B10-M: 12-15 | B10-A: 18 | B10-H | B10: vi-vii

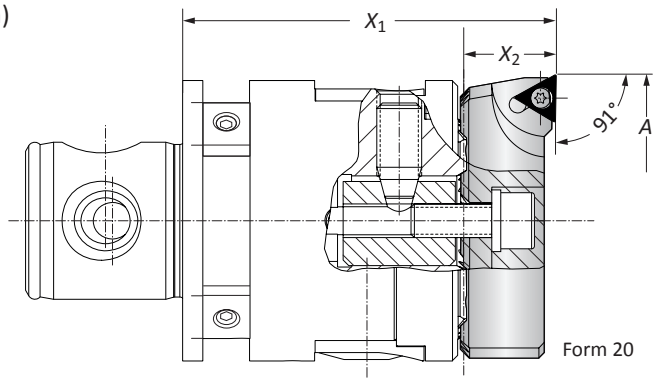
Key on B10-A: 1

i = Imperial (in)
m = Metric (mm)
Inserts sold separately

Insert Holders for Boring Heads

Diameter Range: 2.047" - 4.016" (52.00mm - 102.00mm)

Form 101

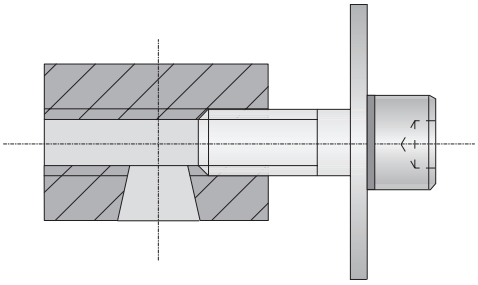


Form 20

	Boring Range *A*	Insert Holder X_1	Insert Holder X_2	Weight	Insert Form	Part No.
ⓘ	2.047 - 3.031	2.598	0.650	0.132 (lbs)	101	**236027**
ⓘ	2.047 - 3.031	2.598	0.650	0.132 (lbs)	20	**236026**
ⓘ	2.992 - 4.016	2.598	0.650	0.220 (lbs)	101	**236029**
ⓘ	2.992 - 4.016	2.598	0.650	0.220 (lbs)	20	**236028**
ⓜ	52.00 - 77.00	66.00	16.50	0.06 (kg)	101	**236027**
ⓜ	52.00 - 77.00	66.00	16.50	0.06 (kg)	20	**236026**
ⓜ	76.00 - 102.00	66.00	16.50	0.10 (kg)	101	**236029**
ⓜ	76.00 - 102.00	66.00	16.50	0.10 (kg)	20	**236028**

Clamping Piece for Insert Holder for Boring Heads

	Boring Range	Service Key	Complete Part No.
ⓜ	52.00 - 102.00	s5	**236020**



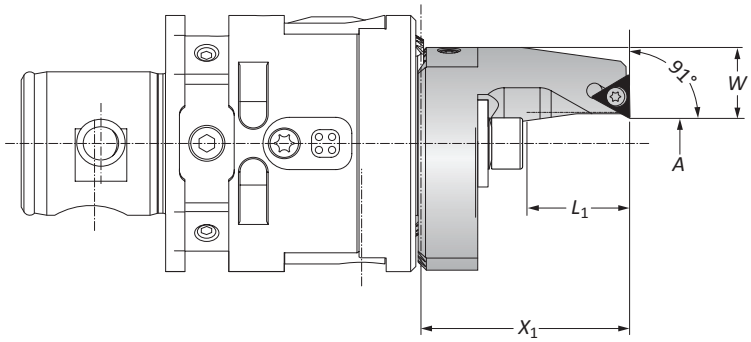
B10-M: 12-15 | B10-A: 18 | B10-H | B10: vi-vii

Key on B10-A: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

Outside Turning Insert Holders for Boring Heads

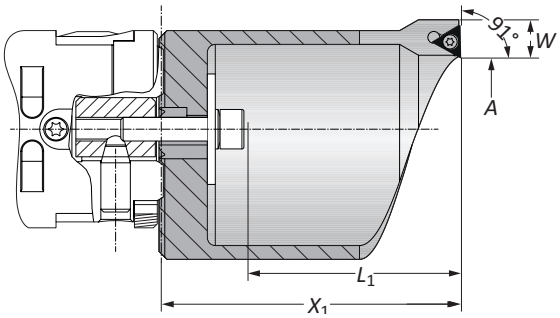
Outside Turning | Diameter Range: 0.157" - 2.598" (4.00mm - 66.00mm)



Type A Insert Holders

	Boring Range A	Insert Holder X_1	Insert Holder L_1	Insert Holder W	Weight	Type	Insert Form	Part No.
i	0.157 - 0.689	1.594	0.787	0.653	0.220	A	20*	**236081**
i	0.650 - 1.181	1.988	1.181	0.437	0.220	A	20*	**236082**
m	4.00 - 17.50	40.50	20.00	16.60	0.10	A	20*	**236081**
m	16.50 - 30.00	50.50	30.00	11.10	0.10	A	20*	**236082**

NOTE: Clockwise and neutral execution
*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)



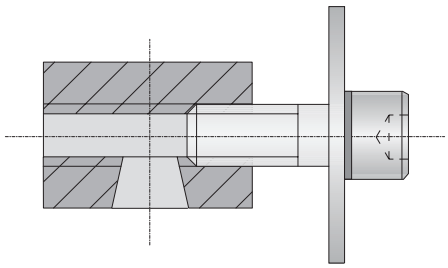
Type B Insert Holders

	Boring Range A	Insert Holder X_1	Insert Holder L_1	Insert Holder W	Weight	Type	Insert Form	Part No.
i	1.142 - 1.732	2.952	2.126	0.377	0.661 (lbs)	B	20*	**236083**
i	1.693 - 2.598	3.956	3.110	0.377	0.882 (lbs)	B	20*	**236084**
m	29.00 - 44.00	75.50	54.00	9.60	0.30 (kg)	B	20*	**236083**
m	43.00 - 66.00	100.50	79.00	9.60	0.40 (kg)	B	20*	**236084**

NOTE: Clockwise and neutral execution
*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

Clamping Pieces for Outside Turning Insert Holders

	Insert Holder Type	Boring Range	Service Key	Complete Part No.
m	A	4.00 - 30.00	**s5**	**236088**
m	B	29.00 - 66.00	**s5**	**236089**



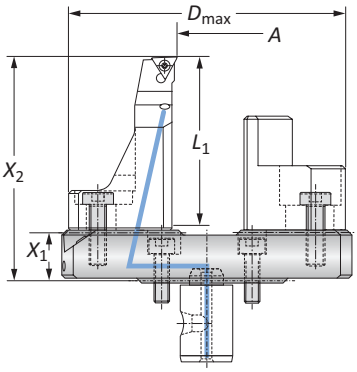
B10-M: 12-15 | B10-A: 18 | B10-H | B10: vi-vii

Key on B10-A: 1

i = Imperial (in)
m = Metric (mm)
Inserts sold separately

Outside Turning Serrated Slides | Insert Holders

Diameter Range: 0.079" - 2.283" (2.00mm - 58.00mm)



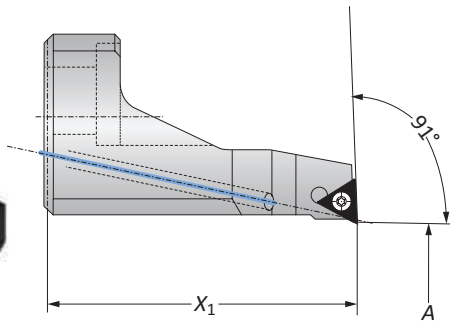
Serrated Slides

	Outside Turning Range	Serrated Slide				Interfering Diameter	
	A	X_1	X_2	L_1	Weight	D_{max}	Part No.
i	0.079 - 1.181	0.630	2.874	2.165	0.771 (lbs)	3.976	**501064**
i	1.181 - 2.283	0.630	2.874	2.165	0.970 (lbs)	5.079	**501065**
m	2.00 - 30.00	16.00	73.00	55.00	0.35 (kg)	101.00	**501064**
m	30.00 - 58.00	16.00	73.00	55.00	0.44 (kg)	129.00	**501065**

Insert Holders

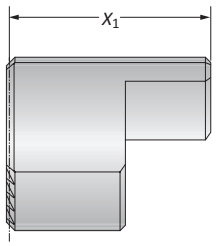
	Boring Range	Insert Holder			
	A	X_1	Weight	Insert Form	Part No.
i	0.079 - 2.283	2.244	0.331 (lbs)	20*	**502082**
m	2.00 - 58.00	57.00	0.15 (kg)	20*	**502082**

*Clockwise and neutral execution



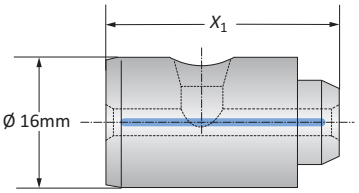
Counterweights

	Counterweight		
	X_1	Weight	Part No.
i	1.486	0.352 (lbs)	**502183**
m	37.75	0.16 (kg)	**502183**



Alu-Line Coolant Delivery Sections

	Coolant Delivery Section		
	X_1	Weight	Part No.
i	1.004	0.022 (lbs)	**450137**
m	25.50	0.01 (kg)	**450137**



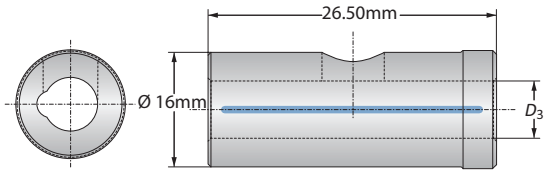
B10-M: 12-15 | B10-A: 18 | B10-H | B10: vi-vii

Key on B10-A: 1

i = Imperial (in)
m = Metric (mm)
Inserts sold separately

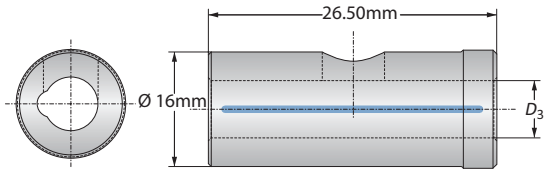
Accessories

Imperial Reducing Sleeves | Metric Reducing Sleeves



Reducing Sleeve

	Reducing Sleeve D_3	Weight	Part No.
	4.00	0.05 (kg)	**450129**
	5.00	0.04 (kg)	**450130**
	7.00	0.04 (kg)	**450132**
ⓜ	8.00	0.04 (kg)	**450133**
	9.00	0.03 (kg)	**450134**
	12.00	0.02 (kg)	**450135**
	14.00	0.01 (kg)	**450136**



Imperial Reducing Sleeves

	D_3	Weight	Part No.
	0.125	0.110 (lbs)	**450142**
	0.250	0.088 (lbs)	**450143**
ⓘ	0.312	0.088 (lbs)	**450144**
	0.375	0.088 (lbs)	**450145**
	0.500	0.088 (lbs)	**450146**

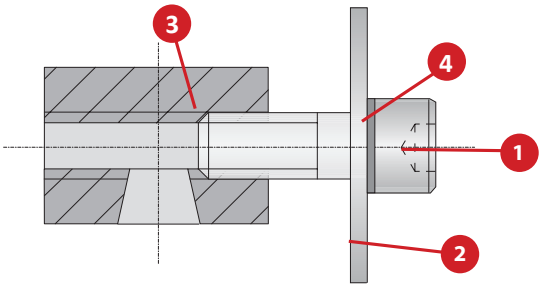
ⓘ = Imperial (in)
ⓜ = Metric (mm)

Accessories

Clamping Elements | Thread Pin | Balancing Element | 3E[TECH] Accessories

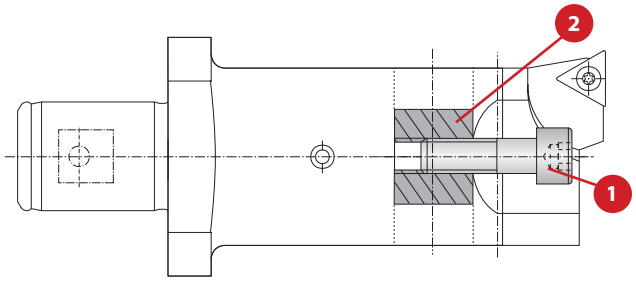
Clamping Elements for Insert Holders

	Boring Range	1 Cap Screw	Hex Size	2 Washer	3 Clamping Nut	4 Locking Washer	Complete Part No.
	4 - 30	**070153**	**s5**	**315155**	**236120**	**215254**	**236088**
(m)	29 - 66	**070153**	**s5**	**315156**	**236120**	**215254**	**236089**
	52 - 102	**115147**	**s5**	**115725**	**236120**	-	**236020**



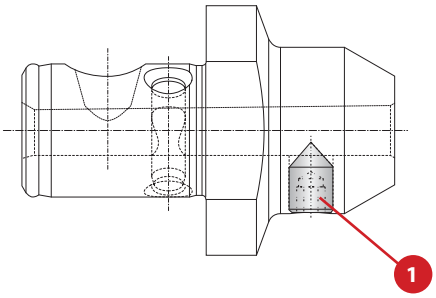
Clamping Elements for Serrated Tool Body

1 Cap Screw	Hex Size	2 Clamping Piece
027154	**s4**	**145184**



Thread Pin

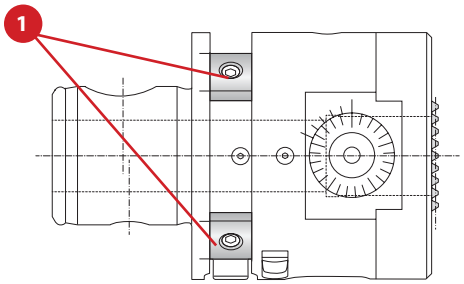
Service Key	1 Part No.
S3 / A	**415244**



Balancing Element

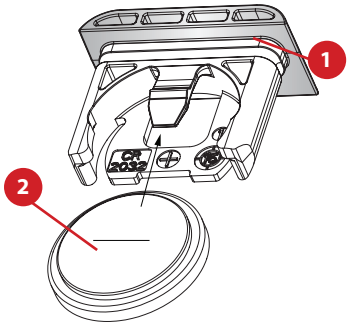
Nominal Size	Key Size / Type	1 Part No.
M8 x 1.25 x 8	s2 / A	**536005**

NOTE: Balancing elements sold separately



3E[TECH] Accessories

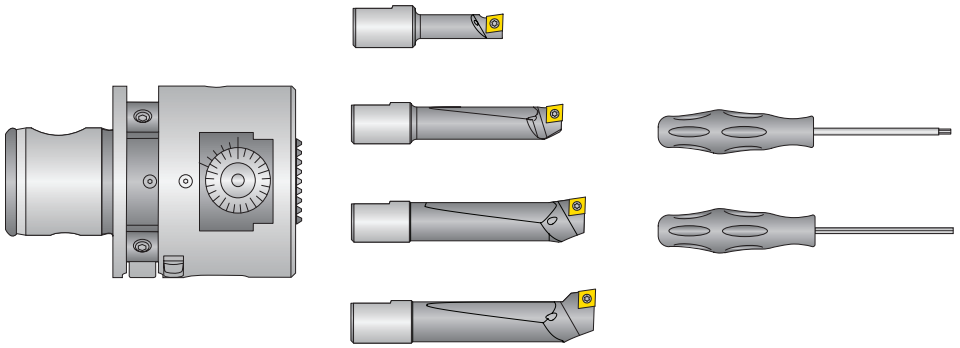
1 Sealing Ring Part No.	2 Battery CR2032 Part No.
215483	**515491**



Notes

Kit Components

3E^{TECH} | Insert Form 101 | Diameter Range: 0.393" - 1.181" (10.00mm - 30.00mm)



Diameter Range: 0.393" - 1.181" (10.00mm - 30.00mm)

Kit Components					
	Boring Head	Boring Bar Range	Boring Bars	Service Keys	Kit No.
ⓘ	563002	0.393 - 0.590	218048	115575 (s2.5)	**104046**
		0.590 - 0.787	081041	215403 (s4)	
		0.787 - 0.984	081042	115590 (T8)	
		0.984 - 1.181	081043		
ⓜ	536002	10.00 - 15.00	218048	115575 (s2.5)	**103046**
		15.00 - 20.00	081041	215403 (s4)	
		20.00 - 25.00	081042	115590 (T8)	
		25.00 - 30.00	081043		

NOTE: Balancing elements and inserts sold separately
NOTE: 3E^{TECH} digital readout module sold separately

3E^{TECH} Digital Readout Module

	Part No.
ⓘ	**563010**
ⓜ	**536010**

NOTE: WEEE-Reg.-Nr. DE 15820388

NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

B10-M: 12-15 | B10-A: 18 | B10-H | B10: vi-vii

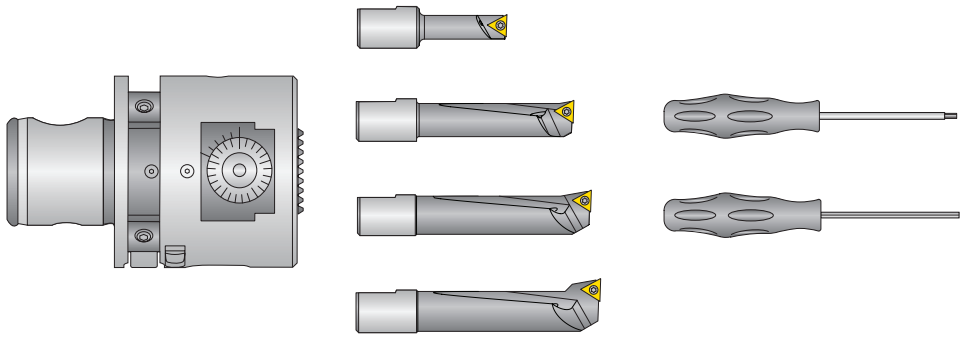
Key on B10-A: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Kit Components

3E[TECH] | Insert Form 20 | Diameter Range: 0.393" - 1.181" (10.00mm - 30.00mm)



Diameter Range: 0.393" - 1.181" (10.00mm - 30.00mm)

	Kit Components				
	Boring Head	Boring Bar Range	Boring Bars	Service Keys	Kit No.
i	563002	0.393 - 0.590	218059	115575 (s2.5)	**104045**
		0.590 - 0.787	081045	215403 (s4)	
		0.787 - 0.984	081046	115591 (T7)	
		0.984 - 1.181	081047		
m	536002	10.00 - 15.00	218059	115575 (s2.5)	**103045**
		15.00 - 20.00	081045	215403 (s4)	
		20.00 - 25.00	081046	115591 (T7)	
		25.00 - 30.00	081047		

NOTE: Balancing elements and inserts sold separately
NOTE: 3E[TECH] digital readout module sold separately

3E[TECH] Digital Readout Module

	Part No.
i	**563010**
m	**536010**

NOTE: WEEE-Reg.-Nr. DE 15820388

NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

B10-M: 12-15 | B10-A: 18 | B10-H | B10: vi-vii

Key on B10-A: 1

i = Imperial (in)
m = Metric (mm)
Inserts sold separately

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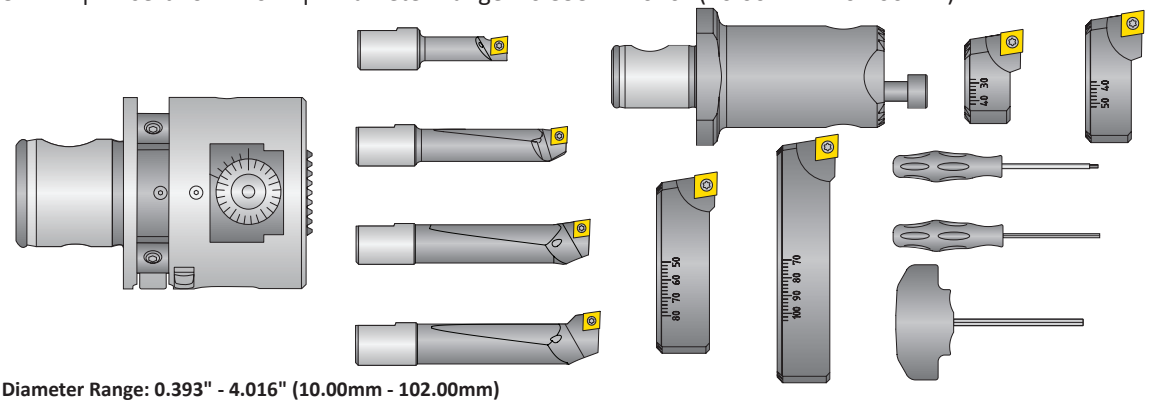
ext: **7611** | *email:* **appeng@alliedmachine.com**

Kit Components

3E[TECH] | Insert Form 101 | Diameter Range: 0.393" - 4.016" (10.00mm - 102.00mm)



Diameter Range: 0.393" - 4.016" (10.00mm - 102.00mm)

Kit Components

	Boring Head	Boring Bars: Boring Bar Range	Boring Bars: Part No.	Serrated Tool Body & Insert Holders: Serrated Tool Body	Serrated Tool Body & Insert Holders: Insert Holder Range	Serrated Tool Body & Insert Holders: Part No.	Insert Holders for Boring Head: Insert Holder Range	Insert Holders for Boring Head: Part No.	Insert Holders for Boring Head: Clamping Piece	Service Keys	Kit No.
ⓘ	563002	0.393 - 0.590	218048	236021	1.142 - 1.614	236023	2.047 - 3.031	236027	236020	115575 (s2.5)	**104048**
		0.590 - 0.787	081041		1.575 - 2.087	236025	2.992 - 4.016	236029		215403 (s4)	
		0.787 - 0.984	081042							215521 (s5)	
		0.984 - 1.181	081043							115590 (T8)	
ⓜ	536002	10.00 - 15.00	218048	236021	29.00 - 41.00	236023	52.00 - 77.00	236027	236020	115575 (s2.5)	**103048**
		15.00 - 20.00	081041		40.00 - 53.00	236025	76.00 - 102.00	236029		215403 (s4)	
		20.00 - 25.00	081042							215521 (s5)	
		25.00 - 30.00	081043							115590 (T8)	

NOTE: Balancing elements and inserts sold separately
NOTE: 3E[TECH] digital readout module sold separately

3E[TECH] Digital Readout Module

	Part No.
ⓘ	**563010**
ⓜ	**536010**

NOTE: WEEE-Reg.-Nr. DE 15820388

NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

B10-M: 12-15 | B10-A: 18 | B10-H | B10: vi-vii

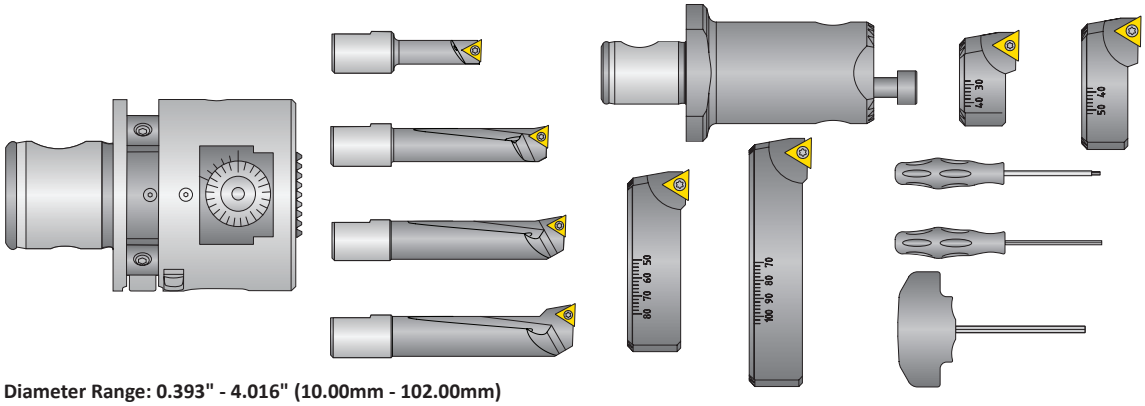
Key on B10-A: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Kit Components

3E[TECH] | Insert Form 20 | Diameter Range: 0.393" - 4.016" (10.00mm - 102.00mm)



Diameter Range: 0.393" - 4.016" (10.00mm - 102.00mm)

Kit Components

	Boring Head	Boring Bars: Boring Bar Range	Boring Bars: Part No.	Serrated Tool Body & Insert Holders: Serrated Tool Body	Serrated Tool Body & Insert Holders: Insert Holder Range	Serrated Tool Body & Insert Holders: Part No.	Insert Holders for Boring Head: Insert Holder Range	Insert Holders for Boring Head: Part No.	Insert Holders for Boring Head: Clamping Piece	Service Keys	Kit No.
(i)	563002	0.393 - 0.590	218059	236021	1.142 - 1.614	236026	2.047 - 3.031	236022	236020	115575 (s2.5)	**104047**
		0.590 - 0.787	081045		1.575 - 2.087	236028	2.992 - 4.016	236024		215403 (s4)	
		0.787 - 0.984	081046							215521 (s5)	
		0.984 - 1.181	081047							115591 (T7)	
(m)	536002	10.00 - 15.00	218059	236021	29.00 - 41.00	236026	52.00 - 77.00	236022	236020	115575 (s2.5)	**103047**
		15.00 - 20.00	081045		40.00 - 53.00	236028	76.00 - 102.00	236024		215403 (s4)	
		20.00 - 25.00	081046							215521 (s5)	
		25.00 - 30.00	081047							115591 (T7)	

NOTE: Balancing elements and inserts sold separately
NOTE: 3E[TECH] digital readout module sold separately

3E[TECH] Digital Readout Module

	Part No.
(i)	**563010**
(m)	**536010**

NOTE: WEEE-Reg.-Nr. DE 15820388

NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

B10-M: 12-15 | B10-A: 18 | B10-H | B10: vi-vii

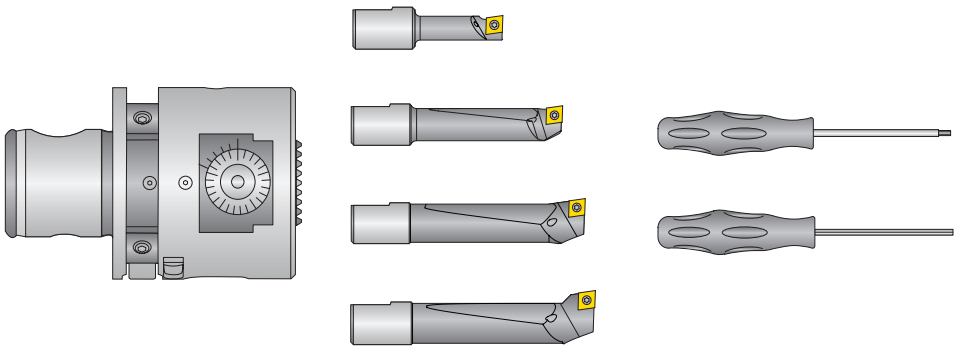
Key on B10-A: 1

(i) = Imperial (in)
(m) = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Kit Components

Non-Digital | Insert Form 101 | Diameter Range: 0.393" - 1.181" (10.00mm - 30.00mm)



Diameter Range: 0.393" - 1.181" (10.00mm - 30.00mm)

	Kit Components				
	Boring Head	**Boring Bar Range**	**Boring Bars**	**Service Keys**	**Kit No.**
ⓘ	563001	0.393 - 0.590	218048	115575 (s2.5)	**104050**
		0.590 - 0.787	081041	215403 (s4)	
		0.787 - 0.984	081042	115590 (T8)	
		0.984 - 1.181	081043		
ⓜ	536001	10.00 - 15.00	218048	115575 (s2.5)	**103050**
		15.00 - 20.00	081041	215403 (s4)	
		20.00 - 25.00	081042	115590 (T8)	
		25.00 - 30.00	081043		

NOTE: Balancing elements and inserts sold separately

B10-M: 12-15 | B10-A: 18 | B10-H | B10: vi-vii

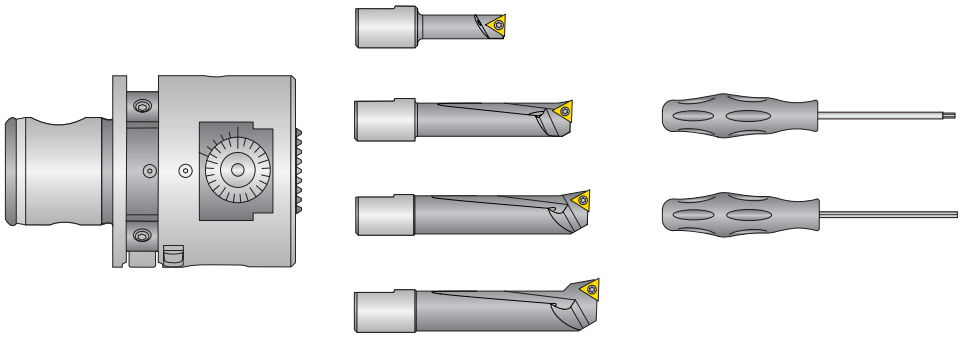
Key on B10-A: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Kit Components

Non-Digital | Insert Form 20 | Diameter Range: 0.393" - 1.181" (10.00mm - 30.00mm)



Diameter Range: 0.393" - 1.181" (10.00mm - 30.00mm)

	Kit Components				
	Boring Head	**Boring Bar Range**	**Boring Bars**	**Service Keys**	**Kit No.**
ⓘ	563001	0.393 - 0.590	218059	115575 (s2.5)	**104049**
		0.590 - 0.787	081045	215403 (s4)	
		0.787 - 0.984	081046	115591 (T7)	
		0.984 - 1.181	081047		
ⓜ	536001	10.00 - 15.00	218059	115575 (s2.5)	**103049**
		15.00 - 20.00	081045	215403 (s4)	
		20.00 - 25.00	081046	115591 (T7)	
		25.00 - 30.00	081047		

NOTE: Balancing elements and inserts sold separately

B10-M: 12-15 | B10-A: 18 | B10-H | B10: vi-vii

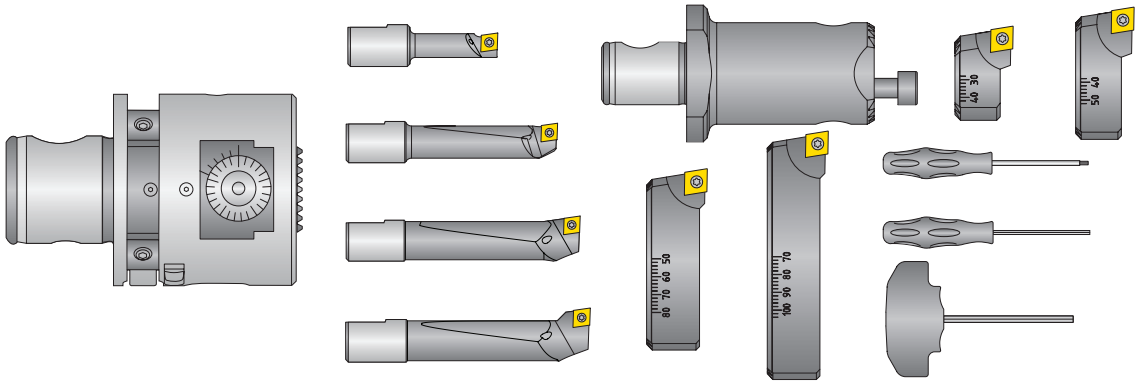
Key on B10-A: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Kit Components

Non-Digital | Insert Form 101 | Diameter Range: 0.393" - 4.016" (10.00mm - 102.00mm)



Diameter Range: 0.393" - 4.016" (10.00mm - 102.00mm)

	Kit Components											
		Boring Bars		Serrated Tool Body & Insert Holders			Insert Holders for Boring Head				
	Boring Head	Boring Bar Range	Part No.	Serrated Tool Body	Insert Holder Range	Part No.	Insert Holder Range	Part No.	Clamping Piece	Service Keys	Kit No.
ⓘ	563001	0.393 - 0.590	218048	236021	1.142 - 1.614	236023	2.047 - 3.031	236027	236020	115575 (s2.5)	**104052**
		0.590 - 0.787	081041		1.575 - 2.087	236025	2.992 - 4.016	236029		215403 (s4)	
		0.787 - 0.984	081042							215521 (s5)	
		0.984 - 1.181	081043							115590 (T8)	
ⓜ	536001	10.00 - 15.00	218048	236021	29.00 - 41.00	236023	52.00 - 77.00	236027	236020	115575 (s2.5)	**103052**
		15.00 - 20.00	081041		40.00 - 53.00	236025	76.00 - 102.00	236029		215403 (s4)	
		20.00 - 25.00	081042							215521 (s5)	
		25.00 - 30.00	081043							115590 (T8)	

NOTE: Balancing elements and inserts sold separately

B10-M: 12-15 | B10-A: 18 | B10-H | B10: vi-vii

Key on B10-A: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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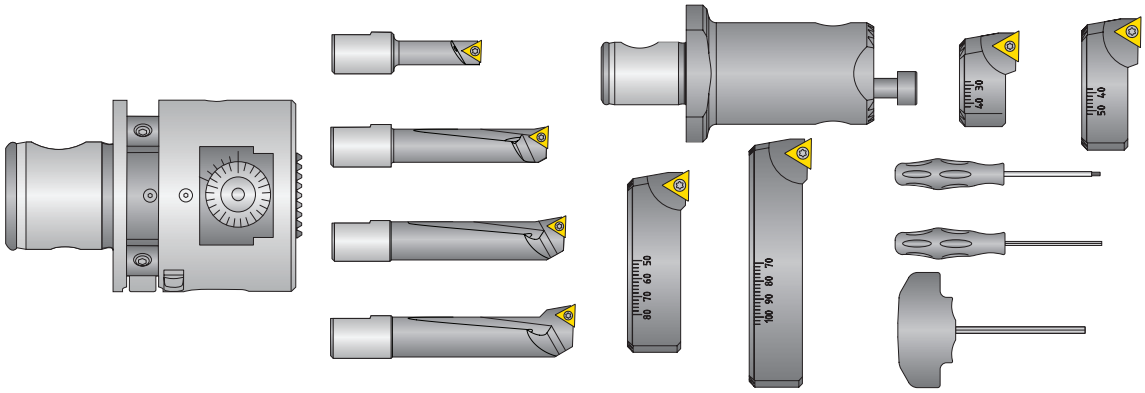
Kit Components

Non-Digital | Insert Form 20 | Diameter Range: 0.393" - 4.016" (10.00mm - 102.00mm)



Diameter Range: 0.393" - 4.016" (10.00mm - 102.00mm)

Kit Components

	Boring Head	Boring Bars: Boring Bar Range	Boring Bars: Part No.	Serrated Tool Body & Insert Holders: Serrated Tool Body	Serrated Tool Body & Insert Holders: Insert Holder Range	Serrated Tool Body & Insert Holders: Part No.	Insert Holders for Boring Head: Insert Holder Range	Insert Holders for Boring Head: Part No.	Insert Holders for Boring Head: Clamping Piece	Service Keys	Kit No.
ⓘ	563001	0.393 - 0.590	218059	236021	1.142 - 1.614	236022	2.047 - 3.031	236026	236020	115575 (s2.5)	**104051**
		0.590 - 0.787	081045		1.575 - 2.087	236024	2.992 - 4.016	236028		215403 (s4)	
		0.787 - 0.984	081046							215521 (s5)	
		0.984 - 1.181	081047							115591 (T7)	
ⓜ	536001	10.00 - 15.00	218059	236021	29.00 - 41.00	236022	52.00 - 77.00	236026	236020	115575 (s2.5)	**103051**
		15.00 - 20.00	081045		40.00 - 53.00	236024	76.00 - 102.00	236028		215403 (s4)	
		20.00 - 25.00	081046							215521 (s5)	
		25.00 - 30.00	081047							115591 (T7)	

NOTE: Balancing elements and inserts sold separately

B10-M: 12-15 | B10-A: 18 | B10-H | B10: vi-vii

Key on B10-A: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

249 (248) Product Overview

249 (248)
VERSATILE FINE BORING

Compact design. Precision boring.

The Wohlhaupter® 249 (248) compact boring head allows for higher spindle speeds and achieves long-reach boring jobs. Its cylindrical shank provides variable length adjustments up to 10xD.

Test this ***compact design*** for finish machining today.

- Diameter range: 0.118" - 1.189" (3.00mm - 30.20mm)
- Length adjustment up to 10xD
- Coolant-through boring tool
- 0.0005" (0.01mm) adjust on diameter
- Max spindle speed: 20,000 RPM

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

249 (248) Head

Insert Holder
Ø 0.626" - 1.189"
(Ø 15.90mm - 30.20mm)

Adapter

Boring Bar
Ø 0.146" - 0.630"
(Ø 3.70mm - 16.00mm)

Adapter

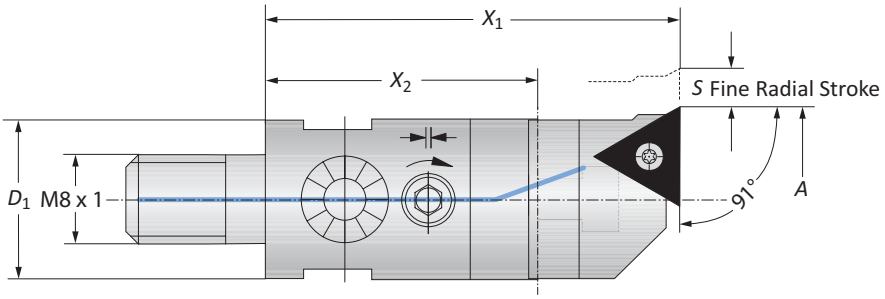
Mini Boring Bar
Ø 0.118" - 0.236"
(Ø 3.00mm - 6.00mm)

OPERATION **VERSATILITY**

from **0.118"** to **1.187"** (**3.00mm** to **30.20mm**)

Boring Heads

Diameter Range: 0.626" - 1.189" (15.90mm - 30.20mm)



	Boring Connection	Boring Range A	Boring Head X_1	X_2	D_1	S	Weight	Insert Form	Part No. Insert Holder	Boring Head
	M8 x 1	0.626 - 0.791	1.654	1.024	0.591	0.025	0.132 (lbs)	20*	**248051**	**249001**
	M8 x 1	0.626 - 0.791	1.654	1.024	0.591	0.055	0.132 (lbs)	101	**248054**	**249001**
ⓘ	M8 x 1	0.783 - 0.976	1.811	1.181	0.709	0.071	0.198 (lbs)	20*	**248052**	**249002**
	M8 x 1	0.783 - 0.976	1.811	1.181	0.709	0.071	0.198 (lbs)	101	**248055**	**249002**
	M8 x 1	0.965 - 1.189	1.811	1.181	0.906	0.091	0.287 (lbs)	20*	**248053**	**249003**
	M8 x 1	0.965 - 1.189	1.811	1.181	0.906	0.091	0.287 (lbs)	101	**248056**	**249003**
	M8 x 1	15.90 - 20.10	42.00	26.00	15.00	1.40	0.06 (kg)	20*	**248051**	**248001**
	M8 x 1	15.90 - 20.10	42.00	26.00	15.00	1.40	0.06 (kg)	101	**248054**	**248001**
ⓜ	M8 x 1	19.90 - 24.80	46.00	30.00	18.00	1.80	0.09 (kg)	20*	**248052**	**248002**
	M8 x 1	19.90 - 24.80	46.00	30.00	18.00	1.80	0.09 (kg)	101	**248055**	**248002**
	M8 x 1	24.50 - 30.20	46.00	30.00	23.00	2.30	0.13 (kg)	20*	**248053**	**248003**
	M8 x 1	24.50 - 30.20	46.00	30.00	23.00	2.30	0.13 (kg)	101	**248056**	**248003**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

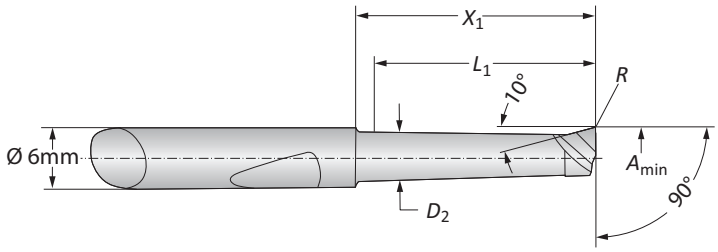
B10-M: 12-15
Key on B10-A: 1
B10-A: 34
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Mini Boring Bars

WHC05 | WHW04 | WBN150 | Diameter Range: 0.118" - 0.236" (3.00mm - 6.00mm)

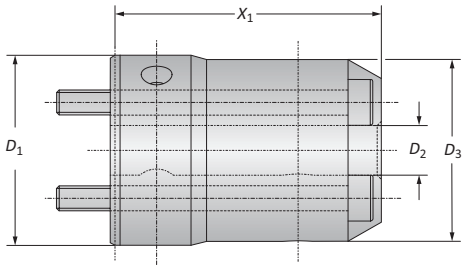


Mini Boring Bars

	Boring Range	Boring Bar					Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	0.118	0.236	0.102	0.452	0.393	0.003	**081306WHC05**	–	**081322WBN150**
	0.118	0.236	0.102	0.649	0.590	0.003	**081307WHC05**	**081307WHW04**	–
	0.157	0.236	0.141	0.472	0.393	0.007	**081308WHC05**	–	**081317WBN150**
	0.157	0.236	0.141	0.669	0.590	0.007	**081309WHC05**	–	**081341WBN150**
	0.157	0.236	0.141	0.866	0.787	0.007	**081310WHC05**	**081310WHW04**	–
ⓘ	0.196	0.236	0.181	0.472	0.393	0.007	**081311WHC05**	–	**081318WBN150**
	0.196	0.236	0.181	0.866	0.787	0.007	**081312WHC05**	–	**081319WBN150**
	0.196	0.236	0.181	1.259	1.181	0.007	**081313WHC05**	**081313WHW04**	–
	0.236	0.236	0.220	0.866	0.787	0.007	**081314WHC05**	–	**081320WBN150**
	0.236	0.236	0.220	1.259	1.181	0.007	**081315WHC05**	–	**081321WBN150**
	0.236	0.236	0.220	1.653	1.574	0.007	**081316WHC05**	**081316WHW04**	–
	3.00	6.00	2.60	11.50	10.00	0.10	**081306WHC05**	–	**081322WBN150**
	3.00	6.00	2.60	16.50	15.00	0.10	**081307WHC05**	**081307WHW04**	–
	4.00	6.00	3.60	12.00	10.00	0.20	**081308WHC05**	–	**081317WBN150**
	4.00	6.00	3.60	17.00	15.00	0.20	**081309WHC05**	–	**081341WBN150**
	4.00	6.00	3.60	22.00	20.00	0.20	**081310WHC05**	**081310WHW04**	–
ⓜ	5.00	6.00	4.60	12.00	10.00	0.20	**081311WHC05**	–	**081318WBN150**
	5.00	6.00	4.60	22.00	20.00	0.20	**081312WHC05**	–	**081319WBN150**
	5.00	6.00	4.60	32.00	30.00	0.20	**081313WHC05**	**081313WHW04**	–
	6.00	6.00	5.60	22.00	20.00	0.20	**081314WHC05**	–	**081320WBN150**
	6.00	6.00	5.60	32.00	30.00	0.20	**081315WHC05**	–	**081321WBN150**
	6.00	6.00	5.60	42.00	40.00	0.20	**081316WHC05**	**081316WHW04**	–

Adapter

	Boring Head	Adapter				
		X_1	D_1	D_2	D_3	Part No.
ⓘ	249003	1.260	0.906	0.236	0.866	**248071**
ⓜ	248003	32.00	23.00	6.00	22.00	**248071**



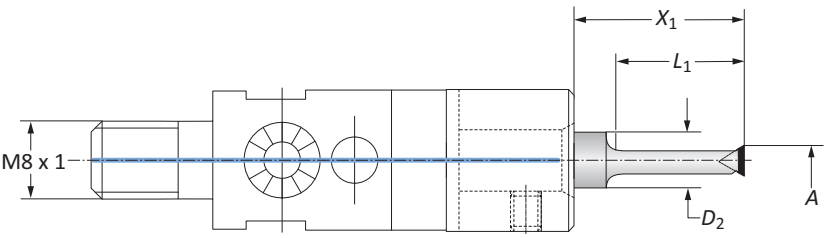
B10-M: 12-15 | B10-A: 34 | B10: vi-vii

Key on B10-A: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Boring Bars

Diameter Range: 0.146" - 0.630" (3.70mm - 16.00mm)



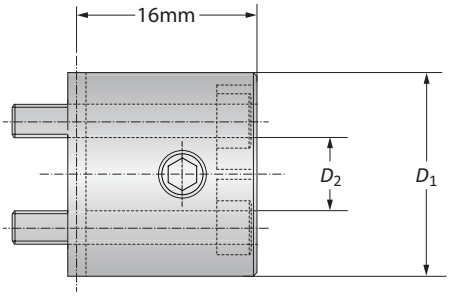
Boring Bars

	Boring Range	Boring Bar				
	A	D_2	X_1	L_1	Insert Form	Part No.
i	0.146 - 0.197	0.315	0.819	0.709	325*	**218074**
i	0.193 - 0.236	0.315	1.024	0.906	47*	**218075**
i	0.232 - 0.315	0.315	1.063	0.984	211*	**218076**
i	0.311 - 0.394	0.315	1.201	1.181	211*	**218077**
i	0.390 - 0.472	0.315	1.378	1.378	20*	**218079**
i	0.390 - 0.472	0.315	1.378	1.378	101	**218082**
i	0.469 - 0.551	0.394	1.772	1.772	20*	**218080**
i	0.469 - 0.551	0.394	1.772	1.772	101	**218083**
i	0.547 - 0.630	0.394	1.969	1.968	20*	**218081**
i	0.547 - 0.630	0.394	1.969	1.968	101	**218084**
m	3.70 - 5.00	8.00	20.80	18.00	325*	**218074**
m	4.90 - 6.00	8.00	26.00	23.00	47*	**218075**
m	5.90 - 8.00	8.00	27.00	25.00	211*	**218076**
m	7.90 - 10.00	8.00	30.50	30.00	211*	**218077**
m	9.90 - 12.00	8.00	35.00	35.00	20*	**218079**
m	9.90 - 12.00	8.00	35.00	35.00	101	**218082**
m	11.90 - 14.00	10.00	45.00	45.00	20*	**218080**
m	11.90 - 14.00	10.00	45.00	45.00	101	**218083**
m	13.90 - 16.00	10.00	50.00	50.00	20*	**218081**
m	13.90 - 16.00	10.00	50.00	50.00	101	**218084**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

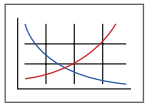
Adapters

	Boring Head	Adapter		Part No.
		D_1	D_2	
i	249002	0.709	0.315	**248063**
i	249003	0.906	0.394	**248064**
i	249003	0.906	0.394	**248065**
m	248002	18.00	8.00	**248063**
m	248003	23.00	8.00	**248064**
m	248003	23.00	10.00	**248065**

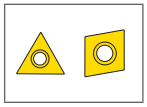


B10-M: 12-15

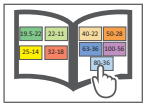
Key on B10-A: 1



B10-H

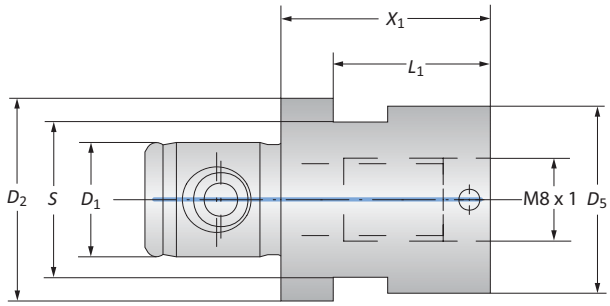


B10: vi-vii



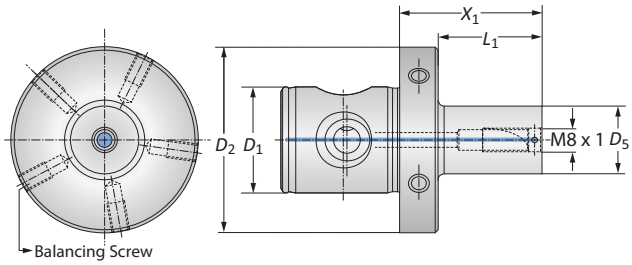
i = Imperial (in)
m = Metric (mm)
Inserts sold separately

Adapters



Adapters

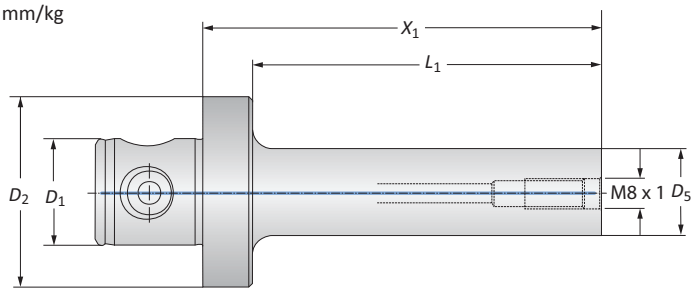
	MVS Connection $D_2 \mid D_1$	Boring Connection	Adapter X_1	L_1	S	D_5	Weight	Service Key	Part No.
i	19.5 - 11	M8 x 1	0.787	0.590	15/P	0.708	0.110 (lbs)	15 S / P	**219168**
	23 - 11	M8 x 1	0.787	–	19/P	0.905	0.154 (lbs)	19 S / P	**219169**
m	19.5 - 11	M8 x 1	20.00	15.00	15/P	18.00	0.05 (kg)	15 S / P	**219168**
	23 - 11	M8 x 1	20.00	–	19/P	23.00	0.07 (kg)	19 S / P	**219169**



Balanced Adapters

	MVS Connection $D_2 \mid D_1$	Boring Connection	Adapter X_1	L_1	D_5	Weight	Balancing Screw	Part No.
i	50 - 28	M8 x 1	1.259	0.748	0.590	0.771 (lbs)	M6 x 1 x 10	**219185**
	50 - 28	M8 x 1	1.890	1.377	0.708	0.881 (lbs)	M6 x 1 x 10	**219176**
	50 - 28	M8 x 1	1.890	1.377	0.905	0.992 (lbs)	M6 x 1 x 10	**219177**
m	50 - 28	M8 x 1	32.00	19.00	15.00	0.35 (kg)	M6 x 1 x 10	**219185**
	50 - 28	M8 x 1	48.00	35.00	18.00	0.40 (kg)	M6 x 1 x 10	**219176**
	50 - 28	M8 x 1	48.00	35.00	23.00	0.45 (kg)	M6 x 1 x 10	**219177**

NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg



Heavy Metal Adapters

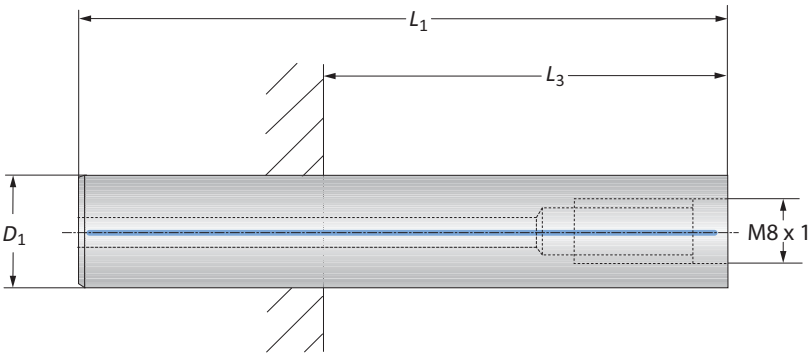
	MVS Connection $D_2 \mid D_1$	Boring Connection	Adapter X_1	L_1	D_5	Weight	Part No.
i	50 - 28	M8 x 1	2.677	2.165	0.590	1.763 (lbs)	**248147**
	50 - 28	M8 x 1	3.307	2.795	0.748	2.204 (lbs)	**248148**
	50 - 28	M8 x 1	4.094	3.582	0.905	2.866 (lbs)	**248149**
m	50 - 28	M8 x 1	68.00	55.00	15.00	0.80 (kg)	**248147**
	50 - 28	M8 x 1	84.00	71.00	19.00	1.00 (kg)	**248148**
	50 - 28	M8 x 1	104.00	91.00	23.00	1.30 (kg)	**248149**

B10-M: 12-15 | B10-A: 30 | B10-A: 34 | B10: vi-vii
Key on B10-A: 1

i = Imperial (in)
m = Metric (mm)

Shanks

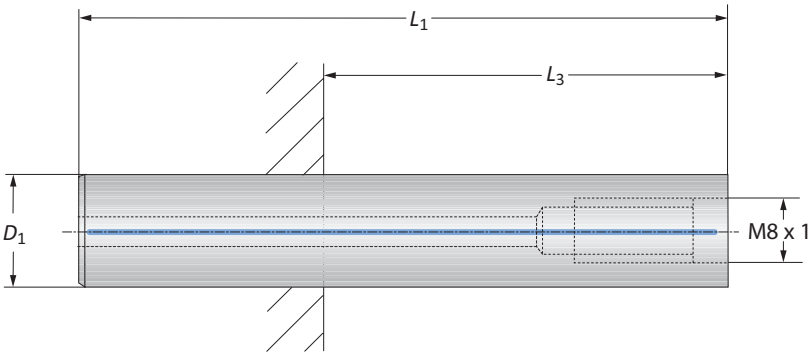
Steel | Carbide



Steel Shanks

	Connection	Shank D_1	Shank L_1	Shank $L_{3\ max}$*	$L_{3\ min}$* SK 40+50	$L_{3\ min}$* HSK-A 63	$L_{3\ min}$* HSK-A 100	Weight	Part No.
i	M8 x 1	0.591	3.346	1.456	–	–	–	0.220 (lbs)	**248136**
i	M8 x 1	0.709	3.937	2.047	–	0.196	0.472	0.440 (lbs)	**248137**
i	M8 x 1	0.906	4.606	2.716	–	0.866	1.141	0.881 (lbs)	**248138**
m	M8 x 1	15.00	85.00	37.00	–	–	–	0.10 (kg)	**248136**
m	M8 x 1	18.00	100.00	52.00	–	5.00	12.00	0.20 (kg)	**248137**
m	M8 x 1	23.00	117.00	69.00	–	22.00	29.00	0.40 (kg)	**248138**

*L_3 dimensions apply to collet chucks



Carbide Shanks

	Connection	Shank D_1	Shank L_1	Shank $L_{3\ max}$*	$L_{3\ min}$* SK 40	$L_{3\ min}$* SK 50	$L_{3\ min}$* HSK-A 63	$L_{3\ min}$* HSK-A 100	Weight	Part No.
i	M8 x 1	0.591	5.118	3.228	0.787	0.787	1.377	1.653	0.661 (lbs)	**248142**
i	M8 x 1	0.709	6.102	4.212	1.535	0.826	2.362	2.637	1.322 (lbs)	**248143**
i	M8 x 1	0.906	7.086	5.196	2.519	1.811	3.346	3.622	2.425 (lbs)	**248144**
i	M8 x 1	0.906	9.527	7.637	4.960	4.251	5.787	6.062	3.086 (lbs)	**248145**
m	M8 x 1	15.00	130.00	82.00	20.00	20.00	35.00	42.00	0.30 (kg)	**248142**
m	M8 x 1	18.00	155.00	107.00	39.00	21.00	60.00	67.00	0.60 (kg)	**248143**
m	M8 x 1	23.00	180.00	132.00	64.00	46.00	85.00	92.00	1.10 (kg)	**248144**
m	M8 x 1	23.00	242.00	194.00	126.00	108.00	147.00	154.00	1.40 (kg)	**248145**

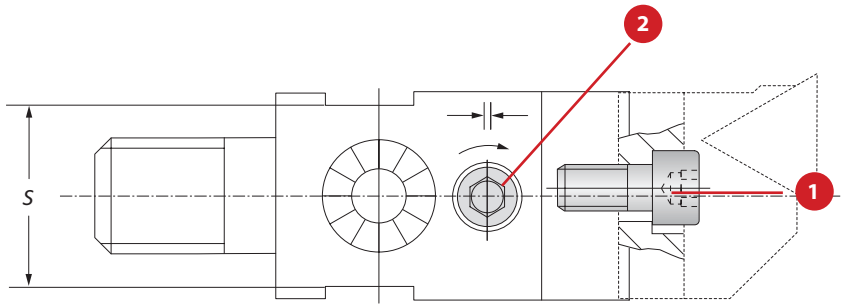
*L_3 dimensions apply to collet chucks

B10-M: 12-15
Key on B10-A:1
B10-A: 30
B10: vi-vii

i = Imperial (in)
m = Metric (mm)

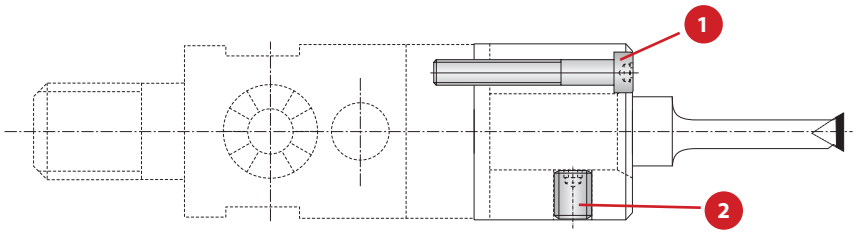
Accessories

Clamping Elements



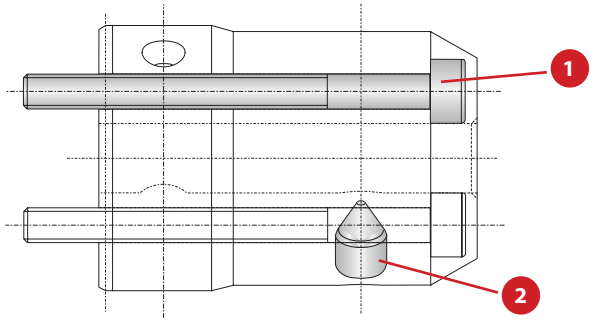
Clamping Elements for Boring Heads

	Boring Head	Service Key S / Type	1 Cap Screw Part No.	1 Cap Screw Service Key	2 Set Screw Part No.	2 Set Screw Service Key
ⓘ	249001	13 S / P	**315631**	s3 / A	**315629**	s2 / A
ⓘ	249002	15 S / P	**315631**	s3 / A	**315684**	s2 / A
ⓘ	249003	19 S / P	**315631**	s3 / A	**315687**	s2 / A
ⓜ	248001	13 S / P	**315631**	s3 / A	**315629**	s2 / A
ⓜ	248002	15 S / P	**315631**	s3 / A	**315684**	s2 / A
ⓜ	248003	19 S / P	**315631**	s3 / A	**315687**	s2 / A



Clamping Elements for Adapters

	Adapters	1 Cap Screw Part No.	1 Cap Screw Service Key	2 Set Screw Part No.	2 Set Screw Service Key
ⓜ	248063	**315801**	S 2.5 / A	**115136**	S 2.5 / A
ⓜ	248064	**315801**	S 2.5 / A	**031141**	S 2.5 / A
ⓜ	248065	**315801**	S 2.5 / A	**031141**	S 2.5 / A



Screws for Adapter

	Adapters	1 Cap Screw Part No.	Service Key	2 Set Screw Part No.	Service Key
ⓜ	248071	**515166**	S 2.5 / A	**415244**	S 3 / A

ⓘ = Imperial (in)
ⓜ = Metric (mm)

PrimeBore Product Overview

PrimeBore
VERSATILE FINE BORING

Advancing versatile technology.

With over 30 years of development, the Wohlhaupter® PrimeBore boring head offers versatility and precision. The PrimeBore head can bore multiple hole sizes ranging from 0.118" - 8.189" (3.00mm - 208.00mm) with our broad range of compatible boring bars.

Complete your boring job with ***technology that continues to advance***.

- Diameter range: 0.118" - 8.189" (3.00mm - 208.00mm)
- Ease the stress of working on different day-to-day projects with boring kits
- 0.0001" (0.002mm) adjust on diameter
- Economical precision and versatility
- Max spindle speed: 12,000 RPM
- Coolant through

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

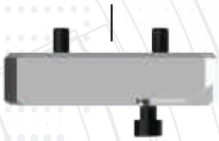
PRIME BORE

PrimeBore Head

Coolant Delivery System

Outside Turning
Ø 0.157" - 2.598"
(Ø 4.00mm - 66.00mm)

Coolant Delivery System



Serrated Slide

Serrated Tool Body

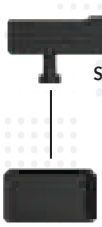
Carbide Boring Bar
Ø 0.394" - 0.787"
(Ø 10.00mm - 20.00mm)

Heavy Metal Boring Bar
Ø 0.236" - 0.394"
(Ø 6.00mm - 10.00mm)

Steel Boring Bar
Ø 0.236" - 0.945"
(Ø 6.00mm - 24.00mm)

Adapter

Mini-Boring Bar
Ø 0.118" - 0.394"
(Ø 3.00mm - 10.00mm)



Counterweight

Outside Turning
Ø 0.157" - 2.598"
(Ø 4.00mm - 66.00mm)

Insert Holder
Ø 2.677" - 8.189"
(Ø 68.00mm - 208.00mm)

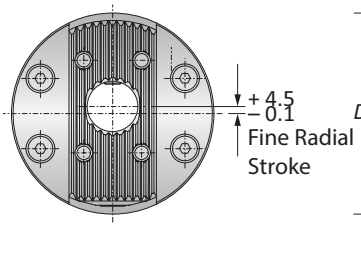
Insert Holder
Ø 0.945" - 5.039"
(Ø 24.00mm - 128.00mm)

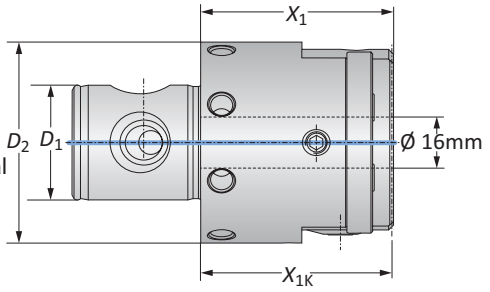
OPERATION **VERSATILITY**

from **0.118"** to **8.189"** (**3.00mm** to **208.00mm**)
plus outside turning

Boring Heads

Diameter Range: 0.118" - 8.189" (3.00mm - 208.00mm)





	MVS Connection D_2 | D_1	Boring Range	Boring Head X_1	Boring Head X_{1K}	Weight	Part No.
i	63 - 36	0.118 - 8.189	2.362	2.343	2.866 (lbs)	**451001**
m	63 - 36	3.00 - 208.00	60.00	59.50	1.30 (kg)	**450001**

B10-M: 12-15 | B10-F | B10: vi-vii

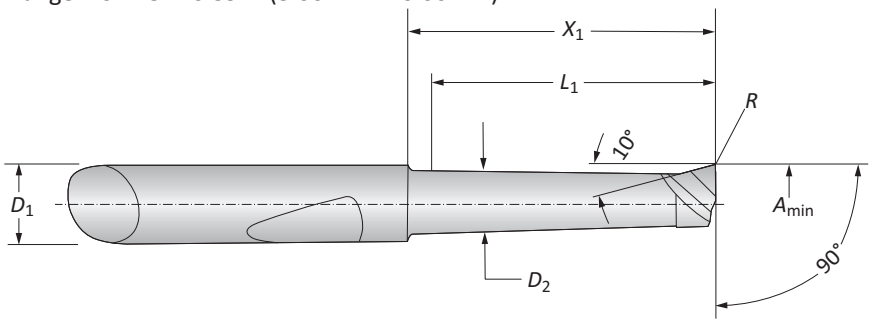
Key on B10-A: 1

i = Imperial (in)
m = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Mini Boring Bars

WHC05 | WHW04 | WBN150 | Diameter Range: 0.118" - 0.394" (3.00mm - 10.00mm)

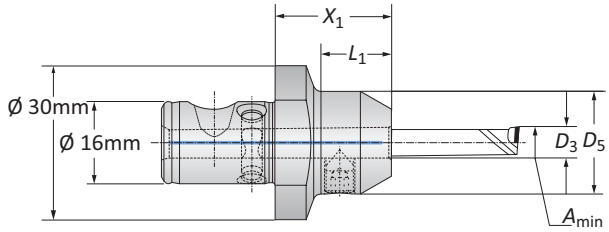


Mini Boring Bars

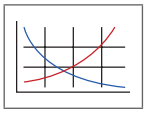
	Boring Range	Boring Bar					Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	0.118	0.236	0.102	0.452	0.393	0.003	**081306WHC05**	–	**081322WBN150**
	0.118	0.236	0.102	0.649	0.590	0.003	**081307WHC05**	**081307WHW04**	–
	0.157	0.236	0.141	0.472	0.393	0.007	**081308WHC05**	–	**081317WBN150**
	0.157	0.236	0.141	0.669	0.590	0.007	**081309WHC05**	–	**081341WBN150**
	0.157	0.236	0.141	0.866	0.787	0.007	**081310WHC05**	**081310WHW04**	–
	0.196	0.236	0.181	0.472	0.393	0.007	**081311WHC05**	–	**081318WBN150**
ⓘ	0.196	0.236	0.181	0.866	0.787	0.007	**081312WHC05**	–	**081319WBN150**
	0.196	0.236	0.181	1.259	1.181	0.007	**081313WHC05**	**081313WHW04**	–
	0.236	0.236	0.220	0.866	0.787	0.007	**081314WHC05**	–	**081320WBN150**
	0.236	0.236	0.220	1.259	1.181	0.007	**081315WHC05**	–	**081321WBN150**
	0.236	0.236	0.220	1.653	1.574	0.007	**081316WHC05**	**081316WHW04**	–
	0.315	0.315	0.229	0.984	0.905	0.007	**081323WHC05**	–	–
	0.315	0.315	0.229	1.968	1.889	0.007	**081324WHC05**	–	–
	3.00	6.00	2.60	11.50	10.00	0.10	**081306WHC05**	–	**081322WBN150**
	3.00	6.00	2.60	16.50	15.00	0.10	**081307WHC05**	**081307WHW04**	–
	4.00	6.00	3.60	12.00	10.00	0.20	**081308WHC05**	–	**081317WBN150**
	4.00	6.00	3.60	17.00	15.00	0.20	**081309WHC05**	–	**081341WBN150**
	4.00	6.00	3.60	22.00	20.00	0.20	**081310WHC05**	**081310WHW04**	–
	5.00	6.00	4.60	12.00	10.00	0.20	**081311WHC05**	–	**081318WBN150**
ⓜ	5.00	6.00	4.60	22.00	20.00	0.20	**081312WHC05**	–	**081319WBN150**
	5.00	6.00	4.60	32.00	30.00	0.20	**081313WHC05**	**081313WHW04**	–
	6.00	6.00	5.60	22.00	20.00	0.20	**081314WHC05**	–	**081320WBN150**
	6.00	6.00	5.60	32.00	30.00	0.20	**081315WHC05**	–	**081321WBN150**
	6.00	6.00	5.60	42.00	40.00	0.20	**081316WHC05**	**081316WHW04**	–
	8.00	8.00	7.60	25.00	23.00	0.20	**081323WHC05**	–	–
	8.00	8.00	7.60	50.00	48.00	0.20	**081324WHC05**	–	–

Adapters

	Adapter				
	D_3	D_5	X_1	L_1	Part No.
ⓜ	6.00	20.00	22.50	14.00	**319010**
	8.00	22.00	22.50	14.00	**236071**

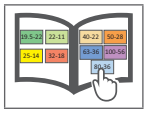


B10-M: 12-15



Key on B10-A:1

B10: vi-vii

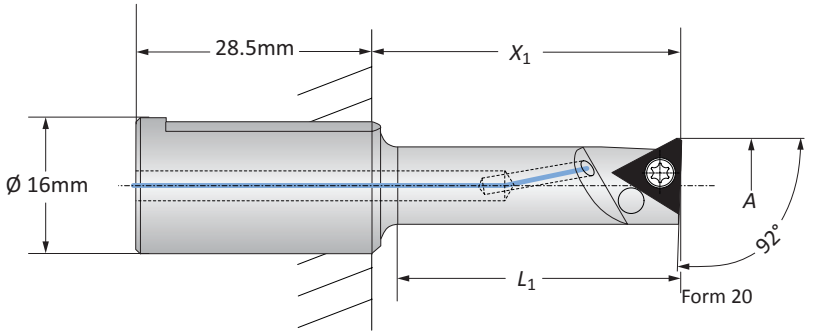


ⓘ = Imperial (in)
ⓜ = Metric (mm)

Boring Bars

Steel | Heavy Metal

Form 101

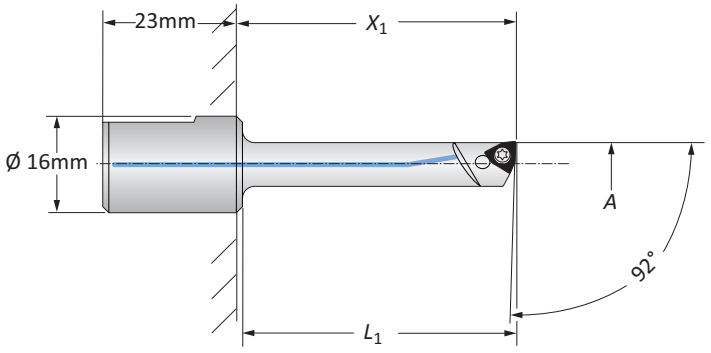


Form 20

Steel Boring Bars | Diameter Range: 0.236" - 0.945" (6.00mm - 24.00mm)

	Boring Range	Boring Bar				
	A	X_1	L_1	Weight	Insert Form	Part No.
	0.236 - 0.394	0.866 - 1.260	0.787	0.090 (lbs)	211*	**450026**
	0.394 - 0.630	1.378 - 1.772	1.299	0.130 (lbs)	101	**450027**
ⓘ	0.394 - 0.630	1.378 - 1.772	1.299	0.130 (lbs)	20*	**450038**
	0.630 - 0.945	2.362 - 2.756	2.283	0.220 (lbs)	101	**450028**
	0.630 - 0.945	2.362 - 2.756	2.283	0.220 (lbs)	20*	**450039**
	6.00 - 10.00	22.00 - 32.00	20.00	0.04 (kg)	211*	**450026**
	10.00 - 16.00	35.00 - 45.00	33.00	0.06 (kg)	101	**450027**
ⓜ	10.00 - 16.00	35.00 - 45.00	33.00	0.06 (kg)	20*	**450038**
	16.00 - 24.00	60.00 - 70.00	58.00	0.10 (kg)	101	**450028**
	16.00 - 24.00	60.00 - 70.00	58.00	0.10 (kg)	20*	**450039**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)



Heavy Metal Boring Bars | Diameter Range: 0.236" - 0.394" (6.00mm - 10.00mm)

	Boring Range	Boring Bar				
	A	X_1	L_1	Weight	Insert Form	Part No.
ⓘ	0.236 - 0.315	1.260	1.142	0.176 (lbs)	211*	**081055**
	0.315 - 0.394	1.772	1.654	0.198 (lbs)	211*	**218072**
ⓜ	6.00 - 8.00	32.00	29.00	0.08 (kg)	211*	**081055**
	8.00 - 10.00	45.00	42.00	0.09 (kg)	211*	**218072**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

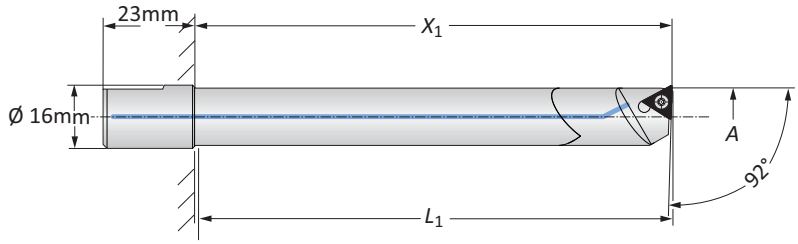
B10-M: 12-15
Key on B10-A:1
B10-H
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

Boring Bars

Carbide | Diameter Range: 0.393" - 0.787" (10.00mm - 20.00mm)

Form 101

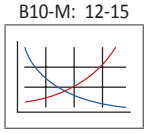
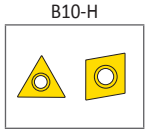


Form 20

Carbide Boring Bars

	Boring Range	Boring Bar						
	A	X_1	L_1	Weight	Insert Form	Part No.	Insert Form	Part No.
	0.394 - 0.472	2.165	2.047	0.154 (lbs)	101	**218042**	20*	**218037**
	0.394 - 0.472	2.953	2.835	0.198 (lbs)	101	**218032**	20*	**218029**
	0.472 - 0.551	2.756	2.638	0.220 (lbs)	101	**218043**	20*	**218038**
ⓘ	0.472 - 0.551	3.543	3.425	0.331 (lbs)	101	**218033**	20*	**218030**
	0.551 - 0.630	2.953	2.835	0.353 (lbs)	101	**218044**	20*	**218039**
	0.551 - 0.630	3.937	3.819	0.441 (lbs)	101	**218045**	20*	**218040**
	0.630 - 0.787	3.543	3.425	0.573 (lbs)	101	**218046**	20*	**218041**
	0.630 - 0.787	4.724	4.606	0.728 (lbs)	101	**218034**	20*	**218031**
	10.00 - 12.00	55.00	52.00	0.07 (kg)	101	**218042**	20*	**218037**
	10.00 - 12.00	75.00	72.00	0.09 (kg)	101	**218032**	20*	**218029**
	12.00 - 14.00	70.00	67.00	0.10 (kg)	101	**218043**	20*	**218038**
ⓜ	12.00 - 14.00	90.00	87.00	0.15 (kg)	101	**218033**	20*	**218030**
	14.00 - 16.00	75.00	72.00	0.16 (kg)	101	**218044**	20*	**218039**
	14.00 - 16.00	100.00	97.00	0.20 (kg)	101	**218045**	20*	**218040**
	16.00 - 20.00	90.00	87.00	0.26 (kg)	101	**218046**	20*	**218041**
	16.00 - 20.00	120.00	117.00	0.33 (kg)	101	**218034**	20*	**218031**

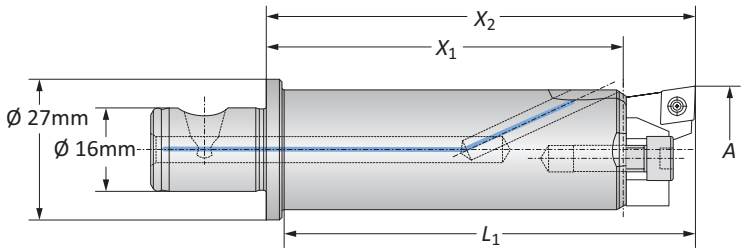
*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

B10-M: 12-15
Key on B10-A:1

B10-H

B10: vi-vii


ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

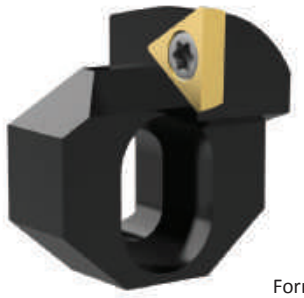
Serrated Tool Bodies | Insert Holders

Diameter Range: 0.945" - 2.559" (24.00mm - 65.00mm)

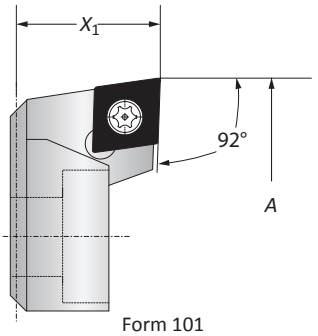


Serrated Tool Bodies

	Boring Range	Serrated Tool Body					
	A	X_1	X_2	L_1	Weight	Part No.
i	0.945 - 2.559	2.667	3.228	3.110	0.441 (lbs)	**450021**
m	24.00 - 65.00	68.00	82.00	79.00	0.20 (kg)	**450021**



Form 20



Form 101

Insert Holders

	Boring Range	Insert Holder			
	A	X_1	Weight	Insert Form	Part No.
i	0.945 - 1.575	0.551	0.044 (lbs)	101	**450022**
i	0.945 - 1.575	0.551	0.044 (lbs)	20*	**450040**
i	1.575 - 2.559	0.551	0.066 (lbs)	101	**450023**
i	1.575 - 2.559	0.551	0.066 (lbs)	20*	**450041**
m	24.00 - 40.00	14.00	0.02 (kg)	101	**450022**
m	24.00 - 40.00	14.00	0.02 (kg)	20*	**450040**
m	40.00 - 65.00	14.00	0.03 (kg)	101	**450023**
m	40.00 - 65.00	14.00	0.03 (kg)	20*	**450041**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

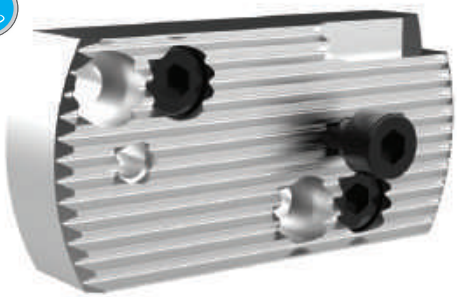
B10-M: 12-15 | B10-A: 47 | B10-H | B10: vi-vii

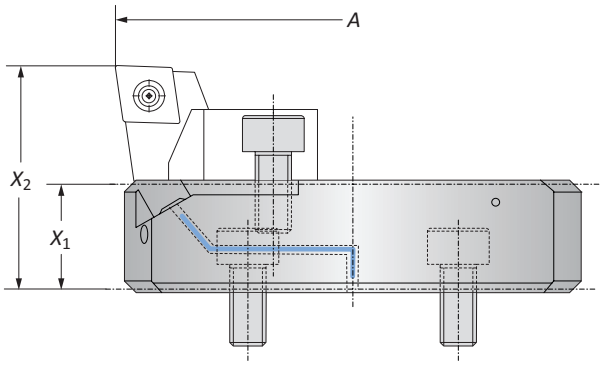
Key on B10-A: 1

i = Imperial (in)
m = Metric (mm)
Inserts sold separately

Serrated Slides | Insert Holders

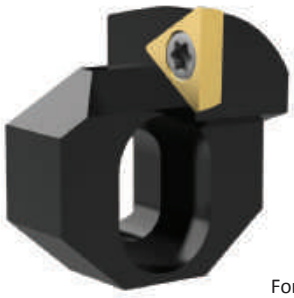
Diameter Range: 2.559" - 5.039" (65.00mm - 128.00mm)



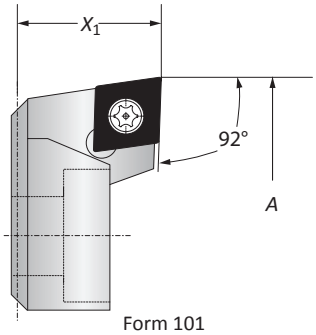


Serrated Slides

	Boring Range A	Serrated Slide X_1	Serrated Slide X_2	Weight	Part No.
i	2.559 - 5.039	0.571	1.161	0.176 (lbs)	**450024**
m	65.00 - 128.00	14.50	29.50	0.08 (kg)	**450024**



Form 20



Form 101

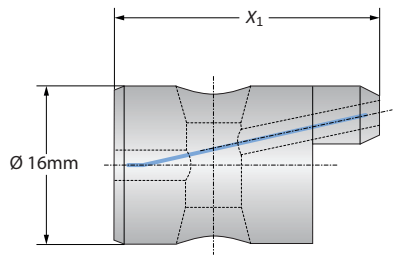
Insert Holders

	Boring Range A	Insert Holder X_1	Weight	Insert Form	Part No.
i	2.559 - 5.039	0.551	0.066 (lbs)	101	**450023**
	2.559 - 5.039	0.551	0.066 (lbs)	20*	**450041**
m	65.00 - 128.00	14.00	0.03 (kg)	101	**450023**
	65.00 - 128.00	14.00	0.03 (kg)	20*	**450041**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

Alu-Line Coolant Delivery Sections

	Coolant Delivery Section X_1	Weight	Part No.
m	26.75	0.01 (kg)	**450125**



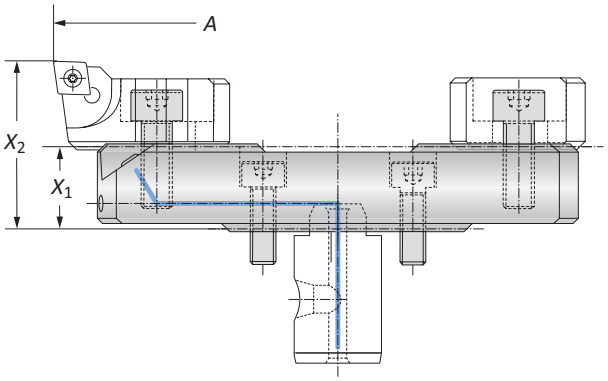
B10-M: 12-15 | B10-A: 47 | B10-H | B10: vi-vii

Key on B10-A: 1

i = Imperial (in)
m = Metric (mm)
Inserts sold separately

Alu-Line Serrated Slides | Insert Holders

Diameter Range: 2.667" - 8.189" (68.00mm - 208.00mm)



Alu-Line Serrated Slides

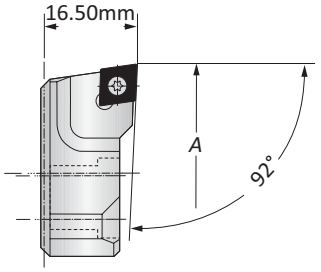
	Boring Range A	Serrated Slide X_1	Serrated Slide X_2	Weight	Part No.
	2.667 - 3.780	0.630	1.280	0.220 (lbs)	**501054**
	3.780 - 4.882	0.630	1.280	0.220 (lbs)	**501055**
i	4.882 - 5.984	0.630	1.280	0.441 (lbs)	**501056**
	5.984 - 7.087	0.866	1.516	0.551 (lbs)	**501058**
	7.087 - 8.189	0.866	1.516	0.661 (lbs)	**501059**
	68.00 - 96.00	16.00	32.50	0.10 (kg)	**501054**
	96.00 - 124.00	16.00	32.50	0.10 (kg)	**501055**
m	124.00 - 152.00	16.00	32.50	0.20 (kg)	**501056**
	152.00 - 180.00	22.00	38.50	0.25 (kg)	**501058**
	180.00 - 208.00	22.00	38.50	0.30 (kg)	**501059**

Insert Holders

	Boring Range A	Weight	Insert Form	Part No.
i	2.677 - 8.189	0.110 (lbs)	101	**502064**
	2.677 - 8.189	0.110 (lbs)	20	**502069**
m	68.00 - 208.00	0.05 (kg)	101	**502064**
	68.00 - 208.00	0.05 (kg)	20	**502069**

NOTE: Other insert holders available upon request

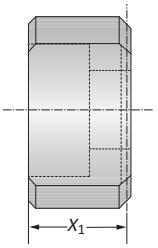
Form 20



Form 101

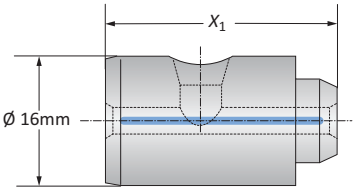
Counterweights

	Counterweights X_1	Weight	Part No.
i	0.528	0.110 (lbs)	**502165**
m	13.40	0.05 (kg)	**502165**



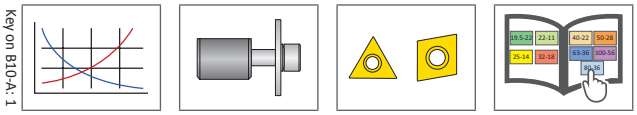
Alu-Line Coolant Delivery Sections

	Coolant Delivery Section X_1	Weight	Part No.
i	1.004	0.022 (lbs)	**450137**
m	25.50	0.01 (kg)	**450137**



B10-M: 12-15 | B10-A: 47 | B10-H | B10: vi-vii

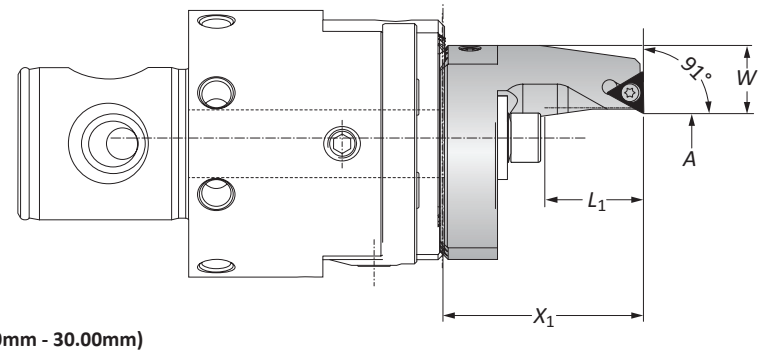
Key on B10-A: 1



i = Imperial (in)
m = Metric (mm)
Inserts sold separately

Outside Turning Insert Holders for Boring Heads

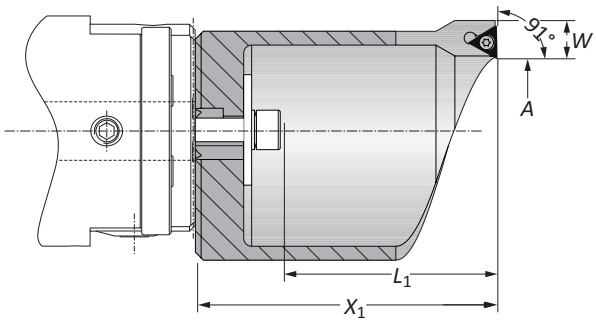
Diameter Range: 0.157" - 2.598" (4.00mm - 66.00mm)



Type A Insert Holders | Diameter Range: 0.157" - 1.181" (4.00mm - 30.00mm)

	Boring Range A	Insert Holder X_1	Insert Holder L_1	Insert Holder W	Weight	Type	Insert Form	Part No.
i	0.157 - 0.689	1.594	0.787	0.653	0.220 (lbs)	A	20*	**236081**
i	0.650 - 1.181	1.988	1.181	0.437	0.220 (lbs)	A	20*	**236082**
m	4.00 - 17.50	40.50	20.00	16.60	0.10 (kg)	A	20*	**236081**
m	16.50 - 30.00	50.50	30.00	11.10	0.10 (kg)	A	20*	**236082**

NOTE: Clockwise and neutral execution
*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)



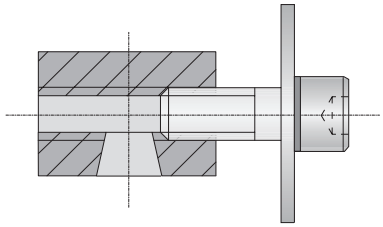
Type B Insert Holders | Diameter Range: 1.142" - 2.598" (29.00mm - 66.00mm)

	Boring Range A	Insert Holder X_1	Insert Holder L_1	Insert Holder W	Weight	Type	Insert Form	Part No.
i	1.142 - 1.732	2.952	2.126	0.377	0.661 (lbs)	B	20*	**236083**
i	1.693 - 2.598	3.956	3.110	0.377	0.882 (lbs)	B	20*	**236084**
m	29.00 - 44.00	75.50	54.00	9.60	0.30 (kg)	B	20*	**236083**
m	43.00 - 66.00	100.50	79.00	9.60	0.40 (kg)	B	20*	**236084**

NOTE: Clockwise and neutral execution
*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

Clamping Pieces for Outside Turning Insert Holders

	Insert Holder Type	Boring Range	Service Key	Complete Part No.
m	A	4.00 - 30.00	**s5**	**236088**
m	B	29.00 - 66.00	**s5**	**236089**



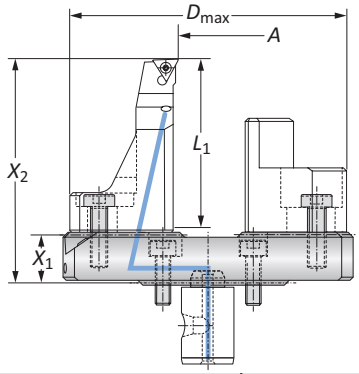
B10-M: 12-15 | B10-A: 47 | B10-H | B10: vi-vii

Key on B10-A: 1

i = Imperial (in)
m = Metric (mm)
Inserts sold separately

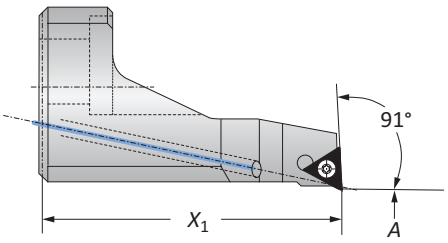
Outside Turning Serrated Slides | Insert Holders

Diameter Range: 0.078" - 4.488" (2.00mm - 114.00mm)



Outside Turning Serrated Slides

	Boring Range A	Serrated Slide X_1	X_2	L_1	D_{max}	Weight	Part No.
i	0.078 - 1.181	0.630	2.874	2.165	3.396	0.771 (lbs)	**501064**
	1.181 - 2.283	0.630	2.874	2.165	5.078	0.970 (lbs)	**501065**
	2.283 - 3.386	0.866	3.110	2.165	6.181	1.322 (lbs)	**501066**
	3.386 - 4.488	0.866	3.110	2.165	7.283	1.609 (lbs)	**501067**
m	2.00 - 30.00	16.00	73.00	55.00	101.00	0.35 (kg)	**501064**
	30.00 - 58.00	16.00	73.00	55.00	129.00	0.44 (kg)	**501065**
	58.00 - 86.00	22.00	79.00	55.00	157.00	0.60 (kg)	**501066**
	86.00 - 114.00	22.00	79.00	55.00	185.00	0.73 (kg)	**501067**



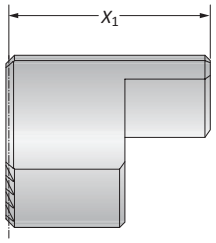
Insert Holders

	Outside Turning Range A	Insert Holder X_1	Weight	Insert Form	Part No.
i	0.079 - 4.488	2.244	0.331 (lbs)	20	**502082**
m	2.00 - 114.00	57.00	0.15 (kg)	20	**502082**

NOTE: clockwise and neutral execution

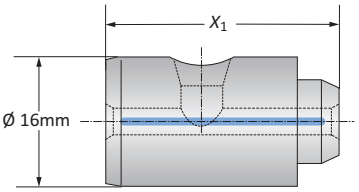
Counterweights

	Counterweight X_1	Weight	Part No.
i	1.486	0.350 (lbs)	**502183**
m	37.75	0.16 (kg)	**502183**



Coolant Delivery Sections

	Coolant Delivery Section X_1	Weight	Part No.
i	1.004	0.022 (lbs)	**450137**
m	25.50	0.01 (kg)	**450137**



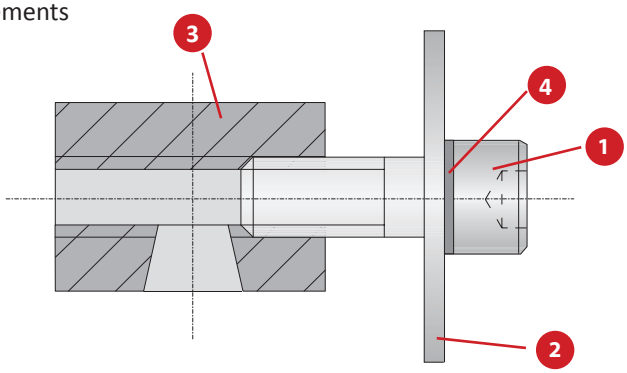
B10-M: 12-15 | B10-A: 47 | B10-H | B10: vi-vii

Key on B10-A: 1

i = Imperial (in)
m = Metric (mm)
Inserts sold separately

Accessories

Clamping Elements

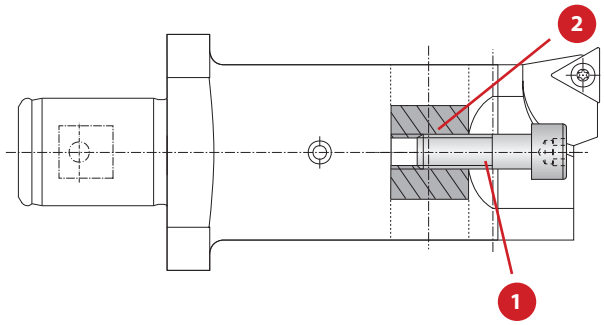


Clamping Elements for Insert Holders

	Boring Range	1 Cap Screw	Hex Size	2 Washer	3 Clamping Nut	4 Locking Washer	Complete Part No.
ⓜ	4.00 - 30.00	070153	s5	315155	236120	215254	236088
	29.00 - 66.00	070153	s5	315156	236120	215254	236089

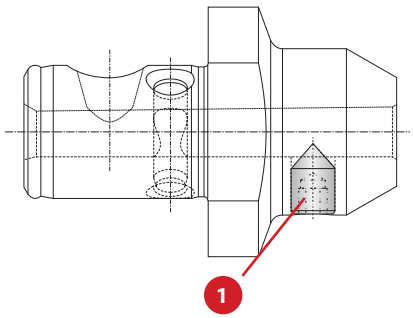
Clamping Elements for Serrated Tool Body

1 Cap Screw	Hex Size	2 Clamping Piece
027154	s4	145184



Thread Pin

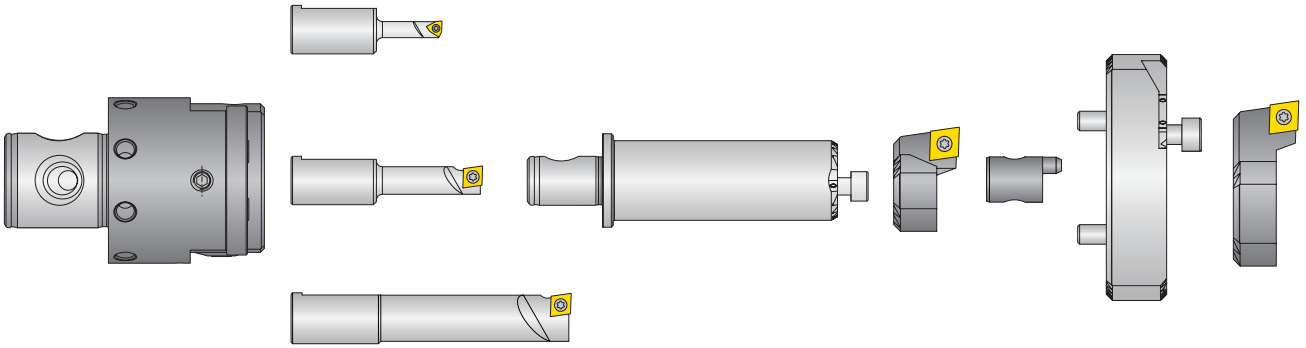
Service Key	1 Part No.
S3 / A	415244



ⓘ = Imperial (in)
ⓜ = Metric (mm)

Kit Components

Form 101 | Diameter Range: 0.236" - 5.039" (6.00mm - 128.00mm)



Diameter Range: 0.236" - 5.039" (6.00mm - 128.00mm)

Kit Components											
	Boring Head	Boring Bars		Insert Holders		Serrated Tool Body	Serrated Slide	Coolant Delivery Section	Service Keys	Kit No.
		Boring Range	Part No.	Boring Range	Part No.					
ⓘ	451001	0.236 - 0.394 0.394 - 0.630 0.630 - 0.945	450026 (Form 211) 450027 (Form 101) 450028 (Form 101)	0.945 - 1.575 1.575 - 2.559	450022 450023	450021	450024	450125	003195 (s4) 515451 (T6) 515452 (T8)	**104088**
ⓜ	450001	6.00 - 10.00 10.00 - 16.00 16.00 - 24.00	450026 (Form 211) 450027 (Form 101) 450028 (Form 101)	24.00 - 40.00 40.00 - 65.00	450022 450023	450021	450024	450125	003195 (s4) 515451 (T6) 515452 (T8)	**103088**

NOTE: Inserts sold separately

B10-M: 12-15 | B10-H | B10: vi-vii

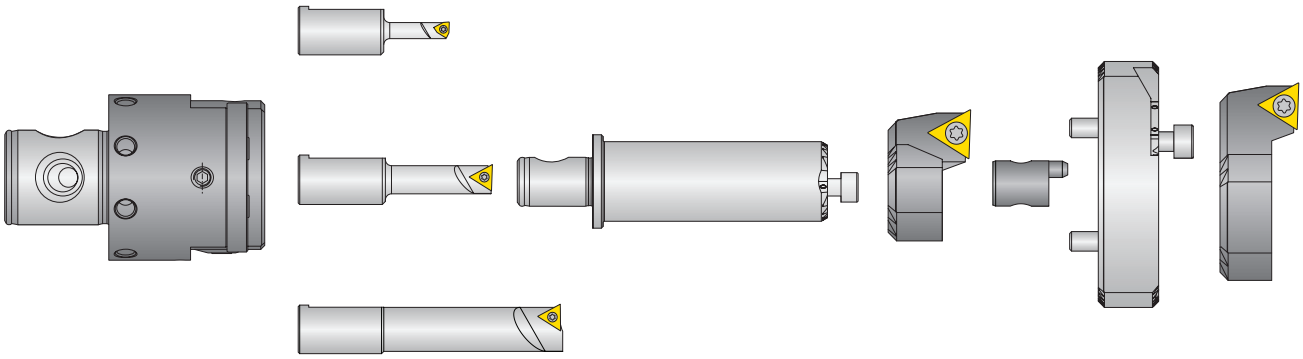
Key on B10-A: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Kit Components

Form 20 | Diameter Range: 0.236" - 5.039" (6.00mm - 128.00mm)



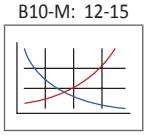
Diameter Range: 0.236" - 5.039" (6.00mm - 128.00mm)

Kit Components											
	Boring Head	Boring Bars		Insert Holders		Serrated Tool Body	Serrated Slide	Coolant Delivery Section	Service Keys	Kit No.
		Boring Range	Part No.	Boring Range	Part No.					
ⓘ	451001	0.236 - 0.394 0.394 - 0.630 0.630 - 0.945	450026 (Form 211) 450038 (Form 20) 450039 (Form 20)	0.945 - 1.575 1.575 - 2.559	450040 450041	450021	450024	450125	003195 (s4) 515451 (T6) 515453 (T7)	**104089**
ⓜ	450001	6.00 - 10.00 10.00 - 16.00 16.00 - 24.00	450026 (Form 211) 450038 (Form 20) 450039 (Form 20)	24.00 - 40.00 40.00 - 65.00	450040 450041	450021	450024	450125	003195 (s4) 515451 (T6) 515453 (T7)	**103089**

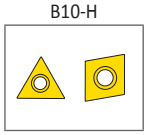
NOTE: Inserts sold separately

B10-M: 12-15

Key on B10-A: 1



B10-H



B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Digital 511 (510) Product Overview

Digital *511 (510)*
VERSATILE FINE BORING

Improve your boring job with the Digital 511 (510) boring head.

The Wohlhaupter® Digital 511 (510) boring head offers precision, quality, and efficiency. Our integrated digital display makes the 511 (510) the smallest precision boring tool available and allows for easy optoelectronic adjusting.

Experience ***precision boring*** for yourself.

- Diameter range: 0.016" - 1.339" (0.40mm - 12.00mm)
- Easy-to-read digital display
- Coolant through
- External counterweight for balancing
- Protected against coolant and dust according to IP65
- Fine adjustments of 0.0001" (0.002mm)
- Ideal for CAT40, BT30, HSK40
- 511001 (510001) max spindle speed: 35,000 RPM
- 511021 max spindle speed: 30,000 RPM

NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

DIGITAL

NOTE: Imperial item pictured

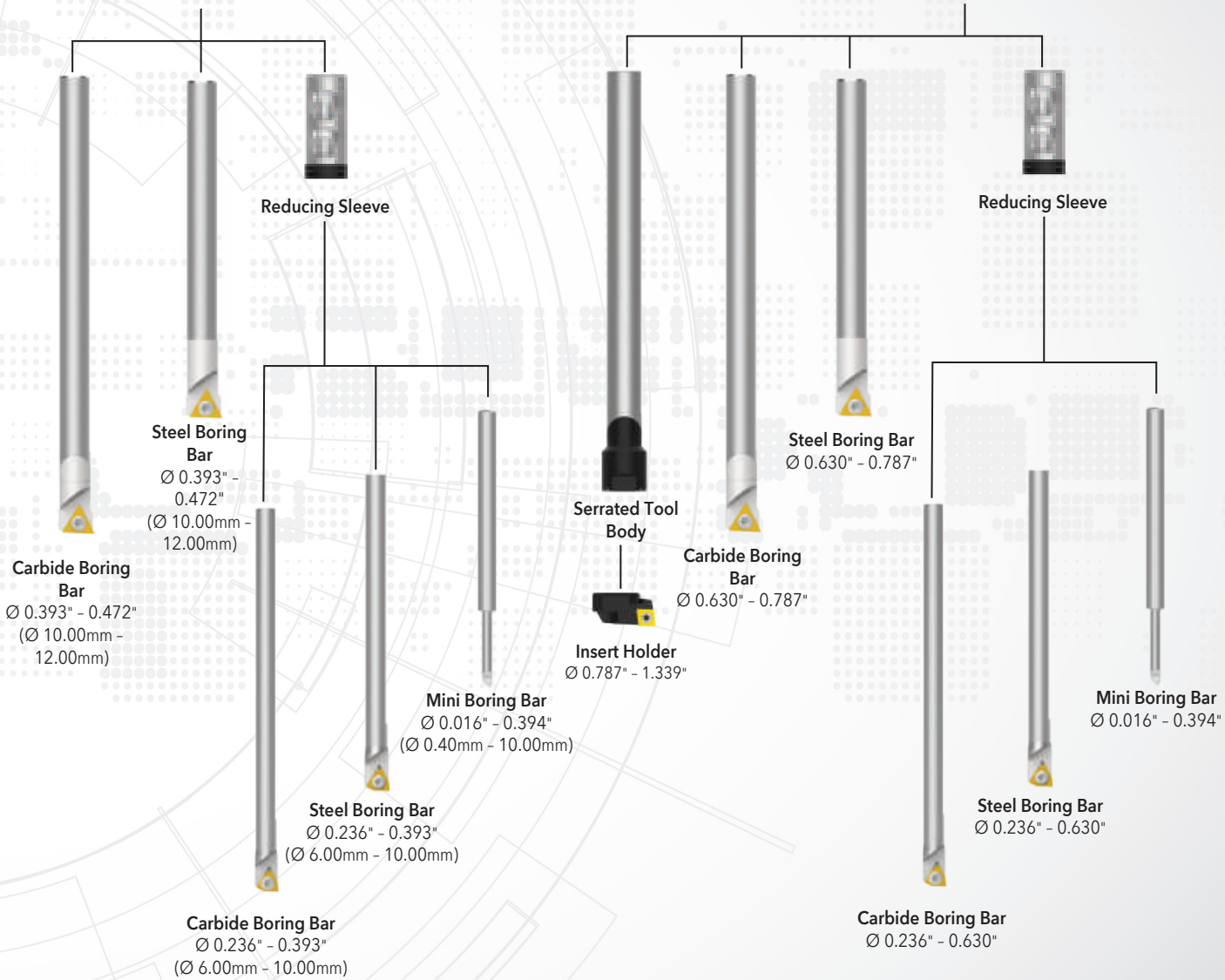
NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

Digital 511001 (510001) Boring Head
Ø 0.016" - 0.472" (0.40mm - 12.00mm)

NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

Digital 511021 Boring Head
Ø 0.016" - 1.339"

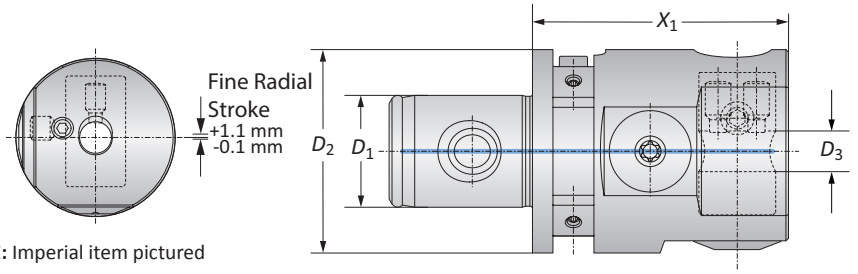


OPERATION **VERSATILITY**

from **0.016"** to **1.339"** (**0.40mm** to **12.00mm**)

Boring Heads

Diameter Range: 0.016" - 1.339" (0.40mm - 12.00mm)



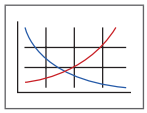
NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

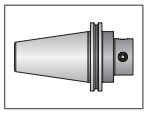
Boring Heads

	MVS Connection D_2 | D_1	Boring Range	Boring Head D_3	Boring Head X_1	Weight	Part No.
ⓘ	40 - 22	0.016 - 0.472	0.315	1.969	0.926 (lbs)	**511001**
ⓘ	50 - 28	0.016 - 1.339	0.551	2.165	1.565 (lbs)	**511021**
ⓜ	40 - 22	0.40 - 12.00	8.00	50.00	0.42 (kg)	**510001**

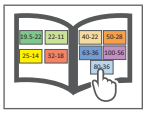
B10-M: 12-15 Key on B10-A: 1



B10-F



B10: vi-vii

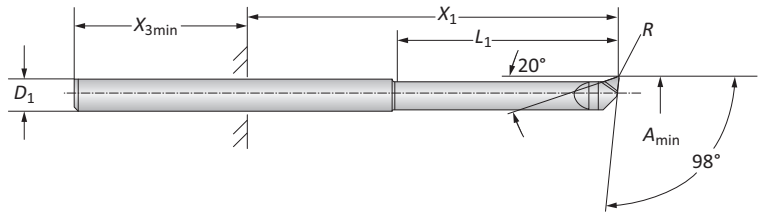


ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Mini Boring Bars

Diameter Range: 0.016" - 0.197" (0.40mm - 5.00mm)

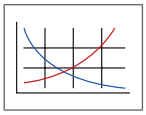


Mini Boring Bars

	Boring Head	Boring Range A_{min}	Boring Bar D_1	X_1	$X_{3\ min}$	L_1	R	Part No.
	511001	0.016	0.157*	0.118 - 1.042	0.630	0.079	0.001	**081401WHC126**
		0.024	0.157*	0.157 - 1.063	0.630	0.118	0.002	**081402WHC126**
		0.031	0.157*	0.197 - 1.102	0.630	0.157	0.002	**081403WHC126**
		0.039	0.157*	0.236 - 1.142	0.630	0.197	0.002	**081404WHC126**
		0.059	0.157*	0.335 - 1.220	0.630	0.295	0.002	**081405WHC126**
		0.079	0.157*	0.433 - 1.339	0.630	0.394	0.002	**081406WHC126**
		0.098	0.157*	0.531 - 1.437	0.630	0.492	0.002	**081407WHC126**
		0.110	0.157*	0.591 - 1.496	0.630	0.551	0.003	**081408WHC126**
	511021	0.016	0.157*	0.118 - 0.669	0.980	0.079	0.001	**081401WHC126**
		0.024	0.157*	0.157 - 0.709	0.980	0.118	0.002	**081402WHC126**
		0.031	0.157*	0.197 - 0.748	0.980	0.157	0.002	**081403WHC126**
		0.039	0.157*	0.236 - 0.787	0.980	0.197	0.002	**081404WHC126**
		0.059	0.157*	0.335 - 0.886	0.980	0.295	0.002	**081405WHC126**
		0.079	0.157*	0.433 - 0.984	0.980	0.394	0.002	**081406WHC126**
		0.098	0.157*	0.531 - 1.083	0.980	0.492	0.002	**081407WHC126**
		0.110	0.157*	0.591 - 1.142	0.980	0.551	0.003	**081408WHC126**
	510001	0.40	4.00*	3.00 - 26.00	16.00	2.00	0.03	**081401WHC126**
		0.60	4.00*	4.00 - 27.00	16.00	3.00	0.04	**081402WHC126**
		0.80	4.00*	5.00 - 28.00	16.00	4.00	0.04	**081403WHC126**
		1.00	4.00*	6.00 - 29.00	16.00	5.00	0.05	**081404WHC126**
		1.50	4.00*	8.50 - 31.50	16.00	7.50	0.05	**081405WHC126**
		2.00	4.00*	11.00 - 34.00	16.00	10.00	0.05	**081406WHC126**
		2.50	4.00*	13.50 - 36.50	16.00	12.50	0.05	**081407WHC126**
		2.80	4.00*	15.00 - 38.00	16.00	14.00	0.07	**081408WHC126**

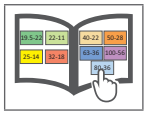
*Fixture-through reducing sleeve required (B10-A: 50)

B10-M: 12-15



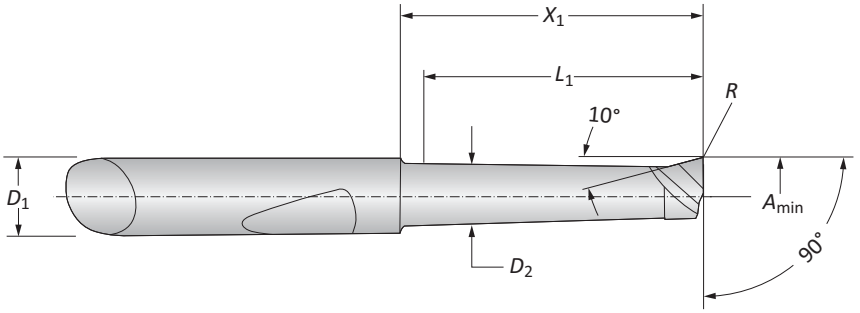
Key on B10-A:1

B10: vi-vii



Mini Boring Bars

WHC05 | WHW04 | WBN150 | Diameter Range: 0.118" - 0.394" (3.00mm - 10.00mm)



	Boring Range	Boring Bar					Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	0.118	0.236*	0.102	0.452	0.393	0.003	**081306WHC05**	–	**081322WBN150**
	0.118	0.236*	0.102	0.649	0.590	0.003	**081307WHC05**	**081307WHW04**	–
	0.157	0.236*	0.141	0.472	0.393	0.007	**081308WHC05**	–	**081317WBN150**
	0.157	0.236*	0.141	0.669	0.590	0.007	**081309WHC05**	–	**081341WBN150**
	0.157	0.236*	0.141	0.866	0.787	0.007	**081310WHC05**	**081310WHW04**	–
	0.196	0.236*	0.181	0.472	0.393	0.007	**081311WHC05**	–	**081318WBN150**
ⓘ	0.196	0.236*	0.181	0.866	0.787	0.007	**081312WHC05**	–	**081319WBN150**
	0.196	0.236*	0.181	1.259	1.181	0.007	**081313WHC05**	**081313WHW04**	–
	0.236	0.236*	0.220	0.866	0.787	0.007	**081314WHC05**	–	**081320WBN150**
	0.236	0.236*	0.220	1.259	1.181	0.007	**081315WHC05**	–	**081321WBN150**
	0.236	0.236*	0.220	1.653	1.574	0.007	**081316WHC05**	**081316WHW04**	–
	0.315	0.315**	0.229	0.984	0.905	0.007	**081323WHC05**	–	–
	0.315	0.315**	0.229	1.968	1.889	0.007	**081324WHC05**	–	–
	3.00	6.00*	2.60	11.50	10.00	0.10	**081306WHC05**	–	**081322WBN150**
	3.00	6.00*	2.60	16.50	15.00	0.10	**081307WHC05**	**081307WHW04**	–
	4.00	6.00*	3.60	12.00	10.00	0.20	**081308WHC05**	–	**081317WBN150**
	4.00	6.00*	3.60	17.00	15.00	0.20	**081309WHC05**	–	**081341WBN150**
	4.00	6.00*	3.60	22.00	20.00	0.20	**081310WHC05**	**081310WHW04**	–
	5.00	6.00*	4.60	12.00	10.00	0.20	**081311WHC05**	–	**081318WBN150**
ⓜ	5.00	6.00*	4.60	22.00	20.00	0.20	**081312WHC05**	–	**081319WBN150**
	5.00	6.00*	4.60	32.00	30.00	0.20	**081313WHC05**	**081313WHW04**	–
	6.00	6.00*	5.60	22.00	20.00	0.20	**081314WHC05**	–	**081320WBN150**
	6.00	6.00*	5.60	32.00	30.00	0.20	**081315WHC05**	–	**081321WBN150**
	6.00	6.00*	5.60	42.00	40.00	0.20	**081316WHC05**	**081316WHW04**	–
	8.00	8.00**	7.60	25.00	23.00	0.20	**081323WHC05**	–	–
	8.00	8.00**	7.60	50.00	48.00	0.20	**081324WHC05**	–	–

*Fixture-through reducing sleeve required (B10-A: 58)
**For 511021 fixture-through reducing sleeve required

B10-M: 12-15
Key on B10-A:1

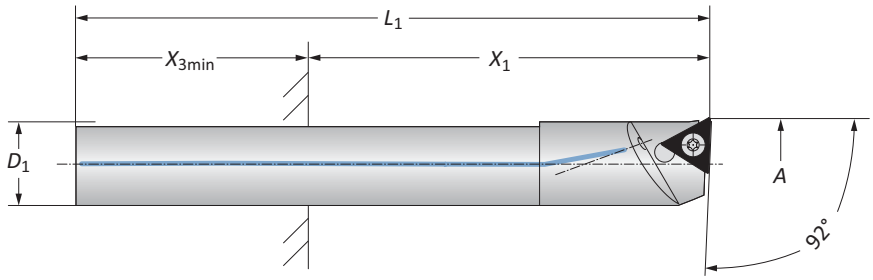
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Boring Bars

Steel | Diameter Range: 0.236" - 0.787" (6.00mm - 12.00mm)

Form 101



Form 20

	Boring Head	Boring Range A	Boring Bar D_1	Boring Bar X_1	Boring Bar $X_{3\ min}$	Boring Bar L_1	Weight	Part No. Insert Form	Part No. Boring Bar	Part No. Insert Form	Part No. Boring Bar
	511001	0.236 - 0.315	0.197*	0.492 - 0.984	0.63	2.756	0.022 (lbs)	211**	**514032**	–	–
		0.315 - 0.394	0.276*	0.689 - 1.378	0.63	3.189	0.044 (lbs)	211**	**514033**	–	–
		0.394 - 0.472	0.315	0.787 - 1.575	0.748	3.346	0.066 (lbs)	101	**514003**	20**	**514004**
	511021	0.236 - 0.315	0.197*	0.492 - 0.984	0.984	2.756	0.022 (lbs)	211**	**514032**	–	–
		0.315 - 0.394	0.276*	0.689 - 1.378	0.984	3.189	0.044 (lbs)	211**	**514033**	–	–
		0.394 - 0.472	0.315*	0.787 - 1.575	0.984	3.346	0.066 (lbs)	101	**514003**	20**	**514004**
		0.472 - 0.551	0.394*	0.984 - 1.969	0.984	3.937	0.110 (lbs)	101	**514005**	20**	**514006**
		0.551 - 0.630	0.472*	1.181 - 2.362	1.181	4.488	0.198 (lbs)	101	**514007**	20**	**514008**
		0.630 - 0.709	0.551	2.205 - 2.756	1.181	4.764	0.287 (lbs)	101	**514009**	20**	**514010**
		0.709 - 0.787	0.551	2.205 - 2.756	1.181	4.764	0.287 (lbs)	101	**514011**	20**	**514012**
	510001	6.00 - 8.00	5.00*	12.50 - 25.00	16.00	70.00	0.01 (kg)	211**	**514032**	–	–
		8.00 - 10.00	7.00*	17.50 - 35.00	16.00	81.00	0.02 (kg)	211**	**514033**	–	–
		10.00 - 12.00	8.00	20.00 - 40.00	19.00	85.00	0.03 (kg)	101	**514003**	20**	**514004**

*Fixture-through reducing sleeve required (B10-A: 58)
**Not suitable for indexable inserts with a radius of 0.031" (0.8mm)

B10-M: 12-15 | B10-A: 59 | B10-H | B10: vi-vii

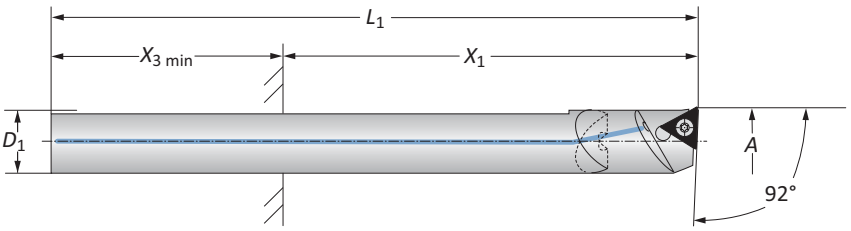
Key on B10-A: 1

= Imperial (in)
= Metric (mm)
Inserts sold separately

Boring Bars

Carbide | Diameter Range: 0.236" - 0.787" (6.00mm - 12.00mm)

Form 101



Form 20

	Boring Head	Boring Range A	Boring Bar D_1	X_1	$X_{3\ min}$	L_1	Weight	Part No. Insert Form	Boring Bar	Insert Form	Boring Bar
i	**511001**	0.236 - 0.315	0.197*	0.492 - 1.575	0.63	3.543	0.044 (lbs)	211**	**514034**	–	–
		0.315 - 0.394	0.276*	0.827 - 2.205	0.63	4.291	0.110 (lbs)	211**	**514035**	–	–
		0.394 - 0.472	0.315	0.866 - 2.520	0.748	4.606	0.154 (lbs)	101	**514015**	20**	**514016**
	511021	0.236 - 0.315	0.197*	0.492 - 1.575	0.984	3.543	0.044 (lbs)	211**	**514034**	–	–
		0.315 - 0.394	0.276*	0.827 - 2.205	0.984	4.291	0.110 (lbs)	211**	**514035**	–	–
		0.394 - 0.472	0.315*	0.866 - 2.520	0.984	4.606	0.154 (lbs)	101	**514015**	20**	**514016**
		0.472 - 0.551	0.394*	2.008 - 3.150	1.181	5.512	0.287(lbs)	101	**514017**	20**	**514018**
		0.551 - 0.630	0.472*	2.677 - 3.780	1.181	6.378	0.485 (lbs)	101	**514019**	20**	**514020**
		0.630 - 0.709	0.551	3.031 - 4.409	1.181	5.591	0.573 (lbs)	101	**514021**	20**	**514022**
		0.630 - 0.709	0.551	4.409 - 5.787	1.181	6.969	0.728 (lbs)	101	**514023**	20**	**514024**
		0.709 - 0.787	0.551	3.031 - 4.409	1.181	5.591	0.573 (lbs)	101	**514025**	20**	**514026**
		0.709 - 0.787	0.551	4.409 - 5.787	1.181	6.969	0.728 (lbs)	101	**514027**	20**	**514028**
m	**510001**	6.00 - 8.00	5.00*	12.50 - 40.00	16.00	90.00	0.02 (kg)	211**	**514034**	–	–
		8.00 - 10.00	7.00*	21.00 - 56.00	16.00	109.00	0.05 (kg)	211**	**514035**	–	–
		10.00 - 12.00	8.00	22.00 - 64.00	19.00	117.00	0.07 (kg)	101	**514015**	20**	**514016**

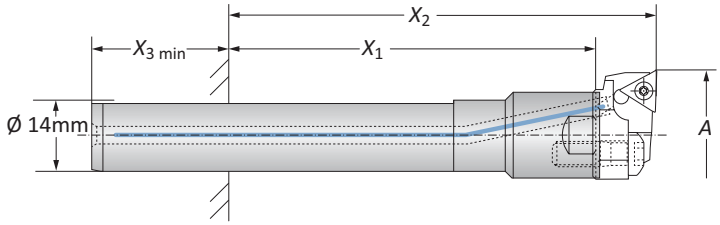
*Fixture-through reducing sleeve required (B10-A: 58)
**Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

B10-M: 12-15 | B10-A: 59 | B10-H | B10: vi-vii
Key on B10-A: 1

i = Imperial (in)
m = Metric (mm)
Inserts sold separately

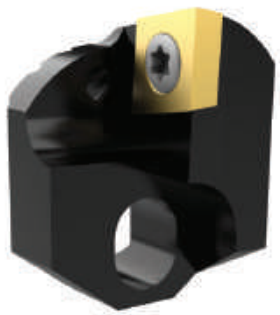
Serrated Tool Bodies | Insert Holders

Diameter Range: 0.787" - 1.339"

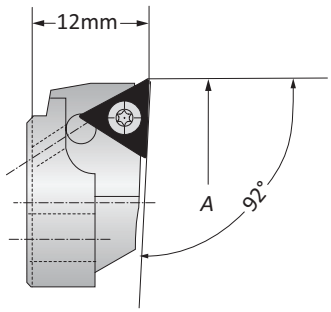


Serrated Tool Bodies

	Substrate	Boring Range A	Serrated Tool Body X_1	X_2	$X_{3\ min}$	Weight	Part No.
	Steel	0.787 - 1.339	1.457 - 2.835	1.929 - 3.307	1.181	0.287 (lbs)	**514029**
ⓘ	Carbide	0.787 - 1.339	2.550 - 3.937	3.031 - 4.409	1.181	0.551 (lbs)	**514030**
	Carbide	0.787 - 1.339	3.937 - 5.315	4.409 - 5.787	1.181	0.728 (lbs)	**514031**



Form 101



Form 20

Insert Holders

	Boring Range A	Weight	Insert Form	Part No.	Insert Form	Part No.
	0.787 - 0.866	0.022 (lbs)	101	**502052**	20*	**502046**
	0.866 - 0.945	0.022 (lbs)	101	**502053**	20*	**502047**
ⓘ	0.945 - 1.024	0.022 (lbs)	101	**502054**	20*	**502048**
	1.024 - 1.102	0.022 (lbs)	101	**502055**	20*	**502049**
	1.102 - 1.181	0.022 (lbs)	101	**502056**	20*	**502050**
	1.181 - 1.260	0.022 (lbs)	101	**502057**	20*	**502051**

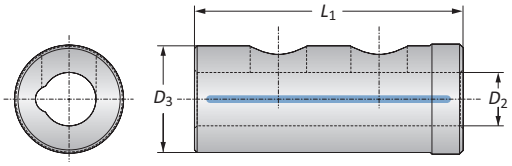
*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

B10-M: 12-15 | B10-A: 59 | B10-H | B10: vi-vii

Key on B10-A: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

Reducing Sleeves



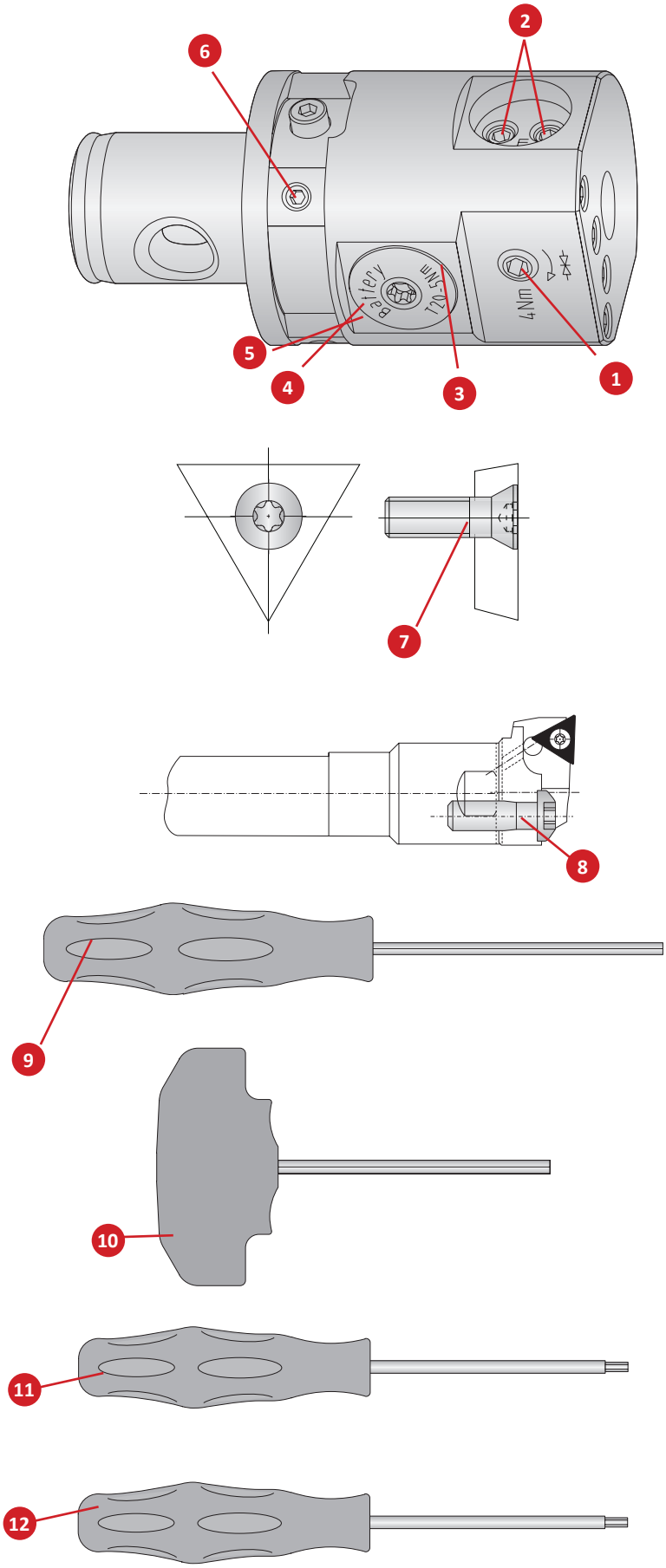
Metric Reducing Sleeves

	Reducing Sleeve			
	D_3	D_2	L_1	Part No.
	8.00	4.00	20.00	**514201**
	8.00	5.00	20.00	**514202**
	8.00	6.00	20.00	**514210**
	8.00	7.00	20.00	**514203**
	14.00	4.00	32.00	**514204**
ⓜ	14.00	5.00	32.00	**514205**
	14.00	6.00	32.00	**514211**
	14.00	7.00	32.00	**514206**
	14.00	8.00	32.00	**514207**
	14.00	10.00	32.00	**514208**
	14.00	12.00	32.00	**514209**

Boring Head Accessories

No.	Part	Insert Form	Size	Part No. 511001 (510001)	Part No. 511021
1	Clamping screw	–	–	**115985**	**315943**
2	Thread pin for tool clamping	–	–	**070333**	**115181**
3	Sealing ring for battery cover	–	–	**415895**	**415895**
4	Battery*	–	–	**415896**	**415896**
5	Battery cover	–	–	**501016**	**501016**
6	Thread pin	–	–	**510114**	**510114**
7	Insert screws	Form 20 Form 101 Form 211	T7 T8 T6	**115535** **115676** **515286**	**115535** **115676** **515286**
8	Clamping Screw	-	T25	-	**415112**
9	Hex wrench	–	s2	**215473**	**215473**
10	Hex wrench	–	s2.5 s3.0 s4.0	**415577** **415578** **115576**	**415577** **415578** **115576**
11	Torx driver	–	T6 T7 T8 T20	**115537** **115591** **115590** **215150**	**115537** **115591** **115590** **215150**
12	Torx screw-driver	Form 211 Form 20 Form 101	T6 T7 T8	**415507** **415508** **415514**	**415507** **415508** **415514**

*Always change two batteries
NOTE: Please use VARTA batteries



DigiBore
VERSATILE FINE BORING

Advanced versatile technology.

The Wohlhaupter® DigiBore boring head provides internal balancing, which makes this tool the stress-free choice to meet your required surface finish. Its digital display allows for quick and accurate diameter corrections at the machine.

Engineered with the ***future in mind***.

- Diameter range: 0.118" - 8.189" (3.00mm - 208.00mm)
- Offers outside turning capabilities: 0.157" - 4.488" (4.00mm - 114.00mm)
- Digital readout for simple 0.0001" (0.002mm) diameter adjustments
- Ease the stress of working on different day-to-day projects with boring kits
- Automatic internal balancing improves surface finish, tool life, and accuracy
- Max spindle speed: 16,000 RPM
- Max coolant pressure: 580 PSI (40 bar)

NOTE: Imperial items pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

DigiBore Head

NOTE: Imperial items pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

DIGIBORE

Coolant Delivery System

Serrated Slide

Counterweight

Outside Turning
Ø 0.079" - 4.488"
(Ø 2mm - 114mm)

Insert Holder
Ø 2.677" - 8.189"
(Ø 68mm - 208mm)

Outside Turning
Ø 0.157" - 2.598"
(Ø 4mm - 66mm)

Serrated Tool Body

Insert Holder
Ø 1.260" - 2.677"
(Ø 32mm - 68mm)

Carbide Serrated Tool Body

Insert Holder
Ø 0.787" - 1.260"
(Ø 20mm - 32mm)

Serrated Tool Body

Carbide Boring Bar
Ø 0.394" - 0.787"
(Ø 10mm - 20mm)

Steel Boring Bar
Ø 0.236" - 0.787"
(Ø 6mm - 20mm)

Adapter

Mini-Boring Tool
Ø 0.118" - 0.394"
(Ø 3mm - 10mm)

OPERATION **VERSATILITY**

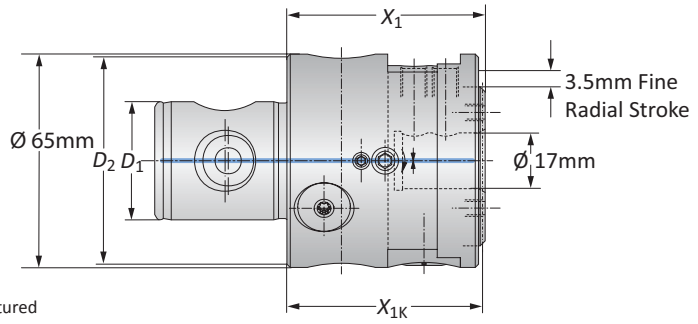
from **0.118"** to **8.189"** (**3.00mm** to **208.00mm**)
plus outside turning

NOTE: Imperial items pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

Boring Heads

Diameter Range: 0.118" - 8.189" (3.00mm - 208.00mm)

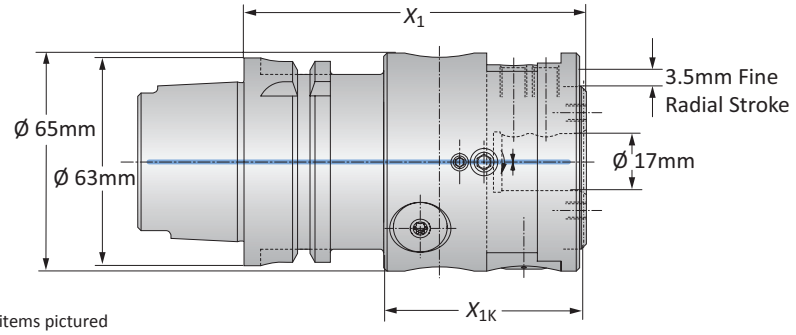


NOTE: Imperial items pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

DigiBore Boring Heads

	MVS Connection D_2 | D_1	Boring Range	Boring Head X_1	Boring Head X_{1K}	Weight	Part No.
i	50 - 28	0.118 - 8.189	2.362	2.342	2.866 (lbs)	**504003**
	63 - 36	0.118 - 8.189	2.362	2.342	3.307 (lbs)	**504001**
m	50 - 28	3.00 - 208.00	60.00	59.50	1.30 (kg)	**501005**
	63 - 36	3.00 - 208.00	60.00	59.50	1.50 (kg)	**501001**



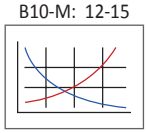
NOTE: Imperial items pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

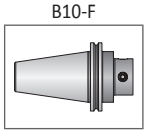
DigiBore Boring Heads

	Connection	Boring Range	Boring Head X_1	Boring Head X_{1K}	Weight	Part No.
i	HSK-A 63	0.118 - 8.189	4.015	2.342	4.630 (lbs)	**504004**
	PSC 63 (Polygon Shank)	0.118 - 8.189	4.015	2.342	4.630 (lbs)	**504019**
m	HSK-A 63	3.00 - 208.00	102.00	59.50	2.10 (kg)	**501004**
	PSC 63 (Polygon Shank)	3.00 - 208.00	102.00	59.50	2.10 (kg)	**501019**

B10-M: 12-15 Key on B10-A: 1



B10-F



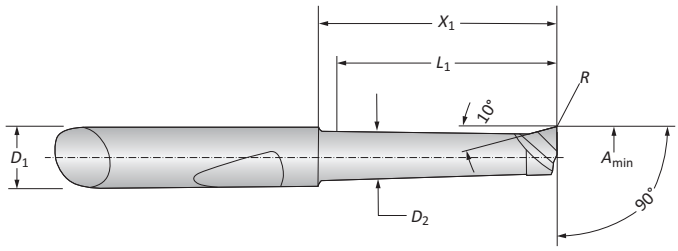
B10: vi-vii

i = Imperial (in)
m = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Mini Boring Bars

WHC05 | WHW04 | WBN150 | Diameter Range: 0.118" - 0.394" (3.00mm - 10.00mm)

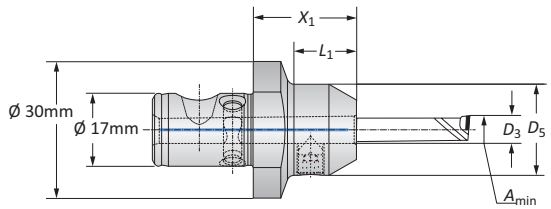


Mini Boring Bars

	Boring Range	Boring Bar					Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	0.118	0.236	0.102	0.452	0.393	0.003	**081306WHC05**	–	**081322WBN150**
	0.118	0.236	0.102	0.649	0.590	0.003	**081307WHC05**	**081307WHW04**	–
	0.157	0.236	0.141	0.472	0.393	0.007	**081308WHC05**	–	**081317WBN150**
	0.157	0.236	0.141	0.669	0.590	0.007	**081309WHC05**	–	**081341WBN150**
	0.157	0.236	0.141	0.866	0.787	0.007	**081310WHC05**	**081310WHW04**	–
	0.196	0.236	0.181	0.472	0.393	0.007	**081311WHC05**	–	**081318WBN150**
ⓘ	0.196	0.236	0.181	0.866	0.787	0.007	**081312WHC05**	–	**081319WBN150**
	0.196	0.236	0.181	1.259	1.181	0.007	**081313WHC05**	**081313WHW04**	–
	0.236	0.236	0.220	0.866	0.787	0.007	**081314WHC05**	–	**081320WBN150**
	0.236	0.236	0.220	1.259	1.181	0.007	**081315WHC05**	–	**081321WBN150**
	0.236	0.236	0.220	1.653	1.574	0.007	**081316WHC05**	**081316WHW04**	–
	0.315	0.315	0.229	0.984	0.905	0.007	**081323WHC05**	–	–
	0.315	0.315	0.229	1.968	1.889	0.007	**081324WHC05**	–	–
	3.00	6.00	2.60	11.50	10.00	0.10	**081306WHC05**	–	**081322WBN150**
	3.00	6.00	2.60	16.50	15.00	0.10	**081307WHC05**	**081307WHW04**	–
	4.00	6.00	3.60	12.00	10.00	0.20	**081308WHC05**	–	**081317WBN150**
	4.00	6.00	3.60	17.00	15.00	0.20	**081309WHC05**	–	**081341WBN150**
	4.00	6.00	3.60	22.00	20.00	0.20	**081310WHC05**	**081310WHW04**	–
	5.00	6.00	4.60	12.00	10.00	0.20	**081311WHC05**	–	**081318WBN150**
ⓜ	5.00	6.00	4.60	22.00	20.00	0.20	**081312WHC05**	–	**081319WBN150**
	5.00	6.00	4.60	32.00	30.00	0.20	**081313WHC05**	**081313WHW04**	–
	6.00	6.00	5.60	22.00	20.00	0.20	**081314WHC05**	–	**081320WBN150**
	6.00	6.00	5.60	32.00	30.00	0.20	**081315WHC05**	–	**081321WBN150**
	6.00	6.00	5.60	42.00	40.00	0.20	**081316WHC05**	**081316WHW04**	–
	8.00	8.00	7.60	25.00	23.00	0.20	**081323WHC05**	–	–
	8.00	8.00	7.60	50.00	48.00	0.20	**081324WHC05**	–	–

Adapters

	Boring Range	Adapter					
	A_{min}	X_1	L_1	D_3	D_5	Weight	Part No.
ⓜ	3.00 - 8.00	22.50	14.00	6.00	20.00	0.04 (kg)	**501050**
	8.00 - 10.00	22.50	14.00	8.00	22.00	0.04 (kg)	**501051**



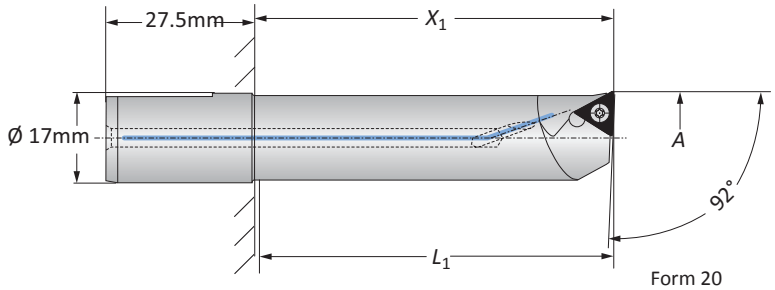
B10-M: 12-15
Key on B10-A:1
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Boring Bars

Steel | Diameter Range: 0.236" - 0.787" (6.00mm - 20.00mm)

Form 101



Form 20

	Boring Range	Boring Bar						
	A	X_1	L_1	Weight	Insert Form	Part No.	Insert Form	Part No.
	0.236 - 0.315	0.866	0.748	0.110 (lbs)	211*	**502068**	–	**–**
	0.315 - 0.394	1.181	1.063	0.110 (lbs)	211*	**502066**	–	**–**
	0.394 - 0.433	1.181	1.063	0.132 (lbs)	101	**502012**	20*	**502001**
	0.433 - 0.472	1.181	1.063	0.132 (lbs)	101	**502075**	20*	**502070**
	0.472 - 0.512	1.772	1.654	0.154 (lbs)	101	**502013**	20*	**502002**
ⓘ	0.512 - 0.551	1.772	1.654	0.176 (lbs)	101	**502076**	20*	**502071**
	0.551 - 0.591	1.968	1.850	0.176 (lbs)	101	**502014**	20*	**502003**
	0.591 - 0.630	1.968	1.850	0.198 (lbs)	101	**502077**	20*	**502072**
	0.630 - 0.669	2.362	2.244	0.220 (lbs)	101	**502015**	20*	**502004**
	0.669 - 0.709	2.362	2.244	0.265 (lbs)	101	**502078**	20*	**502073**
	0.709 - 0.748	2.677	2.559	0.287 (lbs)	101	**502016**	20*	**502005**
	0.748 - 0.787	2.677	2.559	0.309 (lbs)	101	**502079**	20*	**502074**
	6.00 - 8.00	22.00	19.00	0.05 (kg)	211*	**502068**	–	**–**
	8.00 - 10.00	30.00	27.00	0.05 (kg)	211*	**502066**	–	**–**
	10.00 - 11.00	30.00	27.00	0.06 (kg)	101	**502012**	20*	**502001**
	11.00 - 12.00	30.00	27.00	0.06 (kg)	101	**502075**	20*	**502070**
	12.00 - 13.00	45.00	42.00	0.07 (kg)	101	**502013**	20*	**502002**
ⓜ	13.00 - 14.00	45.00	42.00	0.08 (kg)	101	**502076**	20*	**502071**
	14.00 - 15.00	50.00	47.00	0.08 (kg)	101	**502014**	20*	**502003**
	15.00 - 16.00	50.00	47.00	0.09 (kg)	101	**502077**	20*	**502072**
	16.00 - 17.00	60.00	57.00	0.10 (kg)	101	**502015**	20*	**502004**
	17.00 - 18.00	60.00	57.00	0.12 (kg)	101	**502078**	20*	**502073**
	18.00 - 19.00	68.00	65.00	0.13 (kg)	101	**502016**	20*	**502005**
	19.00 - 20.00	68.00	65.00	0.14 (kg)	101	**502079**	20*	**502074**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

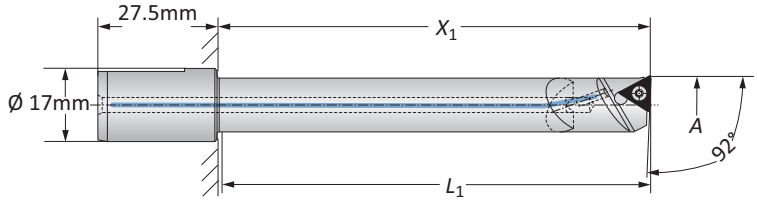
B10-M: 12-15
Key on B10-A: 1
B10-H
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

Boring Bars

Carbide | Diameter Range: 0.394" - 0.787" (10.00mm - 20.00mm)

Form 101



Form 20

	Boring Range	Boring Bar						
	A	X_1	L_1	Weight	Insert Form	Part No.	Insert Form	Part No.
ⓘ	0.394 - 0.472	2.165	2.047	0.265 (lbs)	101	**502093**	20*	**502088**
	0.394 - 0.472	2.756	2.638	0.309 (lbs)	101	**502034**	20*	**502023**
	0.472 - 0.551	2.559	2.441	0.287 (lbs)	101	**502094**	20*	**502089**
	0.472 - 0.551	3.346	3.228	3.975 (lbs)	101	**502035**	20*	**502024**
	0.551 - 0.630	2.953	2.835	0.375 (lbs)	101	**502095**	20*	**502090**
	0.551 - 0.630	3.543	3.425	0.485 (lbs)	101	**502036**	20*	**502025**
	0.630 - 0.709	3.346	3.228	0.573 (lbs)	101	**502096**	20*	**502091**
	0.630 - 0.709	4.331	4.213	0.706 (lbs)	101	**502037**	20*	**502026**
	0.709 - 0.787	3.740	3.622	0.617 (lbs)	101	**502097**	20*	**502092**
	0.709 - 0.787	4.724	4.606	0.882 (lbs)	101	**502038**	20*	**502027**
ⓜ	10.00 - 12.00	55.00	52.00	0.12 (kg)	101	**502093**	20*	**502088**
	10.00 - 12.00	70.00	67.00	0.14 (kg)	101	**502034**	20*	**502023**
	12.00 - 14.00	65.00	62.00	0.13 (kg)	101	**502094**	20*	**502089**
	12.00 - 14.00	85.00	82.00	0.18 (kg)	101	**502035**	20*	**502024**
	14.00 - 16.00	75.00	72.00	0.17 (kg)	101	**502095**	20*	**502090**
	14.00 - 16.00	90.00	87.00	0.22 (kg)	101	**502036**	20*	**502025**
	16.00 - 18.00	85.00	82.00	0.26 (kg)	101	**502096**	20*	**502091**
	16.00 - 18.00	110.00	107.00	0.32 (kg)	101	**502037**	20*	**502026**
	18.00 - 20.00	95.00	92.00	0.28 (kg)	101	**502097**	20*	**502092**
	18.00 - 20.00	120.00	117.00	0.40 (kg)	101	**502038**	20*	**502027**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

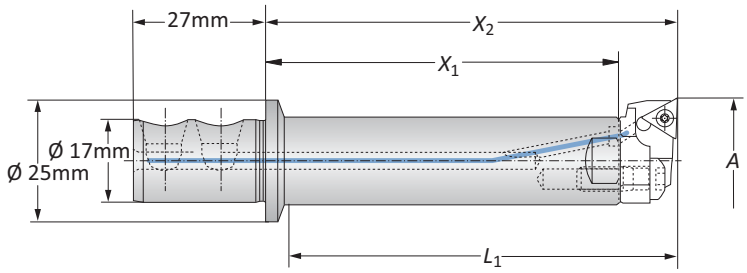
B10-M: 12-15 | B10-H | B10: vi-vii

Key on B10-A: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

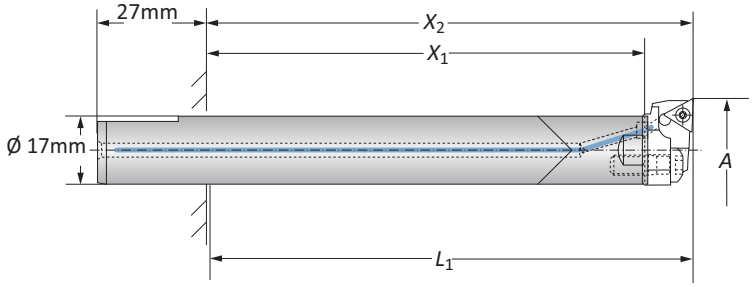
Serrated Tool Bodies | Insert Holders

Steel | Carbide | Diameter Range: 0.787" - 1.260" (20.00mm - 32.00mm)



Steel Serrated Tool Bodies

	Boring Range A	Serrated Tool Body X_1	X_2	L_1	Weight	Part No.
i	0.787 - 1.260	2.835	3.307	3.031	0.441 (lbs)	**502045**
m	20.00 - 32.00	72.00	84.00	77.00	0.20 (kg)	**502045**



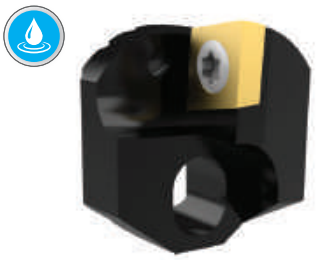
Carbide Serrated Tool Bodies

	Boring Range A	Serrated Tool Body X_1	X_2	L_1	Weight	Part No.
i	0.787 - 1.260	4.252	4.724	4.606	0.882 (lbs)	**502062**
m	20.00 - 32.00	108.00	120.00	117.00	0.40 (kg)	**502062**

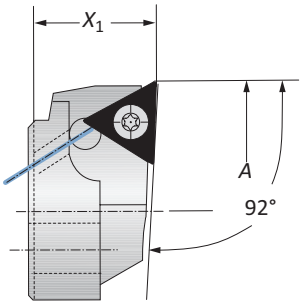
Insert Holders

	Boring Range A	Insert Holder X_1	Weight	Insert Form	Part No.	Insert Form	Part No.
i	0.787 - 0.866	0.472	0.022 (lbs)	101	**502052**	20*	**502046**
	0.866 - 0.945	0.472	0.022 (lbs)	101	**502053**	20*	**502047**
	0.945 - 1.024	0.472	0.022 (lbs)	101	**502054**	20*	**502048**
	1.024 - 1.102	0.472	0.022 (lbs)	101	**502055**	20*	**502049**
	1.102 - 1.181	0.472	0.022 (lbs)	101	**502056**	20*	**502050**
	1.181 - 1.260	0.472	0.022 (lbs)	101	**502057**	20*	**502051**
m	20.00 - 22.00	12.00	0.01 (kg)	101	**502052**	20*	**502046**
	22.00 - 24.00	12.00	0.01 (kg)	101	**502053**	20*	**502047**
	24.00 - 26.00	12.00	0.01 (kg)	101	**502054**	20*	**502048**
	26.00 - 28.00	12.00	0.01 (kg)	101	**502055**	20*	**502049**
	28.00 - 30.00	12.00	0.01 (kg)	101	**502056**	20*	**502050**
	30.00 - 32.00	12.00	0.01 (kg)	101	**502057**	20*	**502051**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)



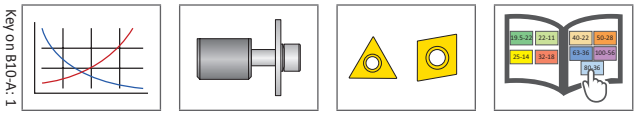
Form 101



Form 20

B10-M: 12-15 | B10-A: 71 | B10-H | B10: vi-vii

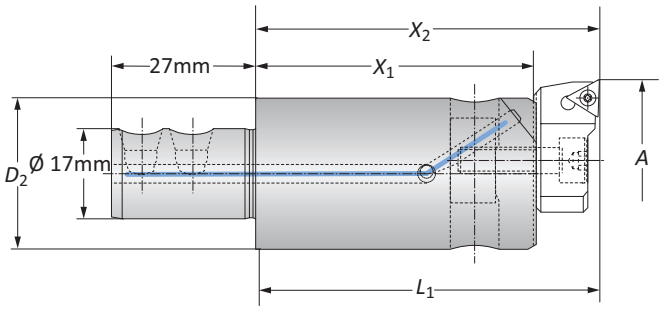
Key on B10-A: 1



i = Imperial (in)
m = Metric (mm)
Inserts sold separately

Alu-Line Serrated Tool Bodies | Insert Holders

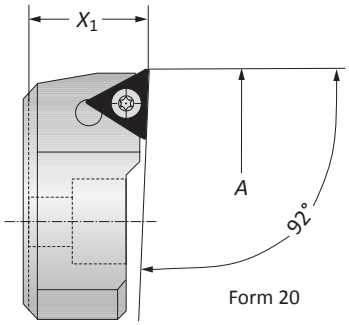
Diameter Range: 1.260" - 2.677" (32.00mm - 68.00mm)



Alu-Line Serrated Tool Bodies

	Boring Range	Serrated Tool Body					
	A	D_2	X_1	X_2	L_1	Weight	Part No.
ⓘ	1.260 - 1.968	1.122	2.047	2.598	2.480	0.220 (lbs)	**501052**
ⓘ	1.260 - 1.968	1.122	3.465	4.016	3.898	0.441 (lbs)	**501060**
ⓘ	1.968 - 2.677	1.811	2.402	2.953	2.835	0.441 (lbs)	**501053**
ⓘ	1.968 - 2.677	1.811	4.173	4.724	4.606	0.661 (lbs)	**501061**
ⓜ	32.00 - 50.00	28.50	52.00	66.00	63.00	0.10 (kg)	**501052**
ⓜ	32.00 - 50.00	28.50	88.00	102.00	99.00	0.20 (kg)	**501060**
ⓜ	50.00 - 68.00	46.00	61.00	75.00	72.00	0.20 (kg)	**501053**
ⓜ	50.00 - 68.00	46.00	106.00	120.00	117.00	0.30 (kg)	**501061**

Form 101



Form 20

Insert Holders

	Serrated Tool Body	Boring Range	Insert Holder			
		A	X_1	Weight	Insert Form	Part No.
ⓘ	**501052 / 501060**	1.260 - 1.614	0.551	0.066 (lbs)	20*	**502060**
ⓘ		1.614 - 1.968	0.551	0.088 (lbs)	20*	**502061**
ⓘ		1.260 - 1.614	0.551	0.066 (lbs)	101	**502058**
ⓘ		1.614 - 1.968	0.551	0.088 (lbs)	101	**502059**
ⓘ	**501053 / 501061**	1.968 - 2.323	0.551	0.066 (lbs)	20*	**502060**
ⓘ		2.323 - 2.677	0.551	0.088 (lbs)	20*	**502061**
ⓘ		1.968 - 2.323	0.551	0.066 (lbs)	101	**502058**
ⓘ		2.323 - 2.677	0.551	0.088 (lbs)	101	**502059**
ⓜ	**501052 / 501060**	32.00 - 41.00	14.00	0.03 (kg)	20*	**502060**
ⓜ		41.00 - 50.00	14.00	0.04 (kg)	20*	**502061**
ⓜ		32.00 - 41.00	14.00	0.03 (kg)	101	**502058**
ⓜ		41.00 - 50.00	14.00	0.04 (kg)	101	**502059**
ⓜ	**501053 / 501061**	50.00 - 59.00	14.00	0.03 (kg)	20*	**502060**
ⓜ		59.00 - 68.00	14.00	0.04 (kg)	20*	**502061**
ⓜ		50.00 - 59.00	14.00	0.03 (kg)	101	**502058**
ⓜ		59.00 - 68.00	14.00	0.04 (kg)	101	**502059**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

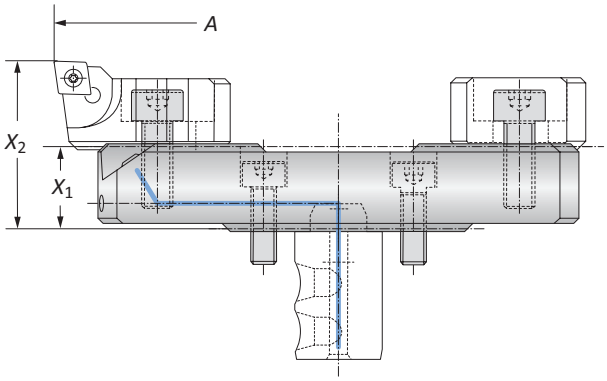
B10-M: 12-15 | B10-A: 71 | B10-H | B10: vi-vii

Key on B10-A: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

Alu-Line Serrated Slides | Insert Holders

Diameter Range: 2.667" - 8.189" (68.00mm - 208.00mm)



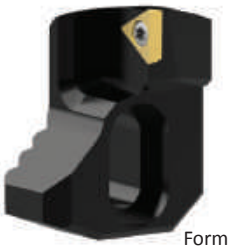
Alu-Line Serrated Slides

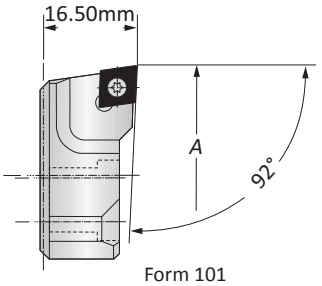
	Boring Range A	Serrated Slide X_1	Serrated Slide X_2	Weight	Part No.
i	2.667 - 3.780	0.630	1.280	0.220 (lbs)	**501054**
	3.780 - 4.881	0.630	1.280	0.220 (lbs)	**501055**
	4.881 - 5.984	0.630	1.280	0.441 (lbs)	**501056**
	5.984 - 7.088	0.866	1.516	0.551 (lbs)	**501058**
	7.088 - 8.189	0.866	1.516	0.661 (lbs)	**501059**
m	68.00 - 96.00	16.00	32.50	0.10 (kg)	**501054**
	96.00 - 124.00	16.00	32.50	0.10 (kg)	**501055**
	124.00 - 152.00	16.00	32.50	0.20 (kg)	**501056**
	152.00 - 180.00	22.00	38.50	0.25 (kg)	**501058**
	180.00 - 208.00	22.00	38.50	0.30 (kg)	**501059**

Insert Holders

	Boring Range A	Weight	Insert Form	Part No.
i	2.677 - 8.189	0.110 (lbs)	101	**502064**
	2.677 - 8.189	0.110 (lbs)	20	**502069**
m	68.00 - 208.00	0.05 (kg)	101	**502064**
	68.00 - 208.00	0.05 (kg)	20	**502069**

NOTE: Other insert holders available upon request

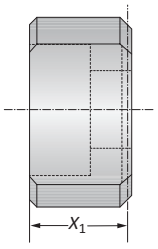

Form 20



Form 101

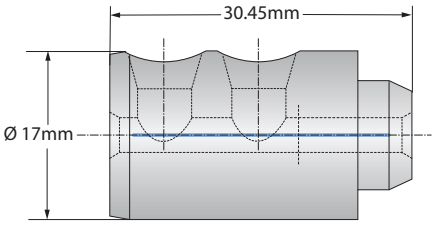
Counterweights

	Counterweight X_1	Weight	Part No.
i	0.528	0.110 (lbs)	**502165**
m	13.40	0.05 (kg)	**502165**



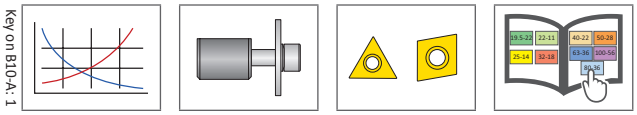
Coolant Delivery Systems

	Coolant Delivery System Weight	Part No.
i	0.044 (lbs)	**501157**
m	0.02 (kg)	**501157**



B10-M: 12-15 | B10-A: 71 | B10-H | B10: vi-vii

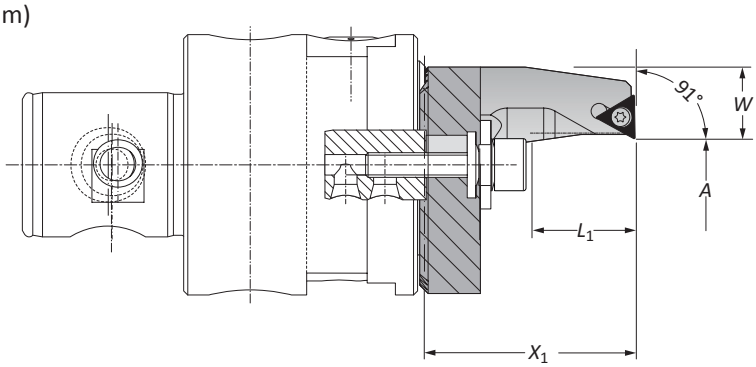
Key on B10-A: 1



i = Imperial (in)
m = Metric (mm)
Inserts sold separately

Outside Turning Insert Holders for Boring Heads

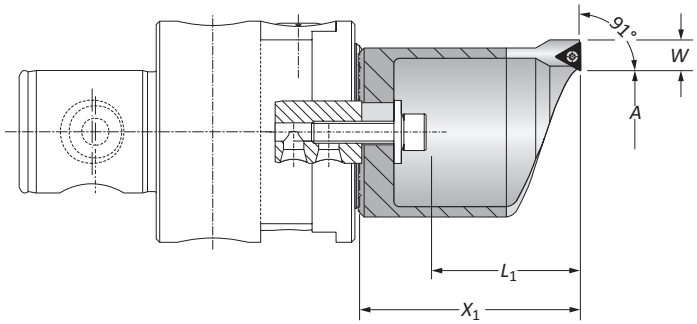
Diameter Range: 0.157" - 2.598" (4.00mm - 66.00mm)



Type A Insert Holders | Diameter Range: 0.157" - 1.181" (4.00mm - 30.00mm)

	Boring Range A	Insert Holder X_1	Insert Holder L_1	Insert Holder W	Weight	Insert Form	Part No.
ⓘ	0.157 - 0.689	1.594	0.787	0.653	0.220 (lbs)	20*	**236081**
ⓘ	0.650 - 1.181	1.988	1.181	0.437	0.220 (lbs)	20*	**236082**
ⓜ	4.00 - 17.50	40.50	20.00	16.60	0.10 (kg)	20*	**236081**
ⓜ	16.50 - 30.00	50.50	30.00	11.10	0.10 (kg)	20*	**236082**

NOTE: Clockwise and neutral execution
*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)



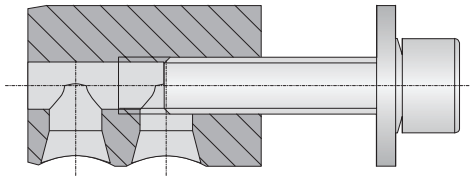
Type B Insert Holders | Diameter Range: 1.142" - 2.598" (29.00mm - 66.00mm)

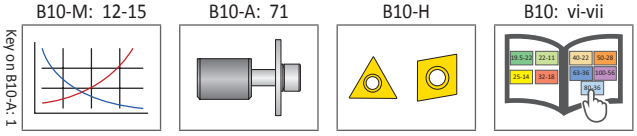
	Boring Range A	Insert Holder X_1	Insert Holder L_1	Insert Holder W	Weight	Insert Form	Part No.
ⓘ	1.142 - 1.732	2.952	2.126	0.377	0.661 (lbs)	20*	**236083**
ⓘ	1.693 - 2.598	3.956	3.110	0.377	0.882 (lbs)	20*	**236084**
ⓜ	29.00 - 44.00	75.50	54.00	9.60	0.30 (kg)	20*	**236083**
ⓜ	43.00 - 66.00	100.50	79.00	9.60	0.40 (kg)	20*	**236084**

NOTE: Clockwise and neutral execution
*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)

Clamping Pieces for Outside Turning Insert Holders

	Insert Holder Type	Boring Range	Service Key	Complete Part No.
ⓜ	A	4.00 - 30.00	s5	**502080**
ⓜ	B	29.00 - 66.00	s5	**502081**

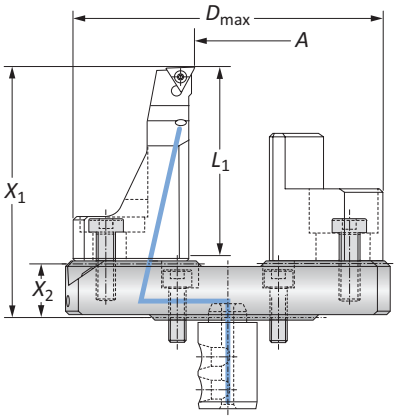




ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

Outside Turning Serrated Slides | Insert Holders

Diameter Range: 0.078" - 4.488" (2.00mm - 114.00mm)



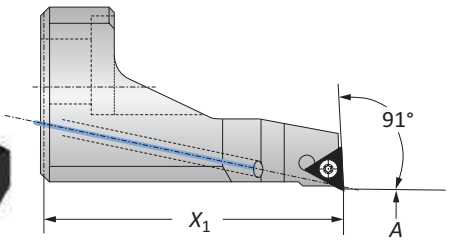
Outside Turning Serrated Slides

	Boring Range A	Serrated Slide X_1	X_2	L_1	D_{max}	Weight	Part No.
i	0.078 - 1.181	2.874	0.630	2.165	3.396	0.771 (lbs)	**501064**
i	1.181 - 2.283	2.874	0.630	2.165	5.078	0.970 (lbs)	**501065**
i	2.283 - 3.385	3.110	0.866	2.165	6.181	1.322 (lbs)	**501066**
i	3.385 - 4.488	3.110	0.866	2.165	7.283	1.609 (lbs)	**501067**
m	2.00 - 30.00	73.00	16.00	55.00	101.00	0.35 (kg)	**501064**
m	30.00 - 58.00	73.00	16.00	55.00	129.00	0.44 (kg)	**501065**
m	58.00 - 86.00	79.00	22.00	55.00	157.00	0.60 (kg)	**501066**
m	86.00 - 114.00	79.00	22.00	55.00	185.00	0.73 (kg)	**501067**

Outside Turning Insert Holders

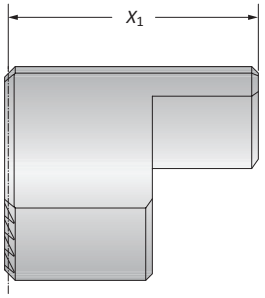
	Outside Turning Range A	Insert Holder X_1	Weight	Insert Form	Part No.
i	0.079 - 4.488	2.244	0.331 (lbs)	20	**502082**
m	2.00 - 114.00	57.00	0.15 (kg)	20	**502082**

NOTE: Clockwise and neutral execution



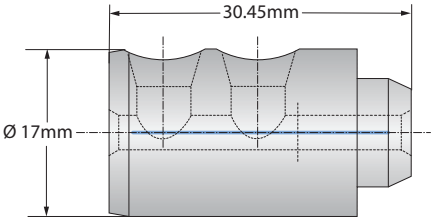
Counterweights

	Counterweight X_1	Weight	Part No.
i	1.486	0.352 (lbs)	**502183**
m	37.75	0.16 (kg)	**502183**



Coolant Delivery Systems

	Weight	Part No.
i	0.044 (lbs)	**501157**
m	0.02 (kg)	**501157**

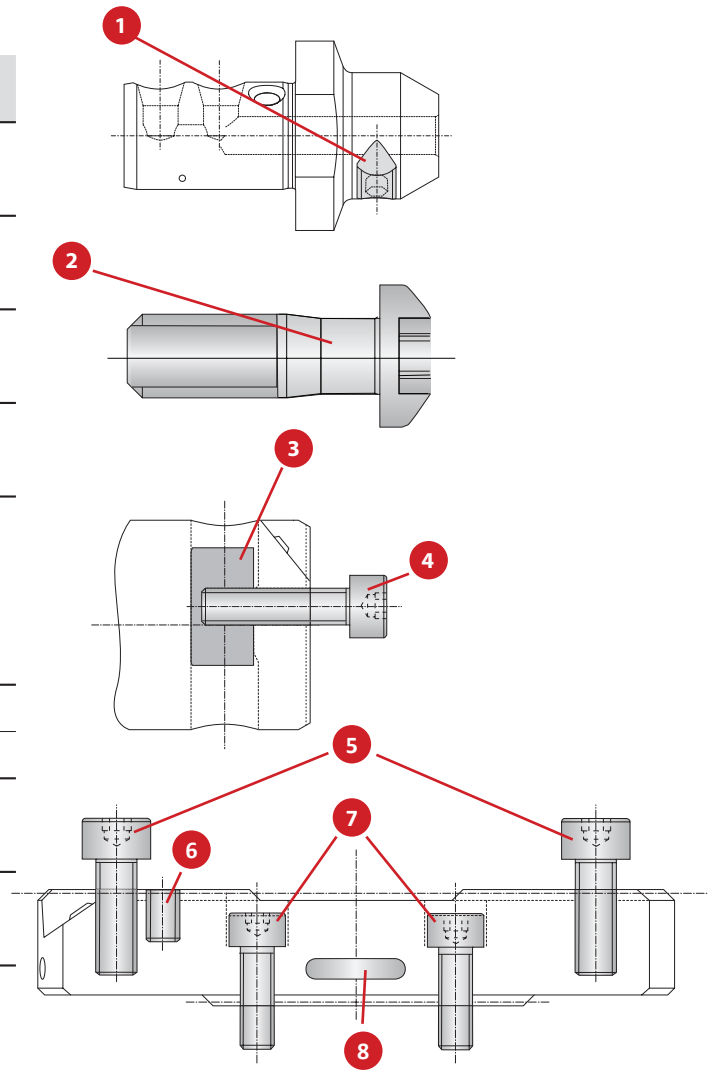


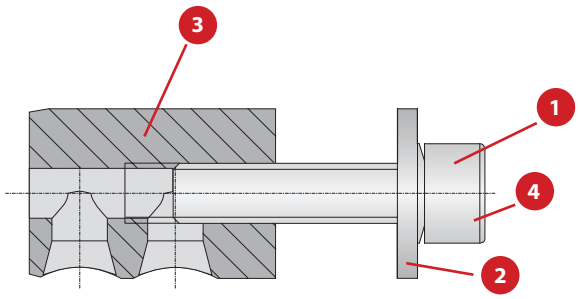
B10-M: 12-15 | B10-A: 71 | B10-H | B10: vi-vii
Key on B10-A: 1

i = Imperial (in)
m = Metric (mm)
Inserts sold separately

Accessories

No.	Part		Size	Part No.
1	Set screw		s3	**415244**
2	Screw for securing insert holder		T25	**415112**
3	Clamping piece		–	**145184**
4	Cap screw for securing insert holders		s4	**027154**
5	Cap screw for securing insert holder/ counterweight		s4	**315248**
6	Set screw - coolant	501054, 501055, 501056	s1.5	**114224**
		501058, 501059	s1.5	**115303**
7	Cap screw for securing serrated slide		s4	**115166**
8	Sealing ring for coolant delivery		–	**415386**



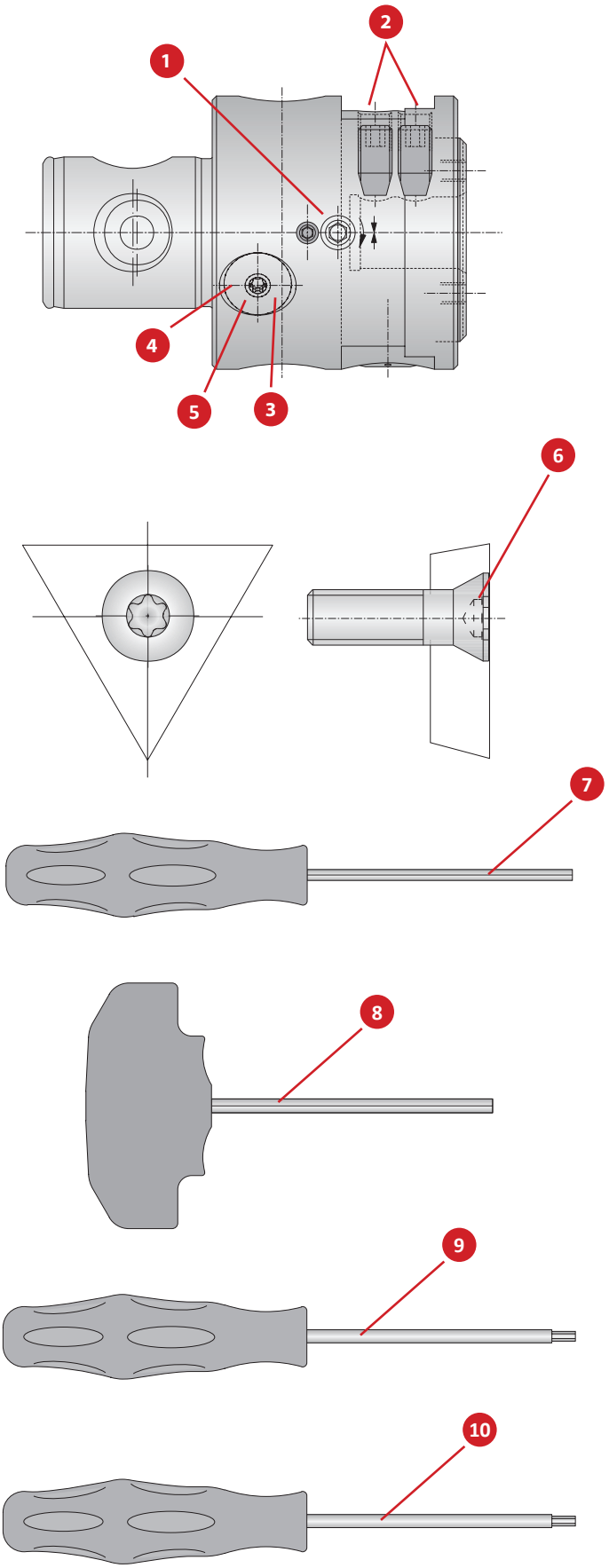


	Boring Range	Type	Hex Size	Clamping Screw Parts 1 Cap Screw	2 Washer	3 Clamping Piece	4 Locking Washer	Complete Part No.
i	0.157 - 1.181	A	s5	070153	315155	502180	215254	**502080**
	1.142 - 2.598	B	s5	070153	315156	502180	215254	**502081**
m	4.00 - 30.00	A	s5	070153	315155	502180	215254	**502080**
	29.00 - 66.00	B	s5	070153	315156	502180	215254	**502081**

Accessories

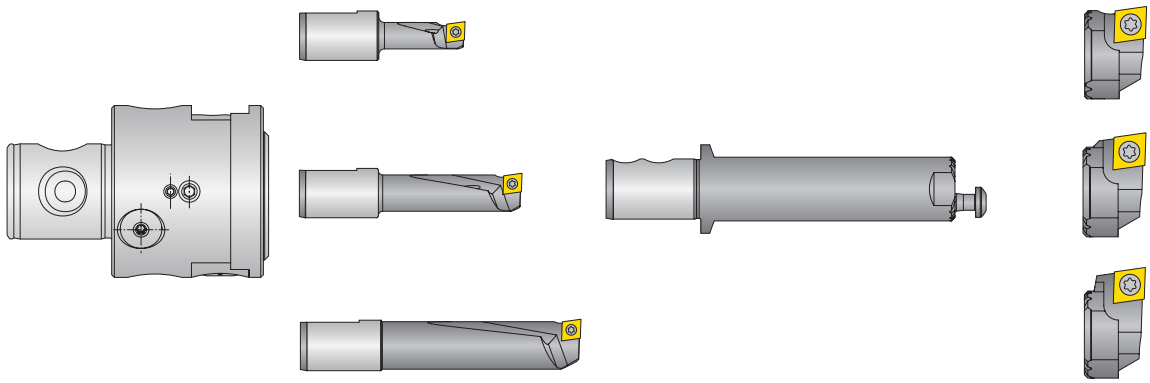
No.	Part	Insert Form	Size	Part No.
1	Clamping screw	–	–	**415353**
2	Set screw for clamping tool	–	–	**215674**
3	Battery cover	–	–	**415895**
4	Battery*	–	–	**415896**
5	Battery access cover with sealing ring	–	–	**501016**
6	Insert screws	Form 211 Form 20 Form 101	T6 T7 T8	**215377** **115535** **115676**
7	Hex driver	–	s1.5 s3	**215472** **115630**
8	Hex driver	–	s4	**115576**
9	Torx® driver	–	T6 T7 T8 T20	**115537** **115591** **115590** **215150**
10	Torque screwdriver, Torx	(0.6 Nm) Form 211 (0.9 Nm) Form 20 (1.2 Nm) Form 101	T6 T7 T8	**415507** **415508** **415514**

*Always change two batteries
NOTE: Please use VARTA batteries (V392 SR41)



Kit Components

Insert Form 101 | Diameter Range: 0.394" - 1.260" (10.00mm - 32.00mm)



Diameter Range: 0.394" - 1.260" (10.00mm - 32.00mm)

	Boring Head	Kit Components: Boring Range	Boring Bars	Boring Range	Serrated Tool Body	Insert Holders	Service Keys	Kit No.
ⓘ	504001	0.394 - 0.433 0.551 - 0.591 0.709 - 0.748	502012 502014 502016	0.787 - 1.260	502045	502052 502054 502056	115576 (s4) 415121 (T25) 115590 (T8)	**104061**
ⓜ	501001	10.00 - 11.00 14.00 - 15.00 18.00 - 19.00	502012 502014 502016	20.00 - 32.00	502045	502052 502054 502056	115576 (s4) 415121 (T25) 115590 (T8)	**103061**

NOTE: Inserts sold separately

B10-M: 12-15 | B10-H | B10: vi-vii

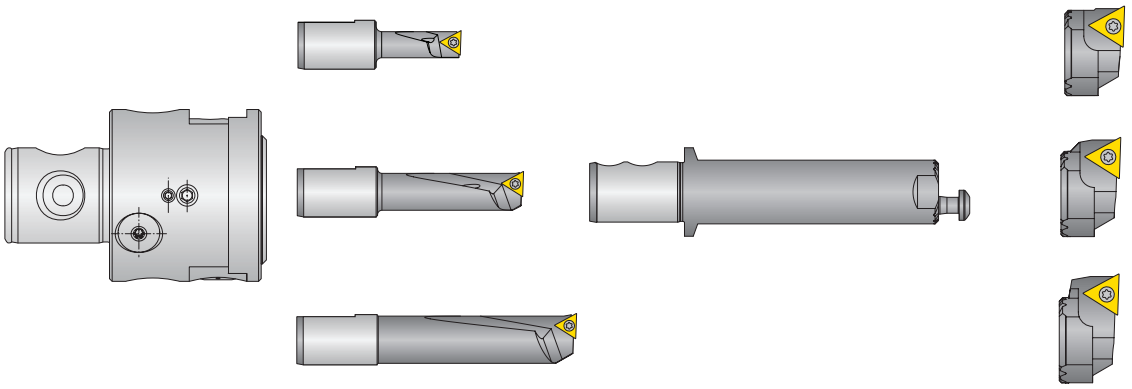
Key on B10-A:1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Kit Components

Insert Form 20 | Diameter Range: 0.394" - 1.260" (10.00mm - 32.00mm)



Diameter Range: 0.394" - 1.260" (10.00mm - 32.00mm)

	Boring Head	Kit Components: Boring Range	Boring Bars	Boring Range	Serrated Tool Body	Insert Holders	Service Keys	Kit No.
ⓘ	504001	0.394 - 0.433 0.551 - 0.591 0.709 - 0.748	502001 502003 502005	0.787 - 1.260	502045	502046 502048 502050	115576 (s4) 415121 (T25) 115591 (T7)	**104062**
ⓜ	501001	10.00 - 11.00 14.00 - 15.00 18.00 - 19.00	502001 502003 502005	20.00 - 32.00	502045	502046 502048 502050	115576 (s4) 415121 (T25) 115591 (T7)	**103062**

NOTE: Inserts sold separately

B10-M: 12-15 | B10-H | B10: vi-vii

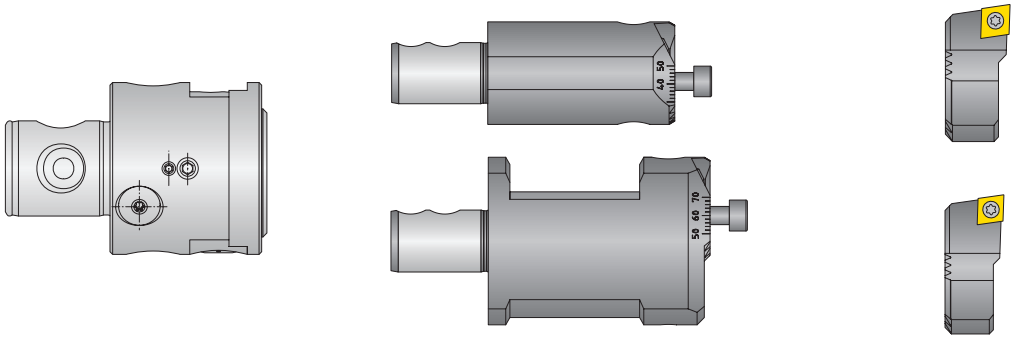
Key on B10-A: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Kit Components

Insert Form 101 | Diameter Range: 1.260" - 2.677" (32.00mm - 68.00mm)



Diameter Range: 1.260" - 2.677" (32.00mm - 68.00mm)

	Boring Head	Kit Components: Boring Range	Serrated Tool Body	Insert Holders	Service Keys	Kit No.
ⓘ	504001	1.260 - 1.968 1.968 - 2.677	501052 501053	502058 502059	115576 (s4) 115590 (T8)	**104063**
ⓜ	501001	32.00 - 50.00 50.00 - 68.00	501052 501053	502058 502059	115576 (s4) 115590 (T8)	**103063**

NOTE: Inserts sold separately

B10-M: 12-15 | B10-H | B10: vi-vii

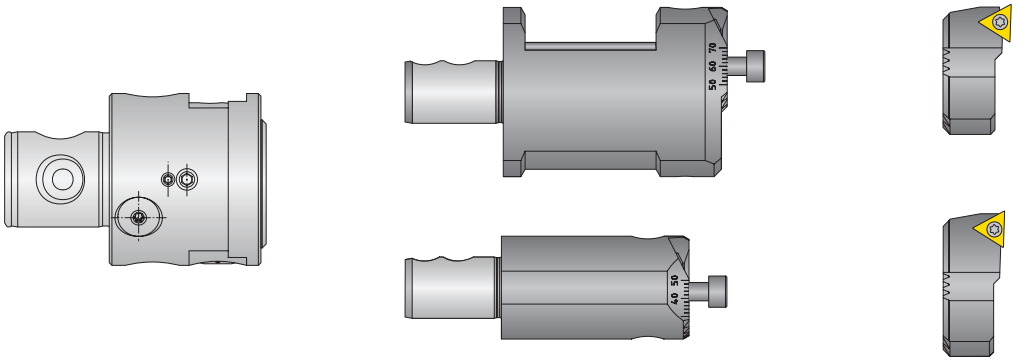
Key on B10-A:1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Kit Components

Insert Form 20 | Diameter Range: 1.260" - 2.677" (32.00mm - 68.00mm)



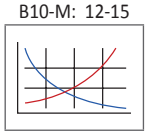
Diameter Range: 1.260" - 2.677" (32.00mm - 68.00mm)

	Boring Head	Kit Components: Boring Range	Serrated Tool Body	Insert Holders	Service Keys	Kit No.
ⓘ	504001	1.260 - 1.968 1.968 - 2.677	501052 501053	502060 502061	115576 (s4) 115591 (T7)	**104064**
ⓜ	501001	32.00 - 50.00 50.00 - 68.00	501052 501053	502060 502061	115576 (s4) 115591 (T7)	**103064**

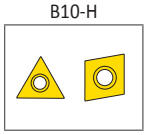
NOTE: Inserts sold separately

B10-M: 12-15

Key on B10-A: 1



B10-H



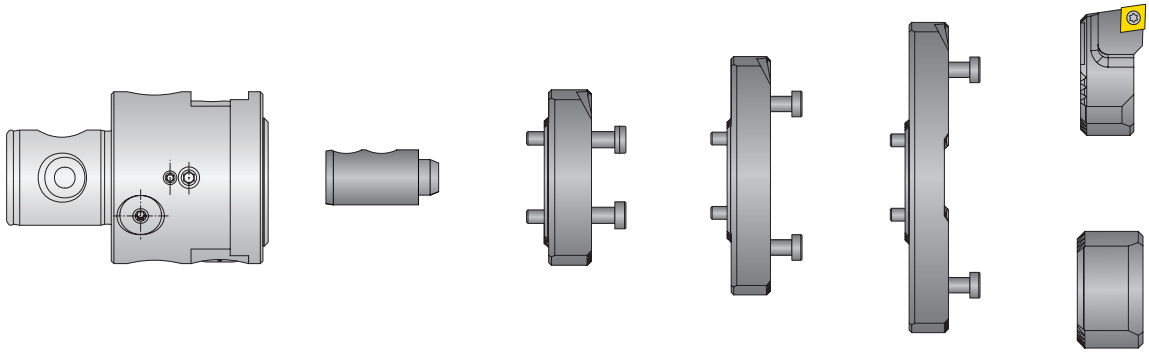
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Kit Components

Insert Form 101 | Diameter Range: 2.667" - 5.984" (68.00mm - 152.00mm)



Diameter Range: 2.667" - 5.984" (68.00mm - 152.00mm)

	Boring Head	Kit Components: Boring Range	Serrated Slides	Insert Holder	Counterweight	Coolant Delivery	Service Keys	Kit No.
ⓘ	504001	2.667 - 3.780 3.780 - 4.881 4.881 - 5.984	501054 501055 501056	502064	502165	501157	115576 (s4) 115590 (T8)	**104065**
ⓜ	501001	68.00 - 96.00 96.00 - 124.00 124.00 - 152.00	501054 501055 501056	502064	502165	501157	115576 (s4) 115590 (T8)	**103065**

NOTE: Inserts sold separately

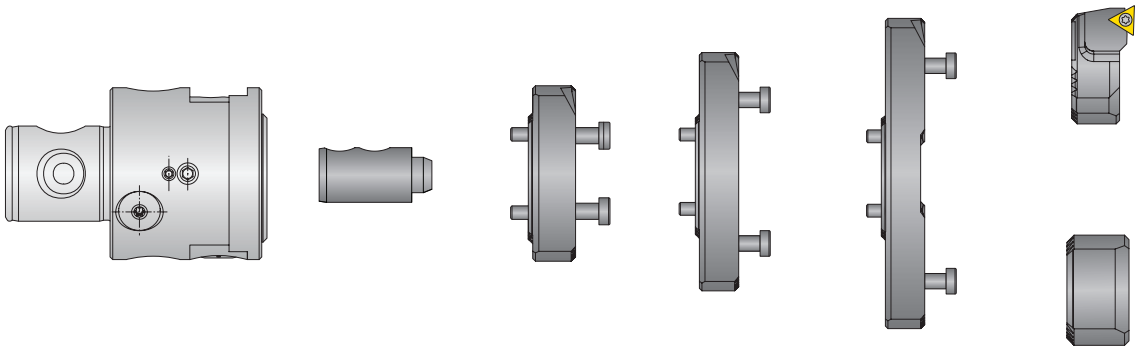
B10-M: 12-15
B10-H
B10: vi-vii
Key on B10-A:1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Kit Components

Insert Form 20 | Diameter Range: 2.667" - 5.984" (68.00mm - 152.00mm)



Diameter Range: 2.667" - 5.984" (68.00mm - 152.00mm)

	Boring Head	Kit Components: Boring Range	Serrated Slides	Insert Holder	Counterweight	Coolant Delivery	Service Keys	Kit No.
ⓘ	504001	2.667 - 3.780 3.780 - 4.881 4.881 - 5.984	501054 501055 501056	502069	502165	501157	115576 (s4) 115591 (T7)	**104066**
ⓜ	501001	68.00 - 96.00 96.00 - 124.00 124.00 - 152.00	501054 501055 501056	502069	502165	501157	115576 (s4) 115591 (T7)	**103066**

NOTE: Inserts sold separately

B10-M: 12-15 B10-H B10: vi-vii

Key on B10-A: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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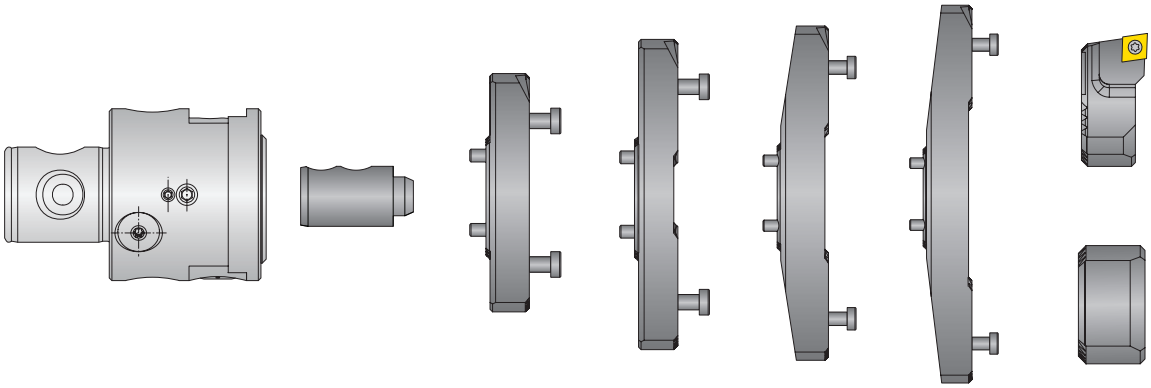
Kit Components

Insert Form 101 | Diameter Range: 3.780" - 8.189" (96.00mm - 208.00mm)



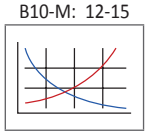
Diameter Range: 3.780" - 8.189" (96.00mm - 208.00mm)

	Boring Head	Kit Components: Boring Range	Serrated Slides	Insert Holder	Counterweight	Coolant Delivery	Service Keys	Kit No.
ⓘ	504001	3.780 - 4.881 4.881 - 5.984 5.984 - 7.088 7.088 - 8.189	501055 501056 501058 501059	502064	502165	501157	115576 (s4) 115590 (T8)	**104081**
ⓜ	501001	96.00 - 124.00 124.00 - 152.00 152.00 - 180.00 180.00 - 208.00	501055 501056 501058 501059	502064	502165	501157	115576 (s4) 115590 (T8)	**103081**

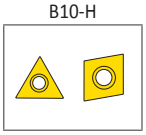
NOTE: Inserts sold separately

B10-M: 12-15

Key on B10-A:1



B10-H



B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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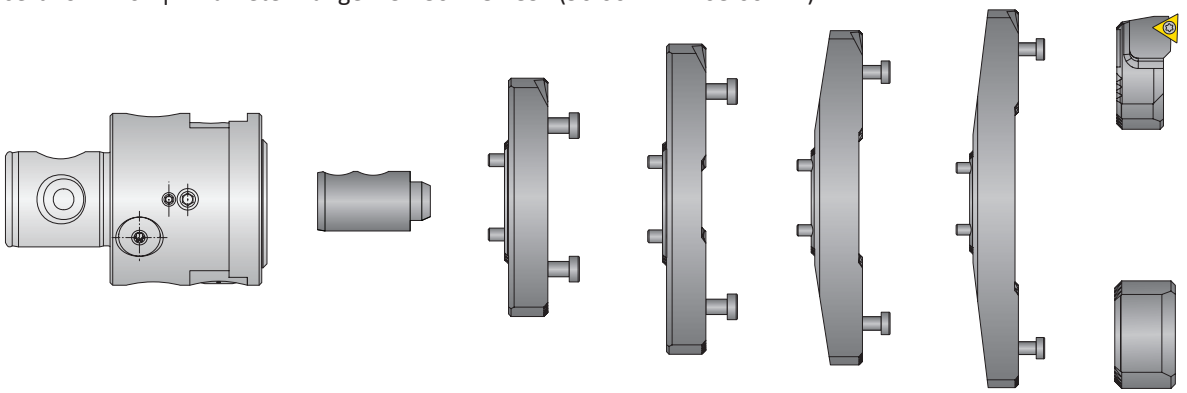
Kit Components

Insert Form 20 | Diameter Range: 3.780" - 8.189" (96.00mm - 208.00mm)



Diameter Range: 3.780" - 8.189" (96.00mm - 208.00mm)

	Boring Head	Kit Components: Boring Range	Serrated Slides	Insert Holder	Counterweight	Coolant Delivery	Service Keys	Kit No.
ⓘ	504001	3.780 - 4.881 4.881 - 5.984 5.984 - 7.088 7.088 - 8.189	501055 501056 501058 501059	502069	502165	501157	115576 (s4) 115591 (T7)	**104080**
ⓜ	501001	96.00 - 124.00 124.00 - 152.00 152.00 - 180.00 180.00 - 208.00	501055 501056 501058 501059	502069	502165	501157	115576 (s4) 115591 (T7)	**103080**

NOTE: Inserts sold separately

B10-M: 12-15 | B10-H | B10: vi-vii

Key on B10-A: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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Notes

SECTION

B10-B

Fine Boring

Wohlhaupter® Fine Boring

420 (410) | 465 (464) | 365 (364) | 565 (564) | 320 (310) | 538 (537)

- **Diameter Range:** 0.787"- 8.071" (20.00mm - 205.00mm)

NOTE: Imperial items pictured
NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

Boring has never been more exciting.

Wohlhaupter's fine boring systems are offered in both vernier and easy-to-read digital readout boring heads and cassettes. The lightweight Alu-Line serrated tool bodies reduce weight on the machine spindle.

Unbalanced & Balanced Digital 3E^{TECH} Boring Heads

- 420 (410) / 465 (464) fine boring heads
- 420 (410) Ø 0.787" - 1.142" (20.00mm - 29.00mm)
- 465 (464) Ø 1.142" - 8.071" (29.00mm - 205.00mm)

Balanced Analog Boring Heads

- 365 (364) / 465 (464) fine boring heads
- 365 (364) Ø 0.787" - 1.161" (20.00mm - 29.50mm)
- 465 (464) Ø 1.142" - 8.071" (29.00mm - 205.00mm)

Balanced Digital Boring Heads

- 565 (564) fine boring heads
- Ø 1.969" - 8.071" (50.00mm - 205.00mm)

Unbalanced Analog Boring Heads

- 320 (310) fine boring heads
- Ø 0.787" - 8.071" (20.00mm - 205.00mm)

Analog and Digital Cassettes

- 538 (537) fine boring cassettes
- Ø 3.937" - 8.071" (100.00mm - 205.00mm)

Applicable Industries

Aerospace | Agriculture | Automotive | Firearms | General Machining | Oil & Gas | Renewable Energy

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.

This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury.

When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words.

⚠ WARNING

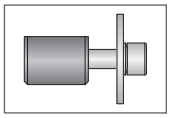
WARNING (shown above) means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

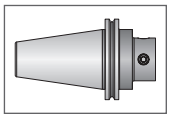
NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

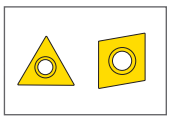
Reference Icons
The following icons will appear throughout the catalog to help you navigate between products.



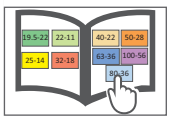
Clamping Elements
For use with insert holders and boring heads



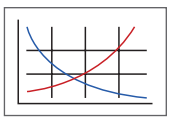
Shanks
A variety of shanks for different machines



Inserts
For use with insert holder boring heads and boring bars using indexable inserts



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s)



Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring

Coolant-Through Option
Indicates that the product is coolant through

Series	Diameter Range	
	Imperial (inch)	Metric (mm)
420 (410)	0.787 - 1.142	20.00 - 29.00
465 (464)	1.142 - 8.071	29.00 - 205.00
365 (364)	0.787 - 1.161	20.00 - 29.50
565 (564)	1.969 - 8.071	50.00 - 205.00
320 (310)	0.787 - 8.071	20.00 - 205.00
538 (537)	3.937 - 8.071	100.00 - 205.00

Fine Boring Table of Contents

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Balanced Analog 365 (364) / 465 (464)

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Balanced Digital 565 (564)

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Unbalanced Analog 320 (310)

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538 (537) Cassettes

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Digital 3E^{TECH} 420 (410) and 465 (464) **FINE BORING**

Make easy diameter adjustments with our 3E^{TECH} digital readout module.

Wohlhaupter® 420 (410) and 465 (464) digital boring heads are equipped with a 3E^{TECH} docking port for easy digital adjustments. Boring heads from 1.142" (29.00mm) and up offer precision boring with automatic balancing. Our boring heads are specifically engineered to minimize the residual imbalance produced by insert holder displacement. Wohlhaupter Alu-Line boring heads, ranging from 2.559" (65.00mm) and up, offer a lightweight aluminum design with a wear-resistant coating that reduces weight on the spindle up to 50%. The insert holder can also be rotated for reverse machining jobs.

- Unbalanced 420 (410) diameter range: 0.787" - 1.142" (20.00mm - 29.00mm)
- Balanced 465 (464) diameter range: 1.142" - 8.071" (29.00mm - 205.00mm)
- Balanced 465 (464) Alu-Line diameter range: 2.559" - 8.071" (65.00mm - 205.00mm)
  - Special coating on Alu-Line for wear-resistant surface
  - Alu-Line body reduces tool weight by 50%, reducing stress on the spindle
- Coolant through
- 3E^{TECH} and vernier diameter adjustment of 0.0001" (0.002mm)
- Internal balancing improves tool life and surface finish
- Insert holder can be rotated for back boring jobs
- Max cutting speed: 5,577 SFM (1,700 m/min)

Highly accurate adjustments through *vernier* scale

NOTE: Imperial items pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

Versatile *3E^{TECH}* digital readout compatible with other boring tools

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

WOHLHAUPTER® 420 (410) and 465 (464) 3E^{TECH} DIGITAL ***BORING HEADS***

Wohlhaupter 3E^{TECH}

Improve productivity and quality with the Wohlhaupter 3E^{TECH} external digital readout module. The 3E^{TECH} docks onto boring heads and cassettes that offer the 3E^{TECH} port to make easy diameter adjustments at the machine.

- Make quick and easy micron-accurate diameter adjustments
- Easy-to-read digital display shows exact diameter adjustments
- Designed to be removed from boring tool before operation (if forgotten 3E^{TECH} will fall off at 500 RPM)
- Adjustments of 0.0001" (0.002mm) on diameter
- Available in imperial and metric
- Water and dust resistent IP 56
- Coolant and chip resistant
- 3E^{TECH} will automatically turn off after 30 seconds of not using
- WEEE-Reg.-Nr. DE 15820388

- ✓ High-production fine boring
- ✓ Easy diameter adjustment with 3E^{TECH}
- ✓ Self-balancing 465 (464) boring heads
- ✓ Imperial and metric

NEW 420 (410) & 465 (464) BORING HEADS WITH 3E^{TECH}		
	Diameter Range	**Part No.**
ⓘ	0.787 - 0.965	420001
	0.965 - 1.142	420002
	1.142 - 1.496	465003
	1.496 - 1.969	465004
	1.969 - 2.579	465005
	2.559 - 3.268	465006
	3.228 - 4.055	465007
	3.937 - 5.118	465008
	4.921 - 6.594	465009
	6.398 - 8.071	465010
ⓜ	20.00 - 24.50	410001
	24.50 - 29.00	410002
	29.00 - 38.00	464003
	38.00 - 50.00	464004
	50.00 - 65.50	464005
	65.00 - 83.00	464006
	82.00 - 103.00	464007
	100.00 - 130.00	464008
	125.00 - 167.50	464009
	162.50 - 205.00	464010

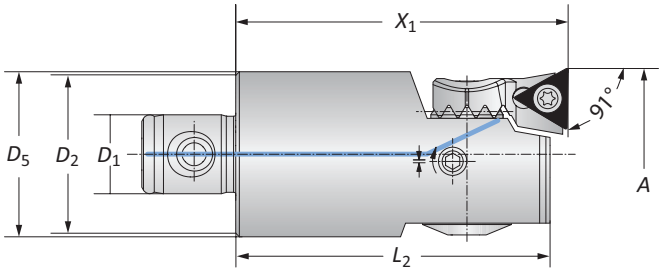
NOTE: Imperial items pictured

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

420 (410) Unbalanced Boring Heads with 3E[TECH]

Diameter Range: 0.787" - 1.142" (20.00mm - 29.00mm)

Form 101



Form 20

420 Unbalanced Boring Heads with 3E[TECH]

	MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	L_2	D_5	Weight	Insert Form	Part No. Insert Holder	Boring Head
ⓘ	19 - 11	0.787 - 0.965	1.811	1.693	–	0.198 (lbs)	20*	**364077**	**420001**
ⓘ	22 - 11	0.965 - 1.142	1.811	1.713	0.906	0.286 (lbs)	20	**210059**	**420002**
ⓘ	22 - 11	0.965 - 1.142	1.811	1.713	0.906	0.286 (lbs)	101	**210069**	**420002**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)
NOTE: 3E[TECH] module, insert holders, and inserts sold separately

410 Unbalanced Boring Heads with 3E[TECH]

	MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	L_2	D_5	Weight	Insert Form	Part No. Insert Holder	Boring Head
ⓜ	19 - 11	20.00 - 24.50	46.00	43.00	–	0.09 (kg)	20*	**364077***	**410001**
ⓜ	22 - 11	24.50 - 29.00	46.00	43.50	23.00	0.13 (kg)	20	**210059**	**410002**
ⓜ	22 - 11	24.50 - 29.00	46.00	43.50	23.00	0.13 (kg)	101	**210069**	**410002**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)
NOTE: 3E[TECH] module, insert holders, and inserts sold separately

NOTE: Imperial item pictured
NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

3E[TECH] Digital Readout Module

	Part No.
ⓘ	**563010**
ⓜ	**536010**

NOTE: WEEE-Reg.-Nr. DE 15820388
NOTE: 3E[TECH] sold separately

B10-M: 12-15
Key on B10-B: 1
B10-F
B10: vi-vii

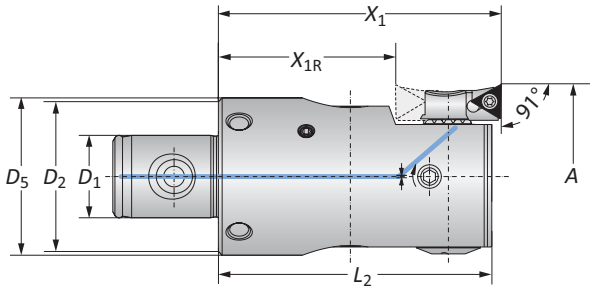
ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

465 (464) Balanced Boring Heads with 3E[TECH]

Diameter Range: 1.142" - 2.579" (29.00mm - 65.50mm)

Form 101



Form 20

465 Balanced Boring Heads with 3E[TECH]

	MVS Connection	Boring Range	Boring Head						Part No.	
	$D_2 \mid D_1$	A	X_1	X_{1R}	L_2	D_5	Weight	Insert Form	Insert Holder	Boring Head
	25 - 14	1.142 - 1.496	2.205	–	2.106	1.063	0.463 (lbs)	20	**210059**	**465003**
	25 - 14	1.142 - 1.496	2.205	–	2.106	1.063	0.463 (lbs)	101	**210069**	**465003**
ⓘ	32 - 18	1.496 - 1.969	2.598	1.496	2.500	1.339	0.904 (lbs)	20	**264051**	**465004**
	32 - 18	1.496 - 1.969	2.598	1.496	2.500	1.339	0.904 (lbs)	101	**264077**	**465004**
	40 - 22	1.969 - 2.579	2.953	1.850	2.854	1.654	1.764 (lbs)	20	**210052**	**465005**
	40 - 22	1.969 - 2.579	2.953	1.850	2.854	1.654	1.764 (lbs)	101	**210062**	**465005**

NOTE: X_{1R} = rotated insert holder for reverse machining
NOTE: 3E[TECH] module, insert holders, and inserts sold separately

464 Balanced Boring Heads with 3E[TECH]

	MVS Connection	Boring Range	Boring Head						Part No.	
	$D_2 \mid D_1$	A	X_1	X_{1R}	L_2	D_5	Weight	Insert Form	Insert Holder	Boring Head
	25 - 14	29.00 - 38.00	56.00	–	53.50	27.00	0.21 (kg)	20	**210059**	**464003**
	25 - 14	29.00 - 38.00	56.00	–	53.50	27.00	0.21 (kg)	101	**210069**	**464003**
ⓜ	32 - 18	38.00 - 50.00	66.00	38.00	63.50	34.00	0.41 (kg)	20	**264051**	**464004**
	32 - 18	38.00 - 50.00	66.00	38.00	63.50	34.00	0.41 (kg)	101	**264077**	**464004**
	40 - 22	50.00 - 65.50	75.00	47.00	72.50	42.00	0.80 (kg)	20	**210052**	**464005**
	40 - 22	50.00 - 65.50	75.00	47.00	72.50	42.00	0.80 (kg)	101	**210062**	**464005**

NOTE: X_{1R} = rotated insert holder for reverse machining
NOTE: 3E[TECH] module, insert holders, and inserts sold separately

NOTE: Imperial item pictured
NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

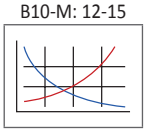
3E[TECH] Digital Readout Module

	Part No.
ⓘ	**563010**
ⓜ	**536010**

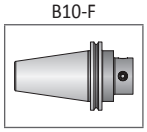
NOTE: WEEE-Reg.-Nr. DE 15820388
NOTE: 3E[TECH] sold separately

Key on B10-B: 1

B10-M: 12-15



B10-F



B10: vi-vii

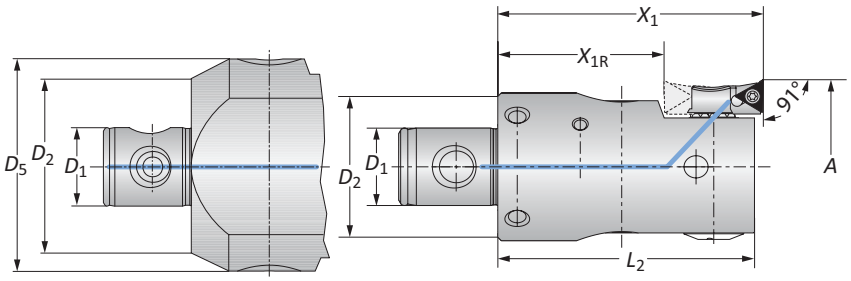
ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

465 Balanced Boring Heads with 3E[TECH]

Imperial | Alu-Line | Diameter Range: 2.559" - 8.071"

Form 101



Form 20

465 Balanced Alu-Line Boring Heads with 3E[TECH]

	MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight	Insert Form	Part No. Insert Holder	Boring Head
	50 - 28	2.559 - 3.268	2.953	1.535	2.874	–	1.323 (lbs)	20	**210020**	**465006**
	50 - 28	2.559 - 3.268	2.953	1.535	2.874	–	1.323 (lbs)	101	**210063**	**465006**
	50 - 28	2.559 - 3.268	2.953	1.535	2.874	–	1.323 (lbs)	103	**210064**	**465006**
	63 - 36	3.228 - 4.055	3.543	2.126	3.464	–	2.205 (lbs)	20	**210020**	**465007**
	63 - 36	3.228 - 4.055	3.543	2.126	3.464	–	2.205 (lbs)	101	**210063**	**465007**
	63 - 36	3.228 - 4.055	3.543	2.126	3.464	–	2.205 (lbs)	103	**210064**	**465007**
	80 - 36	3.937 - 5.118	3.543	2.126	3.464	–	3.307 (lbs)	20	**210020**	**465008**
ⓘ	80 - 36	3.937 - 5.118	3.543	2.126	3.464	–	3.307 (lbs)	101	**210063**	**465008**
	80 - 36	3.937 - 5.118	3.543	2.126	3.464	–	3.307 (lbs)	103	**210064**	**465008**
	80 - 36	4.921 - 6.594	3.543	2.126	3.464	3.937	3.307 (lbs)	20	**210020**	**465009**
	80 - 36	4.921 - 6.594	3.543	2.126	3.464	3.937	4.189 (lbs)	101	**210063**	**465009**
	80 - 36	4.921 - 6.594	3.543	2.126	3.464	3.937	4.189 (lbs)	103	**210064**	**465009**
	80 - 36	6.398 - 8.071	3.543	2.126	3.464	5.315	4.189 (lbs)	20	**210020**	**465010**
	80 - 36	6.398 - 8.071	3.543	2.126	3.464	5.315	4.189 (lbs)	101	**210063**	**465010**
	80 - 36	6.398 - 8.071	3.543	2.126	3.464	5.315	5.512 (lbs)	103	**210064**	**465010**

NOTE: X_{1R} = rotated insert holder for reverse machining
NOTE: 3E[TECH] module, insert holders, and inserts sold separately

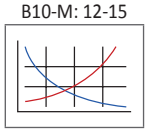
NOTE: Imperial item pictured
NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

3E[TECH] Digital Readout Module

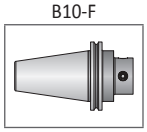
	Part No.
ⓘ	**563010**

NOTE: WEEE-Reg.-Nr. DE 15820388
NOTE: 3E[TECH] sold separately

B10-M: 12-15
Key on B10-B: 1



B10-F



B10: vi-vii

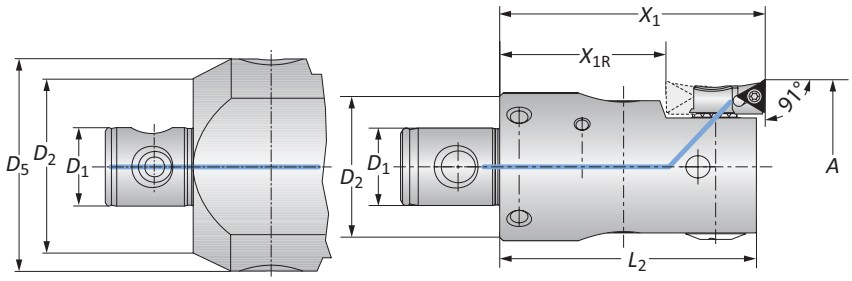
ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

464 Balanced Boring Heads with 3E[TECH]

Metric | Alu-Line | Diameter Range: 65.00mm - 205.00mm

Form 101



Form 20

464 Balanced Alu-Line Boring Heads with 3E[TECH]

	MVS Connection	Boring Range	Boring Head						Part No.	
	D_2 | D_1	A	X_1	X_{1R}	L_2	D_5	Weight	Insert Form	Insert Holder	Boring Head
	50 - 28	65.00 - 83.00	75.00	39.00	73.00	–	0.60 (kg)	20	**210020**	**464006**
	50 - 28	65.00 - 83.00	75.00	39.00	73.00	–	0.60 (kg)	101	**210063**	**464006**
	50 - 28	65.00 - 83.00	75.00	39.00	73.00	–	0.60 (kg)	103	**210064**	**464006**
	63 - 36	82.00 - 103.00	90.00	54.00	88.00	–	1.00 (kg)	20	**210020**	**464007**
	63 - 36	82.00 - 103.00	90.00	54.00	88.00	–	1.00 (kg)	101	**210063**	**464007**
	63 - 36	82.00 - 103.00	90.00	54.00	88.00	–	1.00 (kg)	103	**210064**	**464007**
	80 - 36	100.00 - 130.00	90.00	54.00	88.00	–	1.50 (kg)	20	**210020**	**464008**
ⓜ	80 - 36	100.00 - 130.00	90.00	54.00	88.00	–	1.50 (kg)	101	**210063**	**464008**
	80 - 36	100.00 - 130.00	90.00	54.00	88.00	–	1.50 (kg)	103	**210064**	**464008**
	80 - 36	125.00 - 167.50	90.00	54.00	88.00	100.00	1.90 (kg)	20	**210020**	**464009**
	80 - 36	125.00 - 167.50	90.00	54.00	88.00	100.00	1.90 (kg)	101	**210063**	**464009**
	80 - 36	125.00 - 167.50	90.00	54.00	88.00	100.00	1.90 (kg)	103	**210064**	**464009**
	80 - 36	162.50 - 205.00	90.00	54.00	88.00	135.00	2.50 (kg)	20	**210020**	**464010**
	80 - 36	162.50 - 205.00	90.00	54.00	88.00	135.00	2.50 (kg)	101	**210063**	**464010**
	80 - 36	162.50 - 205.00	90.00	54.00	88.00	135.00	2.50 (kg)	103	**210064**	**464010**

NOTE: X_{1R} = rotated insert holder for reverse machining
NOTE: 3E[TECH] module, insert holders, and inserts sold separately

NOTE: Imperial item pictured
NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

3E[TECH] Digital Readout Module

	Part No.
ⓜ	**536010**

NOTE: WEEE-Reg.-Nr. DE 15820388
NOTE: 3E[TECH] sold separately

B10-M: 12-15 | B10-F | B10: vi-vii

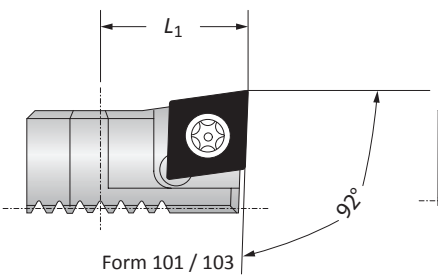
Key on B10-B: 1

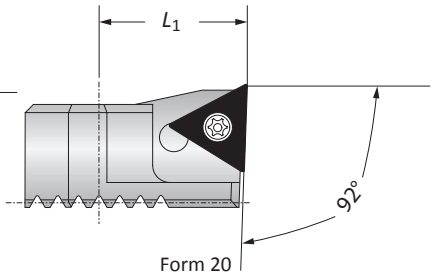
ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Insert Holders for Abrasive Materials

Diameter Range: 2.559" - 8.071" (65.00mm - 205.00mm)





	Boring Range	Insert Holder L_1	Weight	Insert Form	Part No.
	2.559 - 8.071	0.709	0.066 (lbs)	20	**211061**
ⓘ	2.559 - 8.071	0.709	0.066 (lbs)	101	**211063**
	2.559 - 8.071	0.709	0.066 (lbs)	103	**211065**
	65.00 - 205.00	18.00	0.03 (kg)	20	**211061**
ⓜ	65.00 - 205.00	18.00	0.03 (kg)	101	**211063**
	65.00 - 205.00	18.00	0.03 (kg)	103	**211065**

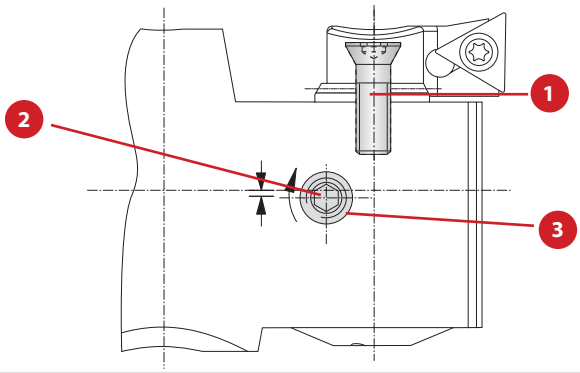
NOTE: Insert holders used for abrasive materials to protect boring head against chip wash
NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.

B10-M: 12-15
Key on B10-B: 1
B10-H
B10: vi-vii

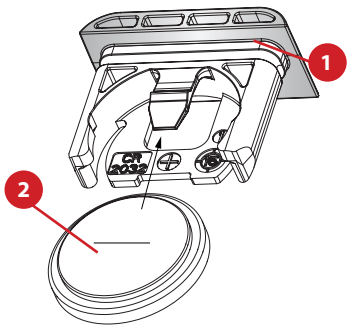
ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

Accessories

Screws | 3E[TECH] Accessories

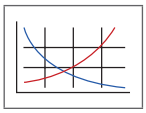


Boring Head	Part No. 1 Countersunk Screw	Countersunk Screw Service Key	2 Clamping Screw	Clamping Screw Service Key	3 Ball
420001 (410001)	**215323**	T15 / H	**410151**	S2 / A	364270
420002 (410002)	**215338**	T15 / H	**410152**	s2 / A	364270
465003 (464003)	**215338**	T15 / H	**364138**	s2.5 / A	364139
465004 (464004)	**215338**	T15 / H	**115180**	s2.5 / A	–
465005 (464005)	**215338**	T15 / H	**115505**	s3 / B	–
465006 (464006)	**215462**	T20 / H	**315943**	s4 / B	–
465007 (464007)	**215462**	T20 / H	**515178**	s4 / B	–
465008 (464008)	**215462**	T20 / H	**515178**	s4 / B	–
465009 (464009)	**215462**	T20 / H	**515178**	s4 / B	–
465010 (464010)	**215462**	T20 / H	**515178**	s4 / B	–



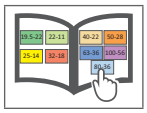
1 Sealing Ring Part No.	2 Battery CR2032 Part No.
215483	**515491**

B10-M: 12-15



Key on B10-B: 1

B10: vi-vii



Balanced Analog 365 (364) and 465 (464) **FINE BORING**

Analog fine boring tools for high-production jobs

Wohlhaupter® 365 (364) and 465 (464) analog balanced boring heads offer precision boring with automatic balancing. Our boring heads are specifically engineered to minimize the residual imbalance produced by insert holder displacement. Wohlhaupter Alu-Line boring heads offer a lightweight aluminum design with a wear-resistant coating that reduces weight on the spindle up to 50% yet remains durable in challenging boring applications. The insert holder can also be rotated for reverse machining jobs.

- 365 (364) diameter range: 0.787" - 1.161" (20.00mm - 29.50mm)
- 465 (464) diameter range: 1.142" - 8.071" (29.00mm - 205.00mm)
- 465 (464) Alu-Line diameter range: 2.559" - 8.071" (65.00mm - 205.00mm)
  - Special coating on Alu-Line for wear-resistant surface
  - Alu-Line body reduces tool weight by 50%, reducing stress on the spindle
- Internal balancing improves tool life and surface finish
- Coolant through
- Vernier diameter adjustment of 0.0001" (0.002mm)
- Insert holder can be rotated for back boring jobs
- Max cutting speed: 3,281 SFM (1,000 m/min)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

WOHLHAUPTER® 465 (464) BALANCED ANALOG ***BORING HEADS***

ANALOG BORING HEAD PART NUMBER CONVERSION			
	Diameter Range	Old Part No.	*NEW* Part No.
i	0.787 - 0.965	365030	*No Change*
	0.965 - 1.161	365031	*No Change*
	1.142 - 1.516	365032	465033
	1.496 - 1.988	365033	465034
	1.969 - 2.579	365034	465035
	2.559 - 3.268	365045	465036
	3.228 - 4.055	365046	465037
	3.937 - 5.118	365047	465038
	4.921 - 6.594	365048	465039
	6.398 - 8.071	365049	465040
m	20.00 - 24.50	364030	*No Change*
	24.50 - 29.50	364031	*No Change*
	29.00 - 38.00	364032	464033
	38.00 - 50.00	364033	464034
	50.00 - 65.50	364034	464035
	65.00 - 83.00	364045	464036
	82.00 - 103.00	364046	464037
	100.00 - 130.00	364047	464038
	125.00 - 167.50	364048	464039
	162.50 - 205.00	364049	464040

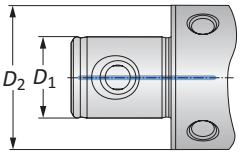
- ✓ High-production fine boring
- ✓ Easy diameter adjustment
- ✓ Self-balancing
- ✓ Imperial and metric

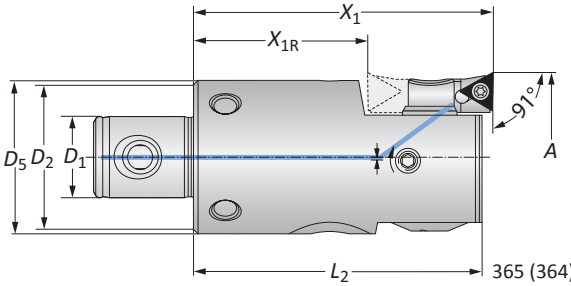
FEATURES AN ***ENHANCED*** CLAMPING MECHANISM FROM OUR TRUSTED LINE OF 565 (564) DIGITAL FINE BORING HEADS

365 (364) / 465 (464) Analog Boring Heads

Diameter Range: 0.787" - 2.579" (20.00mm - 65.50mm)

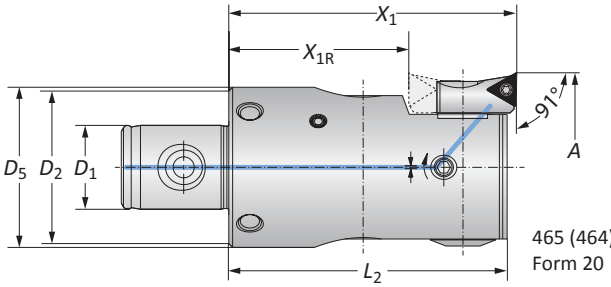
365 (364)
Form 101





365 (364)
Form 20

465 (464)
Form 101



465 (464)
Form 20

365/465 Boring Heads

	MVS Connection	Boring Range	Boring Head						Part No.	
	D_2 | D_1	A	X_1	X_{1R}	L_2	D_5	Weight	Insert Form	Insert Holder	Boring Head
	19 - 11	0.787 - 0.965	1.811	–	1.693	–	0.198 (lbs)	20*	**364077**	**365030**
	22 - 11	0.965 - 1.161	1.811	–	1.713	0.906	0.331 (lbs)	20	**210059**	**365031**
	22 - 11	0.965 - 1.161	1.811	–	1.713	0.906	0.331 (lbs)	101	**210069**	**365031**
	25 - 14	1.142 - 1.516	2.205	–	2.106	1.063	0.441 (lbs)	20	**210059**	**465033**
ⓘ	25 - 14	1.142 - 1.516	2.205	–	2.106	1.063	0.441 (lbs)	101	**210069**	**465033**
	32 - 18	1.496 - 1.988	2.598	1.496	2.450	1.339	0.882 (lbs)	20	**264051**	**465034**
	32 - 18	1.496 - 1.988	2.598	1.496	2.450	1.339	0.882 (lbs)	101	**264077**	**465034**
	40 - 22	1.969 - 2.579	2.953	1.850	2.854	1.654	1.764 (lbs)	20	**210052**	**465035**
	40 - 22	1.969 - 2.579	2.953	1.850	2.854	1.654	1.764 (lbs)	101	**210062**	**465035**

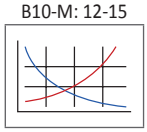
*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)
NOTE: X_{1R} = rotated insert holder for reverse machining
NOTE: Insert holders and inserts sold separately

364/464 Boring Heads

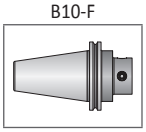
	MVS Connection	Boring Range	Boring Head						Part No.	
	D_2 | D_1	A	X_1	X_{1R}	L_2	D_5	Weight	Insert Form	Insert Holder	Boring Head
	19 - 11	20.00 - 24.50	46.00	–	43.00	–	0.09 (kg)	20*	**364077**	**364030**
	22 - 11	24.50 - 29.50	46.00	–	43.50	23.00	0.15 (kg)	20	**210059**	**364031**
	22 - 11	24.50 - 29.50	46.00	–	43.50	23.00	0.15 (kg)	101	**210069**	**364031**
	25 - 14	29.00 - 38.00	56.00	–	53.50	27.00	0.20 (kg)	20	**210059**	**464033**
ⓜ	25 - 14	29.00 - 38.00	56.00	–	53.50	27.00	0.20 (kg)	101	**210069**	**464033**
	32 - 18	38.00 - 50.00	66.00	38.00	63.50	34.00	0.40 (kg)	20	**264051**	**464034**
	32 - 18	38.00 - 50.00	66.00	38.00	63.50	34.00	0.40 (kg)	101	**264077**	**464034**
	40 - 22	50.00 - 65.50	75.00	47.00	72.50	42.00	0.80 (kg)	20	**210052**	**464035**
	40 - 22	50.00 - 65.50	75.00	47.00	72.50	42.00	0.80 (kg)	101	**210062**	**464035**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)
NOTE: X_{1R} = rotated insert holder for reverse machining
NOTE: Insert holders and inserts sold separately

B10-M: 12-15
Key on B10-B: 1



B10-F



B10: vi-vii

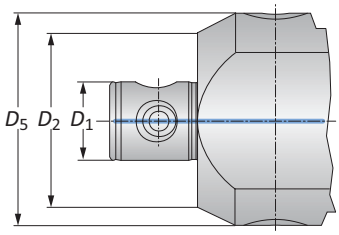
ⓘ = Imperial (in)
ⓜ = Metric (mm)

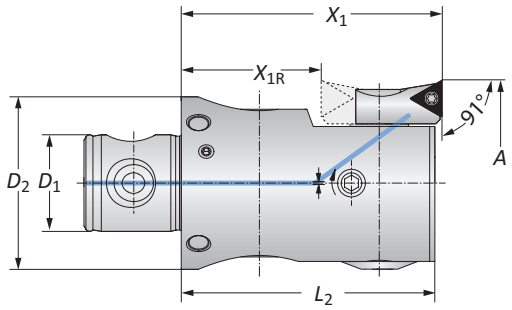
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

465 (464) Analog Boring Heads

Alu-Line | Diameter Range: 2.559" - 8.071" (65.00mm - 205.00mm)

Form 101





Form 20

465 Alu-Line Boring Heads

	MVS Connection	Boring Range	Boring Head						Part No.	
	$D_2 \mid D_1$	A	X_1	X_{1R}	L_2	D_5	Weight	Insert Form	Insert Holder	Boring Head
	50 - 28	2.559 - 3.268	2.953	1.535	2.854	–	1.323 (lbs)	20	**210020**	**465036**
	50 - 28	2.559 - 3.268	2.953	1.535	2.854	–	1.323 (lbs)	101	**210063**	**465036**
	50 - 28	2.559 - 3.268	2.953	1.535	2.854	–	1.323 (lbs)	103	**210064**	**465036**
	63 - 36	3.228 - 4.055	3.543	2.126	3.445	–	2.205 (lbs)	20	**210020**	**465037**
	63 - 36	3.228 - 4.055	3.543	2.126	3.445	–	2.205 (lbs)	101	**210063**	**465037**
	63 - 36	3.228 - 4.055	3.543	2.126	3.445	–	2.205 (lbs)	103	**210064**	**465037**
	80 - 36	3.937 - 5.118	3.543	2.126	3.445	–	3.307 (lbs)	20	**210020**	**465038**
ⓘ	80 - 36	3.937 - 5.118	3.543	2.126	3.445	–	3.307 (lbs)	101	**210063**	**465038**
	80 - 36	3.937 - 5.118	3.543	2.126	3.445	–	3.307 (lbs)	103	**210064**	**465038**
	80 - 36	4.921 - 6.594	3.543	2.126	3.445	3.937	4.189 (lbs)	20	**210020**	**465039**
	80 - 36	4.921 - 6.594	3.543	2.126	3.445	3.937	4.189 (lbs)	101	**210063**	**465039**
	80 - 36	4.921 - 6.594	3.543	2.126	3.445	3.937	4.189 (lbs)	103	**210064**	**465039**
	80 - 36	6.398 - 8.071	3.543	2.126	3.445	5.315	5.512 (lbs)	20	**210020**	**465040**
	80 - 36	6.398 - 8.071	3.543	2.126	3.445	5.315	5.512 (lbs)	101	**210063**	**465040**
	80 - 36	6.398 - 8.071	3.543	2.126	3.445	5.315	5.512 (lbs)	103	**210064**	**465040**

NOTE: X_{1R} = rotated insert holder for reverse machining
NOTE: Insert holders and inserts sold separately

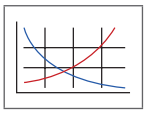
464 Alu-Line Boring Heads

	MVS Connection	Boring Range	Boring Head						Part No.	
	$D_2 \mid D_1$	A	X_1	X_{1R}	L_2	D_5	Weight	Insert Form	Insert Holder	Boring Head
	50 - 28	65.00 - 83.00	75.00	39.00	72.50	–	0.60 (kg)	20	**210020**	**464036**
	50 - 28	65.00 - 83.00	75.00	39.00	72.50	–	0.60 (kg)	101	**210063**	**464036**
	50 - 28	65.00 - 83.00	75.00	39.00	72.50	–	0.60 (kg)	103	**210064**	**464036**
	63 - 36	82.00 - 103.00	90.00	54.00	87.50	–	1.00 (kg)	20	**210020**	**464037**
	63 - 36	82.00 - 103.00	90.00	54.00	87.50	–	1.00 (kg)	101	**210063**	**464037**
	63 - 36	82.00 - 103.00	90.00	54.00	87.50	–	1.00 (kg)	103	**210064**	**464037**
	80 - 36	100.00 - 130.00	90.00	54.00	87.50	–	1.50 (kg)	20	**210020**	**464038**
ⓜ	80 - 36	100.00 - 130.00	90.00	54.00	87.50	–	1.50 (kg)	101	**210063**	**464038**
	80 - 36	100.00 - 130.00	90.00	54.00	87.50	–	1.50 (kg)	103	**210064**	**464038**
	80 - 36	125.00 - 167.50	90.00	54.00	87.50	100.00	1.90 (kg)	20	**210020**	**464039**
	80 - 36	125.00 - 167.50	90.00	54.00	87.50	100.00	1.90 (kg)	101	**210063**	**464039**
	80 - 36	125.00 - 167.50	90.00	54.00	87.50	100.00	1.90 (kg)	103	**210064**	**464039**
	80 - 36	162.50 - 205.00	90.00	54.00	87.50	135.00	2.50 (kg)	20	**210020**	**464040**
	80 - 36	162.50 - 205.00	90.00	54.00	87.50	135.00	2.50 (kg)	101	**210063**	**464040**
	80 - 36	162.50 - 205.00	90.00	54.00	87.50	135.00	2.50 (kg)	103	**210064**	**464040**

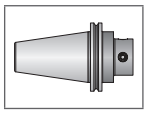
NOTE: X_{1R} = rotated insert holder for reverse machining
NOTE: Insert holders and inserts sold separately

B10-M: 12-15

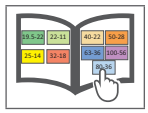
Key on B10-B: 1



B10-F



B10: vi-vii

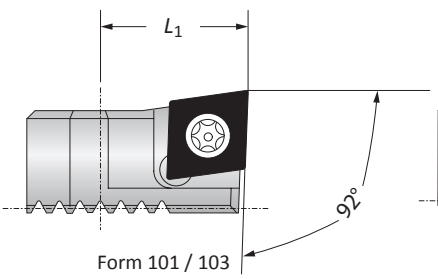


ⓘ = Imperial (in)
ⓜ = Metric (mm)

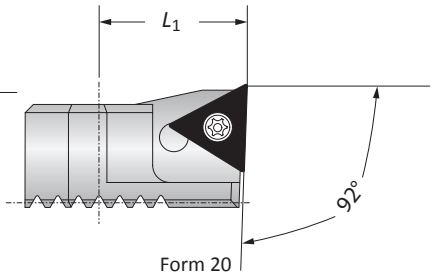
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Insert Holders for Abrasive Materials

Diameter Range: 2.559" - 8.071" (65.00mm - 205.00mm)



Form 101 / 103



Form 20

	Boring Range	Insert Holder L_1	Weight	Insert Form	Part No.
	2.559 - 8.071	0.709	0.066 (lbs)	20	**211061**
ⓘ	2.559 - 8.071	0.709	0.066 (lbs)	101	**211063**
	2.559 - 8.071	0.709	0.066 (lbs)	103	**211065**
	65.00 - 205.00	18.00	0.03 (kg)	20	**211061**
ⓜ	65.00 - 205.00	18.00	0.03 (kg)	101	**211063**
	65.00 - 205.00	18.00	0.03 (kg)	103	**211065**

NOTE: Insert holders used for abrasive materials to protect boring head against chip wash
NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.

B10-M: 12-15
Key on B10-B: 1

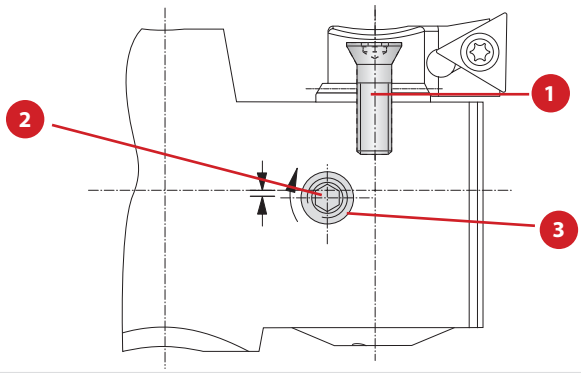
B10-H

B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

Accessories

Screws



Boring Head	Part No. 1 Countersunk Screw	Countersunk Screw Service Key	2 Clamping Screw	Clamping Screw Service Key	3 Ball
365030 (364030)	**215323**	T15 / H	**364260**	s2 / A	**364270**
365031 (364031)	**215338**	T15 / H	**364138**	s2.5 / A	**364139**
465033 (464033)	**215338**	T15 / H	**364138**	s2.5 / A	**364139**
465034 (464034)	**215338**	T15 / H	**115180**	s2.5 / A	–
465035 (464035)	**215338**	T15 / H	**115505**	s3 / B	–
465036 (464036)	**215462**	T20 / H	**315943**	s4 / B	–
465037 (464037)	**215462**	T20 / H	**515178**	s4 / B	–
465038 (464038)	**215462**	T20 / H	**515178**	s4 / B	–
465039 (464039)	**215462**	T20 / H	**515178**	s4 / B	–
465040 (464040)	**215462**	T20 / H	**515178**	s4 / B	–

B10-M: 12-15
Key on B10-B: 1
B10: vi-vii

Balanced Digital 565 (564) Product Overview

Balanced Digital *565 (564)*
FINE BORING

Adjustable diameter for precise machining.

Wohlhaupter® Balance Digital 565 (564) boring heads feature automatic balancing with an easy-to-read digital display. For diameter ranges above 2.559" (65.00mm), 565 (564) boring heads are made of lightweight aluminum. 565 (564) boring heads are specifically engineered to minimize the residual imbalance produced by insert holder displacement. Reverse boring applications can be achieved by rotating the insert holders.

Test the ***engineered lightweight*** boring head today.

- Diameter range: 1.969" - 8.071" (50.00mm - 205.00mm)
- Alu-Line diameter range: 2.559" - 8.071" (65.00mm - 205.00mm)
  - Special coating on Alu-Line for wear-resistant surface
  - Alu-Line body reduces tool weight by 50%, reducing stress on the spindle
- Digital readout advantage for diameter adjustments of 0.0001" (0.002mm)
- Coolant through
- Internal balancing improves tool life and surface finish
- Insert holder can be rotated for back boring jobs
- Max cutting speed: 6,562 SFM (2,000 m/min)
- Max coolant pressure: 580 PSI (40 bar)

Aluminum Boring Head
2.559" - 8.071"
(65.00mm - 205.00mm)

Steel Boring Head
1.969" - 2.579"
(50.00mm - 65.50mm)

NOTE: Imperial items pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

WOHLHAUPTER® 565 BORING HEAD
with NOVI^{TECH}™

- Boring head
  565 series
  Item No. 565045
- NOVI^{TECH} vibration dampening intermediate module
  Item No. 519005

NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

The Wohlhaupter 565 boring head with the NOVI^{TECH} vibration dampening module provided:

- ✓ **Excellent surface finish**
- ✓ **Eliminated vibration and chatter**

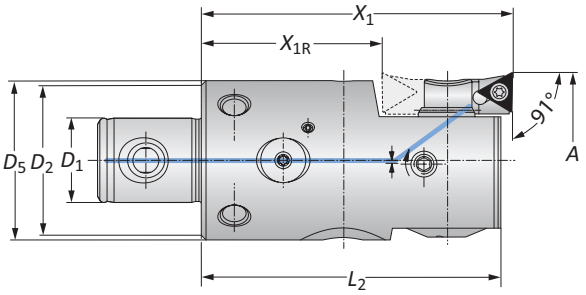
Product:	Wohlhaupter 565 Boring Head with NOVI^{TECH}
Objectives:	0.002" concentricity over the length of two bores spaced 14" apart
Material:	Cast iron
Hole Ø:	3.125"
Depth:	7xD

Measure	565 Boring Head with NOVI^{TECH}
RPM	430 RPM
Speed Rate	352 SFM (107.28 m/min)
Feed Rate	0.003 IPR (0.08 mm/rev)
Penetration Rate	1.29 IPM (33 mm/min)
Cycle Time (per hole)	3 min 32 sec
Hole Finish	155 Ra µin. *(3.8 Ra µm)*

Boring Heads

Diameter Range: 1.969" - 2.579" (50.00mm - 65.50mm)

NOTE: Imperial item pictured
NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter



Form 101 Form 20

565 Digital Boring Heads

	MVS Connection	Boring Range	Boring Head						Part No.	
	D_2 | D_1	A	X_1	X_{1R}	L_2	D_5	Weight	Insert Form	Insert Holder	Boring Head
ⓘ	40 - 22	1.969 - 2.579	2.953	1.850	2.854	1.654	1.764 (lbs)	20	**210052**	**565034**
	40 - 22	1.969 - 2.579	2.953	1.850	2.854	1.654	1.764 (lbs)	101	**210062**	**565034**

NOTE: X_{1R} = rotated insert holder for reverse machining
NOTE: Insert holders and inserts sold separately

564 Digital Boring Heads

	MVS Connection	Boring Range	Boring Head						Part No.	
	D_2 | D_1	A	X_1	X_{1R}	L_2	D_5	Weight	Insert Form	Insert Holder	Boring Head
ⓜ	40 - 22	50.00 - 65.50	75.00	47.00	72.50	42.00	0.80 (kg)	20	**210052**	**564034**
	40 - 22	50.00 - 65.50	75.00	47.00	72.50	42.00	0.80 (kg)	101	**210062**	**564034**

NOTE: X_{1R} = rotated insert holder for reverse machining
NOTE: Insert holders and inserts sold separately

B10-M: 12-15
Key on B10-B: 1
B10-F
B10: vi-vii

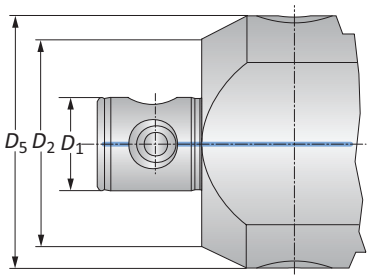
ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

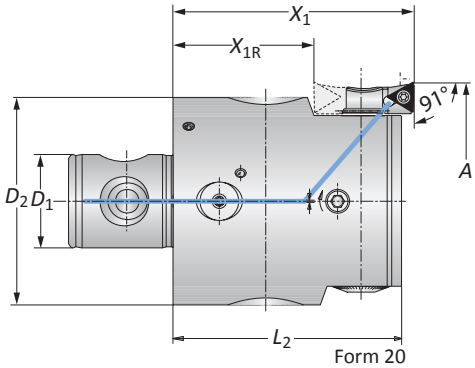
Boring Heads

Alu-Line | Diameter Range: 2.559" - 8.070" (65.00mm - 205.00mm)

NOTE: Imperial item pictured
NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter



Form 101



Form 20

565 Digital Alu-Line Boring Heads

MVS Connection	Boring Range	Boring Head						Part No.	
D_2 | D_1	A	X_1	X_{1R}	L_2	D_5	Weight	Insert Form	Insert Holder	Boring Head
50 - 28	2.559 - 3.268	2.953	1.535	2.874	–	1.323 (lbs)	20	**210020**	**565045**
50 - 28	2.559 - 3.268	2.953	1.535	2.874	–	1.323 (lbs)	101	**210063**	**565045**
50 - 28	2.559 - 3.268	2.953	1.535	2.874	–	1.323 (lbs)	103	**210064**	**565045**
63 - 36	3.228 - 4.055	3.543	2.126	3.464	–	2.205 (lbs)	20	**210020**	**565046**
63 - 36	3.228 - 4.055	3.543	2.126	3.464	–	2.205 (lbs)	101	**210063**	**565046**
63 - 36	3.228 - 4.055	3.543	2.126	3.464	–	2.205 (lbs)	103	**210064**	**565046**
80 - 36	3.937 - 5.118	3.543	2.126	3.464	–	3.307 (lbs)	20	**210020**	**565047**
80 - 36	3.937 - 5.118	3.543	2.126	3.464	–	3.307 (lbs)	101	**210063**	**565047**
80 - 36	3.937 - 5.118	3.543	2.126	3.464	–	3.307 (lbs)	103	**210064**	**565047**
80 - 36	4.921 - 6.594	3.543	2.126	3.464	3.397	3.307 (lbs)	20	**210020**	**565048**
80 - 36	4.921 - 6.594	3.543	2.126	3.464	3.937	4.189 (lbs)	101	**210063**	**565048**
80 - 36	4.921 - 6.594	3.543	2.126	3.464	3.937	4.189 (lbs)	103	**210064**	**565048**
80 - 36	6.398 - 8.071	3.543	2.126	3.464	5.315	4.189 (lbs)	20	**210020**	**565049**
80 - 36	6.398 - 8.071	3.543	2.126	3.464	5.315	4.189 (lbs)	101	**210063**	**565049**
80 - 36	6.398 - 8.071	3.543	2.126	3.464	5.315	5.512 (lbs)	103	**210064**	**565049**

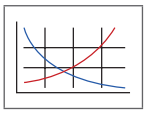
NOTE: X_{1R} = rotated insert holder for reverse machining
NOTE: Insert holders and inserts sold separately

564 Digital Alu-Line Boring Heads

MVS Connection	Boring Range	Boring Head						Part No.	
D_2 | D_1	A	X_1	X_{1R}	L_2	D_5	Weight	Insert Form	Insert Holder	Boring Head
50 - 28	65.00 - 83.00	75.00	39.00	73.00	–	0.60 (kg)	20	**210020**	**564045**
50 - 28	65.00 - 83.00	75.00	39.00	73.00	–	0.60 (kg)	101	**210063**	**564045**
50 - 28	65.00 - 83.00	75.00	39.00	73.00	–	0.60 (kg)	103	**210064**	**564045**
63 - 36	82.00 - 103.00	90.00	54.00	88.00	–	1.00 (kg)	20	**210020**	**564046**
63 - 36	82.00 - 103.00	90.00	54.00	88.00	–	1.00 (kg)	101	**210063**	**564046**
63 - 36	82.00 - 103.00	90.00	54.00	88.00	–	1.00 (kg)	103	**210064**	**564046**
80 - 36	100.00 - 130.00	90.00	54.00	88.00	–	1.50 (kg)	20	**210020**	**564047**
80 - 36	100.00 - 130.00	90.00	54.00	88.00	–	1.50 (kg)	101	**210063**	**564047**
80 - 36	100.00 - 130.00	90.00	54.00	88.00	–	1.50 (kg)	103	**210064**	**564047**
80 - 36	125.00 - 167.50	90.00	54.00	88.00	100.00	1.90 (kg)	20	**210020**	**564048**
80 - 36	125.00 - 167.50	90.00	54.00	88.00	100.00	1.90 (kg)	101	**210063**	**564048**
80 - 36	125.00 - 167.50	90.00	54.00	88.00	100.00	1.90 (kg)	103	**210064**	**564048**
80 - 36	162.50 - 205.00	90.00	54.00	88.00	135.00	2.50 (kg)	20	**210020**	**564049**
80 - 36	162.50 - 205.00	90.00	54.00	88.00	135.00	2.50 (kg)	101	**210063**	**564049**
80 - 36	162.50 - 205.00	90.00	54.00	88.00	135.00	2.50 (kg)	103	**210064**	**564049**

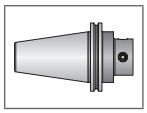
NOTE: X_{1R} = rotated insert holder for reverse machining
NOTE: Insert holders and inserts sold separately

B10-M: 12-15

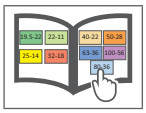


Key on B10-B: 1

B10-F



B10: vi-vii

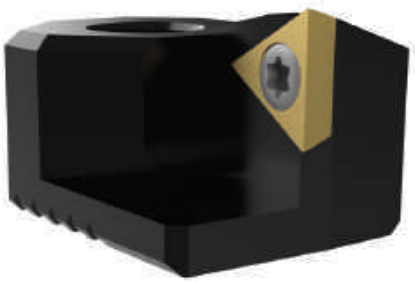


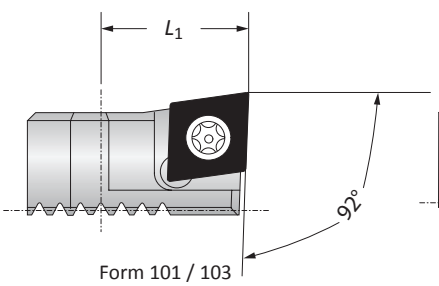
ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

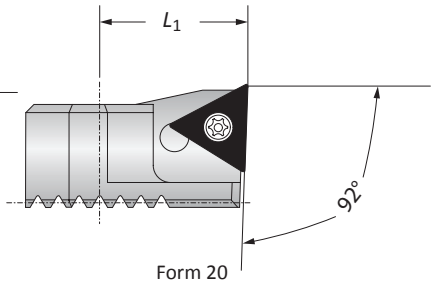
Insert Holder for Abrasive Materials

Diameter Range: 2.559" - 8.071" (65.00mm - 205.00mm)





Form 101 / 103

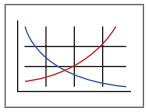


Form 20

	Boring Range	Insert Holder L_1	Weight	Insert Form	Part No.
ⓘ	2.559 - 8.071	0.709	0.066 (lbs)	20	**211061**
ⓘ	2.559 - 8.071	0.709	0.066 (lbs)	101	**211063**
ⓘ	2.559 - 8.071	0.709	0.066 (lbs)	103	**211065**
ⓜ	65.00 - 205.00	18.00	0.03 (kg)	20	**211061**
ⓜ	65.00 - 205.00	18.00	0.03 (kg)	101	**211063**
ⓜ	65.00 - 205.00	18.00	0.03 (kg)	103	**211065**

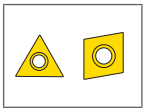
NOTE: Insert holders used for abrasive materials to protect boring head against chip wash
NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.

B10-M: 12-15

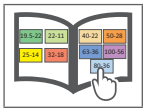


Key on B10-B: 1

B10-H



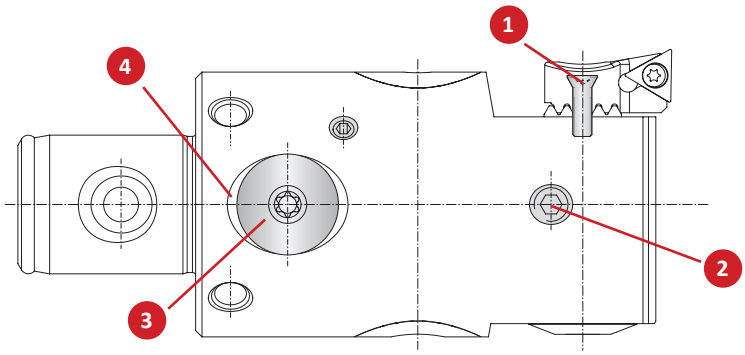
B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

Accessories

Screws | Battery Cover | Batteries

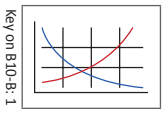


Boring Head	Part No. 1 Countersunk Screw	Service Key	2 Clamping Screw	Service Key	3 Battery Cover	Service Key	4 Sealing Ring	Battery*
565034 (564034)	**215338**	T15 / H	**115505**	s3 / B	**501016**	T20 / H	**415895**	**415896**
565045 (565045)	**215462**	T20 / H	**315943**	s4 / B	**501016**	T20 / H	**415895**	**415896**
565046 (564046)	**215462**	T20 / H	**515178**	s4 / B	**501016**	T20 / H	**415895**	**415896**
565047 (564047)	**215462**	T20 / H	**515178**	s4 / B	**501016**	T20 / H	**415895**	**415896**
565048 (564048)	**215462**	T20 / H	**515178**	s4 / B	**501016**	T20 / H	**415895**	**415896**
565049 (564049)	**215462**	T20 / H	**515178**	s4 / B	**501016**	T20 / H	**415895**	**415896**

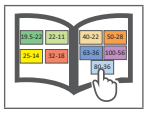
*Replace both batteries

B10-M: 12-15

Key on B10-B: 1



B10: vi-vii



320 (310) Product Overview

320 (310)
FINE BORING

Engineered with wear and tear in mind.

320 (310) Wohlhaupter boring heads are made from steel for Ø 0.787" - 4.055" (20.00mm - 103.00mm) and coated Alu-Line material for Ø 3.937" - 8.071" (100.00mm - 205.00mm) boring heads to protect against corrosion and wear. The insert holder can be rotated quickly for reverse machining.

- Diameter range: 0.787" - 8.071" (20.00mm - 205.00mm)
- Alu-Line diameter range: 3.937" - 8.071" (100.00mm - 205.00mm)
  - Special coating on Alu-Line provides hard, durable surface
  - Alu-Line body reduces tool weight by 50%, reducing stress on the spindle
- Coolant through
- Vernier diameter adjustment of 0.0001" (0.002mm)
- Max cutting speed: 3,281 SFM (1,000 m/min)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

WOHLHAUPTER® 320 BORING HEAD
*with NOVI*TECH™

Time is money, so make it count.

If you want to improve your machining processes, cycle time is a key factor to examine. After all, the longer it takes you to produce a part, the fewer parts you can produce in a given time. Our customer was experiencing lengthy cycle times while machining pumps from grey cast iron. The parts required 3 bored holes, each with a 12" *(304.8mm)* depth and a 22" *(558.8mm)* reach.

In order to free up machine time, the customer questioned if their process could be more efficient. The main objectives were to decrease the current cycle time and to maintain a160 Ra finish, which was required to perform the burnishing process that followed.

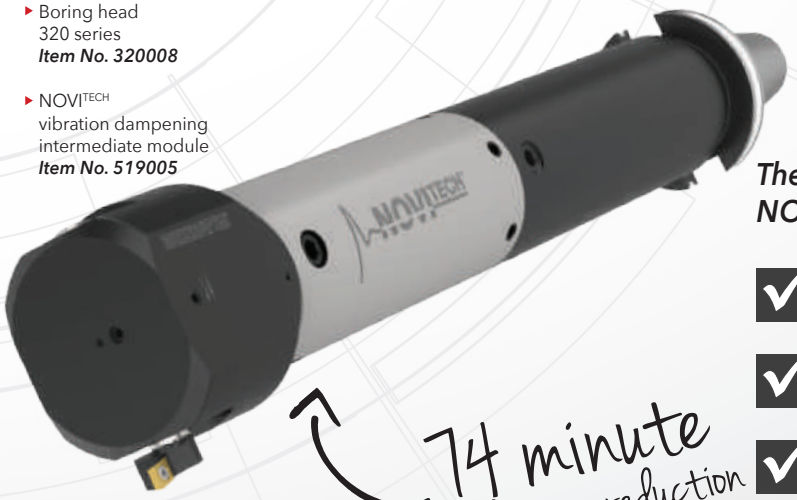
The previous tooling ran at a slow 0.47 IPM *(11.938 mm/min)* and a paint-drying 84-minute cycle time to bore the three holes on each part. With our **Wohlhaupter 320 boring head** utilizing the **NOVI**TECH **vibration dampening module**, the customer increased to a more efficient 3.75 IPM *(95.25 mm/min)* and slashed the cycle time to 10.5 minutes (*an 87% decrease*). Along with the increased speed, the Wohlhaupter tooling also achieved a 155 Ra finish, accomplishing everything the customer needed.

The Wohlhaupter solution reduced the process cycle time by 74 minutes. Improvements in speed and cycle time can free up machine hours, which means more throughput and higher profit for your company. ***Are you losing money on applications with substantially long cycle times?***

Product:	Wohlhaupter 320 Boring Head with NOVITECH
Objectives:	(1) Decrease cycle time (2) Maintain 160 Ra hole finish
Industry:	Oil & gas/petrochemical
Part:	Pump
Material:	Grey cast iron
Hole Ø:	5.500" *(139.7mm)*
Hole Depth:	12.000" *(304.8mm)*

Measure	Competitor Boring Head	320 Boring Head w/ NOVITECH
RPM	39	469
Speed Rate	56 SFM *(17.069 M/min)*	675 SFM *(205.74 M/min)*
Feed Rate	0.012 IPR *(0.305 mm/rev)*	0.008 IPR *(0.203 mm/rev)*
Penetration Rate	0.47 IPM *(11.938 mm/min)*	3.75 IPM *(92.25 mm/min)*
Cycle Time (per hole)	27 min 54 sec	3 min 32 sec
Hole Finish	160 Ra µin. *(4 Ra µm)*	155 Ra µin. *(3.8 Ra µm)*

- Boring head 320 series ***Item No. 320008***
- NOVITECH vibration dampening intermediate module ***Item No. 519005***

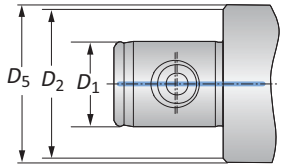


The Wohlhaupter 320 boring head with the NOVITECH vibration dampening module provided:

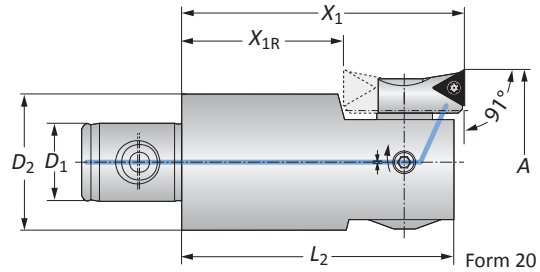
- ✓ **Increased penetration rate**
- ✓ **Decreased cycle time**
- ✓ **Excellent finish in deep hole application**

Boring Heads

Diameter Range: 0.787" - 4.055" (20.00mm - 103.00mm)



Form 101 / 103



Form 20

320 Boring Heads

	MVS Connection	Boring Range	Boring Head						Part No.	
	$D_2 \mid D_1$	A	X_1	X_{1R}	L_2	D_5	Weight	Insert Form	Insert Holder	Boring Head
	19 - 11	0.787 - 0.965	1.810	–	1.693	–	0.221 (lbs)	20*	**364077**	**320010**
	22 - 11	0.965 - 1.161	1.810	–	1.713	0.906	0.331 (lbs)	20	**210059**	**320020**
	22 - 11	0.965 - 1.161	1.810	–	1.713	0.906	0.331 (lbs)	101	**210069**	**320020**
	25 - 14	1.142 - 1.457	2.200	–	2.106	1.024	0.441 (lbs)	20	**210059**	**320001**
	25 - 14	1.142 - 1.457	2.200	–	2.106	1.024	0.441 (lbs)	101	**210069**	**320001**
	25 - 14	1.417 - 1.732	2.200	1.100	2.106	1.024	0.441 (lbs)	20	**210052**	**320001**
	25 - 14	1.417 - 1.732	2.200	1.100	2.106	1.024	0.441 (lbs)	101	**210062**	**320001**
	32 - 18	1.693 - 2.126	2.590	1.490	2.500	–	0.882 (lbs)	20	**210052**	**320003**
ⓘ	32 - 18	1.693 - 2.126	2.590	1.490	2.500	–	0.882 (lbs)	101	**210062**	**320003**
	40 - 22	2.087 - 2.598	2.950	1.530	2.854	–	1.543 (lbs)	20	**210020**	**320004**
	40 - 22	2.087 - 2.598	2.950	1.530	2.854	–	1.543 (lbs)	101	**210063**	**320004**
	40 - 22	2.087 - 2.598	2.950	1.530	2.854	–	1.543 (lbs)	103	**210064**	**320004**
	50 - 28	2.559 - 3.268	2.950	1.530	2.854	–	2.646 (lbs)	20	**210020**	**320005**
	50 - 28	2.559 - 3.268	2.950	1.530	2.854	–	2.646 (lbs)	101	**210063**	**320005**
	50 - 28	2.559 - 3.268	2.950	1.530	2.854	–	2.646 (lbs)	103	**210064**	**320005**
	63 - 36	3.228 - 4.055	3.540	2.120	3.445	–	4.850 (lbs)	20	**210020**	**320006**
	63 - 36	3.228 - 4.055	3.540	2.120	3.445	–	4.850 (lbs)	101	**210063**	**320006**
	63 - 36	3.228 - 4.055	3.540	2.120	3.445	–	4.850 (lbs)	103	**210064**	**320006**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)
NOTE: X_{1R} = rotated insert holder for reverse machining
NOTE: Insert holders and inserts sold separately

310 Boring Heads

	MVS Connection	Boring Range	Boring Head						Part No.	
	$D_2 \mid D_1$	A	X_1	X_{1R}	L_2	D_5	Weight	Insert Form	Insert Holder	Boring Head
	19 - 11	20.00 - 24.50	46.00	–	43.00	–	0.10 (kg)	20*	**364077**	**310010**
	22 - 11	24.50 - 29.50	46.00	–	43.50	23.00	0.15 (kg)	20	**210059**	**310020**
	22 - 11	24.50 - 29.50	46.00	–	43.50	23.00	0.15 (kg)	101	**210069**	**310020**
	25 - 14	29.00 - 37.00	56.00	–	53.50	26.00	0.20 (kg)	20	**210059**	**310001**
	25 - 14	29.00 - 37.00	56.00	–	53.50	26.00	0.20 (kg)	101	**210069**	**310001**
	25 - 14	36.00 - 44.00	56.00	28.00	53.50	26.00	0.20 (kg)	20	**210052**	**310001**
	25 - 14	36.00 - 44.00	56.00	28.00	53.50	26.00	0.20 (kg)	101	**210062**	**310001**
	32 - 18	43.00 - 54.00	66.00	38.00	63.50	–	0.40 (kg)	20	**210052**	**310003**
ⓜ	32 - 18	43.00 - 54.00	66.00	38.00	63.50	–	0.40 (kg)	101	**210062**	**310003**
	40 - 22	53.00 - 66.00	75.00	39.00	72.50	–	0.70 (kg)	20	**210020**	**310004**
	40 - 22	53.00 - 66.00	75.00	39.00	72.50	–	0.70 (kg)	101	**210063**	**310004**
	40 - 22	53.00 - 66.00	75.00	39.00	72.50	–	0.70 (kg)	103	**210064**	**310004**
	50 - 28	65.00 - 83.00	75.00	39.00	72.50	–	1.20 (kg)	20	**210020**	**310005**
	50 - 28	65.00 - 83.00	75.00	39.00	72.50	–	1.20 (kg)	101	**210063**	**310005**
	50 - 28	65.00 - 83.00	75.00	39.00	72.50	–	1.20 (kg)	103	**210064**	**310005**
	63 - 36	82.00 - 103.00	90.00	54.00	87.50	–	2.20 (kg)	20	**210020**	**310006**
	63 - 36	82.00 - 103.00	90.00	54.00	87.50	–	2.20 (kg)	101	**210063**	**310006**
	63 - 36	82.00 - 103.00	90.00	54.00	87.50	–	2.20 (kg)	103	**210064**	**310006**

*Not suitable for indexable inserts with a radius of 0.031" (0.80mm)
NOTE: X_{1R} = rotated insert holder for reverse machining
NOTE: Insert holders and inserts sold separately

ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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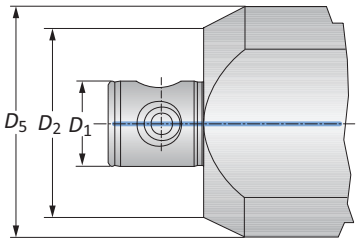
Boring Heads

Alu-Line | Diameter Range: 3.937" - 8.071" (100.00mm - 205.00mm)



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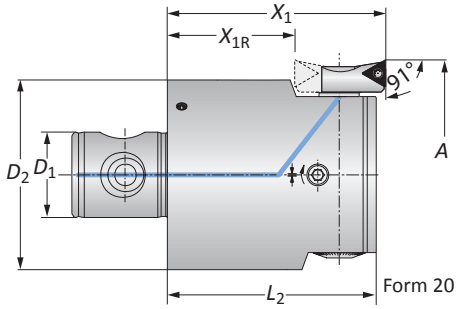


Form 20

Alu-Line 320 Boring Heads

	MVS Connection	Boring Range	Boring Head						Part No.	
	D_2 | D_1	A	X_1	X_{1R}	L_2	D_5	Weight	Insert Form	Insert Holder	Boring Head
	80 - 36	3.937 - 5.118	3.543	2.126	3.445	–	3.086 (lbs)	20	**210020**	**320007**
	80 - 36	3.937 - 5.118	3.543	2.126	3.445	–	3.086 (lbs)	101	**210063**	**320007**
	80 - 36	3.937 - 5.118	3.543	2.126	3.445	–	3.086 (lbs)	103	**210064**	**320007**
	80 - 36	4.921 - 6.594	3.543	2.126	3.445	3.937	3.968 (lbs)	20	**210020**	**320008**
ⓘ	80 - 36	4.921 - 6.594	3.543	2.126	3.445	3.937	3.968 (lbs)	101	**210063**	**320008**
	80 - 36	4.921 - 6.594	3.543	2.126	3.445	3.937	3.968 (lbs)	103	**210064**	**320008**
	80 - 36	6.397 - 8.071	3.543	2.126	3.445	5.315	5.291 (lbs)	20	**210020**	**320009**
	80 - 36	6.397 - 8.071	3.543	2.126	3.445	5.315	5.291 (lbs)	101	**210063**	**320009**
	80 - 36	6.397 - 8.071	3.543	2.126	3.445	5.315	5.291 (lbs)	103	**210064**	**320009**

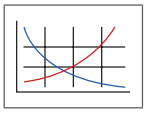
NOTE: X_{1R} = rotated insert holder for reverse machining
NOTE: Insert holders and inserts sold separately

Alu-Line 310 Boring Heads

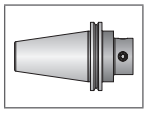
	MVS Connection	Boring Range	Boring Head						Part No.	
	D_2 | D_1	A	X_1	X_{1R}	L_2	D_5	Weight	Insert Form	Insert Holder	Boring Head
	80 - 36	100.00 - 130.00	90.00	54.00	87.50	–	1.40 (kg)	20	**210020**	**310007**
	80 - 36	100.00 - 130.00	90.00	54.00	87.50	–	1.40 (kg)	101	**210063**	**310007**
	80 - 36	100.00 - 130.00	90.00	54.00	87.50	–	1.40 (kg)	103	**210064**	**310007**
	80 - 36	125.00 - 167.50	90.00	54.00	87.50	100.00	1.80 (kg)	20	**210020**	**310008**
ⓜ	80 - 36	125.00 - 167.50	90.00	54.00	87.50	100.00	1.80 (kg)	101	**210063**	**310008**
	80 - 36	125.00 - 167.50	90.00	54.00	87.50	100.00	1.80 (kg)	103	**210064**	**310008**
	80 - 36	162.50 - 205.00	90.00	54.00	87.50	135.00	2.40 (kg)	20	**210020**	**310009**
	80 - 36	162.50 - 205.00	90.00	54.00	87.50	135.00	2.40 (kg)	101	**210063**	**310009**
	80 - 36	162.50 - 205.00	90.00	54.00	87.50	135.00	2.40 (kg)	103	**210064**	**310009**

NOTE: X_{1R} = rotated insert holder for reverse machining
NOTE: Insert holders and inserts sold separately

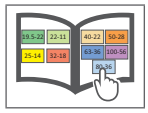
B10-M: 12-15
Key on B10-B: 1



B10-F



B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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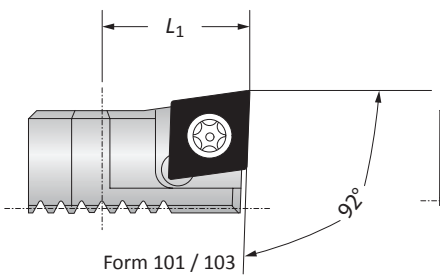
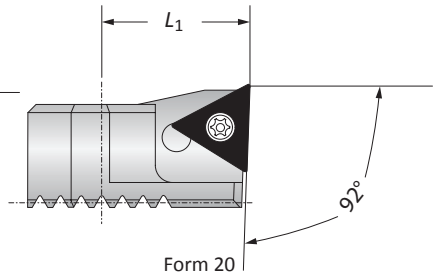
Insert Holders for Abrasive Materials | Serrated Shims

Diameter Range: 2.087" - 8.071" (53.00mm - 205.00mm)

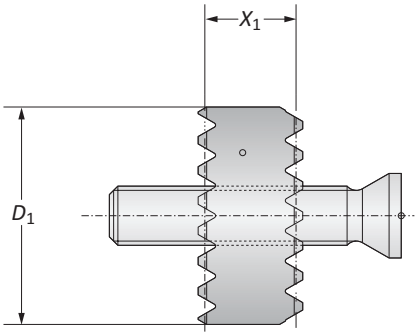




Insert Holders

	Boring Range	Insert Holder L_1	Weight	Insert Form	Part No.
i	2.087 - 8.071	0.709	0.066 (lbs)	20	**211061**
i	2.087 - 8.071	0.709	0.066 (lbs)	101	**211063**
i	2.087 - 8.071	0.709	0.066 (lbs)	103	**211065**
m	53.00 - 205.00	18.00	0.03 (kg)	20	**211061**
m	53.00 - 205.00	18.00	0.03 (kg)	101	**211063**
m	53.00 - 205.00	18.00	0.03 (kg)	103	**211065**

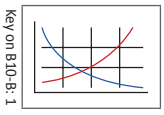
NOTE: Insert holders used for abrasive materials to protect boring head against chip wash
NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.



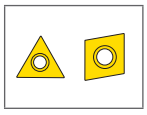
Serrated Shims

	Boring Range	Additional Boring Range	Serrated Shim X_1	Serrated Shim D_1	Weight	Part No. Serrated Shim & Screw	Part No. Replacement Screw
i	1.141 - 2.126	0.315	0.157	0.472	0.022 (lbs)	**310070**	**415360**
i	1.141 - 2.126	0.472	0.236	0.472	0.022 (lbs)	**310071**	**415342**
i	2.087 - 8.071	0.394	0.196	0.708	0.022 (lbs)	**310074**	**515595**
i	2.087 - 8.071	0.590	0.295	0.708	0.022 (lbs)	**310075**	**515596**
m	29.00 - 54.00	8.00	4.00	12.00	0.01 (kg)	**310070**	**415360**
m	29.00 - 54.00	12.00	6.00	12.00	0.01 (kg)	**310071**	**415342**
m	53.00 - 205.00	10.00	5.00	18.00	0.01 (kg)	**310074**	**515595**
m	53.00 - 205.00	15.00	7.50	18.00	0.01 (kg)	**310075**	**515596**

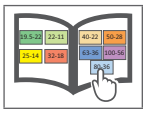
B10-M: 12-15
Key on B10-B: 1



B10-H



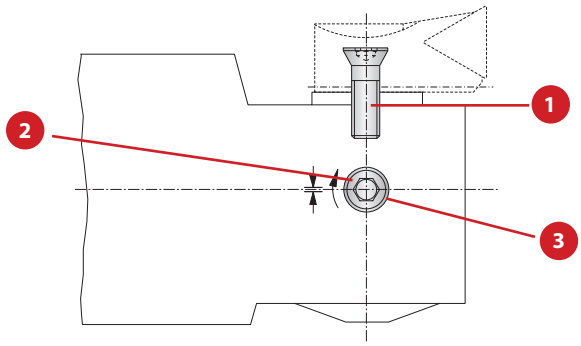
B10: vi-vii



i = Imperial (in)
m = Metric (mm)
Inserts sold separately

Accessories

Screws



Boring Head	1 Countersunk Screw		2 Clamping Screw		3 Ball
	Part No.	Service Key	Part No.	Service Key	Part No.
320010 (310010)	**215323**	T15 / H	**364260**	s2.0 / A	**364270**
320020 (310020)	**215338**	T15 / H	**364138**	s2.5 / A	**364139**
320001 (310001)	**215338**	T15 / H	**115136**	s2.5 / A	–
320003 (310003)	**215338**	T15 / H	**115180**	s2.5 / A	–
320004 (310004)	**215462**	T20 / H	**115249**	s4 / B	–
320005 (310005)	**215462**	T20 / H	**115185**	s4 / B	–
320006 (310006)	**215462**	T20 / H	**315279**	s4 / B	–
320007 (310007)	**215462**	T20 / H	**115186**	s4 / B	–
320008 (310008)	**215462**	T20 / H	**115186**	s4 / B	–
320009 (310009)	**215462**	T20 / H	**115186**	s4 / B	–

B10-M: 12-15
Key on B10-B: 1
B10: vi-vii

538 (537) Product Overview

538 (537) Cassettes
FINE BORING

Engineered for easy precision.

538 (537) fine boring cassettes offer high accuracy and are available in an easy-to-use digital or analog version. The digital version features a docking port to attach the 3E[TECH] digital readout module for µ -accurate diameter adjustments while the analog cassettes provide highly accurate adjustments through the vernier scale. 538 (537) cassettes are made of hardened steel and can be used on serrated tool bodies and slides from 3.937" - 128.150" (100.00mm - 3255.00mm). The insert holder can be rotated easily for reverse machining applications.

Experience ***digital precision boring*** for yourself.

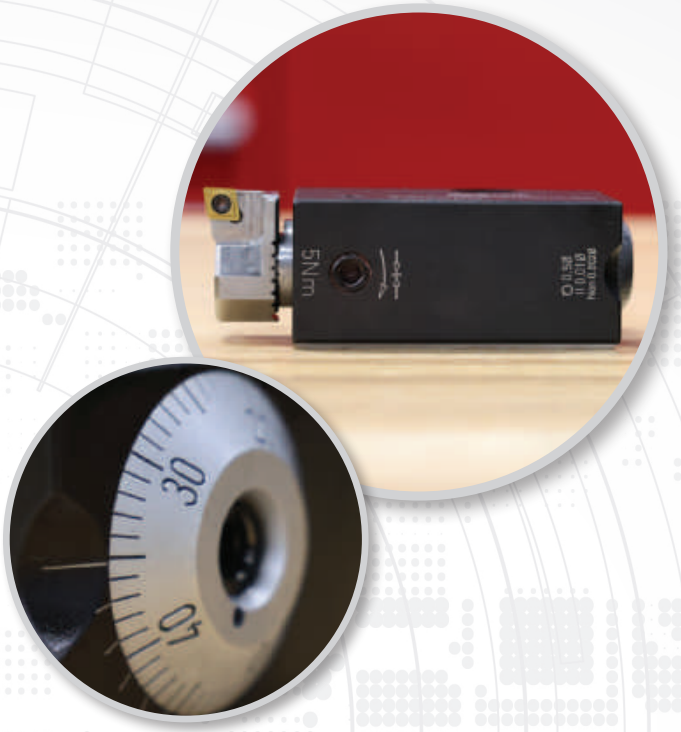
- Diameter range: 3.937" - 8.071" (100.00mm - 205.00mm)
- Cassette can be used on large diameter serrated slides **(pg. B10-G: 8):** 7.874" - 128.150" (200.00mm - 3255.00mm)
- Coolant through
- 3E[TECH] module provides a simple digital readout
- Analog version with a vernier scale
- Max cutting speed: 2,953 SFM (900 m/min)

NOTE: Imperial items pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

538 (537) BORING CASSETTES



NEW vernier scale on both analog and digital cassettes

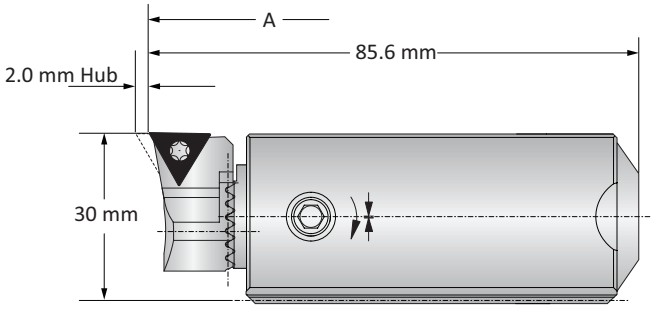
NEW digital 538 (537) cassettes with 3E^{TECH} docking port

- Convenient tool handling
- Large range of applications
- Hardened steel bodies

538 (537) Analog Cassettes

Diameter Range: 3.937" - 8.071" (100.00mm - 205.00mm)

Form 101 / 103



Form 20

Analog 538 (537) Cassettes

	Boring Range	Weight	Insert Form	Part No. Insert Holder	Clamping Piece	Cassette*
	3.937 - 8.071	1.323 (lbs)	20	**210020**	**137026**	**538051**
ⓘ	3.937 - 8.071	1.323 (lbs)	101	**210063**	**137026**	**538051**
	3.937 - 8.071	1.323 (lbs)	103	**210064**	**137026**	**538051**
	100.00 - 205.00	0.60 (kg)	20	**210020**	**137026**	**537051**
ⓜ	100.00 - 205.00	0.60 (kg)	101	**210063**	**137026**	**537051**
	100.00 - 205.00	0.60 (kg)	103	**210064**	**137026**	**537051**

*Required serrated tool body sold separately

NOTE: Cassette and insert holder can be used on large diameter serrated slides (B10-G: 8)

NOTE: Insert holders, inserts, and clamping pieces ***sold separately***

B10-M: 12-15
Key on B10-B: 1
B10-F
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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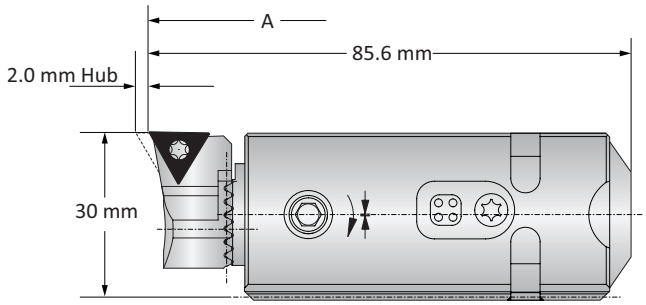
538 (537) Cassettes with 3E^{TECH}

Diameter Range: 3.937" - 8.071" (100.00mm - 205.00mm)

Form 101 / 103



Form 20

Digital 538 (537) Cassettes

	Boring Range	Weight	Insert Form	Part No. Insert Holder	Clamping Piece	Cassette*
	3.937 - 8.071	1.323 (lbs)	20	**210020**	**137026**	**538052**
ⓘ	3.937 - 8.071	1.323 (lbs)	101	**210063**	**137026**	**538052**
	3.937 - 8.071	1.323 (lbs)	103	**210064**	**137026**	**538052**
	100.00 - 205.00	0.60 (kg)	20	**210020**	**137026**	**537052**
ⓜ	100.00 - 205.00	0.60 (kg)	101	**210063**	**137026**	**537052**
	100.00 - 205.00	0.60 (kg)	103	**210064**	**137026**	**537052**

***Required serrated tool body sold separately**

NOTE: Cassette and insert holder can be used on large diameter serrated slides (B10-G: 8)

NOTE: 3E^{TECH} digital readout module, insert holders, inserts, and clamping pieces ***sold separately***

NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

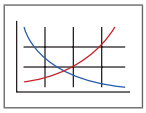
3E^{TECH} Digital Readout Module

	Part No.
ⓘ	**563010**
ⓜ	**536010**

NOTE: WEEE-Reg.-Nr. DE 15820388

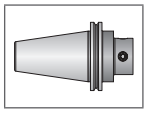
NOTE: 3E^{TECH} sold separately

B10-M: 12-15

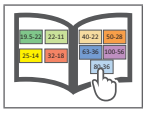


Key on B10-B: 1

B10-F



B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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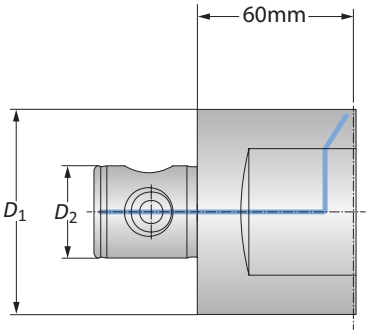
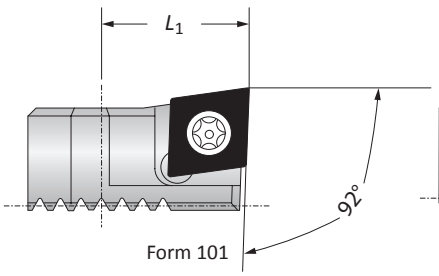
Serrated Tool Bodies | Insert Holders for Abrasive Materials

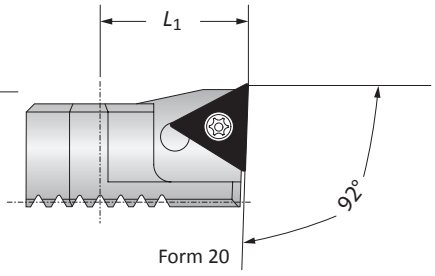
Diameter Range: 3.937" - 8.071" (100.00mm - 205.00mm)



Serrated Tool Bodies

	MVS Connection D_2 | D_1	Serrated Tool Body: Boring Range	Serrated Tool Body: Part No.
i	80 - 36	3.937 - 6.102	**148007**
i	80 - 36	5.906 - 8.071	**148009**
m	80 - 36	100.00 - 155.00	**148007**
m	80 - 36	150.00 - 205.00	**148009**



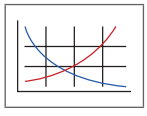


Insert Holders for Abrasive Materials

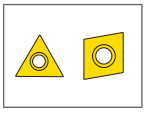
	Insert Holder: Boring Range	Insert Holder: L_1	Weight	Insert Form	Part No.
i	3.937 - 8.071	0.709	0.066 (lbs)	20	**211061**
i	3.937 - 8.071	0.709	0.066 (lbs)	101	**211063**
i	3.937 - 8.071	0.709	0.066 (lbs)	103	**211065**
m	100.00 - 205.00	18.00	0.03 (kg)	20	**211061**
m	100.00 - 205.00	18.00	0.03 (kg)	101	**211063**
m	100.00 - 205.00	18.00	0.03 (kg)	103	**211065**

NOTE: Insert holders used for abrasive materials to protect boring head against chip wash
NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.

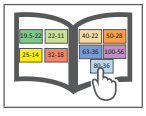
B10-M: 12-15
Key on B10-B: 1



B10-H

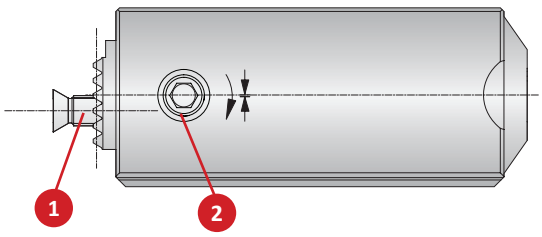


B10: vi-vii

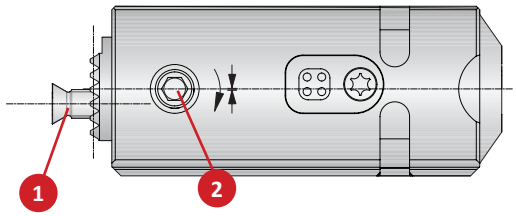


i = Imperial (in)
m = Metric (mm)

538 (537) Accessories | 3E[TECH] Accessories | Clamping Pieces



538 (537) Analog Cassette



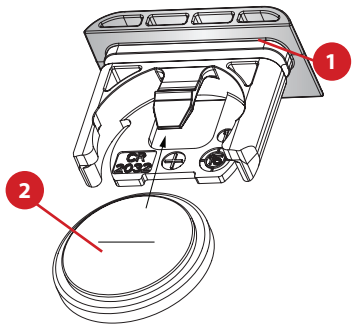
538 (537) Cassette

538 (537) Accessories

	Cassette Part No.	1 Countersunk Screw Part No.	1 Countersunk Screw Service Key	2 Clamping Screw Part No.	2 Clamping Screw Service Key
ⓘ	538051	**215462**	**T20 / H**	**115249**	**s4 / F**
	538052	**215462**	**T20 / H**	**315789**	**s4 / F**
ⓜ	537051	**215462**	**T20 / H**	**115249**	**s4 / F**
	537052	**215462**	**T20 / H**	**315789**	**s4 / F**

3E[TECH] Accessories

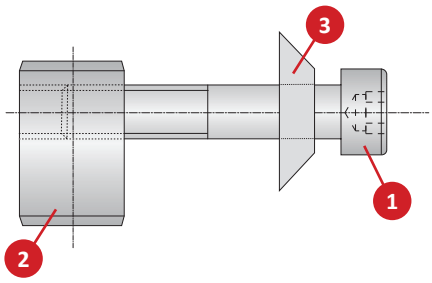
1 Sealing Ring Part No.	2 Battery CR2032 Part No.
215483	**515491**



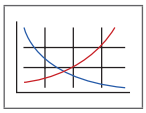
538 (537) Clamping Pieces

Slide Type	Complete Part No.	Service Key		Replacement Components 1 Cap Screw	2 Clamping Nut	3 Disk Spring
Serrated Tool Bodies	**137026**	115578	s6 / B	215101	140118	337105
Basic and Eco Slides	**137027**			215102	215105	337105
Flex Slides	**137019**			415900	215105	337105

NOTE: Clamping pieces sold separately

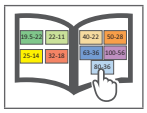


B10-M: 12-15



Key on B10-B: 1

B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

SECTION

B10-C

Combi-Line Rough and Finish Boring

Wohlhaupter® Rough and Finish Boring

Combi-Line

- Diameter Range: 0.965" - 7.913" (24.50mm - 201.00mm)

One tool. Two operations.

The Wohlhaupter Combi-Line combines both rough and finish boring into one operation. The front insert holder is the roughing cutting edge while the shorter holder finishes the hole, saving you time and money.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.

This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury.

When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words.

⚠ WARNING

WARNING (shown above) means that failure to follow the precautions in this message could result in tool failure and serious injury.

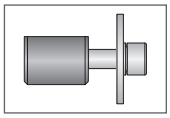
NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

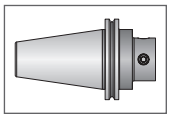
Visit www.alliedmachine.com for the most up-to-date information and procedures.

Applicable Industries

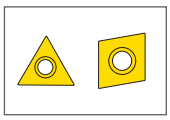
Reference Icons
The following icons will appear throughout the catalog to help you navigate between products.



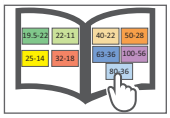
Clamping Elements
For use with insert holders and boring heads



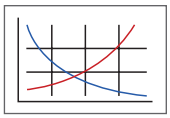
Shanks
A variety of shanks for different machines



Inserts
For use with insert holder boring heads and boring bars using indexable inserts



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s)



Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring

Coolant-Through Option
Indicates that the product is coolant through

Combined Rough and Finish Boring Table of Contents

Combi-Line Introduction

Product Overview . . . . . 2 - 3
Material Removal Percentages | Tool Usage | Same Level Cutting 4
Boring Head and Insert Holder 5
Accessories 6

Series	Diameter Range	
	Imperial (inch)	Metric (mm)
Combi-Line 404 (401)	0.965 - 7.913	24.50 - 201.00

Combi-Line Product Overview

Combi-Line
ROUGH & FINISH BORING

Two operations. One Tool.

Decrease cycle time and tool changes with the Wohlhaupter Combi-Line. The Combi-Line combines rough and finish boring into one tool with height displaced insert holders.

Reduce your ***cycle time*** with the Combi-Line.

- Diameter range: 0.965" - 7.913" (24.50mm - 201.00mm)
- Reduce cycle and tool changing time
- Available in semi-standard same level or height displaced insert holders
- Coolant through
- 0.0001" (0.002mm) vernier adjustment on finishing insert holder
- Max spindle speed: 5,000 SFM

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Cycle time is crucial. Why not choose the best process?

Application: Ductile Cast Iron

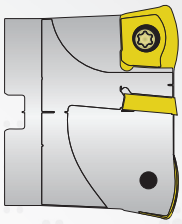
Finish Diameter: 1.968" (50mm) (+/- 0.0005" [0.013mm])

Pre-Hole Diameter: 1.771" (45mm)

Boring Depth: 8.228" (209mm)

Hole Finish: 32 Ra

Measure	1st Process Option	
	Step 1 Rough 49mm Competitor 1.5" High Feed Milling Tool	Step 2 Finish 50mm Wohlhaupter 320 Boring Head
Speed	1000 SFM (2500 RPM)	600 SFM (1165 PRM)
Feed Rate	0.020 IPT (153 IPM)	0.004 IPR (0.466 IPM)
Total Passes	77	1
Cycle Time (per hole)	1.93 min	1.77 min
Tool Change Time	15 sec	
Cycle Time (per part)	**3 min 54 sec**	



1.5" High Feed Milling Tool

Wohlhaupter 320 Boring Head

Measure	2nd Process Option	
	Step 1 Rough 49mm Wohlhaupter Twin Cutter @49mm Ø	Step 2 Finish 50mm Wohlhaupter 320 Boring Head
Speed	500 SFM (990 RPM)	600 SFM (1165 PRM)
Feed Rate	0.012 IPR (11.88 IPM)	0.004 IPR (0.466 IPM)
Total Passes	1	1
Cycle Time (per hole)	.69 min	1.77 min
Tool Change Time	15 sec	
Cycle Time (per part)	**2 min 46 sec**	

Wohlhaupter Twin Cutter

Wohlhaupter 320 Boring Head

OUR ***SOLUTION***

Combi-Line Rough and Finish Boring

Measure	3rd Process Option Finish 50mm Wohlhaupter Combi-Line
Speed	600 SFM (1165 RPM)
Feed Rate	0.004 IPR (0.466 IPM)
Total Passes	1
Cycle Time (per hole)	1.77 min
Tool Change Time	0
Cycle Time (per part)	**1 min 46 sec**

60 seconds of total cycle time saved

- Combi-Line assembly:
  (1) ***Insert holders (x2): 402021***
  (2) ***Serrated tool body: 404006***
  (3) ***Shank: 353014***

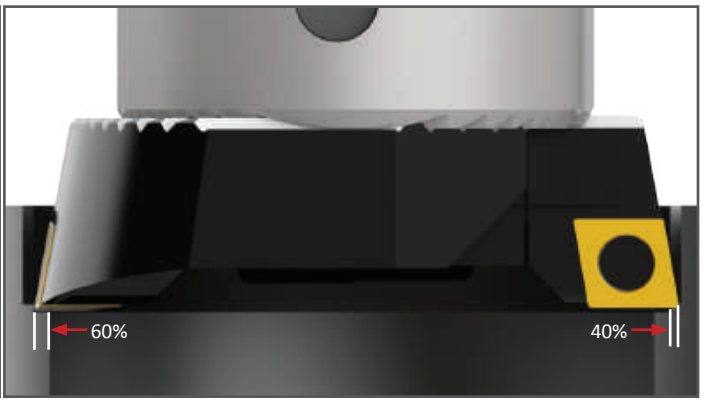
Boring inserts
- ***Item No. 297653WHC19***

1 tool vs. 2 tools saves you time and money

Material Removal Percentages | Tool Usage | Same-Level Cutting

Material Removal Percentages

Material removal up to 0.157" (4.00mm) on diameter: **50% roughing 50% finishing**



Material removal up to 0.157" - 0.276" (4.00mm - 7.00mm) on diameter: **60% roughing 40% finishing**

Material removal up to 0.276" - 0.394" (7.00mm - 10.00mm) on diameter: **70% roughing 30% finishing**

- For tools with a length-to-diameter ratio greater than 4:1, the existing hole diameter should be no more than 0.157" (4.00mm) smaller than the finish diameter. The 50% roughing and 50% finishing rule should be applied.
- When boring with severe interruptions, the existing hole diameter should be no more than 0.157" (4.00mm) smaller than the finish diameter. The 50% roughing and 50% finishing rule should be applied.

IMPORTANT: Consult application engineering for technical support when using Combi-Line tools in holes with interruptions.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Tool Usage

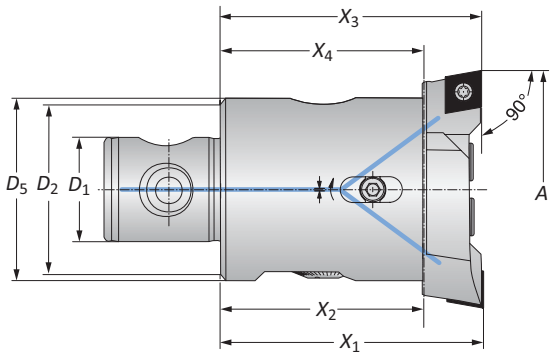
- For most applications, the same inserts should be used in both the roughing and finishing insert holders.
- To insure proper chip breaking, the finishing insert holder DOC must be at least 0.020" (0.50mm)
- Up to a 4:1 length-to-diameter ratio, standard insert holders with a height displacement of up to 0.012" (0.30mm) can be used.
- Inserts with wiper geometry are recommended only for special Combi-Line applications.

Same-Level Cutting (0.003" (0.08mm) Height Displacement)

- With length-to-diameter ratios greater than 4:1, same-level insert holders are recommended to reduce the risk of vibration.
- Same-level cutting inserts will create a 0.003" (0.08mm) step between the roughing and finishing sides.
- Boring blind holes may require the use of same-level insert holders. (If a true 90° flat bottom is required, a secondary operation to clean up the bottom step may be needed.)
- Combi-Line should be applied as a single-effective cutting tool even when same-level insert holders are used.

Boring Heads and Insert Holders

Diameter Range: 0.965" - 7.913" (24.50mm - 201.00mm)



COMBI LINE

	Connection D_2 | D_1	Boring Range A	Boring Head X_1	X_3	X_2	X_4	D_5	Weight	Insert Form	Part No. (x2)* Insert Holder**	Part No. Boring Head
	22 - 11	0.965 - 1.161	1.811	1.801	1.339	1.329	–	0.220 (lbs)	101	402029	404003
	25 - 14	1.142 - 1.457	2.205	2.195	1.614	1.604	1.024	0.440 (lbs)	101	402009	404004
	25 - 14	1.142 - 1.457	2.205	2.195	1.614	1.604	1.024	0.440 (lbs)	103	402011	404004
	25 - 14	1.417 - 1.732	2.205	2.195	1.614	1.604	1.181	0.661 (lbs)	101	402017	404005
	25 - 14	1.417 - 1.732	2.205	2.195	1.614	1.604	1.181	0.661 (lbs)	103	402019	404005
	32 - 18	1.693 - 2.126	2.598	2.587	1.890	1.878	1.339	0.881 (lbs)	103	402021	404006
ⓘ	40 - 22	2.087 - 2.598	2.953	2.941	2.165	2.154	–	1.543 (lbs)	103	402005	404007
	50 - 28	2.559 - 3.268	2.953	2.941	2.165	2.154	–	2.425 (lbs)	103	402013	404008
	63 - 36	3.228 - 4.055	3.543	3.531	2.756	2.744	–	4.850 (lbs)	103	402001	404009
	80 - 36	4.016 - 5.000	3.543	3.531	2.598	2.587	3.346	6.613 (lbs)	103	402025	404010
	80 - 36	5.000 - 5.984	3.543	3.531	2.598	2.587	3.346	6.834 (lbs)	103	402026	404010
	80 - 36	5.945 - 6.929	3.543	3.531	2.598	2.587	5.276	8.377 (lbs)	103	402025	404011
	80 - 36	6.929 - 7.913	3.543	3.531	2.598	2.587	5.276	8.598 (lbs)	103	402026	404011
	22 - 11	24.50 - 29.50	46.00	45.75	34.00	33.75	–	0.10 (kg)	101	402029	401003
	25 - 14	29.00 - 37.00	56.00	55.75	41.00	40.75	26.00	0.20 (kg)	101	402009	401004
	25 - 14	29.00 - 37.00	56.00	55.75	41.00	40.75	26.00	0.20 (kg)	103	402011	401004
	25 - 14	36.00 - 44.00	56.00	55.75	41.00	40.75	30.00	0.30 (kg)	101	402017	401005
	25 - 14	36.00 - 44.00	56.00	55.75	41.00	40.75	30.00	0.30 (kg)	103	402019	401005
	32 - 18	43.00 - 54.00	66.00	65.70	48.00	47.70	34.00	0.40 (kg)	103	402021	401006
ⓜ	40 - 22	53.00 - 66.00	75.00	74.70	55.00	54.70	–	0.70 (kg)	103	402005	401007
	50 - 28	65.00 - 83.00	75.00	74.70	55.00	54.70	–	1.10 (kg)	103	402013	401008
	63 - 36	82.00 - 103.00	90.00	89.70	70.00	69.70	–	2.20 (kg)	103	402001	401009
	80 - 36	102.00 - 127.00	90.00	89.70	66.00	65.70	85.00	3.00 (kg)	103	402025	401010
	80 - 36	127.00 - 152.00	90.00	89.70	66.00	65.70	85.00	3.10 (kg)	103	402026	401010
	80 - 36	151.00 - 176.00	90.00	89.70	66.00	65.70	134.00	3.80 (kg)	103	402025	401011
	80 - 36	176.00 - 201.00	90.00	89.70	66.00	65.70	134.00	3.90 (kg)	103	402026	401011

*(2) insert holders are required
**Insert holders sold individually

B10-M: 12-15 | B10-C: 6 | B10-F | B10-H | B10: vi-vii
Key on B10-C: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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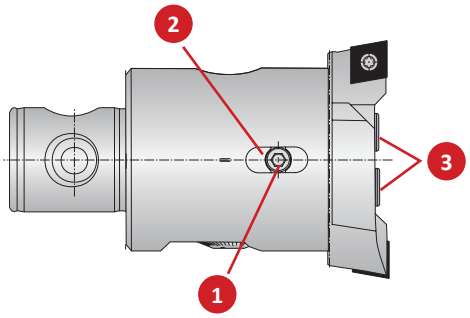
Accessories

Screws | Clamping Elements



	Boring Head Part No.	Part No. 1 Clamp Screw	Service Key	2 Clamping Piece	3 Cap Screw	Service Key
	404003	**401223**	s2.5 / A	–	**401323**	s3 / B
	404004	**401224**	s2.5 / B	**401204**	**401324**	s4 / B
	404005	**401225**	s2.5 / B	**401205**	**401324**	s4 / B
	404006	**401226**	s3 / B	**401206**	**401324**	s4 / B
ⓘ	404007	**401227**	s3 / B	**401207**	**401327**	s5 / B
	404008	**115288**	s4 / B	**401208**	**401329**	s6 / B
	404009	**215501**	s4 / B	**401209**	**401329**	s6 / B
	404010	**401230**	s4 / B	**401210**	**019183**	s8 / C
	404011	**401230**	s4 / B	**401210**	**019183**	s8 / C
	401003	**401223**	s2.5 / A	–	**401323**	s3 / B
	401004	**401224**	s2.5 / B	**401204**	**401324**	s4 / B
	401005	**401225**	s2.5 / B	**401205**	**401324**	s4 / B
	401006	**401226**	s3 / B	**401206**	**401324**	s4 / B
ⓜ	401007	**401227**	s3 / B	**401207**	**401327**	s5 / B
	401008	**115288**	s4 / B	**401208**	**401329**	s6 / B
	401009	**215501**	s4 / B	**401209**	**401329**	s6 / B
	401010	**401230**	s4 / B	**401210**	**019183**	s8 / C
	401011	**401230**	s4 / B	**401210**	**019183**	s8 / C

B10-M: 12-15
Key on B10-C:1
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Notes

SECTION

B10-D

Rough Machining

Wohlhaupter® Rough Machining

Twin Cutters | Chamfering Tools | Grooving Tools | Axial Grooving | Reverse Machining | VolCut

- Diameter Range: 0.768" - 9.645" (19.50mm - 245.00mm)

Variety of tooling. Versatile operations.

A versatile range of tools for rough machining includes rough boring, chamfering, reverse machining, circular milling, and axial grooving. The insert holders with various insert pockets as well as height displaced insert holders are able to be easily adjusted for a quick setup process.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.

This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury.

When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words.

⚠ WARNING

WARNING (shown above) means that failure to follow the precautions in this message could result in tool failure and serious injury.

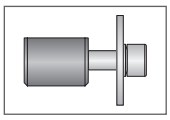
NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

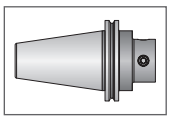
Visit www.alliedmachine.com for the most up-to-date information and procedures.

Applicable Industries

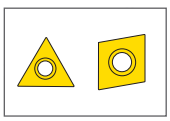
Reference Icons
The following icons will appear throughout the catalog to help you navigate between products.



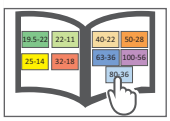
Clamping Elements
For use with insert holders and boring heads



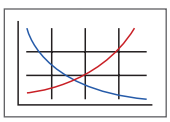
Shanks
A variety of shanks for different machines



Inserts
For use with insert holder boring heads and boring bars using indexable inserts



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s)



Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring

Coolant-Through Option
Indicates that the product is coolant -through

Rough Machining Table of Contents

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Series	Diameter Range	
	Imperial (inch)	Metric (mm)
Twin Cutters	0.768 - 8.071	19.50 - 205.00
Chamfering	0.748 - 8.504	19.00 - 216.00
Radial Grooving	0.787 - 3.110	20.00 - 79.00
Axial Grooving	0.787 - 8.071	20.00 - 205.00
Reverse Machining	1.142 - 9.646	29.00 - 245.00

Roughing Tools
ROUGH MACHINING

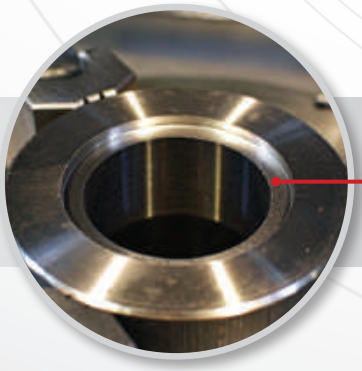
Versatile tools for a variety of applications.

- Diameter range: 0.768" - 9.646" (19.50mm - 245.00mm)
- Tangential inserts and insert holders also available
- Serrated tool bodies can be used for multiple applications including rough boring, chamfering, back boring, and axial grooving
- Insert holders can be used on large diameter Alu-Line serrated tool bodies and slides located in section G: 3.937" - 128.15" (100.00mm - 3255.00mm)

Roughing Applications

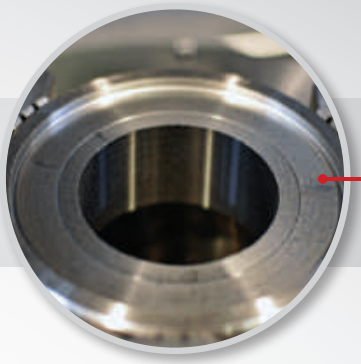
Twin Cutter Assembly:
(1) Reducer: 219087
(2) Serrated tool body: 148004
(3) Insert holders: 151004
(4) Inserts: 10408M158HC79

Tangential Cutter Assembly:
(1) Shank: 353007
(2) Serrated tool body: 148005
(3) Insert holders: 151043
(4) Inserts: 00508M880HC198

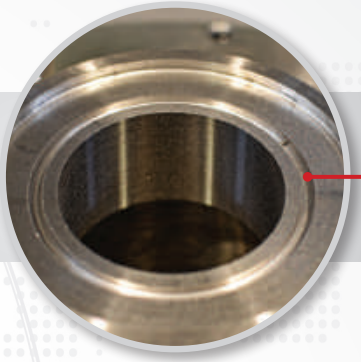


First Tangential Cut

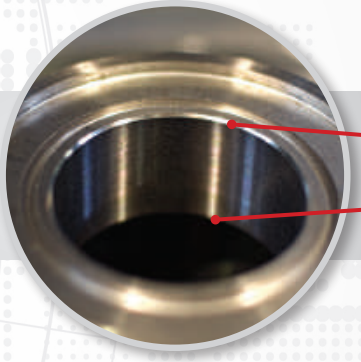
- Tangential Cutter Assembly:
  (1) Shank: 353008
  (2) Serrated tool body: 148006
  (3) Insert holders: 151035
  (4) Inserts: 397594WHC198



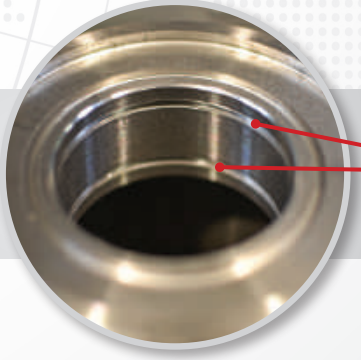
- Axial Grooving Assembly:
  (1) Shank: 353009
  (2) Serrated tool body: 148007
  (3) Support block: 226011
  (4) Insert holder: 226010
  (5) Insert: 297978WCH136



- Chamfer Assembly:
  (1) Shank: 353003
  (2) Serrated tool body: 148004
  (3) Insert holder: 201009
  (4) Inserts: 297497WHC79



- Radial Grooving Assembly:
  (1) Shank: 353007
  (2) Grooving tool: 143055
  (3) Inserts: 097254WCH136



- Finished Application

Case Study

Cycle time is crucial. Why not choose the best process?

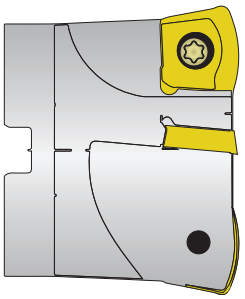
Application: Ductile Cast Iron

Finish Diameter: 1.930" (49mm)

Pre-Hole Diameter: 1.77" (45mm)

Boring Depth: 8.23" (209mm)

Measure	Rough 49mm Competitor 1.5" High Feed Milling Tool
Speed	1000 SFM (2500 RPM)
Feed Rate	0.020 IPT (153 IPM)
Total Passes	77
Cycle Time (per part)	**1.93 min**



1.5" High Feed Milling Tool

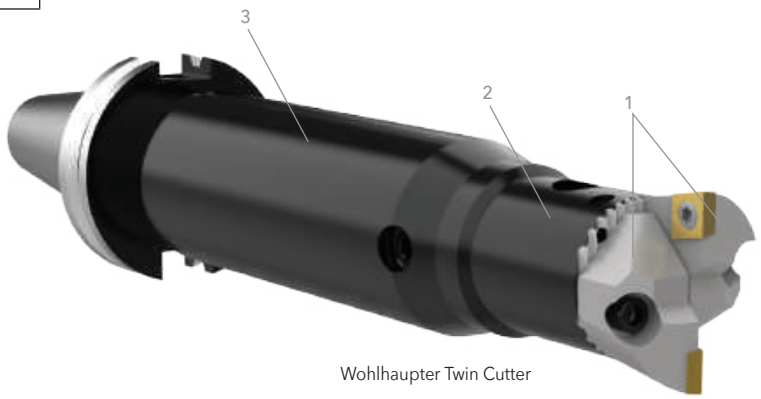
OUR *SOLUTION*

Wohlhaupter® Twin Cuter

Measure	Rough 49mm Wohlhaupter Twin Cutter
Speed	500 SFM (900 RPM)
Feed Rate	0.012 IPR (11.88 IPM)
Total Passes	1
Cycle Time (per part)	**0.69 min**

- Twin Cutter assembly:
  (1) ***Insert Holders (x2): 151023***
  (2) ***Serrated tool body: 148018***
  (3) ***Shank: 353015***

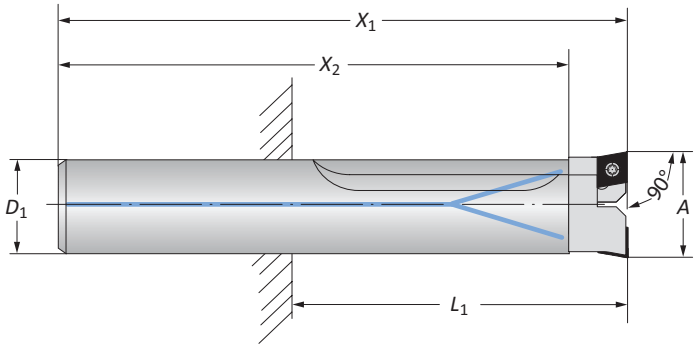
Boring inserts
- ***Item No.: 297239WHC79***



Wohlhaupter Twin Cutter

Twin Cutters Same Level

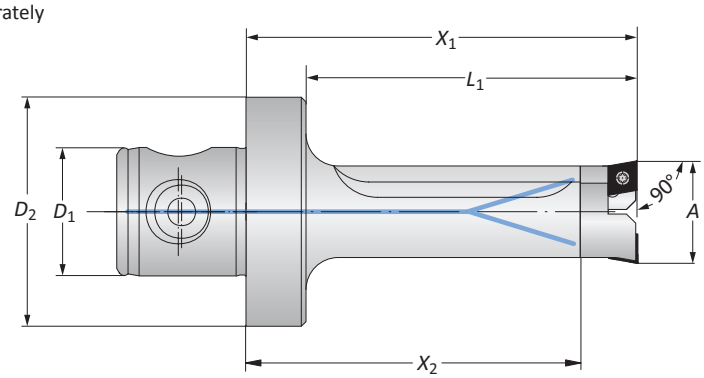
90° | Diameter Range: 0.768" - 1.181" (19.50mm - 30.00mm)



Twin Cutters Same Level

	Connection	Boring Range	Twin Cutter					Part No.	
	D_1	A	X_1	X_2	L_1	Weight	Insert Form	Insert Holder	Serrated Body
i	18	0.768 - 0.906	5.910	5.433	3.149	0.661 (lbs)	101	**235031**	**235021**
	20	0.886 - 1.024	5.910	5.433	3.543	0.661 (lbs)	101	**235032**	**235022**
	23	1.004 - 1.181	6.299	5.826	3.937	0.661 (lbs)	101	**235033**	**235023**
m	18	19.50 - 23.00	150.00	138.00	80.00	0.30 (kg)	101	**235031**	**235021**
	20	22.50 - 26.00	150.00	138.00	90.00	0.30 (kg)	101	**235032**	**235022**
	23	25.50 - 30.00	160.00	148.00	100.00	0.30 (kg)	101	**235033**	**235023**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately



Twin Cutters Same Level

	Connection	Boring Range	Twin Cutter					Part No.	
	$D_2 \mid D_1$	A	X_1	X_2	L_1	Weight	Insert Form	Insert Holder	Serrated Body
i	50 - 28	0.768 - 0.906	3.346	2.874	2.834	0.881 (lbs)	101	**235031**	**235001**
	50 - 28	0.886 - 1.024	3.543	3.070	3.031	1.102 (lbs)	101	**235032**	**235002**
	50 - 28	1.004 - 1.181	3.740	3.268	3.228	1.102 (lbs)	101	**235033**	**235003**
	63 - 36	0.768 - 0.906	3.346	2.874	2.834	1.543 (lbs)	101	**235031**	**235011**
	63 - 36	0.886 - 1.024	3.543	3.070	3.031	1.543 (lbs)	101	**235032**	**235012**
	63 - 36	1.004 - 1.181	3.740	3.268	3.228	1.843 (lbs)	101	**235033**	**235013**
m	50 - 28	19.50 - 23.00	85.00	73.00	72.00	0.40 (kg)	101	**235031**	**235001**
	50 - 28	22.50 - 26.00	90.00	78.00	77.00	0.50 (kg)	101	**235032**	**235002**
	50 - 28	25.50 - 30.00	95.00	83.00	82.00	0.50 (kg)	101	**235033**	**235003**
	63 - 36	19.50 - 23.00	85.00	73.00	72.00	0.70 (kg)	101	**235031**	**235011**
	63 - 36	22.50 - 26.00	90.00	78.00	77.00	0.70 (kg)	101	**235032**	**235012**
	63 - 36	25.50 - 30.00	95.00	83.00	82.00	0.83 (kg)	101	**235033**	**235013**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately

B10-M: 12-15 | B10-D: 24 | B10-F | B10-H | B10: vi-vii

Key on B10-D: 1

i = Imperial (in)
m = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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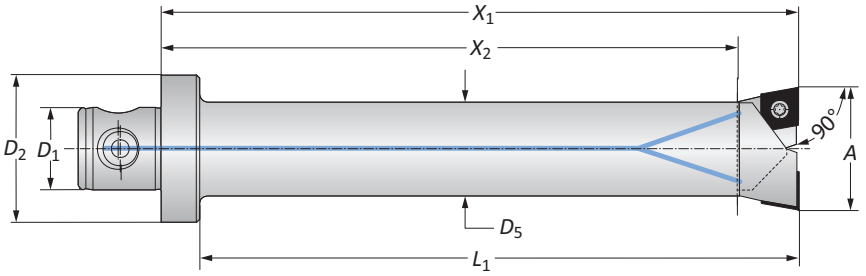
Twin Cutters Same Level

90° | 5xD | Diameter Range: 1.142" - 2.598" (29.00mm - 66.00mm)



	Connection	Boring Range	Twin Cutter						Part No.	
	$D_2 \mid D_1$	A	X_1	X_2	L_1	D_5	Weight	Insert Form	Insert Holder	Serrated Body
	50 - 28	1.142 - 1.457	6.102	5.551	5.590	1.023	1.984 (lbs)	103	**151001**	**148021**
	50 - 28	1.417 - 1.732	6.889	6.338	6.377	1.259	2.866 (lbs)	103	**151002**	**148022**
ⓘ	50 - 28	1.693 - 2.126	8.465	7.677	7.952	1.456	4.188 (lbs)	103	**151023**	**148023**
	50 - 28	1.693 - 2.126	8.465	7.677	7.952	1.456	4.188 (lbs)	104	**151003**	**148023**
	50 - 28	2.087 - 2.598	8.465	7.677	7.952	1.732	5.511 (lbs)	103	**151024**	**148024**
	50 - 28	2.087 - 2.598	8.465	7.677	7.952	1.732	5.511 (lbs)	104	**151004**	**148024**
	50 - 28	29.00 - 37.00	155.00	141.00	142.00	26.00	0.90 (kg)	103	**151001**	**148021**
	50 - 28	36.00 - 44.00	175.00	161.00	162.00	32.00	1.30 (kg)	103	**151002**	**148022**
ⓜ	50 - 28	43.00 - 54.00	215.00	195.00	202.00	37.00	1.90 (kg)	103	**151023**	**148023**
	50 - 28	43.00 - 54.00	215.00	195.00	202.00	37.00	1.90 (kg)	104	**151003**	**148023**
	50 - 28	53.00 - 66.00	215.00	195.00	202.00	44.00	2.50 (kg)	103	**151024**	**148024**
	50 - 28	53.00 - 66.00	215.00	195.00	202.00	44.00	2.50 (kg)	104	**151004**	**148024**

NOTE: Different lengths available upon request.
NOTE: Insert holders sold in quantities of 1, and inserts sold separately

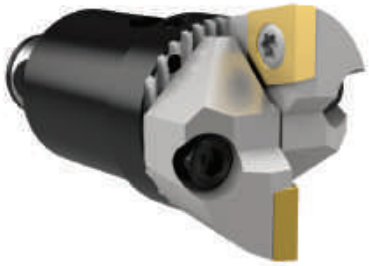
B10-M: 12-15 | B10-D: 24 | B10-F | B10-H | B10: vi-vii
Key on B10-D: 1

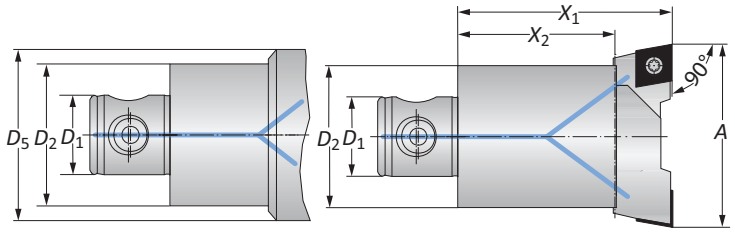
ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Twin Cutters Same Level

90° | Diameter Range: 1.142" - 4.055" (29.00mm - 103.00mm)





	Connection	Boring Range	Twin Cutter					Part No.	
	D_2 | D_1	A	X_1	X_2	D_5	Weight	Insert Form	Insert Holder	Serrated Body
ⓘ	25 - 14	1.142 - 1.457	2.205	1.653	–	0.441 (lbs)	103	**151001**	**148001**
	25 - 14	1.417 - 1.732	2.205	1.653	1.811	0.441 (lbs)	103	**151002**	**148002**
	32 - 18	1.417 - 1.732	2.205	1.653	1.811	0.881 (lbs)	103	**151002**	**148017**
	32 - 18	1.693 - 2.126	2.598	1.811	1.417	0.881 (lbs)	103	**151023**	**148003**
	32 - 18	1.693 - 2.126	2.598	1.811	1.417	0.881 (lbs)	104	**151003**	**148003**
	40 - 22	1.693 - 2.126	2.598	1.811	1.417	1.543 (lbs)	103	**151023**	**148018**
	40 - 22	1.693 - 2.126	2.598	1.811	1.417	1.543 (lbs)	104	**151003**	**148018**
	40 - 22	2.087 - 2.598	2.953	2.165	–	1.543 (lbs)	103	**151024**	**148004**
	40 - 22	2.087 - 2.598	2.953	2.165	–	1.543 (lbs)	104	**151004**	**148004**
	50 - 28	2.559 - 3.268	2.953	2.165	–	2.425 (lbs)	103	**151025**	**148005**
	50 - 28	2.559 - 3.268	2.953	2.165	–	2.425 (lbs)	104	**151005**	**148005**
	63 - 36	3.228 - 4.055	3.543	2.362	–	4.188 (lbs)	103	**151026**	**148006**
	63 - 36	3.228 - 4.055	3.543	2.362	–	4.188 (lbs)	104	**151086**	**148006**
	63 - 36	3.228 - 4.055	3.543	2.362	–	4.188 (lbs)	105	**151006**	**148006**
ⓜ	25 - 14	29.00 - 37.00	56.00	42.00	–	0.20 (kg)	103	**151001**	**148001**
	25 - 14	36.00 - 44.00	56.00	42.00	30.00	0.20 (kg)	103	**151002**	**148002**
	32 - 18	36.00 - 44.00	56.00	42.00	30.00	0.40 (kg)	103	**151002**	**148017**
	32 - 18	43.00 - 54.00	66.00	46.00	36.00	0.40 (kg)	103	**151023**	**148003**
	32 - 18	43.00 - 54.00	66.00	46.00	36.00	0.40 (kg)	104	**151003**	**148003**
	40 - 22	43.00 - 54.00	66.00	46.00	36.00	0.70 (kg)	103	**151023**	**148018**
	40 - 22	43.00 - 54.00	66.00	46.00	36.00	0.70 (kg)	104	**151003**	**148018**
	40 - 22	53.00 - 66.00	75.00	55.00	–	0.70 (kg)	103	**151024**	**148004**
	40 - 22	53.00 - 66.00	75.00	55.00	–	0.70 (kg)	104	**151004**	**148004**
	50 - 28	65.00 - 83.00	75.00	55.00	–	1.10 (kg)	103	**151025**	**148005**
	50 - 28	65.00 - 83.00	75.00	55.00	–	1.10 (kg)	104	**151005**	**148005**
	63 - 36	82.00 - 103.00	90.00	60.00	–	1.90 (kg)	103	**151026**	**148006**
	63 - 36	82.00 - 103.00	90.00	60.00	–	1.90 (kg)	104	**151086**	**148006**
	63 - 36	82.00 - 103.00	90.00	60.00	–	1.90 (kg)	105	**151006**	**148006**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately

B10-M: 12-15 | B10-D: 24 | B10-F | B10-H | B10: vi-vii

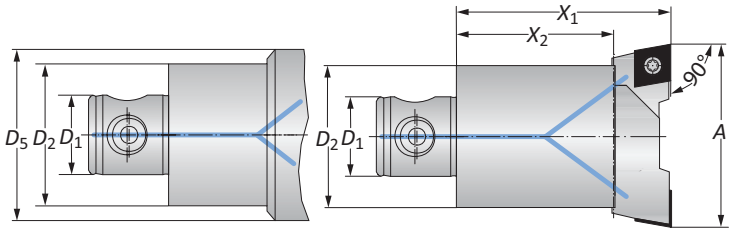
Key on B10-D: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Twin Cutters Same Level

90° | Diameter Range: 3.937" - 8.071" (100.00mm - 205.00mm)



	Connection	Boring Range	Twin Cutter					Part No.	
	D_2 | D_1	A	X_1	X_2	D_5	Weight	Insert Form	Insert Holder	Serrated Body
	80 - 36	3.937 - 5.118	3.543	2.362	–	6.613 (lbs)	103	**151027**	**148007**
	80 - 36	3.937 - 5.118	3.543	2.362	–	6.613 (lbs)	104	**151087**	**148007**
	80 - 36	3.937 - 5.118	3.543	2.362	–	6.613 (lbs)	105	**151007**	**148007**
	80 - 36	4.921 - 6.102	3.543	2.362	–	7.054 (lbs)	103	**151028**	**148007**
ⓘ	80 - 36	4.921 - 6.102	3.543	2.362	–	7.054 (lbs)	104	**151088**	**148007**
	80 - 36	4.921 - 6.102	3.543	2.362	–	7.054 (lbs)	105	**151008**	**148007**
	80 - 36	5.906 - 8.071	3.543	2.362	4.921	8.818 (lbs)	103	**151028**	**148009**
	80 - 36	5.906 - 8.071	3.543	2.362	4.921	8.818 (lbs)	104	**151088**	**148009**
	80 - 36	5.906 - 8.071	3.543	2.362	4.921	8.818 (lbs)	105	**151008**	**148009**
	80 - 36	100.00 - 130.00	90.00	60.00	–	3.00 (kg)	103	**151027**	**148007**
	80 - 36	100.00 - 130.00	90.00	60.00	–	3.00 (kg)	104	**151087**	**148007**
	80 - 36	100.00 - 130.00	90.00	60.00	–	3.00 (kg)	105	**151007**	**148007**
	80 - 36	125.00 - 155.00	90.00	60.00	–	3.20 (kg)	103	**151028**	**148007**
ⓜ	80 - 36	125.00 - 155.00	90.00	60.00	–	3.20 (kg)	104	**151088**	**148007**
	80 - 36	125.00 - 155.00	90.00	60.00	–	3.20 (kg)	105	**151008**	**148007**
	80 - 36	150.00 - 205.00	90.00	60.00	125.00	4.00 (kg)	103	**151028**	**148009**
	80 - 36	150.00 - 205.00	90.00	60.00	125.00	4.00 (kg)	104	**151088**	**148009**
	80 - 36	150.00 - 205.00	90.00	60.00	125.00	4.00 (kg)	105	**151008**	**148009**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately

B10-M: 12-15 | B10-D: 24 | B10-F | B10-H | B10: vi-vii

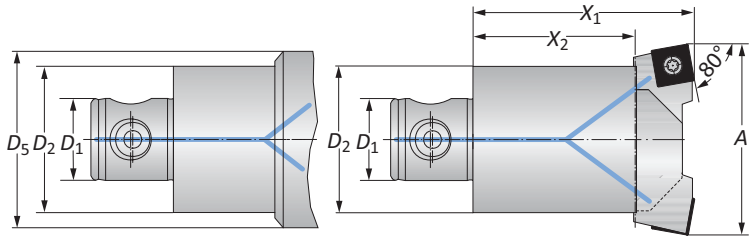
Key on B10-D: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Twin Cutters Same Level

80° | Diameter Range: 1.142" - 8.071" (29.00mm - 205.00mm)



	Connection	Boring Range	Twin Cutter					Part No.	
	D_2 | D_1	A	X_1	X_2	D_5	Weight	Insert Form	Insert Holder	Serrated Tool Body
	25 - 14	1.142 - 1.457	2.205	1.653	–	0.440 (lbs)	112	**151011**	**148001**
	25 - 14	1.417 - 1.732	2.205	1.653	1.181	0.440 (lbs)	112	**151012**	**148002**
	32 - 18	1.417 - 1.732	2.441	1.653	1.181	0.881 (lbs)	112	**151012**	**148017**
	32 - 18	1.693 - 2.126	2.598	1.811	1.417	0.440 (lbs)	113	**151013**	**148003**
	40 - 22	1.693 - 2.126	2.598	1.811	1.417	1.543 (lbs)	113	**151013**	**148018**
ⓘ	40 - 22	2.087 - 2.598	2.952	2.165	–	1.543 (lbs)	113	**151014**	**148004**
	50 - 28	2.559 - 3.268	2.952	2.165	–	2.425 (lbs)	113	**151015**	**148005**
	63 - 36	3.228 - 4.055	3.543	2.362	–	5.070 (lbs)	113	**151036**	**148006**
	80 - 36	3.937 - 5.118	3.543	2.362	–	6.613 (lbs)	113	**151037**	**148007**
	80 - 36	4.921 - 6.102	3.543	2.362	–	7.054 (lbs)	113	**151038**	**148007**
	80 - 36	5.906 - 8.071	3.543	2.362	4.921	8.818 (lbs)	113	**151038**	**148009**
	25 - 14	29.00 - 37.00	56.00	42.00	–	0.20 (kg)	112	**151011**	**148001**
	25 - 14	36.00 - 44.00	56.00	42.00	30.00	0.20 (kg)	112	**151012**	**148002**
	32 - 18	36.00 - 44.00	62.00	42.00	30.00	0.40 (kg)	112	**151012**	**148017**
	32 - 18	43.00 - 54.00	66.00	46.00	36.00	0.40 (kg)	113	**151013**	**148003**
	40 - 22	43.00 - 54.00	66.00	46.00	36.00	0.70 (kg)	113	**151013**	**148018**
ⓜ	40 - 22	53.00 - 66.00	75.00	55.00	–	0.70 (kg)	113	**151014**	**148004**
	50 - 28	65.00 - 83.00	75.00	55.00	–	1.10 (kg)	113	**151015**	**148005**
	63 - 36	82.00 - 103.00	90.00	60.00	–	2.30 (kg)	113	**151036**	**148006**
	80 - 36	100.00 - 130.00	90.00	60.00	–	3.00 (kg)	113	**151037**	**148007**
	80 - 36	125.00 - 155.00	90.00	60.00	–	3.20 (kg)	113	**151038**	**148007**
	80 - 36	150.00 - 205.00	90.00	60.00	125.00	4.00 (kg)	113	**151038**	**148009**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately

B10-M: 12-15 | B10-D: 24 | B10-F | B10-H | B10: vi-vii

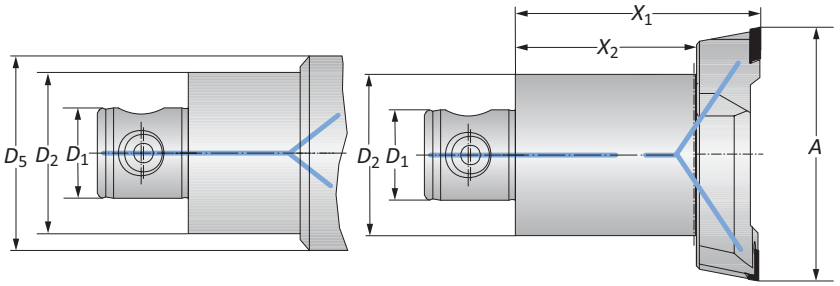
Key on B10-D: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Twin Cutters Same Level Tangential Inserts

Diameter Range: 2.087" - 8.071" (53.00mm - 205.00mm)



	Connection	Boring Range	Twin Cutter					Part No.	
	D_2 | D_1	A	X_1	X_2	D_5	Weight	Insert Form	Insert Holder	Serrated Body
	40 - 22	2.087 - 2.598	2.953	2.165	–	1.543 (lbs)	04	**151022**	**148004**
	50 - 28	2.559 - 3.268	2.953	2.165	–	2.204 (lbs)	04	**151032**	**148005**
	50 - 28	2.559 - 3.268	2.953	2.165	–	2.204 (lbs)	05	**151043**	**148005**
ⓘ	63 - 36	3.228 - 4.055	3.543	2.362	–	4.850 (lbs)	05	**151035**	**148006**
	80 - 36	3.937 - 5.118	3.543	2.362	–	6.613 (lbs)	05	**151009**	**148007**
	80 - 36	4.921 - 6.102	3.543	2.362	–	6.843 (lbs)	05	**151010**	**148007**
	80 - 36	5.906 - 8.071	3.543	2.362	4.921	8.818 (lbs)	05	**151010**	**148009**
	40 - 22	53.00 - 66.00	75.00	55.00	–	0.70 (kg)	04	**151022**	**148004**
	50 - 28	65.00 - 83.00	75.00	55.00	–	1.00 (kg)	04	**151032**	**148005**
	50 - 28	65.00 - 83.00	75.00	55.00	–	1.00 (kg)	05	**151043**	**148005**
ⓜ	63 - 36	82.00 - 103.00	90.00	60.00	–	2.20 (kg)	05	**151035**	**148006**
	80 - 36	100.00 - 130.00	90.00	60.00	–	3.00 (kg)	05	**151009**	**148007**
	80 - 36	125.00 - 155.00	90.00	60.00	–	3.10 (kg)	05	**151010**	**148007**
	80 - 36	150.00 - 205.00	90.00	60.00	125.00	4.00 (kg)	05	**151010**	**148009**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately

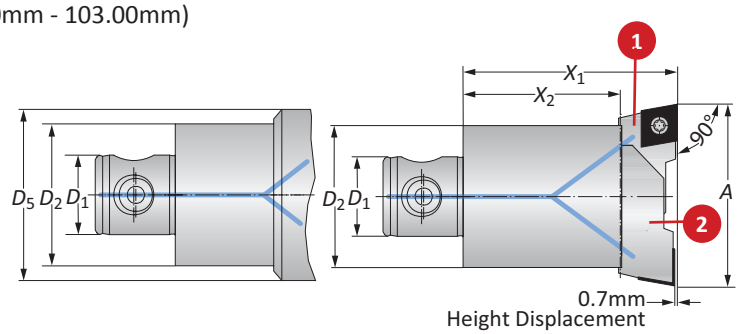
B10-M: 12-15 (Key on B10-D: 1) | B10-D: 24 | B10-F | B10-H | B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Twin Cutters Height Displaced

90° | Diameter Range: 1.142" - 4.055" (29.00mm - 103.00mm)



	Connection D_2 | D_1	Boring Range A	Twin Cutter X_1	X_2	D_5	Weight	Insert Form	Part No. 1 Insert Holder	2. Insert Holder (-0.7mm)	Serrated Body
	25 - 14	1.142 - 1.457	2.205	1.653	–	0.440 (lbs)	103	**151001**	**151061**	**148001**
	25 - 14	1.417 - 1.732	2.205	1.653	1.181	0.440 (lbs)	103	**151002**	**151062**	**148002**
	32 - 18	1.417 - 1.732	2.205	1.653	1.181	0.881 (lbs)	103	**151002**	**151062**	**148017**
	32 - 18	1.693 - 2.126	2.598	1.811	1.417	0.881 (lbs)	104	**151003**	**151093**	**148003**
ⓘ	40 - 22	1.693 - 2.126	2.598	1.811	1.417	1.543 (lbs)	104	**151003**	**151093**	**148018**
	40 - 22	2.087 - 2.598	2.953	2.165	–	1.543 (lbs)	104	**151004**	**151094**	**148004**
	50 - 28	2.559 - 3.268	2.953	2.165	–	2.425 (lbs)	104	**151005**	**151095**	**148005**
	63 - 36	3.228 - 4.055	3.543	2.362	–	5.291 (lbs)	104	**151086**	**151090**	**148006**
	63 - 36	3.228 - 4.055	3.543	2.362	–	5.291 (lbs)	105	**151006**	**151096**	**148006**
	25 - 14	29.00 - 37.00	56.00	42.00	–	0.20 (kg)	103	**151001**	**151061**	**148001**
	25 - 14	36.00 - 44.00	56.00	42.00	30.00	0.20 (kg)	103	**151002**	**151062**	**148002**
	32 - 18	36.00 - 44.00	56.00	42.00	30.00	0.40 (kg)	103	**151002**	**151062**	**148017**
	32 - 18	43.00 - 54.00	66.00	46.00	36.00	0.40 (kg)	104	**151003**	**151093**	**148003**
ⓜ	40 - 22	43.00 - 54.00	66.00	46.00	36.00	0.70 (kg)	104	**151003**	**151093**	**148018**
	40 - 22	53.00 - 66.00	75.00	55.00	–	0.70 (kg)	104	**151004**	**151094**	**148004**
	50 - 28	65.00 - 83.00	75.00	55.00	–	1.10 (kg)	104	**151005**	**151095**	**148005**
	63 - 36	82.00 - 103.00	90.00	60.00	–	2.40 (kg)	104	**151086**	**151090**	**148006**
	63 - 36	82.00 - 103.00	90.00	60.00	–	2.40 (kg)	105	**151006**	**151096**	**148006**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately

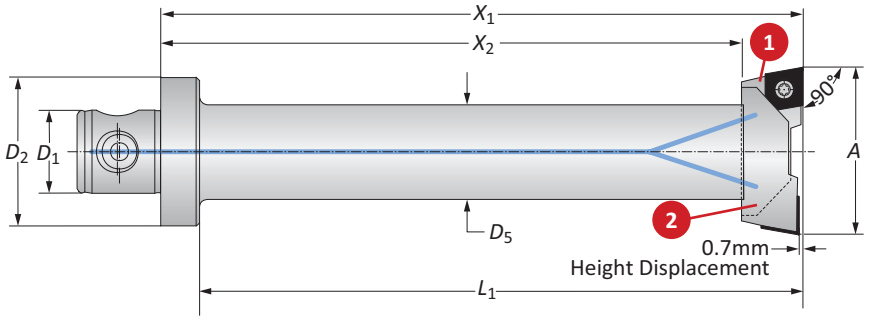
B10-M: 12-15 | B10-D: 24 | B10-F | B10-H | B10: vi-vii
Key on B10-D: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Twin Cutters Height Displaced

90° | 5xD | Diameter Range: 1.142" - 2.598" (29.00mm - 66.00mm)



	Connection	Boring Range	Twin Cutter					Insert Form	Part No.		
	D_2 | D_1	A	X_1	X_2	L_1	D_5	Weight		1. Insert Holder	2. Insert Holder (-0.7mm)	Serrated Body
(i)	50 - 28	1.142 - 1.457	6.102	5.551	5.590	1.023	1.984 (lbs)	103	**151001**	**151061**	**148021**
	50 - 28	1.417 - 1.732	6.889	6.338	6.377	1.259	2.866 (lbs)	103	**151002**	**151062**	**148022**
	50 - 28	1.693 - 2.126	8.465	7.677	7.952	1.456	4.188 (lbs)	104	**151003**	**151093**	**148023**
	50 - 28	2.087 - 2.598	8.465	7.677	7.951	1.732	5.511 (lbs)	104	**151004**	**151094**	**148024**
(m)	50 - 28	29.00 - 37.00	155.00	141.00	142.00	26.00	0.90 (kg)	103	**151001**	**151061**	**148021**
	50 - 28	36.00 - 44.00	175.00	161.00	162.00	32.00	1.30 (kg)	103	**151002**	**151062**	**148022**
	50 - 28	43.00 - 54.00	215.00	195.00	202.00	37.00	1.90 (kg)	104	**151003**	**151093**	**148023**
	50 - 28	53.00 - 66.00	215.00	195.00	202.00	44.00	2.50 (kg)	104	**151004**	**151094**	**148024**

NOTE: Different lengths available upon request.
NOTE: Insert holders sold in quantities of 1, and inserts sold separately

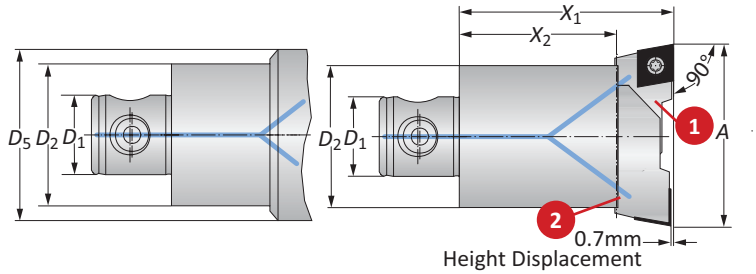
B10-M: 12-15 | B10-D: 24 | B10-F | B10-H | B10: vi-vii
Key on B10-D: 1

(i) = Imperial (in)
(m) = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

Twin Cutters Height Displaced

90° | Diameter Range: 3.937" - 8.071" (100.00mm - 205.00mm)



	Connection D_2 | D_1	Boring Range A	Twin Cutter X_1	X_2	D_5	Weight	Insert Form	Part No. 1. Insert Holder	2. Insert Holder (-0.7mm)	Serrated Body
i	80 - 36	3.937 - 5.118	3.543	2.362	–	6.613 (lbs)	104	**151087**	**151091**	**148007**
	80 - 36	3.937 - 5.118	3.543	2.362	–	6.613 (lbs)	105	**151007**	**151097**	**148007**
	80 - 36	4.921 - 6.102	3.543	2.362	–	7.054 (lbs)	104	**151088**	**151092**	**148007**
	80 - 36	4.921 - 6.102	3.543	2.362	–	7.054 (lbs)	105	**151008**	**151098**	**148007**
	80 - 36	5.906 - 8.071	3.543	2.362	4.921	8.818 (lbs)	104	**151088**	**151092**	**148009**
	80 - 36	5.906 - 8.071	3.543	2.362	4.921	8.818 (lbs)	105	**151008**	**151098**	**148009**
m	80 - 36	100.00 - 130.00	90.00	60.00	–	3.00 (kg)	104	**151087**	**151091**	**148007**
	80 - 36	100.00 - 130.00	90.00	60.00	–	3.00 (kg)	105	**151007**	**151097**	**148007**
	80 - 36	125.00 - 155.00	90.00	60.00	–	3.20 (kg)	104	**151088**	**151092**	**148007**
	80 - 36	125.00 - 155.00	90.00	60.00	–	3.20 (kg)	105	**151008**	**151098**	**148007**
	80 - 36	150.00 - 205.00	90.00	60.00	125.00	4.00 (kg)	104	**151088**	**151092**	**148009**
	80 - 36	150.00 - 205.00	90.00	60.00	125.00	4.00 (kg)	105	**151008**	**151098**	**148009**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately

B10-M: 12-15 | B10-D: 24 | B10-F | B10-H | B10: vi-vii
Key on B10-D: 1

i = Imperial (in)
m = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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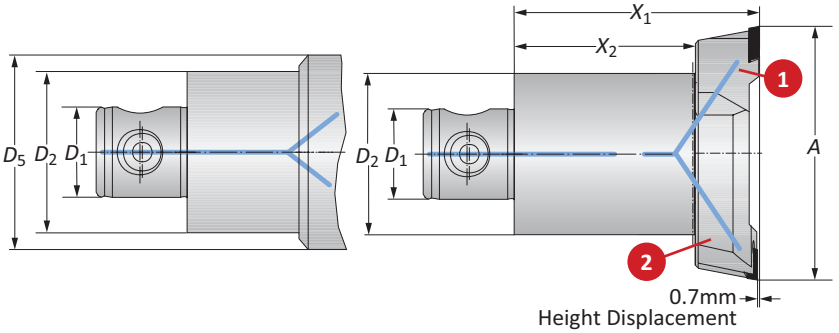
Twin Cutters Height Displaced Tangential Inserts

Diameter Range: 2.087" - 8.071" (53.00mm - 205.00mm)



	Connection $D_2 \mid D_1$	Boring Range A	Twin Cutter X_1	Twin Cutter X_2	Twin Cutter D_5	Weight	Insert Form	Part No. 1. Insert Holder	Part No. 2. Insert Holder (-0.7mm)	Part No. Serrated Body
	40 - 22	2.087 - 2.598	2.953	2.165	–	1.543 (lbs)	04	**151022**	**268009**	**148004**
	50 - 28	2.559 - 3.268	2.953	2.165	–	2.204 (lbs)	04	**151032**	**268010**	**148005**
	50 - 28	2.559 - 3.268	2.953	2.165	–	2.204 (lbs)	05	**151043**	**268019**	**148005**
	63 - 36	3.229 - 4.055	3.543	2.362	–	5.291 (lbs)	04	**151034**	**268020**	**148006**
	63 - 36	3.229 - 4.055	3.543	2.362	–	5.291 (lbs)	05	**151035**	**268021**	**148006**
	80 - 36	3.937 - 5.118	3.543	2.362	–	6.613 (lbs)	05	**151009**	**268022**	**148007**
	80 - 36	4.921 - 6.102	3.543	2.362	–	6.834 (lbs)	05	**151010**	**268023**	**148007**
	80 - 36	5.906 - 8.071	3.543	2.362	4.921	8.818 (lbs)	05	**151010**	**268023**	**148009**
	40 - 22	53.00 - 66.00	75.00	55.00	–	0.70 (kg)	04	**151022**	**268009**	**148004**
	50 - 28	65.00 - 83.00	75.00	55.00	–	1.00 (kg)	04	**151032**	**268010**	**148005**
	50 - 28	65.00 - 83.00	75.00	55.00	–	1.00 (kg)	05	**151043**	**268019**	**148005**
	63 - 36	82.00 - 103.00	90.00	60.00	–	2.20 (kg)	04	**151034**	**268020**	**148006**
	63 - 36	82.00 - 103.00	90.00	60.00	–	2.20 (kg)	05	**151035**	**268021**	**148006**
	80 - 36	100.00 - 130.00	90.00	60.00	–	3.00 (kg)	05	**151009**	**268022**	**148007**
	80 - 36	125.00 - 155.00	90.00	60.00	–	3.10 (kg)	05	**151010**	**268023**	**148007**
	80 - 36	150.00 - 205.00	90.00	60.00	125.00	4.00 (kg)	05	**151010**	**268023**	**148009**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately

B10-M: 12-15 | B10-D: 24 | B10-F | B10-H | B10: vi-vii

Key on B10-D: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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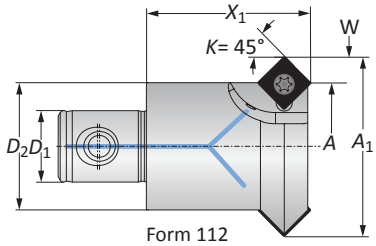
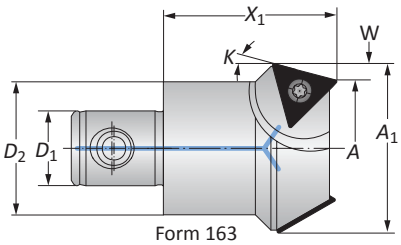
Chamfering Tools

Diameter Range: 0.787" - 1.260" (20.00mm - 32.00mm)



Form 112



Form 163

	Connection D_2 | D_1	Approach Angle K	Boring Range A	Cutter Diameter A_1	Chamfering Tool X_1	Chamfering Tool W	Weight	Insert Form	Number of Inserts	Part No.
	25 - 14	15°	0.984	1.299	1.220	0.157	0.330 (lbs)	163	2	**201087**
	25 - 14	45°	0.787	1.299	1.220	0.255	0.330 (lbs)	112	2	**201082**
ⓘ	32 - 18	15°	1.260	1.574	1.614	0.157	0.440 (lbs)	163	2	**201088**
	32 - 18	30°	0.984	1.614	1.614	0.314	0.440 (lbs)	163	2	**201089**
	32 - 18	45°	1.260	1.771	1.614	0.255	0.440 (lbs)	112	3	**201083**
	25 - 14	15°	25.00	33.00	31.00	4.00	0.15 (kg)	163	2	**201087**
	25 - 14	45°	20.00	33.00	31.00	6.50	0.15 (kg)	112	2	**201082**
ⓜ	32 - 18	15°	32.00	40.00	41.00	4.00	0.20 (kg)	163	2	**201088**
	32 - 18	30°	25.00	41.00	41.00	8.00	0.20 (kg)	163	2	**201089**
	32 - 18	45°	32.00	45.00	41.00	6.50	0.20 (kg)	112	3	**201083**

NOTE: K 45° for front and reverse side chamfering
NOTE: Inserts sold separately

B10-M: 12-15 | B10-D: 24 | B10-F | B10-H | B10: vi-vii
Key on B10-D: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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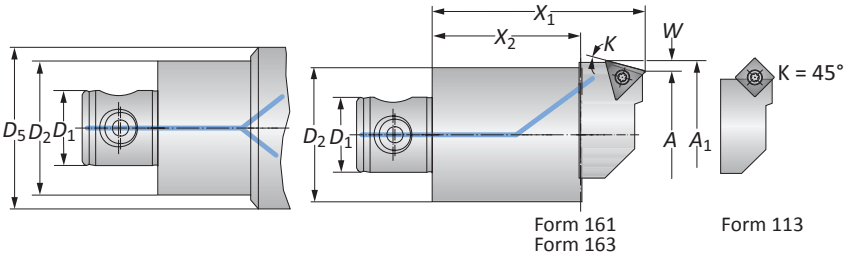
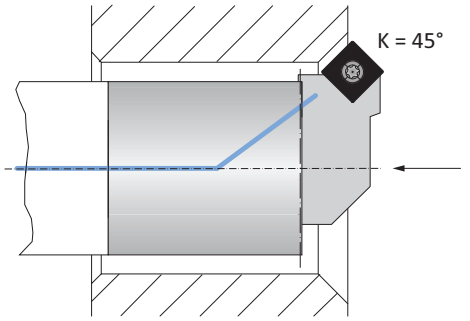
Chamfering Tools

Imperial | Diameter Range: 0.748" - 2.795"



Form 161
Form 163

Form 113



	Connection	Approach Angle	Boring Range	Chamfering Range	Chamfering Tool				Weight (lbs)	Insert Form	Part No.	
	D_2 | D_1	K	A	A_1	X_1	X_2	D_5	W			Insert Holder	Serrated Body
	25 - 14	15°	0.945 - 1.260	1.141 - 1.457	2.362	1.653	–	0.098	0.440 (lbs)	161	**201057**	**148001**
	25 - 14	15°	1.220 - 1.535	1.417 - 1.732	2.362	1.653	1.181	0.098	0.440 (lbs)	161	**201058**	**148002**
	25 - 14	20°	0.866 - 1.181	1.141 - 1.456	2.362	1.653	–	0.138	0.440 (lbs)	161	**201017**	**148001**
	25 - 14	20°	1.142 - 1.457	1.417 - 1.732	2.362	1.653	1.181	0.138	0.440 (lbs)	161	**201018**	**148002**
	25 - 14	30°	0.787 - 1.102	1.141 - 1.456	2.362	1.653	–	0.177	0.440 (lbs)	161	**201067**	**148001**
	25 - 14	30°	1.063 - 1.378	1.417 - 1.732	2.362	1.653	1.181	0.177	0.440 (lbs)	161	**201068**	**148002**
	25 - 14	45°	0.748 - 1.063	1.141 - 1.456	2.283	1.653	–	0.197	0.440 (lbs)	161	**201003***	**148001**
	25 - 14	45°	1.024 - 1.339	1.417 - 1.732	2.283	1.653	–	0.197	0.440 (lbs)	161	**201004***	**148001**
	25 - 14	45°	1.220 - 1.535	1.692 - 2.007	2.362	1.653	1.181	0.236	0.440 (lbs)	112	**201007**	**148002**
	32 - 18	15°	1.220 - 1.535	1.417 - 1.732	2.362	1.653	1.181	0.098	0.440 (lbs)	161	**201058**	**148017**
	32 - 18	20°	1.142 - 1.457	1.417 - 1.732	2.362	1.653	1.181	0.138	0.440 (lbs)	161	**201018**	**148017**
	32 - 18	30°	1.063 - 1.378	1.417 - 1.732	2.362	1.653	1.181	0.177	0.440 (lbs)	161	**201068**	**148017**
ⓘ	32 - 18	45°	1.220 - 1.535	1.692 - 2.007	2.362	1.653	1.181	0.236	0.440 (lbs)	112	**201007**	**148017**
	32 - 18	15°	1.378 - 1.811	1.692 - 2.125	2.795	1.811	1.417	0.157	0.881 (lbs)	163	**201059**	**148003**
	32 - 18	20°	1.299 - 1.732	1.692 - 2.125	2.795	1.811	1.417	0.197	0.881 (lbs)	163	**201019**	**148003**
	32 - 18	30°	1.102 - 1.535	1.692 - 2.125	2.795	1.811	1.417	0.297	0.881 (lbs)	163	**201069**	**148003**
	32 - 18	45°	1.378 - 1.811	1.968 - 2.401	2.598	1.811	1.417	0.295	0.881 (lbs)	113	**201008**	**148003**
	40 - 22	15°	1.378 - 1.811	1.692 - 2.125	2.795	1.811	1.417	0.157	0.881 (lbs)	163	**201059**	**148018**
	40 - 22	20°	1.299 - 1.732	1.692 - 2.125	2.795	1.811	1.417	0.197	0.881 (lbs)	163	**201019**	**148018**
	40 - 22	30°	1.102 - 1.535	1.692 - 2.125	2.795	1.811	1.417	0.295	0.881 (lbs)	163	**201069**	**148018**
	40 - 22	45°	1.378 - 1.811	1.968 - 2.401	2.598	1.811	1.417	0.295	0.881 (lbs)	113	**201008**	**148018**
	40 - 22	15°	1.457 - 1.969	1.771 - 2.283	3.150	2.165	–	0.157	1.543 (lbs)	163	**201060**	**148004**
	40 - 22	20°	1.457 - 1.969	1.850 - 2.362	3.150	2.165	–	0.197	1.543 (lbs)	163	**201020**	**148004**
	40 - 22	30°	1.457 - 1.969	2.047 - 2.559	3.150	2.165	–	0.295	1.543 (lbs)	163	**201070**	**148004**
	40 - 22	45°	1.963 - 2.205	2.283 - 2.795	3.150	2.165	–	0.295	1.543 (lbs)	113	**201009**	**148004**

*Insert holder cannot be used for reverse machining.
NOTE: K 45° for front and reverse side chamfering above Ø 1.220"
NOTE: Insert holders and inserts sold separately

B10-M: 12-15 | B10-D: 24 | B10-F | B10-H | B10: vi-vii
Key on B10-D: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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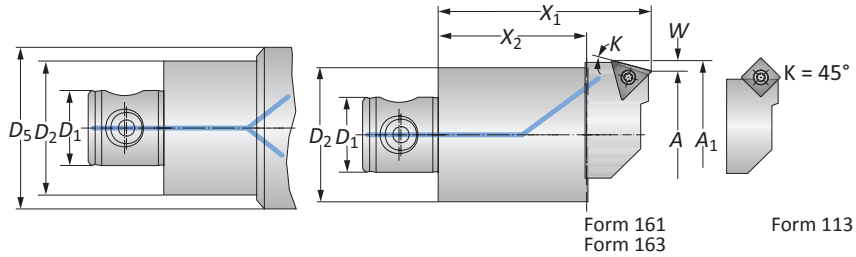
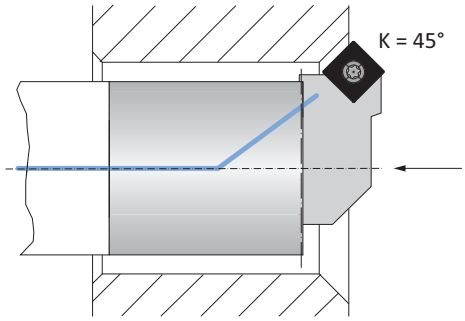
Chamfering Tools

Metric | Diameter Range: (19.00mm - 71.00mm)





	Connection	Approach Angle	Boring Range	Chamfering Range	Chamfering Tool				Weight	Insert	Part No.	
	$D_2 \mid D_1$	K	A	A_1	X_1	X_2	D_5	W	(lbs)	Form	Insert Holder	Serrated Body
	25 - 14	15°	24.00 - 32.00	29.00 - 37.00	60.00	42.00	–	2.50	0.20 (kg)	161	**201057**	**148001**
	25 - 14	15°	31.00 - 39.00	36.00 - 44.00	60.00	42.00	30.00	2.50	0.20 (kg)	161	**201058**	**148002**
	25 - 14	20°	22.00 - 30.00	29.00 - 37.00	60.00	42.00	–	3.50	0.20 (kg)	161	**201017**	**148001**
	25 - 14	20°	29.00 - 37.00	36.00 - 44.00	60.00	42.00	30.00	3.50	0.20 (kg)	161	**201018**	**148002**
	25 - 14	30°	20.00 - 28.00	29.00 - 37.00	60.00	42.00	–	4.50	0.20 (kg)	161	**201067**	**148001**
	25 - 14	30°	27.00 - 35.00	36.00 - 44.00	60.00	42.00	30.00	4.50	0.20 (kg)	161	**201068**	**148002**
	25 - 14	45°	19.00 - 27.00	29.00 - 37.00	58.00	42.00	–	5.00	0.20 (kg)	161	**201003***	**148001**
	25 - 14	45°	26.00 - 34.00	36.00 - 44.00	58.00	42.00	–	5.00	0.20 (kg)	161	**201004***	**148001**
	25 - 14	45°	31.00 - 39.00	43.00 - 51.00	60.00	42.00	30.00	6.00	0.20 (kg)	112	**201007**	**148002**
	32 - 18	15°	31.00 - 39.00	36.00 - 44.00	60.00	42.00	30.00	2.50	0.20 (kg)	161	**201058**	**148017**
	32 - 18	20°	29.00 - 37.00	36.00 - 44.00	60.00	42.00	30.00	3.50	0.20 (kg)	161	**201018**	**148017**
	32 - 18	30°	27.00 - 35.00	36.00 - 44.00	60.00	42.00	30.00	4.50	0.20 (kg)	161	**201068**	**148017**
ⓜ	32 - 18	45°	31.00 - 39.00	43.00 - 51.00	60.00	42.00	30.00	6.00	0.20 (kg)	112	**201077**	**148017**
	32 - 18	15°	35.00 - 46.00	43.00 - 54.00	71.00	46.00	36.00	4.00	0.40 (kg)	163	**201059**	**148003**
	32 - 18	20°	33.00 - 44.00	43.00 - 54.00	71.00	46.00	36.00	5.00	0.40 (kg)	163	**201019**	**148003**
	32 - 18	30°	28.00 - 39.00	43.00 - 54.00	71.00	46.00	36.00	7.50	0.40 (kg)	163	**201069**	**148003**
	32 - 18	45°	35.00 - 46.00	50.00 - 61.00	66.00	46.00	36.00	7.50	0.40 (kg)	113	**201008**	**148003**
	40 - 22	15°	35.00 - 46.00	43.00 - 54.00	71.00	46.00	36.00	4.00	0.40 (kg)	163	**201059**	**148018**
	40 - 22	20°	33.00 - 44.00	43.00 - 54.00	71.00	46.00	36.00	5.00	0.40 (kg)	163	**201019**	**148018**
	40 - 22	30°	28.00 - 39.00	43.00 - 54.00	71.00	46.00	36.00	7.50	0.40 (kg)	163	**201069**	**148018**
	40 - 22	45°	35.00 - 46.00	50.00 - 61.00	66.00	46.00	36.00	7.50	0.40 (kg)	113	**201008**	**148018**
	40 - 22	15°	37.00 - 50.00	45.00 - 58.00	80.00	55.00	–	4.00	0.70 (kg)	163	**201060**	**148004**
	40 - 22	20°	37.00 - 50.00	47.00 - 60.00	80.00	55.00	–	5.00	0.70 (kg)	163	**201020**	**148004**
	40 - 22	30°	37.00 - 50.00	52.00 - 65.00	80.00	55.00	–	7.50	0.70 (kg)	163	**201070**	**148004**
	40 - 22	45°	43.00 - 56.00	58.00 - 71.00	80.00	55.00	–	7.50	0.70 (kg)	113	**201009**	**148004**

*Insert holder cannot be used for reverse machining.
NOTE: K 45° for front and reverse side chamfering above Ø 31.00mm
NOTE: Insert holders and inserts sold separately

B10-M: 12-15 | B10-D: 24 | B10-F | B10-H | B10: vi-vii
Key on B10-D: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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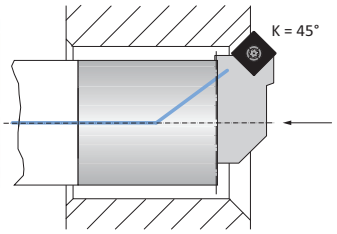
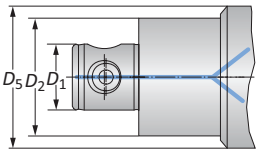
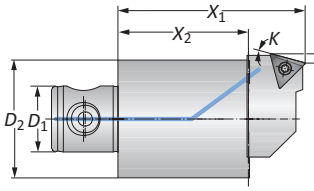
Chamfering Tools

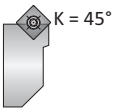
Diameter Range: 1.969" - 8.504" (50.00mm - 216.00mm)







Form 161
Form 163

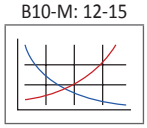


Form 113

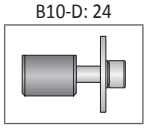
	Connection	Approach Angle	Boring Range	Chamfering Range	Chamfering Tool						Part No.	
	D_2 | D_1	K	A	A_1	X_1	X_2	D_5	W	Weight	Insert Form	Insert Holder	Serrated Body
	50 - 28	15°	1.969 - 2.677	2.283 - 2.992	3.150	2.165	–	0.157	2.204 (lbs)	163	**201061**	**148005**
	50 - 28	20°	1.969 - 2.677	2.362 - 3.070	3.150	2.165	–	0.197	2.204 (lbs)	163	**201021**	**148005**
	50 - 28	30°	1.969 - 2.677	2.559 - 3.267	3.150	2.165	–	0.197	2.204 (lbs)	163	**201071**	**148005**
	50 - 28	45°	2.165 - 2.874	2.755 - 3.464	3.150	2.165	–	0.295	2.204 (lbs)	113	**201010**	**148005**
	63 - 36	15°	2.677 - 3.504	2.992 - 3.818	3.543	2.362	–	0.157	4.188 (lbs)	163	**201062**	**148006**
	63 - 36	20°	2.677 - 3.504	3.070 - 3.897	3.543	2.362	–	0.197	4.188 (lbs)	163	**201022**	**148006**
	63 - 36	30°	2.677 - 3.504	3.268 - 4.094	3.543	2.362	–	0.295	4.188 (lbs)	163	**201072**	**148006**
	63 - 36	45°	2.835 - 3.661	3.425 - 4.251	3.543	2.362	–	0.295	4.188 (lbs)	113	**201011**	**148006**
	80 - 36	15°	3.504 - 4.685	3.818 - 5.000	3.543	2.362	–	0.157	5.732 (lbs)	163	**201063**	**148007**
ⓘ	80 - 36	15°	4.685 - 5.866	5.000 - 6.259	3.543	2.362	–	0.157	5.952 (lbs)	163	**201064**	**148007**
	80 - 36	15°	5.669 - 7.835	5.984 - 8.149	3.543	2.362	4.921	0.157	7.936 (lbs)	163	**201064**	**148009**
	80 - 36	20°	3.504 - 4.685	3.989 - 5.078	3.543	2.362	–	0.197	5.732 (lbs)	163	**201023**	**148007**
	80 - 36	20°	4.685 - 5.866	5.078 - 6.259	3.543	2.362	–	0.197	5.952 (lbs)	163	**201024**	**148007**
	80 - 36	20°	5.669 - 7.835	6.062 - 8.228	3.543	2.362	4.921	0.197	7.936 (lbs)	163	**201024**	**148009**
	80 - 36	30°	3.504 - 4.685	4.094 - 5.275	3.543	2.362	–	0.295	5.732 (lbs)	163	**201073**	**148007**
	80 - 36	30°	4.685 - 5.866	5.275 - 6.456	3.543	2.362	–	0.295	5.952 (lbs)	163	**201074**	**148007**
	80 - 36	30°	5.669 - 7.835	6.259 - 8.425	3.543	2.362	4.921	0.295	7.936 (lbs)	163	**201074**	**148009**
	80 - 36	45°	3.622 - 4.803	4.212 - 5.393	3.543	2.362	–	0.295	5.732 (lbs)	113	**201012**	**148007**
	80 - 36	45°	4.764 - 5.945	5.354 - 6.535	3.543	2.362	–	0.295	5.952 (lbs)	113	**201013**	**148007**
	80 - 36	45°	5.748 - 7.913	6.338 - 8.504	3.543	2.362	4.921	0.295	7.936 (lbs)	113	**201013**	**148009**
	50 - 28	15°	50.00 - 68.00	58.00 - 76.00	80.00	55.00	–	4.00	1.00 (kg)	163	**201061**	**148005**
	50 - 28	20°	50.00 - 68.00	60.00 - 78.00	80.00	55.00	–	5.00	1.00 (kg)	163	**201021**	**148005**
	50 - 28	30°	50.00 - 68.00	65.00 - 83.00	80.00	55.00	–	7.50	1.00 (kg)	163	**201071**	**148005**
	50 - 28	45°	55.00 - 73.00	70.00 - 88.00	80.00	55.00	–	7.50	1.00 (kg)	113	**201010**	**148005**
	63 - 36	15°	68.00 - 89.00	76.00 - 97.00	90.00	60.00	–	4.00	1.90 (kg)	163	**201062**	**148006**
	63 - 36	20°	68.00 - 89.00	78.00 - 99.00	90.00	60.00	–	5.00	1.90 (kg)	163	**201022**	**148006**
	63 - 36	30°	68.00 - 89.00	83.00 - 104.00	90.00	60.00	–	7.50	1.90 (kg)	163	**201072**	**148006**
	63 - 36	45°	72.00 - 93.00	87.00 - 108.00	90.00	60.00	–	7.50	1.90 (kg)	113	**201011**	**148006**
	80 - 36	15°	89.00 - 119.00	97.00 - 127.00	90.00	60.00	–	4.00	2.60 (kg)	163	**201063**	**148007**
ⓜ	80 - 36	15°	119.00 - 149.00	127.00 - 159.00	90.00	60.00	–	4.00	2.70 (kg)	163	**201064**	**148007**
	80 - 36	15°	144.00 - 199.00	152.00 - 207.00	90.00	60.00	125.00	4.00	3.60 (kg)	163	**201064**	**148009**
	80 - 36	20°	89.00 - 119.00	99.00 - 129.00	90.00	60.00	–	5.00	2.60 (kg)	163	**201023**	**148007**
	80 - 36	20°	119.00 - 149.00	129.00 - 159.00	90.00	60.00	–	5.00	2.70 (kg)	163	**201024**	**148007**
	80 - 36	20°	144.00 - 199.00	154.00 - 209.00	90.00	60.00	125.00	5.00	3.60 (kg)	163	**201024**	**148009**
	80 - 36	30°	89.00 - 119.00	104.00 - 134.00	90.00	60.00	–	7.50	2.60 (kg)	163	**201073**	**148007**
	80 - 36	30°	119.00 - 149.00	134.00 - 164.00	90.00	60.00	–	7.50	2.70 (kg)	163	**201074**	**148007**
	80 - 36	30°	144.00 - 199.00	159.00 - 214.00	90.00	60.00	125.00	7.50	3.60 (kg)	163	**201074**	**148009**
	80 - 36	45°	92.00 - 122.00	107.00 - 137.00	90.00	60.00	–	7.50	2.60 (kg)	113	**201012**	**148007**
	80 - 36	45°	121.00 - 151.00	136.00 - 166.00	90.00	60.00	–	7.50	2.70 (kg)	113	**201013**	**148007**
	80 - 36	45°	146.00 - 201.00	161.00 - 216.00	90.00	60.00	125.00	7.50	3.60 (kg)	113	**201013**	**148009**

NOTE: K 45° = front and reverse side chamfering
NOTE: Insert holders and inserts sold separately

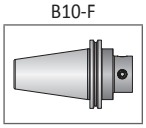
B10-M: 12-15
Key on B10-D: 1



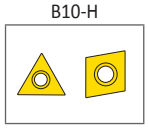
B10-D: 24



B10-F



B10-H



B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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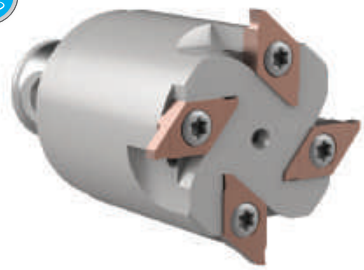
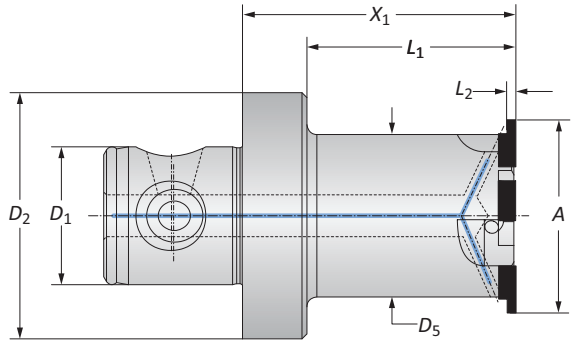
Grooving Tools for Circular Milling

Diameter Range: Ø >0.787" (20.00mm)





	Connection D_2 | D_1	Cutter Diameter A	Grooving Tool X_1	L_1	D_5	Groove Width L_2	Groove Depth	Number of Inserts	Weight	Insert Form	Part No.
	50 - 28	0.787	2.165	1.575	0.669	max 0.093	max 0.059	2	0.881 (lbs)	89	**143051**
	50 - 28	0.787	3.740	3.228	0.669	max 0.093	max 0.059	2	0.881 (lbs)	89	**143052**
	50 - 28	1.535	2.165	1.654	1.299	max 0.133	max 0.098	4	1.322 (lbs)	90	**143053**
ⓘ	32 - 18	1.535	1.575	1.575	1.299	max 0.133	max 0.098	4	0.661 (lbs)	90	**143054**
	50 - 28	1.929	2.165	1.575	1.692	max 0.133	max 0.098	5	1.543 (lbs)	90	**143055**
	40 - 22	1.929	1.575	1.575	1.692	max 0.133	max 0.098	5	1.102 (lbs)	90	**143056**
	50 - 28	2.480	1.575	1.575	2.086	max 0.231	max 0.185	6	1.543 (lbs)	91	**143057**
	63 - 36	3.110	1.575	1.575	2.716	max 0.231	max 0.185	8	2.645 (lbs)	91	**143058**
	50 - 28	20.00	55.00	40.00	17.00	max 2.37	max 1.50	2	0.40 (kg)	89	**143051**
	50 - 28	20.00	95.00	82.00	17.00	max 2.37	max 1.50	2	0.40 (kg)	89	**143052**
	50 - 28	39.00	55.00	42.00	33.00	max 3.37	max 2.50	4	0.60 (kg)	90	**143053**
ⓜ	32 - 18	39.00	40.00	40.00	33.00	max 3.37	max 2.50	4	0.30 (kg)	90	**143054**
	50 - 28	49.00	55.00	40.00	43.00	max 3.37	max 2.50	5	0.70 (kg)	90	**143055**
	40 - 22	49.00	40.00	40.00	43.00	max 3.37	max 2.50	5	0.50 (kg)	90	**143056**
	50 - 28	63.00	40.00	40.00	53.00	max 5.87	max 4.70	6	0.70 (kg)	91	**143057**
	63 - 36	79.00	40.00	40.00	69.00	max 5.87	max 4.70	8	1.20 (kg)	91	**143058**

NOTE: Different lengths available upon request.
NOTE: Insert holders and inserts sold separately

B10-M: 12-15 | B10-D: 24 | B10-F | B10-H | B10: vi-vii
Key on B10-D: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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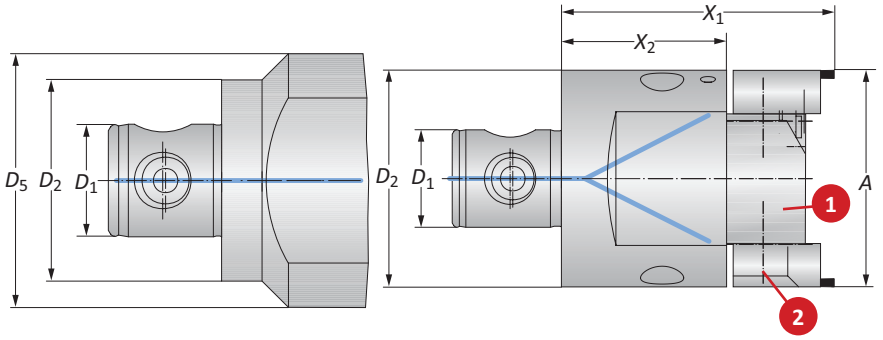
Axial Grooving Tools

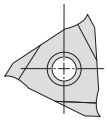
Diameter Range: 0.787" - 8.071" (20.00mm - 205.00mm)



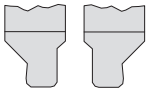
	Connection	Boring Range	Grooving Tool				Part No.			
	$D_2 \mid D_1$	A	X_1	X_2	D_5	Weight	1. Support Block	Insert Form	2. Insert Holder	Serrated Tool Body
ⓘ	50 - 28	0.787 - 2.559	3.268	2.165	2.480	2.866 (lbs)	–	304	226030	148010
	80 - 36	2.244 - 3.740	3.937	2.362	–	5.732 (lbs)	226011	304	226031	148007
	80 - 36	3.228 - 6.102	3.937	2.362	4.921	8.157 (lbs)	226012	304	226031	148009
	80 - 36	6.142 - 8.268	3.937	2.362	4.921	8.157 (lbs)	226013	304	226031	148009
ⓜ	50 - 28	20.00 - 65.00	83.00	55.00	63.00	1.30 (kg)	–	304	226030	148010
	80 - 36	57.00 - 95.00	100.00	60.00	–	2.60 (kg)	226011	304	226031	148007
	80 - 36	82.00 - 155.00	100.00	60.00	125.00	3.70 (kg)	226012	304	226031	148009
	80 - 36	156.00 - 210.00	100.00	60.00	125.00	3.70 (kg)	226013	304	226031	148009

NOTE: Groove width is 0.039" - 0.276" (1.00mm - 7.00mm). (With Twin Cutter and diameter offset up to 12.00mm is possible.) | Groove depth is 0.039" - 0.236" (1.00mm - 6.00mm)
NOTE: Support block with machining diameters smaller than 4.842" (123.00mm) can only be secured with one screw
NOTE: Insert holders, support blocks, and inserts sold separately

Examples of recessing replaceable inserts:


Other insert types available upon request.


Two-Sided Cutting Form


Single-Sided Cutting Form (Right / Left)


Two-Sided Angle Cutting


With Corner Radius


Full Radius

B10-M: 12-15 | B10-D: 24 | B10-F | B10-H | B10: vi-vii
Key on B10-D: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

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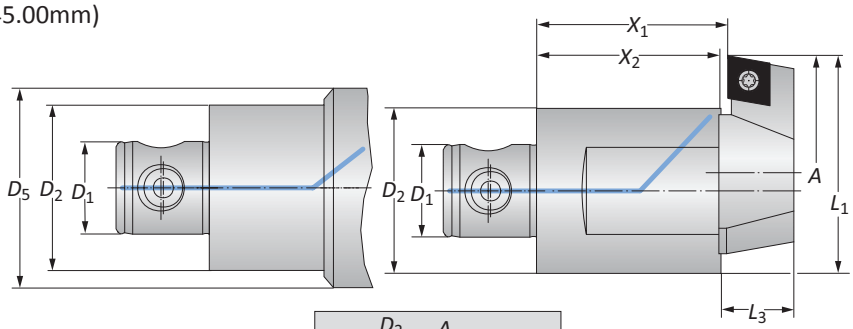
Reverse Machining Tools

Diameter Range: 1.142" - 9.646" (29.00mm - 245.00mm)



$$L_1 = \frac{D_2}{2} + \frac{A}{2} + 0.5\text{mm}$$

	Connection	Boring Range	Reverse Machining						Part No.	
	D_2 | D_1	A	X_1	X_2	L_3	D_5	Weight	Insert Form	Insert Holder	Serrated Tool Body
	25 - 14	1.142 - 1.457	1.575	1.535	0.551	–	0.440 (lbs)	103	**251001**	**148011**
	25 - 14	1.339 - 1.654	1.575	1.535	0.551	–	0.440 (lbs)	103	**251002**	**148011**
	25 - 14	1.417 - 1.732	1.575	1.535	0.551	–	0.440 (lbs)	103	**251002**	**148012**
	25 - 14	1.732 - 2.047	1.575	1.535	0.708	–	0.440 (lbs)	104	**251003**	**148012**
	32 - 18	1.693 - 2.126	1.575	1.535	0.708	–	0.661 (lbs)	104	**251003**	**148013**
	32 - 18	2.165 - 2.598	1.575	1.535	0.708	–	0.881 (lbs)	104	**251004**	**148013**
	40 - 22	2.087 - 2.835	1.575	1.535	0.708	–	1.102 (lbs)	104	**251004**	**148014**
ⓘ	40 - 22	2.598 - 3.346	1.575	1.535	0.708	–	1.102 (lbs)	104	**251005**	**148014**
	50 - 28	2.756 - 3.740	2.205	2.165	0.866	–	2.425 (lbs)	104	**251006**	**148015**
	50 - 28	3.622 - 4.606	2.205	2.165	0.866	–	2.866 (lbs)	104	**251007**	**148015**
	63 - 36	3.622 - 4.803	2.205	2.165	0.866	–	3.747 (lbs)	104	**251007**	**148016**
	80 - 36	4.724 - 5.906	2.441	2.362	1.023	–	5.952 (lbs)	104	**251008**	**148007**
	80 - 36	6.535 - 7.717	2.441	2.362	1.023	–	6.393 (lbs)	104	**251009**	**148007**
	80 - 36	5.709 - 7.874	2.441	2.362	1.023	4.921	7.936 (lbs)	104	**251008**	**148009**
	80 - 36	7.480 - 9.646	2.441	2.362	1.023	4.921	8.157 (lbs)	104	**251009**	**148009**
	25 - 14	29.00 - 37.00	40.00	39.00	14.00	–	0.20 (kg)	103	**251001**	**148011**
	25 - 14	34.00 - 42.00	40.00	39.00	14.00	–	0.20 (kg)	103	**251002**	**148011**
	25 - 14	36.00 - 44.00	40.00	39.00	14.00	–	0.20 (kg)	103	**251002**	**148012**
	25 - 14	44.00 - 52.00	40.00	39.00	18.00	–	0.20 (kg)	104	**251003**	**148012**
	32 - 18	43.00 - 54.00	40.00	39.00	18.00	–	0.30 (kg)	104	**251003**	**148013**
	32 - 18	55.00 - 66.00	40.00	39.00	18.00	–	0.40 (kg)	104	**251004**	**148013**
	40 - 22	53.00 - 72.00	40.00	39.00	18.00	–	0.50 (kg)	104	**251004**	**148014**
ⓜ	40 - 22	66.00 - 85.00	40.00	39.00	18.00	–	0.50 (kg)	104	**251005**	**148014**
	50 - 28	70.00 - 95.00	56.00	55.00	22.00	–	1.10 (kg)	104	**251006**	**148015**
	50 - 28	92.00 - 117.00	56.00	55.00	22.00	–	1.30 (kg)	104	**251007**	**148015**
	63 - 36	92.00 - 122.00	56.00	55.00	22.00	–	1.70 (kg)	104	**251007**	**148016**
	80 - 36	120.00 - 150.00	62.00	60.00	26.00	–	2.70 (kg)	104	**251008**	**148007**
	80 - 36	166.00 - 196.00	62.00	60.00	26.00	–	2.90 (kg)	104	**251009**	**148007**
	80 - 36	145.00 - 200.00	62.00	60.00	26.00	125.00	3.60 (kg)	104	**251008**	**148009**
	80 - 36	190.00 - 245.00	62.00	60.00	26.00	125.00	3.70 (kg)	104	**251009**	**148009**

NOTE: Only use inserts with chip grooves all around
NOTE: Insert holders and inserts sold separately

B10-M: 12-15 | B10-D: 24 | B10-F | B10-H | B10: vi-vii
Key on B10-D: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

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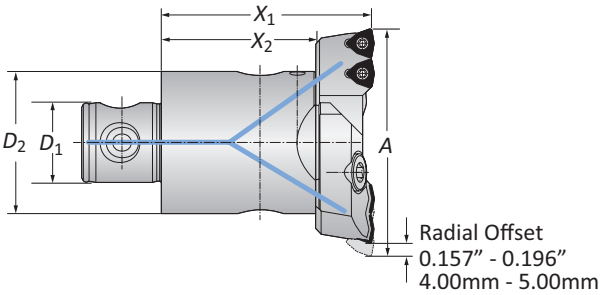
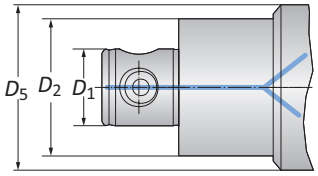
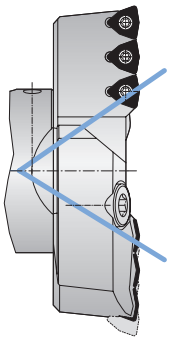
VolCut Insert Holders

Diameter Range: 2.559" - 128.150" (65.00mm - 3255.00mm)







Serrated Bodies with VolCut Insert Holders

	Connection	Boring Range		Serrated Body				Number of Inserts	Insert Form	Part No.	
	D_2 | D_1	A	A_{min}**	X_1	X_2	D_5	Weight			VolCut Insert Holder	Serrated Body
ⓘ	50 - 28	2.559 - 3.268	2.559 - 2.756	2.913	2.165	–	2.425 (lbs)	2	464	**151019**	**148005**
	63 - 36	3.228 - 4.055	3.228 - 3.425	3.504	2.362	–	4.850 (lbs)	3	464	**151039**	**148006**
	80 - 36	3.937 - 5.118	3.937 - 4.134	3.504	2.362	–	6.613 (lbs)	3	464	**151059**	**148007**
	80 - 36	4.921 - 6.102	4.921 - 5.118	3.504	2.362	–	7.054 (lbs)	3	464	**151069**	**148007**
	80 - 36	5.906 - 8.071	5.906 - 6.102	3.504	2.362	4.921	11.243 (lbs)	3	464	**151069**	**148009**
	⚠ D60	7.874 - 128.150	–	–	–	–	–	3	464	**149030**	*
ⓜ	50 - 28	65.00 - 83.00	65.00 - 70.00	74.00	55.00	–	1.10 (kg)	2	464	**151019**	**148005**
	63 - 36	82.00 - 103.00	82.00 - 87.00	89.00	60.00	–	2.20 (kg)	3	464	**151039**	**148006**
	80 - 36	100.00 - 130.00	100.00 - 105.00	89.00	60.00	–	3.00 (kg)	3	464	**151059**	**148007**
	80 - 36	125.00 - 155.00	125.00 - 130.00	89.00	60.00	–	3.20 (kg)	3	464	**151069**	**148007**
	80 - 36	150.00 - 205.00	150.00 - 155.00	89.00	60.00	125.00	5.10 (kg)	3	464	**151069**	**148009**
	⚠ D60	200.00 - 3255.00	–	–	–	–	–	3	464	**149030**	*

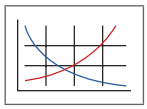
NOTE: Inserts, insert holders, and serrated body are sold separately.
*For large diameter serrated slides, please contact Application Eng. (330.343.4283 ext: 7611) and see section B10-G in the Wohlhaupter® MultiBore® System Tools catalog.
**For smaller diameters, both cartridges must be set to the same diameter. Only the outside insert on each cartridge can be engaged in the material.

IC Inserts

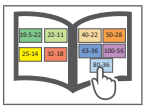
Carbide Grade	Geometry	Part No. AM300®	WSP-Screw
P35 (C5)	Standard	**OP-05T308-P**	IS-10-1
K35 (C1)	Standard	**OP-05T308-1P**	IS-10-1
K20 (C2)	Standard	**OP-05T308-2P**	IS-10-1
P35 (C5)	High Rake	**OP-05T308-PHR**	IS-10-1

NOTE: See section A70 in the Allied Master Product Catalog for recommended cutting data, cutting materials, and geometries.

A70: 16 - 19



B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

⚠ **WARNING** **For large diameter boring with VolCut insert holders please:**
- Contact our Application Engineering department before purchasing (330.343.4283 *ext:* **7611** | *email:* **appeng@alliedmachine.com)**
- Refer to section B10-G in the Wohlhaupter® MultiBore® System Tools catalog.

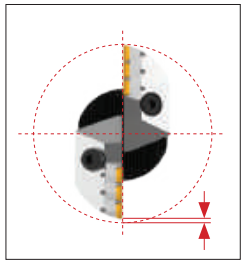
VolCut Technical Information

Setup Instructions | Minimum Pilot Calculation

Step 1:
Loosen the mounting screws on both cartridges.

Step 2:
Set one cartridge to the finish diameter by tightening the adjustment screw against the adjustment pin.

Step 3:
Tighten the mounting screws on the cartridge to 15-19 Nm (11-14 ft-lbf).



Step 4:
Set the opposing cartridge with 0.157" - 0.196" (4mm - 5mm) radial offset inward by tightening the adjustment screw against the adjustment pin (optimum situation for each insert to remove equal material).

Step 5:
Tighten the mounting screws on the cartridge to 15-19 Nm (11-14 ft-lbf).

Note: Drilling systems with OP inserts are used as single cutters. The replaceable inserts are mounted offset in diameter. Please review the assembly instructions.

Minimum Pilot Calculation

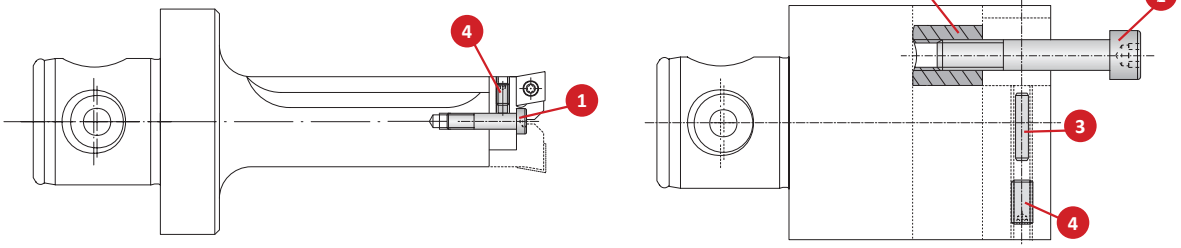
Calculation: Finish Diameter - Opening Range = Minimum Pilot Hole Diameter

Insert Holder	Diameter Range	Opening Range
151019	2.559" - 2.756" (65.00mm - 70.00mm)	0.600" (15.24mm)
	2.756" - 3.268" (70.00mm - 83.00mm)	1.880" (47.75mm)
151039	3.228" - 3.425" (82.00mm - 87.00mm)	0.600" (15.24mm)
	3.425" - 4.055" (87.00mm - 103.00mm)	2.680" (68.07mm)
151059	3.937" - 4.134" (100.00mm - 105.00mm)	0.600" (15.24mm)
	4.134" - 5.118" (105.00mm - 130.00 mm)	2.680" (68.07mm)
151069	4.921" - 5.118" (125.00mm - 130.00mm)	0.600" (15.24mm)
	5.118" - 8.071" (130.00mm - 205.00mm)	2.680" (68.07mm)
149030	7.874" - 128.150" (200.00mm - 3255.00mm)	2.680" (68.07mm)

Example: To open an existing hole to 4.500" diameter, a 151059 insert holder would be used with a 148007 serrated tool body, and the minimum pilot diameter would be 4.500" - 2.680" = 1.820".

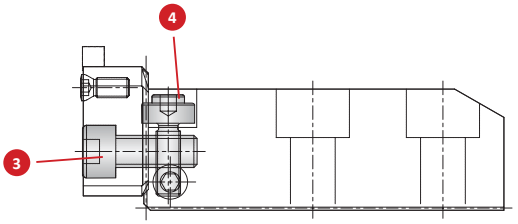
Accessories

Clamping Elements | Axial Grooving Accessories



Clamping Elements

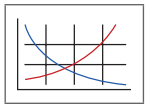
Connection	Serrated Tool Body	Part No. 1. Cap Screw	Service Key	2. Clamping Nut	3. Adjustment Pin	4. Thread Pin	Service Key
25 - 14	148001	**140108**	**s4 / B**	**140114**	–	**115280**	**s2.5 / A**
25 - 14	148002	**148110**	**s5 / B**	**115667**	–	**126157**	**s2.5 / A**
25 - 14	148011	**148110**	**s5 / B**	**148113**	–	**117148**	**s2.5 / A**
25 - 14	148012	**148110**	**s5 / B**	**115666**	–	**117148**	**s2.5 / A**
32 - 18	148003	**140110**	**s5 / B**	**115667**	–	**126157**	**s2.5 / A**
32 - 18	148013	**148110**	**s5 / B**	**148114**	–	**115192**	**s2.5 / A**
32 - 18	148017	**148110**	**s5 / B**	**115667**	–	**126157**	**s2.5 / A**
40 - 22	148004	**140110**	**s5 / B**	**140116**	–	**115407**	**s2.5 / A**
40 - 22	148014	**148110**	**s5 / B**	**148114**	–	**126157**	**s2.5 / A**
40 - 22	148018	**140110**	**s5 / B**	**115667**	–	**126157**	**s2.5 / A**
50 - 28	148005	**140111**	**s6 / B**	**140117**	–	**140121**	**s2.5 / A**
50 - 28	148010	**140111**	**s6 / B**	**140117**	–	**140121**	**s2.5 / A**
50 - 28	148015	**140112**	**s6 / B**	**140117**	–	**215111**	**s2.5 / A**
50 - 28	235001	**415111**	**T25 / B**	–	–	**215346**	**s1.5 / A**
50 - 28	235002	**415112**	**T25 / B**	–	–	**215346**	**s1.5 / A**
50 - 28	235003	**415113**	**T25 / B**	–	–	**215346**	**s1.5 / A**
50 - 28	148021	**140108**	**s4 / B**	**140114**	–	**115280**	**s2.5 / A**
50 - 28	148022	**140110**	**s5 / B**	**115667**	–	**126157**	**s2.5 / A**
50 - 28	148023	**140110**	**s5 / B**	**115667**	–	**126157**	**s2.5 / A**
50 - 28	148024	**140110**	**s5 / B**	**140116**	–	**115407**	**s2.5 / A**
63 - 36	148006	**140112**	**s6 / B**	**140118**	–	**140121**	**s2.5 / A**
63 - 36	148016	**140112**	**s6 / B**	**140117**	–	**116550**	**s2.5 / A**
63 - 36	235011	**415111**	**T25 / B**	–	–	**215346**	**s1.5 / A**
63 - 36	235012	**415112**	**T25 / B**	–	–	**215346**	**s1.5 / A**
63 - 36	235013	**415113**	**T25 / B**	–	–	**215346**	**s1.5 / A**
80 - 36	148007	**115730**	**s6 / B**	**140119**	–	**116550**	**s2.5 / A**
80 - 36	148009	**115730**	**s6 / B**	**140119**	**140120**	**115519**	**s2.5 / A**
Ø 18	235021	**415111**	**T25 / B**	–	–	**215346**	**s1.5 / A**
Ø 20	235022	**415112**	**T25 / B**	–	–	**215346**	**s1.5 / A**
Ø 23	235023	**415113**	**T25 / B**	–	–	**215346**	**s1.5 / A**



Axial Grooving Accessories

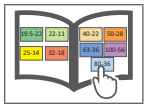
Support Base	3. Cap Screw Part No.	3. Service Key	4. Axial Adjustment Screw Part No.	Service Key
226011	**023182**	s6 / B	**215374**	s4 / B
226012	**023182**	s6 / B	**215374**	s4 / B
226013	**023182**	s6 / B	**215374**	s4 / B

B10-M: 12-15



Key on B10-D: 1

B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

Notes

SECTION

B10-E

Intermediate Modules

Wohlhaupter® Intermediate Modules

NOVI[TECH®] | Reducers | Extensions

Increase Tool Stability with Intermediate Modules

- Allow for expanded use of existing components
- Add flexibility to setups
- Reduce need for specials and their associated cost and lead time
- Each component individually balanced

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.

This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury.

When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words.

⚠ WARNING

WARNING (shown above) means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

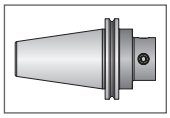
NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

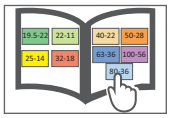
Applicable Industries

Aerospace | Agriculture | Automotive | Firearms | General Machining | Oil & Gas | Renewable Energy

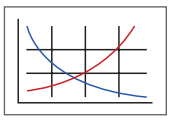
Reference Icons
The following icons will appear throughout the catalog to help you navigate between products.



Shanks
A variety of shanks for different machines



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s)



Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring

Coolant-Through Option
Indicates that the product is coolant through

Intermediate Modules Table of Contents

Introduction
Product Overview . . . . . 2 - 3

NOVI[TECH®] Vibration Damping Modules . . . . . 4 - 5

249 (248) Adapters . . . . . 6 - 7

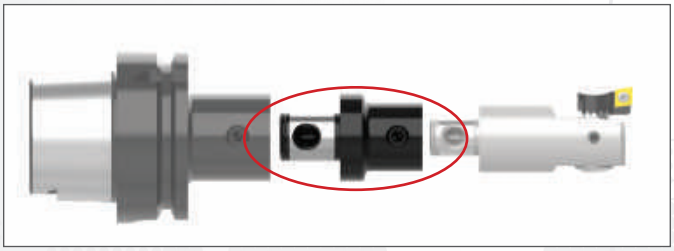
Reducers . . . . . 8 - 13

Extensions . . . . . 14 - 16

Intermediate Modules Product Overview

Intermediate
MODULES

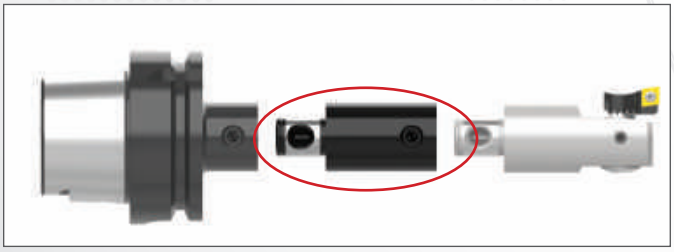
Reducers



Features:

- Improves rigidity by stepping-down to smaller MVS connection sizes
- Connects quickly and easily with the MVS connection
- Accommodates smaller diameter applications

Extensions



Features:

- Used to increase bore depth
- Connects quickly and easily with the MVS connection
- Aluminum components available to reduce stress on the spindle

WOHLHAUPTER® FINE BORING HEAD with NOVI$^{TECH®}$

Are you looking for more from your tooling?

After facing problems with chatter and chipping inserts, our customer, who machines fueling machine head rotors from ASTM A276 - 304L in the nuclear power industry, sought a better solution to their machining process.

The customer turned to Allied for help finding a new solution. Once the causes of insert failure and chatter were identified, our experienced team was able to create the best assembly suitable for the application. Using **Wohlhaupter's analog balanced fine boring head** paired with the **NOVI^{TECH} vibration damper module,** they were able to eliminate the issues our customers were facing.

With the previous tooling, the customer achieved only 12 minutes of tool life, but with Allied's Wohlhaupter assembly, they achieved more than four times the life for 65 minutes!

Allied's Wohlhaupter assembly improved the machining process by making it more consistent and saved the customer money by reducing cost per hole. If you are looking to save time and money, ***give us a call, and we will help you find the right solution.***

Product: Wohlhaupter analog balanced fine boring head with NOVI^{TECH}

Objectives: (1) Decrease cycle time
(2) Improve process

Industry: Renewable energy/energy

Part: Nuclear fueling machine head rotor

Material: ASTM A276-304L

Hole Ø: 4.7244" *(120 mm)*

Hole Depth: 40.9449" *(1040 mm)*

Measure	Competitor Boring Head	Wohlhaupter Fine Boring Head with NOVI^{TECH}
RPM	106	372
Speed Rate	131.234 SFM *(40 M/min)*	459.318 SFM *(140 M/min)*
Feed Rate	0.003 IPR *(0.076 mm/rev)*	0.006 IPR *(0.16 mm/rev)*
Penetration Rate	0.315 IPM *(8 mm/min)*	2.362 IPM *(60 mm/min)*
Cycle Time	2 hr 10 min	17 min
Tool Life	12 min	65 min
Wohlhaupter offered *93.32%* cost per hole savings over the competitor tooling.		

- Analog balanced fine boring head
- Boring insert ***Item No. 297994WHC111***
- NOVI^{TECH} vibration damper intermediate module ***Item No. 519004***

86.92% cycle time reduction

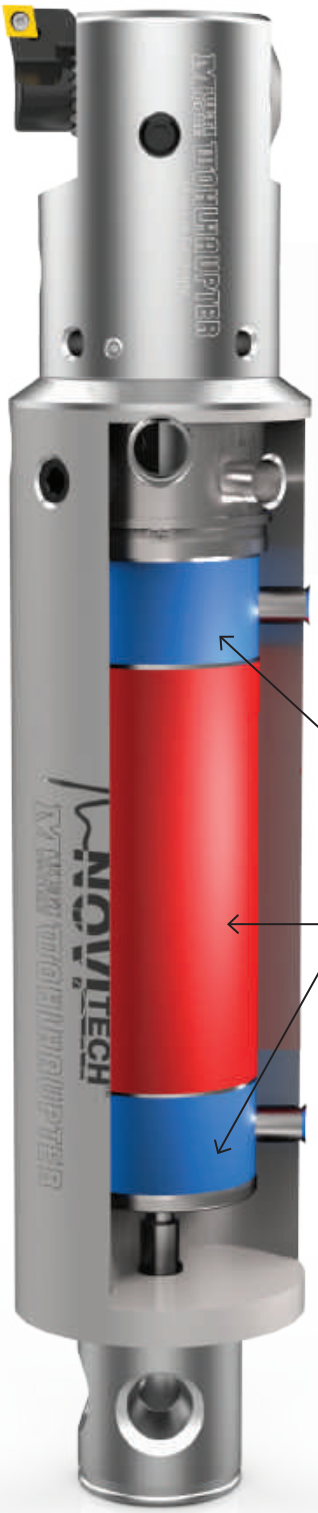
The Wohlhaupter boring head with the NOVI^{TECH} vibration damper module provided:

- ✓ Increased penetration rate
- ✓ Decreased cycle time
- ✓ Increased tool life
- ✓ Decreased cost per hole

NOVI[TECH]® Vibration Damping Intermediate Modules Overview

NOVITECH®
Vibration Damping Intermediate Module

THE **DEEP** HOLE **10xD BORING *SOLUTION*** YOU'VE BEEN LOOKING FOR

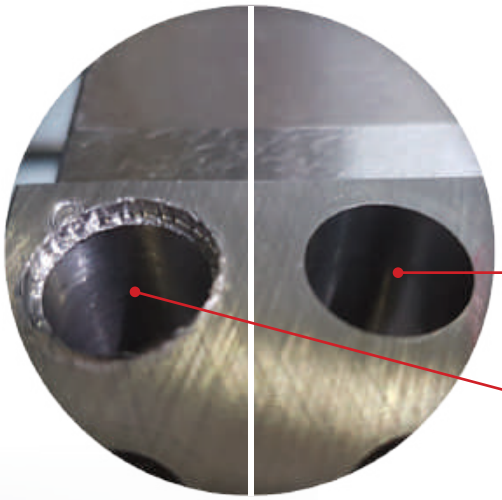


OUR ***SOLUTION***

- Machine up to **10xD**
- Connect quickly and easily with the **MVS connection**
- Utilize existing **Wohlhaupter® components**
- **Increase** your productivity, surface quality, and process reliability
- **Increase** your tool and spindle life

YOUR ***ADVANTAGE***

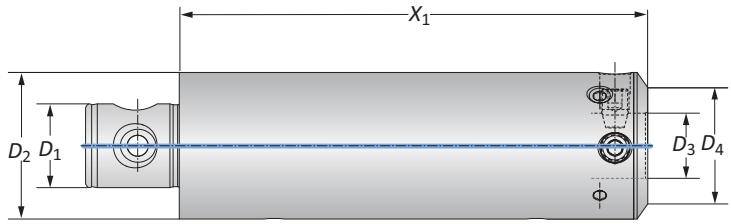
THE SURFACE QUALITY TELLS IT ALL

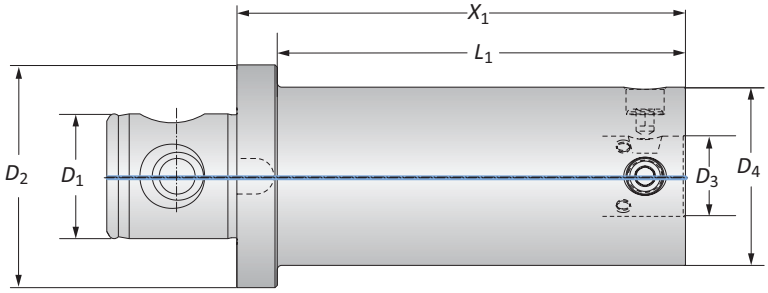


When our customer was machining alloy steel to 9xD, the NOVI[TECH] provided reliable machining, which achieved high surface quality (Ra = 32).

NOVI[TECH®] Vibration Damping Intermediate Modules

Machining Diameter: 1.969" - 8.071" (50.00mm - 205.00mm)



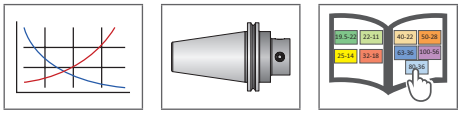


	MVS Connection		NOVI[TECH]			
	D_2 | D_1	D_4 | D_3	X_1	L_1	Weight	Part No.
i	50 - 28*	40 - 22	7.874	–	6.172 (lbs)	**519002**
i	63 - 36	50 - 28	7.874	–	12.560 (lbs)	**519003**
i	80 - 36	63 - 36	7.874	–	16.530 (lbs)	**519004**
i	80 - 36	80 - 36	7.874	–	16.530 (lbs)	**519005**
i	100 - 56	80 - 36	7.874	7.165	21.825 (lbs)	**519006**
m	50 - 28	40 - 22	200.00	–	2.80 (kg)	**519002**
m	63 - 36	50 - 28	200.00	–	5.70 (kg)	**519003**
m	80 - 36	63 - 36	200.00	–	7.50 (kg)	**519004**
m	80 - 36	80 - 36	200.00	–	7.50 (kg)	**519005**
m	100 - 56	80 - 36	200.00	182.00	9.90 (kg)	**519006**

*D_2 =49.50mm

B10-M: 12-15 | B10-F | B10: vi-vii

Key on B10-E:1



i = Imperial (in)
m = Metric (mm)

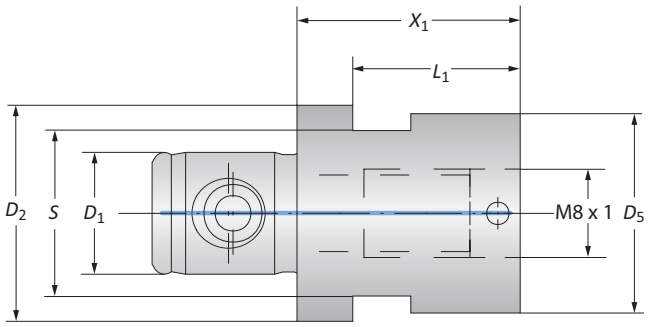
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
-Consult machine tool builder for machine's weight limitations.
-Refer to example on page B10-M: 11 for calculating tool assembly weight
Factory technical assistance is also available for specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI[TECH] module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

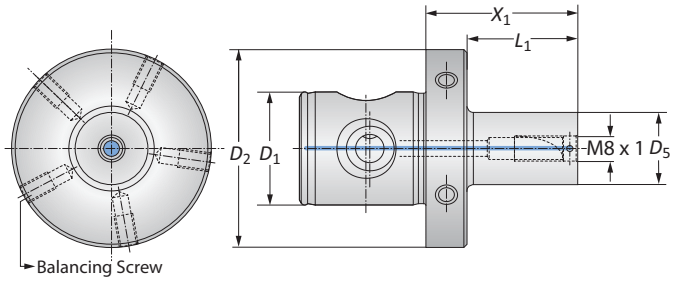
249 (248) Adapters

Adapters | Balanced Adapters



Adapters

	MVS Connection D_2 | D_1	Boring Connection	Adapter X_1	L_1	S	D_5	Weight	Service Key	Part No.
ⓘ	19.5 - 11	M8 x 1	0.787	0.590	15/P	0.708	0.110 (lbs)	15 S / P	**219168**
	23 - 11	M8 x 1	0.787	–	19/P	0.905	0.154 (lbs)	19 S / P	**219169**
ⓜ	19.5 - 11	M8 x 1	20.00	15.00	15/P	18.00	0.05 (kg)	15 S / P	**219168**
	23 - 11	M8 x 1	20.00	–	19/P	23.00	0.07 (kg)	19 S / P	**219169**



Balanced Adapters

	MVS Connection D_2 | D_1	Boring Connection	Adapter X_1	L_1	D_5	Weight	Balancing Screw	Part No.
ⓘ	50 - 28	M8 x 1	1.259	0.748	0.590	0.771 (lbs)	M6 x 1 x 10	**219185**
	50 - 28	M8 x 1	1.890	1.377	0.708	0.881 (lbs)	M6 x 1 x 10	**219176**
	50 - 28	M8 x 1	1.890	1.377	0.905	0.992 (lbs)	M6 x 1 x 10	**219177**
ⓜ	50 - 28	M8 x 1	32.00	19.00	15.00	0.35 (kg)	M6 x 1 x 10	**219185**
	50 - 28	M8 x 1	48.00	35.00	18.00	0.40 (kg)	M6 x 1 x 10	**219176**
	50 - 28	M8 x 1	48.00	35.00	23.00	0.45 (kg)	M6 x 1 x 10	**219177**

NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg

B10-M: 12-15 | B10-A: 30 | B10-A: 34 | B10: vi-vii

Key on B10-A: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
-Consult machine tool builder for machine's weight limitations.
-Refer to example on page B10-M: 11 for calculating tool assembly weight
Factory technical assistance is also available for specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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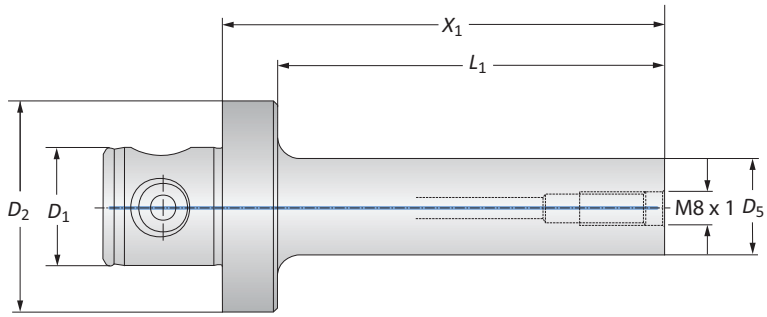
249 (248) Adapters

Heavy Metal Adapters



	MVS Connection D_2 | D_1	Boring Connection	Adapter X_1	L_1	D_5	Weight	Part No.
ⓘ	50 - 28	M8 x 1	2.677	2.165	0.590	1.763 (lbs)	**248147**
ⓘ	50 - 28	M8 x 1	3.307	2.795	0.748	2.204 (lbs)	**248148**
ⓘ	50 - 28	M8 x 1	4.094	3.582	0.905	2.866 (lbs)	**248149**
ⓜ	50 - 28	M8 x 1	68.00	55.00	15.00	0.80 (kg)	**248147**
ⓜ	50 - 28	M8 x 1	84.00	71.00	19.00	1.00 (kg)	**248148**
ⓜ	50 - 28	M8 x 1	104.00	91.00	23.00	1.30 (kg)	**248149**

B10-M: 12-15
B10-A: 30
B10-A: 34
B10: vi-vii
Key on B10-A:1

ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

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-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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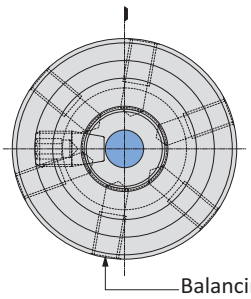
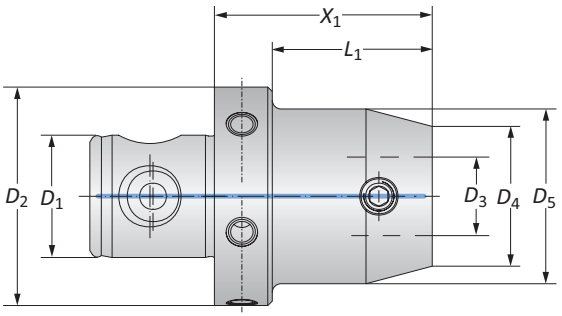
Reducers

Imperial | Balanced



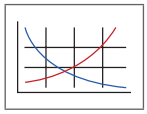


MVS Connection		Reducer					
D_2 | D_1	D_4 | D_3	X_1	L_1	D_5	Weight	Balancing Screw	Part No.
25 - 14	19.5 - 11	1.181	0.827	–	0.220 (lbs)	–	**219034**
25 - 14	22 - 11	1.181	0.827	–	0.440 (lbs)	–	**219035**
32 - 18	22 - 11	0.472	0.020	–	0.220 (lbs)	–	**219036**
32 - 18	25 - 14	1.181	0.827	–	0.220 (lbs)	–	**219037**
40 - 22	22 - 11	0.472	0.020	–	0.440 (lbs)	–	**219038**
40 - 22	25 - 14	1.181	0.827	–	0.440 (lbs)	–	**219039**
40 - 22	32 - 18	1.181	–	1.575	1.102 (lbs)	–	**219040**
50 - 28	19.5 - 11	2.126	1.614	–	0.881 (lbs)	M6 x 1 x 10	**219051**
50 - 28	22 - 11	0.551	0.020	–	0.661 (lbs)	M6 x 1 x 10	**219041**
50 - 28	22 - 11	2.126	1.614	–	0.881 (lbs)	M6 x 1 x 10	**219052**
50 - 28	25 - 14	0.551	0.020	–	0.661 (lbs)	M6 x 1 x 7	**119094**
50 - 28	25 - 14	2.323	1.811	–	0.881 (lbs)	M6 x 1 x 10	**119054**
50 - 28	25 - 14	2.323	1.811	1.260	1.102 (lbs)	M6 x 1 x 10	**119055**
50 - 28	25 - 14	4.685	4.173	1.260	1.984 (lbs)	M6 x 1 x 10	**119010**
50 - 28	25 - 14	4.685	4.173	1.417	2.204 (lbs)	M6 x 1 x 10	**219030***
50 - 28	32 - 18	1.929	1.417	1.378	1.984 (lbs)	M6 x 1 x 10	**219085**
50 - 28	32 - 18	4.291	3.780	1.378	2.204 (lbs)	M6 x 1 x 10	**219086**
50 - 28	32 - 18	4.291	3.780	1.575	2.425 (lbs)	M6 x 1 x 10	**119012**
50 - 28	32 - 18	4.291	3.780	1.811	2.866 (lbs)	M6 x 1 x 10	**219032***
50 - 28	40 - 22	1.575	1.063	–	1.102 (lbs)	M6 x 1 x 10	**219087**
50 - 28	40 - 22	3.937	3.425	1.850	2.866 (lbs)	M6 x 1 x 10	**219088**
50 - 28	63 - 36	1.969	–	–	2.204 (lbs)	M6 x 1 x 10	**119059**

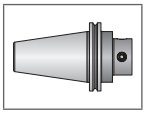
*Reinforced reducer

NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg

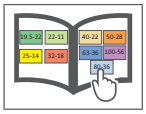
B10-M: 12-15
Key on B10-E:1



B10-F



B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

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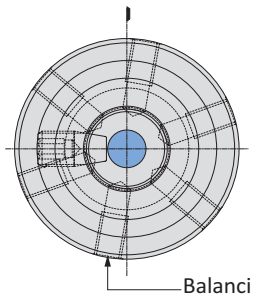
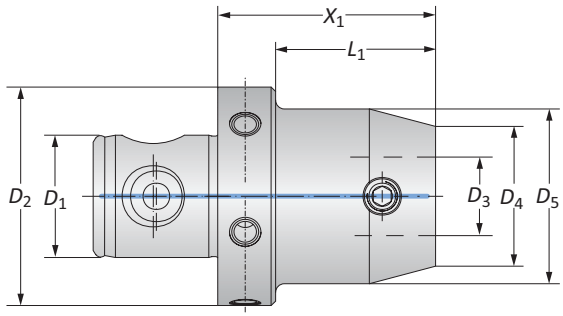
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Reducers

Metric | Balanced





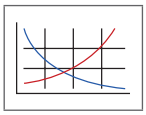
MVS Connection		Reducer					
D_2 | D_1	D_4 | D_3	X_1	L_1	D_5	Weight	Balancing Screw	Part No.
25 - 14	19.5 - 11	30.00	21.00	–	0.10 (kg)	–	**219034**
25 - 14	22 - 11	30.00	21.00	–	0.20 (kg)	–	**219035**
32 - 18	22 - 11	12.00	0.50	–	0.10 (kg)	–	**219036**
32 - 18	25 - 14	30.00	21.00	–	0.10 (kg)	–	**219037**
40 - 22	22 - 11	12.00	0.50	–	0.20 (kg)	–	**219038**
40 - 22	25 - 14	30.00	21.00	–	0.20 (kg)	–	**219039**
40 - 22	32 - 18	30.00	–	40.00	0.50 (kg)	–	**219040**
50 - 28	19.5 - 11	54.00	41.00	–	0.40 (kg)	M6 x 1 x 10	**219051**
50 - 28	22 - 11	14.00	0.50	–	0.30 (kg)	M6 x 1 x 10	**219041**
50 - 28	22 - 11	54.00	41.00	–	0.40 (kg)	M6 x 1 x 10	**219052**
50 - 28	25 - 14	14.00	0.50	–	0.30 (kg)	M6 x 1 x 7	**119094**
50 - 28	25 - 14	59.00	46.00	–	0.40 (kg)	M6 x 1 x 10	**119054**
50 - 28	25 - 14	59.00	46.00	32.00	0.50 (kg)	M6 x 1 x 10	**119055**
50 - 28	25 - 14	119.00	106.00	32.00	0.90 (kg)	M6 x 1 x 10	**119010**
50 - 28	25 - 14	119.00	106.00	36.00	1.00 (kg)	M6 x 1 x 10	**219030***
50 - 28	32 - 18	49.00	36.00	35.00	0.90 (kg)	M6 x 1 x 10	**219085**
50 - 28	32 - 18	109.00	96.00	35.00	1.00 (kg)	M6 x 1 x 10	**219086**
50 - 28	32 - 18	109.00	96.00	40.00	1.10 (kg)	M6 x 1 x 10	**119012**
50 - 28	32 - 18	109.00	96.00	46.00	1.30 (kg)	M6 x 1 x 10	**219032***
50 - 28	40 - 22	40.00	27.00	–	0.50 (kg)	M6 x 1 x 10	**219087**
50 - 28	40 - 22	100.00	87.00	47.00	1.30 (kg)	M6 x 1 x 10	**219088**
50 - 28	63 - 36	50.00	–	–	1.00 (kg)	M6 x 1 x 10	**119059**

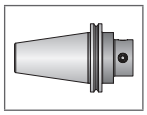
*Reinforced reducer

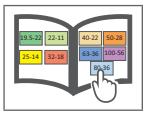
NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg

B10-M: 12-15 | B10-F | B10: vi-vii

Key on B10-E:1







ⓘ = Imperial (in)
ⓜ = Metric (mm)

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-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
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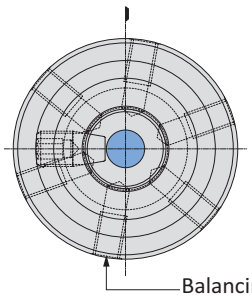
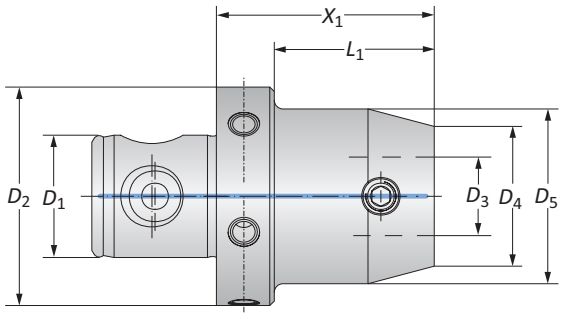
Reducers

Imperial | Balanced



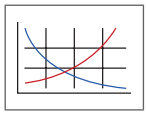


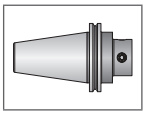
	MVS Connection		Reducer					
	D_2 | D_1	D_4 | D_3	X_1	L_1	D_5	Weight	Balancing Screw	Part No.
	63 - 36	19.5 - 11	2.126	1.614	–	1.322 (lbs)	M6 x 1 x 10	**219053**
	63 - 36	22 - 11	0.551	0.020	–	1.322 (lbs)	M6 x 1 x 10	**219042**
	63 - 36	22 - 11	2.126	1.614	–	1.543 (lbs)	M6 x 1 x 10	**219054**
	63 - 36	25 - 14	0.551	0.020	–	1.322 (lbs)	M6 x 1 x 10	**119095**
	63 - 36	25 - 14	2.323	1.811	–	1.543 (lbs)	M6 x 1 x 10	**119060**
	63 - 36	25 - 14	2.323	1.811	1.260	1.763 (lbs)	M6 x 1 x 10	**119061**
	63 - 36	25 - 14	4.685	4.173	1.260	2.425 (lbs)	M6 x 1 x 15	**119019**
	63 - 36	25 - 14	4.685	4.173	1.417	2.866 (lbs)	M6 x 1 x 10	**219031***
	63 - 36	32 - 18	1.929	1.417	1.378	1.543 (lbs)	M6 x 1 x 10	**219089**
	63 - 36	32 - 18	4.291	3.780	1.378	2.645 (lbs)	M6 x 1 x 10	**219090**
i	63 - 36	32 - 18	4.291	3.780	1.575	3.086 (lbs)	M6 x 1 x 10	**119021**
	63 - 36	32 - 18	4.291	3.780	1.811	3.527 (lbs)	M6 x 1 x 10	**219033***
	63 - 36	40 - 22	1.575	1.063	–	1.763 (lbs)	M6 x 1 x 10	**219091**
	63 - 36	40 - 22	3.937	3.425	1.850	3.527 (lbs)	M6 x 1 x 15	**219092**
	63 - 36	40 - 22	5.906	5.394	1.969	5.291 (lbs)	M6 x 1 x 15	**119067**
	63 - 36	50 - 28	1.575	–	2.480	2.204 (lbs)	M6 x 1 x 10	**119064**
	63 - 36	50 - 28	1.575	1.063	–	1.763 (lbs)	M6 x 1 x 10	**119096****
	63 - 36	50 - 28	3.937	–	2.480	5.291 (lbs)	M6 x 1 x 15	**119025**
	63 - 36	50 - 28	3.937	3.425	–	3.747 (lbs)	M6 x 1 x 10	**119097****
	80 - 36	63 - 36	1.969	–	3.150	3.527 (lbs)	M6 x 1 x 15	**119098**
	100 - 56	80 - 36	2.756	2.047	–	7.936 (lbs)	M8 x 1.25 x 20	**219066**

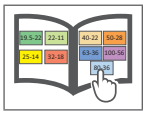
* Reinforced reducer
**For milling applications
NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg

B10-M: 12-15 | B10-F | B10: vi-vii

Key on B10-E: 1







i = Imperial (in)
m = Metric (mm)

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-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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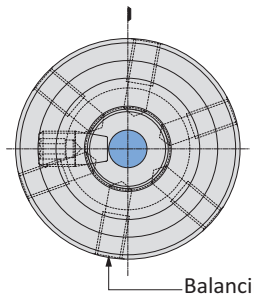
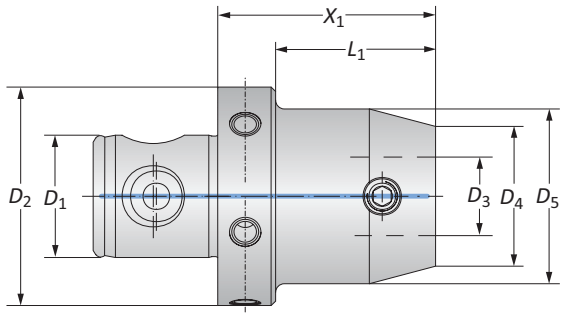
Reducers

Metric | Balanced

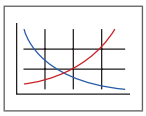
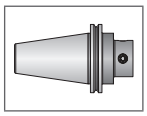
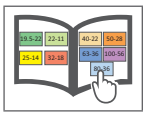




MVS Connection		Reducer					
D_2 | D_1	D_4 | D_3	X_1	L_1	D_5	Weight	Balancing Screw	Part No.
63 - 36	19.5 - 11	54.00	41.00	–	0.60 (kg)	M6 x 1 x 10	**219053**
63 - 36	22 - 11	14.00	0.50	–	0.60 (kg)	M6 x 1 x 10	**219042**
63 - 36	22 - 11	54.00	41.00	–	0.70 (kg)	M6 x 1 x 10	**219054**
63 - 36	25 - 14	14.00	0.50	–	0.60 (kg)	M6 x 1 x 10	**119095**
63 - 36	25 - 14	59.00	46.00	–	0.70 (kg)	M6 x 1 x 10	**119060**
63 - 36	25 - 14	59.00	46.00	32.00	0.80 (kg)	M6 x 1 x 10	**119061**
63 - 36	25 - 14	119.00	106.00	32.00	1.10 (kg)	M6 x 1 x 15	**119019**
63 - 36	25 - 14	119.00	106.00	36.00	1.30 (kg)	M6 x 1 x 10	**219031***
63 - 36	32 - 18	49.00	36.00	35.00	0.70 (kg)	M6 x 1 x 10	**219089**
63 - 36	32 - 18	109.00	96.00	35.00	1.20 (kg)	M6 x 1 x 10	**219090**
63 - 36	32 - 18	109.00	96.00	40.00	1.40 (kg)	M6 x 1 x 10	**119021**
63 - 36	32 - 18	109.00	96.00	46.00	1.60 (kg)	M6 x 1 x 10	**219033***
63 - 36	40 - 22	40.00	27.00	–	0.80 (kg)	M6 x 1 x 10	**219091**
63 - 36	40 - 22	100.00	87.00	47.00	1.60 (kg)	M6 x 1 x 15	**219092**
63 - 36	40 - 22	150.00	137.00	50.00	2.40 (kg)	M6 x 1 x 15	**119067**
63 - 36	50 - 28	40.00	–	63.00	1.00 (kg)	M6 x 1 x 10	**119064**
63 - 36	50 - 28	40.00	27.00	–	0.80 (kg)	M6 x 1 x 10	**119096****
63 - 36	50 - 28	100.00	–	63.00	2.40 (kg)	M6 x 1 x 15	**119025**
63 - 36	50 - 28	100.00	87.00	–	1.70 (kg)	M6 x 1 x 10	**119097****
80 - 36	63 - 36	50.00	–	80.00	1.60 (kg)	M6 x 1 x 15	**119098**
100 - 56	80 - 36	70.00	52.00	–	3.60 (kg)	M8 x 1.25 x 20	**219066**

* Reinforced reducer
**For milling applications
NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg

B10-M: 12-15 B10-F B10: vi-vii
Key on B10-E: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
-Consult machine tool builder for machine's weight limitations.
-Refer to example on page B10-M: 11 for calculating tool assembly weight
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⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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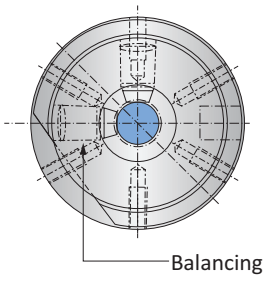
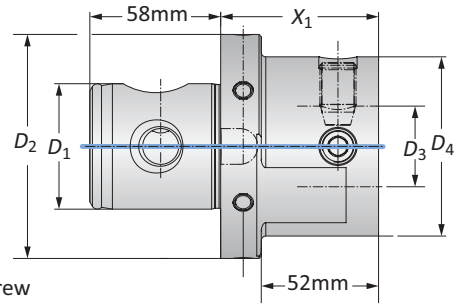
Reducer

Balanced Alu-Line

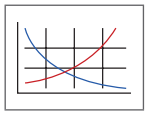




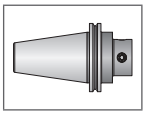
	MVS Connection		Reducer				
	$D_2 \mid D_1$	$D_4 \mid D_3$	X_1	L_1	Weight	Balancing Screw	Part No.
i	100 - 56	80 - 36	2.756	2.047	2.866 (lbs)	M8 x 1.25 x 20	**319013**
m	100 - 56	80 - 36	70.00	52.00	1.30 (kg)	M8 x 1.25 x 20	**319013**

NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg

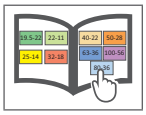
B10-M: 12-15



B10-F



B10: vi-vii



i = Imperial (in)
m = Metric (mm)

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-Refer to example on page B10-M: 11 for calculating tool assembly weight
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-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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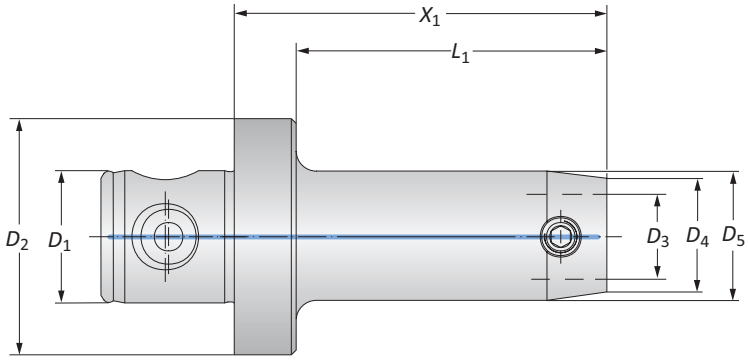
Heavy Metal Reducers

Vibration Reduction

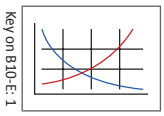


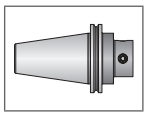
	MVS Connection		Heavy Metal Reducer				
	$D_2 \mid D_1$	$D_4 \mid D_3$	X_1	L_1	D_5	Weight	Part No.
	50 - 28	19.5 - 11	3.543	3.031	–	2.204 (lbs)	**219055**
	50 - 28	22 - 11	4.331	3.819	0.906	2.866 (lbs)	**219056**
	50 - 28	25 - 14	4.882	4.370	1.102	3.747 (lbs)	**219057**
ⓘ	50 - 28	25 - 14	5.669	5.157	1.260	5.070 (lbs)	**219058**
	50 - 28	25 - 14	6.457	5.945	1.378	6.393 (lbs)	**219059**
	50 - 28	32 - 18	6.063	5.551	1.457	6.393 (lbs)	**219093**
	50 - 28	32 - 18	6.063	5.551	1.654	8.157 (lbs)	**219060**
	50 - 28	19.5 - 11	90.00	77.00	–	1.00 (kg)	**219055**
	50 - 28	22 - 11	110.00	97.00	23.00	1.30 (kg)	**219056**
	50 - 28	25 - 14	124.00	111.00	28.00	1.70 (kg)	**219057**
ⓜ	50 - 28	25 - 14	144.00	131.00	32.00	2.30 (kg)	**219058**
	50 - 28	25 - 14	164.00	151.00	35.00	2.90 (kg)	**219059**
	50 - 28	32 - 18	154.00	141.00	37.00	2.90 (kg)	**219093**
	50 - 28	32 - 18	154.00	141.00	42.00	3.70 (kg)	**219060**

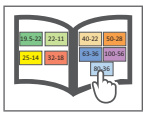
NOTE: Heavy metal reducers are used to reduce vibration when machining deep boring applications. When using heavy metal reducers, the maximum cutting speed (V_c) is 200 m/min. If steel extensions are also used, reduce the cutting speed by 50% and use replaceable inserts where r = 0.10mm.

B10-M: 12-15 | B10-F | B10: vi-vii

Key on B10-E: 1







ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

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-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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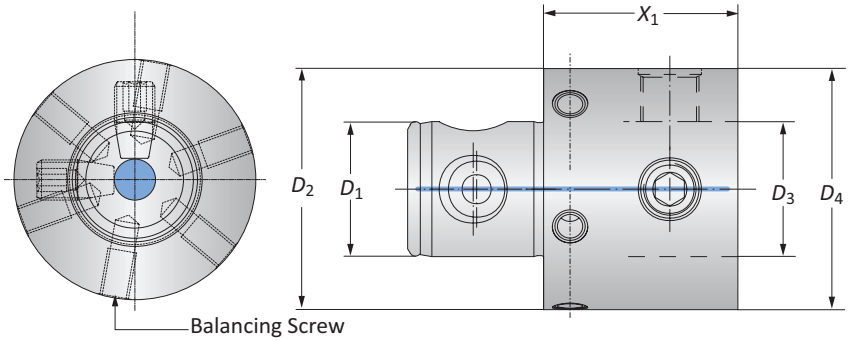
Extensions

Imperial | Balanced

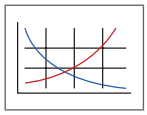


MVS Connection D_2 | D_1	MVS Connection D_4 | D_3	Extension X_1	Weight	Balancing Screw	Part No.
19.5 - 11	19.5 - 11	1.575	0.220 (lbs)	–	**219043**
22 - 11	22 - 11	1.575	0.220 (lbs)	–	**219044**
25 - 14	25 - 14	0.984	0.220 (lbs)	–	**219068**
25 - 14	25 - 14	1.575	0.220 (lbs)	–	**119001**
32 - 18	32 - 18	1.575	0.440 (lbs)	–	**119002**
40 - 22	40 - 22	1.575	0.881 (lbs)	–	**119003**
50 - 28	50 - 28	1.575	1.322 (lbs)	M6 x 1 x 10	**119004**
50 - 28*	50 - 28*	2.953	2.425 (lbs)	M6 x 1 x 10	**219097**
50 - 28	50 - 28	2.953	2.425 (lbs)	M6 x 1 x 10	**219082**
50 - 28	50 - 28	3.937	3.306 (lbs)	M6 x 1 x 10	**119058**
63 - 36	63 - 36	1.969	2.425 (lbs)	M6 x 1 x 10	**119005**
63 - 36	63 - 36	2.953	3.747 (lbs)	M6 x 1 x 15	**219083**
63 - 36	63 - 36	4.921	6.393 (lbs)	M6 x 1 x 15	**119065**
80 - 36	80 - 36	1.969	4.188 (lbs)	M6 x 1 x 15	**119006**
80 - 36	80 - 36	2.953	6.172 (lbs)	M6 x 1 x 15	**219084**
80 - 36	80 - 36	4.921	10.580 (lbs)	M6 x 1 x 15	**119066**
80 - 36	80 - 36	7.874	16.310 (lbs)	M8 x 1.25 x 21	**219094**
80 - 36	80 - 36	10.827	22.260 (lbs)	M8 x 1.25 x 21	**119069**
100 - 56	100 - 56	2.953	9.479 (lbs)	M8 x 1.25 x 20	**219095**
100 - 56	100 - 56	3.937	12.340 (lbs)	M8 x 1.25 x 20	**219061**
100 - 56	100 - 56	5.906	17.850 (lbs)	M8 x 1.25 x 20	**219096**
100 - 56	100 - 56	7.874	22.480 (lbs)	M8 x 1.25 x 20	**219062**
100 - 56	100 - 56	11.811	32.180 (lbs)	M8 x 1.25 x 20	**219063**

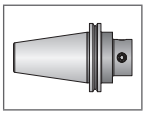
* D_2 / D_4 = 1.949" (49.50mm) for boring 1.969" (50.00mm) diameter applications

NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg

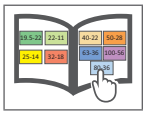
B10-M: 12-15
Key on B10-E: 1



B10-F



B10: vi-vii



= Imperial (in)
= Metric (mm)

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-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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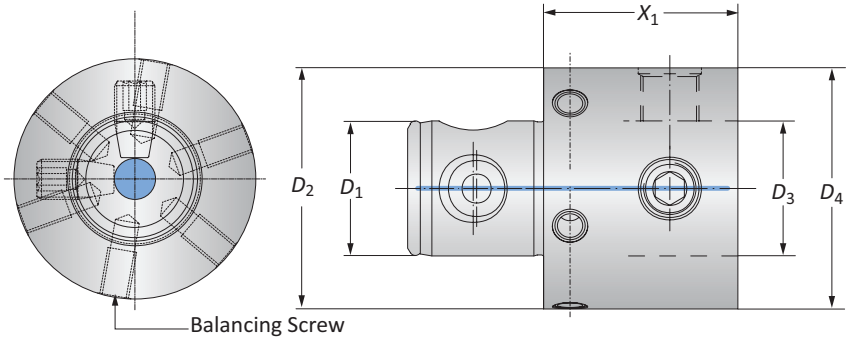
Extensions

Metric | Balanced



	MVS Connection D_2 | D_1	MVS Connection D_4 | D_3	Extension X_1	Weight	Balancing Screw	Part No.
	19.5 - 11	19.5 - 11	40.00	0.10 (kg)	–	**219043**
	22 - 11	22 - 11	40.00	0.10 (kg)	–	**219044**
	25 - 14	25 - 14	25.00	0.10 (kg)	–	**219068**
	25 - 14	25 - 14	40.00	0.10 (kg)	–	**119001**
	32 - 18	32 - 18	40.00	0.20 (kg)	–	**119002**
	40 - 22	40 - 22	40.00	0.40 (kg)	–	**119003**
	50 - 28	50 - 28	40.00	0.60 (kg)	M6 x 1 x 10	**119004**
	50 - 28*	50 - 28*	75.00	1.10 (kg)	M6 x 1 x 10	**219097**
	50 - 28	50 - 28	75.00	1.10 (kg)	M6 x 1 x 10	**219082**
	50 - 28	50 - 28	100.00	1.50 (kg)	M6 x 1 x 10	**119058**
	63 - 36	63 - 36	50.00	1.10 (kg)	M6 x 1 x 10	**119005**
ⓜ	63 - 36	63 - 36	75.00	1.70 (kg)	M6 x 1 x 15	**219083**
	63 - 36	63 - 36	125.00	2.90 (kg)	M6 x 1 x 15	**119065**
	80 - 36	80 - 36	50.00	1.90 (kg)	M6 x 1 x 15	**119006**
	80 - 36	80 - 36	75.00	2.80 (kg)	M6 x 1 x 15	**219084**
	80 - 36	80 - 36	125.00	4.80 (kg)	M6 x 1 x 15	**119066**
	80 - 36	80 - 36	200.00	7.40 (kg)	M8 x 1.25 x 21	**219094**
	80 - 36	80 - 36	275.00	10.10 (kg)	M8 x 1.25 x 21	**119069**
	100 - 56	100 - 56	75.00	4.30 (kg)	M8 x 1.25 x 20	**219095**
	100 - 56	100 - 56	100.00	5.60 (kg)	M8 x 1.25 x 20	**219061**
	100 - 56	100 - 56	150.00	8.10 (kg)	M8 x 1.25 x 20	**219096**
	100 - 56	100 - 56	200.00	10.20 (kg)	M8 x 1.25 x 20	**219062**
	100 - 56	100 - 56	300.00	14.60 (kg)	M8 x 1.25 x 20	**219063**

*D_2 / D_4 = 1.949" (49.50mm) for boring 1.969" (50.00mm) diameter applications
NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg

B10-M: 12-15 B10-F B10: vi-vii
Key on B10-E: 1

ⓘ = Imperial (in)
ⓜ = Metric (mm)

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-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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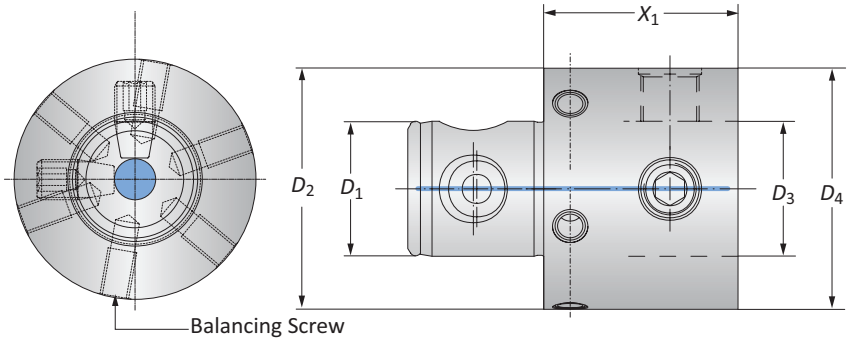
Extensions

Balanced Alu-Line



	MVS Connection D_2 | D_1	MVS Connection D_4 | D_3	Modules X_1	Weight	Balancing Screw	Part No.
	50 - 28	50 - 28	1.575	0.440 (lbs)	M6 x 1 x 8	**319021**
	50 - 28	50 - 28	2.953	0.881 (lbs)	M6 x 1 x 10	**319022**
	50 - 28	50 - 28	3.937	1.322 (lbs)	M6 x 1 x 10	**319023**
	63 - 36	63 - 36	1.969	0.881 (lbs)	M6 x 1 x 8	**319002**
	63 - 36	63 - 36	4.921	2.425 (lbs)	M6 x 1 x 10	**319003**
	80 - 36	80 - 36	1.969	1.543 (lbs)	M6 x 1 x 10	**319004**
	80 - 36	80 - 36	2.953	2.204 (lbs)	M6 x 1 x 10	**319016**
ⓘ	80 - 36	80 - 36	4.921	3.968 (lbs)	M6 x 1 x 10	**319005**
	80 - 36	80 - 36	7.874	5.952 (lbs)	M6 x 1 x 10	**319017**
	80 - 36	80 - 36	10.827	8.157 (lbs)	M6 x 1 x 10	**319006**
	100 - 56	100 - 56	2.953	3.306 (lbs)	M8 x 1.25 x 20	**319019**
	100 - 56	100 - 56	3.937	4.850 (lbs)	M8 x 1.25 x 20	**319007**
	100 - 56	100 - 56	5.906	6.613 (lbs)	M8 x 1.25 x 20	**319018**
	100 - 56	100 - 56	7.874	8.377 (lbs)	M8 x 1.25 x 20	**319008**
	100 - 56	100 - 56	11.811	11.900 (lbs)	M8 x 1.25 x 20	**319009**
	50 - 28	50 - 28	40.00	0.20 (kg)	M6 x 1 x 8	**319021**
	50 - 28	50 - 28	75.00	0.40 (kg)	M6 x 1 x 10	**319022**
	50 - 28	50 - 28	100.00	0.60 (kg)	M6 x 1 x 10	**319023**
	63 - 36	63 - 36	50.00	0.40 (kg)	M6 x 1 x 8	**319002**
	63 - 36	63 - 36	125.00	1.10 (kg)	M6 x 1 x 10	**319003**
	80 - 36	80 - 36	50.00	0.70 (kg)	M6 x 1 x 10	**319004**
	80 - 36	80 - 36	75.00	1.00 (kg)	M6 x 1 x 10	**319016**
ⓜ	80 - 36	80 - 36	125.00	1.80 (kg)	M6 x 1 x 10	**319005**
	80 - 36	80 - 36	200.00	2.70 (kg)	M6 x 1 x 10	**319017**
	80 - 36	80 - 36	275.00	3.70 (kg)	M6 x 1 x 10	**319006**
	100 - 56	100 - 56	75.00	1.50 (kg)	M8 x 1.25 x 20	**319019**
	100 - 56	100 - 56	100.00	2.20 (kg)	M8 x 1.25 x 20	**319007**
	100 - 56	100 - 56	150.00	3.00 (kg)	M8 x 1.25 x 20	**319018**
	100 - 56	100 - 56	200.00	3.80 (kg)	M8 x 1.25 x 20	**319008**
	100 - 56	100 - 56	300.00	5.40 (kg)	M8 x 1.25 x 20	**319009**

NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg

ⓘ = Imperial (in)
ⓜ = Metric (mm)

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
ext: **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
-Consult machine tool builder for machine's weight limitations.
-Refer to example on page B10-M: 11 for calculating tool assembly weight
Factory technical assistance is also available for specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Notes

SECTION

B10-F

Master Shanks with MVS Connection

Wohlhaupter® Master Shanks with MVS Connection

The MVS Connection

Wohlhaupter MVS connection shanks provide a high level of accuracy when building or replacing components. Our master shanks adapt to any machine tool spindle, making it easy to find the shank you need.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.

This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury.

When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words.

⚠ WARNING

WARNING (shown above) means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

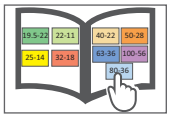
NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

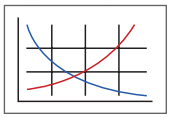
Applicable Industries

Aerospace | Agriculture | Automotive | Firearms | General Machining | Oil & Gas | Renewable Energy

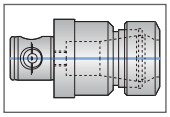
Reference Icons
The following icons will appear throughout the catalog to help you navigate between products.



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s)



Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring



Clamping Elements
Collet chucks for carbide shanks

Coolant-Through Option
Indicates that the product is coolant through

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CAT Shanks with Metric Threads 9

Dual Contact SK Shanks (DIN 69871-AD / BD) 10

SK Shanks (DIN 69871-AD / B-D) 11

Dual Contact BT Shanks (JIS B 6339) 12

BT Shanks (JIS B 6339) 13

NMTB Shanks 14

Imperial Straight Shanks 15

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Morse Taper Shanks (DIN 1806) & R8 Shanks 17

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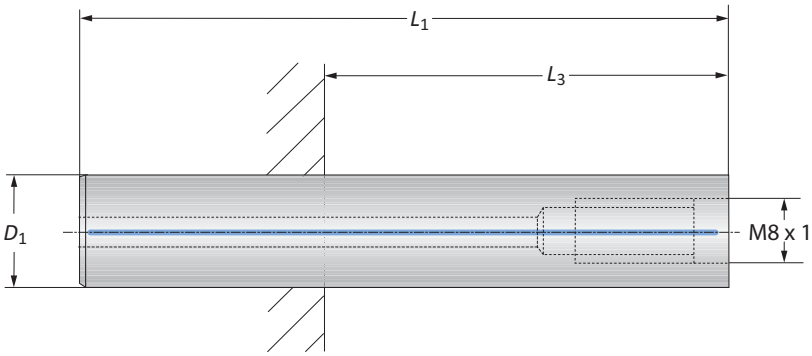
249 (248) Shanks

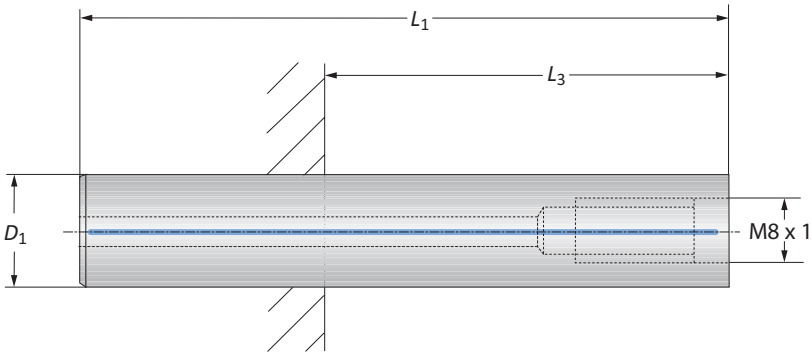
Steel | Carbide



Steel Shanks

	Connection	Shank D_1	Shank L_1	Shank $L_{3\ max}$*	$L_{3\ min}$* SK 40+50	$L_{3\ min}$* HSK-A 63	$L_{3\ min}$* HSK-A 100	Weight	Part No.
ⓘ	M8 x 1	0.591	3.346	1.456	–	–	–	0.220 (lbs)	**248136**
ⓘ	M8 x 1	0.709	3.937	2.047	–	0.196	0.472	0.440 (lbs)	**248137**
ⓘ	M8 x 1	0.906	4.606	2.716	–	0.866	1.141	0.881 (lbs)	**248138**
ⓜ	M8 x 1	15.00	85.00	37.00	–	–	–	0.10 (kg)	**248136**
ⓜ	M8 x 1	18.00	100.00	52.00	–	5.00	12.00	0.20 (kg)	**248137**
ⓜ	M8 x 1	23.00	117.00	69.00	–	22.00	29.00	0.40 (kg)	**248138**

*L_3 dimensions apply to collet chucks

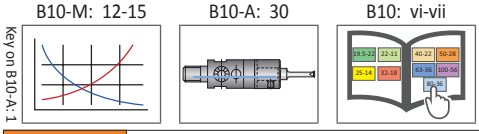


Carbide Shanks

	Connection	Shank D_1	Shank L_1	Shank $L_{3\ max}$*	$L_{3\ min}$* SK 40	$L_{3\ min}$* SK 50	$L_{3\ min}$* HSK-A 63	$L_{3\ min}$* HSK-A 100	Weight	Part No.
ⓘ	M8 x 1	0.591	5.118	3.228	0.787	0.787	1.377	1.653	0.661 (lbs)	**248142**
ⓘ	M8 x 1	0.709	6.102	4.212	1.535	0.826	2.362	2.637	1.322 (lbs)	**248143**
ⓘ	M8 x 1	0.906	7.086	5.196	2.519	1.811	3.346	3.622	2.425 (lbs)	**248144**
ⓘ	M8 x 1	0.906	9.527	7.637	4.960	4.251	5.787	6.062	3.086 (lbs)	**248145**
ⓜ	M8 x 1	15.00	130.00	82.00	20.00	20.00	35.00	42.00	0.30 (kg)	**248142**
ⓜ	M8 x 1	18.00	155.00	107.00	39.00	21.00	60.00	67.00	0.60 (kg)	**248143**
ⓜ	M8 x 1	23.00	180.00	132.00	64.00	46.00	85.00	92.00	1.10 (kg)	**248144**
ⓜ	M8 x 1	23.00	242.00	194.00	126.00	108.00	147.00	154.00	1.40 (kg)	**248145**

*L_3 dimensions apply to collet chucks

B10-M: 12-15 | B10-A: 30 | B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
-Consult machine tool builder for machine's weight limitations.
-Refer to example on page B10-M: 11 for calculating tool assembly weight
Factory technical assistance is also available for specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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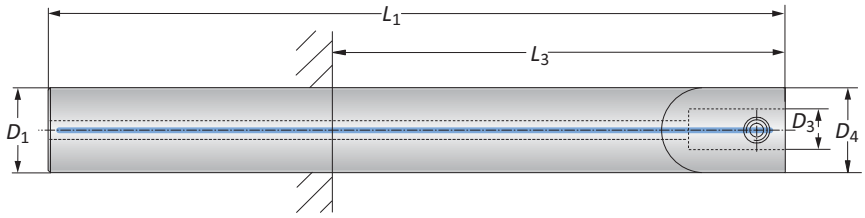
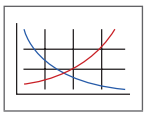
Carbide Master Shanks



	Connection D_4 | D_3	Shank L_1	D_1	$L_{3\,max}$	$L_{3\,min}$ SK 40	SK 50	HSK-A 63	HSK-A 100	Weight	Part No.
	18 - 11	6.102	0.709	4.213	1.535	1.024	2.362	2.638	1.102 (lbs)	**299009***
	22 - 11	5.512	0.866	3.622	1.102	1.102	1.772	2.047	1.543 (lbs)	**299001***
	22 - 11	7.480	0.866	5.591	2.913	2.205	3.740	4.016	1.984 (lbs)	**299002***
	22 - 11	9.049	0.866	7.205	4.528	3.819	5.354	5.630	2.425 (lbs)	**299003***
ⓘ	25 - 14	6.496	0.984	4.606	1.929	1.417	2.756	3.031	2.205 (lbs)	**299004***
	25 - 14	8.465	0.984	6.575	3.898	3.189	4.724	5.000	2.866 (lbs)	**299005***
	32 - 18	8.268	1.260	–	5.354	5.354	5.572	5.394	4.630 (lbs)	**299006****
	32 - 18	10.236	1.260	–	7.323	7.323	7.441	7.362	5.732 (lbs)	**299007****
	40 - 22	16.399	1.575	–	–	13.110	–	13.110	11.460 (lbs)	**299008****
	18 - 11	155.00	18.00	107.00	39.00	26.00	60.00	67.00	0.50 (kg)	**299009***
	22 - 11	140.00	22.00	92.00	28.00	28.00	45.00	52.00	0.70 (kg)	**299001***
	22 - 11	190.00	22.00	142.00	74.00	56.00	95.00	102.00	0.90 (kg)	**299002***
	22 - 11	231.00	22.00	183.00	115.00	97.00	136.00	143.00	1.10 (kg)	**299003***
ⓜ	25 - 14	165.00	25.00	117.00	49.00	36.00	70.00	77.00	1.00 (kg)	**299004***
	25 - 14	215.00	25.00	167.00	99.00	81.00	120.00	127.00	1.30 (kg)	**299005***
	32 - 18	210.00	32.00	–	136.00	136.00	139.00	137.00	2.10 (kg)	**299006****
	32 - 18	260.00	32.00	–	186.00	186.00	189.00	187.00	2.60 (kg)	**299007****
	40 - 22	415.00	40.00	–	–	333.00	–	333.00	5.20 (kg)	**299008****

NOTE: Adapter shanks are used for extensions up to 10xD
*Recommended clamping element: collet chuck ISO 15488 (DIN 6499-B) (pg. B10-I: 5)
**Recommended clamping element: collet chuck ISO 10897 (DIN 6388) (pg. B10-I: 5)

B10-M: 12-15



Key on B10-F: 1

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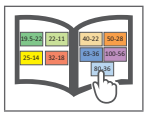
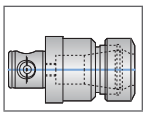


B10-I: 5



ⓘ = Imperial (in)
ⓜ = Metric (mm)

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⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
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-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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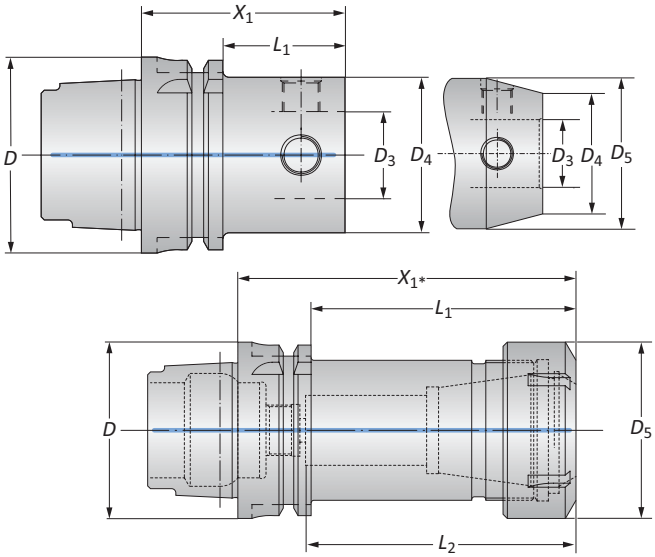
HSK Master Shanks (DIN 69893)

Imperial | Balanced



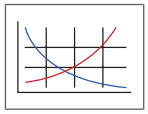
	Taper Size	Connection	Shank					
	D	D4 | D3	X1	L1	L2	D5	Weight	Part No.
	40	40 - 22	2.205	–	–	–	0.881 (lbs)	**246016**
	40	50 - 28	2.756	–	–	–	1.543 (lbs)	**246004**
	50	40 - 22	2.205	1.181	–	–	1.322 (lbs)	**246015**
	50	50 - 28	2.559	–	–	–	1.763 (lbs)	**245011**
	63	25 - 14	1.811	0.787	–	–	1.543 (lbs)	**246012**
	63	32 - 18	2.205	1.181	–	–	1.763 (lbs)	**246013**
	63	40 - 22	2.205	1.181	–	–	1.764 (lbs)	**246014**
	63	50 - 28	2.559	1.535	–	–	2.425 (lbs)	**245012**
	63	63 - 36	3.150	–	–	–	3.306 (lbs)	**245013**
	63	80 - 36	3.150	–	–	–	4.629 (lbs)	**246009**
	63	ER 40	4.724	3.700	3.740	2.480	3.747 (lbs)	**252090****
ⓘ	100	50 - 28	2.559	1.417	–	–	5.291 (lbs)	**245014**
	100	50 - 28	7.087	5.944	–	2.362	11.020 (lbs)	**246020**
	100	50 - 28*	7.087	5.944	–	–	6.393 (lbs)	**246021**
	100	63 - 36	3.150	2.007	–	–	6.393 (lbs)	**245015**
	100	63 - 36	8.071	6.929	–	3.070	17.190 (lbs)	**246019**
	100	63 - 36	8.071	6.929	–	–	17.190 (lbs)	**246022**
	100	80 - 36	3.150	2.007	–	–	8.157 (lbs)	**245016**
	100	80 - 36	10.03	8.897	–	3.543	27.770 (lbs)	**246018**
	100	80 - 36	10.03	8.897	–	–	22.920 (lbs)	**246023**
	100	100 - 56	3.937	–	–	–	11.020 (lbs)	**246010**
	100	100 - 56	11.810	8.700	–	–	38.580 (lbs)	**246017**
	100	ER 40	4.724	3.582	3.464	2.480	7.716 (lbs)	**252091****

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg

*D_4 = 49.50

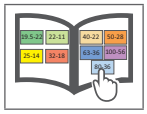
**Balanced without clamping nut

B10-M: 12-15



Key on B10-F: 1

B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
-Consult machine tool builder for machine's weight limitations.
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Factory technical assistance is also available for specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

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-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
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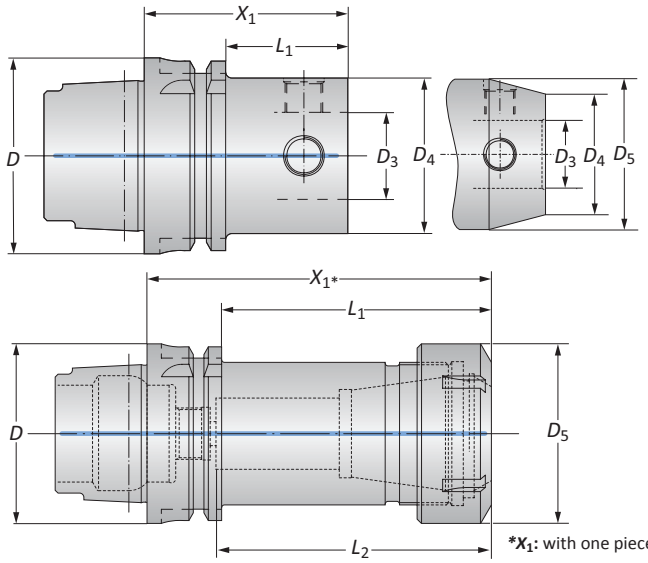
HSK Master Shanks (DIN 69893)

Metric | Balanced



*X_1: with one piece clamping nut

	Taper Size	Connection	Shank					
	D	D_4 | D_3	X_1	L_1	L_2	D_5	Weight	Part No.
	40	40 - 22	56.00	–	–	–	0.40 (kg)	**246016**
	40	50 - 28	70.00	–	–	–	0.70 (kg)	**246004**
	50	40 - 22	56.00	30.00	–	–	0.60 (kg)	**246015**
	50	50 - 28	65.00	–	–	–	0.80 (kg)	**245011**
	63	25 - 14	46.00	20.00	–	–	0.70 (kg)	**246012**
	63	32 - 18	56.00	30.00	–	–	0.80 (kg)	**246013**
	63	40 - 22	56.00	30.00	–	–	0.80 (kg)	**246014**
	63	50 - 28	65.00	39.00	–	–	1.10 (kg)	**245012**
	63	63 - 36	80.00	–	–	–	1.50 (kg)	**245013**
	63	80 - 36	80.00	–	–	–	2.10 (kg)	**246009**
	63	ER 40	120.00	94.00	95.00	63.00	1.70 (kg)	**252090****
ⓜ	100	50 - 28	65.00	36.00	–	–	2.40 (kg)	**245014**
	100	50 - 28	180.00	151.00	–	60.00	5.00 (kg)	**246020**
	100	50 - 28*	180.00	151.00	–	–	4.00 (kg)	**246021**
	100	63 - 36	80.00	51.00	–	–	2.90 (kg)	**245015**
	100	63 - 36	205.00	176.00	–	78.00	7.80 (kg)	**246019**
	100	63 - 36	205.00	176.00	–	–	7.80 (kg)	**246022**
	100	80 - 36	80.00	51.00	–	–	3.70 (kg)	**245016**
	100	80 - 36	255.00	226.00	–	90.00	12.60 (kg)	**246018**
	100	80 - 36	255.00	226.00	–	–	10.40 (kg)	**246023**
	100	100 - 56	100.00	–	–	–	5.00 (kg)	**246010**
	100	100 - 56	300.00	221.00	–	–	17.50 (kg)	**246017**
	100	ER 40	120.00	91.00	88.00	63.00	3.50 (kg)	**252091****

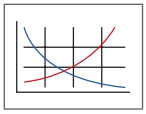
NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg

*D_4 = 49.50mm

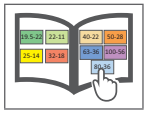
**Balanced without clamping nut

B10-M: 12-15

Key on B10-F: 1



B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

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⚠ WARNING **Tool failure can cause serious injury. To prevent:**
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-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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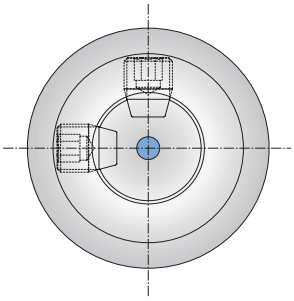
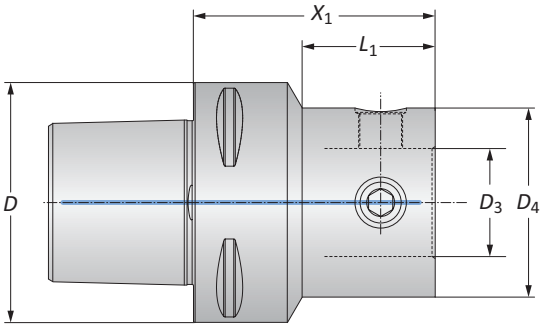
Polygon Shaft Master Shanks (PSC) (ISO 26623-1)

Balanced

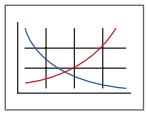




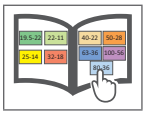
	PSC	Connection	Shank			
	D	D_4 | D_3	X_1	L_1	Weight	Part No.
	50	40 - 22	2.126	1.224	1.543 (lbs)	**227014**
	50	50 - 28	2.559	–	2.205 (lbs)	**227001**
	50	63 - 36	3.150	–	3.307 (lbs)	**227002**
	50	80 - 36	3.150	–	5.512 (lbs)	**227012**
	63	25 - 14	2.126	0.838	1.984 (lbs)	**227010**
	63	32 - 18	2.126	0.917	2.205 (lbs)	**227009**
ⓘ	63	40 - 22	2.559	1.433	2.425 (lbs)	**227008**
	63	50 - 28	2.559	1.555	2.866 (lbs)	**227003**
	63	63 - 36	3.150	–	3.968 (lbs)	**227004**
	63	80 - 36	3.150	–	5.732 (lbs)	**227005**
	80	50 - 28	2.559	1.047	4.850 (lbs)	**227011**
	80	63 - 36	3.150	1.783	5.732 (lbs)	**227006**
	80	80 - 36	3.150	–	7.275 (lbs)	**227007**
	50	40 - 22	54.00	31.10	0.70 (kg)	**227014**
	50	50 - 28	65.00	–	1.00 (kg)	**227001**
	50	63 - 36	80.00	–	1.50 (kg)	**227002**
	50	80 - 36	80.00	–	2.50 (kg)	**227012**
	63	25 - 14	54.00	21.10	0.90 (kg)	**227010**
	63	32 - 18	54.00	23.00	1.00 (kg)	**227009**
ⓜ	63	40 - 22	65.00	36.40	1.10 (kg)	**227008**
	63	50 - 28	65.00	39.00	1.30 (kg)	**227003**
	63	63 - 36	80.00	-	1.80 (kg)	**227004**
	63	80 - 36	80.00	-	2.60 (kg)	**227005**
	80	50 - 28	65.00	25.00	2.20 (kg)	**227011**
	80	63 - 36	80.00	45.10	2.60 (kg)	**227006**
	80	80 - 36	80.00	-	3.30 (kg)	**227007**

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg

B10-M: 12-15



B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

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-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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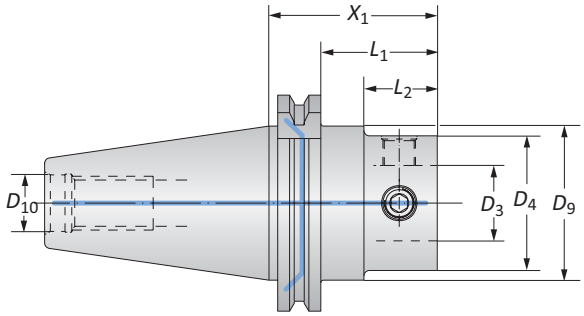
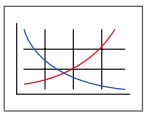
Dual Contact CAT Master Shanks with Imperial Threads



	Taper Size	Connection D_4 | D_3	Shank X_1	L_1	L_2	D_9	D_{10}	Weight	Part No.
	40	50 - 28	2.440	1.688	1.062	1.752	⅝ - 11	2.866 (lbs)	**353062**
	40	50 - 28	5.394	4.642	4.016	1.752	⅝ - 11	5.292 (lbs)	**353076**
	40	63 - 36	3.228	2.440	1.850	1.752	⅝ - 11	3.968 (lbs)	**353063**
	50	50 - 28	2.440	1.689	1.062	2.752	1 - 8	7.275 (lbs)	**353061**
	50	50 - 28*	7.953	7.201	6.575	2.752	1 - 8	11.687 (lbs)	**353077**
ⓘ	50	63 - 36	2.835	2.083	1.457	2.752	1 - 8	7.938 (lbs)	**353078**
	50	63 - 36	8.740	7.988	7.362	2.752	1 - 8	15.656 (lbs)	**353079**
	50	80 - 36	2.834	2.082	1.456	2.752	1 - 8	9.039 (lbs)	**353060**
	50	80 - 36	10.709	9.957	9.331	2.752	1 - 8	26.240 (lbs)	**353080**
	50	100 - 56	4.134	3.382	2.756	2.752	1 - 8	13.230 (lbs)	**353081**
	50	100 - 56	12.008	11.256	10.630	2.752	1 - 8	39.470 (lbs)	**353082**
	40	50 - 28	62.00	42.90	27.00	44.50	⅝ - 11	1.30 (kg)	**353062**
	40	50 - 28	137.00	117.90	102.00	44.50	⅝ - 11	2.40 (kg)	**353076**
	40	63 - 36	82.00	62.90	47.00	44.50	⅝ - 11	1.80 (kg)	**353063**
	50	50 - 28	62.00	42.90	27.00	69.90	1 - 8	3.30 (kg)	**353061**
	50	50 - 28*	202.00	182.90	167.00	69.90	1 - 8	5.30 (kg)	**353077**
ⓜ	50	63 - 36	72.00	52.90	37.00	69.90	1 - 8	3.60 (kg)	**353078**
	50	63 - 36	222.00	202.90	187.00	69.90	1 - 8	7.10 (kg)	**353079**
	50	80 - 36	72.00	52.90	37.00	69.90	1 - 8	4.10 (kg)	**353060**
	50	80 - 36	272.00	252.90	237.00	69.90	1 - 8	11.90 (kg)	**353080**
	50	100 - 56	105.00	85.90	70.00	69.90	1 - 8	6.00 (kg)	**353081**
	50	100 - 56	305.00	285.90	270.00	69.90	1 - 8	17.90 (kg)	**353082**

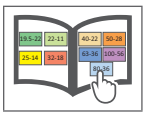
*D_4 = 49.50

B10-M: 12-15



Key on B10-F: 1

B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

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-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
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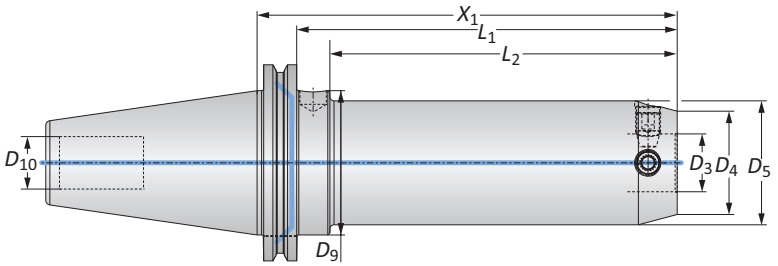
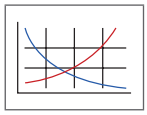
CAT Master Shanks with Imperial Threads



	Taper Size	Connection D_4 | D_3	Shank X_1	L_1	L_2	D_5	D_9	D_{10}	Weight	Part No.
	30	40 - 22	2.362	1.612	–	–	–	½ - 13	1.322 (lbs)	**353001**
	30	50 - 28	2.756	2.006	–	–	–	½ - 13	1.763 (lbs)	**353002**
	40	25 - 14	2.165	1.415	0.787	-	1.750	⅝ - 11	2.204 (lbs)	**353011**
	40	25 - 14	5.551	4.800	4.173	1.102	1.750	⅝ - 11	3.306 (lbs)	**353012**
	40	32 - 18	2.559	1.809	1.181	-	1.750	⅝ - 11	2.425 (lbs)	**353013**
	40	32 - 18	6.732	5.982	5.354	1.378	1.750	⅝ - 11	4.188 (lbs)	**353014**
	40	40 - 22	2.165	1.415	0.787	–	1.750	⅝ - 11	2.491 (lbs)	**353003**
	40	40 - 22	6.378	5.628	-	1.850	1.750	⅝ - 11	5.511 (lbs)	**353015**
	40	50 - 28	2.441	1.691	–	–	1.750	⅝ - 11	2.821 (lbs)	**353004**
	40	50 - 28	5.394	4.644	-	-	1.750	⅝ - 11	5.291 (lbs)	**353016**
	40	63 - 36	3.228	2.478	–	–	1.750	⅝ - 11	4.034 (lbs)	**353005**
	40	63 - 36	6.181	5.431	-	-	1.750	⅝ - 11	7.936 (lbs)	**353017**
i	50	40 - 22	2.165	1.415	0.787	–	2.750	1 - 8	7.297 (lbs)	**353006**
	50	40 - 22	6.378	5.628	5.000	1.850	2.750	1 - 8	9.920 (lbs)	**353018**
	50	50 - 28	2.441	1.691	1.063	-	2.750	1 - 8	7.583 (lbs)	**353007**
	50	50 - 28*	7.953	7.203	6.575	-	2.750	1 - 8	11.680 (lbs)	**353025**
	50	50 - 28	7.953	7.203	6.575	2.362	2.750	1 - 8	14.100 (lbs)	**353019**
	50	63 - 36	2.835	2.085	1.457	-	2.750	1 - 8	8.223 (lbs)	**353008**
	50	63 - 36	8.740	7.990	7.362	-	2.750	1 - 8	15.650 (lbs)	**353023**
	50	63 - 36	8.740	7.990	-	3.071	2.750	1 - 8	20.500 (lbs)	**353020**
	50	80 - 36	2.835	2.085	–	–	2.750	1 - 8	9.413 (lbs)	**353009**
	50	80 - 36	10.709	9.959	-	-	2.750	1 - 8	26.230 (lbs)	**353024**
	50	80 - 36	10.709	9.959	-	3.543	2.750	1 - 8	31.300 (lbs)	**353021**
	50	100 - 56	4.134	3.384	–	–	2.750	1 - 8	13.600 (lbs)	**353010**
	50	100 - 56	12.008	11.258	-	-	2.750	1 - 8	39.460 (lbs)	**353022**

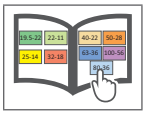
*D_4 = 49.50

B10-M: 12-15



Key on B10-F: 1

B10: vi-vii



i = Imperial (in)
m = Metric (mm)

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-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
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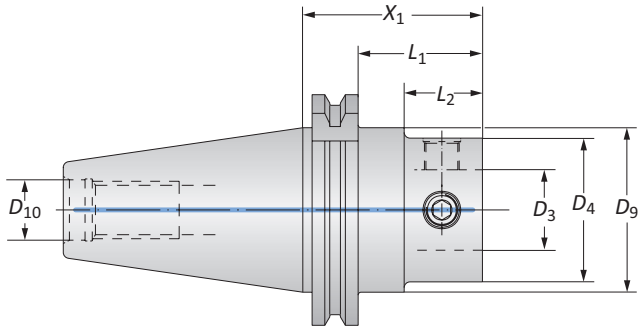
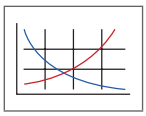
CAT Master Shanks with Metric Threads



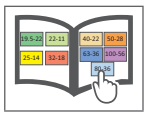
	Taper Size	Connection D_4 | D_3	Shank X_1	L_1	L_2	D_9	D_{10}	Weight	Part No.
	40	50 - 28	62.00	42.90	–	44.45	M16 x 2	1.30 (kg)	**132022T016960**
	40	63 - 36	82.00	62.90	–	44.45	M16 x 2	1.80 (kg)	**132066T016960**
ⓜ	50	50 - 28	62.00	42.90	27.00	69.85	M24 x 3	3.40 (kg)	**132022T016962**
	50	63 - 36	72.00	52.90	37.00	69.85	M24 x 3	3.70 (kg)	**132066T016962**
	50	80 - 36	72.00	52.90	–	69.85	M24 x 3	4.20 (kg)	**132088T016962**
	50	100 - 56	105.00	85.90	–	69.85	M24 x 3	5.20 (kg)	**132076T016962**

B10-M: 12-15



Key on B10-F: 1

B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

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-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
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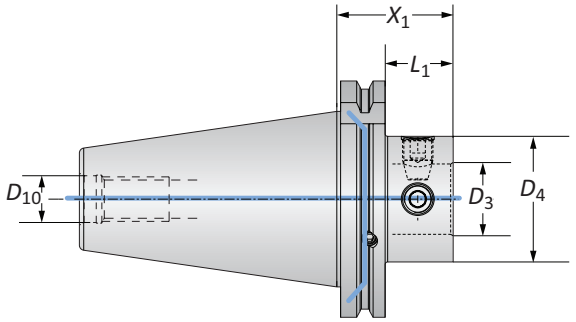
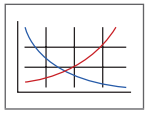
Dual Contact SK Master Shanks (DIN 69871-AD / B-D)



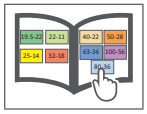
	Taper Size	Connection D_4 | D_3	Shank X_1	Shank L_1	Shank D_{10}	Weight	Part No.
ⓘ	40	50 - 28	1.811	1.059	M16 x 2	2.426 (lbs)	**353064**
	40	63 - 36	2.598	1.846	M16 x 2	6.395 (lbs)	**353065**
	50	50 - 28	1.811	1.059	M24 x 3	6.395 (lbs)	**353066**
	50	63 - 36	2.205	1.453	M24 x 3	7.056 (lbs)	**353067**
	50	80 - 36	2.205	1.453	M24 x 3	8.159 (lbs)	**353068**
	50	100 - 56	3.543	2.791	M24 x 3	11.687 (lbs)	**353069**
ⓜ	40	50 - 28	46.00	26.90	M16 x 2	1.10 (kg)	**353064**
	40	63 - 36	66.00	46.90	M16 x 2	1.50 (kg)	**353065**
	50	50 - 28	46.00	26.90	M24 x 3	2.90 (kg)	**353066**
	50	63 - 36	56.00	36.90	M24 x 3	3.20 (kg)	**353067**
	50	80 - 36	56.00	36.90	M24 x 3	3.70 (kg)	**353068**
	50	100 - 56	90.00	70.90	M24 x 3	5.30 (kg)	**353069**

B10-M: 12-15



Key on B10-F: 1

B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

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-Refer to example on page B10-M: 11 for calculating tool assembly weight
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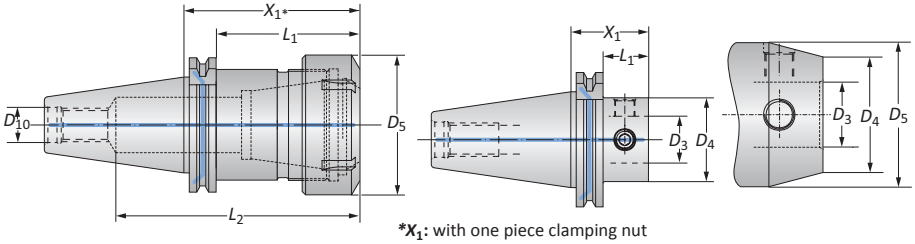
⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

SK Master Shanks (DIN 69871-AD / B-D)

Balanced



***X_1:** with one piece clamping nut

	Taper Size	Connection D_4 | D_3	Shank X_1	L_1	L_2	D_5	D_{10}	Weight	Part No.
	30	40 - 22	1.811	1.059	–	–	M12 x 1.75	1.103 (lbs)	**327001**
	30	50 - 28	2.283	1.531	–	–	M12 x 1.75	1.764 (lbs)	**327002**
	40	32 - 18	2.165	1.413	–	1.575	M16 x 2	2.426 (lbs)	**327003**
	40	40 - 22	1.811	1.059	–	–	M16 x 2	2.205 (lbs)	**327004**
	40	50 - 28	1.811	1.059	–	–	M16 x 2	2.426 (lbs)	**327005**
	40	63 - 36	2.598	1.846	–	–	M16 x 2	3.087 (lbs)	**327006**
	40	80 - 36	2.598	1.846	–	–	M16 x 2	4.190 (lbs)	**327007**
	40	ER 40	3.149	2.397	4.566	2.480	M16 x 2	2.860 (lbs)	**259079****
	50	50 - 28	1.811	1.059	–	–	M24 x 3	6.395 (lbs)	**327017**
ⓘ	50	50 - 28	7.323	6.571	–	2.362	M24 x 3	13.230 (lbs)	**327025**
	50	50 - 28*	7.323	6.571	–	–	M24 x 3	10.805 (lbs)	**327033**
	50	63 - 36	2.205	1.453	–	–	M24 x 3	7.056 (lbs)	**327018**
	50	63 - 36	8.110	7.358	–	3.071	M24 x 3	19.625 (lbs)	**327026**
	50	63 - 36	8.110	7.358	–	–	M24 x 3	15.215 (lbs)	**327034**
	50	80 - 36	2.205	1.453	–	–	M24 x 3	8.159 (lbs)	**327010**
	50	80 - 36	10.079	9.327	–	3.543	M24 x 3	29.988 (lbs)	**327027**
	50	100 - 56	3.543	2.791	–	–	M24 x 3	11.687 (lbs)	**327011**
	50	100 - 56	11.417	10.665	–	–	M24 x 3	37.706 (lbs)	**327028**
	50	ER 40	3.149	2.173	5.275	2.480	M24 x 3	6.834 (lbs)	**259080****
	30	40 - 22	46.00	26.90	–	–	M12 x 1.75	0.50 (kg)	**327001**
	30	50 - 28	58.00	38.90	–	–	M12 x 1.75	0.80 (kg)	**327002**
	40	32 - 18	55.00	35.90	–	40.00	M16 x 2	1.10 (kg)	**327003**
	40	40 - 22	46.00	26.90	–	–	M16 x 2	1.00 (kg)	**327004**
	40	50 - 28	46.00	26.90	–	–	M16 x 2	1.10 (kg)	**327005**
	40	63 - 36	66.00	46.90	–	–	M16 x 2	1.40 (kg)	**327006**
	40	80 - 36	66.00	46.90	–	–	M16 x 2	1.90 (kg)	**327007**
	40	ER 40	80.00	60.90	116.00	63.00	M16 x 2	1.30 (kg)	**259079****
	50	50 - 28	46.00	26.90	–	–	M24 x 3	2.90 (kg)	**327017**
ⓜ	50	50 - 28	186.00	166.90	–	60.00	M24 x 3	6.00 (kg)	**327025**
	50	50 - 28*	186.00	166.90	–	–	M24 x 3	4.90 (kg)	**327033**
	50	63 - 36	56.00	36.90	–	–	M24 x 3	3.20 (kg)	**327018**
	50	63 - 36	206.00	186.90	–	78.00	M24 x 3	8.90 (kg)	**327026**
	50	63 - 36	206.00	186.90	–	–	M24 x 3	6.90 (kg)	**327034**
	50	80 - 36	56.00	36.90	–	–	M24 x 3	3.70 (kg)	**327010**
	50	80 - 36	256.00	236.90	–	90.00	M24 x 3	13.60 (kg)	**327027**
	50	100 - 56	90.00	70.90	–	–	M24 x 3	5.30 (kg)	**327011**
	50	100 - 56	290.00	270.90	–	–	M24 x 3	17.10 (kg)	**327028**
	50	ER 40	80.00	55.20	134.00	63.00	M24 x 3	3.10 (kg)	**259080****

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg

* D_4 = (49.50mm)

**Balanced without clamping nut

ⓘ = Imperial (in)
ⓜ = Metric (mm)

⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**

-Consult machine tool builder for machine's weight limitations.
-Refer to example on page B10-M: 11 for calculating tool assembly weight
Factory technical assistance is also available for specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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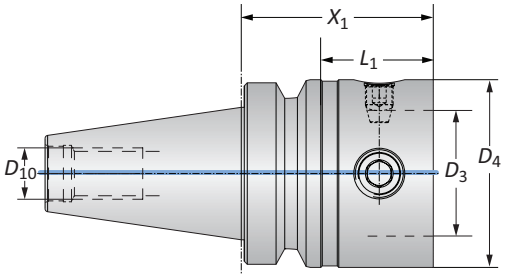
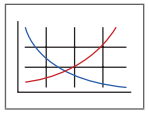
Dual Contact BT Master Shanks (JIS B 6339)

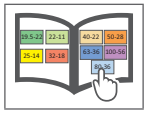


	Taper Size	Connection D_4 | D_3	Shank X_1	Shank L_1	Shank D_{10}	Weight	Part No.
ⓘ	40	50 - 28	2.126	1.063	M16 x 2	2.646 (lbs)	**353070**
ⓘ	40	63 - 36	2.520	1.457	M16 x 2	3.308 (lbs)	**353071**
ⓘ	50	50 - 28	2.559	1.055	M24 x 3	8.820 (lbs)	**353072**
ⓘ	50	63 - 36	2.953	1.449	M24 x 3	9.261 (lbs)	**353073**
ⓘ	50	80 - 36	2.953	1.449	M24 x 3	10.584 (lbs)	**353074**
ⓘ	50	100 - 56	3.543	2.039	M24 x 3	12.128 (lbs)	**353075**
ⓜ	40	50 - 28	54.00	27.00	M16 x 2	1.20 (kg)	**353070**
ⓜ	40	63 - 36	64.00	37.00	M16 x 2	1.50 (kg)	**353071**
ⓜ	50	50 - 28	65.00	26.80	M24 x 3	4.00 (kg)	**353072**
ⓜ	50	63 - 36	75.00	36.80	M24 x 3	4.20 (kg)	**353073**
ⓜ	50	80 - 36	75.00	36.80	M24 x 3	4.80 (kg)	**353074**
ⓜ	50	100 - 56	90.00	51.80	M24 x 3	5.50 (kg)	**353075**

B10-M: 12-15
Key on B10-F: 1



B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

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-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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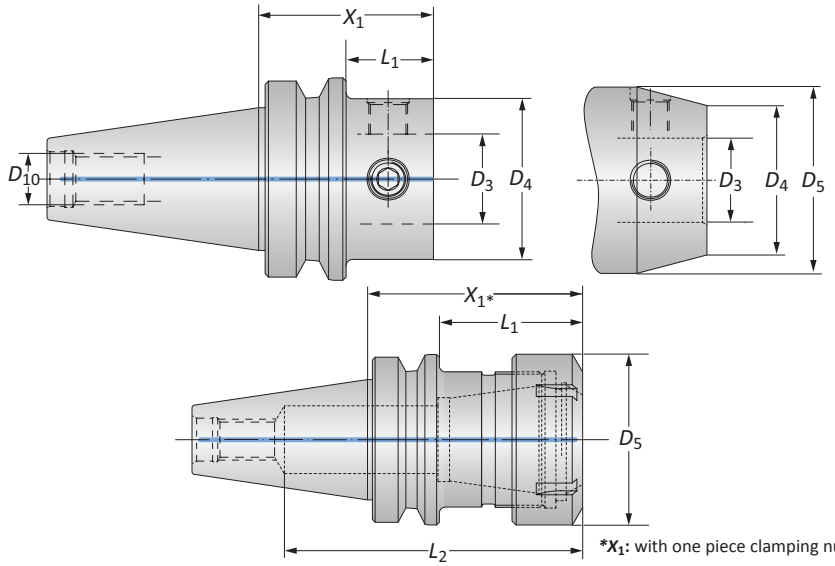
BT Master Shanks (JIS B 6339)

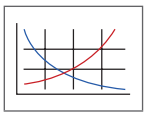
Balanced



	Taper Size	Connection D_4 | D_3	Shank X_1	L_1	L_2	D_5	D_{10}	Weight	Part No.
	30	40 - 22	1.575	0.710	–	–	M12 x 1.75	1.102 (lbs)	**327012**
	30	50 - 28	1.811	0.945	–	–	M12 x 1.75	1.323 (lbs)	**327013**
	40	40 - 22	1.811	0.750	–	–	M16 x 2	2.425 (lbs)	**327016**
	40	50 - 28	2.126	1.060	–	–	M16 x 2	2.646 (lbs)	**327019**
	40	63 - 36	2.520	1.457	–	–	M16 x 2	3.307 (lbs)	**327020**
ⓘ	40	ER 40	2.755	1.692	4.094	2.480	M16 x 2	2.645 (lbs)	**259081***
	50	50 - 28	2.559	1.060	–	–	M24 x 3	8.599 (lbs)	**327021**
	50	63 - 36	2.953	1.450	–	–	M24 x 3	9.261 (lbs)	**327022**
	50	80 - 36	2.953	1.450	–	–	M24 x 3	10.363 (lbs)	**327023**
	50	100 - 56	3.543	2.039	–	–	M24 x 3	12.127 (lbs)	**327024**
	50	ER 40	3.149	1.645	5.314	2.480	M24 x 3	8.377 (lbs)	**259082***
	30	40 - 22	40.00	18.00	–	–	M12 x 1.75	0.50 (kg)	**327012**
	30	50 - 28	46.00	24.00	–	–	M12 x 1.75	0.60 (kg)	**327013**
	40	40 - 22	46.00	19.00	–	–	M16 x 2	1.10 (kg)	**327016**
	40	50 - 28	54.00	27.00	–	–	M16 x 2	1.20 (kg)	**327019**
	40	63 - 36	64.00	37.00	–	–	M16 x 2	1.50 (kg)	**327020**
ⓜ	40	ER 40	70.00	43.00	104.00	63.00	M16 x 2	1.20 (kg)	**259081***
	50	50 - 28	65.00	26.80	–	–	M24 x 3	3.90 (kg)	**327021**
	50	63 - 36	75.00	36.80	–	–	M24 x 3	4.20 (kg)	**327022**
	50	80 - 36	75.00	36.80	–	–	M24 x 3	4.70 (kg)	**327023**
	50	100 - 56	90.00	51.80	–	–	M24 x 3	5.50 (kg)	**327024**
	50	ER 40	80.00	41.80	135.00	63.00	M24 x 3	3.80 (kg)	**259082***

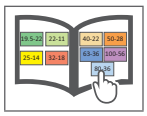
NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg
*Balanced without clamping nut

B10-M: 12-15



Key on B10-F: 1

B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

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-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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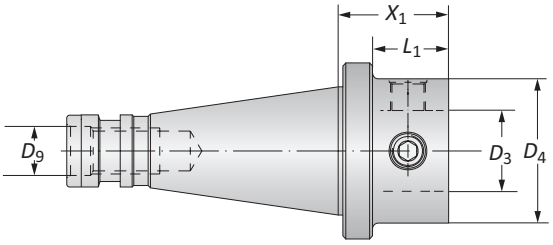
NMTB Master Shanks



	Taper Size	Connection D_4 | D_3	Shank X_1	Shank L_1	Shank D_9	Weight	Part No.
ⓘ	40	50 - 28	1.496	1.039	5/8 - 11	2.900 (lbs)	**132022T004498**
	40	63 - 36	1.890	1.433	5/8 - 11	3.300 (lbs)	**132066T004498**
	50	50 - 28	1.654	1.060	1 - 8	6.600 (lbs)	**132022T004480**
	50	63 - 36	2.047	1.450	1 - 8	7.700 (lbs)	**132066T004480**
	50	80 - 36	2.047	1.450	1 - 8	8.800 (lbs)	**132088T004480**
	50	100 - 56	3.543	2.945	1 - 8	10.800 (lbs)	**132076T004480**
ⓜ	40	50 - 28	38.00	26.40	5/8 - 11	1.30 (kg)	**132022T004498**
	40	63 - 36	48.00	36.40	5/8 - 11	1.50 (kg)	**132066T004498**
	50	50 - 28	42.00	26.80	1 - 8	3.00 (kg)	**132022T004480**
	50	63 - 36	52.00	36.80	1 - 8	3.50 (kg)	**132066T004480**
	50	80 - 36	52.00	36.80	1 - 8	4.00 (kg)	**132088T004480**
	50	100 - 56	90.00	74.80	1 - 8	4.90 (kg)	**132076T004480**

B10-M: 12-15

Key on B10-F: 1

B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
-Consult machine tool builder for machine's weight limitations.
-Refer to example on page B10-M: 11 for calculating tool assembly weight
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-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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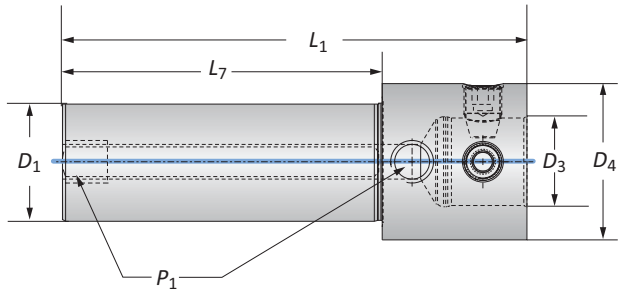
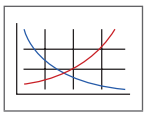
Imperial Straight Master Shanks



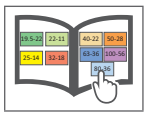
	Connection	Shank						
	D_4 | D_3	L_7	D_1	P_1	L_1	Weight	Part No.
ⓘ	40 - 22	3-½	1-¼	⅛-27 NPTF	5.080	1.764 (lbs)	**K71547**
	50 - 28	4	1-½	¼-18 NPTF	5.810	3.086 (lbs)	**K71548**
	63 - 36	4-½	2	¼-18 NPTF	6.700	5.952 (lbs)	**K71549**
	80 - 36	4-½	2	¼-18 NPTF	6.700	7.716 (lbs)	**K71550**

B10-M: 12-15



Key on B10-F: 1

B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

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-Consult machine tool builder for machine's weight limitations.
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-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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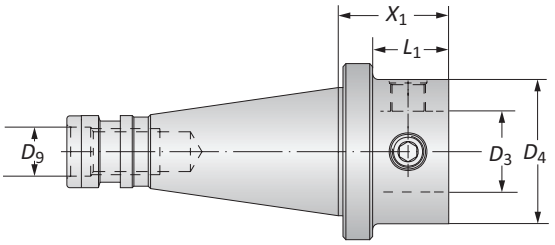
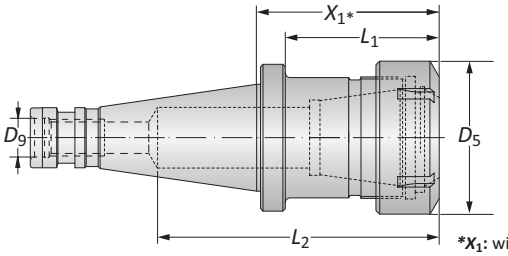
DIN 2080 Master Shanks

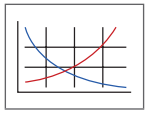




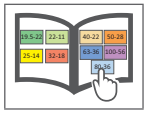
***X_1:** with one piece clamping nut

	Taper Size	Connection D_4 | D_3	Shank X_1	L_1	L_2	D_5	D_9	Weight	Part No.
	40	50 - 28	1.496	1.039	–	–	M16 x 2	2.866 (lbs)	**132022T010229**
	40	63 - 36	1.889	1.433	–	–	M16 x 2	3.306 (lbs)	**132066T010229**
	50	50 - 28	1.653	1.055	–	–	M24 x 3	6.613 (lbs)	**132022T003704**
ⓘ	50	63 - 36	2.047	1.448	–	–	M24 x 3	7.716 (lbs)	**132066T003704**
	50	80 - 36	2.047	1.448	–	–	M24 x 3	8.818 (lbs)	**132088T003704**
	50	100 - 56	3.543	2.945	–	–	M24 x 3	10.800 (lbs)	**132076T003704**
	50	ER 40	3.149	2.551	5.276	2.480	M24 x 3	7.275 (lbs)	**259084**
	40	50 - 28	38.00	26.40	–	–	M16 x 2	1.30 (kg)	**132022T010229**
	40	63 - 36	48.00	36.40	–	–	M16 x 2	1.50 (kg)	**132066T010229**
	50	50 - 28	42.00	26.80	–	–	M24 x 3	3.00 (kg)	**132022T003704**
ⓜ	50	63 - 36	52.00	36.80	–	–	M24 x 3	3.50 (kg)	**132066T003704**
	50	80 - 36	52.00	36.80	–	–	M24 x 3	4.00 (kg)	**132088T003704**
	50	100 - 56	90.00	74.80	–	–	M24 x 3	4.90 (kg)	**132076T003704**
	50	ER 40	80.00	64.80	134.00	63.00	M24 x 3	3.30 (kg)	**259084**

B10-M: 12-15
Key on B10-F: 1



B10: vi-vii

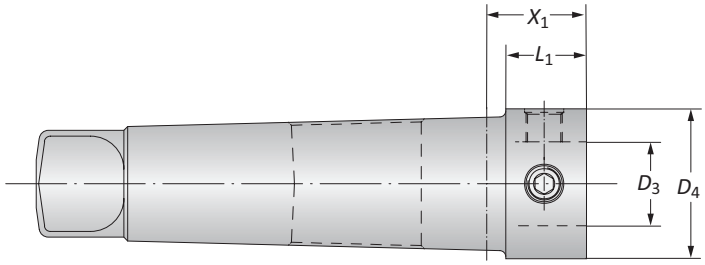


ⓘ = Imperial (in)
ⓜ = Metric (mm)

⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
-Consult machine tool builder for machine's weight limitations.
-Refer to example on page B10-M: 11 for calculating tool assembly weight
Factory technical assistance is also available for specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

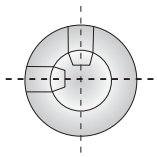
⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

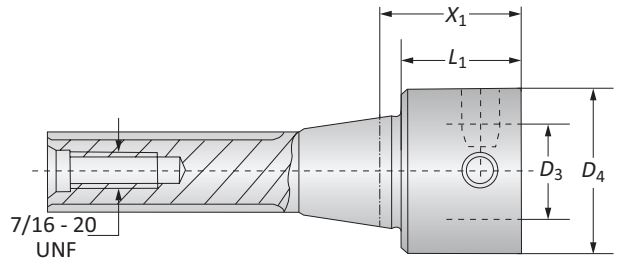
DIN 1806 Morse Taper Master Shanks | R8 Master Shanks



DIN 1806 Master Shanks

	Morse Taper Size	Connection D_4 | D_3	Shank X_1	Shank L_1	Weight	Part No.
i	4	50 - 28	1.693	1.440	2.425 (lbs)	**132022T003590**
i	5	50 - 28	1.299	1.050	3.968 (lbs)	**132022T003920**
i	5	63 - 36	2.087	1.840	4.850 (lbs)	**132066T003920**
m	4	50 - 28	43.00	36.50	1.10 (kg)	**132022T003590**
m	5	50 - 28	33.00	26.70	1.80 (kg)	**132022T003920**
m	5	63 - 36	53.00	46.70	2.20 (kg)	**132066T003920**

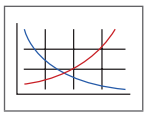




R8 Master Shanks

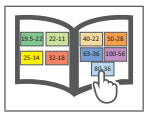
	Connection D_4 | D_3	Shank X_1	Shank L_1	Weight	Part No.
i	50 - 28	1.770	1.417	2.204 (lbs)	**132022T007166**
i	63 - 36	2.362	2.008	2.866 (lbs)	**132066T007166**
m	50 - 28	45.00	36.00	1.00 (kg)	**132022T007166**
m	63 - 36	60.00	51.00	1.30 (kg)	**132066T007166**

B10-M: 12-15



Key on B10-F: 1

B10: vi-vii



i = Imperial (in)
m = Metric (mm)

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-Consult machine tool builder for machine's weight limitations.
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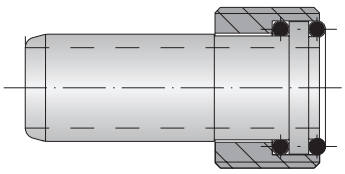
⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Accessories

Coolant Adapter Sets | Service Keys | ISO 15488 (DIN 6499-B) Collet Chuck Accessories

Coolant Adapter Sets

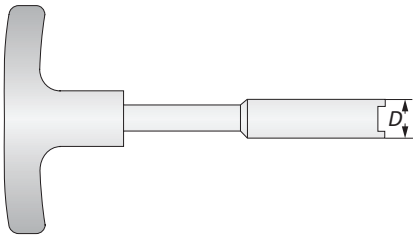
HSK Shank Size	Thread	Part No.
32	M10 x 1.5 x 1.0	**262002**
40	M12 x 1.75 x 1.0	**262003**
50	M16 x 2 x 1.0	**262004**
63	M18 x 2.5 x 1.0	**262005**
80	M20 x 2.5 x 1.5	**262006**
100	M24 x 3 x 1.5	**262007**



Service Keys

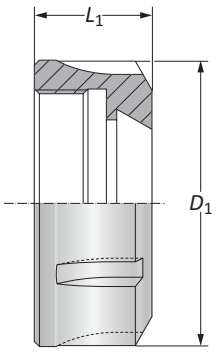
HSK Shank Size	*D*	Part No.
32	8.50	**315234**
40	10.50	**315235**
50	14.50	**215726**
63	16.50	**215727***
80	18.00	**415127**
100	22.00	**215728**

*Two piece



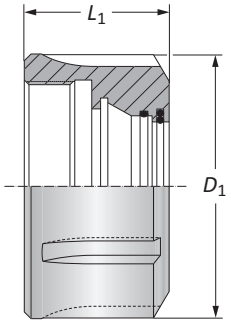
ISO 15488 (DIN 6499-B) One Piece Clamping Nut

	Nominal Size	Clamping Nut L_1	Clamping Nut D_1	Part No.
i	ER 40	1.004	2.480	**215926**
m	ER 40	25.50	63.00	**215926**



ISO 15488 (DIN 6499-B) Sealing Disk Clamping Nut

	Nominal Size	Sealing Disk Clamping Nut L_1	Sealing Disk Clamping Nut D_1	Part No.
i	ER 40	1.339	2.480	**278001**
m	ER 40	34.00	63.00	**278001**



B10-M: 12-15
Key on B10-F 1
B10: vi-vii

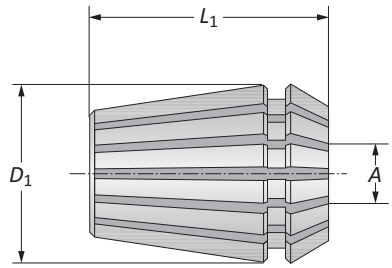
i = Imperial (in)
m = Metric (mm)

Accessories

ISO 15488 (DIN 6499-B) Collet Chuck Accessories

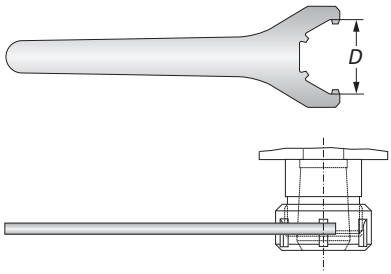
ISO 15488 (DIN6499-B) Collets

	Clamping Range	Collet		
	A	L_1	D_1	Part No.
ⓘ	0.591 - 0.551	1.811	1.575	**071790**
	0.709 - 0.669	1.811	1.575	**071793**
	0.787 - 0.748	1.811	1.575	**071795**
	0.906 - 0.866	1.811	1.575	**071798**
ⓜ	15.00 - 14.00	46.00	40.00	**071790**
	18.00 - 17.00	46.00	40.00	**071793**
	20.00 - 19.00	46.00	40.00	**071795**
	23.00 - 22.00	46.00	40.00	**071798**



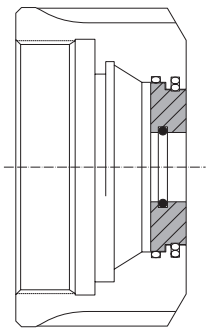
ISO 15488 (DIN 6499-B) Service Keys

		Service Key	
	Nominal Size	*D*	Part No.
ⓜ	ER 40	63.00	**215931**

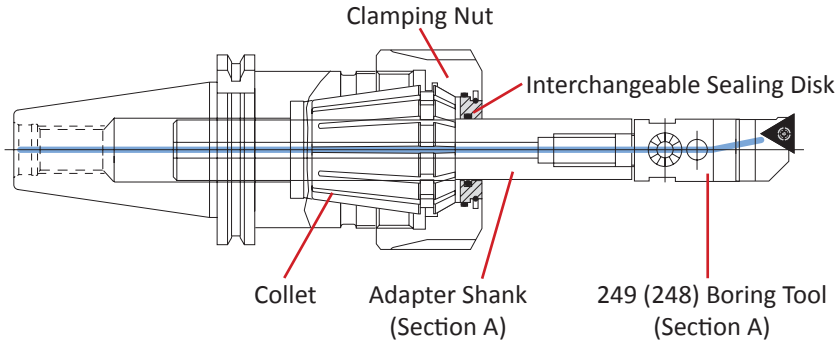


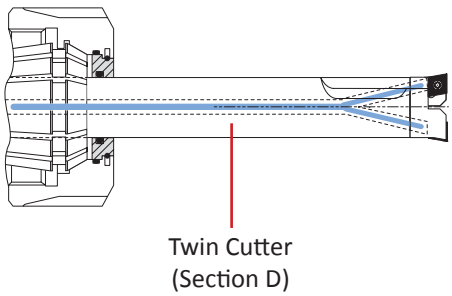
ISO 15488 (DIN 6499-B) Sealing Disks

	Clamping Range	Part No.
ⓘ	0.591 - 0.551	**278029**
	0.709 - 0.669	**278035**
	0.787 - 0.748	**278039**
	0.906 - 0.866	**278045**
ⓜ	15.00 - 14.50	**278029**
	18.00 - 17.50	**278035**
	20.00 - 19.50	**278039**
	23.00 - 22.50	**278045**



Application with clamping nuts and sealing disks when using central coolant feed:





B10-M: 12-15
Key on B10-F: 1
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Accessories

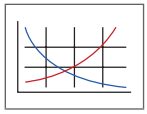
Mounting Fixtures

Mounting Fixture		
Code	**Type**	**Part No.**
Basic Body*	–	**098060**
Adapter	30 Taper	**098073**
Adapter	40 Taper	**098061**
Adapter	50 Taper	**098062**
Adapter	HSK-A 32	**098063**
Adapter	HSK-A 40	**098064**
Adapter	HSK-A 50	**098065**
Adapter	HSK-A 63	**098066**
Adapter	HSK-A 80	**098067**
Adapter	HSK-A 100	**098068**
Adapter	PSC 50	**098069**
Adapter	PSC 63	**098070**
Adapter	PSC 80	**098071**

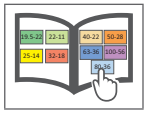
*Basic body and adapters sold separately

B10-M: 12-15

Key on B10-F: 1



B10: vi-vii



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Notes

SECTION

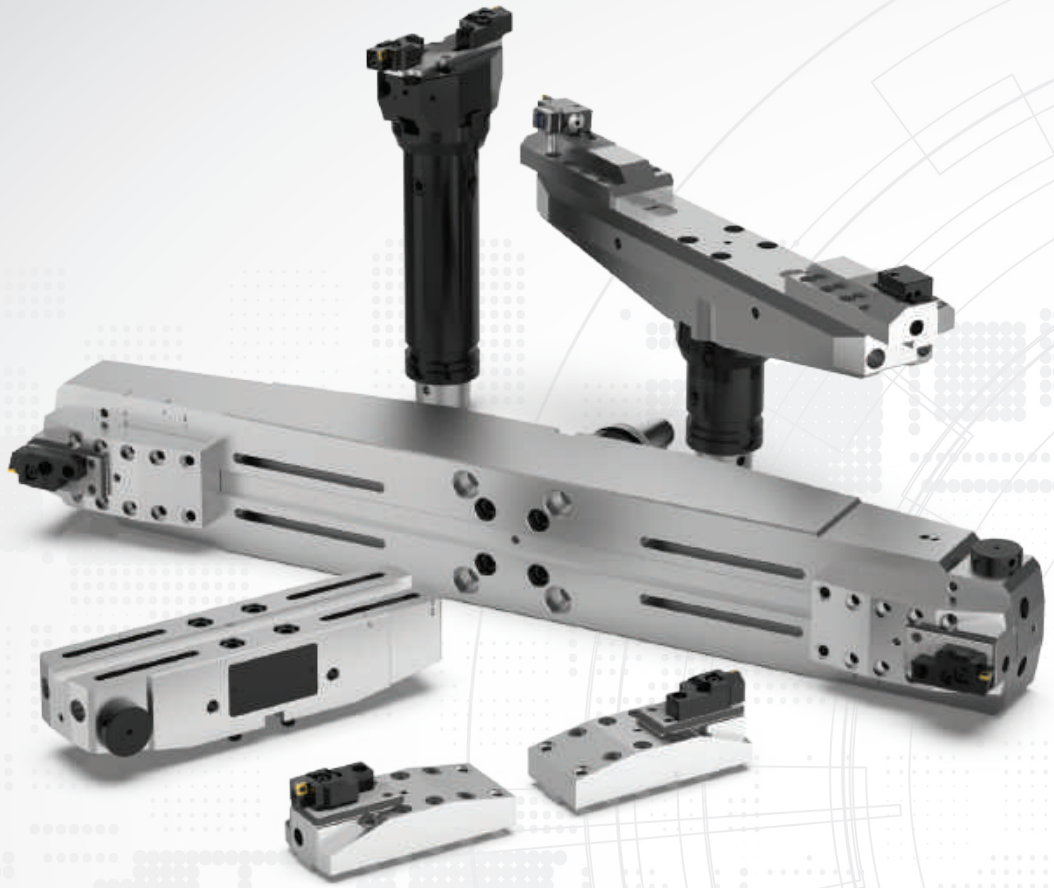
B10-G

Large Diameter Boring

Wohlhaupter® Large Diameter Boring

Basic D 40 | Basic D 60 | Eco D 60 | Flex D 60

- Diameter Range: 7.874" - 128.150" (200.00mm - 3255.00mm)



Boring Big?

Wohlhaupter has continued to expand our large diameter boring capabilities with Alu-Line. Our Alu-Line serrated slides and tool bodies are made of lightweight aluminum alloy to minimize the weight while still getting the heavy boring job done. The versatile serrated slides and serrated tool bodies allow for boring 7.874" (200.00mm) up to 128.150" (3255.00mm), offering the most powerful and versatile tool ranges to our customers.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.

This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury.

When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words.

⚠ WARNING

WARNING (shown above) means that failure to follow the precautions in this message could result in tool failure and serious injury.

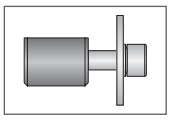
NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

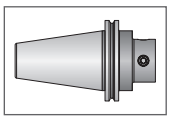
Visit www.alliedmachine.com for the most up-to-date information and procedures.

Applicable Industries

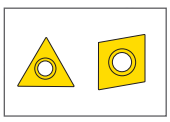
Reference Icons
The following icons will appear throughout the catalog to help you navigate between products.



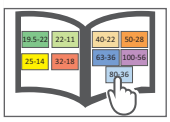
Clamping Elements
For use with insert holders and boring heads



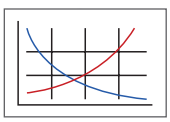
Shanks
A variety of shanks for different machines



Inserts
For use with insert holder boring heads and boring bars using indexable inserts



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s)



Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring

Coolant-Through Option
Indicates that the product is coolant through

Large Diameter Boring Table of Contents

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Product Overview . . . . . 2 - 3

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Alu-Line Basic D 40 Serrated Slides 4
Alu-Line Basic D 60 Serrated Slides 5
Alu-Line Eco D 60 Serrated Slides 6
Alu-Line Flex D 60 Serrated Slides 7

Serrated Adapters with MVS Connection . . . . . 8 - 9

538 (537) Boring Cassettes

538 (537) Analog Cassettes 10
538 (537) 3E^{TECH} Digital Cassettes 11

Insert Holders

Insert Holders for Rough Machining . . . . . 12 - 13
Insert Holders for Height Adjustments & Axial Grooving 14

Holding Arbors and Shanks

MVS Holding Arbors 15
Master Shanks . . . . . 16 - 19

Accessories . . . . . 20 - 25

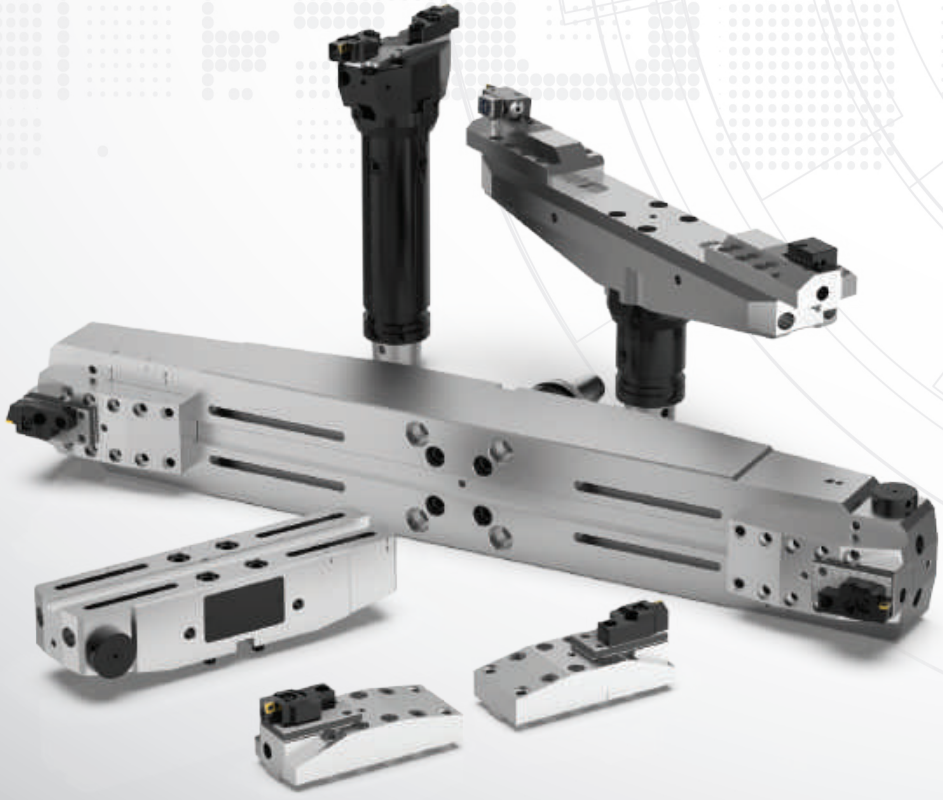
Series	Diameter Range	
	Imperial (inch)	Metric (mm)
Basic D 40 Slides	7.874 - 20.472	200.00 - 520.00
Basic D 60 Slides	7.874 - 19.882	200.00 - 505.00
Eco D 60 Slides	18.307 - 40.157	465.00 - 1020.00
Flex D 60 Slides	19.685 - 128.150	500.00 - 3255.00

Large Diameter **BORING**

Boring big? We've got you covered.

Our versatile tooling system can provide the power and precision your large diameter boring jobs demand. The large diameter boring system offers four different Alu-Line serrated slides, a wide range of rough and finish boring insert holders, vernier and digital cassettes, and combined rough and finish insert holders.

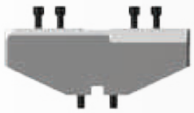
- Diameter range: 7.874" - 128.150" (200.00mm - 3255.00mm)
- Basic, Eco, and Flex serrated slides
- Roughing, finishing, or combined roughing and finishing can be achieved in one pass
- Digital readout cassettes available for quick and easy adjustments
- Alu-Line serrated slides and tool bodies are made of lightweight aluminum



Basic D 40 Serrated Slides for Finish Boring

350021 (349021)
Ø 7.874" - 11.023"
(Ø 200.00mm – 280.00mm)

350023 (349023)
Ø 14.173" - 17.322"
(Ø 360.00mm – 440.00mm)

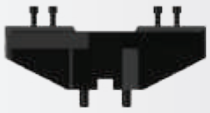


350022 (349022)
Ø 11.023" - 14.173"
(Ø 280.00mm – 360.00mm)

350024 (349024)
Ø 17.322" - 20.472"
(Ø 440.00mm – 520.00mm)

Basic D 60 Serrated Slides for Semi Rough Finish and Finish Boring

350051 (349051)
Ø 7.874" - 11.023"
(Ø 200.00mm – 280.00mm)



350053 (349053)
Ø 13.779" - 16.929"
(Ø 350.00mm – 430.00mm)

350052 (349052)
Ø 10.826" - 13.976"
(Ø 275.00mm – 355.00mm)

350054 (349054)
Ø 16.732" - 19.881"
(Ø 425.00mm – 505.00mm)

Eco D 60 Serrated Slides for Rough and Finish Boring

350005 (349005)
Ø 18.307" - 29.330"
(Ø 465.00mm – 745.00mm)

350014 (349014) / 350015 (350015)
Serrated slide for base slides
350005 (349005) / 350006 (349006)

350006 (349006)
Ø 29.133" - 40.157"
(Ø 740.00mm – 1020.00mm)

Flex D 60 Serrated Slides for Rough and Finish Boring

350031 (349031)
Ø 19.685" - 41.535"
(Ø 500.00mm – 1055.00mm)

350035 (349035)
Serrated slide for base slides
350031 (349031) | 350032 (349032)
350033 (349033) | 350034 (349034)

350032 (349032)
Ø 29.724" - 63.188"
(Ø 755.00mm – 1605.00mm)

350036 (349036)
Serrated slide for base slides
350031 (349031) | 350032 (349032)
350033 (349033) | 350034 (349034)

350033 (349033)
Ø 52.165" - 95.669"
(Ø 1325.00mm – 2430.00mm)

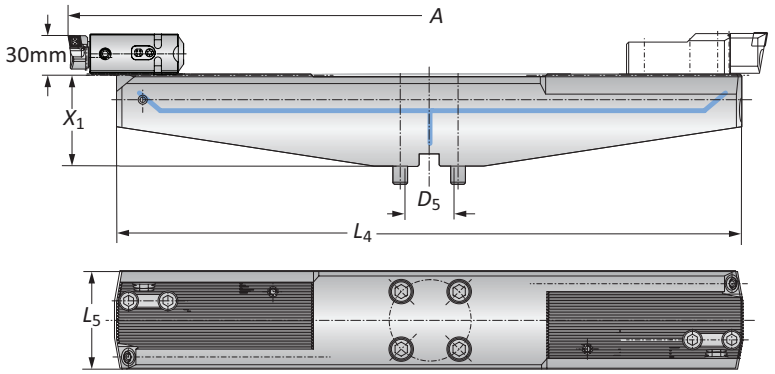
350037 (349037)
Serrated slide for base slides
350032 (349032) | 350033 (349033)
350034 (349034)

350034 (349034)
Ø 84.645" - 128.149"
(Ø 2150.00mm – 3255.00mm)

350038 (349038)
Serrated slide for base slides
350033 (349033) | 350034 (349034)

Alu-Line Basic D 40 Serrated Slides

Diameter Range: 7.874" - 20.472" (200.00mm - 520.00mm)



	Connection	Boring Range	Serrated Slide				
	D_5	A	X_1	L_4	L_5	Weight	Part No.
ⓘ	D 40	7.874 - 11.024	2.953	7.480	3.149	6.173 (lbs)	**350021**
ⓘ	D 40	11.024 - 14.173	2.953	10.620	3.149	8.377 (lbs)	**350022**
ⓘ	D 40	14.173 - 17.323	2.953	13.770	3.149	11.023 (lbs)	**350023**
ⓘ	D 40	17.323 - 20.472	2.953	16.320	3.149	13.228 (lbs)	**350024**
ⓜ	D 40	200.00 - 280.00	75.00	190.00	80.00	2.80 (kg)	**349021**
ⓜ	D 40	280.00 - 360.00	75.00	270.00	80.00	3.80 (kg)	**349022**
ⓜ	D 40	360.00 - 440.00	75.00	350.00	80.00	5.00 (kg)	**349023**
ⓜ	D 40	440.00 - 520.00	75.00	430.00	80.00	6.00 (kg)	**349024**

B10-M: 12-15 | B10-G: 22 | B10-G: 16-19 | B10-H | B10: vi-vii

Key on B10-G:1

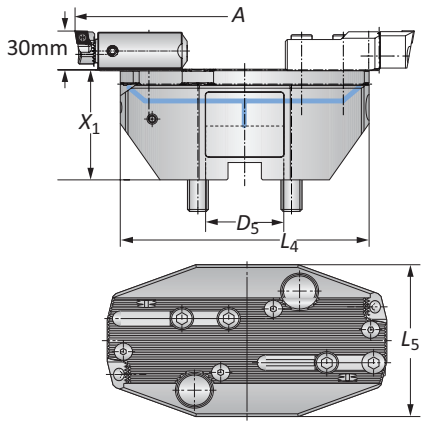
ⓘ = Imperial (in)
ⓜ = Metric (mm)

⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
-Consult machine tool builder for machine's weight limitations.
-Refer to example on page B10-M: 11 for calculating tool assembly weight
Factory technical assistance is also available for specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Alu-Line Basic D 60 Serrated Slides

Diameter Range: 7.874" - 19.882" (200.00mm - 505.00mm)



	Connection	Boring Range	Serrated Slide				
	D_5	A	X_1	L_4	L_5	Weight	Part No.
ⓘ	D 60	7.874 - 11.024	3.346	7.520	4.330	9.038 (lbs)	**350051**
ⓘ	D 60	10.827 - 13.976	3.346	10.394	4.330	11.464 (lbs)	**350052**
ⓘ	D 60	13.780 - 16.929	3.346	13.346	4.921	15.211 (lbs)	**350053**
ⓘ	D 60	16.732 - 19.882	3.346	16.299	4.921	17.637 (lbs)	**350054**
ⓜ	D 60	200.00 - 280.00	85.00	191.00	110.00	4.10 (kg)	**349051**
ⓜ	D 60	275.00 - 355.00	85.00	264.00	110.00	5.20 (kg)	**349052**
ⓜ	D 60	350.00 - 430.00	85.00	339.00	125.00	6.90 (kg)	**349053**
ⓜ	D 60	425.00 - 505.00	85.00	414.00	125.00	8.00 (kg)	**349054**

B10-M: 12-15 | B10-G: 23 | B10-G: 16-19 | B10-H | B10: vi-vii

Key on B10-G:1

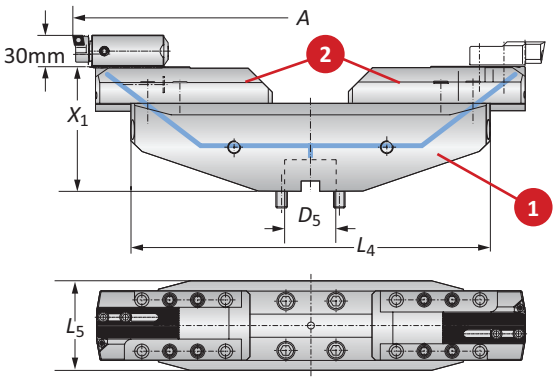
ⓘ = Imperial (in)
ⓜ = Metric (mm)

⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
-Consult machine tool builder for machine's weight limitations.
-Refer to example on page B10-M: 11 for calculating tool assembly weight
Factory technical assistance is also available for specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Alu-Line Eco D 60 Serrated Slides

Diameter Range: 18.307" - 40.157" (465.00mm - 1020.00mm)



	Connection	Boring Range	Serrated Slide			1 Base Slide		2 Serrated Slide (Alu-Line)*		2 Serrated Slide (steel)**	
	D_5	A	X_1	L_4	L_5	Weight	Part No.	Weight	Part No.	Weight	Part No.
ⓘ	D 60	18.307 - 29.331	6.102	17.590	5.078	26.010 (lbs)	**350005**	4.850 (lbs)	**350015**	12.560 (lbs)	**350014**
	D 60	29.134 - 40.157	6.102	28.420	5.078	39.680 (lbs)	**350006**	4.850 (lbs)	**350015**	12.560 (lbs)	**350014**
ⓜ	D 60	465.00 - 745.00	155.00	447.00	129.00	11.80 (kg)	**349005**	2.20 (kg)	**349015**	5.70 (kg)	**349014**
	D 60	740.00 - 1020.00	155.00	722.00	129.00	18.00 (kg)	**349006**	2.20 (kg)	**349015**	5.70 (kg)	**349014**

*Finish boring: serrated slide in Alu-Line
**Rough boring: serrated slide in steel

B10-M: 12-15 | B10-G: 24 | B10-G: 16-19 | B10-H | B10: vi-vii
Key on B10-G: 1

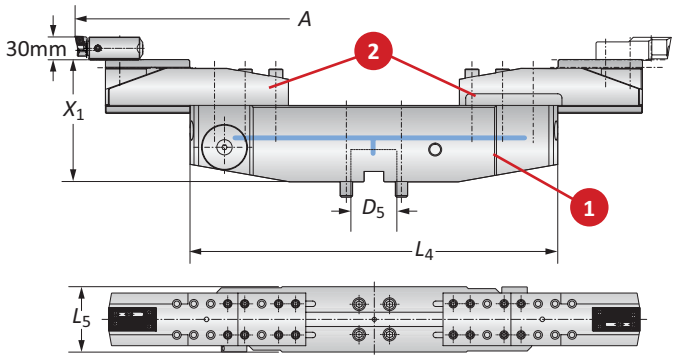
ⓘ = Imperial (in)
ⓜ = Metric (mm)

⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
-Consult machine tool builder for machine's weight limitations.
-Refer to example on page B10-M: 11 for calculating tool assembly weight
Factory technical assistance is also available for specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Alu-Line Flex D 60 Serrated Slides

Diameter Range: 19.685" - 128.150" (500.00mm - 3255.00mm)



	Connection	Boring Range	Serrated Slide				Part No.	
	D_5	A	X_1	L_4	L_5	Weight (1 + 2)	1 Base Slide	2 Serrated Slide
	D 60	19.685 - 30.709	6.299	18.898	5.118	53.360 (lbs)	**350031**	**350035**
	D 60	37.402 - 41.535	7.283	18.898	5.118	91.060 (lbs)	**350031**	**350036**
	D 60	30.512 - 41.535	7.283	29.724	6.102	93.710 (lbs)	**350032**	**350035**
	D 60	41.339 - 52.362	8.268	29.724	6.102	131.400 (lbs)	**350032**	**350036**
	D 60	56.772 - 63.189	8.858	29.724	6.102	190.200 (lbs)	**350032**	**350037**
	D 60	52.165 - 63.189	8.268	51.378	7.283	194.400 (lbs)	**350033**	**350035**
ⓘ	D 60	52.165 - 74.016	9.252	51.378	7.283	232.100 (lbs)	**350033**	**350036**
	D 60	62.992 - 84.843	9.843	51.378	7.283	291.000 (lbs)	**350033**	**350037**
	D 60	78.346 - 95.669	10.039	51.378	7.283	374.400 (lbs)	**350033**	**350038**
	D 60	84.646 - 95.669	9.252	83.858	8.858	424.400 (lbs)	**350034**	**350035**
	D 60	84.646 - 106.496	10.236	83.858	8.858	462.100 (lbs)	**350034**	**350036**
	D 60	84.646 - 117.323	10.827	83.858	8.858	520.300 (lbs)	**350034**	**350037**
	D 60	84.646 - 128.150	11.024	83.858	8.858	604.100 (lbs)	**350034**	**350038**
	D 60	500.00 - 780.00	160.00	480.00	130.00	24.20 (kg)	**349031**	**349035**
	D 60	950.00 - 1055.00	185.00	480.00	130.00	41.30 (kg)	**349031**	**349036**
	D 60	775.00 - 1055.00	185.00	755.00	155.00	42.50 (kg)	**349032**	**349035**
	D 60	1050.00 - 1330.00	210.00	755.00	155.00	59.60 (kg)	**349032**	**349036**
	D 60	1442.00 - 1605.00	225.00	755.00	155.00	86.30 (kg)	**349032**	**349037**
	D 60	1325.00 - 1605.00	210.00	1305.00	185.00	88.20 (kg)	**349033**	**349035**
ⓜ	D 60	1325.00 - 1880.00	235.00	1305.00	185.00	105.30 (kg)	**349033**	**349036**
	D 60	1600.00 - 2155.00	250.00	1305.00	185.00	132.00 (kg)	**349033**	**349037**
	D 60	1990.00 - 2430.00	255.00	1305.00	185.00	169.80 (kg)	**349033**	**349038**
	D 60	2150.00 - 2430.00	235.00	2130.00	225.00	192.50 (kg)	**349034**	**349035**
	D 60	2150.00 - 2705.00	260.00	2130.00	225.00	209.60 (kg)	**349034**	**349036**
	D 60	2150.00 - 2980.00	275.00	2130.00	225.00	236.00 (kg)	**349034**	**349037**
	D 60	2150.00 - 3255.00	280.00	2130.00	225.00	274.00 (kg)	**349034**	**349038**

B10-M: 12-15 | B10-G: 25 | B10-G: 16-19 | B10-H | B10: vi-vii

Key on B10-G:1

ⓘ = Imperial (in)
ⓜ = Metric (mm)

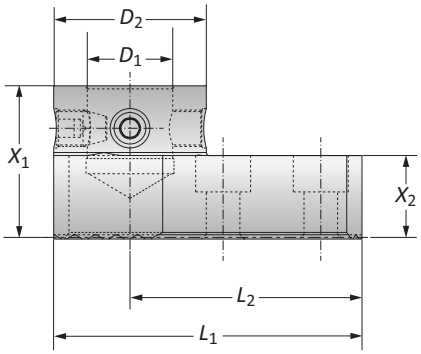
⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
-Consult machine tool builder for machine's weight limitations.
-Refer to example on page B10-M: 11 for calculating tool assembly weight
Factory technical assistance is also available for specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Serrated Adapter with MVS Connection

Mounting Adapter

	MVS Connection	Mounting Adapters					
	D_2 | D_1	X_1	X_2	L_1	L_2	Weight	Part No.
ⓘ	50 - 28	1.969	1.063	3.976	2.992	2.866 (lbs)	**349046**
ⓜ	50 - 28	50.00	27.00	101.00	76.00	1.30 (kg)	**349046**



Inside Boring

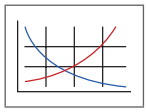
Slide	Boring Heads	ID Bore Range inch	ID Bore Range mm
349/350051	320005/465006/565045	8.465 - 12.323	215.00 - 313.00
349/350052	320005/465006/565045	11.417 - 15.276	290.00 - 388.00
349/350053	320005/465006/565045	14.370 - 18.228	365.00 - 463.00
349/350054	320005/465006/565045	17.323 - 21.181	440.00 - 538.00
349/350005 with 349/350015	320005/465006/565045	18.898 - 30.630	480.00 - 778.00

Outside Boring

Slide	Boring Heads	OD Bore Range inch	OD Bore Range mm
349/350051	320005/465006/565045	2.638 - 6.496	67.00 - 165.00
349/350052	320005/465006/565045	5.591 - 9.449	142.00 - 240.00
349/350053	320005/465006/565045	8.543 - 12.402	217.00 - 315.00
349/350054	320005/465006/565045	11.496 - 15.354	292.00 - 390.00
349/350005 with 349/350015	320005/465006/565045	13.071 - 24.803	332.00 - 630.00

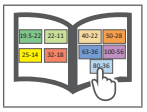
NOTE: LH only spindle rotation

B10-M: 12-15



Key on B10-G: 1

B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

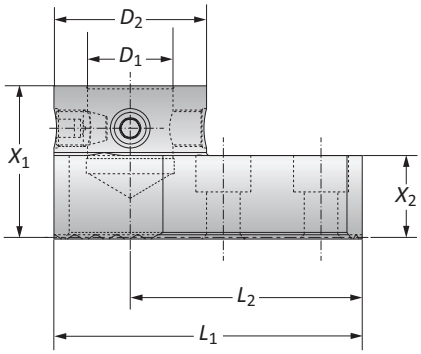
⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
-Consult machine tool builder for machine's weight limitations.
-Refer to example on page B10-M: 11 for calculating tool assembly weight
Factory technical assistance is also available for specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Serrated Adapter with MVS Connection

Mounting Adapter

	MVS Connection	Mounting Adapters					
	D_2 | D_1	X_1	X_2	L_1	L_2	Weight	Part No.
ⓘ	50 - 28	1.969	1.063	3.976	2.992	2.866 (lbs)	**349046**
ⓜ	50 - 28	50.00	27.00	101.00	76.00	1.30 (kg)	**349046**



Inside Boring

Slide	Boring Heads	ID Bore Range inch	ID Bore Range mm
349/350051	320005/465006/565045	2.559 - 5.039	65.00 -128.00
349/350052	320005/465006/565045	4.134 - 7.992	105.00 - 203.00
349/350053	320005/465006/565045	7.087 - 10.945	180.00 - 278.00
349/350054	320005/465006/565045	10.039 - 13.898	255.00 - 353.00
349/350005 with 349/350015	320005/465006/565045	11.614 - 23.346	295.00 - 593.00

Outside Boring

Slide	Boring Heads	OD Bore Range inch	OD Bore Range mm
349/350051	320005/465006/565045	–	–
349/350052	320005/465006/565045	0.000 - 2.165	0.00 - 55.00
349/350053	320005/465006/565045	1.260 - 5.118	32.00 - 130.00
349/350054	320005/465006/565045	4.213 - 8.071	107.00 - 205.00
349/350005 with 349/350015	320005/465006/565045	5.787 - 17.520	147.00 - 445.00

NOTE: LH only spindle rotation

B10-M: 12-15
Key on B10-G:1
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

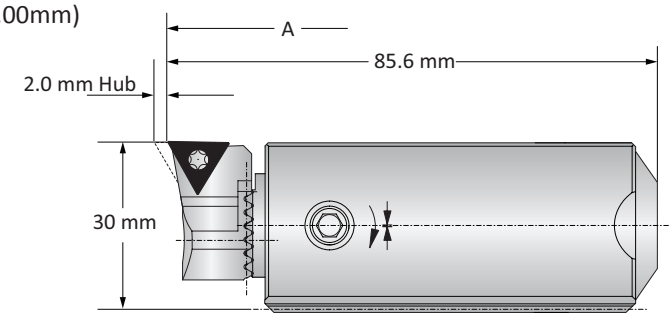
⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
-Consult machine tool builder for machine's weight limitations.
-Refer to example on page B10-M: 11 for calculating tool assembly weight
Factory technical assistance is also available for specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

538 (537) Analog Cassettes

Diameter Range: 3.937" - 128.150" (100.00mm - 3255.00mm)

Form 101



Form 20

	Slide Type	Boring Range A	Weight	Insert Form	Part No. Insert Holder	Clamping Piece	Cassette
	Serrated Tool Bodies	3.937 - 8.071	1.323 (lbs)	20	**210020**	**137026**	**538051**
		3.937 - 8.071	1.323 (lbs)	101	**210063**	**137026**	**538051**
		3.937 - 8.071	1.323 (lbs)	103	**210064**	**137026**	**538051**
ⓘ	Basic / Eco Slides	7.874 - 40.157	1.323 (lbs)	20	**210020**	**137027**	**538051**
ⓘ		7.874 - 40.157	1.323 (lbs)	101	**210063**	**137027**	**538051**
ⓘ		7.874 - 40.157	1.323 (lbs)	103	**210064**	**137027**	**538051**
	Flex Slides	19.685 - 128.150	1.323 (lbs)	20	**210020**	**137019**	**538051**
		19.685 - 128.150	1.323 (lbs)	101	**210063**	**137019**	**538051**
		19.685 - 128.150	1.323 (lbs)	103	**210064**	**137019**	**538051**
	Serrated Tool Bodies	100.00 - 205.00	0.60 (kg)	20	**210020**	**137026**	**537051**
		100.00 - 205.00	0.60 (kg)	101	**210063**	**137026**	**537051**
		100.00 - 205.00	0.60 (kg)	103	**210064**	**137026**	**537051**
ⓜ	Basic / Eco Slides	200.00 - 1020.00	0.60 (kg)	20	**210020**	**137027**	**537051**
ⓜ		200.00 - 1020.00	0.60 (kg)	101	**210063**	**137027**	**537051**
ⓜ		200.00 - 1020.00	0.60 (kg)	103	**210064**	**137027**	**537051**
	Flex Slides	500.00 - 3255.00	0.60 (kg)	20	**210020**	**137019**	**537051**
		500.00 - 3255.00	0.60 (kg)	101	**210063**	**137019**	**537051**
		500.00 - 3255.00	0.60 (kg)	103	**210064**	**137019**	**537051**

Key on B10-G: 1

B10-M: 12-15 | B10-G: 20-21 | B10-G: 16-19 | B10-H | B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Inserts sold separately

⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
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-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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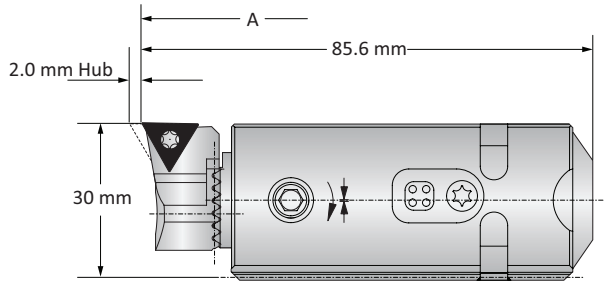
538 (537) Cassettes with 3E[TECH]

Diameter Range: 3.937" - 128.150" (100.00mm - 3255.00mm)

Form 101



Form 20

	Slide Type	Boring Range A	Weight	Insert Form	Part No. Insert Holder	Clamping Pieces	Cassette
	Serrated Tool Bodies	3.937 - 8.071	1.323 (lbs)	20	**210020**	**137026**	**538052**
		3.937 - 8.071	1.323 (lbs)	101	**210063**	**137026**	**538052**
		3.937 - 8.071	1.323 (lbs)	103	**210064**	**137026**	**538052**
	Basic / Eco Slides	7.874 - 40.157	1.323 (lbs)	20	**210020**	**137027**	**538052**
ⓘ		7.874 - 40.157	1.323 (lbs)	101	**210063**	**137027**	**538052**
		7.874 - 40.157	1.323 (lbs)	103	**210064**	**137027**	**538052**
	Flex Slides	19.685 - 128.150	1.323 (lbs)	20	**210020**	**137019**	**538052**
		19.685 - 128.150	1.323 (lbs)	101	**210063**	**137019**	**538052**
		19.685 - 128.150	1.323 (lbs)	103	**210064**	**137019**	**538052**
	Serrated Tool Bodies	100.00 - 205.00	0.60 (kg)	20	**210020**	**137026**	**537052**
		100.00 - 205.00	0.60 (kg)	101	**210063**	**137026**	**537052**
		100.00 - 205.00	0.60 (kg)	103	**210064**	**137026**	**537052**
	Basic / Eco Slides	200.00 - 1020.00	0.60 (kg)	20	**210020**	**137027**	**537052**
ⓜ		200.00 - 1020.00	0.60 (kg)	101	**210063**	**137027**	**537052**
		200.00 - 1020.00	0.60 (kg)	103	**210064**	**137027**	**537052**
	Flex Slides	500.00 - 3255.00	0.60 (kg)	20	**210020**	**137019**	**537052**
		500.00 - 3255.00	0.60 (kg)	101	**210063**	**137019**	**537052**
		500.00 - 3255.00	0.60 (kg)	103	**210064**	**137019**	**537052**

3E[TECH] Digital Readout Module

	Part No.*
ⓘ	**563010**
ⓜ	**536010**

***WEEE-Reg.-Nr. DE 15820388**

NOTE: 3E[TECH] must be ordered separately.

NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

B10-M: 12-15 | B10-G: 20-21 | B10-G: 16-19 | B10-H | B10: vi-vii

Key on B10-G:1

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Inserts sold separately

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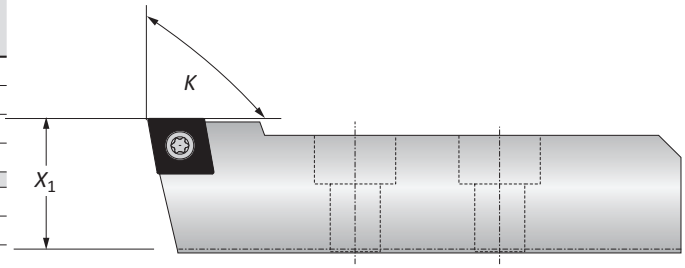
Insert Holders for Rough Machining

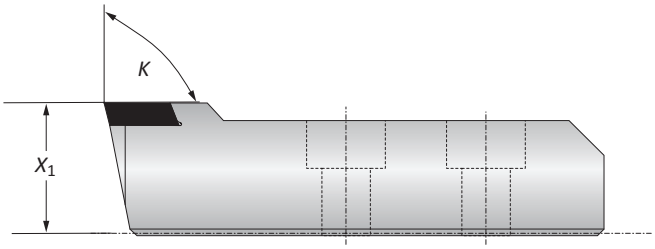
90° Insert Holders

	Insert Holder K	Insert Holder X_1	Weight	ISO Code	Insert Form	Part No.
i	90°	1.180	1.322 (lbs)	CC..09T3..	103	**149090**
i	90°	1.180	1.322 (lbs)	CC..1204..	104	**149099**
i	90°	1.150	1.322 (lbs)	CC..1204..	104	**149083**
i	90°	1.180	1.322 (lbs)	CC..1605..	105	**149093**
m	90°	30.00	0.60 (kg)	CC..09T3..	103	**149090**
m	90°	30.00	0.60 (kg)	CC..1204..	104	**149099**
m	90°	29.30	0.60 (kg)	CC..1204..	104	**149083**
m	90°	30.00	0.60 (kg)	CC..1605..	105	**149093**



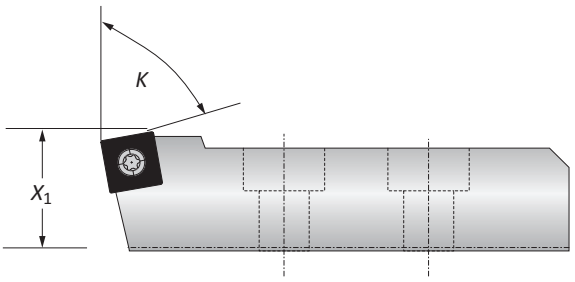
90° Tangential Insert Holders

	Insert Holder K	Insert Holder X_1	Weight	ISO Code	Insert Form	Part No.
i	90°	1.180	1.322 (lbs)	Tangential	05	**149010**
i	90°	1.150	1.322 (lbs)	Tangential	05	**149020**
m	90°	30.00	0.60 (kg)	Tangential	05	**149010**
m	90°	29.30	0.60 (kg)	Tangential	05	**149020**

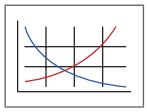


80° Insert Holders

	Insert Holder K	Insert Holder X_1	Weight	ISO Code	Insert Form	Part No.
i	80°	1.180	1.322 (lbs)	SC..1204..	113	**149089**
i	80°	1.180	1.322 (lbs)	SC..150512	114	**149094**
i	80°	1.180	1.322 (lbs)	SN..1506..	134	**149096**
m	80°	30.00	0.60 (kg)	SC..1204..	113	**149089**
m	80°	30.00	0.60 (kg)	SC..150512	114	**149094**
m	80°	30.00	0.60 (kg)	SN..1506..	134	**149096**

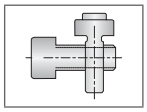


B10-M: 12-15

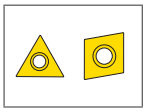


Key on B10-G: 1

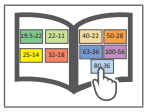
B10-G: 22-25



B10-H



B10: vi-vii



i = Imperial (in)
m = Metric (mm)

Inserts sold separately

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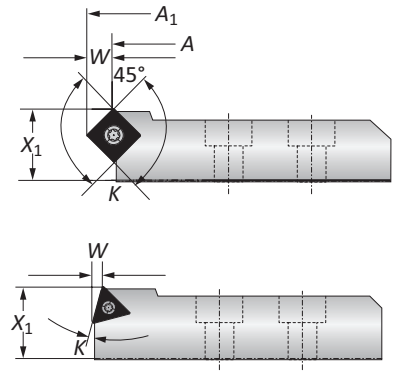
Insert Holders for Rough Machining | Boring Range Example

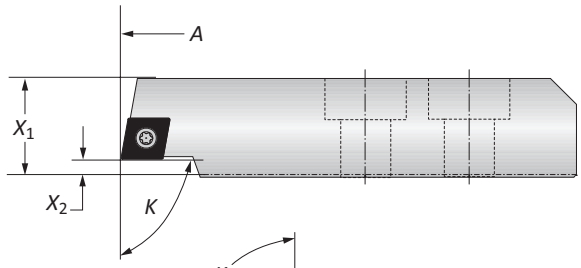
Chamfering Insert Holders

	Insert Holder K	X_1	A / A_1	W	Weight	ISO Code	Insert Form	Part No.
i	15°	1.180	+0.275	0.157	1.322 (lbs)	TC..16T3..	163	**201065**
	20°	1.180	+0.354	0.208	1.322 (lbs)	TC..16T3..	163	**201025**
	30°	1.180	+0.551	0.303	1.322 (lbs)	TC..16T3..	163	**201075**
	45°	1.180	+0.787	0.389	1.322 (lbs)	SC..1505..	114	**201015**
m	15°	30.00	+7.00	4.00	0.60 (kg)	TC..16T3..	163	**201065**
	20°	30.00	+9.00	5.30	0.60 (kg)	TC..16T3..	163	**201025**
	30°	30.00	+14.00	7.70	0.60 (kg)	TC..16T3..	163	**201075**
	45°	30.00	+20.00	9.90	0.60 (kg)	SC..1505..	114	**201015**



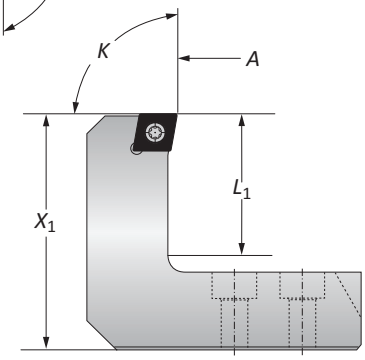
Back-Boring Insert Holders

	Insert Holder K	X_1	X_2	A	Weight	ISO Code	Insert Form	Part No.
i	90°	3.540	0.196	+1.574	1.763 (lbs)	CC..1204..	104	**251010**
	90°	3.540	0.196	+2.952	1.984 (lbs)	CC..1204..	104	**251011**
m	90°	30.00	5.00	+40.00	0.80 (kg)	CC..1204..	104	**251010**
	90°	30.00	5.00	+75.00	0.90 (kg)	CC..1204..	104	**251011**



OD Turning Insert Holders

	Insert Holder K	X_1	L_1	A	Weight	ISO Code	Insert Form	Part No.
i	90°	198.400	2.440	-1.968	2.204 (lbs)	CC..1204..	104	**149040**
m	90°	90.00	62.00	-50.00	1.00 (kg)	CC..1204..	104	**149040**



Boring Range Example

	Serrated Slide Part No.	Bore Range	Insert Holder Part No.	Modified Bore Range	Total Bore Range
i	350051	7.874 - 11.023	201065	+0.280	8.150 - 11.300
	350051	7.874 - 11.023	251010	+1.600	9.450 - 12.600
	350051	7.874 - 11.023	149040	-2.000	5.900 - 9.055
m	349051	200.00 - 280.00	201065	+7.00	207.00 - 287.00
	349051	200.00 - 280.00	251010	+40.00	240.00 - 320.00
	349051	200.00 - 280.00	149040	-50.00	150.00 - 230.00

NOTE: Boring range for serrated slides or base slides are found on pg. B10-G: 4 - 7
NOTE: Additional insert holders available upon request

B10-M: 12-15 | B10-G: 22-25 | B10-H | B10: vi-vii
Key on B10-G:1

i = Imperial (in)
m = Metric (mm)
Inserts sold separately

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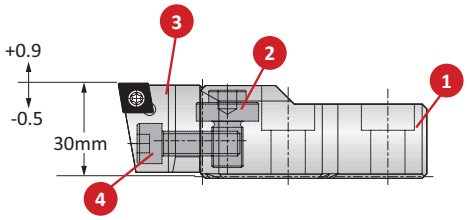
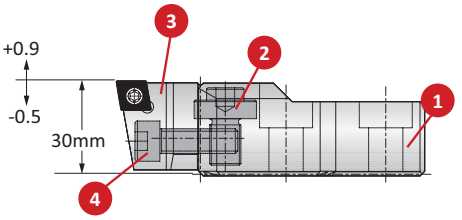
Insert Holders for Height Adjustments and Axial Grooving



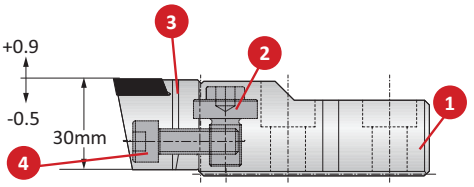
Insert Form 103

	Boring Range	1 Support Part No.	2 Adjusting Screw Part No.	2 Adjusting Screw Service Key	3 Insert Holder Insert Form	3 Insert Holder Part No.	4 Fixing Screw Part No.	4 Fixing Screw Service Key	Complete Part No.
ⓘ	7.874 - 128.150	149055	315355	s6 / B	103	149058	070369	s6 / B	**149059**
ⓜ	200.00 - 3255.00	149055	315355	s6 / B	103	149058	070369	s6 / B	**149059**



Insert Form 104

	Boring Range	1 Support Part No.	2 Adjusting Screw Part No.	2 Adjusting Screw Service Key	3 Insert Holder Insert Form	3 Insert Holder Part No.	4 Fixing Screw Part No.	4 Fixing Screw Service Key	Complete Part No.
ⓘ	7.874 - 128.150	149055	315355	s6 / B	104	149056	070369	s6 / B	**149057**
ⓜ	200.00 - 3255.00	149055	315355	s6 / B	104	149056	070369	s6 / B	**149057**

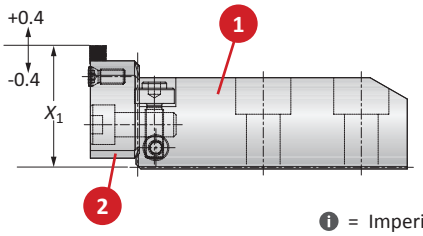


Insert Form 05

	Boring Range	1 Support Part No.	2 Adjusting Screw Part No.	2 Adjusting Screw Service Key	3 Insert Holder Insert Form	3 Insert Holder Part No.	4 Fixing Screw Part No.	4 Fixing Screw Service Key	Complete Part No.
ⓘ	7.874 - 128.150	149055	315355	s6 / B	05	149085	070369	s6 / B	**149086**
ⓜ	200.00 - 3255.00	149055	315355	s6 / B	05	149085	070369	s6 / B	**149086**

Insert Holders for Axial Grooving

	Insert Holder X_1	1 Support Module Part No.	2 Insert Holder Part No.	Weight	Insert Form	Complete Part No.
ⓘ	1.574	226014	226031	0.661 (lbs)	304	**226029**
ⓜ	40.00	226014	226031	0.30 (kg)	304	**226029**



ⓘ = Imperial (in)
ⓜ = Metric (mm)

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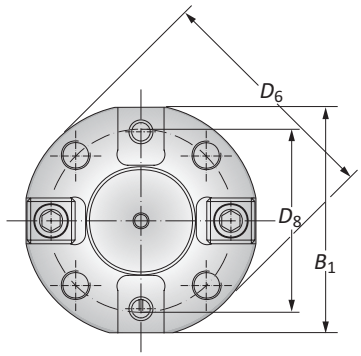
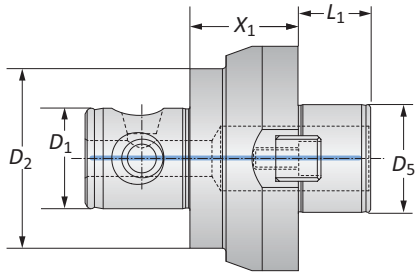
MVS Holding Arbors





	MVS Connection D_2 | D_1	Holding Arbor Connection	Holding Arbor X_1	L_1	D_5	D_6	D_8	B_1	Weight	Part No.
	80 - 36	D 40 Alu-Line	0.748	1.181	1.575	3.503	2.625	3.150	1.102 (lbs)	**309001**(1)(2)
	80 - 36	D 60	2.362	1.574	2.362	5.082	4.000	4.921	9.038 (lbs)	**209060**(1)
ⓘ	100 - 56	D 40 Alu-Line	1.181	1.181	1.575	3.503	2.625	3.149	2.204 (lbs)	**309041**(2)
	100 - 56	D 60	2.362	1.575	2.362	5.082	4.000	4.921	13.880 (lbs)	**209043**
	100 - 56	D 60 Alu-Line	2.362	1.575	2.362	5.082	4.000	4.921	4.850 (lbs)	**309043**(2)
	80 - 36	D 40 Alu-Line	19.00	30.00	40.00	89.00	66.70	80.00	0.50 (kg)	**309001**(1)(2)
	80 - 36	D 60	60.00	40.00	60.00	129.10	101.60	125.00	4.10 (kg)	**209060**(1)
ⓜ	100 - 56	D 40 Alu-Line	30.00	30.00	40.00	89.00	66.70	80.00	1.00 (kg)	**309041**(2)
	100 - 56	D 60	60.00	40.00	60.00	129.10	101.60	125.00	6.30 (kg)	**209043**
	100 - 56	D 60 Alu-Line	60.00	40.00	60.00	129.10	101.60	125.00	2.20 (kg)	**309043**(2)

(1) For light machining only

(2) Lightweight aluminum construction only in connection with our serrated slides
Basic D 40 Serrated Slides: Ø 7.874" - 20.472" (200.00 - 520.00mm) (Page B10-E: 4)
Basic D 60 Serrated Slides: Ø 7.874" - 19.882" (200.00 - 505.00mm) (Page B10-E: 5)

B10-M: 12-15
Key on B10-G:1
B10: vi-vii

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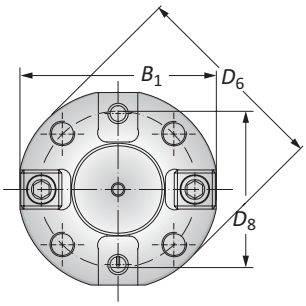
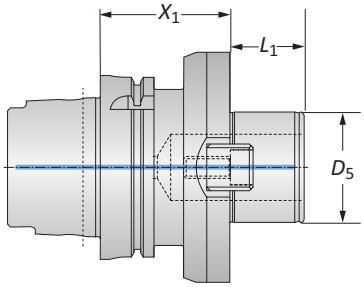
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Master Shanks D 40 / D 60

HSK-A (DIN 69 893) Shanks

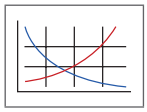




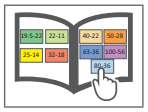
HSK-A (DIN 69 893) Shanks

	Taper Size	Connection	Shank X_1	Shank L_1	Shank D_5	Shank D_6	Shank D_8	Shank B_1	Weight	Part No.
ⓘ	63	D 40	2.362	1.181	1.575	3.504	2.626	3.150	4.200 (lbs)	**358015**
ⓘ	100	D 40	2.362	1.181	1.575	3.504	2.626	3.150	7.900 (lbs)	**258021**
ⓘ	100	D 60	2.756	1.575	2.362	5.083	4.000	4.921	11.500 (lbs)	**258061**
ⓘ	100	D 60	2.756	1.575	2.362	5.083	4.000	4.331	11.000 (lbs)	**258098**
ⓜ	63	D 40	60.00	30.00	40.00	89.00	66.70	80.00	1.90 (kg)	**358015**
ⓜ	100	D 40	60.00	30.00	40.00	89.00	66.70	80.00	3.60 (kg)	**258021**
ⓜ	100	D 60	70.00	40.00	60.00	129.10	101.60	125.00	5.20 (kg)	**258061**
ⓜ	100	D 60	70.00	40.00	60.00	129.10	101.60	110.00	5.00 (kg)	**258098**

B10-M: 12-15
Key on B10-G: 1



B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

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-Consult machine tool builder for machine's weight limitations.
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-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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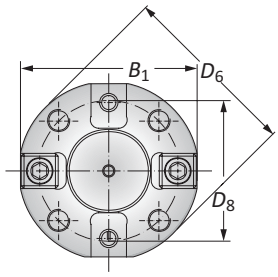
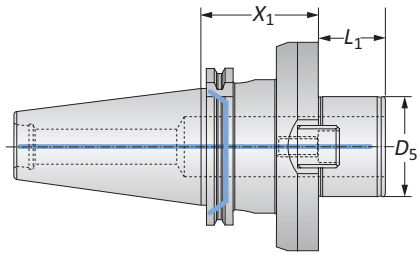
Master Shanks D 40 / D 60

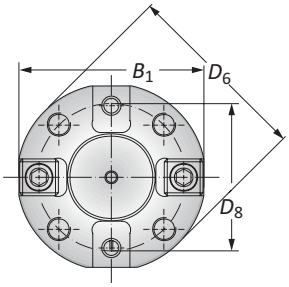
CAT 40 / 50 Shanks with Imperial Threads | CAT 50 Shank with Metric Threads

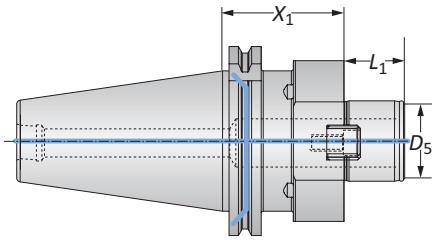




CAT 40 / 50 Shanks with Imperial Threads

	Taper Size	Connection	Shank X_1	L_1	D_5	D_6	D_8	B_1	Weight	Part No.
ⓘ	40	D 40	1.970	1.181	1.575	3.504	2.626	3.150	4.000 (lbs)	**357004**
ⓘ	50	D 40	1.970	1.181	1.575	3.504	2.626	3.150	8.400 (lbs)	**357001**
ⓘ	50	D 60	2.756	1.575	2.362	5.083	4.000	4.331	11.700 (lbs)	**357002**
ⓘ	50	D 60	2.756	1.575	2.362	5.083	4.000	4.921	12.100 (lbs)	**357003**

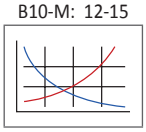




CAT 50 Shanks with Metric Threads

	Taper Size	Connection	Shank X_1	L_1	D_5	D_6	D_8	B_1	Weight	Part No.
ⓜ	50	D 40	60.00	30.00	40.00	89.00	66.70	80.00	4.60 (kg)	**326083**

B10-M: 12-15
Key on B10-G:1



B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

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-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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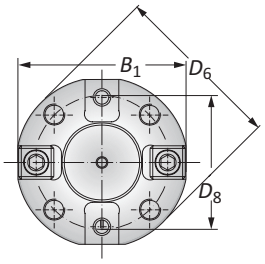
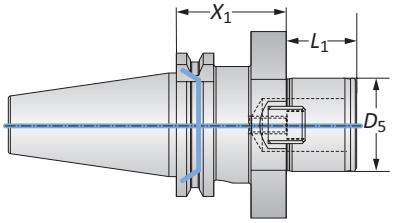
Master Shanks D 40 / D 60

SK (DIN 69 871-AD/B) | BT / JIS B 6339 Shanks

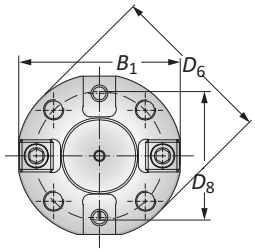


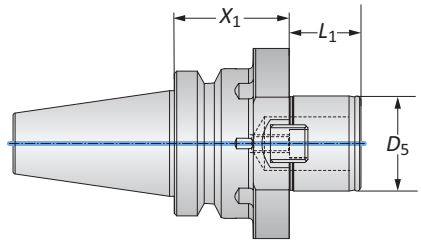


SK (DIN 69 871-AD/B) Shanks

	Taper Size	Connection	Shank X_1	L_1	D_5	D_6	D_8	B_1	Weight	Part No.
i	40	D 40	1.969	1.181	1.575	3.504	2.626	3.150	4.190 (lbs)	**326080***
	50	D 40	1.969	1.181	1.575	3.504	2.626	3.150	9.040 (lbs)	**326081**
	50	D 60	2.756	1.575	2.362	5.083	4.000	4.921	12.790 (lbs)	**198054T019539**
	50	D 60	2.756	1.575	2.362	5.083	4.000	4.331	12.130 (lbs)	**198081T019539**
m	40	D 40	50.00	30.00	40.00	89.00	66.70	80.00	1.90 (kg)	**326080***
	50	D 40	50.00	30.00	40.00	89.00	66.70	80.00	4.10 (kg)	**326081**
	50	D 60	70.00	40.00	60.00	129.10	101.60	125.00	5.80 (kg)	**198054T019539**
	50	D 60	70.00	40.00	60.00	129.10	101.60	110.00	5.50 (kg)	**198081T019539**

*For light machining only

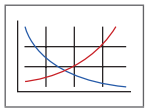




BT / JIS B 6339 Shanks

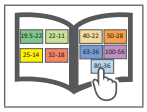
	Taper Size	Connection	Shank X_1	L_1	D_5	D_6	D_8	B_1	Weight	Part No.
i	40	D 40	1.969	1.181	1.575	3.504	2.626	3.150	4.000 (lbs)	**326084**
	50	D 40	2.165	1.181	1.575	3.504	2.626	3.150	9.900 (lbs)	**326082**
	50	D 60	3.150	1.575	2.362	5.083	4.000	–	17.600 (lbs)	**326062**
m	40	D 40	50.00	30.00	40.00	89.00	66.70	80.00	1.80 (kg)	**326084**
	50	D 40	55.00	30.00	40.00	89.00	66.70	80.00	4.50 (kg)	**326082**
	50	D 60	80.00	40.00	60.00	19.10	101.60	–	8.00 (kg)	**326062**

B10-M: 12-15



Key on B10-G: 1

B10: vi-vii



i = Imperial (in)
m = Metric (mm)

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-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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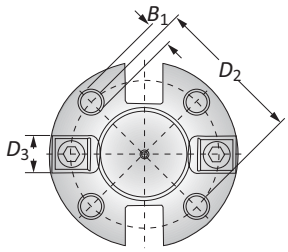
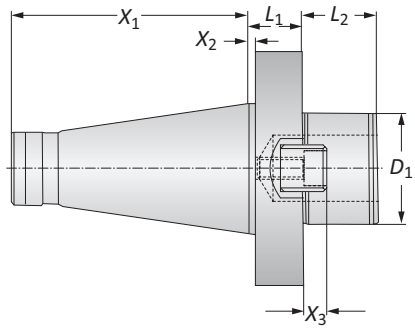
Master Shanks D 40 / D 60

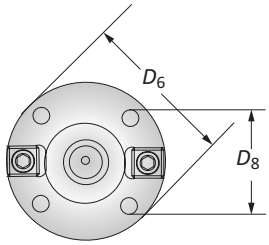
NMTB Shanks | DIN 2080 Shanks

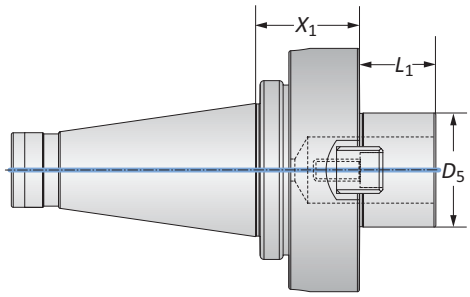




NMTB Shanks

	Taper Size	Connection	Shank X_1	X_2	L_1	L_2	D_1	X_3	D_2	D_3	B_1	Weight	Part No.
ⓘ	50	D 60	4.992	0.126	1.142	1.575	2.362	0.492	4.000	1.000	M16	17.637 (lbs)	**198051T004480**
ⓜ	50	D 60	126.80	3.20	29.00	40.00	60.00	12.50	101.60	25.40	M16	8.00 (kg)	**198051T004480**

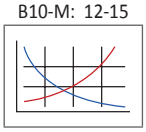




DIN 2080 Shanks

	Taper Size	Connection	Shank X_1	L_1	D_5	D_6	D_8	B_1	Weight	Part No.
ⓘ	50	D 60	2.165	1.575	2.362	5.039	4.000	–	14.991 (lbs)	**326035**
ⓜ	50	D 60	55.00	40.00	60.00	128.00	101.60	–	6.80 (kg)	**326035**

B10-M: 12-15
Key on B10-G:1



B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

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-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
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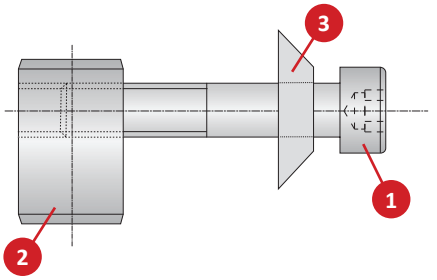
538 (537) Accessories

Clamping Pieces | Counter Weight | Insert Holders for Abrasive Materials

538 (537) Clamping Pieces

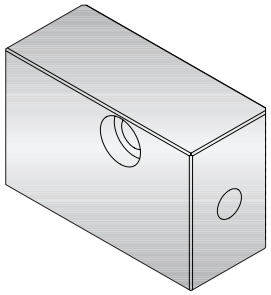
Slide Type	Complete Part No.	Service Key		Replacement Components 1 Cap Screw	2 Clamping Nut	3 Disk Spring
Serrated Tool Bodies	**137026**	115578	s6 / B	215101	140118	337105
Basic and Eco Slides	**137027**			215102	215105	337105
Flex Slides	**137019**			415900	215105	337105

NOTE: Clamping pieces sold separately



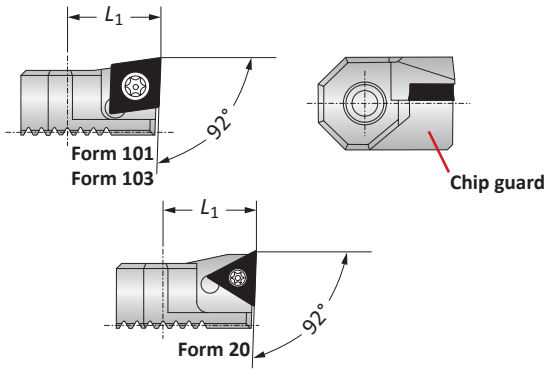
538 (537) Counter Weights

	Boring Range	Part No.
i	3.937 - 128.15	**538055**
m	100.00 - 3255.00	**537055**

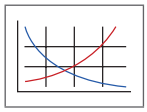


Insert Holders for Abrasive Materials

	Boring Range	L_1	Weight	Insert Form	Part No.
i	3.937 - 128.150	0.708	0.066 (lbs)	20	**211061**
i	3.937 - 128.150	0.708	0.066 (lbs)	101	**211063**
i	3.937 - 128.150	0.708	0.066 (lbs)	103	**211065**
m	100.00 - 3255.00	18.00	0.03 (kg)	20	**211061**
m	100.00 - 3255.00	18.00	0.03 (kg)	101	**211063**
m	100.00 - 3255.00	18.00	0.03 (kg)	103	**211065**

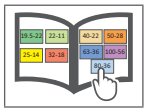


B10-M: 12-15



Key on B10-G: 1

B10: vi-vii



i = Imperial (in)
m = Metric (mm)

Inserts sold separately

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-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
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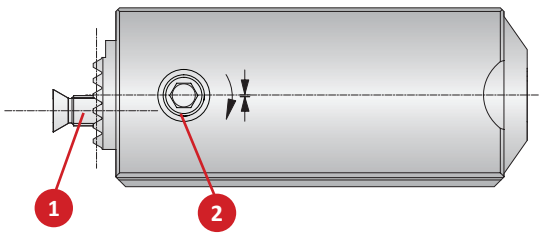
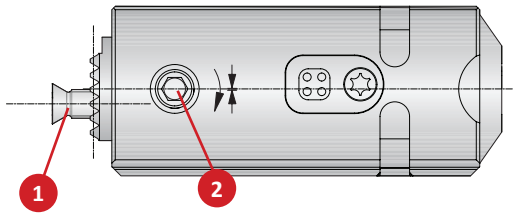
538 (537) Accessories | 3E[TECH] Accessories

Accessories



538 (537) Analog Cassette



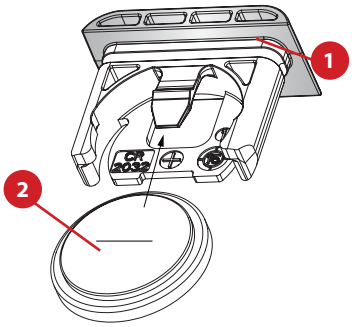
538 (537) Cassette

538 (537) Accessories

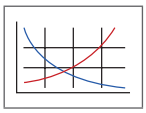
	Cassette Part No.	1 Countersunk Screw Part No.	1 Countersunk Screw Service Key	2 Clamping Screw Part No.	2 Clamping Screw Service Key
ⓘ	538051	**215462**	**T20 / H**	**115249**	**s4 / F**
	538052	**215462**	**T20 / H**	**315789**	**s4 / F**
ⓜ	537051	**215462**	**T20 / H**	**115249**	**s4 / F**
	537052	**215462**	**T20 / H**	**315789**	**s4 / F**

3E[TECH] Accessories

1 Sealing Ring Part No.	2 Battery CR2032 Part No.
215483	**515491**

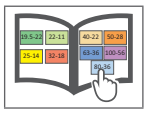


B10-M: 12-15



Key on B10-G:1

B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

Inserts sold separately

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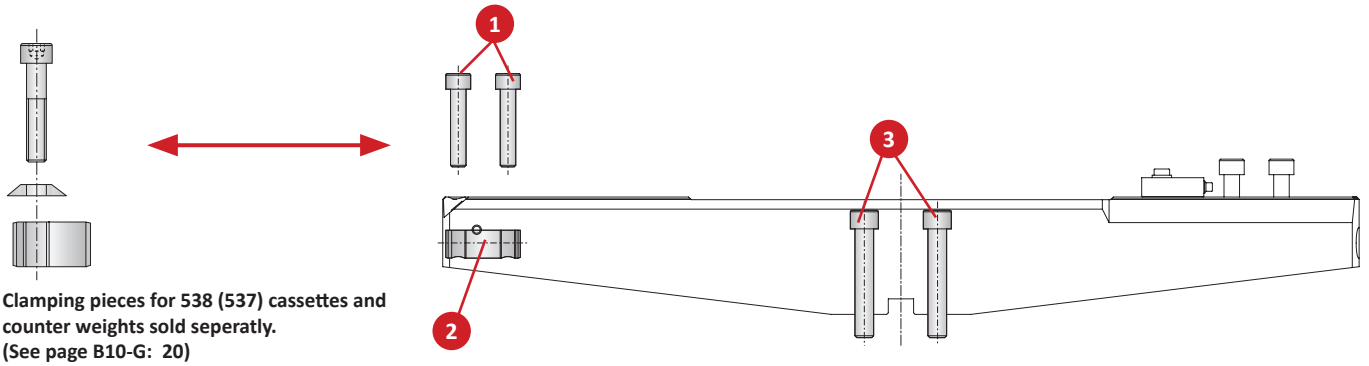
-Refer to example on page B10-M: 11 for calculating tool assembly weight
Factory technical assistance is also available for specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI[TECH] module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Serrated Slide Basic D 40 Accessories

Clamping Pieces



Clamping pieces for 538 (537) cassettes and counter weights sold seperatly.
(See page B10-G: 20)

Clamping Pieces

	Connection	Serrated Slide Part No.	1 Cap Screw Part No.	1 Cap Screw Service Key	2 Clamping Nut Part No.	3 Thread Pin Part No.	3 Thread Pin Service Key	Cap Screw Part No.	Cap Screw Service Key
ⓘ	D 40	350021	**115118**	s8 / B	**115669**	**349010**	s4 / F	**315186**	s10 / C
	D 40	350022	**115118**	s8 / B	**115669**	**349011**	s4 / F	**315186**	s10 / C
	D 40	350023	**115118**	s8 / B	**115669**	**349012**	s4 / F	**315186**	s10 / C
	D 40	350024	**115118**	s8 / B	**115669**	**349013**	s4 / F	**315186**	s10 / C
ⓜ	D 40	349021	**115118**	s8 / B	**115669**	**349010**	s4 / F	**315186**	s10 / C
	D 40	349022	**115118**	s8 / B	**115669**	**349011**	s4 / F	**315186**	s10 / C
	D 40	349023	**115118**	s8 / B	**115669**	**349012**	s4 / F	**315186**	s10 / C
	D 40	349024	**115118**	s8 / B	**115669**	**349013**	s4 / F	**315186**	s10 / C

B10-M: 12-15
Key on B10-G: 1
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
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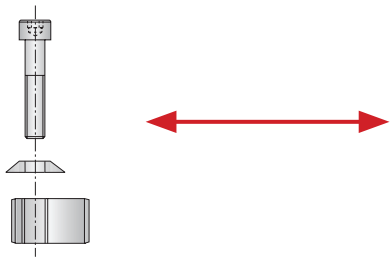
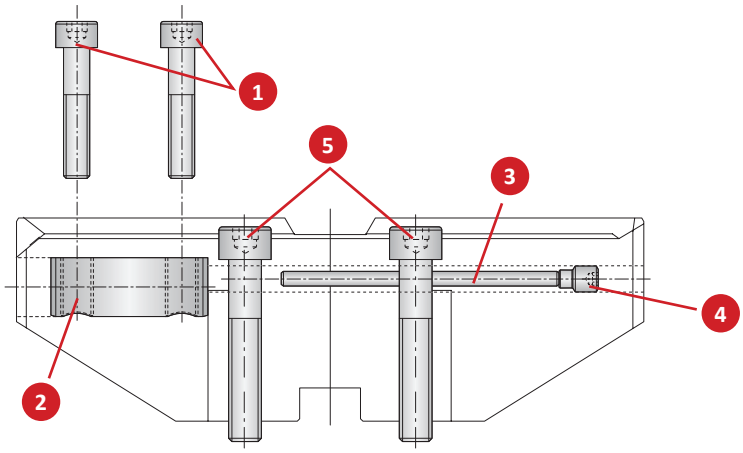
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Serrated Slide Basic D 60 Accessories

Clamping Pieces | Cover Plates



Clamping pieces for 538 (537) cassettes and counter weights sold seperatly.
(See page B10-G: 20)

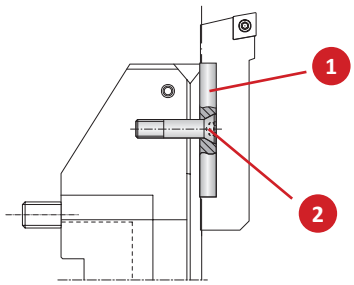


Clamping Pieces

	Connection	Serrated Slide Part No.	1 Cap Screw Part No.	1 Cap Screw Service Key	2 Clamping Nut Part No.	3 Adjustment Pin Part No.	4 Thread Pin Part No.	4 Thread Pin Service Key	5 Cap Screw Part No.	5 Cap Screw Service Key
ⓘ	D 60	350051	**115118**	s8 / B	**115669**	**114112**	**115196**	s4 / F	**115170**	s14 / C
ⓘ	D 60	350052	**115118**	s8 / B	**115669**	**114113**	**115196**	s4 / F	**115170**	s14 / C
ⓘ	D 60	350053	**115118**	s8 / B	**115669**	**114114**	**115196**	s4 / F	**115170**	s14 / C
ⓘ	D 60	350054	**115118**	s8 / B	**115669**	**114115**	**115196**	s4 / F	**115170**	s14 / C
ⓜ	D 60	349051	**115118**	s8 / B	**115669**	**114112**	**115196**	s4 / F	**115170**	s14 / C
ⓜ	D 60	349052	**115118**	s8 / B	**115669**	**114113**	**115196**	s4 / F	**115170**	s14 / C
ⓜ	D 60	349053	**115118**	s8 / B	**115669**	**114114**	**115196**	s4 / F	**115170**	s14 / C
ⓜ	D 60	349054	**115118**	s8 / B	**115669**	**114115**	**115196**	s4 / F	**115170**	s14 / C

Cover Plates for Basic D 60 Serrated Slides

	Connection	Serrated Slide Part No.	1 Cover Plate Part No.	2 Countersunk Screw Part No.	Service Key
ⓘ	D 60	350051	**349016**	**063106**	s4 / B
ⓘ	D 60	350052	**349017**	**063106**	s4 / B
ⓘ	D 60	350053	**349017**	**063106**	s4 / B
ⓘ	D 60	350054	**349017**	**063106**	s4 / B
ⓜ	D 60	349051	**349016**	**063106**	s4 / B
ⓜ	D 60	349052	**349017**	**063106**	s4 / B
ⓜ	D 60	349053	**349017**	**063106**	s4 / B
ⓜ	D 60	349054	**349017**	**063106**	s4 / B



B10-M: 12-15
Key on B10-G:1
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

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-Consult machine tool builder for machine's weight limitations.
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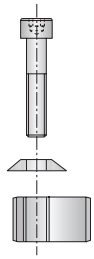
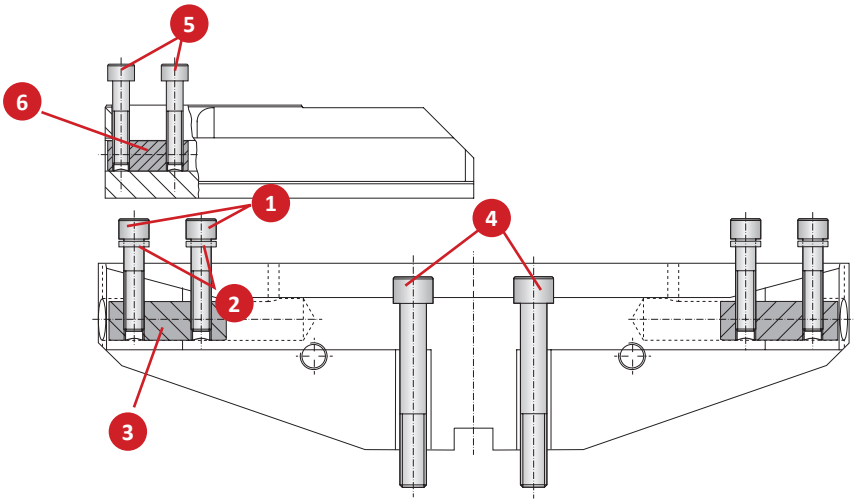
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Serrated Slide Eco D 60 Accessories

Clamping Pieces





Clamping pieces for 538 (537) cassettes and counter weights sold seperatly.
(See page B10-G: 20)

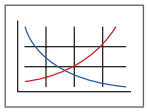
Base Slide Clamping Pieces

	Connection	Base Slide Part No.	1 Cap Screw Part No.	1 Cap Screw Service Key	2 Disc Part No.	3 Clamping Nut Part No.	4 Cap Screw Part No.	4 Cap Screw Service Key
ⓘ	D 60	350005	**115771**	s10 / C	**115737**	**415181**	**077128**	s14 / C
	D 60	350006	**115771**	s10 / C	**115737**	**415181**	**077128**	s14 / C
ⓜ	D 60	349005	**115771**	s10 / C	**115737**	**415181**	**077128**	s14 / C
	D 60	349006	**115771**	s10 / C	**115737**	**415181**	**077128**	s14 / C

Serrated Slide Clamping Pieces

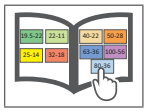
	Serrated Slide Part No.	5 Cap Screw Part No.	5 Cap Screw Service Key	6 Clamping Nut Part No.
ⓘ	350014	**115118**	s8 / B	**115669**
	350015	**115118**	s8 / B	**115669**
ⓜ	349014	**115118**	s8 / B	**115669**
	349015	**115118**	s8 / B	**115669**

B10-M: 12-15



Key on B10-G: 1

B10: vi-vii



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-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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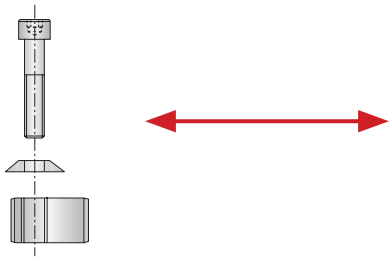
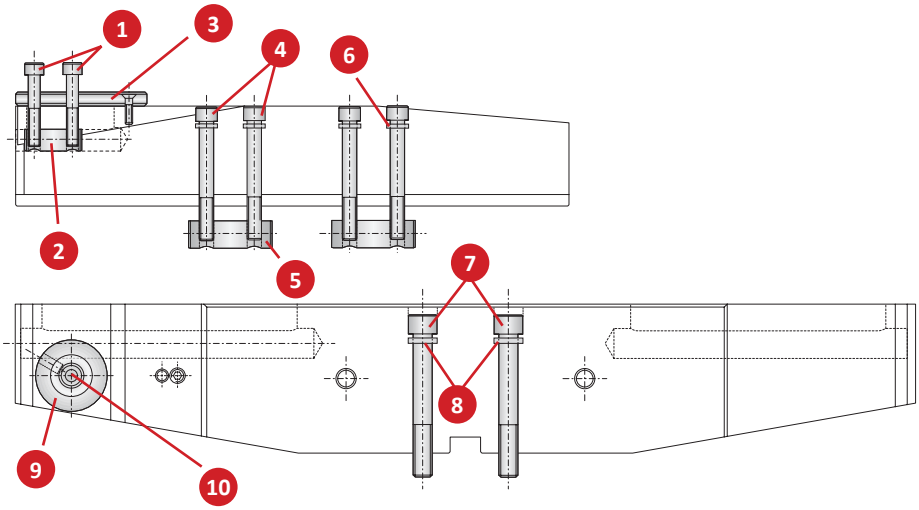
Serrated Slide Flex D 60 Accessories

Clamping Pieces





Clamping pieces for 538 (537) cassettes and counter weights sold seperatly.
(See page B10-G: 20)

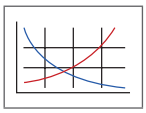
Serrated Slide Clamping Pieces

	Serrated Slide	1 Cap Screw		2 Clamping Nut	3 Adapter		4 Cap Screw		5 Clamping Nut	6 Disk
	Part No.	Part No.	Service Key	Part No.	Part No.	Service Key	Part No.	Service Key	Part No.	Part No.
ⓘ	350035	**115307**	s8 / B	**115669**	**349043**	s4 / B	**315186**	s10 / C	**349202**	**115737**
ⓘ	350036	**115307**	s8 / B	**115669**	**349043**	s4 / B	**077110**	s10 / C	**415181**	**115737**
ⓘ	350037	**115307**	s8 / B	**115669**	**349043**	s4 / B	**315403**	s10 / C	**415181**	**115737**
ⓘ	350038	**115307**	s8 / B	**115669**	**349043**	s4 / B	**315415**	s10 / C	**415181**	**115737**
ⓜ	349035	**115307**	s8 / B	**115669**	**349043**	s4 / B	**315186**	s10 / C	**349202**	**115737**
ⓜ	349036	**115307**	s8 / B	**115669**	**349043**	s4 / B	**077110**	s10 / C	**415181**	**115737**
ⓜ	349037	**115307**	s8 / B	**115669**	**349043**	s4 / B	**315403**	s10 / C	**415181**	**115737**
ⓜ	349038	**115307**	s8 / B	**115669**	**349043**	s4 / B	**315415**	s10 / C	**415181**	**115737**

Base Slide Clamping Pieces

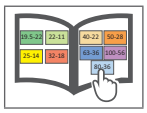
	Connection	Base Slide	7 Cap Screw		8 Disk	9 Injector	10 Countersunk Screw	
		Part No.	Part No.	Service Key	Part No.	Part No.	Part No.	Service Key
ⓘ	D 60	350031	**115736**	s14 / C	**068168**	**349201**	**415898**	s6 / B
ⓘ	D 60	350032	**415913**	s14 / C	**068168**	**349201**	**415898**	s6 / B
ⓘ	D 60	350033	**215509**	s14 / C	**068168**	**349201**	**415898**	s6 / B
ⓘ	D 60	350034	**415636**	s14 / C	**068168**	**349201**	**415898**	s6 / B
ⓜ	D 60	349031	**115736**	s14 / C	**068168**	**349201**	**415898**	s6 / B
ⓜ	D 60	349032	**415913**	s14 / C	**068168**	**349201**	**415898**	s6 / B
ⓜ	D 60	349033	**215509**	s14 / C	**068168**	**349201**	**415898**	s6 / B
ⓜ	D 60	349034	**415636**	s14 / C	**068168**	**349201**	**415898**	s6 / B

B10-M: 12-15



Key on B10-G:1

B10: vi-vii



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-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length to diameter ratio
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Notes

Notes

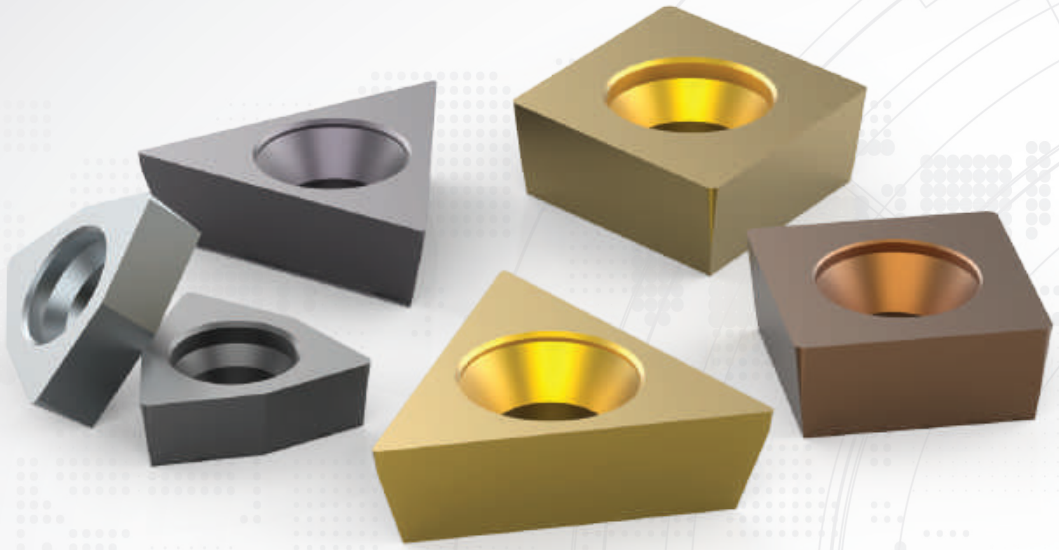
SECTION

B10-H

Inserts

Wohlhaupter® Inserts

Replaceable Boring Inserts



Cutting-Edge Technology

Wohlhaupter has the cutting-edge technology to achieve all of your boring applications. With precision in mind, our inserts are available in multiple insert geometries, coatings, and nose radii. Wohlhaupter inserts are offered in uncoated and coated carbide, cermet, as well as CBN and PCD materials.

Try our easy-to-use boring insert selector available online or to download from the app store to find the perfect inserts for your boring applications.
www.alliedmachine.com/bis

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.

This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury.

When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words.

⚠ WARNING

WARNING (shown above) means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

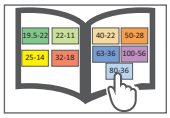
NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

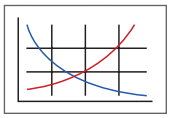
Applicable Industries

Aerospace | Agriculture | Automotive | Firearms | General Machining | Oil & Gas | Renewable Energy

Reference Icons
The following icons will appear throughout the catalog to help you navigate between products.



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s)



Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring

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Wohlhaupter Insert Product Nomenclature

Reference Key

Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▼▼	Universal - Main Application
▽▽	Universal - Extended Application
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

Reference Key

Symbol	Machining Conditions
●	Good - Main Application
○	Good - Extended Application
◕	Average - Main Application
◔	Average - Extended Application
✱	Difficult - Main Application
✲	Difficult - Extended Application

Reference Key

Symbol	Wohlhaupter Insert Grades
WHW	Uncoated carbide (HW)
WHC	Coated carbide (HC)
WHT	Uncoated cermet (HT)
WTC	Coated cermet (HC)
WCN	Ceramic cutting material (CN)
WBN	Cubic boron nitride CBN (BN)
WBC	Coated CBN (BC)
PCD	Polycrystalline diamond PCD (DP)

Wohlhaupter Inserts

F101	04	M	N	–	158	W
1	2	3	4		5	6

1. Wohlhaupter Insert Form

211	**262**
20	**264**
161	**112**
163	**113**
47	**114**
101	**04**
103	**05**
104	**89**
105	**90**
123	**91**
124	**304**
39	**325**
75	

2. Corner Radius

Metric (mm)

005 = 0.05mm
01 = 0.10mm
02 = 0.20mm
03 = 0.30mm
04 = 0.40mm
06 = 0.60mm
08 = 0.80mm
12 = 1.20mm
16 = 1.60mm
20 = 2.00mm
24 = 2.40mm

3. Tolerance Group

	Metric (mm)	
G	Length of edge	±0.025
	IC	±0.025
	Thickness	±0.13
M	Length of edge	±0.08-0.15*
	IC	±0.05-0.10*
	Thickness	±0.13
F	Length of edge	±0.013
	IC	±0.005
	Thickness	±0.025
C	Length of edge	±0.13
	IC	±0.025
	Thickness	±0.025

*Varies upon insert size

4. Machining Direction

N = Neutral
L = Left
R = Right

5. Geometry

Carbide	Carbide	Tangential	Ceramic	PCD	CBN
108	**155**	**880**	**711**	**530**	**538**
109	**158**	**811**		**720**	**741**
112	**161**			**730**	**742**
114	**161**			**735**	**745**
117	**174W**				**747**
121	**192**				**748**
122	**199**				**749**
126	**200**				**768**
127	**650**				
128	**711**				
129	**840**				
145	**850**				
	860				

6. Optional Information

W = Wiper Geometry

ISO Insert Nomenclature

DIN ISO 1832

C	C	M	T	09	T3	02
1	2	3	4	5	6	7

1. Basic Insert Form

- **C** = Rhomboid 80°
- **D** = Rhomboid 55°
- **L** = Rectangular
- **R** = Round
- **S** = Square
- **T** = Triangular
- **V** = Rhomboid 35°
- **W** = Trigon

2. Clearance Angle

- **B** = 5°
- **C** = 7°
- **N** = 0°
- **P** = 11°
- **O** = 10°

3. Tolerance Group

	Metric (mm)	
G	Length of edge	±0.025
	IC	±0.025
	Thickness	±0.13
M	Length of edge	±0.08-0.15*
	IC	±0.05-0.10*
	Thickness	±0.13
F	Length of edge	±0.013
	IC	±0.005
	Thickness	±0.025
C	Length of edge	±0.13
	IC	±0.025
	Thickness	±0.025

*Varies upon insert size

4. Mounting Style

T = One-sided countersunk	Cylindrical fixing hole Countersunk 40° - 60°
H = One-sided chipbreaker	Cylindrical fixing hole Countersunk 70° - 90°
W = Without chipbreaker	Cylindrical fixing hole Countersunk 40° - 60°
X = Special design	Special insert design
A = Without chipbreaker	Cylindrical fixing hole Without countersunk

5. Insert Size / Cutting Edge

Metric (mm)	C	D	R	S	T	V	W
3.97mm					006		03
5.00mm					F20		
6.00mm					F21		
6.35mm	06				11	11	
7.94mm				07			
9.52mm	09	11		09	16	16	
10.00mm		10					
12.00mm	12	12					
12.70mm	16	15		12			
15.87mm			15	15			
16.00mm			16				
19.05mm		19		19			
20.00mm			20				
25.00mm			25				
25.40mm				25			

6. Insert Thickness

Metric (mm)

- **01** = 1.59mm
- **02** = 2.38mm
- **T2** = 2.78mm
- **03** = 3.18mm
- **T3** = 3.97mm
- **04** = 4.76mm
- **05** = 5.56mm
- **06** = 6.35mm
- **07** = 7.94mm

7. Corner Radius

Metric (mm)

- **005** = 0.05mm
- **01** = 0.10mm
- **02** = 0.20mm
- **03** = 0.30mm
- **04** = 0.40mm
- **06** = 0.60mm
- **08** = 0.80mm
- **12** = 1.20mm
- **16** = 1.60mm
- **20** = 2.00mm
- **24** = 2.40mm

Wohlhaupter Insert Grades

Uncoated Carbides

Uncoated Carbides

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WHW01 (HW)	• Fine-grain carbide • Finishing & light roughing • Non-ferrous metals, cast materials & difficult-to-machine alloys	P								
		M								
		K	■	■	■					
		N	■	■	■					
		S	■	■						
		H								
WHW16 (HW)	• Fine-grain carbide • Finishing & light roughing • Non-ferrous metals, cast materials & difficult-to-machine alloys	P								
		M								
		K		■	■					
		N		■	■					
		S		■	■					
		H								
WHW20 (HW)	• Tough fine-grain carbide • Finishing, roughing & grooving • Steel & cast materials, cast steel • Non-ferrous materials & difficult-to-machine alloys	P			■	■				
		M								
		K			■	■				
		N			■	■				
		S			■	■				
		H								

Wohlhaupter Insert Grades

Coated Carbides

Coated Carbides

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WHC05 (HC)	• PVD coating with nano-composite structure • Finishing & roughing • Steels, stainless steels, cast materials, & difficult-to-machine alloys	P		■	■					
		M		■	■					
		K		■	■					
		N								
		S		■	■					
		H								
WHC18 (HC)	• PVD-TiB2 coating • Finishing & light roughing • Non-ferrous metals	P								
		M								
		K								
		N		■	■	■				
		S								
		H								
WHC19 (HC)	• Multilayer PVD coating • Finishing & roughing • Stainless steels	P				■	■	■	■	
		M				■	■	■		
		K					■	■	■	
		N								
		S				■	■	■		
		H								
WHC20 (HC)	• Multilayer CVD coating • Finishing • Steels & stainless steels	P		■	■	■				
		M		■	■					
		K								
		N								
		S								
		H								
WHC30 (HC)	• CVD coating • Roughing • Steel & cast steel	P					■	■		
		M				■	■			
		K					■	■		
		N								
		S								
		H								
WHC77 (HC)	• Fine-grained substrate with modified cobalt to increase strength • MT-CVD coating combines advantages of TiCN & Al_2O_3 • Versatile material designed for turning gray and ductile iron • Rough & finish machining • Medium to high cutting speeds • Continuous & light to medium interrupted cuts	P		■	■	■				
		M								
		K		■	■	■				
		N								
		S								
		H		■	■					
WHC79 (HC)	• Multilayer MT CVD coating • Roughing & finishing • Steels, stainless steels & cast materials	P				■	■	■		
		M			■	■	■			
		K			■	■	■			
		N								
		S								
		H								
WHC98 (HC)	• PVD TiAlN coating • Roughing & finishing • Steels, stainless steels & difficult-to-machine materials	P				■	■	■		
		M				■	■	■		
		K				■	■	■		
		N								
		S				■	■			
		H								

Wohlhaupter Insert Grades

Coated Carbides

Coated Carbides

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WHC111 (HC)	• PVD TiAlN coating • Finishing • Machining of steels after heat treating with high Cr content up to 60 HRC • Hard - soft transitions, difficult-to-machine alloys & stainless steels	P								
		M								
		K								
		N								
		S								
		H								
WHC114 (HC)	• Multilayer PVD coating • Finishing & roughing • Steels, stainless steels, & difficult-to-machine materials	P								
		M								
		K								
		N								
		S								
		H								
WHC136 (HC)	• Stronger PVD coating with improved coating adhesion • High oxidation resistance allows a wide range of applications	P								
		M								
		K								
		N								
		S								
		H								
WHC164 (HC)	• Thick MT-CVD coating with a dominant AC_2O_3 • Primarily developed for the material groups P-K & alternatively H • Full & discontinuous cut • High cutting speeds possible	P								
		M								
		K								
		N								
		S								
		H								
WHC168 (HC)	• Multilayer MT CVD coating • Excellent combination of toughness & reliability • Steels, cast materials & alternatively for stainless steel	P								
		M								
		K								
		N								
		S								
		H								
WHC198 (HC)	• Upgraded PVD grade with hard AlTiN coating • Optimized cutting edge stability • General machining of steel, stainless steel, high-temperature resistant alloys, titanium, iron, cast iron, & non-ferrous materials	P								
		M								
		K								
		N								
		S								
		H								
WHC190 (HC)	• Newest generation multilayer PVD coating • Finishing & roughing • Extremely universal & the first choice for poor machining conditions • Excellent in cast steels, stainless steels, & super alloys	P								
		M								
		K								
		N								
		S								
		H								

Wohlhaupter Insert Grades

Uncoated Cermet | Coated Cermet

Uncoated Cermet

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WHT10 (HT)	• Uncoated cermet • Finishing • Steels, stainless steels & cast materials	P								
		M								
		K								
		N								
		S								
		H								
WHT12 (HC)	• Uncoated cermet • Finishing • Steels, cast materials, sintered metals, & non-ferrous metals	P								
		M								
		K								
		N								
		S								
		H								
WHT32 (HC)	• Uncoated cermet • Finishing • Steels & cast materials	P								
		M								
		K								
		N								
		S								
		H								

Coated Cermet

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WTC15 (TC)	• New PVD brilliant coating • Reduce friction coefficient in turning applications • Coated cermet general purpose grade for material group • Achieves excellent surface finish with excellent wear resistance • Usable in stainless steels	P								
		M								
		K								
		N								
		S								
		H								
WTC121 (TC)	• PVD coated cermet • Finishing of steels & stainless steels	P								
		M								
		K								
		N								
		S								
		H								

Wohlhaupter Insert Grades

Uncoated Cubic Boron Nitride | Coated Cubic Boron Nitride

Uncoated Cubic Boron Nitride

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WBN150 (BN)	• Uncoated CBN grade • Roughing & finishing smooth & slightly discontinuous cuts • Hardened steels 58 - 64 HRC • Grain size 2 µm • CBN content: 50%	P								
		M								
		K								
		N								
		S								
		H								
WBN200 (BN)	• Uncoated CBN grade • Roughing & finishing highly discontinuous cuts • Hardened steels 58 - 64 HRC • Grain size 3 µm • CBN content: 65%	P								
		M								
		K								
		N								
		S								
		H								
WBN300 (BN)	• Uncoated CBN grade • Roughing & finishing smooth cuts • Hardened steels 58 - 64 HRC • Grain size 0.5 - 1.0 µm • CBN content: approximately 50%	P								
		M								
		K								
		N								
		S								
		H								
WBN450 (BN)	• Uncoated CBN grade • Roughing & finishing smooth & discontinuous cuts • Pearlite grey cast iron & sintered metals • Grain size 2 µm • CBN content: 90%	P								
		M								
		K								
		N								
		S								
		H								

Coated Cubic Boron Nitride

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WBC... (BC)	• Single and multiple assembled • Different sizes & designs available upon request. Please contact our Application Engineering Department *email*: **appeng@alliedmachine.com** *ext*: **7611**	P								
		M								
		K								
		N								
		S								
		H								

Wohlhaupter Insert Grades

Polycrystalline Diamond | Ceramic Cutting Material

Polycrystalline Diamond

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
PCD D30 (DP)	• PCD medium grain grade • Finishing • Al alloys & Mg alloys up to 12% Si • Grain size 10 µm	P								
		M								
		K								
		N								
		S								
		H								
PCD D50 (DP)	• PCD mixed-grain grade • Finishing • CFRP, GRP, MMC, Al alloys over 12% Si • Grain size 2 - 30 µm	P								
		M								
		K								
		N								
		S								
		H								

Ceramic Cutting Material

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WCN06 (CN)	• Uncoated silicon-nitride ceramic • Roughing • Pearlite grey cast iron	P								
		M								
		K								
		N								
		S								
		H								

Wohlhaupter Insert Geometries

Cermet | Carbide

Cermet | Carbide

Geometry	Description	Application	Available Form
108 	• Sintered chip breaker for higher feeds • Suitable for highly discontinuous cuts	▼▼▼ ▼	F101, F103, F104, F112, F113
109 	• Sintered geometry with V-shaped chip breaker for roughing & finishing • Good chip control even for shallow depth of cut	▼▼▼ ▼	F101, F103, F104
112 	• Sintered chip breaker • Finishing & light roughing	▼▼▼ ▽	F101, F03
117 	• Sintered geometry for medium machining & roughing • Main application in material groups P, M, & K	▼▼▼ ▼	F75, F123, F124
121 	• Positive geometry with stable cutting edge • Finishing in different material groups • Good chip control	▼▼▼	F20, F211
122 	• Sintered chip breaker • Good chip control - even with long-chipping materials	▼▼▼	F101, F103, F161
126 	• Sintered version with a wide range of applications	▼	F105
127 	• Highly positive sintered geometry • For non-ferrous metals & cast iron	▼▼▼ ▼	F39, F101, F103, F104, F112, F113, F262, F264
128 	• Highly positive sintered geometry • Polished for finishing non-ferrous metals, cast iron, & steel	▼▼▼	F20
129 	• Highly positive chip breaking geometry • Polished for non-ferrous metals, cast iron, & steel • Ideal for structural steel applications	▼▼▼ ▼	F39, F101, F103, F262, F264
145 	• Geometry for finishing in smooth & discontinuous cut • Good chip control - even with long-chipping materials	▼▼▼ ▼	F101, F103, F112, F113, F161

Wohlhaupter Insert Geometries

Cermet | Carbide

Cermet | Carbide

Geometry		Description	Application	Available Form
155		• Positive sintered geometry • Special cutting edge design in combination with the chip breaker design enables exceptional chip control even at shallow cutting depths & light feeds	▼▼▼	F20, F101, F103, F39, F264
158		• Stable sintered geometry for roughing & finishing with & without discontinuous cuts	▼▼▼ ▼	F75, F101, F103, F104, F105, F113, F114, F123, F124, F163
161		• Slightly positive & stable geometry • Main application material groups S & M. Alternatively suitable for P & K • Roughing & finishing in full & interrupted cuts	▼▼▼ ▼	F75, F123
167		• Positive sintered geometry with sharp cutting edges • Finishing up to medium machining • Excellent for M & S materials	▼▼▼ ▼	F75, F123
174W		• Wiper geometry for highly productive turning & boring • Can be used with pitch angle 92° - 95° • Good chip breaking properties even at lower feed rates	▼▼▼ ▽	F101, F103
192		• Sintered version for a variety of applications • Low cutting pressure because of sharp cutting edge prep	▼▼▼ ▼	F39, F101, F103, F104, F112, F113, F163, F161, F262, F264
199		• Positive sintered geometry for wide variety of applications • Special chip breaker allows chip control with different radial depth of cut	▼▼▼ ▼	F101, F103, F104, F112, F113
200		• Highly positive sintered geometry • Applicable for various material groups for low cutting pressure	▼▼▼ ▼	F39, F101, F103, F104, F264
650		• Obliquely ground chip breaker reduces cutting forces • Finishing & smooth interrupted cuts	▼▼▼	F20, F211
711		• Negative geometry with 0 rake suitable for fine finishing and semi roughing • Machined materials in groups K & H • Continuous and moderately interrupted cut	▼▼▼ ▼	F101, F103, F104, F113, F163
840		• Parallel ground chip breaker • For finish operations with stable cutting edge	▼▼▼	F20
850		• Parallel ground chip breaker • Good chip control with short to medium feeds	▼▼▼	F161
860		• Parallel ground chip breaker reduces cutting forces • Stable for a wide range of applications	▼▼▼ ▼	F101, F103, F104, F105, F325

Wohlhaupter Insert Geometries

Tangential | Ceramic

Tangential

Geometry	Description	Application	Available Form
880 	• Large parallel ground chip breaker with 10° rake angle for reduced cutting force	▼	F04, F05
811 	• Smooth geometry without additional ground chip breaker • Reinforced cutting edges provide stability • Excellent for cast materials	▼	F05

Ceramic

Geometry	Description	Application	Available Form
711 	• Smooth geometry with 0° rake angle • High cutting edge stability particularly in discontinuous cuts	▼	F75, F103, F104, F123

Wohlhaupter Insert Geometries

PCD | CBN

PCD

Geometry	Description	Application	Available Form
530 	• PCD-tipped cutting edge	▼▼▼ ▼	F101, F103
720 	• Smooth geometry in positive version with 7° rake angle for PCD • Sharp cutting edge	▼▼▼	F20, F101, F103
730 	• Smooth geometry with 0° rake angle for PCD • Sharp cutting edge	▼▼▼	F20, F39, F75, F101, F103, F123, F211, F262, F264
735 	• Smooth geometry • Laser-cut chip breaker for PCD • Suitable for long-chipping aluminum wrought alloys	▼▼▼	F20, F39, F101, F103, F211, F262, F264

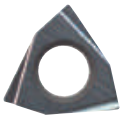
CBN

Geometry	Description	R	Fb	Fw	Application	Available Form
548 	• Smooth geometry with 0° rake angle for afforded CBN • Rounded cutting edge - not for chamfering • For cast materials	0.015			▼▼▼ ▼	F101, F103
741 	• Smooth geometry with 0° rake angle for CBN • Rounded cutting edge with 30° chamfer	0.015	0.15	30°	▼▼▼	F20, F101, F103
742 	• Smooth geometry with 0° rake angle for CBN • Rounded cutting edge with 15° chamfer	0.015	0.1	15°	▼▼▼	F20, F101, F103
745 	• Smooth geometry with 0° rake angle for CBN • Rounded cutting edge with 30° chamfer	0.015	0.05	30°	▼▼▼	F20, F211
747 	• Smooth geometry with 0° rake angle for CBN • Rounded cutting edge with a small 20° chamfer	0.015	0.1	20°	▼▼▼	F39, F104, F262, F264
748 	• Smooth geometry with 0° rake angle for CBN • Rounded cutting edge • No chamfer	0.015	0.2	20°	▼▼▼	F20, F101, F103, F211
749 	• Smooth geometry with 0° rake angle for CBN • Rounded cutting edge with a large 20° chamfer	0.015			▼▼▼ ▼	F75, F123, F264
768 	• Smooth geometry with 7° rake angle for CBN • Rounded cutting edge	0.015			▼▼▼	F20, F101, F103

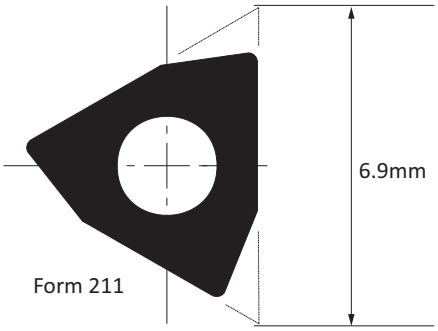
Insert Form 211

Cermet | Carbide

121 Geometry



650 Geometry



		Cermet						Carbide											
		Uncoated				Coated		Uncoated		Coated									
Steel	P	▼▼▼								▼▼▼		▼▼▼			▼▼▼		▼▼▼		
Stainless Steel	M	▽▽▽								▼▼▼		▼▼▼			▼▼▼		▼▼▼		
Cast Iron	K	▽▽▽						▽▽▽		▼▼▼		▽▽▽			▼▼▼		▽▽▽		
Non-Ferrous Materials	N	▽▽▽						▼▼▼			▼▼▼								
Titanium	S							▽▽▽				▼▼▼			▼▼▼		▼▼▼		
Hard Materials	H														▼▼▼				

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WHT10	WHT12	WHT16	WHT32	WTC15	WTC121	WHW01	WHW16	WHC05	WHC18	WHC19	WHC79	WHC98	WHC111	WHC114	WHC136	WHC164
121	0.004	0.10	WBGX030101	F21101GN121	**397675**											✱			◔			
121	0.008	0.20	WBGX030102	F21102GN121	**397676**											✱			◔			
650	0.004	0.10	WBGX030101	F21101GL650	**097755**		●					●		●	●						◔	
650	0.008	0.20	WBGX030102	F21102GL650	**097454**		●					●		●							◔	

Reference Key

Symbol	Machining Conditions
●	Good - Main Application
◔	Average - Main Application
✱	Difficult - Main Application

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
211	**215377**	M2 x 0.4 x 4	**415507**	**115537**	0.6 Nm	T6

Reference Key

Symbol	Insert Type
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

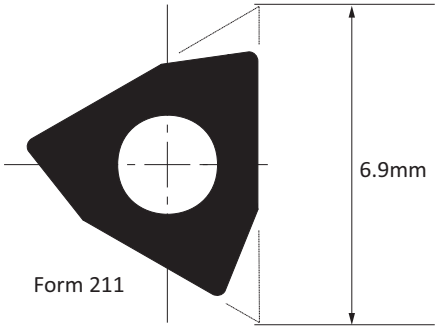
Insert Form 211

CBN | PCD


730 Geometry


735 Geometry


748 Geometry



		Ceramic					CBN								PCD			
		Uncoated			Coated		Uncoated						Coated					
Steel	P																	
Stainless Steel	M																	
Cast Iron	K									▼▼▼								
Non-Ferrous Materials	N														▼▼▼	▼▼▼		
Titanium	S																	
Hard Materials	H							▼▼▼										
Geometry	Radius in	Radius mm	ISO Code	Description	Part No.			WBN150	WBN200	WBN300	WBN450				PKDD30	PKDD50		
730	0.004	0.10	WBGX030101	F21101GN730	**397763**										●			
730	0.008	0.20	WBGX030102	F21102GN730	**097557**										●	●		
735	0.008	0.20	WBGX030102	F21102GN735	**397237**										●			
748	0.004	0.10	WBGX030101	F21101GN748	**097486**				●		●					●		
748	0.008	0.20	WBGX030102	F21102GN748	**097552**				●		●							

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
211	**215377**	M2 x 0.4 x 4	**415507**	**115537**	0.6 Nm	T6

Reference Key

Symbol	Machining Conditions
●	Average - Main Application

Reference Key

Symbol	Insert Type
▼▼▼	Finishing - Main Application

Insert Form 20

Cermet | Carbide

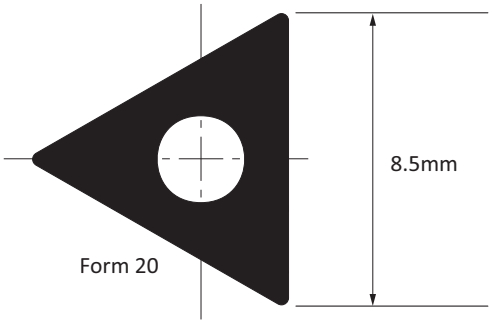
121 Geometry

128 Geometry

155 Geometry

650 Geometry

840 Geometry



		Cermet						Carbide									
		Uncoated				Coated		Uncoated		Coated							
Steel	P	▼▼▼				▼▼▼	▼▼▼			▼▼▼		▼▼▼			▼▼▼		▼▼▼
Stainless Steel	M					▽▽▽	▽▽▽			▽▽▽		▼▼▼			▼▼▼		▼▼▼
Cast Iron	K	▽▽▽				▽▽▽		▽▽▽	▽▽▽	▼▼▼		▽▽▽			▼▼▼		▽▽▽
Non-Ferrous Materials	N	▽▽▽						▼▼▼	▼▼▼		▼▼▼						
Titanium	S							▽▽▽	▽▽▽			▼▼▼			▼▼▼		▼▼▼
Hard Materials	H														▼▼▼		

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WHT10	WHT12	WHT16	WHT32	WTC15	WTC121	WHW01	WHW16	WHC05	WHC18	WHC19	WHC79	WHC98	WHC111	WHC114	WHC136
121	0.004	0.10	TOGX080201	F02001GN121	397672											✱			◕		
121	0.008	0.20	TOGX080202	F02002GN121	397673											✱			◕		
121	0.016	0.40	TOGX080204	F02004GN121	397674											✱			◕		
128	0.008	0.20	TOGX080202	F02002GN128	297541								●	●	●						
128	0.016	0.40	TOGX080204	F02004GN128	297542								●	●	●						
155	0.008	0.20	TOMX080202	F02002MN155	397688					◕											
155	0.016	0.40	TOMX080204	F02004MN155	397689					◕											
650	0.004	0.10	TOGX080201	F02001GL650	097153		●				◕	●		●							◕
650	0.008	0.20	TOGX080202	F02002GL650	097546		●				◕	●		●							◕
650	0.012	0.30	TOGX080203	F02003GL650	097154							●		●							◕
650	0.016	0.40	TOGX080204	F02004GL650	097599		●				◕	●		●							◕
650	0.031	0.80	TOGX080208	F02008GL650	397764							●									◕
840	0.008	0.20	TOGX080202	F02002GR840	097701		●							●							

Reference Key

Symbol	Machining Conditions
●	Good - Main Application
◕	Average - Main Application
✱	Difficult - Main Application

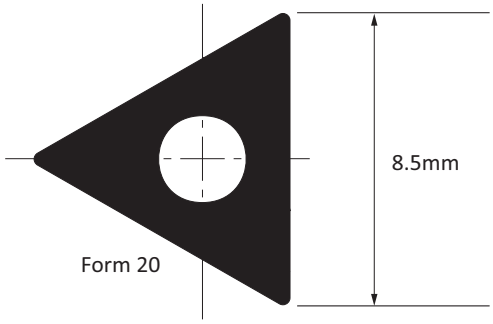
Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
20	115535	M2 x 0.4 x 5	415508	115591	0.9 Nm	T7

Reference Key

Symbol	Insert Type
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

Insert Form 20

CBN | PCD



		CBN								PCD			
		Uncoated						Coated					
Steel	P												
Stainless Steel	M												
Cast Iron	K			▼▼▼	▼▼▼								
Non-Ferrous Materials	N									▼▼▼	▼▼▼		
Titanium	S												
Hard Materials	H		▼▼▼	▼▼▼									

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WBN150	WBN200	WBN300	WBN450					PKDD30	PKDD50		
720	0.008	0.20	TOGX080202	F02002GN720	**297692**									◕			
720	0.016	0.40	TOGX080204	F02004GN720	**297845**									◕			
730	0.008	0.20	TOGX080202	F02002GN730	**097487**									◕	◕		
730	0.016	0.40	TOGX080204	F02004GN730	**097686**									◕	◕		
730	0.031	0.80	TOGX080208	F02008GN730	**097877**									◕			
735	0.008	0.20	TOGX080202	F02002GN735	**397133**									◕			
735	0.016	0.40	TOGX080204	F02004GN735	**397301**									◕			
741	0.008	0.20	TOGX080202	F02002GN741	**297260**		◕										
741	0.016	0.40	TOGX080204	F02004GN741	**297262**		◕										
742	0.008	0.20	TOGX080202	F02002GN742	**297264**			●									
742	0.016	0.40	TOGX080204	F02004GN742	**397610**			●									
745	0.004	0.10	TOGX080201	F02001GN745	**297259**		◕										
748	0.008	0.20	TOGX080202	F02002GN748	**297780**				◕								
748	0.016	0.40	TOGX080204	F02004GN748	**297782**				◕								
768	0.008	0.20	TOGX080202	F02002GN768	**397146**				◕								
768	0.016	0.40	TOGX080204	F02004GN768	**397192**				◕								

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
20	**115535**	M2 x 0.4 x 5	**415508**	**115591**	0.9 Nm	T7

Reference Key

Symbol	Machining Conditions
●	Good - Main Application
◕	Average - Main Application

Reference Key

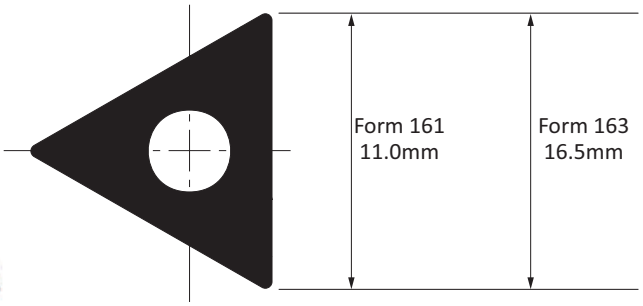
Symbol	Insert Type
▼▼▼	Finishing - Main Application

Insert Forms 161, 163

Cermet | Carbide

122 Geometry 129 Geometry 145 Geometry

158 Geometry 192 Geometry 711 Geometry 850 Geometry



		Cermet						Carbide											
		Uncoated				Coated		Uncoated		Coated									
Steel	P	▼▼▼	▼▼▼							▼▼▼		▼▼▼	▼▼▼	▼▼▼	▼▼▼				▼▼▼
Stainless Steel	M									▽▽▽		▼▼▼		▽▽▽	▼▼▼				
Cast Iron	K	▽▽▽	▽▽▽						▽▽▽	▼▼▼		▽▽▽	▼▼▼	▼▼▼	▼▼▼				▼▼▼
Non-Ferrous Materials	N	▽▽▽	▽▽▽						▼▼▼										
Titanium	S								▽▽▽			▼▼▼			▼▼▼				
Hard Materials	H												▽▽▽		▼▼▼				▽▽▽

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WHT10	WHT12	WHT16	WHT32	WTC15	WTC121	WHW01	WHW16	WHC05	WHC18	WHC19	WHC77	WHC79	WHC111	WHC114	WHC136	WHC164
122	0.016	0.40	TCMT110204	F16104MN122	**097953**	●																
129	0.008	0.20	TCGT110202	F16102GN129	**397769**								●	●								
129	0.016	0.40	TCGT110204	F16104GN129	**397770**								●	●								
129	0.016	0.40	TCGT16T304	F16304GN129	**397771**								●	●								
145	0.016	0.40	TCGT110204	F16104GN145	**297993**														●			
158	0.016	0.40	TCMT16T304	F16304MN158	**297604**													◕				
192	0.016	0.40	TCMT110204	F16104MN192	**397663**											✱						◕
192	0.016	0.40	TCMT16T304	F16304MN192	**397654**											✱						◕
192	0.031	0.80	TCMT16T308	F16308MN192	**397772**											✱						
711	0.016	0.40	TCMT16T304	F16304MN711	**397898**												◕					
711	0.031	0.80	TCMT16T308	F16308MN711	**397899**												◕					
850	0.008	0.20	TCGT110202	F16102GL850	**097512**		●															

Reference Key

Symbol	Machining Conditions
●	Good - Main Application
◕	Average - Main Application
✱	Difficult - Main Application

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
161	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 Nm	T8
163	**115673**	M3.5 x 0.6 x 9	**415510**	**115664**	3.0 Nm	T15

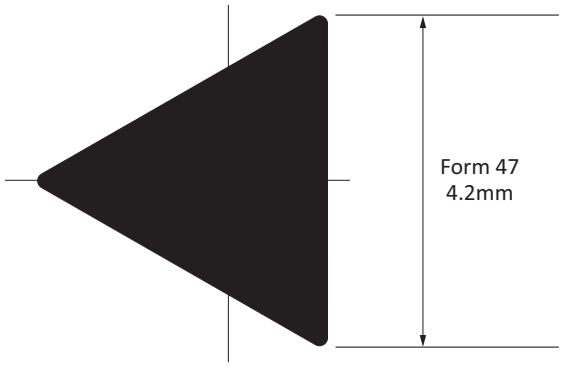
Reference Key

Symbol	Insert Type
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

Insert Form 47

Cermet | Carbide

650 Geometry



		Carbide									
		Uncoated		Coated							
Steel	P					▼▼▼					
Stainless Steel	M					▽▽▽					
Cast Iron	K	▽▽▽				▽▽▽					
Non-Ferrous Materials	N	▼▼▼									
Titanium	S	▽▽▽									
Hard Materials	H										

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WHW01	WHW16	WHC05	WHC18	WHC20	WHC79	WHC111	WHC114	WHC136	WHC164
650	0.004	0.10	TOFX040101	F04701FL650	**097832**	●				●					
650	0.008	0.20	TOFX040102	F04702FL650	**097833**	●				●					

Insert Form	Countersunk Screw		Clamping Jaw	Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
47	**315324**	M1.8 x 0.35 x 4	**315323**	–	**115537**	0.5 Nm	T6

Reference Key

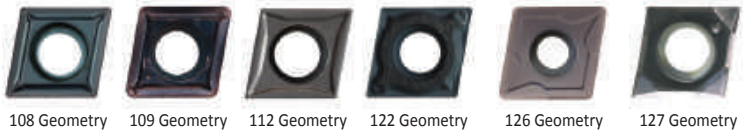
Symbol	Machining Conditions
●	Good - Main Application

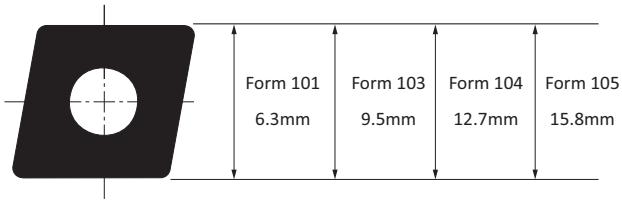
Reference Key

Symbol	Insert Type
▼▼▼	Finishing - Main Application

Insert Forms 101, 103, 104, 105

Cermet | Carbide





		Cermet						Carbide									
		Uncoated				Coated		Uncoated	Coated								
Steel	P	▼▼▼			▼▼▼ ▽								▼▼▼ ▼			▼▼▼ ▼	
Stainless Steel	M												▼▼▼ ▼			▼▼▼ ▽	
Cast Iron	K	▽▽▽			▽▽▽				▽▽▽ ▽				▽▽▽ ▽			▽▽▽ ▽	
Non-Ferrous Materials	N	▽▽▽			▽▽▽				▼▼▼ ▼		▼▼▼ ▼						
Titanium	S								▽▽▽ ▽							▼▼▼ ▼	
Hard Materials	H																

Geometry	Radius in	Radius mm	ISO Description	Description	Part No.	WHT10	WHT12	WHT16	WHT32	WTC15	WTC121	WHW01	WHW16	WHC05	WHC18	WHC19	WHC79	WHC98	WHC111	WHC114	WHC136	WHC164
108	0.008	0.20	CCMT060202	F10102MN108	297833													●				
108	0.016	0.40	CCMT060204	F10104MN108	297537													●				
108	0.016	0.40	CCMT09T304	F10304MN108	297891													●				
108	0.031	0.80	CCMT09T308	F10308MN108	397118													●				
108	0.016	0.40	CCMT120404	F10404MN108	297725													●				
108	0.031	0.80	CCMT120408	F10408MN108	297724													●				
109	0.008	0.20	CCMT060202	F10102MN109	397352																●	
109	0.016	0.40	CCMT060204	F10104MN109	397765																●	
109	0.016	0.40	CCMT09T304	F10304MN109	397354																●	
109	0.031	0.80	CCMT09T308	F10308MN109	397355																●	
109	0.016	0.40	CCMT120404	F10404MN109	397356																●	
109	0.031	0.80	CCMT120408	F10408MN109	397357																●	
112	0.008	0.20	CCGT060202	F10102GN112	297485				◕													
112	0.016	0.40	CCMT060204	F10104MN112	297434				◕													
112	0.008	0.20	CCGT09T302	F10302GN112	297534				◕													
112	0.016	0.40	CCMT09T304	F10304MN112	297387				◕													
122	0.008	0.20	CCMT060202	F10102MN122	097899	●																
122	0.016	0.40	CCMT060204	F10104MN122	097926	●																
122	0.008	0.20	CCMT09T302	F10302MN122	097862	●																
122	0.016	0.40	CCMT09T304	F10304MN122	097957	●																
126	0.031	0.80	CCMT160508	F10508MN126	297557																◕	
126	0.047	1.20	CCMT160512	F10512MN126	297558																◕	
127	0.008	0.20	CCGT060202	F10102GN127	097529								●		●							
127	0.016	0.40	CCGT060204	F10104GN127	097445								●		●							
127	0.008	0.20	CCGT09T302	F10302GN127	297550								●		●							
127	0.016	0.40	CCGT09T304	F10304GN127	097497								●		●							
127	0.016	0.40	CCGT120404	F10404GN127	097496								●		●							

Reference Key

Symbol	Machining Conditions
●	Good - Main Application
◕	Average - Main Application

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
101	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 Nm	T8
103	**115672**(<Ø37mm)	M3.5 x 0.6 x 7.5	**415510**	**115664**	3.0 Nm	T15
103	**115673**(>Ø36mm)	M3.5 x 0.6 x 9	**415510**	**115664**	3.0 Nm	T15
104	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 Nm	T20
105	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 Nm	T20

Reference Key

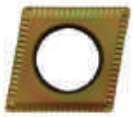
Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

Insert Forms 101, 103, 104, 105

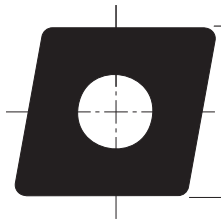
Cermet | Carbide

129 Geometry

145 Geometry



155 Geometry



		Cermet						Carbide										
		Uncoated				Coated		Uncoated	Coated									
Steel	P					▼▼▼				▽						▼▼▼ ▼		
Stainless Steel	M					▽▽▽				▽▽▽						▼▼▼ ▼		
Cast Iron	K					▽▽▽			▽▽▽ ▽	▼▼▼ ▼						▼▼▼ ▼		
Non-Ferrous Materials	N								▼▼▼ ▼		▼▼▼ ▼							
Titanium	S								▽▽▽ ▽							▼▼▼ ▼		
Hard Materials	H															▼▼▼ ▽		

Geometry	Radius in	Radius mm	ISO Description	Description	Part No.	WHT10	WHT12	WHT16	WHT32	WTC15	WTC121	WHW01	WHW16	WHC05	WHC18	WHC19	WHC79	WHC98	WHC111	WHC114	WHC136	WHC164
129	0.002	0.05	CCGT0602005	F101005GN129	**397738**								●	●								
129	0.004	0.10	CCGT060201	F10101GN129	**397737**								●	●								
129	0.008	0.20	CCGT060202	F10102GN129	**297545**								●	●	●							
129	0.016	0.40	CCGT060204	F10104GN129	**297546**								●	●	●							
129	0.008	0.20	CCGT09T302	F10302GN129	**297547**								●	●	●							
129	0.016	0.40	CCGT09T304	F10304GN129	**297548**								●	●	●							
145	0.016	0.40	CCGT060204	F10104GN145	**297980**														●			
145	0.031	0.80	CCGT060208	F10108GN145	**397742**														●			
145	0.016	0.40	CCGT09T304	F10304GN145	**297994**														●			
145	0.031	0.80	CCGT09T308	F10308GN145	**297995**														●			
155	0.008	0.20	CCMT060202	F10102MN155	**397662**					◕												
155	0.016	0.40	CCMT060204	F10104MN155	**397739**					◕												
155	0.016	0.40	CCMT09T304	F10304MN155	**397740**					◕												

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
101	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 Nm	T8
103	**115672**(<Ø37mm)	M3.5 x 0.6 x 7.5	**415510**	**115664**	3.0 Nm	T15
103	**115673**(>Ø36mm)	M3.5 x 0.6 x 9	**415510**	**115664**	3.0 Nm	T15
104	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 Nm	T20
105	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 Nm	T20

Reference Key

Symbol	Machining Conditions
●	Good - Main Application
◕	Average - Main Application

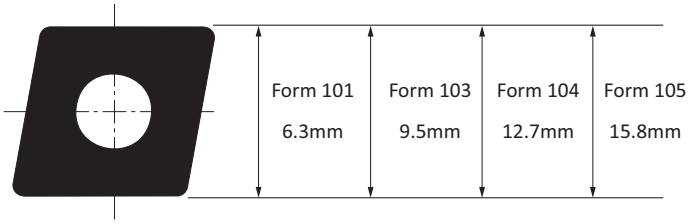
Reference Key

Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

Insert Forms 101, 103, 104, 105

Carbide

158 Geometry | 174W Geometry | 192 Geometry



		Carbide											
		Uncoated		Coated									
Steel	P			▼▼▼ ▽		▼▼▼ ▼	▼▼▼ ▼		▼▼▼ ▼				▼▼▼ ▼
Stainless Steel	M			▽▽▽		▼▼▼ ▼	▽▽▽ ▽		▼▼▼ ▼				
Cast Iron	K			▼▼▼ ▼		▽▽▽ ▽	▼▼▼ ▼		▼▼▼ ▼				▼▼▼ ▼
Non-Ferrous Materials	N												
Titanium	S					▼▼▼ ▼			▼▼▼ ▼				
Hard Materials	H								▼▼▼ ▼				▽▽▽

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WHW01	WHW16	WHC05	WHC18	WHC19	WHC79	WHC98	WHC111	WHC114	WHC136	WHC164
158	0.008	0.20	CCMT060202	F10102MN158	**297248**						◕		●			
158	0.016	0.40	CCMT060204	F10104MN158	**297377**						◕		●			
158	0.016	0.40	CCMT09T304	F10304MN158	**297239**						◕		●			
158	0.031	0.80	CCMT09T308	F10308MN158	**297240**						◕		●			
158	0.016	0.40	CCMT120404	F10404MN158	**297242**						◕		●			
158	0.031	0.80	CCMT120408	F10408MN158	**297241**						◕		●			
158	0.031	0.80	CCMT160508	F10508MN158	**297559**			●			◕					
158	0.047	1.20	CCMT160512	F10512MN158	**297560**						◕					
174W	0.016	0.40	CCMT060204	F10104MN174W	**397766**					✱						◕
174W	0.016	0.40	CCMT09T304	F10304MN174W	**397767**					✱						◕
174W	0.031	0.80	CCMT09T308	F10308MN174W	**397768**											◕
192	0.008	0.20	CCMT060202	F10102MN192	**297531**					✱						◕
192	0.016	0.40	CCMT060204	F10104MN192	**297658**					✱						◕
192	0.031	0.80	CCMT060208	F10108MN192	**297588**					✱						◕
192	0.008	0.20	CCMT09T302	F10302MN192	**297958**					✱						
192	0.016	0.40	CCMT09T304	F10304MN192	**297653**					✱						◕
192	0.031	0.80	CCMT09T308	F10308MN192	**397614**					✱						◕
192	0.016	0.40	CCMT120404	F10404MN192	**397666**					✱						◕
192	0.031	0.80	CCMT120408	F10408MN192	**297878**					✱						◕
192	0.047	1.20	CCMT120412	F10412MN192	**397632**											◕

Reference Key

Symbol	Machining Conditions
●	Good - Main Application
◕	Average - Main Application
✱	Difficult - Main Application

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
101	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 Nm	T8
103	**115672**(<Ø37mm)	M3.5 x 0.6 x 7.5	**415510**	**115664**	3.0 Nm	T15
103	**115673**(>Ø36mm)	M3.5 x 0.6 x 9	**415510**	**115664**	3.0 Nm	T15
104	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 Nm	T20
105	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 Nm	T20

Reference Key

Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

Insert Forms 101, 103, 104, 105

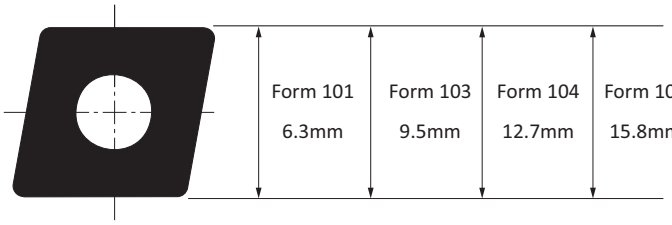
Cermet | Carbide


199 Geometry


200 Geometry


711 Geometry


860 Geometry



		Cermet						Carbide											
		Uncoated				Coated		Uncoated		Coated									
Steel	P					▼▼▼				▼▼▼ ▼			▼▼▼ ▼			▼▼▼ ▼	▼▼▼ ▼	▼▼▼ ▼	
Stainless Steel	M					▽▽▽				▼▼▼ ▽						▼▼▼ ▼	▼▼▼ ▼	▼▼▼ ▼	
Cast Iron	K							▽▽▽ ▽		▼▼▼ ▼			▼▼▼ ▼			▼▼▼ ▼	▽▽▽ ▽	▽▽▽ ▽	
Non-Ferrous Materials	N							▼▼▼ ▼											
Titanium	S															▼▼▼ ▼	▼▼▼ ▼	▼▼▼ ▼	
Hard Materials	H												▽▽▽			▼▼▼ ▽			

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WHT10	WHT12	WHT16	WHT32	WTC15	WTC121	WHW01	WHW16	WHC05	WHC18	WHC19	WHC77	WHC79	WHC98	WHC111	WHC114	WHC136	WHC164
199	0.008	0.20	CCMT060202	F10102MN199	**397164**																●		
199	0.016	0.40	CCMT060204	F10104MN199	**397165**																●		
199	0.008	0.20	CCMT09T302	F10302MN199	**397702**																●		
199	0.016	0.40	CCMT09T304	F10304MN199	**397166**																●		
199	0.031	0.80	CCMT09T308	F10308MN199	**397167**																●		
199	0.016	0.40	CCMT120404	F10404MN199	**397191**																●		
199	0.031	0.80	CCMT120408	F10408MN199	**397168**																●		
200	0.008	0.20	CCGT060202	F10102GN200	**397585**															●			
200	0.016	0.40	CCGT060204	F10104GN200	**397586**															●			
200	0.008	0.20	CCGT09T302	F10302GN200	**397587**															●			
200	0.016	0.40	CCGT09T304	F10304GN200	**397588**															●			
200	0.016	0.40	CCGT120404	F10404GN200	**397589**															●			
711	0.016	0.40	CCMT060204	F10104MN711	**097637**												●						
711	0.016	0.40	CCMT09T304	F10304MN711	**097692**												●						
711	0.031	0.80	CCMT09T308	F10308MN711	**297910**												●						
711	0.031	0.80	CCMT120408	F10408MN711	**297911**												●						
860	0.004	0.10	CCGT060201	F10101GL860	**097324**						◕	●		●								●	
860	0.008	0.20	CCGT060202	F10102GL860	**097241**						◕	●		●								●	
860	0.016	0.40	CCGT060204	F10104GL860	**097242**							●		●								●	
860	0.008	0.20	CCGT09T302	F10302GL860	**097245**							●		●								●	
860	0.016	0.40	CCGT09T304	F10304GL860	**097244**							●		●								●	
860	0.016	0.40	CCGT120404	F10404GL860	**097738**							●										●	
860	0.031	0.80	CCGT120408	F10408GL860	**097247**							●		●								●	
860	0.031	0.80	CCMT160508	F10508ML860	**097249**							●		●								●	

Reference Key

Symbol	Machining Conditions
●	Good - Main Application
◕	Average - Main Application

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data Torque	Technical Data Key Size
101	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 Nm	T8
103	**115672**(<Ø37mm)	M3.5 x 0.6 x 7.5	**415510**	**115664**	3.0 Nm	T15
103	**115673**(>Ø36mm)	M3.5 x 0.6 x 9	**415510**	**115664**	3.0 Nm	T15
104	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 Nm	T20
105	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 Nm	T20

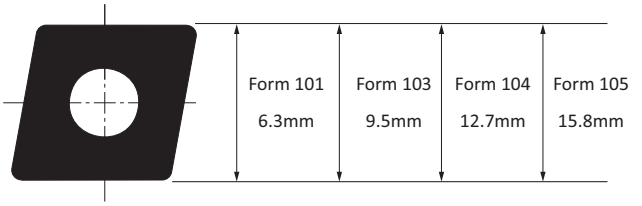
Reference Key

Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

Insert Forms 101, 103, 104

Ceramic | CBN | PCD

530 Geometry | 548 Geometry | 711 Geometry | 720 Geometry | 730 Geometry | 735 Geometry



		Ceramic					CBN								PCD			
		Uncoated			Coated		Uncoated						Coated					
Steel	P																	
Stainless Steel	M																	
Cast Iron	K	▼								▼▼▼ ▼								
Non-Ferrous Materials	N														▼▼▼ ▼	▼▼▼ ▼		
Titanium	S																	
Hard Materials	H																	

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WCN06	WBN150	WBN200	WBN300	WBN450	PKDD30	PKDD50
530	0.016	0.40	CCGW060204	F10104GL530	**397207**						●	
530	0.016	0.40	CCGW060204	F10104GR530	**397242**						●	
530	0.016	0.40	CCGW09T304	F10304GL530	**397249**						●	
530	0.016	0.40	CCGW09T304	F10304GR530	**397250**						●	
548	0.016	0.40	CCGW060204	F10104GL548	**397245**					●		
548	0.016	0.40	CCGW060204	F10104GR548	**397246**					●		
548	0.016	0.40	CCGW09T304	F10304GL548	**397604**					●		
548	0.016	0.40	CCGW09T304	F10304GR548	**397605**					●		
711	0.016	0.40	CCGW09T304	F10304GN711	**297561**	✹						
711	0.031	0.80	CCGW09T308	F10308GN711	**297192**	✹						
711	0.031	0.80	CCGW120408	F10408GN711	**297249**	✹						
711	0.047	1.20	CCGW120412	F10412GN711	**297234**	✹						
720	0.008	0.20	CCGT060202	F10102GN720	**297501**						●	
720	0.016	0.40	CCGT060204	F10104GN720	**297502**						●	
720	0.008	0.20	CCGT09T302	F10302GN720	**297578**						●	
720	0.016	0.40	CCGT09T304	F10304GN720	**297483**						●	
730	0.008	0.20	CCGW060202	F10102GN730	**097462**						●	●
730	0.016	0.40	CCGW060204	F10104GN730	**297164**						●	●
730	0.031	0.80	CCGW060208	F10108GN730	**297165**						●	
730	0.008	0.20	CCGW09T302	F10302GN730	**397251**						●	●
730	0.016	0.40	CCGW09T304	F10304GN730	**297533**						●	●
730	0.016	0.40	CCGW120404	F10404GN730	**397257**						●	●
730	0.031	0.80	CCGW120408	F10408GN730	**297871**						●	●
735	0.008	0.20	CCGT060202	F10102GN735	**297872**						●	
735	0.016	0.40	CCGT060204	F10104GN735	**397244**						●	
735	0.008	0.20	CCGT09T302	F10302GN735	**397252**						●	
735	0.016	0.40	CCGT09T304	F10304GN735	**297870**						●	

Reference Key

Symbol	Machining Conditions
●	Good - Main Application
◕	Average - Main Application
✹	Difficult - Main Application

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
101	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 Nm	T8
103	**115672**(<Ø37mm)	M3.5 x 0.6 x 7.5	**415510**	**115664**	3.0 Nm	T15
103	**115673**(>Ø36mm)	M3.5 x 0.6 x 9	**415510**	**115664**	3.0 Nm	T15
104	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 Nm	T20

Reference Key

Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

Insert Forms 101, 103, 104

CBN


741 Geometry

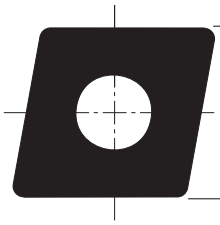

742 Geometry


747 Geometry


748 Geometry


749 Geometry


768 Geometry



		CBN							
		Uncoated						Coated	
Steel	P								
Stainless Steel	M								
Cast Iron	K	▽▽▽ ▽		▼▼▼ ▽	▼▼▼ ▼				
Non-Ferrous Materials	N								
Titanium	S								
Hard Materials	H	▼▼▼ ▽	▼▼▼ ▽	▼▼▼ ▽					

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WBN150	WBN200	WBN300	WBN450				
741	0.008	0.20	CCGW060202	F10102GN741	**297290**		◕						
741	0.016	0.40	CCGW060204	F10104GN741	**297291**		◕						
741	0.016	0.40	CCGW09T304	F10304GN741	**297303**		◕						
742	0.008	0.20	CCGW060202	F10102GN742	**297293**			●					
742	0.016	0.40	CCGW060204	F10104GN742	**297294**			●					
742	0.016	0.40	CCGW09T304	F10304GN742	**297306**			●					
747	0.016	0.40	CCGW120404	F10404GN747	**397260**	◕			◕				
748	0.008	0.20	CCGW060202	F10102GN748	**297787**				◕				
748	0.016	0.40	CCGW060204	F10104GN748	**297788**				◕				
748	0.008	0.20	CCGW09T302	F10302GN748	**297790**				◕				
748	0.016	0.40	CCGW09T304	F10304GN748	**297419**				◕				
749	0.031	0.80	CCGW120408	F10408GN749	**397261**	◕			◕				
768	0.008	0.20	CCGT060202	F10102GN768	**297486**				◕				
768	0.016	0.40	CCGT060204	F10104GN768	**297659**				◕				
768	0.008	0.20	CCGT09T302	F10302GN768	**397439**				◕				
768	0.016	0.40	CCGT09T304	F10304GN768	**297660**								

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data Torque	Technical Data Key Size
101	**115676**	M2.5 x 0.4 x 5	**415514**	**115590**	1.2 Nm	T8
103	**115672**(<Ø37mm)	M3.5 x 0.6 x 7.5	**415510**	**115664**	3.0 Nm	T15
103	**115673**(>Ø36mm)	M3.5 x 0.6 x 9	**415510**	**115664**	3.0 Nm	T15
104	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 Nm	T20

Reference Key

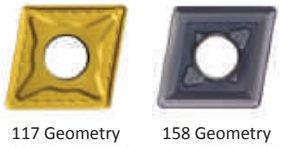
Symbol	Machining Conditions
●	Good - Main Application
◕	Average - Main Application

Reference Key

Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

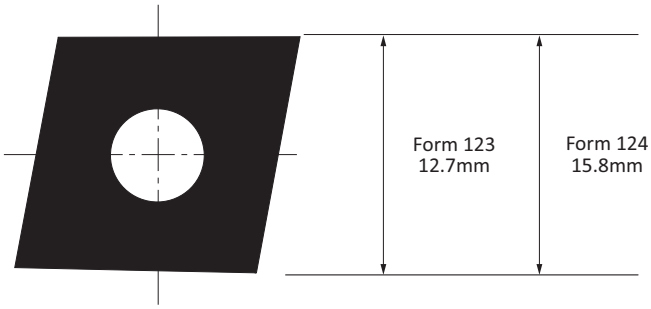
Insert Forms 123, 124

Carbide



117 Geometry | 158 Geometry

161 Geometry | 167 Geometry



		Carbide											
		Uncoated		Coated									
Steel	P							▼▼▼ ▼		▼▼▼ ▼	▼▼▼ ▼	▼▼▼ ▼	
Stainless Steel	M							▼▼▼ ▼		▼▼▼ ▼		▼▼▼ ▼	
Cast Iron	K							▼▼▼ ▼		▽▽▽ ▽	▼▼▼ ▼	▽▽▽ ▽	
Non-Ferrous Materials	N												
Titanium	S							▼▼▼ ▼		▼▼▼ ▼		▼▼▼ ▼	
Hard Materials	H							▽▽▽ ▽			▽▽▽ ▽		

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WHW01	WHW16	WHC05	WHC18	WHC79	WHC98	WHC111	WHC114	WHC136	WHC164	WHC190
117	0.031	0.80	CNMG120408	F12308MN117	**397683**							●			◕	✱
117	0.047	1.20	CNMG120412	F12312MN117	**397777**							●			◕	✱
117	0.031	0.80	CNMG160608	F12408MN117	**397608**										◕	✱
117	0.047	1.20	CNMG160612	F12412MN117	**397778**							●			◕	✱
158	0.016	0.40	CNMG120404	F12304MN158	**397799**									◕		
158	0.031	0.80	CNMG120408	F12308MN158	**397800**									◕		
158	0.047	1.20	CNMG120412	F12312MN158	**397801**									◕		
158	0.031	0.80	CNMG160608	F12408MN158	**397802**									◕		
158	0.047	1.20	CNMG160612	F12412MN158	**397803**									◕		
161	0.016	0.40	CNMG120404	F12304MN161	**397758**							●			◕	✱
161	0.031	0.80	CNMG120408	F12308MN161	**397759**							●			◕	✱
167	0.016	0.40	CNMG120404	F12304MN167	**397756**							●			◕	✱
167	0.031	0.80	CNMG120408	F12308MN167	**397757**							●			◕	✱

Insert Form	Clamping Set Part No.	Clamping Set Key Size	Mounting Arbor for Sleeve Part No.	Clamping Bolt Part No.	Clamping Bolt Key Size	Service Key Part No.	Service Key Key Size
123	**315003**	s3	**415642**	**115775**	s2.5	**415578**	s3
						115575	s2.5
124	**315054**	s3	**415644**	**115776**	s3	**415578**	s3
						115630	s3

Reference Key

Symbol	Machining Conditions
●	Good - Main Application
◕	Average - Main Application
✱	Difficult - Main Application

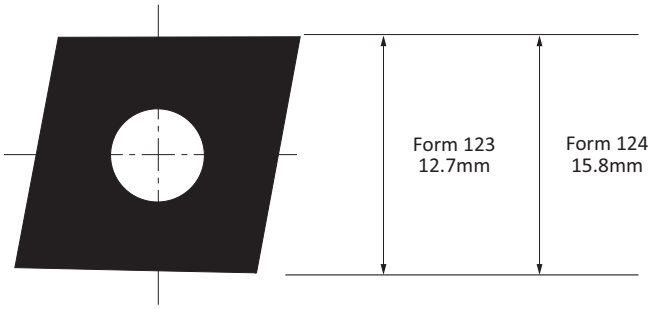
Reference Key

Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▽▽▽	Finishing - Extended Application

Insert Form 123

Ceramic | CBN | PCD

711 Geometry 730 Geometry 749 Geometry



		Ceramic					CBN						PCD			
		Uncoated			Coated		Uncoated				Coated					
Steel	P															
Stainless Steel	M															
Cast Iron	K	▽▽▽ ▼					▽▽▽ ▽			▼▼▼ ▼						
Non-Ferrous Materials	N												▼▼▼ ▼			
Titanium	S															
Hard Materials	H						▼▼▼ ▽									

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WCN06	WBN150	WBN200	WBN300	WBN450	PKDD30	PKDD50
711	0.031	0.80	CNGA120408	F12308GN711	**397842**	●						
711	0.047	1.20	CNGA120412	F12312GN711	**397843**	●						
730	0.031	0.80	CNGA120408	F12308GN730	**397849**						◕	
749	0.031	0.80	CNGA120408	F12308GN749	**397262**		◕			◕		

Reference Key

Symbol	Machining Conditions
◕	Average - Main Application
●	Difficult - Main Application

Reference Key

Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

Insert Form	Clamping Set Part No.	Clamping Set Key Size	Mounting Arbor for Sleeve Part No.	Clamping Bolt Part No.	Clamping Bolt Key Size	Service Key Part No.	Service Key Key Size
123	**315003**	s3	**415642**	**115775**	s2.5	**415578**	s3
						115575	s2.5

Insert Form 39

Cermet | Carbide


121 Geometry

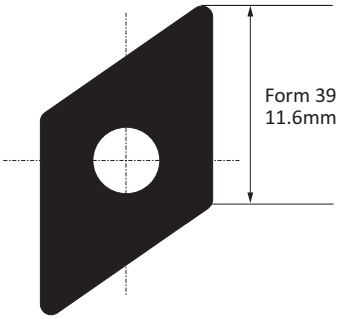

127 Geometry


129 Geometry


155 Geometry


192 Geometry


200 Geometry



		Cermet						Carbide											
		Uncoated				Coated		Uncoated	Coated										
Steel	P					▼▼▼				▼▼▼ ▼				▼▼▼ ▽			▼▼▼ ▼	▼▼▼ ▼	
Stainless Steel	M					▽▽▽				▽▽▽ ▽				▼▼▼ ▽				▼▼▼ ▼	
Cast Iron	K					▽▽▽			▽▽▽ ▽	▼▼▼ ▼				▼▼▼ ▼			▼▼▼ ▼	▽▽▽ ▽	
Non-Ferrous Materials	N							▼▼▼ ▼											
Titanium	S								▽▽▽					▼▼▼ ▽				▼▼▼ ▼	
Hard Materials	H													▼▼▼			▽▽▽		

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WHT10	WHT12	WHT16	WHT32	WTC15	WTC121	WHW01	WHW16	WHC05	WHC18	WHC79	WHC98	WHC111	WHC114	WHC136	WHC164	WHC190
121	0.008	0.20	DCMT11T302	F03902MN121	397787																	✖
121	0.016	0.40	DCMT11T304	F03904MN121	397788																	✖
127	0.008	0.20	DCGT11T302	F03902GN127	397235								●									
127	0.016	0.40	DCGT11T304	F03904GN127	097559								●									
129	0.008	0.20	DCGT11T302	F03902GN129	397816								●	●								
129	0.016	0.40	DCGT11T304	F03904GN129	397817								●	●								
155	0.008	0.20	DCMT11T302	F03902MN155	397809					◕												
155	0.016	0.40	DCMT11T304	F03904MN155	397810					◕												
192	0.008	0.20	DCMT11T302	F03902MN192	397783																◕	✖
192	0.016	0.40	DCMT11T304	F03904MN192	297721																◕	✖
192	0.031	0.80	DCMT11T308	F03908MN192	397784																◕	✖
200	0.008	0.20	DCGT11T302	F03902GN200	397785													●				
200	0.016	0.40	DCGT11T304	F03904GN200	397786													●				

Reference Key

Symbol	Machining Conditions
●	Good - Main Application
◕	Average - Main Application
✖	Difficult - Main Application

Reference Key

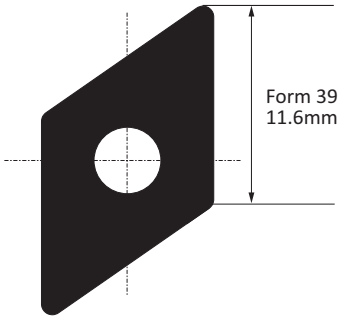
Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
39	115673	M3.5 x 0.6 x 9	414510	115664	3.0 Nm	T15

Insert Form 39

CBN | PCD

730 Geometry 735 Geometry 747 Geometry



		CBN								PCD			
		Uncoated						Coated					
Steel	P												
Stainless Steel	M												
Cast Iron	K	▽▽▽			▼▼▼								
Non-Ferrous Materials	N									▼▼▼			
Titanium	S												
Hard Materials	H	▼▼▼ ▽											

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WBN150	WBN200	WBN300	WBN450	WBN200				PKDD30	PKDD50		
730	0.008	0.20	DCGW11T302	F03902GN730	**397269**									◕			
730	0.016	0.40	DCGW11T304	F03904GN730	**397270**									◕			
735	0.008	0.20	DCGT11T302	F03902GN735	**397271**									●			
735	0.016	0.40	DCGT11T304	F03904GN735	**397272**									●			
747	0.008	0.20	DCGW11T302	F03902GN747	**397273**	◕			◕								
747	0.016	0.40	DCGW11T304	F03904GN747	**397274**	◕			◕								

Reference Key

Symbol	Machining Conditions
◕	Average - Main Application
◕	Difficult - Main Application

Reference Key

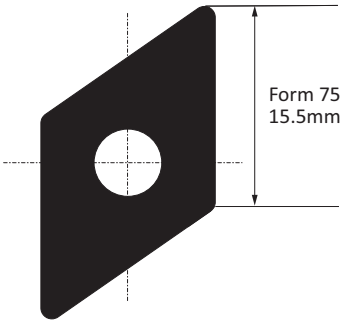
Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
39	**115673**	M3.5 x 0.6 x 9	**414510**	**115664**	3.0 Nm	T15

Insert Form 75

Carbide

117 Geometry | 158 Geometry | 161 Geometry | 167 Geometry



		Carbide											
		Uncoated		Coated									
Steel	P							▼▼▼ ▼		▼▼▼ ▼	▼▼▼ ▼	▼▼▼ ▼	
Stainless Steel	M							▼▼▼ ▼		▼▼▼ ▼		▼▼▼ ▼	
Cast Iron	K							▼▼▼ ▼		▼▼▼ ▼	▼▼▼ ▼		
Non-Ferrous Materials	N												
Titanium	S							▼▼▼ ▼		▼▼▼ ▼		▼▼▼ ▼	
Hard Materials	H							▼▼▼ ▽			▼▼▼ ▽		

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WHW01	WHW16	WHC05	WHC18	WHC79	WHC98	WHC111	WHC114	WHC136	WHC164	WHC190
117	0.031	0.80	DNMG150608	F07508MN117	**397779**										◕	✱
158	0.016	0.40	DNMG150604	F07504MN158	**397804**									◕		
158	0.031	0.80	DNMG150608	F07508MN158	**397805**									◕		
158	0.047	1.20	DNMG150612	F07512MN158	**397806**									◕		
161	0.016	0.40	DNMG150604	F07504MN161	**397746**							●			◕	✱
161	0.031	0.80	DNMG150608	F07508MN161	**397747**							●			◕	✱
161	0.047	1.20	DNMG150612	F07512MN161	**397748**							●			◕	✱
167	0.016	0.40	DNMG150604	F07504MN167	**397749**							●			◕	✱
167	0.031	0.80	DNMG150608	F07508MN167	**397750**							●			◕	✱

Reference Key

Symbol	Machining Conditions
●	Good - Main Application
◕	Average - Main Application
✱	Difficult - Main Application

Insert Form	Clamping Set Part No.	Clamping Set Key Size	Mounting Arbor for Sleeve Part No.	Service Key Part No.	Service Key Key Size
75	**315004**	s3	**415642**	**415578**	s3

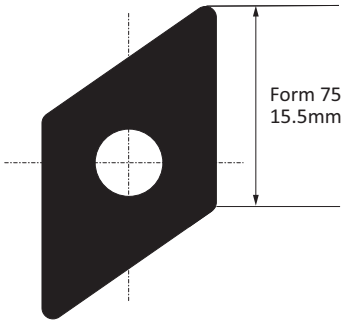
Reference Key

Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▽▽▽	Finishing - Extended Application

Insert Form 75

Ceramic | CBN | PCD

711 Geometry 730 Geometry 749 Geometry



		Ceramic					CBN								PCD			
		Uncoated			Coated		Uncoated						Coated					
Steel	P																	
Stainless Steel	M																	
Cast Iron	K	▽▽▽ ▼					▽▽▽ ▽			▼▼▼ ▼								
Non-Ferrous Materials	N														▼▼▼ ▼			
Titanium	S																	
Hard Materials	H						▼▼▼ ▽											
Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WCN06					WBN150	WBN200	WBN300	WBN450	WBN200			PKDD30	PKDD50		
711	0.031	0.80	DNGA150608	F07508GN711	**397840**	●															
711	0.047	1.20	DNGA150612	F07512GN711	**397841**	●															
730	0.031	0.80	DNGA150608	F07508GN730	**397276**													◕			
749	0.031	0.80	DNGA150608	F07508GN749	**397277**						◕			◕							

Reference Key

Symbol	Machining Conditions
◕	Average - Main Application
●	Difficult - Main Application

Reference Key

Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

Insert Form	Clamping Set Part No.	Clamping Set Key Size	Mounting Arbor for Sleeve Part No.	Service Key Part No.	Service Key Key Size
75	**315004**	s3	**415642**	**415578**	s3

Insert Forms 262, 264

Cermet | Carbide

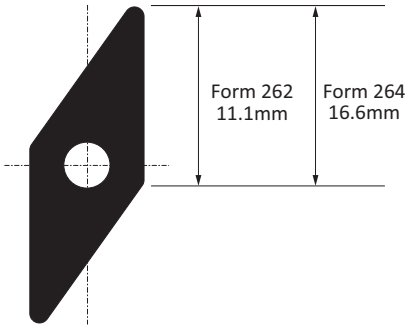

127 Geometry


129 Geometry


155 Geometry


192 Geometry


200 Geometry



		Cermet						Carbide											
		Uncoated				Coated		Uncoated		Coated									
Steel	P					▼▼▼				▼▼▼ ▽				▼▼▼ ▽			▼▼▼ ▽	▼▼▼ ▽	
Stainless Steel	M					▽▽▽				▽▽▽ ▽				▼▼▼ ▽			▼▼▼ ▽		
Cast Iron	K					▽▽▽			▽▽▽	▼▼▼ ▽				▼▼▼ ▽			▼▼▼ ▽	▽▽▽ ▽	
Non-Ferrous Materials	N								▼▼▼ ▽										
Titanium	S								▽▽▽					▼▼▼ ▽				▼▼▼ ▼	
Hard Materials	H													▼▼▼ ▽			▽▽▽		

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WHT10	WHT12	WHT16	WHT32	WTC15	WTC121	WHW01	WHW16	WHC05	WHC18	WHC79	WHC98	WHC111	WHC114	WHC136	WHC164	WHC190
127	0.008	0.20	VCGT110302	F26202GN127	**297146**								●									
127	0.016	0.40	VCGT110304	F26204GN127	**097954**								●									
127	0.008	0.20	VCGT160402	F26402GN127	**397813**								●									
127	0.016	0.40	VCGT160404	F26404GN127	**297900**								●									
127	0.031	0.80	VCGT160408	F26408GN127	**397179**								●									
129	0.008	0.20	VCGT110302	F26202GN129	**397811**								●	●								
129	0.016	0.40	VCGT110304	F26204GN129	**397812**								●	●								
129	0.016	0.40	VCGT160404	F26404GN129	**397814**								●	●								
129	0.031	0.80	VCGT160408	F26408GN129	**397815**								●	●								
155	0.016	0.40	VCMT160404	F26404MN155	**397807**					◕												
155	0.031	0.80	VCMT160408	F26408MN155	**397808**					◕												
192	0.016	0.40	VCMT110304	F26204MN192	**397628**																◕	✱
192	0.031	0.80	VCMT110308	F26208MN192	**397627**																◕	✱
192	0.016	0.40	VCMT160404	F26404MN192	**397611**																◕	✱
192	0.031	0.80	VCMT160408	F26408MN192	**397780**																◕	✱
200	0.016	0.40	VCGT160404	F26404GN200	**397782**													●				
200	0.031	0.80	VCGT160408	F26408GN200	**397781**													●				

Reference Key

Symbol	Machining Conditions
●	Good - Main Application
◕	Average - Main Application
✱	Difficult - Main Application

Reference Key

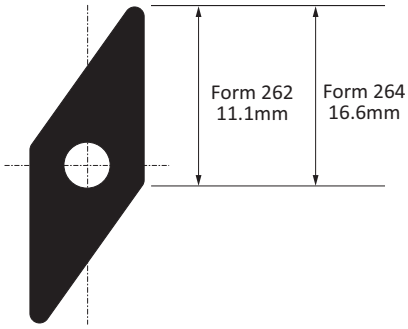
Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
262	**215987**	M2.5 x 0.45 x 6	**415514**	**115590**	1.2 Nm	T8
264	**115673**	M3.5 x 0.6 x 9	**415510**	**115664**	3.0 Nm	T15

Insert Forms 262, 264

CBN | PCD

730 Geometry | 735 Geometry | 747 Geometry | 749 Geometry



		CBN								PCD			
		Uncoated						Coated					
Steel	P												
Stainless Steel	M												
Cast Iron	K	▽▽▽ ▽			▼▼▼ ▽								
Non-Ferrous Materials	N									▼▼▼ ▽			
Titanium	S												
Hard Materials	H	▼▼▼ ▽											

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WBN150	WBN200	WBN300	WBN450					PKDD30	PKDD50		
730	0.008	0.20	VCGW110302	F26202GN730	**397284**									◕			
730	0.016	0.40	VCGW110304	F26204GN730	**397285**									◕			
730	0.008	0.20	VCGW160402	F26402GN730	**397407**									◕			
730	0.016	0.40	VCGW160404	F26404GN730	**397278**									◕			
730	0.031	0.80	VCGW160408	F26408GN730	**397279**									◕			
735	0.008	0.20	VCGW110302	F26202GN735	**397818**									●			
735	0.016	0.40	VCGW110304	F26204GN735	**397286**									●			
735	0.016	0.40	VCGT160404	F26404GN735	**397280**									●			
735	0.031	0.80	VCGT160408	F26408GN735	**397281**									●			
747	0.016	0.40	VCGW110304	F26204GN747	**397287**	◕			◕								
747	0.031	0.80	VCGW160408	F26408GN747	**397283**				◕								
749	0.031	0.80	VCGW160408	F26408GN749	**397282**	◕											

Reference Key

Symbol	Machining Conditions
◕	Average - Main Application
●	Difficult - Main Application

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
262	**215987**	M2.5 x 0.45 x 6	**415514**	**115590**	1.2 Nm	T8
264	**115673**	M3.5 x 0.6 x 9	**415510**	**115664**	3.0 Nm	T15

Reference Key

Symbol	Insert Type
▽	Roughing - Extended Application
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

Insert Forms 112, 113, 114

Carbide


108 Geometry


127 Geometry

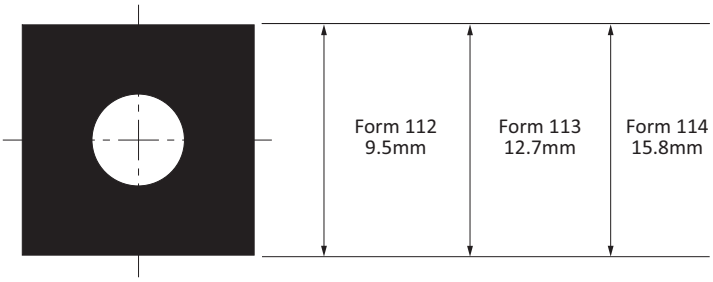

145 Geometry


158 Geometry


192 Geometry


199 Geometry


711 Geometry



		Carbide												
		Uncoated		Coated										
Steel	P				▼▼▼ ▼	▼▼▼ ▼	▼▼▼ ▼	▼▼▼ ▼	▼▼▼ ▼	▼▼▼ ▼		▼▼▼ ▼	▼▼▼ ▼
Stainless Steel	M				▼▼▼ ▼		▼▼▼ ▽	▼▼▼ ▼	▼▼▼ ▼	▼▼▼ ▼			▼▼▼ ▼
Cast Iron	K		▼▼▼ ▽		▼▼▼ ▽	▼▼▼ ▼	▼▼▼ ▼	▼▼▼ ▽	▼▼▼ ▼	▼▼▼ ▽		▼▼▼ ▼	▼▼▼ ▽
Non-Ferrous Materials	N		▼▼▼ ▼										
Titanium	S		▼▼▼ ▽		▼▼▼ ▼				▼▼▼ ▼	▼▼▼ ▼			▼▼▼ ▼
Hard Materials	H					▽▽▽ ▽			▽▽▽ ▽			▽▽▽ ▽	

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WHW01	WHW16	WHC05	WHC30	WHC77	WHC79	WHC98	WHC111	WHC114	WHC136	WHC164	WHC190
108	0.016	0.40	SCMT09T304	F11204MN108	**297535**							◕					
108	0.031	0.80	SCMT120408	F11308MN108	**397110**							◕					
127	0.016	0.40	SCGT09T304	F11204GN127	**097539**		●										
127	0.016	0.40	SCGT120404	F11304GN127	**397590**		●										
127	0.031	0.80	SCGT120408	F11308GN127	**097566**		●										
145	0.031	0.80	SCGT09T308	F11208GN145	**297996**								●				
145	0.031	0.80	SCGT120408	F11308GN145	**297997**								●				
158	0.031	0.80	SCMT120408	F11308MN158	**297497**						◕						
158	0.047	1.20	SCMT150512	F11412MN158	**097252**				✱								
192	0.016	0.40	SCMT09T304	F11204MN192	**397741**											◕	✱
192	0.031	0.80	SCMT09T308	F11208MN192	**397640**											◕	✱
192	0.031	0.80	SCMT120408	F11308MN192	**397709**											◕	✱
192	0.047	1.20	SCMT120412	F11312MN192	**397710**												✱
199	0.016	0.40	SCMT09T304	F11204MN199	**397703**									◕			
199	0.031	0.80	SCMT09T308	F11208MN199	**397704**									◕			
199	0.031	0.80	SCMT120408	F11308MN199	**397705**									◕			
711	0.031	0.80	SCMT120408	F11308MN711	**297212**					◕							

Reference Key

Symbol	Machining Conditions
●	Good - Main Application
◕	Average - Main Application
✱	Difficult - Main Application

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
112	**115672**(<Ø37mm)	M3.5 x 0.6 x 7.5	**415510**	**115664**	3.0 Nm	T15
112	**115673**(>Ø36mm)	M3.5 x 0.6 x 9	**415510**	**115664**	3.0 Nm	T15
113	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 Nm	T20
114	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 Nm	T20

Reference Key

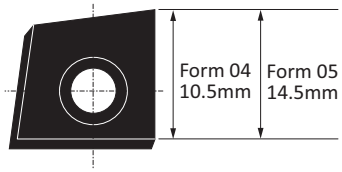
Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▽▽▽	Finishing - Extended Application

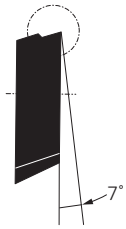
Insert Forms 04, 05

Carbide

880 Geometry

811 Geometry





		Carbide										
		Uncoated		Coated								
Steel	P										▼	▼
Stainless Steel	M										▽	▼
Cast Iron	K										▼	▼
Non-Ferrous Materials	N											▽
Titanium	S											▽
Hard Materials	H											

Geometry	Radius in	Radius mm	ISO Code	Description	Part No.	WHW16	WHC05	WHC18	WHC19	WHC79	WHC98	WHC111	WHC114	WHC136	WHC168	WHC198
880	0.016	0.40	–	F00404ML880	**397595**											●
880	0.016	0.40	–	F00504ML880	**397593**										✱	●
880	0.031	0.80	–	F00508ML880	**397594**										✱	●
811	0.031	0.80	–	F00508ML811	**397844**										✱	

Reference Key

Symbol	Machining Conditions
●	Average - Main Application
✱	Difficult - Main Application

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
04	**415977**	M4 x 0.7 x 7.9	**415510**	**115664**	3.0 Nm	T15
05	**415949**	M4 x 0.7 x 11	**415543**	**215150**	5.0 Nm	T20

Reference Key

Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application

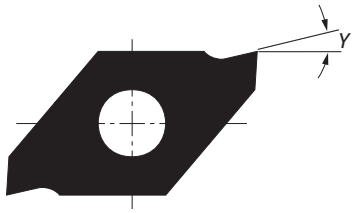
Radial Grooving Insert Forms 89, 90, 91

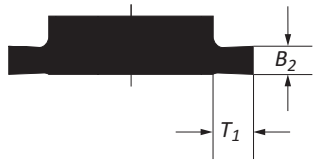
Carbide

Insert Form 89

Insert Form 90

Insert Form 91





							Carbide											
							Uncoated			Coated								
Steel	P															▼▼		
Stainless Steel	M															▽▽		
Cast Iron	K								▽▽							▼▼		
Non-Ferrous Materials	N								▼▼									
Titanium	S								▽▽							▼▼		
Hard Materials	H																	
	Insert Form	B_2	Y	T_1	Ring Width	Part No.	WHW01	WHW16	WHW20	WHC05	WHC18	WHC19	WHC79	WHC98	WHC111	WHC114	WHC136	WHC164
	89	0.048	13°	0.051	0.039	097257			●								●	
	89	0.056	13°	0.051	0.047	097258			●								●	
	89	0.068	13°	0.059	0.059	097259			●								●	
	90	0.078	9°	0.094	0.068	097256			●								●	
	90	0.090	9°	0.094	0.078	097253			●								●	
ⓘ	90	0.109	9°	0.094	0.098	097254			●								●	
	90	0.129	9°	0.094	0.118	097255			●								●	
	91	0.109	9°	0.094	0.098	097260			●								●	
	91	0.129	9°	0.094	0.118	097261			●								●	
	91	0.168	9°	0.129	0.157	097262			●								●	
	91	0.208	9°	0.177	0.196	097294			●								●	
	89	1.24	13°	1.30	1.00	097257			●								●	
	89	1.44	13°	1.30	1.20	097258			●								●	
	89	1.74	13°	1.50	1.50	097259			●								●	
	90	1.99	9°	2.40	1.75	097256			●								●	
	90	2.29	9°	2.40	2.00	097253			●								●	
ⓜ	90	2.79	9°	2.40	2.50	097254			●								●	
	90	3.29	9°	2.40	3.00	097255			●								●	
	91	2.79	9°	2.40	2.50	097260			●								●	
	91	3.29	9°	2.40	3.00	097261			●								●	
	91	4.29	9°	3.30	4.00	097262			●								●	
	91	5.29	9°	4.50	5.00	097294			●								●	

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
89	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 Nm	T8
90	**115531**	M3 x 0.5 x 7.5	**415514**	**115590**	1.2 Nm	T8
91	**115802**	M3 x 0.5 x 12	**415514**	**115590**	1.2 Nm	T8

Reference Key

Symbol	Machining Conditions
●	Average - Main Application

Reference Key

Symbol	Insert Type
▼▼	Universal - Main Application
▽▽	Universal - Extended Application

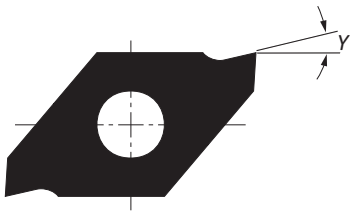
Radial Grooving Insert Forms 89, 90, 91

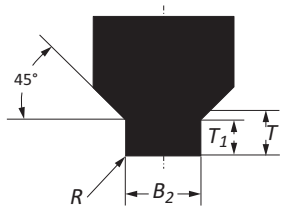
Carbide

Insert Form 89

Insert Form 90

Insert Form 91





										Carbide												
										Uncoated			Coated									
Steel									P												▼▼	
Stainless Steel									M												▽▽	
Cast Iron									K												▼▼	
Non-Ferrous Materials									N													
Titanium									S												▼▼	
Hard Materials									H													
	Insert Form	Boring Ø	B_2	Y	R	T_1	T	Ring Width	Part No.	WHW01	WHW16	WHW20	WHC05	WHC18	WHC19	WHC79	WHC98	WHC111	WHC114	WHC136	WHC164
	89	0.944 - 1.023	0.056	13°	0.004	0.021	0.025	0.047	297937											◕	
	89	1.102 - 1.181	0.056	13°	0.004	0.025	0.029	0.047	297938											◕	
	89	1.220 - 1.259	0.056	13°	0.004	0.030	0.035	0.047	297939											◕	
	89	1.338	0.068	13°	0.004	0.030	0.035	0.059	297940											◕	
	89	1.377 - 1.496	0.068	13°	0.004	0.036	0.041	0.059	297941											◕	
ⓘ	90	1.574 - 1.889	0.078	9°	0.006	0.046	0.051	0.068	297942											◕	
	90	1.968 - 2.480	0.090	9°	0.006	0.056	0.062	0.078	297943											◕	
	91	2.559 - 3.070	0.109	9°	0.008	0.056	0.062	0.098	297944											◕	
	91	3.149 - 3.228	0.109	9°	0.008	0.066	0.072	0.098	297945											◕	
	91	3.346 - 3.937	0.129	9°	0.008	0.066	0.072	0.118	297946											◕	
	91	4.015 - 5.708	0.168	9°	0.008	0.076	0.084	0.157	297947											◕	
	89	24.00 - 26.00	1.44	13°	0.10	0.54	0.65	1.20	297937											◕	
	89	28.00 - 30.00	1.44	13°	0.10	0.64	0.75	1.20	297938											◕	
	89	31.00 - 32.00	1.44	13°	0.10	0.78	0.91	1.20	297939											◕	
	89	34.00	1.74	13°	0.10	0.78	0.91	1.50	297940											◕	
	89	35.00 - 38.00	1.74	13°	0.10	0.93	1.06	1.50	297941											◕	
ⓜ	90	40.00 - 48.00	1.99	9°	0.15	1.18	1.31	1.75	297942											◕	
	90	50.00 - 63.00	2.29	9°	0.15	1.43	1.58	2.00	297943											◕	
	91	65.00 - 78.00	2.79	9°	0.20	1.43	1.58	2.50	297944											◕	
	91	80.00 - 82.00	2.79	9°	0.20	1.68	1.84	2.50	297945											◕	
	91	85.00 - 100.00	3.29	9°	0.20	1.68	1.84	3.00	297946											◕	
	91	102.00 - 145.00	4.29	9°	0.20	1.94	2.14	4.00	297947											◕	

Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
89	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 Nm	T8
90	**115531**	M3 x 0.5 x 7.5	**415514**	**115590**	1.2 Nm	T8
91	**115802**	M3 x 0.5 x 12	**415514**	**115590**	1.2 Nm	T8

Reference Key

Symbol	Machining Conditions
◕	Average - Main Application

Reference Key

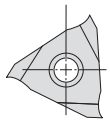
Symbol	Insert Type
▼▼	Universal - Main Application
▽▽	Universal - Extended Application

Axial Grooving Insert Blanks Form 304

Carbide

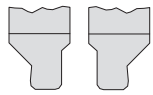
		Carbide											
		Uncoated			Coated								
Steel	P												
Stainless Steel	M												
Cast Iron Non-Ferrous Materials	K			▽▽									
Non-Ferrous Materials	N			▼▼									
Titanium	S			▽▽									
Hard Materials	H												

Geometry	S_1	Part No.	WHW01	WHW16	WHW20	WHC05	WHC18	WHC19	WHC79	WHC98	WHC111	WHC114	WHC136	WHC164
	0.137	297150			◕									
	0.169	297151			◕									
	0.208	297152			◕									
	0.255	297154			◕									
	0.295	297493			◕									
	0.137	397850			◕									
	0.169	397851			◕									
	0.208	397852			◕									
	0.255	397853			◕									
	0.295	397854			◕									
	3.50	297150			◕									
	4.30	297151			◕									
	5.30	297152			◕									
	6.50	297154			◕									
	7.50	297493			◕									
	3.50	397850			◕									
	4.30	397851			◕									
	5.30	397852			◕									
	6.50	397853			◕									
	7.50	397854			◕									



Other insert types available upon request.

Two-Sided Cutting Form



Single-Sided Cutting Form (Right / Left)

Two-Sided Angle Cutting

With Corner Radius

Full Radius

Reference Key

Symbol	Machining Conditions
◕	Average - Main Application

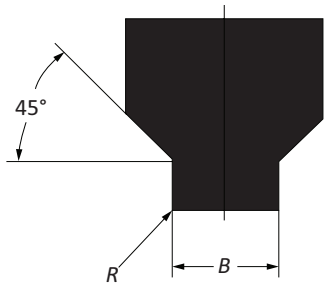
Insert Form	Countersunk Screw		Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
304	215392	M5 x 0.8 x 12.9	415543	215150	5.0 Nm	T20

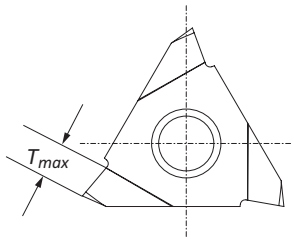
Reference Key

Symbol	Insert Type
▼▼	Universal - Main Application
▽▽	Universal - Extended Application

Axial Grooving O-Rings for Single Cutter Tools Insert Form 304

Carbide





									Carbide												
									Uncoated			Coated									
Steel	P																		▼▼		
Stainless Steel	M																		▽▽		
Cast Iron Non-Ferrous Materials	K																		▼▼		
Non-Ferrous Materials	N																				
Titanium	S																		▼▼		
Hard Materials	H																				
	Geometry	Boring Range	O-Ring Cross Section	*B + 0.05*	B_{max}	T_{max}	*R ± 0.05*	Part No.	WHW01	WHW16	WHW20	WHC05	WHC18	WHC19	WHC79	WHC98	WHC111	WHC114	WHC136	WHC164
ⓘ		0.787 - 2.125	0.039	0.059	0.059	0.064	0.008	**297969**											●	
		0.787 - 2.125	0.059	0.086	0.086	0.092	0.012	**297970**											●	
		0.787 - 2.125	0.078	0.114	0.114	0.124	0.016	**297971**											●	
		0.787 - 2.125	0.098	0.137	0.137	0.151	0.020	**297972**											●	
		0.787 - 2.125	0.118	0.161	0.161	0.175	0.024	**297973**											●	
		0.787 - 2.125	0.157	0.212	0.212	0.194	0.031	**297974**											●	
		0.787 - 2.125	0.196	0.267	0.267	0.194	0.031	**297975**											●	
ⓜ		20 - 54	1.00	1.50	1.50	1.65	0.20	**297969**											●	
		20 - 54	1.50	2.20	2.20	2.35	0.30	**297970**											●	
		20 - 54	2.00	2.90	2.90	3.15	0.40	**297971**											●	
		20 - 54	2.50	3.50	3.50	3.85	0.50	**297972**											●	
		20 - 54	3.00	4.10	4.10	4.45	0.60	**297973**											●	
		20 - 54	4.00	5.40	5.40	4.95	0.80	**297974**											●	
		20 - 54	5.00	6.80	6.80	4.95	0.80	**297975**											●	

 Insert Form	 Countersunk Screw		 Torque Driver	Service Key	Technical Data: Torque	Key Size
304	**215392**	M5 x 0.8 x 12.9	**415543**	**215150**	5.0 Nm	T20

Reference Key

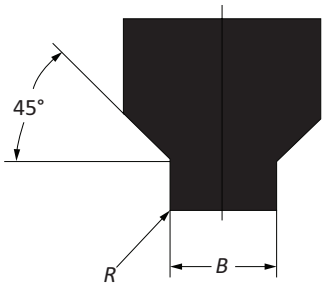
Symbol	Machining Conditions
●	Average - Main Application

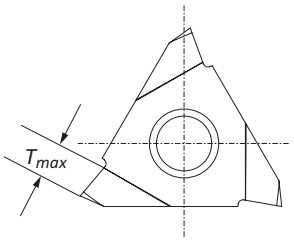
Reference Key

Symbol	Insert Type
▼▼	Universal - Main Application
▽▽	Universal - Extended Application

Axial Grooving O-Rings for Twin Cutter Tools Insert Form 304

Carbide





											Carbide											
											Uncoated			Coated								
Steel	P																			▼▼		
Stainless Steel	M																			▽▽		
Cast Iron Non-Ferrous Materials	K																			▼▼		
Non-Ferrous Materials	N																					
Titanium	S																			▼▼		
Hard Materials	H																					
	Geometry	Boring Range	O-Ring Cross Section	*B + 0.05*	B_{max}	T_{max}	*R ± 0.05*	Part No.	WHW01	WHW16	WHW20	WHC05	WHC18	WHC19	WHC79	WHC98	WHC111	WHC114	WHC136	WHC164
i		2.086 - 39.37	0.039 - 0.059	0.059	0.098	0.064	0.008	**297976**											●	
		2.086 - 39.37	0.039 - 0.059	0.086	0.145	0.092	0.012	**297977**											●	
		2.086 - 39.37	0.039 - 0.059	0.133	0.224	0.143	0.020	**297978**											●	
		2.086 - 39.37	0.039 - 0.059	0.212	0.358	0.194	0.031	**297979**											●	
m		53.00 - 1000.00	1.00 - 1.50	1.50	2.50	1.65	0.20	**297976**											●	
		53.00 - 1000.00	1.50 - 2.40	2.20	3.70	2.35	0.30	**297977**											●	
		53.00 - 1000.00	2.40 - 4.00	3.40	5.70	3.65	0.50	**297978**											●	
		53.00 - 1000.00	4.00 - 5.50	5.40	9.10	4.95	0.80	**297979**											●	

Reference Key

Symbol	Machining Conditions
●	Average - Main Application

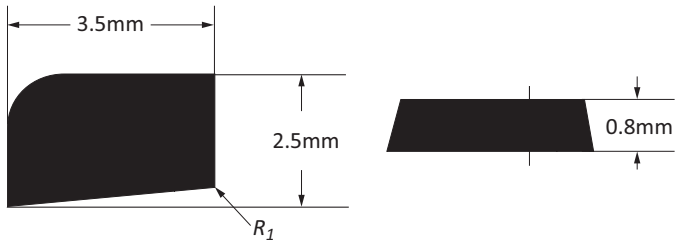
					Technical Data	
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
304	**215392**	M5 x 0.8 x 12.9	**415543**	**215150**	5.0 Nm	T20

Reference Key

Symbol	Insert Type
▼▼	Universal - Main Application
▽▽	Universal - Extended Application

Insert Form 325

Carbide



		Carbide												
		Uncoated			Coated									
Steel	P											▼▼▼		
Stainless Steel	M											▼▼▼		
Cast Iron Non-Ferrous Materials	K			▼▼▼								▽▽▽		
Non-Ferrous Materials	N			▽▽▽										
Titanium	S											▼▼▼		
Hard Materials	H													

	Geometry	Radius R_1	Description	Part No.	WHW01	WHW16	WHW20	WHC05	WHC18	WHC19	WHC79	WHC98	WHC111	WHC114	WHC136	WHC164
i	860	0.004	**F32501CN860**	**097831**			●								●	
m	860	0.10	**F32501CN860**	**097831**			●								●	

Insert Form	Countersunk Screw		Clamping Jaw	Torque Driver	Service Key	Technical Data: Torque	Technical Data: Key Size
325	**315321**	M1.6 x 0.35 x 3	**315320**	-	**315322**	0.3 Nm	0.5x3

Reference Key

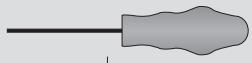
Symbol	Machining Conditions
●	Average - Main Application

Reference Key

Symbol	Insert Type
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

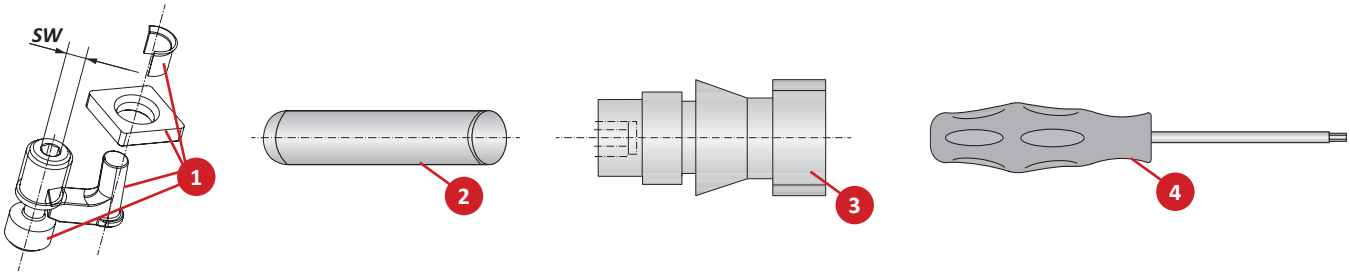
Insert Accessories

Countersunk Screws | Torque Drivers

						Technical Data	
Insert Form	Countersunk Screw		Clamping Jaw	Torque Driver	Service Key	Torque	Key Size
04	**415977**	M4 x 0.7 x 7.9	–	**415510**	**115664**	3.0 Nm	T15
05	**415949**	M4 x 0.7 x 11	–	**415543**	**215150**	5.0 Nm	T20
20	**115535**	M2 x 0.4 x 5	–	**415508**	**115591**	0.9 Nm	T7
39	**115673**	M3.5 x 0.6 x 9	–	**414510**	**115664**	3.0 Nm	T15
47	**315324**	M1.8 x 0.35 x 4	**315323**	**–**	**115537**	0.5 Nm	T6
89	**115676**	M2.5 x 0.45 x 5	–	**415514**	**115590**	1.2 Nm	T8
90	**115531**	M3 x 0.5 x 7.5	–	**415514**	**115590**	1.2 Nm	T8
91	**115802**	M3 x 0.5 x 12	–	**415514**	**115590**	1.2 Nm	T8
101	**115676**	M2.5 x 0.45 x 5	–	**415514**	**115590**	1.2 Nm	T8
103	**115672(<Ø37mm)**	M3.5 x 0.6 x 7.5	–	**415510**	**115664**	3.0 Nm	T15
103	**115673(>Ø36mm)**	M3.5 x 0.6 x 9	–	**415510**	**115664**	3.0 Nm	T15
104	**215149**	M4.5 x 0.75 x 11.5	–	**415543**	**215150**	5.0 Nm	T20
105	**215149**	M4.5 x 0.75 x 11.5	–	**415543**	**215150**	5.0 Nm	T20
111	**115531**	M3 x 0.5 x 7.5	–	**415514**	**115590**	1.2 Nm	T8
112	**115672(<Ø37mm)**	M3.5 x 0.6 x 7.5	–	**415510**	**115664**	3.0 Nm	T15
112	**115673(>Ø36mm)**	M3.5 x 0.6 x 9	–	**415510**	**115664**	3.0 Nm	T15
113	**215149**	M4.5 x 0.75 x 11.5	–	**415543**	**215150**	5.0 Nm	T20
114	**215149**	M4.5 x 0.75 x 11.5	–	**415543**	**215150**	5.0 Nm	T20
161	**115676**	M2.5 x 0.45 x 5	–	**415514**	**115590**	1.2 Nm	T8
163	**115673**	M3.5 x 0.6 x 9	–	**415510**	**115664**	3.0 Nm	T15
211	**215377**	M2 x 0.4 x 4	–	**415507**	**115537**	0.6 Nm	T6
262	**215987**	M2.5 x 0.45 x 6	–	**415514**	**115590**	1.2 Nm	T8
264	**115673**	M3.5 x 0.6 x 9	–	**415510**	**115664**	3.0 Nm	T15
304	**215392**	M5 x 0.8 x 12.9	–	**415543**	**215150**	5.0 Nm	T20
325	**315321**	M1.6 x 0.35 x 3	**315320**	**–**	**315322**	0.3 Nm	0.5x3
394	**215915**	M2.5 x 0.45 x 7	–	**415514**	**115590**	1.1 Nm	T8
395	**215985**	M3 x 0.5 x 7.5	–	**415514**	**115590**	1.2 Nm	T8
396	**415320**	M3.5 x 0.6 x 11	–	**415510**	**115664**	3.0 Nm	T15
397	**215149**	M4.5 x 0.75 x 11.5	–	**415543**	**215150**	5.0 Nm	T20

Insert Accessories

Countersunk Screws | Torque Drivers



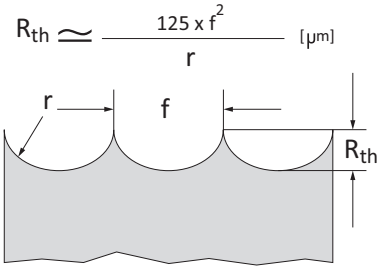
Insert Form	1. Clamping Set		2. Mounting Arbor for Sleeve	3. Clamping Bolt		4. Service Key	
	Part No.	Key Size	Part No.	Part No.	Key Size	Part No.	Key Size
75	**315004**	s3	**415642**	**–**	–	**415578**	s3
123	**315003**	s3	**415642**	**115775**	s2.5	**415578**	s3
						115575	s2.5
124	**315054**	s3	**415644**	**115776**	s3	**415578**	s3
						115630	s3

Technical Information

Surface Finish | General Formulas

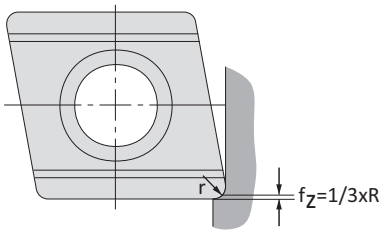
The corner radius of replaceable inserts is very important in finish machining. Large corner radii (0.031") (0.8mm) or higher) allow for high feed rates with good surface quality.

The expected surface quality can be estimated by using the function of corner radius and feed rate formula.



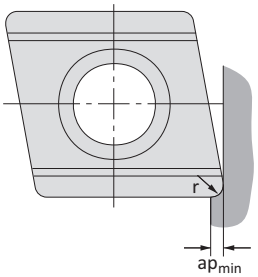
1. The larger the corner radius and the lighter the feed rate is, the better the surface quality.

2. If the feed is approximately 1/3 of the corner radius, the better the machining time and surface finish will be in finish machining applications.



3. A larger corner radius increases radial forces, which can negatively affect dimensional accuracy. Large corner radii also require increased depth of cut.

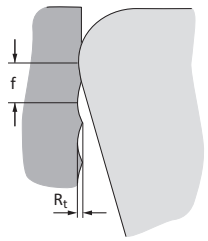
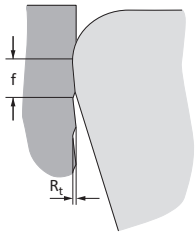
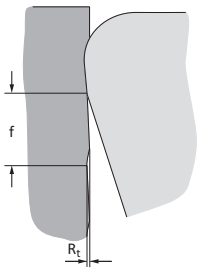
Minimum depth of cut (a_p) should at least match the corner radius. This minimizes the radial forces.



General Formulas		
Cutting Speed	$Vc = \frac{D \times \pi \times n}{1000}$	**(m/min)**
RPM	$n = \frac{Vc \times 1000}{D \times \pi}$	**(min^{-1})**
Feed Speed	$V_f = f \times n$	**(mm/min)**
	D = Machining Ø	**(mm)**
	f= Feed	**(mm/u)**
	V_c= Cutting Speed	**(m/min)**
	n = RPM	**(min^{-1})**

Technical Information

Wiper Geometries

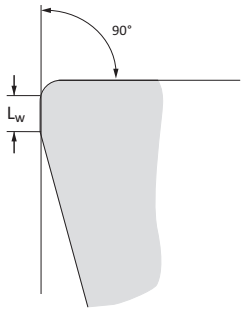
Replaceable Inserts with Wiper Geometry	
Insert with conventional corner radius with feed (f)	
Insert with wiper geometry radius with same feed (f)	
Insert with wiper geometry with increased feed (f)	

Wiper Geometry for 90° Approach Angle

Replaceable inserts produce a right-angled step at the bottom of the hole. When used in a Wohlhaupter standard insert holder that has a 90° approach angle, the secondary wiper cutting edge is nearly parallel with the wall of the hole.

Wiper geometry for 90° approach angle

Lw = length of the wiper secondary cutting edge

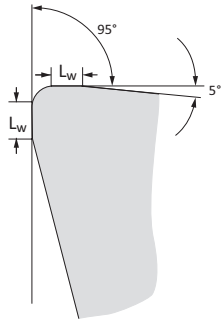


Wiper Geometry for 95° Approach Angle

Wiper inserts can also be used with 95° insert holders, which are included in the Wohlhaupter standard insert range.

Wiper geometry for 95° approach angle (left and right cutting)

Lw = length of the secondary wiper cutting edge

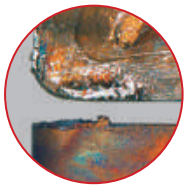


Boring Insert Wear Patterns

Built-up Edge

Potential Problem

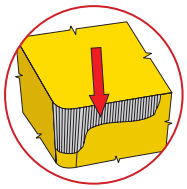
- Machined material adheres to the cutting edge of insert
- When it breaks, the edge becomes brittle and cracks
- This can negatively affect machined surface



Possible Solution

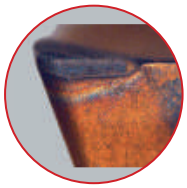
- Increase temperature by increasing speed or feed
- Use an insert with higher lubricity coating
- Choose a freer cutting insert geometry

Flank Wear



Potential Problem

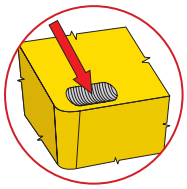
- Caused by friction between the insert and machined material
- It cannot be fully eliminated, but it can be reduced



Possible Solution

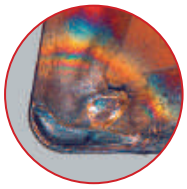
- Use a more wear-resistant grade
- Reduce cutting speed
- Use coolant or increase coolant flow to the cutting edge

Cratering



Potential Problem

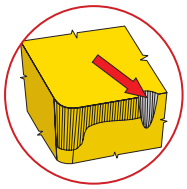
- Appears when the geometry is too neutral or material is too hard for the substrate



Possible Solution

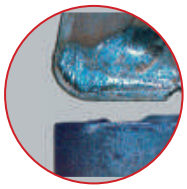
- Use a more wear-resistant grade
- Reduce cutting speed or feed
- Use coolant or increase coolant flow to the cutting edge

Notch Wear



Potential Problem

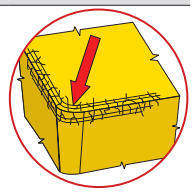
- Occurs when cutting edge of insert comes in contact with surface of machined material
- Caused by hardening of surface layer of material and burrs
- Often appears on stainless austenitic steels and other high-temperature alloy steels



Possible Solution

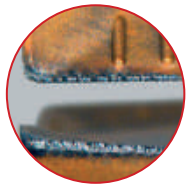
- Use a more wear-resistant grade (Al_2O_3)
- Select a tool with a smaller approach angle
- Vary the radial depth of cut
- Use coolant or increase coolant flow to the cutting edge

Comb Cracks



Potential Problem

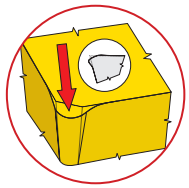
- Caused by high stress on the cutting edge during interrupted cuts



Possible Solution

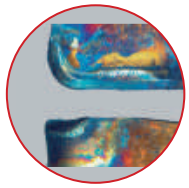
- Switch off coolant or increase coolant flow to obtain an even temperature level
- Reduce cutting speed
- Use tougher insert grade

Plastic Deformation



Potential Problem

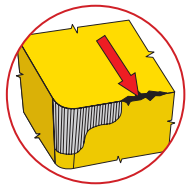
- Caused by high thermal stress on the cutting edge from excessive feed rate and cutting speed



Possible Solution

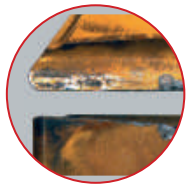
- Use a more wear-resistant grade
- Reduce cutting speed
- Reduce feed rate
- Use coolant or increase coolant flow to the cutting edge

Chipping of Cutting Edge (Out of Cut)



Potential Problem

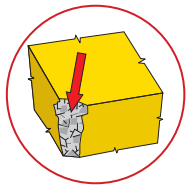
- Caused by poor chip control
- Can damage the portion of the cutting edge that might not be engaged in the cut



Possible Solution

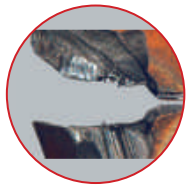
- Change feed rate to gain chip control
- Select a tool with a different approach angle
- Use an insert with a different geometry
- Use a tougher grade of carbide

Insert Fracture



Potential Problem

- Caused by workpiece material, grade, condition, the rigidity of the machine-tool workpiece, extent of wear, and cutting conditions



Possible Solution

- Use a tougher grade of carbide
- Reduce the feed and depth of cut
- Use an insert with a stronger chip breaker
- Use an insert with a bigger corner radius

Notes

SECTION

B10-I

Modular Tool Holders

Wohlhaupter® Modular Tool Holders

Adapter Sleeves | Drill Chucks | Collet Chucks | Milling Arbors | Holding Arbors | Hydraulic Clamping Chucks
Tapping Chucks | Boring Bar Blanks

Clamping Tools with MVS Connection

Wohlhaupter offers a complete range of tool holders that incorporates the MVS connection. Our clamping tools allow for smaller MVS tools to connect and provide a quick and inexpensive alternative to special tooling. The clamping tools also feature coolant-through capabilities.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.

This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury.

When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words.

⚠ WARNING

WARNING (shown above) means that failure to follow the precautions in this message could result in tool failure and serious injury.

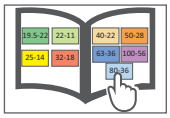
NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

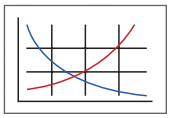
Visit www.alliedmachine.com for the most up-to-date information and procedures.

Applicable Industries

Reference Icons
The following icons will appear throughout the catalog to help you navigate between products.



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s)



Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring

Coolant-Through Option
Indicates that the product is coolant through

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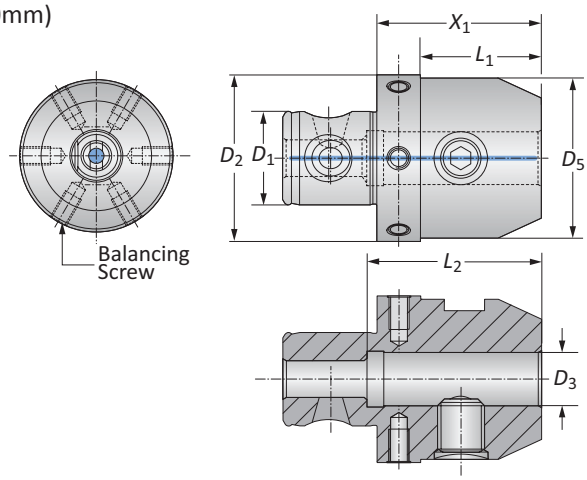
Adapter Side Lock for Cylindrical Shanks DIN 1835B

Clamping Diameter Range: 0.236" - 1.575" (6.00mm - 40.00mm)

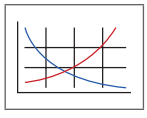


	MVS Connection $D_2 \mid D_1$	Clamping Range D_3	Adapter Sleeve X_1	L_1	L_2	D_5	Weight	Balancing Screw	Part No.
	32 - 18	0.236	1.417	0.906	1.575	0.984	0.441 (lbs)	M5 x .8 x 6	**228022**
	32 - 18	0.315	1.417	0.906	1.575	1.102	0.441 (lbs)	M5 x .8 x 6	**228023**
	32 - 18	0.394	1.890	–	1.732	1.378	0.661 (lbs)	M5 x .8 x 6	**228024**
	40 - 22	0.472	2.047	–	1.929	1.654	1.102 (lbs)	M5 x .8 x 8	**228025**
	40 - 22	0.551	2.126	–	1.929	1.732	1.323 (lbs)	M5 x .8 x 8	**228026**
	50 - 28	0.236	1.417	0.906	1.575	0.984	0.882 (lbs)	M6 x 1 x 10	**162015**
	50 - 28	0.315	1.417	0.906	1.575	1.102	0.882 (lbs)	M6 x 1 x 10	**162016**
ⓘ	50 - 28	0.394	1.732	1.220	1.732	1.378	1.102 (lbs)	M6 x 1 x 10	**162017**
	50 - 28	0.472	1.732	1.220	1.929	1.654	1.102 (lbs)	M6 x 1 x 10	**162018**
	50 - 28	0.630	1.929	1.417	2.047	1.890	2.205 (lbs)	M6 x 1 x 10	**162019**
	50 - 28	0.709	1.929	1.417	2.047	1.890	2.205 (lbs)	M6 x 1 x 10	**228014**
	50 - 28	0.787	2.362	–	2.126	2.047	2.646 (lbs)	M6 x 1 x 10	**162020**
	63 - 36	0.787	1.929	1.417	2.126	2.047	2.425 (lbs)	M6 x 1 x 10	**161024**
	63 - 36	0.984	2.953	–	2.323	2.480	4.189 (lbs)	M6 x 1 x 15	**161026**
	63 - 36	1.260	2.953	–	2.480	2.835	4.851 (lbs)	M6 x 1 x 15	**161027**
	80 - 36	1.575	3.346	–	2.874	3.150	5.512 (lbs)	M6 x 1 x 15	**161028**
	32 - 18	6.00	36.00	23.00	40.00	25.00	0.20 (kg)	M5 x .8 x 6	**228022**
	32 - 18	8.00	36.00	23.00	40.00	28.00	0.20 (kg)	M5 x .8 x 6	**228023**
	32 - 18	10.00	48.00	–	44.00	35.00	0.30 (kg)	M5 x .8 x 6	**228024**
	40 - 22	12.00	52.00	–	49.00	42.00	0.50 (kg)	M5 x .8 x 8	**228025**
	40 - 22	14.00	54.00	–	49.00	44.00	0.60 (kg)	M5 x .8 x 8	**228026**
	50 - 28	6.00	36.00	23.00	40.00	25.00	0.40 (kg)	M6 x 1 x 10	**162015**
	50 - 28	8.00	36.00	23.00	40.00	28.00	0.40 (kg)	M6 x 1 x 10	**162016**
ⓜ	50 - 28	10.00	44.00	31.00	44.00	35.00	0.50 (kg)	M6 x 1 x 10	**162017**
	50 - 28	12.00	44.00	31.00	49.00	42.00	0.50 (kg)	M6 x 1 x 10	**162018**
	50 - 28	16.00	49.00	36.00	52.00	48.00	1.00 (kg)	M6 x 1 x 10	**162019**
	50 - 28	18.00	49.00	36.00	52.00	48.00	1.00 (kg)	M6 x 1 x 10	**228014**
	50 - 28	20.00	60.00	–	54.00	52.00	1.20 (kg)	M6 x 1 x 10	**162020**
	63 - 36	20.00	49.00	36.00	54.00	52.00	1.10 (kg)	M6 x 1 x 10	**161024**
	63 - 36	25.00	75.00	–	59.00	63.00	1.90 (kg)	M6 x 1 x 15	**161026**
	63 - 36	32.00	75.00	–	63.00	72.00	2.20 (kg)	M6 x 1 x 15	**161027**
	80 - 36	40.00	85.00	–	73.00	80.00	2.50 (kg)	M6 x 1 x 15	**161028**

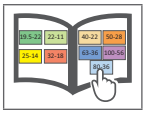
NOTE: Balanced 10 gmm/kg

NOTE: When using a ball pressure screw instead of a thread pin, it's similar to DIN 1835E, without axial adjustment.
See ball pressure screws on page B10-I: 9.

B10-M: 12-15
Key on B10-I: 1



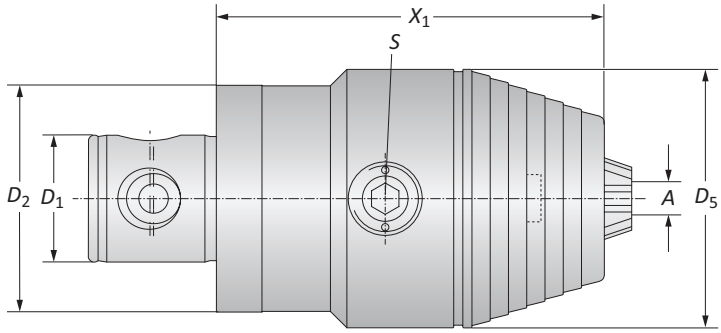
B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

Drill Chucks for Clockwise & Counterclockwise Rotation

Clamping Diameter Range: 0.019" - 0.629" (0.50mm - 16.00mm)



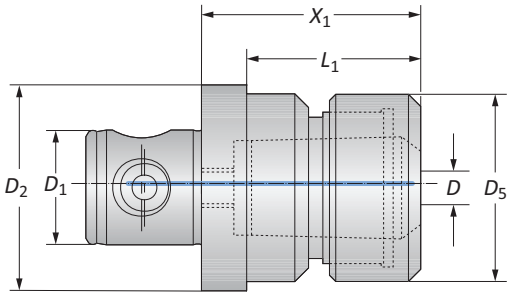
	MVS Connection D_2 | D_1	Clamping Range A	Drill Chuck X_1	D_5	S	Weight	Part No.
ⓘ	50 - 28	0.019 - 0.511	3.150	1.969	s6 / B	2.425 (lbs)	**209088**
ⓘ	50 - 28	0.098 - 0.629	3.346	2.244	s6 / B	2.866 (lbs)	**209089**
ⓘ	63 - 36	0.019 - 0.511	3.150	1.969	s6 / B	2.866 (lbs)	**209090**
ⓘ	63 - 36	0.098 - 0.629	3.346	2.244	s6 / B	3.307 (lbs)	**209091**
ⓜ	50 - 28	0.50 - 13.00	80.00	50.00	s6 / B	1.10 (kg)	**209088**
ⓜ	50 - 28	2.50 - 16.00	85.00	57.00	s6 / B	1.30 (kg)	**209089**
ⓜ	63 - 36	0.50 - 13.00	80.00	50.00	s6 / B	1.30 (kg)	**209090**
ⓜ	63 - 36	2.50 - 16.00	85.00	57.00	s6 / B	1.50 (kg)	**209091**

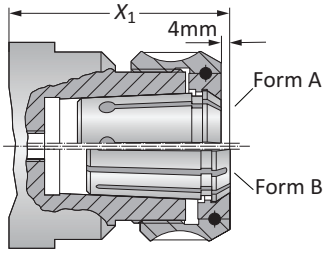
B10-M: 12-15
Key on B10-I:1
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Collet Chucks ISO 10898 (DIN 6388) | ISO 15488 (DIN 6499)

Clamping Diameter Range: 0.078" - 1.259" (2.00mm - 32.00mm)

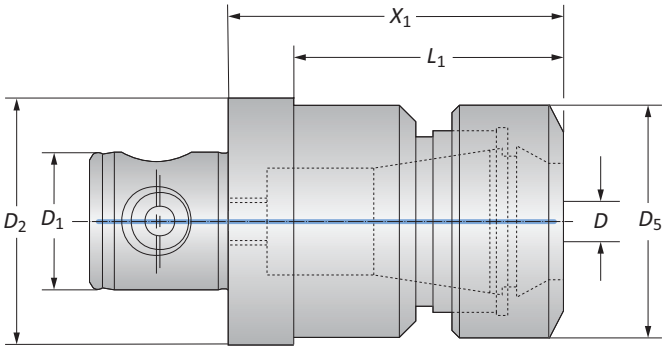




Collet Chucks ISO 10897 (DIN 6388) | Diameter Range: 0.078" - 1.259" (2.00mm - 32.00mm)

	MVS Connection	Clamping Range		Collet Chuck				
	D_2 | D_1	D	Nominal Size	X_1*	L_1	D_5	Weight	Part No.
ⓘ	40 - 22	0.078 - 0.629	16	2.520	–	1.693	1.102 (lbs)	**209082**
	50 - 28	0.078 - 0.629	16	2.480	1.968	1.693	1.984 (lbs)	**162011**
	50 - 28	0.078 - 0.984	25	2.913	–	2.362	2.205 (lbs)	**209083**
	63 - 36	0.078 - 0.984	25	2.913	–	2.362	3.087 (lbs)	**161016**
	63 - 36	0.157 - 1.259	32	3.504	–	2.835	3.969 (lbs)	**161098**
ⓜ	40 - 22	2.00 - 16.00	16	64.00	–	43.00	0.50 (kg)	**209082**
	50 - 28	2.00 - 16.00	16	63.00	50.00	43.00	0.90 (kg)	**162011**
	50 - 28	2.00 - 25.00	25	74.00	–	60.00	1.00 (kg)	**209083**
	63 - 36	2.00 - 25.00	25	74.00	–	60.00	1.40 (kg)	**161016**
	63 - 36	4.00 - 32.00	32	89.00	–	72.00	1.80 (kg)	**161098**

***X_1** Clamping nut with ball-bearing



Collet Chucks ISO 15488 (DIN 6499) | Diameter Range: 0.039" - 1.023" (1.00mm - 26.00mm)

	MVS Connection	Clamping Range		Collet Chuck				
	D_2 | D_1	D	Nominal Size	X_1*	L_1	D_5	Weight	Part No.
ⓘ	32 - 18	0.039 - 0.393	ER 16	2.125	1.614	1.102	0.441 (lbs)	**228020**
	40 - 22	0.078 - 0.629	ER 25	2.953	–	1.654	1.323 (lbs)	**228021**
	50 - 28	0.078 - 0.629	ER 25	2.953	2.441	1.654	1.764 (lbs)	**228003**
	50 - 28	0.078 - 0.787	ER 32	2.992	–	1.969	1.764 (lbs)	**228004**
	63 - 36	0.078 - 0.787	ER 32	2.992	2.480	1.969	2.646 (lbs)	**228007**
	63 - 36	0.157 - 1.023	ER 40	3.465	–	2.480	2.646 (lbs)	**228006**
ⓜ	32 - 18	1.00 - 10.00	ER 16	54.00	4100	28.00	0.20 (kg)	**228020**
	40 - 22	2.00 - 16.00	ER 25	75.00	–	42.00	0.60 (kg)	**228021**
	50 - 28	2.00 - 16.00	ER 25	75.00	62.00	42.00	0.80 (kg)	**228003**
	50 - 28	2.00 - 20.00	ER 32	76.00	–	50.00	0.80 (kg)	**228004**
	63 - 36	2.00 - 20.00	ER 32	76.00	63.00	50.00	1.20 (kg)	**228007**
	63 - 36	4.00 - 26.00	ER 40	88.00	–	63.00	1.20 (kg)	**228006**

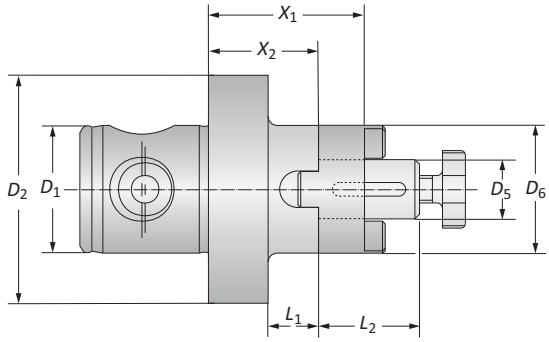
***X_1** Clamping nut with sliding ring

B10-M: 12-15
Key on B10-I: 1
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Milling Machine Arbors

For Milling Cutters with Longitudinal or Transverse Drive | Shell Mill Adapter Range: 0.512" - 1.575" (13.00mm - 40.00mm)



	MVS Connection $D_2 \mid D_1$	Adapter Range D_5	Milling Arbor X_1	X_2	L_1	L_2	D_6	Weight	Part No.
	50 - 28	0.512	1.339	0.945	0.433	0.866	1.102	0.882 (lbs)	**162002**
	50 - 28	0.630	1.575	1.181	0.669	1.063	1.260	1.102 (lbs)	**162003**
	50 - 28	0.866	1.575	1.102	0.591	1.220	1.575	1.323 (lbs)	**162004**
	63 - 36	0.630	1.575	1.181	0.669	1.063	1.260	1.764 (lbs)	**161002**
	63 - 36	0.866	1.575	1.102	0.591	1.220	1.575	1.984 (lbs)	**161003**
	63 - 36	1.063	1.575	1.102	0.591	1.299	1.890	2.425 (lbs)	**161004**
	63 - 36	1.260	1.575	1.024	0.512	1.496	2.283	2.866 (lbs)	**161005**
	80 - 36	1.575	2.087	1.535	–	1.614	2.756*	5.733 (lbs)	**161006**
	50 - 28	13.00	34.00	24.00	11.00	22.00	28.00	0.40 (kg)	**162002**
	50 - 28	16.00	40.00	30.00	17.00	27.00	32.00	0.50 (kg)	**162003**
	50 - 28	22.00	40.00	28.00	15.00	31.00	40.00	0.60 (kg)	**162004**
	63 - 36	16.00	40.00	30.00	17.00	27.00	32.00	0.80 (kg)	**161002**
	63 - 36	22.00	40.00	28.00	15.00	31.00	40.00	0.90 (kg)	**161003**
	63 - 36	27.00	40.00	28.00	15.00	33.00	48.00	1.10 (kg)	**161004**
	63 - 36	32.00	40.00	26.00	13.00	38.00	58.00	1.30 (kg)	**161005**
	80 - 36	40.00	53.00	39.00	–	41.00	70.00*	2.60 (kg)	**161006**

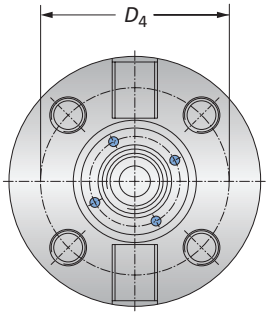
*Ø 2.756" (70.00mm) with clutch drive ring

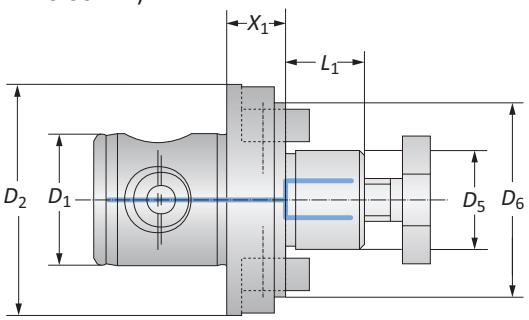
B10-M: 12-15
Key on B10-I:1
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Holding Arbors for Milling Cutters

Central Coolant Feed | Shell Mill Adapter Range: 0.630" - 1.575" (16.00mm - 40.00mm)





	MVS Connection $D_2 \mid D_1$	Adapter Range D_5	Holding Arbor X_1	L_1	D_4	D_6	Weight	Part No.
	50 - 28	0.630	0.630	0.669	–	1.575	0.882 (lbs)	**162032**
	50 - 28	0.866	0.630	0.748	–	1.969	1.102 (lbs)	**162033**
i	63 - 36	1.063	0.630	0.827	–	2.362	1.764 (lbs)	**161082**
	80 - 36	1.260	0.630	0.945	–	3.071	2.425 (lbs)	**209080**
	80 - 36	1.575	0.748	1.063	2.626	3.504	3.307 (lbs)	**209081**
	50 - 28	16.00	16.00	17.00	–	40.00	0.40 (kg)	**162032**
	50 - 28	22.00	16.00	19.00	–	50.00	0.50 (kg)	**162033**
m	63 - 36	27.00	16.00	21.00	–	60.00	0.80 (kg)	**161082**
	80 - 36	32.00	16.00	24.00	–	78.00	1.10 (kg)	**209080**
	80 - 36	40.00	19.00	27.00	66.70	89.00	1.50 (kg)	**209081**

NOTE: See page B10-G: 15 for holding arbor with MVS 100 - 56 connection

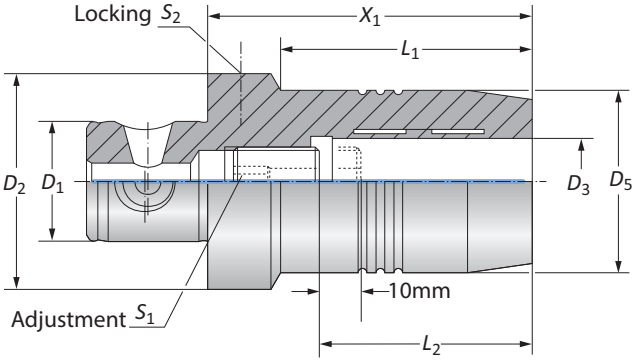
B10-M: 12-15
Key on B10-I: 1

B10: vi-vii

i = Imperial (in)
m = Metric (mm)

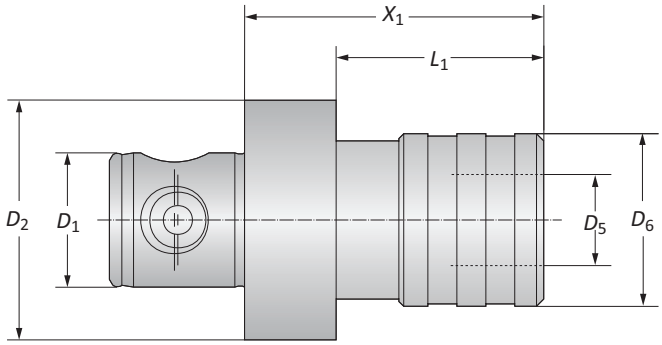
Clamping Chucks | Tapping Chucks

Clamping Range: 0.787" (20.00mm)



Coolant Through Hydraulic Clamping Chucks

	MVS Connection	Clamping Range	Clamping Chuck							
	D_2 | D_1	D_3	X_1	D_5	L_1	L_2	S_1	S_2	Weight	Part No.
ⓘ	50 - 28	0.787	2.953	1.654	2.283	2.008	s6	s5	1.764 (lbs)	**209044**
ⓘ	63 - 36	0.787	2.953	1.654	2.087	2.008	s5	s5	2.425 (lbs)	**209045**
ⓜ	50 - 28	20.00	75.00	42.00	58.00	51.00	s6	s5	0.80 (kg)	**209044**
ⓜ	63 - 36	20.00	75.00	42.00	53.00	51.00	s5	s5	1.10 (kg)	**209045**



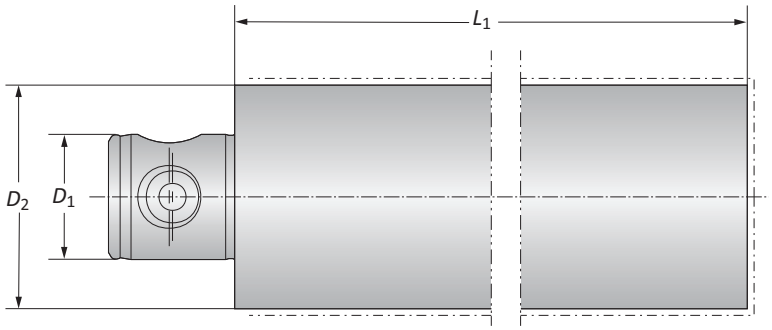
Tapping Chucks (Non-Coolant)

	MVS Connection	Quick Change Adapters		Tapping Chucks				Length Compensation			
	D_2 | D_1	For Taps	Nominal Size	X_1	L_1	D_5	D_6	Pressure	Tension	Weight	Part No.
ⓘ	50 - 28	M 3 - M 12	1	2.441	1.929	0.748	1.634	0.295	0.295	1.543 (lbs)	**209098**
ⓘ	50 - 28	M 6 - M 20	2	3.701	–	1.220	2.374	0.394	0.394	2.425 (lbs)	**209099**
ⓘ	63 - 36	M 3 - M 12	1	2.205	1.693	0.748	1.634	0.295	0.295	1.764 (lbs)	**231005**
ⓘ	63 - 36	M 6 - M 20	2	3.150	2.638	1.220	2.374	0.394	0.394	2.866 (lbs)	**231006**
ⓘ	63 - 36	M 14 - M 33	3	5.984	–	1.890	3.386	0.689	0.689	9.040 (lbs)	**231007**
ⓜ	50 - 28	M 3 - M 12	1	62.00	49.00	19.00	41.50	7.50	7.50	0.70 (kg)	**209098**
ⓜ	50 - 28	M 6 - M 20	2	94.00	–	31.00	60.30	10.00	10.00	1.10 (kg)	**209099**
ⓜ	63 - 36	M 3 - M 12	1	56.00	43.00	19.00	41.50	7.50	7.50	0.80 (kg)	**231005**
ⓜ	63 - 36	M 6 - M 20	2	80.00	67.00	31.00	60.30	10.00	10.00	1.30 (kg)	**231006**
ⓜ	63 - 36	M 14 - M 33	3	152.00	–	48.00	86.00	17.50	17.50	4.10 (kg)	**231007**

B10-M: 12-15
Key on B10-I:1
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

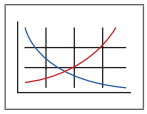
Boring Bar Blanks



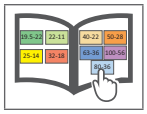
	MVS Connection D_2 | D_1	Boring Bar Blanks L_1	Weight	Part No.
i	50 - 28	6.299	5.733 (lbs)	**166103**
	63 - 36	6.299	9.261 (lbs)	**166104**
	80 - 36	6.299	14.550 (lbs)	**166105**
m	50 - 28	160.00	2.60 (kg)	**166103**
	63 - 36	160.00	4.20 (kg)	**166104**
	80 - 36	160.00	6.60 (kg)	**166105**

B10-M: 12-15

Key on B10-I: 1

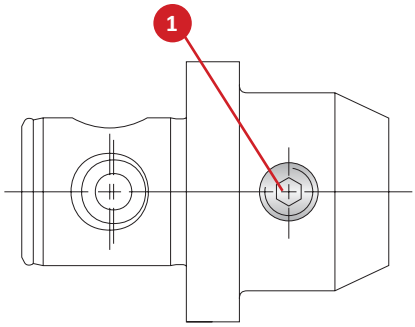


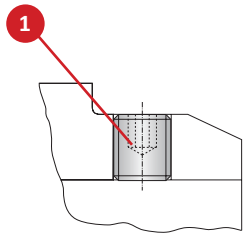
B10: vi-vii



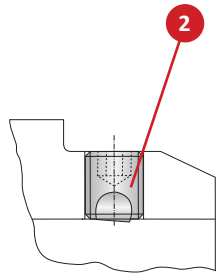
i = Imperial (in)
m = Metric (mm)

Accessories for Adapter Sleeves





DIN 1835B

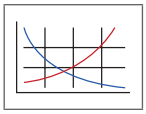


Similar to DIN 1835E*

	Clamping Diameter	1 Thread Pin		2 Ball Pressure Screw		
		Part No.	Service Key	Part No.	Service Key	Thread
	0.236	**115680**	s3 / B	**315788**	s3 / B	M6 x 1
	0.315	**115681**	s4 / B	**315789**	s4 / B	M8 x 1.25
	0.394	**115682**	s5 / B	**515535**	s5 / B	M10 x 1.5
	0.472	**115683**	s6 / B	**315790**	s6 / B	M12 x 1.75
	0.551	**115683**	s6 / B	**315790**	s6 / B	M12 x 1.75
ⓘ	0.630	**115684**	s6 / B	**515675**	s6 / B	M14 x 2
	0.709	**115684**	s6 / B	**515675**	s6 / B	M14 x 2
	0.787	**115685**	s8 / B	**515676**	s8 / B	M16 x 2
	0.984	**115686**	s10 / B	**515677**	s10 / B	M18 x 2 (2x)
	1.260	**115687**	s10 / B	**515678**	s10 / B	M20 x 2 (2x)
	1.575	**115687**	s10 / B	**515678**	s10 / B	M20 x 2 (2x)
	6.00	**115680**	s3 / B	**315788**	s3 / B	M6 x 1
	8.00	**115681**	s4 / B	**315789**	s4 / B	M8 x 1.25
	10.00	**115682**	s5 / B	**515535**	s5 / B	M10 x 1.5
	12.00	**115683**	s6 / B	**315790**	s6 / B	M12 x 1.75
	14.00	**115683**	s6 / B	**315790**	s6 / B	M12 x 1.75
ⓜ	16.00	**115684**	s6 / B	**515675**	s6 / B	M14 x 2
	18.00	**115684**	s6 / B	**515675**	s6 / B	M14 x 2
	20.00	**115685**	s8 / B	**515676**	s8 / B	M16 x 2
	25.00	**115686**	s10 / B	**515677**	s10 / B	M18 x 2 (2x)
	32.00	**115687**	s10 / B	**515678**	s10 / B	M20 x 2 (2x)
	40.00	**115687**	s10 / B	**515678**	s10 / B	M20 x 2 (2x)

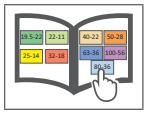
*Without axial adjustment.

B10-M: 12-15



Key on B10-I: 1

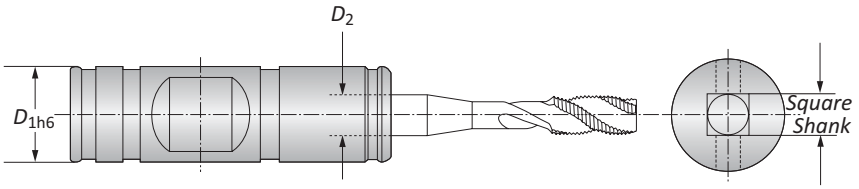
B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

Accessories for Adapter Sleeves

Adapter Sleeve for Tap Shanks Suitable for Reduction Sleeves



	Adapter Sleeves		
	D_{1h6}	D_2 x Square Shank	Part No.
i	0.315	0.082 x 0.098	**271190**
	0.315	0.082 x 0.110	**271191**
	0.394	0.106 x 0.137	**271192**
	0.394	0.118 x 0.157	**271193**
	0.394	0.133 x 0.177	**271194**
	0.472	0.192 x 0.236	**271195**
	0.551	0.216 x 0.275	**271196**
	0.551	0.244 x 0.314	**271197**
	0.630	0.275 x 0.354	**271198**
	0.630	0.314 x 0.393	**271199**
	0.709	0.354 x 0.433	**271200**
	0.787	0.354 x 0.472	**271201**
	0.984	0.433 x 0.551	**271202**
	0.984	0.472 x 0.629	**271203**
	1.260	0.570 x 0.708	**271204**
	1.260	0.629 x 0.787	**271205**
	1.260	0.708 x 0.866	**271206**
	1.575	0.866 x 0.984	**271207**
	1.575	0.866 x 1.102	**271208**
	1.969	0.944 x 1.259	**271209**
	1.969	1.141 x 1.417	**271210**
	1.969	1.259 x 1.574	**271211**
	8.00	2.10 x 2.50	**271190**
	8.00	2.10 x 2.80	**271191**
	10.00	2.70 x 3.50	**271192**
	10.00	3.00 x 4.00	**271193**
	10.00	3.40 x 4.50	**271194**
	12.00	4.90 x 6.00	**271195**
	14.00	5.50 x 7.00	**271196**
	14.00	6.20 x 8.00	**271197**
	16.00	7.00 x 9.00	**271198**
	16.00	8.00 x 10.00	**271199**
m	18.00	9.00 x 11.00	**271200**
	20.00	9.00 x 12.00	**271201**
	25.00	11.00 x 14.00	**271202**
	25.00	12.00 x 16.00	**271203**
	32.00	14.50 x 18.00	**271204**
	32.00	16.00 x 20.00	**271205**
	32.00	18.00 x 22.00	**271206**
	40.00	20.00 x 25.00	**271207**
	40.00	22.00 x 28.00	**271208**
	50.00	24.00 x 32.00	**271209**
	50.00	29.00 x 36.00	**271210**
	50.00	32.00 x 40.00	**271211**

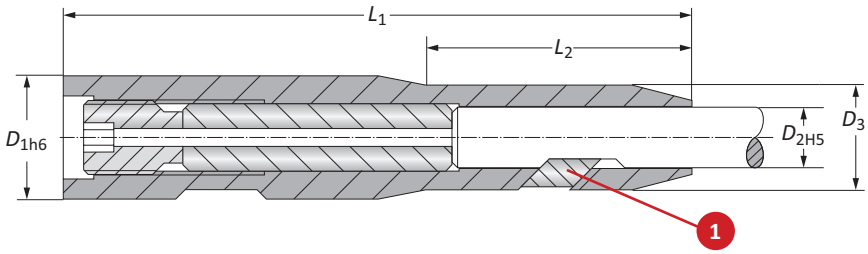
B10-M: 12-15
Key on B10-I: 1

B10: vi-vii

i = Imperial (in)
m = Metric (mm)

Accessories for Adapter Sleeves

Micro Clamping Chucks Suitable for Reduction Sleeves



	Micro Clamping Chuck					1 Clamping Wedge	
	D_{1h6}	D_{2H5}	D_3	L_1	L_2	Part No.	Part No.
ⓘ	0.630	0.236	0.472	3.937	1.575	**219170**	**219070**
	0.630	0.315	0.551	3.937	1.772	**219171**	**219071**
	0.787	0.394	0.669	3.937	1.693	**219172**	**219072**
	0.984	0.472	0.787	4.331	1.535	**219173**	**219073**
	0.984	0.551	0.866	4.331	1.811	**219174**	**219074**
	1.260	0.630	0.984	4.921	1.772	**219174**	**219075**
	1.260	0.709	1.063	5.118	2.126	**219174**	**219076**
	1.260	0.787	1.181	5.118	2.441	**219175**	**219077**
ⓜ	16.00	6.00	12.00	100.00	40.00	**219170**	**219070**
	16.00	8.00	14.00	100.00	45.00	**219171**	**219071**
	20.00	10.00	17.00	100.00	43.00	**219172**	**219072**
	25.00	12.00	20.00	110.00	39.00	**219173**	**219073**
	25.00	14.00	22.00	110.00	46.00	**219174**	**219074**
	32.00	16.00	25.00	125.00	45.00	**219174**	**219075**
	32.00	18.00	27.00	130.00	54.00	**219174**	**219076**
	32.00	20.00	30.00	130.00	62.00	**219175**	**219077**

NOTE: Clamping chucks are used in reduction sleeves for clamping tools with cylindrical shanks to DIN 1835-B (Fig. 1). The chucks' design allows the use of standard tools versus ordering special tools (Fig. 2).

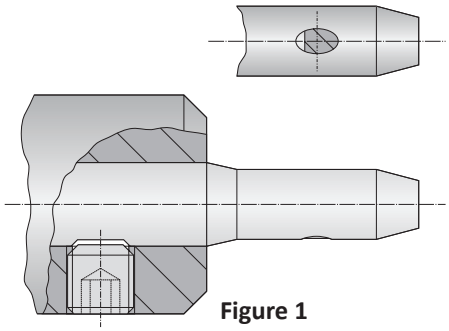


Figure 1

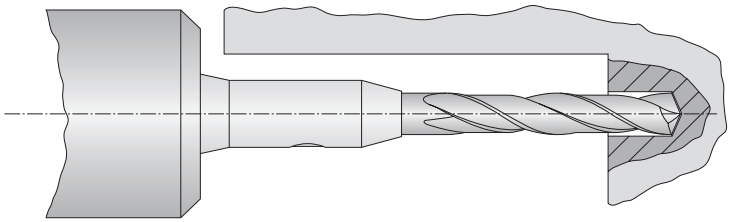


Figure 2

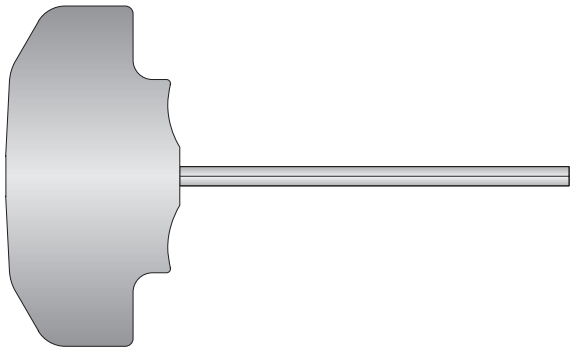
B10-M: 12-15
Key on B10-I:1
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Accessories for Drill Chucks

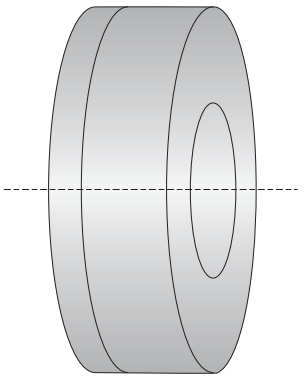
Service Keys for Drill Chucks

Service Key		Tightening Torque Nm	Part No.
Service Key	Type		
2.50	B	15	**415577**
6.00	B	15	**115578**



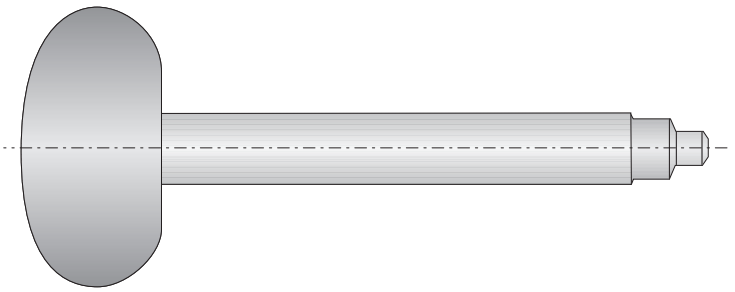
Gaskets for Drill Chucks

	Gasket		
	Gasket Diameter	Clamping Diameter	Part No.
i	0.118 - 0.236	0.019 - 0.511	**387113**
i	0.236 - 0.511	0.019 - 0.511	**387114**
i	0.118 - 0.236	0.098 - 0.629	**387115**
i	0.236 - 0.629	0.098 - 0.629	**387116**
m	3.00 - 6.00	0.50 - 13.00	**387113**
m	6.00 - 13.00	0.50 - 13.00	**387114**
m	3.00 - 6.00	2.50 - 16.00	**387115**
m	6.00 - 16.00	2.50 - 16.00	**387116**



Assembly Tool for Gasket

Part No.
387112



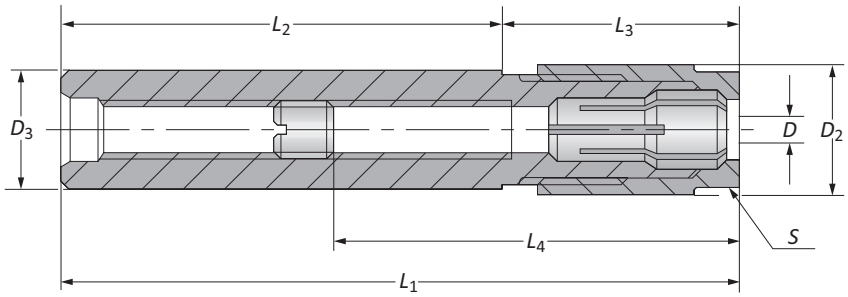
B10-M: 12-15
Key on B10-I: 1

B10: vi-vii

i = Imperial (in)
m = Metric (mm)

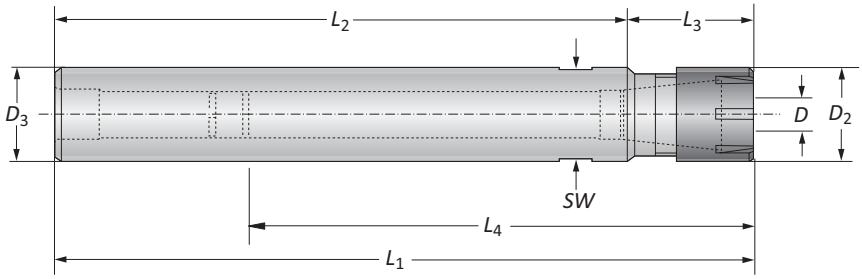
Collet Chucks for Erickson System | Cylindrical Collet Chucks for ISO 15488 (DIN 6499) Collets

Diameter Range: 0.039" - 0.393" (1.00mm - 10.00mm)



Collet Chucks for Erickson System

	Nominal Size	Clamping Range D	Collet Chuck D_2	D_3	L_1	L_2	L_3	$L_{4\,Min}$	$L_{4\,Max}$	Service Key S	Weight	Part No.
i	6	0.039 - 0.255	0.551	0.492	4.409	2.992	1.417	1.654	3.976	13	0.441 (lbs)	**162080**
i	6	0.039 - 0.255	0.551	0.492	6.929	5.512	1.417	1.654	4.016	13	0.441 (lbs)	**162081**
i	10	0.039 - 0.393	0.827	0.787	4.724	2.992	1.732	1.535	4.213	19	0.661 (lbs)	**162082**
i	10	0.039 - 0.393	0.827	0.787	7.244	5.512	1.732	1.535	4.685	19	0.661 (lbs)	**162083**
m	6	1.00 - 6.50	14.00	12.50	112.00	76.00	36.00	42.00	101.00	13	0.20 (kg)	**162080**
m	6	1.00 - 6.50	14.00	12.50	176.00	140.00	36.00	42.00	102.00	13	0.20 (kg)	**162081**
m	10	1.00 - 10.00	21.00	20.00	120.00	76.00	44.00	39.00	107.00	19	0.30 (kg)	**162082**
m	10	1.00 - 10.00	21.00	20.00	184.00	140.00	44.00	39.00	119.00	19	0.30 (kg)	**162083**



Cylindrical Collet Chucks for ISO 15488 (DIN 6499) Collets

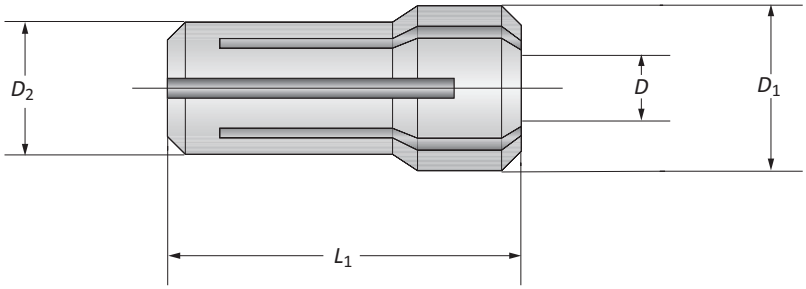
	Nominal Size	Collet Chuck D	D_2	D_3	L_1	L_2	L_3	$L_{4\,Min}$	$L_{4\,Max}$	Hex Size SW	Part No.
i	ER 8	0.039 - 0.196	0.472	0.315	4.961	3.937	1.024	1.437	1.437	09	**209054**
i	ER 8	0.039 - 0.196	0.472	0.472	6.535	5.512	1.024	1.437	1.437	09	**209055**
i	ER 11	0.039 - 0.275	0.630	0.630	4.193	3.150	1.043	0.906	2.559	11	**209056**
i	ER 11	0.039 - 0.275	0.630	0.630	6.555	5.512	1.043	0.906	2.559	11	**209057**
i	ER 16	0.039 - 0.393	0.866	0.787	4.665	3.150	1.516	1.299	4.016	17	**209058**
i	ER 16	0.039 - 0.393	0.866	0.787	7.028	5.512	1.516	1.299	4.843	17	**209059**
m	ER 8	1.00 - 5.00	12.00	8.00	126.00	100.00	26.00	36.50	36.50	09	**209054**
m	ER 8	1.00 - 5.00	12.00	12.00	166.00	140.00	26.00	36.50	36.50	09	**209055**
m	ER 11	1.00 - 7.00	16.00	16.00	106.50	80.00	26.50	23.00	65.00	11	**209056**
m	ER 11	1.00 - 7.00	16.00	16.00	166.50	140.00	26.50	23.00	65.00	11	**209057**
m	ER 16	1.00 - 10.00	22.00	20.00	118.50	80.00	38.50	33.00	102.00	17	**209058**
m	ER 16	1.00 - 10.00	22.00	20.00	178.50	140.00	38.50	33.00	123.00	17	**209059**

B10-M: 12-15
Key on B10-I:1
B10: vi-vii

i = Imperial (in)
m = Metric (mm)

Accessories for Collet Chucks

Diameter Range: 0.019" - 0.393" (0.50mm - 10.00mm)



Collet Sets for Erickson System

	Nominal Size	Standard-No.	Set D_1	Set D_2	Set L_1	Set D	Part No.
i	6	416 E	0.374	0.300	1.004	0.019 - 0.236	**071016**
i	10	417 E	0.531	0.450	1.197	0.019 - 0.393	**071017**
m	6	416 E	9.50	7.62	25.50	0.50 - 6.00	**071016**
m	10	417 E	13.50	11.43	30.40	0.50 - 10.00	**071017**

Collets for Erickson System

	Collet Nominal Size	Diameter Range D	Part No.
i	6	0.020 - 0.039	**071355**
i	6	0.039 - 0.059	**071356**
i	6	0.059 - 0.079	**071357**
i	6	0.079 - 0.098	**071358**
i	6	0.098 - 0.118	**071359**
i	6	0.118 - 0.138	**071360**
i	6	0.138 - 0.157	**071361**
i	6	0.157 - 0.177	**071362**
i	6	0.177 - 0.197	**071363**
i	6	0.197 - 0.217	**071364**
i	6	0.217 - 0.236	**071365**
i	10	0.020 - 0.039	**071368**
i	10	0.039 - 0.059	**071369**
i	10	0.059 - 0.079	**071370**
i	10	0.079 - 0.098	**071371**
i	10	0.098 - 0.118	**071372**
i	10	0.118 - 0.138	**071373**
i	10	0.139 - 0.157	**071374**
i	10	0.157 - 0.177	**071375**
i	10	0.177 - 0.197	**071376**
i	10	0.197 - 0.217	**071377**
i	10	0.217 - 0.236	**071378**
i	10	0.236 - 0.256	**071379**
i	10	0.256 - 0.276	**071380**
i	10	0.276 - 0.295	**071381**
i	10	0.295 - 0.315	**071382**
i	10	0.315 - 0.335	**071383**
i	10	0.335 - 0.354	**071384**
i	10	0.354 - 0.374	**071385**
i	10	0.374 - 0.394	**071681**

Collets for Erickson System

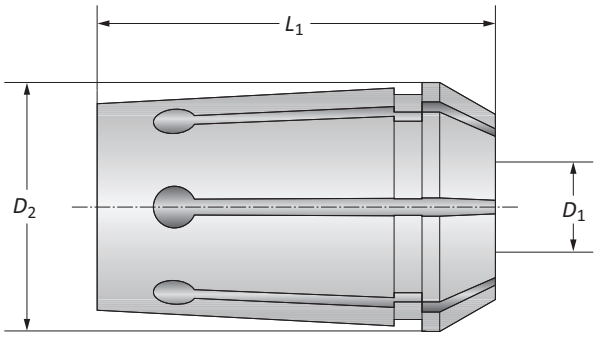
	Collet Nominal Size	Diameter Range D	Part No.
m	6	0.50 - 1.00	**071355**
m	6	1.00 - 1.50	**071356**
m	6	1.50 - 2.00	**071357**
m	6	2.00 - 2.50	**071358**
m	6	2.50 - 3.00	**071359**
m	6	3.00 - 3.50	**071360**
m	6	3.50 - 4.00	**071361**
m	6	4.00 - 4.50	**071362**
m	6	4.50 - 5.00	**071363**
m	6	5.00 - 5.50	**071364**
m	6	5.50 - 6.00	**071365**
m	10	0.50 - 1.00	**071368**
m	10	1.00 - 1.50	**071369**
m	10	1.50 - 2.00	**071370**
m	10	2.00 - 2.50	**071371**
m	10	2.50 - 3.00	**071372**
m	10	3.00 - 3.50	**071373**
m	10	3.50 - 4.00	**071374**
m	10	4.00 - 4.50	**071375**
m	10	4.50 - 5.00	**071376**
m	10	5.00 - 5.50	**071377**
m	10	5.50 - 6.00	**071378**
m	10	6.00 - 6.50	**071379**
m	10	6.50 - 7.00	**071380**
m	10	7.00 - 7.50	**071381**
m	10	7.50 - 8.00	**071382**
m	10	8.00 - 8.50	**071383**
m	10	8.50 - 9.00	**071384**
m	10	9.00 - 9.50	**071385**
m	10	9.50 - 10.00	**071681**

B10-M: 12-15
Key on B10-I: 1
B10: vi-vii

i = Imperial (in)
m = Metric (mm)

Accessories for Collet Chucks

ISO 10897-A (DIN 6388-A)



Collet Sets

	Nominal Size	Standard-No.	Set D_2	Set L_1	Set D_1	Part No.
	A 16	410 E	0.891	1.574	0.078 - 0.629	**071003**
ⓘ	A 25	444 E	1.295	2.047	0.078 - 0.984	**071004**
	A 32	450 E	1.625	2.362	0.157 - 1.259	**071019**
	A 16	410 E	22.65	40.00	2.00 - 16.00	**071003**
ⓜ	A 25	444 E	32.90	52.00	2.00 - 25.00	**071004**
	A 32	450 E	41.30	60.00	4.00 - 32.00	**071019**

Collets

	Nominal Size	Diameter D_1	Part No.
	A 16	0.079	**071140**
	A 16	0.098	**071141**
	A 16	0.118	**071142**
	A 16	0.138	**071143**
	A 16	0.157	**071144**
	A 16	0.177	**071145**
	A 16	0.197	**071146**
	A 16	0.217	**071147**
	A 16	0.236	**071148**
	A 16	0.256	**071149**
	A 16	0.276	**071150**
	A 16	0.295	**071151**
	A 16	0.315	**071152**
	A 16	0.335	**071153**
ⓘ	A 16	0.354	**071154**
	A 16	0.374	**071155**
	A 16	0.394	**071156**
	A 16	0.413	**071157**
	A 16	0.433	**071158**
	A 16	0.453	**071159**
	A 16	0.472	**071160**
	A 16	0.492	**071161**
	A 16	0.512	**071162**
	A 16	0.531	**071163**
	A 16	0.551	**071164**
	A 16	0.571	**071165**
	A 16	0.591	**071166**
	A 16	0.610	**071167**
	A 16	0.630	**071168**

Collets

	Nominal Size	Diameter D_1	Part No.
	A 16	2.00	**071140**
	A 16	2.50	**071141**
	A 16	3.00	**071142**
	A 16	3.50	**071143**
	A 16	4.00	**071144**
	A 16	4.50	**071145**
	A 16	5.00	**071146**
	A 16	5.50	**071147**
	A 16	6.00	**071148**
	A 16	6.50	**071149**
	A 16	7.00	**071150**
	A 16	7.50	**071151**
	A 16	8.00	**071152**
	A 16	8.50	**071153**
ⓜ	A 16	9.00	**071154**
	A 16	9.50	**071155**
	A 16	10.00	**071156**
	A 16	10.50	**071157**
	A 16	11.00	**071158**
	A 16	11.50	**071159**
	A 16	12.00	**071160**
	A 16	12.50	**071161**
	A 16	13.00	**071162**
	A 16	13.50	**071163**
	A 16	14.00	**071164**
	A 16	14.50	**071165**
	A 16	15.00	**071166**
	A 16	15.50	**071167**
	A 16	16.00	**071168**

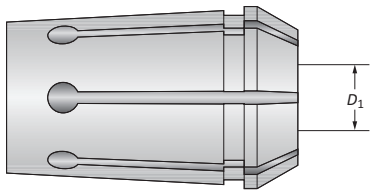
B10-M: 12-15
Key on B10-I:1

B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Accessories for Collet Chucks

ISO 10897-A (DIN 6388-A)



Collets

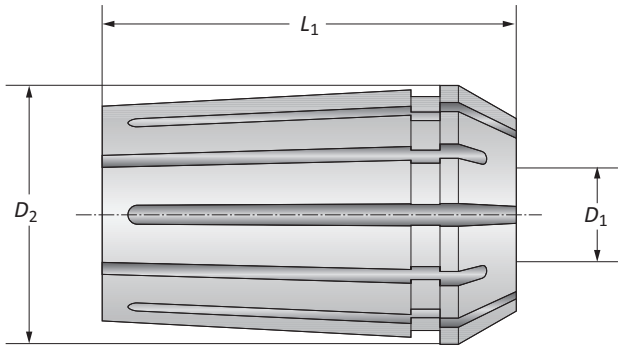
Nominal Size	Diameter D_1	Part No.
A 25	0.078	**071169**
A 25	0.118	**071170**
A 25	0.157	**071171**
A 25	0.196	**071172**
A 25	0.236	**071173**
A 25	0.275	**071174**
A 25	0.315	**071175**
A 25	0.354	**071176**
A 25	0.393	**071177**
A 25	0.433	**071178**
A 25	0.472	**071179**
A 25	0.511	**071180**
A 25	0.551	**071181**
A 25	0.590	**071182**
A 25	0.629	**071183**
A 25	0.669	**071184**
A 25	0.708	**071185**
A 25	0.748	**071186**
A 25	0.787	**071187**
A 25	0.826	**071188**
A 25	0.866	**071189**
A 25	0.905	**071190**
A 25	0.944	**071191**
A 25	0.984	**071192**
A 32	0.157	**071612**
A 32	0.196	**071419**
A 32	0.236	**071420**
A 32	0.275	**071613**
A 32	0.315	**071421**
A 32	0.354	**071614**
A 32	0.393	**071422**
A 32	0.433	**071666**
A 32	0.472	**071423**
A 32	0.511	**071667**
A 32	0.551	**071668**
A 32	0.590	**071669**
A 32	0.629	**071424**
A 32	0.669	**071670**
A 32	0.708	**071665**
A 32	0.748	**071671**
A 32	0.787	**071416**
A 32	0.826	**071672**
A 32	0.866	**071673**
A 32	0.905	**071674**
A 32	0.944	**071675**
A 32	0.984	**071417**
A 32	1.023	**071676**
A 32	1.063	**071677**
A 32	1.102	**071678**
A 32	1.141	**071679**
A 32	1.181	**071633**
A 32	1.220	**071680**
A 32	1.259	**071418**

Collets

Nominal Size	Diameter D_1	Part No.
A 25	2.00	**071169**
A 25	3.00	**071170**
A 25	4.00	**071171**
A 25	5.00	**071172**
A 25	6.00	**071173**
A 25	7.00	**071174**
A 25	8.00	**071175**
A 25	9.00	**071176**
A 25	10.00	**071177**
A 25	11.00	**071178**
A 25	12.00	**071179**
A 25	13.00	**071180**
A 25	14.00	**071181**
A 25	15.00	**071182**
A 25	16.00	**071183**
A 25	17.00	**071184**
A 25	18.00	**071185**
A 25	19.00	**071186**
A 25	20.00	**071187**
A 25	21.00	**071188**
A 25	22.00	**071189**
A 25	23.00	**071190**
A 25	24.00	**071191**
A 25	25.00	**071192**
A 32	4.00	**071612**
A 32	5.00	**071419**
A 32	6.00	**071420**
A 32	7.00	**071613**
A 32	8.00	**071421**
A 32	9.00	**071614**
A 32	10.00	**071422**
A 32	11.00	**071666**
A 32	12.00	**071423**
A 32	13.00	**071667**
A 32	14.00	**071668**
A 32	15.00	**071669**
A 32	16.00	**071424**
A 32	17.00	**071670**
A 32	18.00	**071665**
A 32	19.00	**071671**
A 32	20.00	**071416**
A 32	21.00	**071672**
A 32	22.00	**071673**
A 32	23.00	**071674**
A 32	24.00	**071675**
A 32	25.00	**071417**
A 32	26.00	**071676**
A 32	27.00	**071677**
A 32	28.00	**071678**
A 32	29.00	**071679**
A 32	30.00	**071633**
A 32	31.00	**071680**
A 32	32.00	**071418**

Accessories for Collet Chucks

ISO 10897-B (DIN 6388-B)



Collet Sets

	Nominal Size	Standard-No.	Set D_2	Set L_1	Set D_1	Part No.
	B 16	415 E	0.892	1.575	0.059 - 0.630	**071005**
ⓘ	B 25	462 E	1.295	2.047	0.138 - 0.984	**071006**
	B 32	467 E	1.626	2.362	0.217 - 1.260	**071022**
	B 16	415 E	22.65	40.00	1.50 - 16.00	**071005**
ⓜ	B 25	462 E	32.90	52.00	3.50 - 25.00	**071006**
	B 32	467 E	41.30	60.00	5.50 - 32.00	**071022**

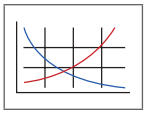
Collets

	Nominal Size	Diameter D_1	Part No.
	B 16	0.059 - 0.079	**071625**
	B 16	0.079 - 0.098	**071626**
	B 16	0.098 - 0.118	**071621**
	B 16	0.118 - 0.138	**071622**
	B 16	0.138 - 0.157	**071193**
	B 16	0.157 - 0.177	**071194**
	B 16	0.177 - 0.197	**071195**
	B 16	0.197 - 0.217	**071196**
	B 16	0.217 - 0.236	**071197**
	B 16	0.236 - 0.256	**071198**
	B 16	0.256 - 0.276	**071199**
	B 16	0.276 - 0.295	**071200**
	B 16	0.295 - 0.315	**071201**
	B 16	0.315 - 0.335	**071202**
ⓘ	B 16	0.335 - 0.354	**071203**
	B 16	0.354 - 0.374	**071204**
	B 16	0.374 - 0.394	**071205**
	B 16	0.394 - 0.413	**071206**
	B 16	0.413 - 0.433	**071207**
	B 16	0.433 - 0.453	**071208**
	B 16	0.453 - 0.472	**071209**
	B 16	0.472 - 0.492	**071210**
	B 16	0.492 - 0.512	**071211**
	B 16	0.512 - 0.531	**071212**
	B 16	0.531 - 0.551	**071213**
	B 16	0.551 - 0.571	**071214**
	B 16	0.571 - 0.591	**071215**
	B 16	0.591 - 0.610	**071216**
	B 16	0.610 - 0.630	**071217**

Collets

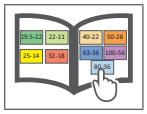
	Nominal Size	Diameter D_1	Part No.
	B 16	1.50 - 2.00	**071625**
	B 16	2.00 - 2.50	**071626**
	B 16	2.50 - 3.00	**071621**
	B 16	3.00 - 3.50	**071622**
	B 16	3.50 - 4.00	**071193**
	B 16	4.00 - 4.50	**071194**
	B 16	4.50 - 5.00	**071195**
	B 16	5.00 - 5.50	**071196**
	B 16	5.50 - 6.00	**071197**
	B 16	6.00 - 6.50	**071198**
	B 16	6.50 - 7.00	**071199**
	B 16	7.00 - 7.50	**071200**
	B 16	7.50 - 8.00	**071201**
	B 16	8.00 - 8.50	**071202**
ⓜ	B 16	8.50 - 9.00	**071203**
	B 16	9.00 - 9.50	**071204**
	B 16	9.50 - 10.00	**071205**
	B 16	10.00 - 10.50	**071206**
	B 16	10.50 - 11.00	**071207**
	B 16	11.00 - 11.50	**071208**
	B 16	11.50 - 12.00	**071209**
	B 16	12.00 - 12.50	**071210**
	B 16	12.50 - 13.00	**071211**
	B 16	13.00 - 13.50	**071212**
	B 16	13.50 - 14.00	**071213**
	B 16	14.00 - 14.50	**071214**
	B 16	14.50 - 15.00	**071215**
	B 16	15.00 - 15.50	**071216**
	B 16	15.50 - 16.00	**071217**

B10-M: 12-15



Key on B10-I:1

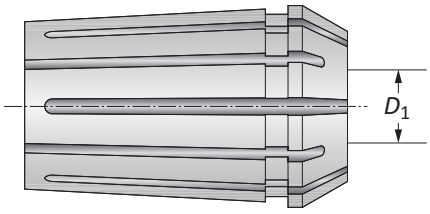
B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

Accessories for Collet Chucks

ISO 10897-B (DIN 6388-B)



Collets

Nominal Size	Diameter D_1	Part No.
B 25	0.138 - 0.157	**071627**
B 25	0.157 - 0.177	**071628**
B 25	0.177 - 0.197	**071218**
B 25	0.197 - 0.217	**071219**
B 25	0.217 - 0.236	**071220**
B 25	0.236 - 0.256	**071221**
B 25	0.256 - 0.276	**071222**
B 25	0.276 - 0.295	**071223**
B 25	0.295 - 0.315	**071224**
B 25	0.315 - 0.335	**071225**
B 25	0.335 - 0.354	**071226**
B 25	0.354 - 0.374	**071227**
B 25	0.374 - 0.394	**071228**
B 25	0.394 - 0.413	**071229**
B 25	0.413 - 0.433	**071230**
B 25	0.433 - 0.453	**071231**
B 25	0.453 - 0.472	**071232**
B 25	0.472 - 0.492	**071233**
B 25	0.492 - 0.512	**071234**
B 25	0.512 - 0.531	**071235**
B 25	0.531 - 0.551	**071236**
B 25	0.551 - 0.571	**071237**
B 25	0.571 - 0.591	**071238**
B 25	0.591 - 0.610	**071239**
B 25	0.610 - 0.630	**071240**
B 25	0.630 - 0.650	**071241**
B 25	0.650 - 0.669	**071242**
B 25	0.669 - 0.689	**071243**
B 25	0.689 - 0.709	**071244**
B 25	0.709 - 0.728	**071245**
B 25	0.728 - 0.748	**071246**
B 25	0.748 - 0.768	**071247**
B 25	0.768 - 0.787	**071248**
B 25	0.787 - 0.807	**071249**
B 25	0.807 - 0.827	**071250**
B 25	0.827 - 0.846	**071251**
B 25	0.846 - 0.866	**071252**
B 25	0.866 - 0.866	**071253**
B 25	0.866 - 0.906	**071254**
B 25	0.906 - 0.925	**071255**
B 25	0.925 - 0.945	**071256**
B 25	0.945 - 0.965	**071257**
B 25	0.965 - 0.984	**071258**

Collets

Nominal Size	Diameter D_1	Part No.
B 25	3.50 - 4.00	**071627**
B 25	4.00 - 4.50	**071628**
B 25	4.50 - 5.00	**071218**
B 25	5.00 - 5.50	**071219**
B 25	5.50 - 6.00	**071220**
B 25	6.00 - 6.50	**071221**
B 25	6.50 - 7.00	**071222**
B 25	7.00 - 7.50	**071223**
B 25	7.50 - 8.00	**071224**
B 25	8.00 - 8.50	**071225**
B 25	8.50 - 9.00	**071226**
B 25	9.00 - 9.50	**071227**
B 25	9.50 - 10.00	**071228**
B 25	10.00 - 10.50	**071229**
B 25	10.50 - 11.00	**071230**
B 25	11.00 - 11.50	**071231**
B 25	11.50 - 12.00	**071232**
B 25	12.00 - 12.50	**071233**
B 25	12.50 - 13.00	**071234**
B 25	13.00 - 13.50	**071235**
B 25	13.50 - 14.00	**071236**
B 25	14.00 - 14.50	**071237**
B 25	14.50 - 15.00	**071238**
B 25	15.00 - 15.50	**071239**
B 25	15.50 - 16.00	**071240**
B 25	16.00 - 16.50	**071241**
B 25	16.50 - 17.00	**071242**
B 25	17.00 - 17.50	**071243**
B 25	17.50 - 18.00	**071244**
B 25	18.00 - 18.50	**071245**
B 25	18.50 - 19.00	**071246**
B 25	19.00 - 19.50	**071247**
B 25	19.50 - 20.00	**071248**
B 25	20.00 - 20.50	**071249**
B 25	20.50 - 21.00	**071250**
B 25	21.00 - 21.50	**071251**
B 25	21.50 - 22.00	**071252**
B 25	22.00 - 22.50	**071253**
B 25	22.50 - 23.00	**071254**
B 25	23.00 - 23.50	**071255**
B 25	23.50 - 24.00	**071256**
B 25	24.00 - 24.50	**071257**
B 25	24.50 - 25.00	**071258**

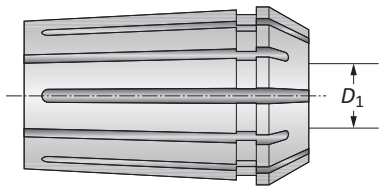
B10-M: 12-15
Key on B10-I: 1

B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Accessories for Collet Chucks

ISO 10897-B (DIN 6388-B)



Collets

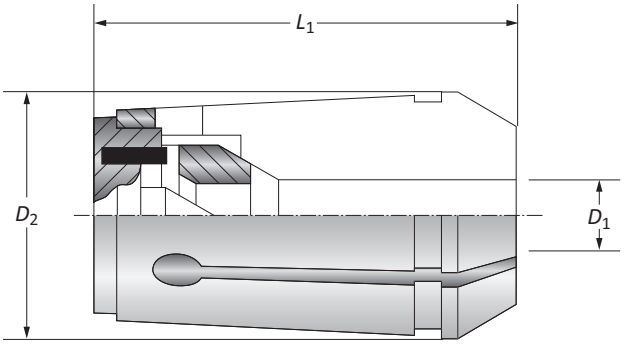
Nominal Size	Diameter D_1	Part No.
B 32	0.217 - 0.236	**071686**
B 32	0.236 - 0.256	**071687**
B 32	0.256 - 0.276	**071688**
B 32	0.276 - 0.295	**071689**
B 32	0.295 - 0.315	**071690**
B 32	0.315 - 0.335	**071691**
B 32	0.335 - 0.354	**071692**
B 32	0.354 - 0.374	**071693**
B 32	0.374 - 0.394	**071542**
B 32	0.394 - 0.413	**071543**
B 32	0.413 - 0.433	**071544**
B 32	0.433 - 0.453	**071545**
B 32	0.453 - 0.472	**071546**
B 32	0.472 - 0.492	**071547**
B 32	0.492 - 0.512	**071548**
B 32	0.512 - 0.531	**071549**
B 32	0.531 - 0.551	**071550**
B 32	0.551 - 0.571	**071551**
B 32	0.571 - 0.591	**071552**
B 32	0.591 - 0.610	**071553**
B 32	0.610 - 0.630	**071554**
B 32	0.630 - 0.650	**071555**
B 32	0.650 - 0.669	**071556**
B 32	0.669 - 0.689	**071557**
B 32	0.689 - 0.709	**071558**
B 32	0.709 - 0.728	**071559**
B 32	0.728 - 0.748	**071560**
B 32	0.748 - 0.768	**071561**
B 32	0.768 - 0.787	**071562**
B 32	0.787 - 0.807	**071563**
B 32	0.807 - 0.827	**071564**
B 32	0.827 - 0.846	**071565**
B 32	0.846 - 0.866	**071566**
B 32	0.866 - 0.866	**071567**
B 32	0.866 - 0.906	**071568**
B 32	0.906 - 0.925	**071569**
B 32	0.925 - 0.945	**071570**
B 32	0.945 - 0.965	**071571**
B 32	0.965 - 0.984	**071572**
B 32	0.984 - 1.004	**071573**
B 32	1.004 - 1.024	**071574**
B 32	1.024 - 1.043	**071575**
B 32	1.043 - 1.063	**071576**
B 32	1.063 - 1.083	**071577**
B 32	1.083 - 1.102	**071578**
B 32	1.102 - 1.122	**071579**
B 32	1.122 - 1.142	**071580**
B 32	1.142 - 1.161	**071581**
B 32	1.161 - 1.181	**071582**
B 32	1.181 - 1.201	**071583**
B 32	1.201 - 1.220	**071584**
B 32	1.220 - 1.240	**071585**
B 32	1.240 - 1.260	**071586**

Collets

Nominal Size	Diameter D_1	Part No.
B 32	5.50 - 6.00	**071686**
B 32	6.00 - 6.50	**071687**
B 32	6.50 - 7.00	**071688**
B 32	7.00 - 7.50	**071689**
B 32	7.50 - 8.00	**071690**
B 32	8.00 - 8.50	**071691**
B 32	8.50 - 9.00	**071692**
B 32	9.00 - 9.50	**071693**
B 32	9.50 - 10.00	**071542**
B 32	10.00 - 10.50	**071543**
B 32	10.50 - 11.00	**071544**
B 32	11.00 - 11.50	**071545**
B 32	11.50 - 12.00	**071546**
B 32	12.00 - 12.50	**071547**
B 32	12.50 - 13.00	**071548**
B 32	13.00 - 13.50	**071549**
B 32	13.50 - 14.00	**071550**
B 32	14.00 - 14.50	**071551**
B 32	14.50 - 15.00	**071552**
B 32	15.00 - 15.50	**071553**
B 32	15.50 - 16.00	**071554**
B 32	16.00 - 16.50	**071555**
B 32	16.50 - 17.00	**071556**
B 32	17.00 - 17.50	**071557**
B 32	17.50 - 18.00	**071558**
B 32	18.00 - 18.50	**071559**
B 32	18.50 - 19.00	**071560**
B 32	19.00 - 19.50	**071561**
B 32	19.50 - 20.00	**071562**
B 32	20.00 - 20.50	**071563**
B 32	20.50 - 21.00	**071564**
B 32	21.00 - 21.50	**071565**
B 32	21.50 - 22.00	**071566**
B 32	22.00 - 22.50	**071567**
B 32	22.50 - 23.00	**071568**
B 32	23.00 - 23.50	**071569**
B 32	23.50 - 24.00	**071570**
B 32	24.00 - 24.50	**071571**
B 32	24.50 - 25.00	**071572**
B 32	25.00 - 25.50	**071573**
B 32	25.50 - 26.00	**071574**
B 32	26.00 - 26.50	**071575**
B 32	26.50 - 27.00	**071576**
B 32	27.00 - 27.50	**071577**
B 32	27.50 - 28.00	**071578**
B 32	28.00 - 28.50	**071579**
B 32	28.50 - 29.00	**071580**
B 32	29.00 - 29.50	**071581**
B 32	29.50 - 30.00	**071582**
B 32	30.00 - 30.50	**071583**
B 32	30.50 - 31.00	**071584**
B 32	31.00 - 31.50	**071585**
B 32	31.50 - 32.00	**071586**

Accessories for Collet Chucks

ISO 10897-A (DIN 6388-A)



Collet Sets for Clarkson System

	Nominal Size	Standard-No.	Sets D_2	Sets L_1	Sets D_1	Part No.
ⓘ	A 16	421 E	0.892	1.654	0.236 - 0.472	**071013**
ⓘ	A 25	459 E	1.295	2.047	0.236 - 0.984	**071014**
ⓘ	A 32	460 E	1.626	2.480	0.236 - 1.260	**071020**
ⓜ	A 16	421 E	22.65	42.00	6.00 - 12.00	**071013**
ⓜ	A 25	459 E	32.90	52.00	6.00 - 25.00	**071014**
ⓜ	A 32	460 E	41.30	63.00	6.00 - 32.00	**071020**

NOTE: Recommended to use clamping nuts with ball-bearings to lock collets

Collets for Clarkson System

	Nominal Size	Diameter D_1	Part No.
	A 16	0.236	**071304**
	A 16	0.315	**071305**
	A 16	0.394	**071306**
	A 16	0.472	**071307**
	A 25	0.236	**071308**
	A 25	0.315	**071309**
	A 25	0.394	**071310**
	A 25	0.472	**071311**
	A 25	0.630	**071312**
ⓘ	A 25	0.787	**071313**
	A 25	0.984	**071684**
	A 32	0.236	**071427**
	A 32	0.315	**071428**
	A 32	0.394	**071429**
	A 32	0.472	**071430**
	A 32	0.630	**071431**
	A 32	0.787	**071432**
	A 32	0.984	**071433**
	A 32	1.260	**071685**

Collets for Clarkson System

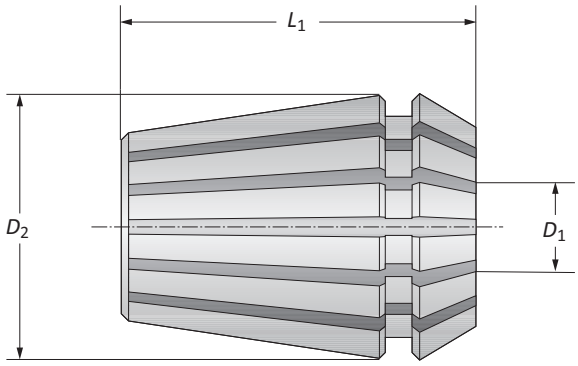
	Nominal Size	Diameter D_1	Part No.
	A 16	6.00	**071304**
	A 16	8.00	**071305**
	A 16	10.00	**071306**
	A 16	12.00	**071307**
	A 25	6.00	**071308**
	A 25	8.00	**071309**
	A 25	10.00	**071310**
	A 25	12.00	**071311**
	A 25	16.00	**071312**
ⓜ	A 25	20.00	**071313**
	A 25	25.00	**071684**
	A 32	6.00	**071427**
	A 32	8.00	**071428**
	A 32	10.00	**071429**
	A 32	12.00	**071430**
	A 32	16.00	**071431**
	A 32	20.00	**071432**
	A 32	25.00	**071433**
	A 32	32.00	**071685**

B10-M: 12-15
Key on B10-I: 1
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Accessories for Collet Chucks

ISO 15488-B (DIN 6499-B)



Collet Sets

	Nominal Size	Standard-No.	Diameter D_1	Collet Set D_2	Collet Set L_1	Part No.
	ER 8	4004 E	0.039 - 0.197	0.335	0.531	**071034**
	ER 11	4008 E	0.039 - 0.276	0.433	0.709	**071028**
ⓘ	ER 16	426 E	0.020 - 0.394	0.630	1.083	**071029**
	ER 25	430 E	0.059 - 0.630	0.984	1.339	**071031**
	ER 32	470 E	0.079 - 0.787	1.260	1.575	**071032**
	ER 40	472 E	0.118 - 1.024	1.575	1.811	**071033**
	ER 8	4004 E	1.00 - 5.00	8.50	13.50	**071034**
	ER 11	4008 E	1.00 - 7.00	11.00	18.00	**071028**
ⓜ	ER 16	426 E	0.50 - 10.00	16.00	27.50	**071029**
	ER 25	430 E	1.50 - 16.00	25.00	34.00	**071031**
	ER 32	470 E	2.00 - 20.00	32.00	40.00	**071032**
	ER 40	472 E	3.00 - 26.00	40.00	46.00	**071033**

Collets

	Nominal Size	Diameter D_1	Part No.
	ER 8	0.039	**071986**
	ER 8	0.059	**071987**
	ER 8	0.079	**071988**
	ER 8	0.098	**071989**
	ER 8	0.102 - 0.118	**071990**
	ER 8	0.122 - 0.138	**071991**
	ER 8	0.142 - 0.157	**071992**
	ER 8	0.161 - 0.177	**071993**
	ER 8	0.181 - 0.197	**071994**
	ER 11	0.039	**071700**
ⓘ	ER 11	0.059	**071701**
	ER 11	0.079	**071702**
	ER 11	0.098	**071703**
	ER 11	0.102 - 0.118	**071704**
	ER 11	0.122 - 0.138	**071705**
	ER 11	0.142 - 0.157	**071706**
	ER 11	0.161 - 0.177	**071707**
	ER 11	0.181 - 0.197	**071708**
	ER 11	0.201 - 0.217	**071709**
	ER 11	0.220 - 0.354	**071710**
	ER 11	0.240 - 0.256	**071711**
	ER 11	0.260 - 0.276	**071712**

Collets

	Nominal Size	Diameter D_1	Part No.
	ER 8	1.00	**071986**
	ER 8	1.50	**071987**
	ER 8	2.00	**071988**
	ER 8	2.50	**071989**
	ER 8	2.60 - 3.00	**071990**
	ER 8	3.10 - 3.50	**071991**
	ER 8	3.60 - 4.00	**071992**
	ER 8	4.10 - 4.50	**071993**
	ER 8	4.60 - 5.00	**071994**
	ER 11	1.00	**071700**
ⓜ	ER 11	1.50	**071701**
	ER 11	2.00	**071702**
	ER 11	2.50	**071703**
	ER 11	2.60 - 3.00	**071704**
	ER 11	3.10 - 3.50	**071705**
	ER 11	3.60 - 4.00	**071706**
	ER 11	4.10 - 4.50	**071707**
	ER 11	4.60 - 5.00	**071708**
	ER 11	5.10 - 5.50	**071709**
	ER 11	5.60 - 6.00	**071710**
	ER 11	6.10 - 6.50	**071711**
	ER 11	6.60 - 7.00	**071712**

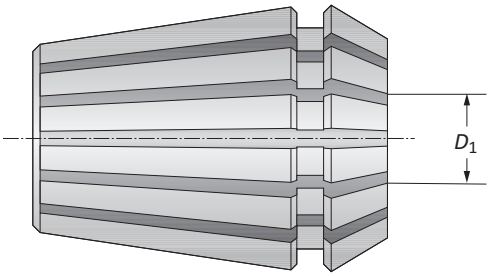
B10-M: 12-15
Key on B10-I:1

B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Accessories for Collet Chucks

ISO 15488-B (DIN 6499-B)



Collets

	Nominal Size	Diameter D_1	Part No.
	ER 16	0.020 - 0.039	**071713**
	ER 16	0.039 - 0.059	**071714**
	ER 16	0.039 - 0.079	**071715**
	ER 16	0.079 - 0.098	**071716**
	ER 16	0.098 - 0.118	**071717**
	ER 16	0.118 - 0.138	**071718**
	ER 16	0.138 - 0.157	**071719**
	ER 16	0.157 - 0.177	**271132**
	ER 16	0.157 - 0.197	**071720**
ⓘ	ER 16	0.197 - 0.217	**271133**
	ER 16	0.217 - 0.236	**071721**
	ER 16	0.236 - 0.256	**271134**
	ER 16	0.236 - 0.276	**071722**
	ER 16	0.276 - 0.295	**271135**
	ER 16	0.295 - 0.315	**071723**
	ER 16	0.315 - 0.335	**271136**
	ER 16	0.335 - 0.354	**071724**
	ER 16	0.354 - 0.374	**271137**
	ER 16	0.354 - 0.394	**071725**
	ER 16	0.50 - 1.00	**071713**
	ER 16	1.00 - 1.50	**071714**
	ER 16	1.00 - 2.00	**071715**
	ER 16	2.00 - 2.50	**071716**
	ER 16	2.50 - 3.00	**071717**
	ER 16	3.00 - 3.50	**071718**
	ER 16	3.50 - 4.00	**071719**
	ER 16	4.00 - 4.50	**271132**
	ER 16	4.00 - 5.00	**071720**
ⓜ	ER 16	5.00 - 5.50	**271133**
	ER 16	5.50 - 6.00	**071721**
	ER 16	6.00 - 6.50	**271134**
	ER 16	6.00 - 7.00	**071722**
	ER 16	7.00 - 7.50	**271135**
	ER 16	7.5 - 8.00	**071723**
	ER 16	8.00 - 8.50	**271136**
	ER 16	8.50 - 9.00	**071724**
	ER 16	9.00 - 9.50	**271137**
	ER 16	9.00 - 10.00	**071725**

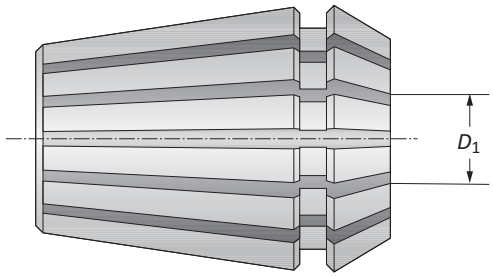
B10-M: 12-15
Key on B10-I: 1

B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Accessories for Collet Chucks

ISO 15488-B (DIN 6499-B)



Collets

Nominal Size	Diameter D_1	Part No.
ER 25	0.059 - 0.079	**071743**
ER 25	0.079 - 0.098	**071744**
ER 25	0.098 - 0.118	**071745**
ER 25	0.118 - 0.138	**271128**
ER 25	0.138 - 0.157	**071746**
ER 25	0.157 - 0.177	**271129**
ER 25	0.177 - 0.197	**071747**
ER 25	0.197 - 0.217	**271130**
ER 25	0.217 - 0.236	**071748**
ER 25	0.236 - 0.256	**271131**
ER 25	0.256 - 0.276	**071749**
ER 25	0.276 - 0.315	**071750**
ER 25	0.315 - 0.354	**071751**
ER 25	0.354 - 0.394	**071752**
ER 25	0.394 - 0.433	**071753**
ER 25	0.433 - 0.472	**071754**
ER 25	0.472 - 0.512	**071755**
ER 25	0.512 - 0.551	**071756**
ER 25	0.551 - 0.591	**071757**
ER 25	0.591 - 0.630	**071758**
ER 32	0.079 - 0.118	**071761**
ER 32	0.118 - 0.157	**071762**
ER 32	0.157 - 0.197	**071763**
ER 32	0.197 - 0.236	**071764**
ER 32	0.236 - 0.276	**071765**
ER 32	0.276 - 0.315	**071766**
ER 32	0.315 - 0.354	**071767**
ER 32	0.354 - 0.394	**071768**
ER 32	0.394 - 0.433	**071769**
ER 32	0.433 - 0.472	**071770**
ER 32	0.472 - 0.512	**071771**
ER 32	0.512 - 0.551	**071772**
ER 32	0.551 - 0.591	**071773**
ER 32	0.591 - 0.630	**071774**
ER 32	0.630 - 0.669	**071775**
ER 32	0.669 - 0.709	**071776**
ER 32	0.709 - 0.748	**071777**
ER 32	0.748 - 0.787	**071778**
ER 32	0.669 - 0.709	**071776**
ER 32	0.709 - 0.748	**071777**
ER 32	0.748 - 0.787	**071778**

Collets

Nominal Size	Diameter D_1	Part No.
ER 25	1.50 - 2.00	**071743**
ER 25	2.00 - 2.50	**071744**
ER 25	2.50 - 3.00	**071745**
ER 25	3.00 - 3.50	**271128**
ER 25	3.50 - 4.00	**071746**
ER 25	4.00 - 4.50	**271129**
ER 25	4.50 - 5.00	**071747**
ER 25	5.00 - 5.50	**271130**
ER 25	5.50 - 6.00	**071748**
ER 25	6.00 - 6.50	**271131**
ER 25	6.50 - 7.00	**071749**
ER 25	7.00 - 8.00	**071750**
ER 25	8.00 - 9.00	**071751**
ER 25	9.00 - 10.00	**071752**
ER 25	10.00 - 11.00	**071753**
ER 25	11.00 - 12.00	**071754**
ER 25	12.00 - 13.00	**071755**
ER 25	13.00 - 14.00	**071756**
ER 25	14.00 - 15.00	**071757**
ER 25	15.00 - 16.00	**071758**
ER 32	2.00 - 3.00	**071761**
ER 32	3.00 - 4.00	**071762**
ER 32	4.00 - 5.00	**071763**
ER 32	5.00 - 6.00	**071764**
ER 32	6.00 - 7.00	**071765**
ER 32	7.00 - 8.00	**071766**
ER 32	8.00 - 9.00	**071767**
ER 32	9.00 - 10.00	**071768**
ER 32	10.00 - 11.00	**071769**
ER 32	11.00 - 12.00	**071770**
ER 32	12.00 - 13.00	**071771**
ER 32	13.00 - 14.00	**071772**
ER 32	14.00 - 15.00	**071773**
ER 32	15.00 - 16.00	**071774**
ER 32	16.00 - 17.00	**071775**
ER 32	17.00 - 18.00	**071776**
ER 32	18.00 - 19.00	**071777**
ER 32	19.00 - 20.00	**071778**
ER 32	17.00 - 18.00	**071776**
ER 32	18.00 - 19.00	**071777**
ER 32	19.00 - 20.00	**071778**

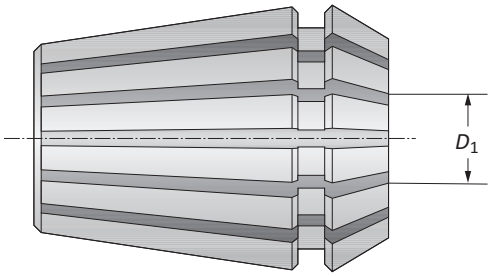
B10-M: 12-15
Key on B10-I:1

B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Accessories for Collet Chucks

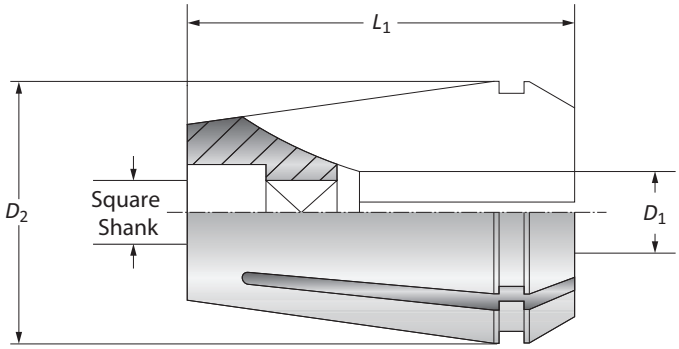
ISO 15488-B (DIN 6499-B)



	Nominal Size	Diameter D_1	Part No.
	ER 40	0.118 - 0.157	**071779**
	ER 40	0.157 - 0.197	**071780**
	ER 40	0.197 - 0.236	**071781**
	ER 40	0.236 - 0.276	**071782**
	ER 40	0.276 - 0.315	**071783**
	ER 40	0.315 - 0.354	**071784**
	ER 40	0.354 - 0.394	**071785**
	ER 40	0.394 - 0.433	**071786**
	ER 40	0.433 - 0.472	**071787**
	ER 40	0.472 - 0.512	**071788**
	ER 40	0.512 - 0.551	**071789**
i	ER 40	0.551 - 0.591	**071790**
	ER 40	0.591 - 0.630	**071791**
	ER 40	0.630 - 0.669	**071792**
	ER 40	0.669 - 0.709	**071793**
	ER 40	0.709 - 0.748	**071794**
	ER 40	0.748 - 0.787	**071795**
	ER 40	0.787 - 0.827	**071796**
	ER 40	0.827 - 0.866	**071797**
	ER 40	0.866 - 0.906	**071798**
	ER 40	0.906 - 0.945	**071799**
	ER 40	0.945 - 0.984	**071800**
	ER 40	0.984 - 1.024	**071801**
	ER 40	3.00 - 4.00	**071779**
	ER 40	4.00 - 5.00	**071780**
	ER 40	5.00 - 6.00	**071781**
	ER 40	6.00 - 7.00	**071782**
	ER 40	7.00 - 8.00	**071783**
	ER 40	8.00 - 9.00	**071784**
	ER 40	9.00 - 10.00	**071785**
	ER 40	10.00 - 11.00	**071786**
	ER 40	11.00 - 12.00	**071787**
	ER 40	12.00 - 13.00	**071788**
	ER 40	13.00 - 14.00	**071789**
m	ER 40	14.00 - 15.00	**071790**
	ER 40	15.00 - 16.00	**071791**
	ER 40	16.00 - 17.00	**071792**
	ER 40	17.00 - 18.00	**071793**
	ER 40	18.00 - 19.00	**071794**
	ER 40	19.00 - 20.00	**071795**
	ER 40	20.00 - 21.00	**071796**
	ER 40	21.00 - 22.00	**071797**
	ER 40	22.00 - 23.00	**071798**
	ER 40	23.00 - 24.00	**071799**
	ER 40	24.00 - 25.00	**071800**
	ER 40	25.00 - 26.00	**071801**

Accessories for Collet Sets for Taps DIN 371/374/376

ISO 15488-B (DIN 6499-B)



Collet Sets

	Nominal Size	Standard-No.	Clamping Range D_1	Collet Set D_2	Collet Set L_1	Part No.
ⓘ	ER 16	426 EGB	0.177 - 0.276	0.630	1.083	**071045**
ⓘ	ER 25	430 EGB	0.177 - 0.472	0.984	1.339	**071047**
ⓘ	ER 32	470 EGB	0.177 - 0.630	1.260	1.575	**071048**
ⓘ	ER 40	472 EGB	0.276 - 0.787	1.575	1.811	**071049**
ⓜ	ER 16	426 EGB	4.50 - 7.00	16.00	27.50	**071045**
ⓜ	ER 25	430 EGB	4.50 - 12.00	25.00	34.00	**071047**
ⓜ	ER 32	470 EGB	4.50 - 16.00	32.00	40.00	**071048**
ⓜ	ER 40	472 EGB	7.00 - 20.00	40.00	46.00	**071049**

Taps

	Shank D_1	Shank Square Shank	Tap DIN 371	Tap DIN 374	Tap DIN 376
ⓘ	0.177	0.134	M 4	M 6 x...	M 6
ⓘ	0.217	0.169	–	M 7 x...	M 7
ⓘ	0.236	0.193	M 4,5/5/6	M 8 x...	M 8
ⓘ	0.276	0.217	M 7	M 9/10 x...	M 9/10
ⓘ	0.315	0.244	M 8	M 6 x...	M 11
ⓘ	0.354	0.276	M 9	M 6 x...	M 12
ⓘ	0.394	0.315	M 10	–	–
ⓘ	0.433	0.354	–	M 14 x...	M 14
ⓘ	0.472	0.354	M 12	M 16 x...	M 16
ⓘ	0.551	0.433	–	M 18 x...	M 18
ⓘ	0.630	0.472	–	M 20 x...	M 20
ⓘ	0.709	0.551	–	M 22/24 x...	M 22/24
ⓘ	0.787	0.630	–	M 27 x...	M 27
ⓜ	4.50	3.40	M 4	M 6 x...	M 6
ⓜ	5.50	4.30	–	M 7 x...	M 7
ⓜ	6.00	4.90	M 4,5/5/6	M 8 x...	M 8
ⓜ	7.00	5.50	M 7	M 9/10 x...	M 9/10
ⓜ	8.00	6.20	M 8	M 6 x...	M 11
ⓜ	9.00	7.00	M 9	M 6 x...	M 12
ⓜ	10.00	8.00	M 10	–	–
ⓜ	11.00	9.00	–	M 14 x...	M 14
ⓜ	12.00	9.00	M 12	M 16 x...	M 16
ⓜ	14.00	11.00	–	M 18 x...	M 18
ⓜ	16.00	12.00	–	M 20 x...	M 20
ⓜ	18.00	14.00	–	M 22/24 x...	M 22/24
ⓜ	20.00	16.00	–	M 27 x...	M 27

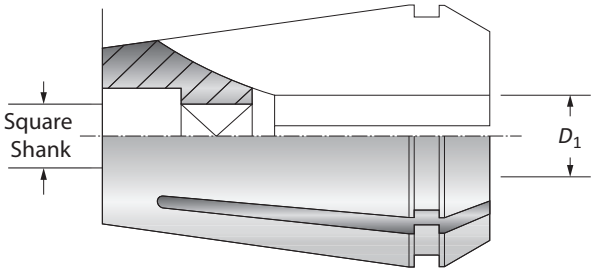
B10-M: 12-15
Key on B10-I:1

B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Accessories for Collet Sets for Taps DIN 371/374/376

ISO 15488-B (DIN 6499-B)



Nominal Size	Suitable Taps D_1	Suitable Taps Square Shank	Part No.
ER 16	0.177	0.134	**071901**
ER 16	0.217	0.169	**071902**
ER 16	0.236	0.193	**071903**
ER 16	0.276	0.217	**071904**
ER 25	0.177	0.134	**071912**
ER 25	0.217	0.169	**071913**
ER 25	0.236	0.193	**071914**
ER 25	0.276	0.217	**071915**
ER 25	0.315	0.244	**071916**
ER 25	0.354	0.276	**071917**
ER 25	0.394	0.315	**071918**
ER 25	0.433	0.354	**071919**
ER 25	0.472	0.354	**071920**
ER 32	0.177	0.134	**071921**
ER 32	0.217	0.169	**071922**
ER 32	0.236	0.193	**071923**
ER 32	0.276	0.217	**071924**
ER 32	0.315	0.244	**071925**
ER 32	0.354	0.276	**071926**
ER 32	0.394	0.315	**071927**
ER 32	0.433	0.354	**071928**
ER 32	0.472	0.354	**071929**
ER 32	0.551	0.433	**071930**
ER 32	0.630	0.472	**071931**
ER 40	0.276	0.217	**071932**
ER 40	0.315	0.244	**071933**
ER 40	0.354	0.276	**071934**
ER 40	0.394	0.315	**071935**
ER 40	0.433	0.354	**071936**
ER 40	0.472	0.354	**071937**
ER 40	0.551	0.433	**071938**
ER 40	0.630	0.472	**071939**
ER 40	0.709	0.571	**071940**
ER 40	0.787	0.630	**071941**

Nominal Size	Suitable Taps D_1	Suitable Taps Square Shank	Part No.
ER 16	4.50	3.40	**071901**
ER 16	5.50	4.30	**071902**
ER 16	6.00	4.90	**071903**
ER 16	7.00	5.50	**071904**
ER 25	4.50	3.40	**071912**
ER 25	5.50	4.30	**071913**
ER 25	6.00	4.90	**071914**
ER 25	7.00	5.50	**071915**
ER 25	8.00	6.20	**071916**
ER 25	9.00	7.00	**071917**
ER 25	10.00	8.00	**071918**
ER 25	11.00	9.00	**071919**
ER 25	12.00	9.00	**071920**
ER 32	4.50	3.40	**071921**
ER 32	5.50	4.30	**071922**
ER 32	6.00	4.90	**071923**
ER 32	7.00	5.50	**071924**
ER 32	8.00	6.20	**071925**
ER 32	9.00	7.00	**071926**
ER 32	10.00	8.00	**071927**
ER 32	11.00	9.00	**071928**
ER 32	12.00	9.00	**071929**
ER 32	14.00	11.00	**071930**
ER 32	16.00	12.00	**071931**
ER 40	7.00	5.50	**071932**
ER 40	8.00	6.20	**071933**
ER 40	9.00	7.00	**071934**
ER 40	10.00	8.00	**071935**
ER 40	11.00	9.00	**071936**
ER 40	12.00	9.00	**071937**
ER 40	14.00	11.00	**071938**
ER 40	16.00	12.00	**071939**
ER 40	18.00	14.50	**071940**
ER 40	20.00	16.00	**071941**

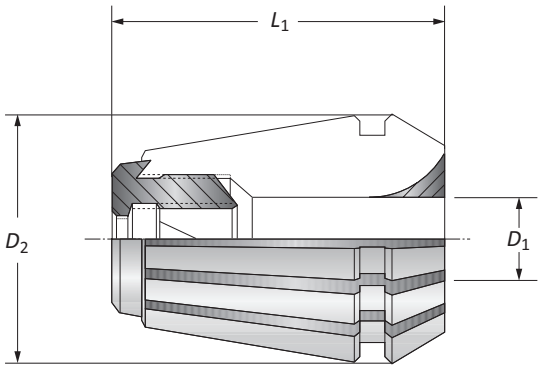
B10-M: 12-15
Key on B10-I: 1

B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Accessories for Collet Chucks: ISO 15488-B (DIN 6499-B)

Collets



Collets for Mill Cutters with Pull Thread System

	Nominal Size	Standard-No.	Clamping Range D_2	Collet L_1	Collet D_1	Part No.
i	ER 32	470 ECL	1.260	1.811	0.236 - 0.630	**071052**
	ER 40	472 ECL	1.575	2.047	0.236 - 0.984	**071053**
m	ER 32	470 ECL	32.00	46.00	6.00 - 16.00	**071052**
	ER 40	472 ECL	40.00	52.00	6.00 - 25.00	**071053**

Collets

	Nominal Size	Collet D_1	Part No.
i	ER 32	0.236	**071826**
	ER 32	0.315	**071827**
	ER 32	0.394	**071828**
	ER 32	0.472	**071829**
	ER 32	0.630	**071830**
	ER 40	0.236	**071831**
	ER 40	0.315	**071832**
	ER 40	0.394	**071833**
	ER 40	0.472	**071834**
	ER 40	0.630	**071835**
	ER 40	0.787	**071836**
	ER 40	0.984	**071837**
m	ER 32	6.00	**071826**
	ER 32	8.00	**071827**
	ER 32	10.00	**071828**
	ER 32	12.00	**071829**
	ER 32	16.00	**071830**
	ER 40	6.00	**071831**
	ER 40	8.00	**071832**
	ER 40	10.00	**071833**
	ER 40	12.00	**071834**
	ER 40	16.00	**071835**
	ER 40	20.00	**071836**
	ER 40	25.00	**071837**

B10-M: 12-15
Key on B10-I:1
B10: vi-vii

i = Imperial (in)
m = Metric (mm)

Collet Kit Set Accessories for Collet Chucks

Collet Kit: ISO 15488 (DIN 6499)

	Nominal Size	Kit Width	Kit Depth	Kit Height	Collet Space	Kit Part No.
i	ER 16	5.512	2.835	1.772	0.394	**099049**
i	ER 25	7.717	4.409	1.969	0.591	**099050**
i	ER 32	9.882	5.512	2.205	0.709	**099051**
m	ER 16	140.00	72.00	45.00	10.00	**099049**
m	ER 25	196.00	112.00	50.00	15.00	**099050**
m	ER 32	251.00	140.00	56.00	18.00	**099051**

Collet Kit: ISO 10897 (DIN 6388)

	Nominal Size	Kit Width	Kit Depth	Kit Height	Collet Space	Kit Part No.
i	ER 16	8.898	6.339	3.346	0.591	**099053**
i	ER 25	13.110	7.913	3.346	0.945	**099054**
i	ER 32	12.598	8.268	3.346	0.591	**099055**
m	ER 16	226.00	161.00	85.00	15.00	**099053**
m	ER 25	333.00	201.00	85.00	24.00	**099054**
m	ER 32	320.00	210.00	85.00	15.00	**099055**

B10-M: 12-15
Key on B10-I: 1
B10: vi-vii

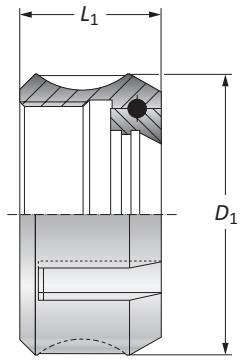
i = Imperial (in)
m = Metric (mm)

Accessories for Collet Chucks: ISO 10897 (DIN 6388)

Clamping Nuts

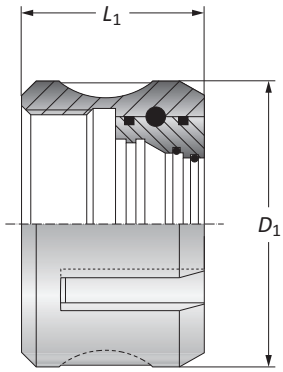
Clamping Nuts: DIN 6388 / ISO 10897 - 1:10

	Nominal Size	Clamping Nut D_1	Clamping Nut L_1	Clamping Range	Torque	Part No.
i	16	1.693	0.945	0.079 - 0.630	73.8 lb-ft	**068048**
i	25	2.362	1.181	0.079 - 0.984	123.8 lb-ft	**068052**
i	32	2.835	1.319	0.157 - 1.260	162.3 lb-ft	**161099**
m	16	43.00	24.00	2.00 - 16.00	100Nm	**068048**
m	25	60.00	30.00	2.00 - 25.00	180Nm	**068052**
m	32	72.00	33.50	4.00 - 32.00	220Nm	**161099**



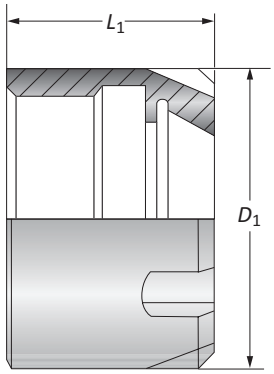
Clamping Nuts for Sealing Discs: DIN 6388 / ISO 10897 - 1:10

	Nominal Size	Clamping Nut D_1	Clamping Nut L_1	Clamping Range	Torque	Part No.
i	16	1.693	1.240	0.079 - 0.591	73.8 lb-ft	**275001**
i	25	2.362	1.496	0.079 - 0.984	123.8 lb-ft	**275003**
i	32	2.835	1.654	0.157 - 1.260	162.3 lb-ft	**276001**
m	16	43.00	31.50	2.00 - 16.00	100Nm	**275001**
m	25	60.00	38.00	2.00 - 25.00	180Nm	**275003**
m	32	72.00	42.00	4.00 - 32.00	220Nm	**276001**



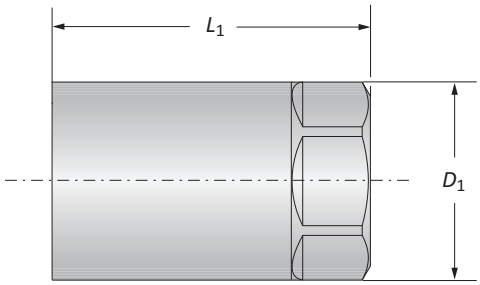
Mini Clamping Nuts

	Nominal Size	Clamping Nut D_1	Clamping Nut L_1	Clamping Range	Torque	Part No.
i	ER 08	0.472	0.425	0.039 - 0.157	5.9 lb-ft	**415357**
i	ER 11	0.630	0.472	0.039 - 0.276	11.8 lb-ft	**415358**
i	ER 16	0.866	0.709	0.039 - 0.394	18.4 lb-ft	**415359**
m	ER 08	12.00	10.80	1.00 - 4.00	8Nm	**415357**
m	ER 11	16.00	12.00	1.00 - 7.00	16Nm	**415358**
m	ER 16	22.00	18.00	1.00 - 10.00	25Nm	**415359**



Clamping Nuts for Erickson Collet Chuck System

	Nominal Size	Clamping Nut D_1	Clamping Nut L_1	Clamping Range	Part No.
i	6	0.551	1.102	0.039 - 0.256	**162095**
i	10	0.827	1.417	0.039 - 0.394	**162093**
m	6	14.00	28.00	1.00 - 6.50	**162095**
m	10	21.00	36.00	1.00 - 10.00	**162093**



B10-M: 12-15
Key on B10-I:1
B10: vi-vii

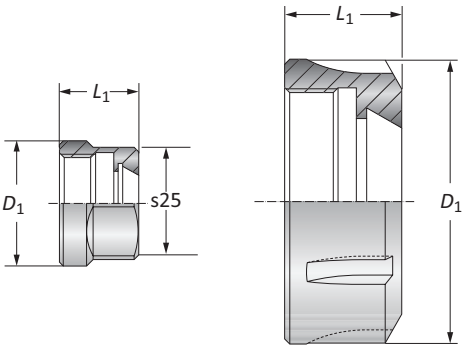
i = Imperial (in)
m = Metric (mm)

Accessories for Collet Chucks: ISO 15488 (DIN 6499)

Clamping Nuts

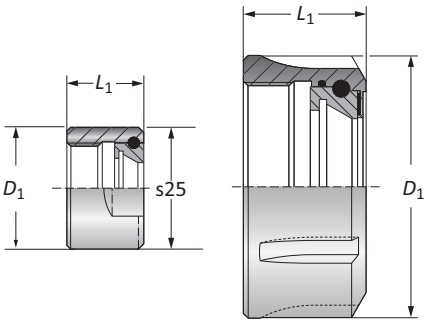
One Piece Clamping Nuts: DIN 6499 / ISO 15488 - 8°

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
i	ER 16	1.102	0.689	0.039 - 0.394	44.3 lb-ft	**215922**
	ER 25	1.654	0.787	0.079 - 0.630	73.8 lb-ft	**215924**
	ER 32	1.969	0.886	0.079 - 0.787	103.3 lb-ft	**215925**
	ER 40	2.480	1.004	0.157 - 1.024	132.8 lb-ft	**215926**
m	ER 16	28.00	17.50	1.00 - 10.00	60Nm	**215922**
	ER 25	42.00	20.00	2.00 - 16.00	100Nm	**215924**
	ER 32	50.00	22.50	2.00 - 20.00	140Nm	**215925**
	ER 40	63.00	25.50	4.00 - 26.00	180Nm	**215926**



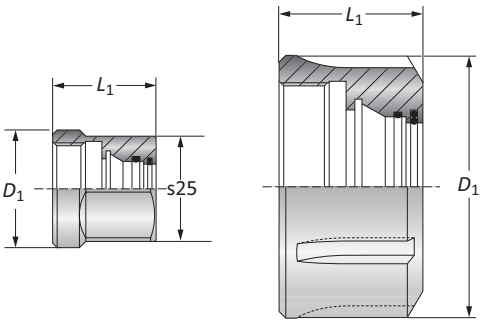
Clamping Nuts with Sliding Ring: DIN 6499 / ISO 15488 - 8°

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
i	ER 16	1.102	0.984	0.039 - 0.394	44.3 lb-ft	**315015**
	ER 25	1.654	1.083	0.079 - 0.630	73.8 lb-ft	**315016**
	ER 32	1.969	1.201	0.079 - 0.787	103.3 lb-ft	**315017**
	ER 40	2.480	1.339	0.157 - 1.024	132.8 lb-ft	**315018**
m	ER 16	28.00	20.30	1.00 - 10.00	60Nm	**315015**
	ER 25	42.00	22.40	2.00 - 16.00	100Nm	**315016**
	ER 32	50.00	25.00	2.00 - 20.00	140Nm	**315017**
	ER 40	63.00	28.30	4.00 - 26.00	180Nm	**315018**



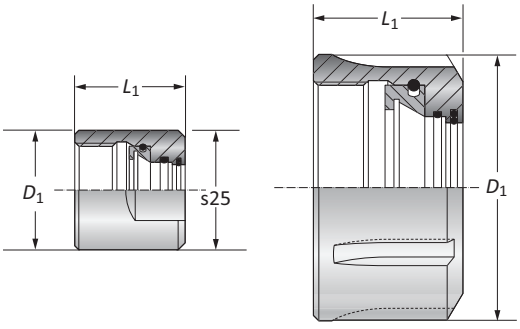
One Piece Clamping Nuts for use with Sealing Disks: DIN 6499 / ISO 15488 - 8°

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
i	ER 16	1.102	0.984	0.039 - 0.394	44.3 lb-ft	**277001**
	ER 25	1.654	1.083	0.079 - 0.630	73.8 lb-ft	**277005**
	ER 32	1.969	1.201	0.079 - 0.787	103.3 lb-ft	**277007**
	ER 40	2.480	1.339	0.157 - 1.024	132.8 lb-ft	**278001**
m	ER 16	28.00	25.00	1.00 - 10.00	60Nm	**277001**
	ER 25	42.00	27.50	2.00 - 16.00	100Nm	**277005**
	ER 32	50.00	30.50	2.00 - 20.00	140Nm	**277007**
	ER 40	63.00	34.00	4.00 - 26.00	180Nm	**278001**



Clamping Nuts with Sliding Ring for use with Sealing Disks: DIN 6499 / ISO 15488 - 8°

	Nominal Size	Clamping Nuts : ISO 15488 (DIN 6499) D_1	L_1	Clamping Range	Torque	Part No.
i	ER 16	1.102	0.984	0.039 - 0.394	44.3 lb-ft	**277002**
	ER 25	1.654	1.122	0.079 - 0.630	73.8 lb-ft	**277006**
	ER 32	1.969	1.240	0.079 - 0.787	103.3 lb-ft	**277008**
	ER 40	2.480	1.378	0.157 - 1.024	132.8 lb-ft	**278002**
m	ER 16	28.00	25.00	1.00 - 10.00	60Nm	**277002**
	ER 25	42.00	28.50	2.00 - 16.00	100Nm	**277006**
	ER 32	50.00	31.50	2.00 - 20.00	140Nm	**277008**
	ER 40	63.00	35.00	4.00 - 26.00	180Nm	**278002**

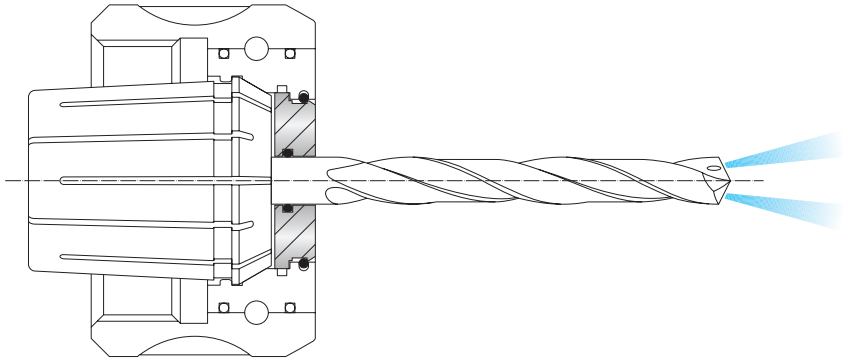


B10-M: 12-15
Key on B10-I: 1
B10: vi-vii

i = Imperial (in)
m = Metric (mm)

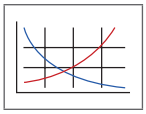
Sealing Disks for Collet Chucks: ISO 10897 (DIN 6388)

Imperial



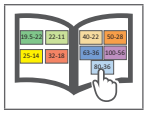
Nominal Size	Sealing Disk Diameter	Sealing Disk Part No.	Sealing Disk Diameter	Sealing Disk Part No.	Sealing Disk Diameter	Sealing Disk Part No.	Sealing Disk Diameter	Sealing Disk Part No.
16	0.098 - 0.118	**275010**	0.236 - 0.256	**275017**	0.374 - 0.394	**275024**	0.512 - 0.531	**275031**
16	0.118 - 0.138	**275011**	0.256 - 0.276	**275018**	0.394 - 0.413	**275025**	0.531 - 0.551	**275032**
16	0.138 - 0.157	**275012**	0.276 - 0.295	**275019**	0.413 - 0.433	**275026**	0.551 - 0.571	**275033**
16	0.157 - 0.177	**275013**	0.295 - 0.315	**275020**	0.433 - 0.453	**275027**	0.571 - 0.591	**275034**
16	0.177 - 0.197	**275014**	0.315 - 0.335	**275021**	0.453 - 0.472	**275028**	0.591 - 0.610	**275035**
16	0.197 - 0.217	**275015**	0.335 - 0.354	**275022**	0.472 - 0.492	**275029**	0.610 - 0.630	**275036**
16	0.217 - 0.236	**275016**	0.354 - 0.374	**275023**	0.492 - 0.512	**275030**	–	**–**
25	0.098 - 0.118	**275040**	0.335 - 0.354	**275052**	0.571 - 0.591	**275064**	0.807 - 0.827	**275076**
25	0.118 - 0.138	**275041**	0.354 - 0.374	**275053**	0.591 - 0.610	**275065**	0.807 - 0.846	**275077**
25	0.138 - 0.157	**275042**	0.374 - 0.394	**275054**	0.610 - 0.630	**275066**	0.846 - 0.866	**275078**
25	0.157 - 0.177	**275043**	0.394 - 0.413	**275055**	0.630 - 0.650	**275067**	0.866 - 0.886	**275079**
25	0.177 - 0.197	**275044**	0.413 - 0.433	**275056**	0.650 - 0.669	**275068**	0.886 - 0.906	**275080**
25	0.197 - 0.217	**275045**	0.433 - 0.453	**275057**	0.669 - 0.689	**275069**	0.906 - 0.925	**275081**
25	0.217 - 0.236	**275046**	0.453 - 0.472	**275058**	0.689 - 0.709	**275070**	0.925 - 0.945	**275082**
25	0.236 - 0.256	**275047**	0.472 - 0.492	**275059**	0.709 - 0.728	**275071**	0.945 - 0.965	**275083**
25	0.256 - 0.276	**275048**	0.492 - 0.512	**275060**	0.728 - 0.748	**275072**	0.965 - 0.984	**275084**
25	0.276 - 0.295	**275049**	0.512 - 0.531	**275061**	0.748 - 0.768	**275073**	–	**–**
25	0.295 - 0.315	**275050**	0.531 - 0.551	**275062**	0.768 - 0.787	**275074**	–	**–**
25	0.315 - 0.335	**275051**	0.551 - 0.571	**275063**	0.787 - 0.807	**275075**	–	**–**
32	0.138 - 0.157	**276005**	0.433 - 0.453	**276020**	0.728 - 0.748	**276035**	1.024 - 1.043	**276050**
32	0.157 - 0.177	**276006**	0.453 - 0.472	**276021**	0.748 - 0.768	**276036**	1.043 - 1.063	**276051**
32	0.177 - 0.197	**276007**	0.472 - 0.492	**276022**	0.768 - 0.787	**276037**	1.063 - 1.102	**276052**
32	0.197 - 0.217	**276008**	0.492 - 0.512	**276023**	0.787 - 0.807	**276038**	1.063 - 1.102	**276053**
32	0.217 - 0.236	**276009**	0.512 - 0.531	**276024**	0.807 - 0.827	**276039**	1.102 - 1.102	**276054**
32	0.236 - 0.256	**276010**	0.531 - 0.551	**276025**	0.827 - 0.846	**276040**	1.122 - 1.142	**276055**
32	0.256 - 0.276	**276011**	0.551 - 0.571	**276026**	0.846 - 0.866	**276041**	1.142 - 1.161	**276056**
32	0.276 - 0.295	**276012**	0.571 - 0.591	**276027**	0.866 - 0.886	**276042**	1.161 - 1.181	**276057**
32	0.295 - 0.315	**276013**	0.591 - 0.610	**276028**	0.886 - 0.906	**276043**	1.181 - 1.201	**276058**
32	0.315 - 0.335	**276014**	0.610 - 0.630	**276029**	0.906 - 0.925	**276044**	1.201 - 1.220	**276059**
32	0.335 - 0.354	**276015**	0.630 - 0.650	**276030**	0.925 - 0.945	**276045**	1.220 - 1.240	**276060**
32	0.354 - 0.374	**276016**	0.650 - 0.669	**276031**	0.945 - 0.965	**276046**	1.240 - 1.260	**276061**
32	0.374 - 0.394	**276017**	0.669 - 0.689	**276032**	0.965 - 0.984	**276047**	–	**–**
32	0.394 - 0.413	**276018**	0.669 - 0.709	**276033**	0.984 - 1.004	**276048**	–	**–**
32	0.413 - 0.433	**276019**	0.709 - 0.728	**276034**	1.004 - 1.024	**276049**	–	**–**

B10-M: 12-15



Key on B10-I:1

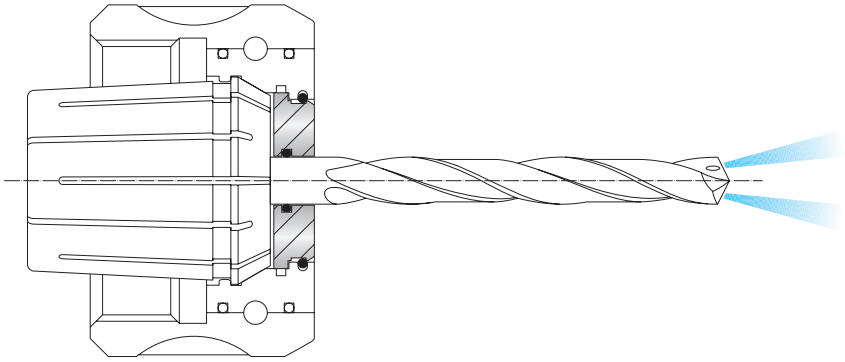
B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

Sealing Disks for Collet Chucks: ISO 10897 (DIN 6388)

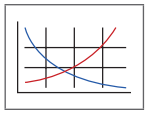
Metric



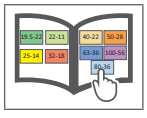
	Nominal Size	Sealing Disk Diameter	Sealing Disk Part No.	Sealing Disk Diameter	Sealing Disk Part No.	Sealing Disk Diameter	Sealing Disk Part No.	Sealing Disk Diameter	Sealing Disk Part No.
	16	2.50 - 3.00	**275010**	6.00 - 6.50	**275017**	9.50 - 10.00	**275024**	13.00 - 13.50	**275031**
	16	3.00 - 3.50	**275011**	6.50 - 7.00	**275018**	10.00 - 10.50	**275025**	13.50 - 14.00	**275032**
	16	3.50 - 4.00	**275012**	7.00 - 7.50	**275019**	10.50 - 11.00	**275026**	14.00 - 14.50	**275033**
	16	4.00 - 4.50	**275013**	7.50 - 8.00	**275020**	11.00 - 11.50	**275027**	14.50 - 15.00	**275034**
	16	4.50 - 5.00	**275014**	8.00 - 8.50	**275021**	11.50 - 12.00	**275028**	15.00 - 15.50	**275035**
	16	5.00 - 5.50	**275015**	8.50 - 9.00	**275022**	12.00 - 12.50	**275029**	15.50 - 16.00	**275036**
	16	5.50 - 6.00	**275016**	9.00 - 9.50	**275023**	12.50 - 13.00	**275030**	–	–
	25	2.50 - 3.00	**275040**	8.50 - 9.00	**275052**	14.50 - 15.00	**275064**	20.50 - 21.00	**275076**
	25	3.00 - 3.50	**275041**	9.00 - 9.50	**275053**	15.00 - 15.50	**275065**	21.00 - 21.50	**275077**
	25	3.50 - 4.00	**275042**	9.50 - 10.00	**275054**	15.50 - 16.00	**275066**	21.50 - 22.00	**275078**
	25	4.00 - 4.50	**275043**	10.00 - 10.50	**275055**	16.00 - 16.50	**275067**	22.00 - 22.50	**275079**
	25	4.50 - 5.00	**275044**	10.50 - 11.00	**275056**	16.50 - 17.00	**275068**	22.50 - 23.00	**275080**
	25	5.00 - 5.50	**275045**	11.00 - 11.50	**275057**	17.00 - 17.50	**275069**	23.00 - 23.50	**275081**
	25	5.50 - 6.00	**275046**	11.50 - 12.00	**275058**	17.50 - 18.00	**275070**	23.50 - 24.00	**275082**
	25	6.00 - 6.50	**275047**	12.00 - 12.50	**275059**	18.00 - 18.50	**275071**	24.00 - 24.50	**275083**
	25	6.50 - 7.00	**275048**	12.50 - 13.00	**275060**	18.50 - 19.00	**275072**	24.50 - 25.00	**275084**
ⓜ	25	7.00 - 7.50	**275049**	13.00 - 13.50	**275061**	19.00 - 19.50	**275073**	–	–
	25	7.50- 8.00	**275050**	13.50 - 14.00	**275062**	19.50 - 20.00	**275074**	–	–
	25	8.00 - 8.50	**275051**	14.00 - 14.50	**275063**	20.00 - 20.50	**275075**	–	–
	32	3.50 - 4.00	**276005**	11.00 - 11.50	**276020**	18.50 - 19.00	**276035**	26.00 - 26.50	**276050**
	32	4.00 - 4.50	**276006**	11.50 - 12.00	**276021**	19.00 - 19.50	**276036**	26.50 - 27.00	**276051**
	32	4.50 - 5.00	**276007**	12.00 - 12.50	**276022**	19.50 - 20.00	**276037**	27.50 - 28.00	**276052**
	32	5.00 - 5.50	**276008**	12.50 - 13.00	**276023**	20.00 - 20.50	**276038**	27.50 - 28.00	**276053**
	32	5.50 - 6.00	**276009**	13.00 - 13.50	**276024**	20.50 - 21.00	**276039**	28.00 - 28.50	**276054**
	32	6.00 - 6.50	**276010**	13.50 - 14.00	**276025**	21.00- 21.50	**276040**	28.50 - 29.00	**276055**
	32	6.50 - 7.00	**276011**	14.00 - 14.50	**276026**	21.50 - 22.00	**276041**	29.00 - 29.50	**276056**
	32	7.00 - 7.50	**276012**	14.50 - 15.00	**276027**	22.00 - 22.50	**276042**	29.50 - 30.00	**276057**
	32	7.50 - 8.00	**276013**	15.00 - 15.50	**276028**	22.50 - 23.00	**276043**	30.00 - 30.50	**276058**
	32	8.00 - 8.50	**276014**	15.50 - 16.00	**276029**	23.00 - 23.50	**276044**	30.50 - 31.00	**276059**
	32	8.50 - 9.00	**276015**	16.00 - 16.50	**276030**	23.50 - 24.00	**276045**	31.00 - 31.50	**276060**
	32	9.00 - 9.50	**276016**	16.50 - 17.00	**276031**	24.00 - 24.50	**276046**	31.50 - 32.00	**276061**
	32	9.50 - 10.00	**276017**	17.00 - 17.50	**276032**	24.50 - 25.00	**276047**	–	–
	32	10.00 - 10.50	**276018**	17.50 - 18.00	**276033**	25.00 - 25.50	**276048**	–	–
	32	10.50 - 11.00	**276019**	18.00 - 18.50	**276034**	25.50 - 26.00	**276049**	–	–

B10-M: 12-15

Key on B10-I: 1



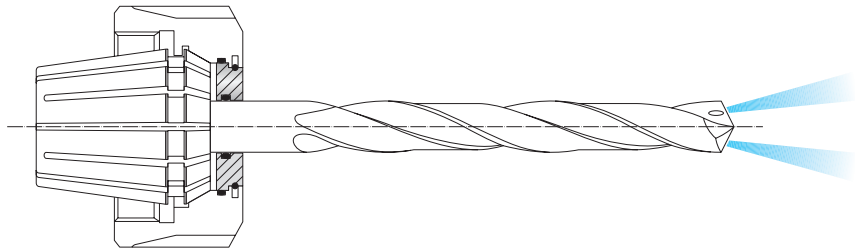
B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

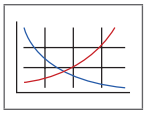
Sealing Disks Collet Chucks: ISO 15488 (DIN 6499)

Imperial



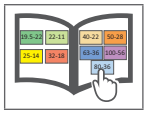
	Nominal Size	Sealing Disk Diameter	Sealing Disk Part No.	Sealing Disk Diameter	Sealing Disk Part No.	Sealing Disk Diameter	Sealing Disk Part No.	Sealing Disk Diameter	Sealing Disk Part No.
	ER 16	0.098 - 0.118	**277010**	0.177 - 0.197	**277014**	0.256 - 0.276	**277018**	0.335 - 0.354	**277022**
	ER 16	0.117 - 0.138	**277011**	0.197 - 0.217	**277015**	0.276 - 0.295	**277019**	0.354 - 0.374	**277023**
	ER 16	0.138 - 0.157	**277012**	0.217 - 0.236	**277016**	0.295 - 0.315	**277020**	0.374 - 0.394	**277024**
	ER 16	0.157 - 0.177	**277013**	0.236 - 0.256	**277017**	0.315 - 0.335	**277021**	–	**–**
	ER 25	0.098 - 0.118	**277025**	0.236 - 0.256	**277032**	0.374 - 0.394	**277039**	0.512 - 0.531	**277046**
	ER 25	0.118 - 0.138	**277026**	0.256 - 0.276	**277033**	0.394 - 0.413	**277040**	0.531 - 0.551	**277047**
	ER 25	0.138 - 0.157	**277027**	0.276 - 0.295	**277034**	0.413 - 0.433	**277041**	0.551 - 0.571	**277048**
	ER 25	0.157 - 0.177	**277028**	0.295 - 0.315	**277035**	0.433 - 0.453	**277042**	0.571 - 0.591	**277049**
	ER 25	0.177 - 0.197	**277029**	0.315 - 0.335	**277036**	0.453 - 0.472	**277043**	0.591 - 0.610	**277050**
	ER 25	0.197 - 0.217	**277030**	0.335 - 0.354	**277037**	0.472 - 0.492	**277044**	0.610 - 0.630	**277051**
	ER 25	0.217 - 0.236	**277031**	0.354 - 0.374	**277038**	0.492 - 0.512	**277045**	–	**–**
	ER 32	0.098 - 0.118	**277055**	0.276 - 0.295	**277064**	0.453 - 0.472	**277073**	0.630 - 0.650	**277082**
	ER 32	0.118 - 0.138	**277056**	0.295 - 0.315	**277065**	0.472 - 0.492	**277074**	0.650 - 0.669	**277083**
	ER 32	0.138 - 0.157	**277057**	0.315 - 0.335	**277066**	0.492 - 0.512	**277075**	0.669 - 0.689	**277084**
	ER 32	0.157 - 0.177	**277058**	0.335 - 0.354	**277067**	0.512 - 0.531	**277076**	0.689 - 0.709	**277085**
ⓘ	ER 32	0.177 - 0.197	**277059**	0.354 - 0.374	**277068**	0.531 - 0.551	**277077**	0.709 - 0.728	**277086**
	ER 32	0.197 - 0.217	**277060**	0.374 - 0.394	**277069**	0.551 - 0.571	**277078**	0.728 - 0.748	**277087**
	ER 32	0.217 - 0.236	**277061**	0.394 - 0.413	**277070**	0.571 - 0.591	**277079**	0.748 - 0.768	**277088**
	ER 32	0.236 - 0.256	**277062**	0.413 - 0.433	**277071**	0.591 - 0.610	**277080**	0.768 - 0.787	**277089**
	ER 32	0.256 - 0.276	**277063**	0.433 - 0.453	**277072**	0.610 - 0.630	**277081**	–	**–**
	ER 40	0.098 - 0.118	**278005**	0.335 - 0.354	**278017**	0.571 - 0.591	**278029**	0.807 - 0.827	**278041**
	ER 40	0.118 - 0.138	**278006**	0.354 - 0.374	**278018**	0.591 - 0.610	**278030**	0.827 - 0.846	**278042**
	ER 40	0.138 - 0.157	**278007**	0.374 - 0.394	**278019**	0.610 - 0.630	**278031**	0.846 - 0.866	**278043**
	ER 40	0.157 - 0.177	**278008**	0.394 - 0.413	**278020**	0.630 - 0.650	**278032**	0.866 - 0.886	**278044**
	ER 40	0.177 - 0.197	**278009**	0.413 - 0.433	**278021**	0.650 - 0.669	**278033**	0.866 - 0.906	**278045**
	ER 40	0.197 - 0.217	**278010**	0.433 - 0.453	**278022**	0.669 - 0.689	**278034**	0.906 - 0.925	**278046**
	ER 40	0.217 - 0.236	**278011**	0.453 - 0.472	**278023**	0.689 - 0.709	**278035**	0.925 - 0.945	**278047**
	ER 40	0.236 - 0.256	**278012**	0.472 - 0.492	**278024**	0.709 - 0.728	**278036**	0.945 - 0.965	**278048**
	ER 40	0.256 - 0.276	**278013**	0.492 - 0.512	**278025**	0.728 - 0.748	**278037**	0.965 - 0.984	**278049**
	ER 40	0.276 - 0.295	**278014**	0.512 - 0.531	**278026**	0.748 - 0.768	**278038**	0.984 - 1.004	**278050**
	ER 40	0.295 - 0.315	**278015**	0.531 - 0.551	**278027**	0.768 - 0.787	**278039**	1.004 - 1.024	**278051**
	ER 40	0.315 - 0.335	**278016**	0.551 - 0.571	**278028**	0.787 - 0.807	**278040**	–	**–**

B10-M: 12-15



Key on B10-I:1

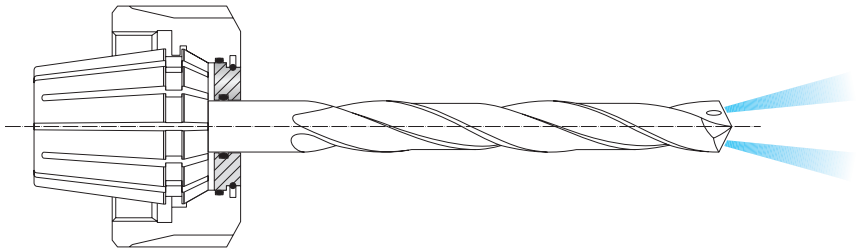
B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

Sealing Disks Collet Chucks: ISO 15488 (DIN 6499)

Metric



Nominal Size	Sealing Disk Diameter	Sealing Disk Part No.	Sealing Disk Diameter	Sealing Disk Part No.	Sealing Disk Diameter	Sealing Disk Part No.	Sealing Disk Diameter	Sealing Disk Part No.
ER 16	2.50 - 3.00	**277010**	4.50 - 5.00	**277014**	6.50 - 7.00	**277018**	8.50 - 9.00	**277022**
ER 16	3.00 - 3.50	**277011**	5.00 - 5.50	**277015**	7.00 - 7.50	**277019**	9.00 - 9.50	**277023**
ER 16	3.50 - 4.00	**277012**	5.50 - 6.00	**277016**	7.50 - 8.00	**277020**	9.50 - 10.00	**277024**
ER 16	4.00 - 4.50	**277013**	6.00 - 6.50	**277017**	8.00 - 8.50	**277021**	–	**–**
ER 25	2.50 - 3.00	**277025**	6.00 - 6.50	**277032**	9.50 - 10.00	**277039**	13.00 - 13.50	**277046**
ER 25	3.00 - 3.50	**277026**	6.50 - 7.00	**277033**	10.00 - 10.50	**277040**	13.50 - 14.00	**277047**
ER 25	3.50 - 4.00	**277027**	7.00 - 7.50	**277034**	10.50 - 11.00	**277041**	14.00 - 14.50	**277048**
ER 25	4.00 - 4.50	**277028**	7.50 - 8.00	**277035**	11.00 - 11.50	**277042**	14.50 - 15.00	**277049**
ER 25	4.50 - 5.00	**277029**	8.00 - 8.50	**277036**	11.50 - 12.00	**277043**	15.00 - 15.50	**277050**
ER 25	5.00 - 5.50	**277030**	8.50 - 9.00	**277037**	12.00 - 12.50	**277044**	15.50 - 16.00	**277051**
ER 25	5.50 - 6.00	**277031**	9.00 - 9.50	**277038**	12.50 - 13.00	**277045**	–	**–**
ER 32	2.50 - 3.00	**277055**	7.00 - 7.50	**277064**	11.50 - 12.00	**277073**	16.00 - 16.50	**277082**
ER 32	3.00 - 3.50	**277056**	7.50 - 8.00	**277065**	12.00 - 12.50	**277074**	16.50 - 17.00	**277083**
ER 32	3.50 - 4.00	**277057**	8.00 - 8.50	**277066**	12.50 - 13.00	**277075**	17.00 - 17.50	**277084**
ER 32	4.00 - 4.50	**277058**	8.50 - 9.00	**277067**	13.00 - 13.50	**277076**	17.50 - 18.00	**277085**
ER 32	4.50 - 5.00	**277059**	9.00 - 9.50	**277068**	13.50 - 14.00	**277077**	18.00 - 18.50	**277086**
ER 32	5.00 - 5.50	**277060**	9.50 - 10.00	**277069**	14.00 - 14.50	**277078**	18.50 - 19.00	**277087**
ER 32	5.50 - 6.00	**277061**	10.00 - 10.50	**277070**	14.50 - 15.00	**277079**	19.00 - 19.50	**277088**
ER 32	6.00 - 6.50	**277062**	10.50 - 11.00	**277071**	15.00 - 15.50	**277080**	19.50 - 20.00	**277089**
ER 32	6.50 - 7.00	**277063**	11.00 - 11.50	**277072**	15.50 - 16.00	**277081**	–	**–**
ER 40	2.50 - 3.00	**278005**	8.50 - 9.00	**278017**	14.50 - 15.00	**278029**	20.50 - 21.00	**278041**
ER 40	3.00 - 3.50	**278006**	9.00 - 9.50	**278018**	15.00 - 15.50	**278030**	21.00 - 21.50	**278042**
ER 40	3.50 - 4.00	**278007**	9.50 - 10.00	**278019**	15.50 - 16.00	**278031**	21.50 - 22.00	**278043**
ER 40	4.00 - 4.50	**278008**	10.00 - 10.50	**278020**	16.00- 16.50	**278032**	22.00 - 22.50	**278044**
ER 40	4.50 - 5.00	**278009**	10.50 - 11.00	**278021**	16.50 - 17.00	**278033**	22.50 - 23.00	**278045**
ER 40	5.00 - 5.50	**278010**	11.00 - 11.50	**278022**	17.00 - 17.50	**278034**	23.00 - 23.50	**278046**
ER 40	5.50 - 6.00	**278011**	11.50 - 12.00	**278023**	17.50 - 18.00	**278035**	23.50 - 24.00	**278047**
ER 40	6.00 - 6.50	**278012**	12.00 - 12.50	**278024**	18.00 - 18.50	**278036**	24.00 - 24.50	**278048**
ER 40	6.50 - 7.00	**278013**	12.50 - 13.00	**278025**	18.50 - 19.00	**278037**	24.50 - 25.00	**278049**
ER 40	7.00 - 7.50	**278014**	13.00 - 13.50	**278026**	19.00 - 19.50	**278038**	25.00 - 25.50	**278050**
ER 40	7.50 - 8.00	**278015**	13.50 - 14.00	**278027**	19.50 - 20.00	**278039**	25.50 - 26.00	**278051**
ER 40	8.00 - 8.50	**278016**	14.00 - 14.50	**278028**	20.00 - 20.50	**278040**	–	**–**

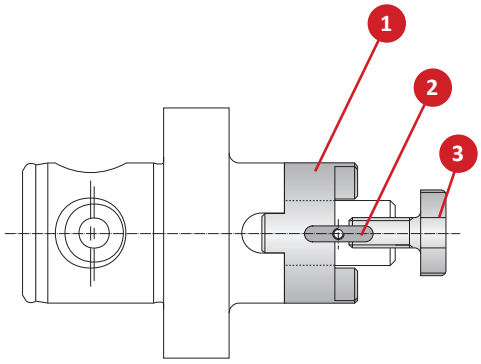
B10-M: 12-15
Key on B10-I: 1
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Accessories for Milling Machine Arbors

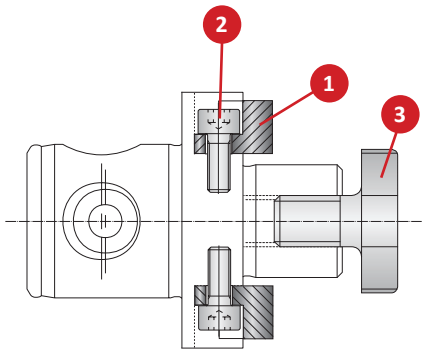
Accessories for Milling Machine Arbors

Shell-Mill Adapter	Part No. 1 Clutch Drive Ring	2 Axial Drive Key	3 Retaining Screw
13	**115708**	**115709**	**115707**
16	**115696**	**215608**	**115697**
22	**115341**	**215609**	**115345**
27	**115342**	**215610**	**115346**
32	**115343**	**215611**	**115347**
40	**115344**	**215612**	**115348**



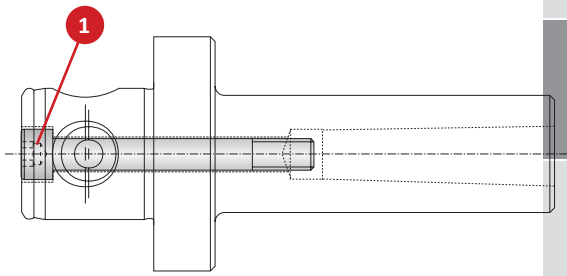
Accessories for Milling Machine Arbors

Shell-Mill Adapter	Part No. 1 Drive Key	2 Cap Screw	3 Retaining Screw
16	**215701**	**115566**	**115697**
22	**215702**	**108109**	**115345**
27	**215703**	**109109**	**115346**
32	**215704**	**115147**	**115347**
40	**215705**	**116152**	**115348**
60	**115643**	**115237**	–



Accessories for Holding Arbors

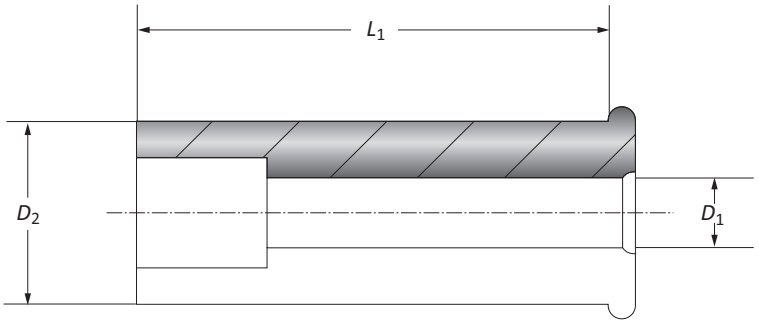
Adapter Sleeves	Part No. 1 Cap Screw	Service Key
209022	**115929**	s5
209023	**115930**	s7
209024	**115932**	s8
209025	**115933**	s5
209026	**115169**	s8
209027	**115934**	s10
209028	**115936**	s12



B10-M: 12-15
Key on B10-I:1
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Reducing Sleeves for Hydraulic Clamping Chucks

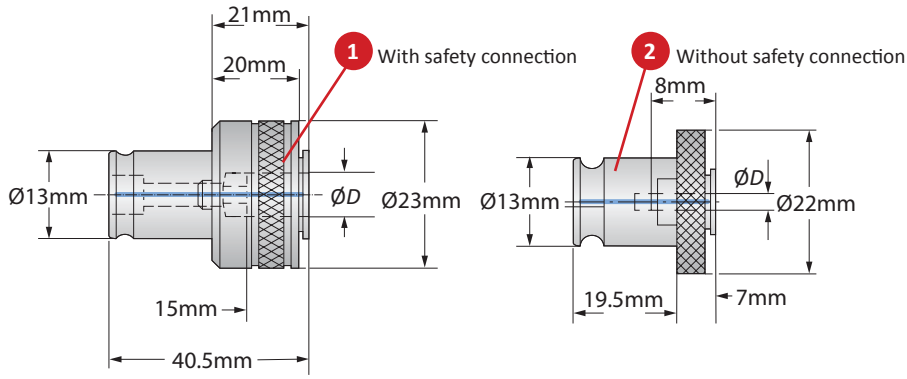


	Nominal Size D_2	Reducing Sleeve D_1	L_1	Part No.
ⓘ	0.787	0.118	1.988	**271067**
	0.787	0.157	1.988	**271068**
	0.787	0.197	1.988	**271069**
	0.787	0.236	1.988	**271070**
	0.787	0.276	1.988	**271049**
	0.787	0.315	1.988	**271071**
	0.787	0.354	1.988	**271050**
	0.787	0.394	1.988	**271072**
	0.787	0.433	1.988	**271051**
	0.787	0.472	1.988	**271073**
	0.787	0.512	1.988	**271052**
	0.787	0.551	1.988	**271074**
	0.787	0.591	1.988	**271018**
	0.787	0.630	1.988	**271008**
ⓜ	20.00	3.00	50.50	**271067**
	20.00	4.00	50.50	**271068**
	20.00	5.00	50.50	**271069**
	20.00	6.00	50.50	**271070**
	20.00	7.00	50.50	**271049**
	20.00	8.00	50.50	**271071**
	20.00	9.00	50.50	**271050**
	20.00	10.00	50.50	**271072**
	20.00	11.00	50.50	**271051**
	20.00	12.00	50.50	**271073**
	20.00	13.00	50.50	**271052**
	20.00	14.00	50.50	**271074**
	20.00	15.00	50.50	**271018**
	20.00	16.00	50.50	**271008**

B10-M: 12-15
Key on B10-I: 1
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Quick Change Adapters

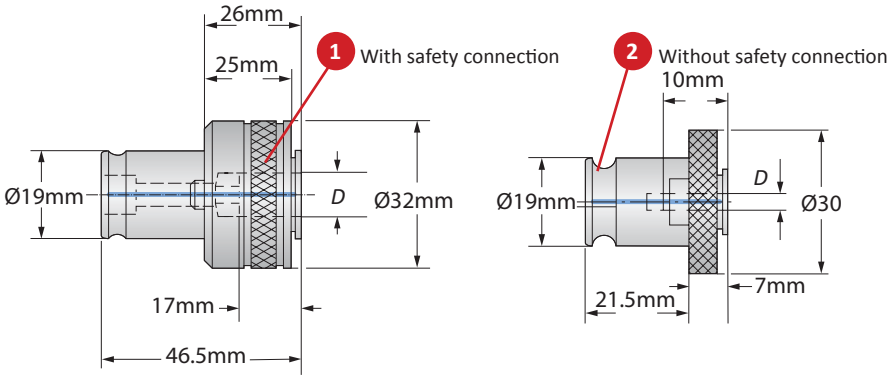


	Shank Dimensions		Quick Change Adapter								Part No.	
	Nominal Size	*D* x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1	2
ⓘ	0	0.083 x 0.098	M 1	–	M 1	–	M 3.5	1/16"	–	1.5 - 2	**233070**	**K24358**
	0	0.083 x 0.110	M 2	–	M 2	M 4	M 4	3/32"	5/32"	2 - 3	**233071**	**K24276**
	0	0.106 x 0.138	M 3	–	M 3	M 5	M 5	1/8"	–	4 - 6	**233072**	**K24277**
	0	0.118 x 0.157	M 3.5	–	M 3.5	–	–	–	–	1.5 - 2	**233073**	**K24278**
	0	0.138 x 0.177	M 4	–	M 4	M 6	M 6	5/32"	1/4"	6 - 9	**233074**	**K24279**
	0	0.193 x 0.236	M 8	–	–	M 8	M 8	–	–	16 - 21	**233075**	**K24280**
	0	0.217 x 0.276	M 10	G 1/8"	–	M 10	M 10	1/4"	3/8"	27 - 32	**233076**	**K24281**
	0	0.244 x 0.315	–	–	M 8	–	–	5/16"	7/16"	16 - 21	**233077**	**K24391**
ⓜ	0	2.10 x 2.50	M 1	–	M 1	–	M 3.5	1/16"	–	1.5 - 2	**233070**	**K24358**
	0	2.10 x 2.80	M 2	–	M 2	M 4	M 4	3/32"	5/32"	2 - 3	**233071**	**K24276**
	0	2.70 x 3.50	M 3	–	M 3	M 5	M 5	1/8"	–	4 - 6	**233072**	**K24277**
	0	3.00 x 4.00	M 3.5	–	M 3.5	–	–	–	–	1.5 - 2	**233073**	**K24278**
	0	3.40 x 4.50	M 4	–	M 4	M 6	M 6	5/32"	1/4"	6 - 9	**233074**	**K24279**
	0	4.90 x 6.00	M 8	–	–	M 8	M 8	–	–	16 - 21	**233075**	**K24280**
	0	5.50 x 7.00	M 10	G 1/8"	–	M 10	M 10	1/4"	3/8"	27 - 32	**233076**	**K24281**
	0	6.20 x 8.00	–	–	M 8	–	–	5/16"	7/16"	16 - 21	**233077**	**K24391**

B10-M: 12-15
Key on B10-I:1
B10: vi-vii

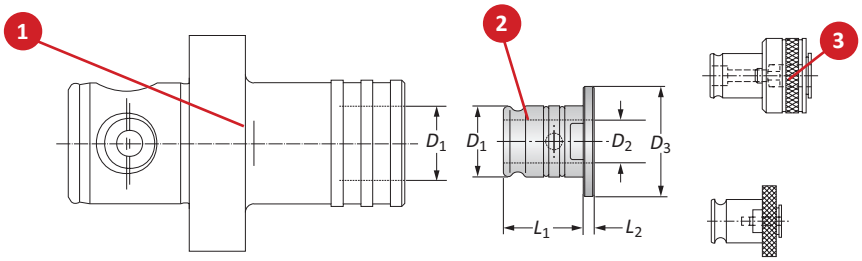
ⓘ = Imperial (in)
ⓜ = Metric (mm)

Quick Change Adapters



Quick Change Adapters

	Shank Dimensions		Quick Change Adapter								Part No.	
	Nominal Size	*D* x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1	2
ⓘ	1	0.083 x 0.110	M 2	–	M 2.8	M 4	M 4	3/32"	5/32"	2 - 3	K17847	K23259
	1	0.106 x 0.138	M 3	–	M 3.5	M 5	M 5	1/8"	–	4 - 6	233001	K18455
	1	0.118 x 0.157	M 3.5	–	M 3.5	–	–	–	–	1.5 - 2	233002	K22439
	1	0.134 x 0.177	M 4	–	M 4	M 6	M 6	5/32"	1/4"	6 - 9	233003	K16414
	1	0.193 x 0.236	M 8	–	–	M 8	M 8	–	–	16 - 21	233004	K16415
	1	0.217 x 0.276	M 10	–	–	M 10	M 10	1/4"	3/8"	27 - 32	233005	K16418
	1	0.244 x 0.315	–	G 1/8"	M 8	–	–	5/16"	7/16"	16 - 21	233006	K16416
	1	0.276 x 0.354	M 12	–	–	M 12	M 12	3/8"	1/2"	37 - 44	233007	K18454
	1	0.315 x 0.394	–	–	M 10	–	–	–	–	27 - 32	233008	K16417
	1	0.354 x 0.433	M 14	G 1/4"	–	M 14	M 14	–	9/16"	50 - 53	233009	K22440
ⓜ	1	2.10 x 2.80	M 2	–	M 2.8	M 4	M 4	3/32"	5/32"	2 - 3	K17847	K23259
	1	2.70 x 3.50	M 3	–	M 3.5	M 5	M 5	1/8"	–	4 - 6	233001	K18455
	1	3.00 x 4.00	M 3.5	–	M 3.5	–	–	–	–	1.5 - 2	233002	K22439
	1	3.40 x 4.50	M 4	–	M 4	M 6	M 6	5/32"	1/4"	6 - 9	233003	K16414
	1	4.90 x 6.00	M 8	–	–	M 8	M 8	–	–	16 - 21	233004	K16415
	1	5.50 x 7.00	M 10	–	–	M 10	M 10	1/4"	3/8"	27 - 32	233005	K16418
	1	6.20 x 8.00	–	G 1/8"	M 8	–	–	5/16"	7/16"	16 - 21	233006	K16416
	1	7.00 x 9.00	M 12	–	–	M 12	M 12	3/8"	1/2"	37 - 44	233007	K18454
	1	8.00 x 10.00	–	–	M 10	–	–	–	–	27 - 32	233008	K16417
	1	9.00 x 11.00	M 14	G 1/4"	–	M 14	M 14	–	9/16"	50 - 53	233009	K22440



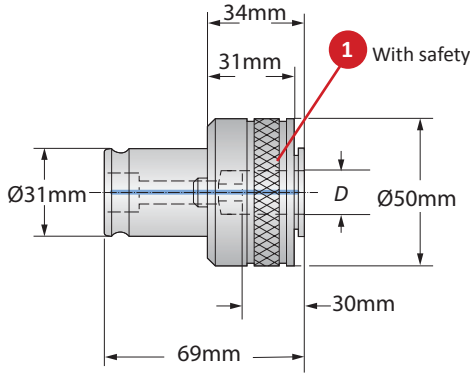
Reducers for Quick Change Adapters

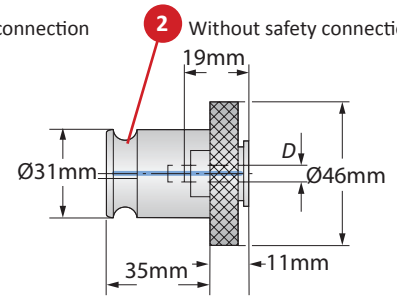
	1 Tapping Chuck		2 Quick Change Adapter		3. Reducer						
	Nominal Size	D_1	Nominal Size	D_1	D_1	D_2	D_3	L_1	L_2	Weight	Part No.
ⓘ	1	0.748	0	0.512	0.748	0.512	1.181	0.846	0.157	0.264 (lbs)	161038
	2	1.220	1	0.748	1.220	0.748	1.890	1.378	0.197	1.058 (lbs)	162094
ⓜ	1	19.00	0	13.00	19.00	13.00	30.00	21.50	4.00	0.12 (kg)	161038
	2	31.00	1	19.00	31.00	19.00	48.00	35.00	5.00	0.48 (kg)	162094

B10-M: 12-15
Key on B10-I: 1
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

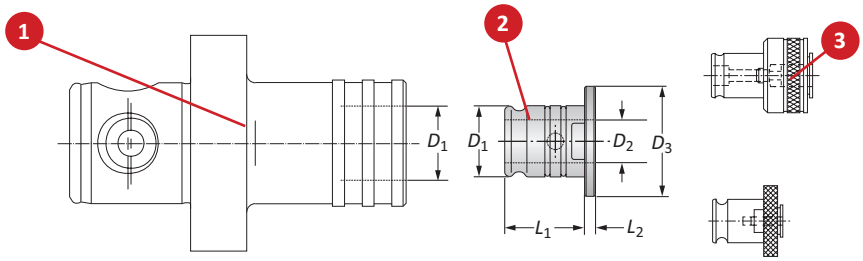
Quick Change Adapters





Quick Change Adapters

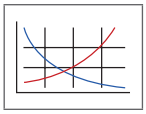
	Shank Dimensions		Quick Change Adapter								Part No.	
	Nominal Size	*D* x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1	2
	2	0.217 x 0.276	M 10	G ⅛"	–	M 10	M 10	¼"	⅜"	24 - 32	**233020**	**K15282**
	2	0.244 x 0.315	–	–	M 8	–	–	5/16"	7/16"	16 - 21	**233021**	**K15283**
	2	0.276 x 0.354	M 12	–	–	M 12	M 12	⅜"	½"	37 - 44	**233022**	**K15284**
	2	0.315 x 0.394	–	–	M 10	–	–	–	–	27 - 32	**233023**	**K18456**
ⓘ	2	0.354 x 0.433	M 14	G ¼"	–	M 14	M 14	–	9/16"	50 - 53	**233024**	**K16419**
	2	0.354 x 0.472	M 16	G ⅜"	–	M 16	M 16	–	⅝"	55 - 58	**233025**	**K15285**
	2	0.433 x 0.551	M 18	–	–	M 18	M 18	–	11/16"	85 - 90	**233026**	**K16420**
	2	0.472 x 0.630	M 20	G ½"	–	M 20	M 20	–	13/16"	110 - 115	**233027**	**K15286**
	2	0.571 x 0.709	M 24	–	–	M 24	M 24	–	15/16"	110 - 115	**233028**	**K18457**
	2	5.50 x 7.00	M 10	G ⅛"	–	M 10	M 10	¼"	⅜"	24 - 32	**233020**	**K15282**
	2	6.20 x 8.00	–	–	M 8	–	–	5/16"	7/16"	16 - 21	**233021**	**K15283**
	2	7.00 x 9.00	M 12	–	–	M 12	M 12	⅜"	½"	37 - 44	**233022**	**K15284**
	2	8.00 x 10.00	–	–	M 10	–	–	–	–	27 - 32	**233023**	**K18456**
ⓜ	2	9.00 x 11.00	M 14	G ¼"	–	M 14	M 14	–	9/16"	50 - 53	**233024**	**K16419**
	2	9.00 x 12.00	M 16	G ⅜"	–	M 16	M 16	–	⅝"	55 - 58	**233025**	**K15285**
	2	11.00 x 14.00	M 18	–	–	M 18	M 18	–	11/16"	85 - 90	**233026**	**K16420**
	2	12.00 x 16.00	M 20	G ½"	–	M 20	M 20	–	13/16"	110 - 115	**233027**	**K15286**
	2	14.50 x 18.00	M 24	–	–	M 24	M 24	–	15/16"	110 - 115	**233028**	**K18457**



Reducers for Quick Change Adapters

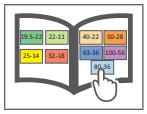
	1 Tapping Chuck		2 Quick Change Adapter		3 Reducer						
	Nominal Size	D_1	Nominal Size	D_1	D_1	D_2	D_3	L_1	L_2	Weight	Part No.
ⓘ	1	0.748	0	0.512	0.748	0.512	1.181	0.846	0.157	0.264 (lbs)	**161038**
	2	1.220	1	0.748	1.220	0.748	1.890	1.378	0.197	1.058 (lbs)	**162094**
ⓜ	1	19.00	0	13.00	19.00	13.00	30.00	21.50	4.00	0.12 (kg)	**161038**
	2	31.00	1	19.00	31.00	19.00	48.00	35.00	5.00	0.48 (kg)	**162094**

B10-M: 12-15



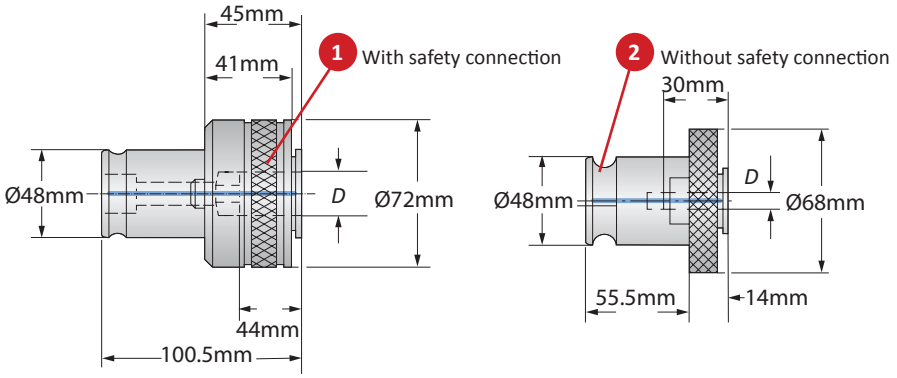
Key on B10-I:1

B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

Quick Change Adapters



	Shank Dimensions		Quick Change Adapters								Part No.	
	Nominal Size	*D* x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1	2
	3	0.354 x 0.433	M 14	G ¼"	–	M 14	M 14	–	9/18"	50 - 53	**233040**	**K22434**
	3	0.354 x 0.472	M 16	G ⅜"	–	M 16	M 16	–	⅝"	55 - 58	**233041**	**K22435**
	3	0.433 x 0.551	M 18	–	–	M 18	M 18	–	11/16"	85 - 90	**233042**	**K22436**
	3	0.472 x 0.630	M 20	G ½"	–	M 20	M 20	–	13/18"	100 - 106	**233043**	**K22437**
ⓘ	3	0.571 x 0.709	M 24	–	–	M 24	M 24	–	15/16"	140 - 150	**233044**	**K16421**
	3	0.650 x 0.787	M 27	G ¾"	–	M 27	M 27	–	1"	150 - 160	**233045**	**K16422**
	3	0.709 x 0.866	M 30	G ⅞"	–	M 30	M 30	–	1 ⅛"	240 - 250	**233046**	**K16423**
	3	0.866 x 0.984	M 33	G 1"	–	M 33	M 33	–	1 ¼"	260 - 270	**233047**	**K16424**
	3	0.866 x 1.102	M 36	G 1 ⅛"	–	M 36	M 36	–	1 ⅜"	260 - 270	**233048**	**K22438**
	3	9.00 x 11.00	M 14	G ¼"	–	M 14	M 14	–	9/18"	50 - 53	**233040**	**K22434**
	3	9.00 x 12.00	M 16	G ⅜"	–	M 16	M 16	–	⅝"	55 - 58	**233041**	**K22435**
	3	11.00 x 14.00	M 18	–	–	M 18	M 18	–	11/16"	85 - 90	**233042**	**K22436**
	3	12.00 x 16.00	M 20	G ½"	–	M 20	M 20	–	13/18"	100 - 106	**233043**	**K22437**
ⓜ	3	14.50 x 18.00	M 24	–	–	M 24	M 24	–	15/16"	140 - 150	**233044**	**K16421**
	3	16.50 x 20.00	M 27	G ¾"	–	M 27	M 27	–	1"	150 - 160	**233045**	**K16422**
	3	18.00 x 22.00	M 30	G ⅞"	–	M 30	M 30	–	1 ⅛"	240 - 250	**233046**	**K16423**
	3	22.00 x 25.00	M 33	G 1"	–	M 33	M 33	–	1 ¼"	260 - 270	**233047**	**K16424**
	3	22.00 x 28.00	M 36	G 1 ⅛"	–	M 36	M 36	–	1 ⅜"	260 - 270	**233048**	**K22438**

B10-M: 12-15
Key on B10-I: 1

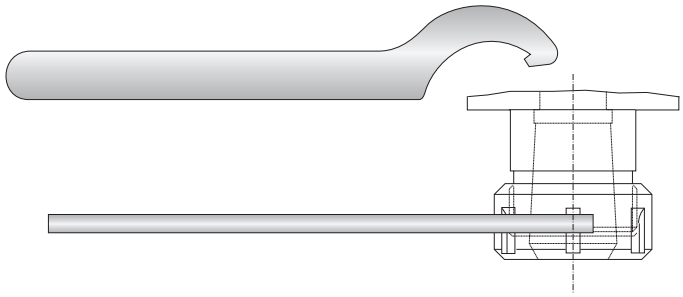
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

Service Keys for Collet Systems

Service Keys for ISO 10897 (DIN 6388) Collet Chuck Systems

Service Key			
Nominal Size	Size	Type	Part No.
16	40 - 43	S	**068179**
25	58 - 62	S	**068182**
32	68 - 75	S	**115867**

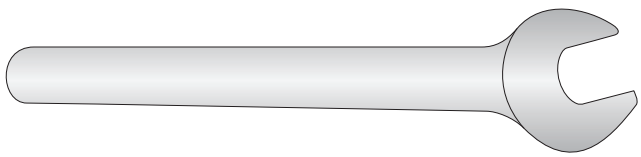


Service Keys for ISO 15488 (DIN 6499) Collet Chuck Systems

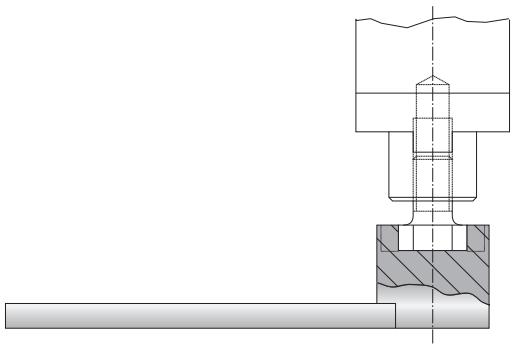
Service Key				
Nominal Size	Size	Service Key	Type	Part No.
ER 08 Mini	9.0	–	X	**415373**
ER 11 Mini	12.0	–	X	**415374**
ER 16 Mini	17.5	–	X	**415375**
ER 16	–	25	P	**215927**
ER 25	42.0	–	T	**215929**
ER 32	50.0	–	T	**215930**
ER 40	63.0	–	T	**215931**

Service Keys for Erickson Collet Chuck Systems

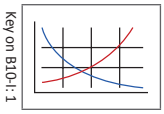
Service Key		
Service Key	Type	Part No.
13	P	**315689**
19	P	**315691**



Service Keys	
Service Key	Part No.
13	**115785**
16	**115699**
22	**115660**
27	**115661**
32	**115662**
40	**115663**
60	**315637**

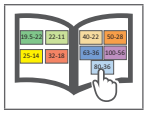


B10-M: 12-15



Key on B10-I:1

B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

SECTION

B10-J

UPA Versatile Boring Heads

Wohlhaupter® UPA Versatile Boring Heads

UPA 3 | UPA 4 | UPA 5-S 6

- Diameter Range: 0.000" - 24.409" (0.00mm - 620.00mm)

Operation Facing and Boring

In 1936, the first model of the Wohlhaupter Universal Facing and Boring head was developed to launch the start of Wohlhaupter boring products. It became a staple to the boring industry.

Universal Facing and Boring heads are used on universal milling and boring machines, boring mills, and jig boring machines for machining stationary workpieces in individual and batch productions.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.

This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury.

When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words.

⚠ WARNING

WARNING (shown above) means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

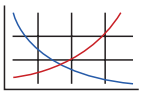
Visit www.alliedmachine.com for the most up-to-date information and procedures.

Applicable Industries

Aerospace | Agriculture | Automotive | Firearms | General Machining | Oil & Gas | Renewable Energy

Reference Icons
The following icons will appear throughout the catalog to help you navigate between products.

Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s)



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling

Universal Versatile Boring Heads Table of Contents

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UPA Product Overview . . . . . 2 - 3

UPA 3 Boring System

UPA 3 Boring Heads and Accessories . . . . . 4 - 5

UPA 3 Shanks . . . . . 6 - 7

UPA 4 and 5s6 Boring System

UPA 4 Boring Heads and Accessories . . . . . 8 - 9

UPA 5-S 6 Boring Heads and Accessories . . . . . 10 - 11

UPA 4 and 5-S 6 Shanks 12

Technical Data and Chip Production Values 13

UPA Boring System Diagram . . . . . 14 - 15

Series	Diameter Range	
	Imperial (inch)	Metric (mm)
UPA 3	0.000 - 10.236	0.00 - 260.00
UPA 4	0.000 - 15.748	0.00 - 400.00
UPA 5-S 6	0.000 - 24.409	0.00 - 620.00

UPA Boring Head
FACING AND BORING

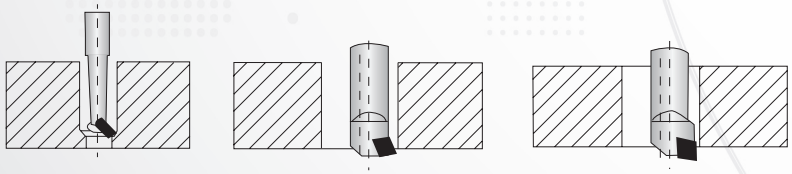
Universal Facing and Boring Heads

The versatile Wohlhaupter UPA boring heads can be used for facing, boring, and taper turning. They can also be used for right- or left-handed turning.

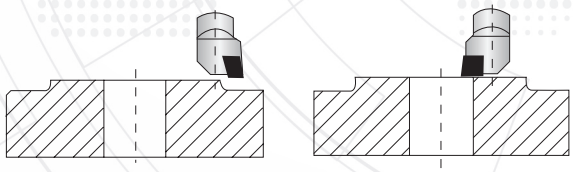
Precise and ***versatile*** boring heads.

- Diameter range: 0.000" - 24.409" (0.00mm - 620.00mm)
- Slide adjustment up to 4.410" (112.00mm)
- Can be used in a variety of operations

UNIVERSAL
FACING & BORING *Applications*



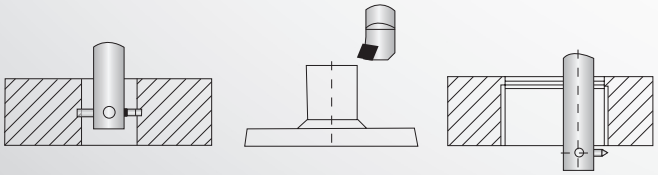
Boring with different tools



Facing

From inside outward

From outside inward



Recessing

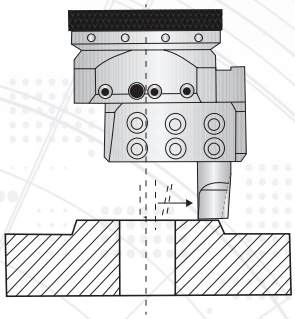
Outside Turning

Thread Cutting

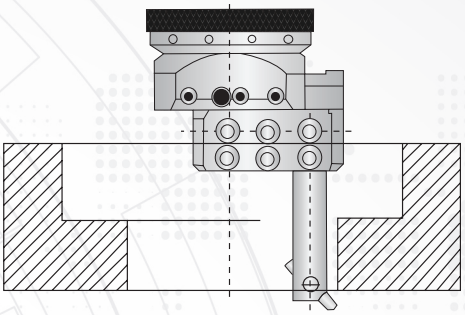
Taper Turning

UNIVERSAL

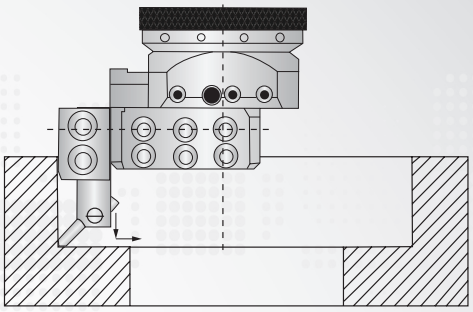
FACING & BORING *Application Examples*



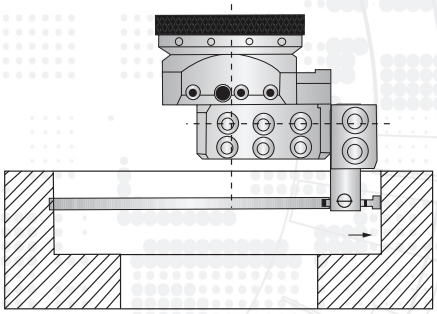
Facing with boring bar directly in slide



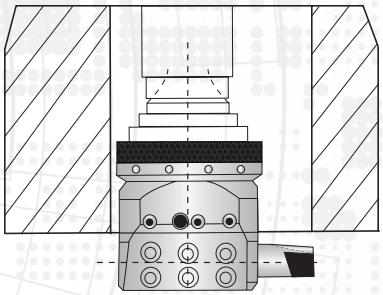
Boring with long boring bar



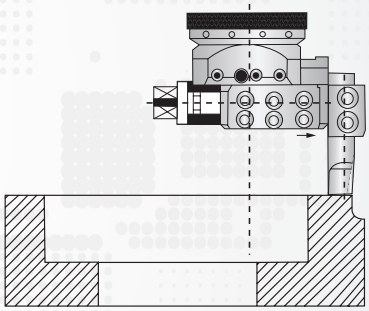
Boring and facing with short boring bar holder and a boring bar



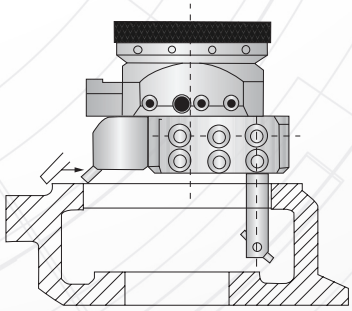
Recessing with short boring bar holder and a boring bar



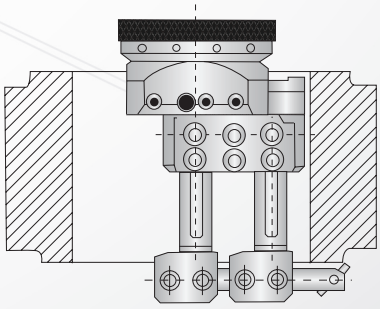
Deep hole boring with boring bar directly in slide



Large diameter facing with a long boring bar holder



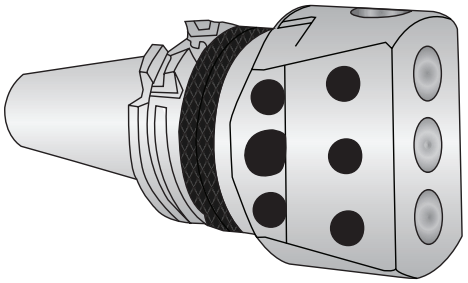
Facing in two areas with one boring bar and a boring bar holder

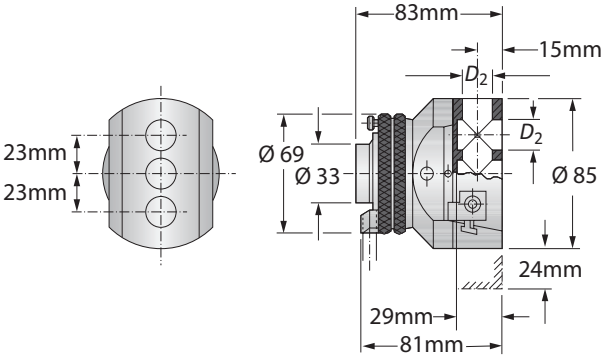


Facing the reverse side by using boring bar holders contained in attachment

UPA 3 Boring Heads and Accessories

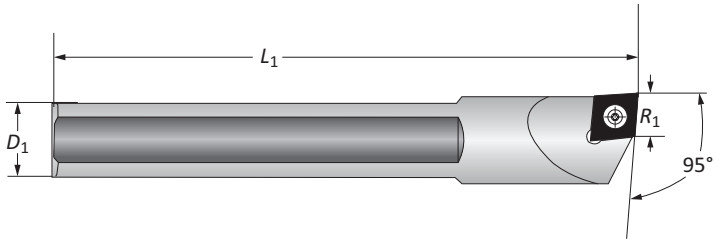
Diameter Range: 0.000" - 10.236" (0.00mm - 260.00mm)





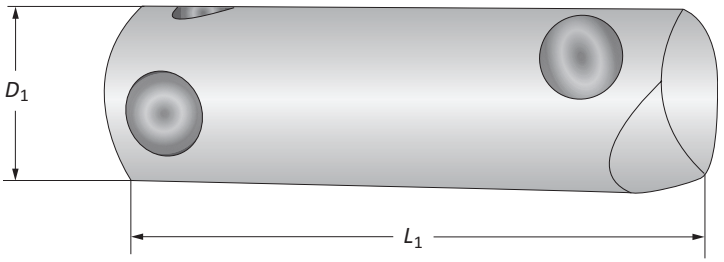
UPA 3 Boring Heads

	Boring Range	Boring Head D_2	Weight	Part No.
i	0.000 - 10.234	0.750	4.629 (lbs)	**006020**
m	0.00 - 260.00	18.00	2.10 (kg)	**005020**



UPA 3 Boring Bars

	Boring Bar D_1	L_1	R_1	Weight	Cutting Direction	Insert Form	Part No.
i	0.750	3.149	0.531	0.220 (lbs)	R	103	**0750BFBR**
	0.750	3.149	0.531	0.220 (lbs)	L	103	**0750BFBL**
m	18.00	80.00	13.50	0.10 (kg)	R	103	**081087**
	18.00	80.00	13.50	0.10 (kg)	L	103	**218088**



UPA 3 Boring Bars

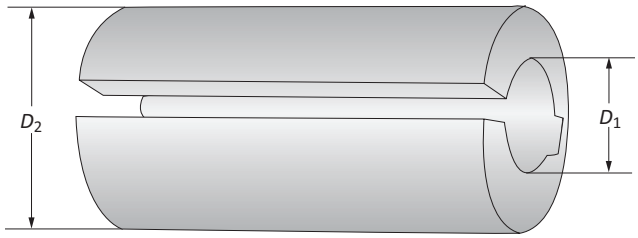
	Boring Bar D_1	L_1	Boring Depth	Designation	Part No.
i	0.750	2.362	1.181	B 306	**074003**
	0.750	3.543	2.362	B 309	**074004**
	0.750	4.724	3.543	B 312	**074005**
m	18.00	60.00	30.00	B 306	**073003**
	18.00	90.00	60.00	B 309	**073004**
	18.00	120.00	90.00	B 312	**073005**

B10-M: 12-15
Key on B10-I: 1
B10: vi-vii

i = Imperial (in)
m = Metric (mm)

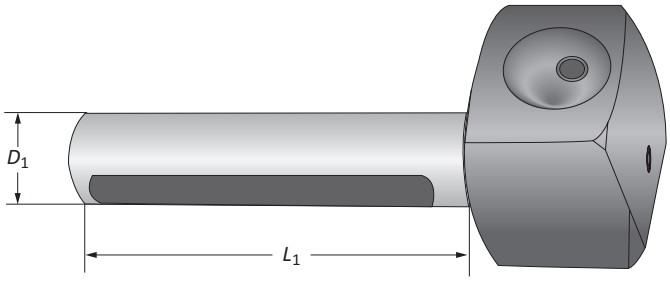
UPA 3 Accessories

Reducing Sleeves | Boring Bar Holders



UPA 3 Reducing Sleeves

	Reducing Sleeve D_2	Reducing Sleeve D_1	Weight	Part No.
i	0.750	0.313	0.220 (lbs)	**072104**
i	0.750	0.375	0.220 (lbs)	**072105**
i	0.750	0.500	0.220 (lbs)	**072106**
i	0.750	0.625	0.220 (lbs)	**072107**
m	18.00	8.00	0.10 (kg)	**071103**
m	18.00	10.00	0.10 (kg)	**071104**
m	18.00	12.00	0.10 (kg)	**071105**
m	18.00	14.00	0.10 (kg)	**071106**

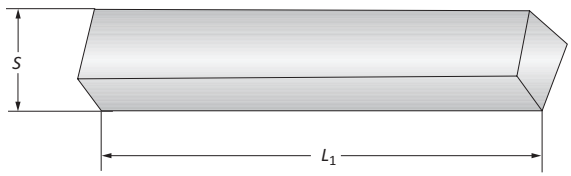


UPA 3 Boring Bar Holders

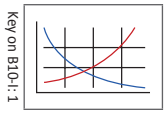
	Boring Bar Holder D_1	Boring Bar Holder L_1	Working Diameter Range	Designation	Part No.
i	0.750	3.228	3.346 - 7.480	BH 308	**076001**
i	0.750	4.724	6.299 - 10.236	BH 312	**076002**
m	18.00	82.00	85.00 - 190.00	BH 308	**075001**
m	18.00	120.00	160.00 - 260.00	BH 312	**075002**

UPA 3 Square Turning Bit

	Square Turning Bit D_1	Square Turning Bit L_1	Weight	Part No.
i	0.236	1.574	0.035 (oz)	**089001**
m	6.00	40.00	11 (g)	**089001**

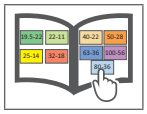


B10-M: 12-15



Key on B10-I: 1

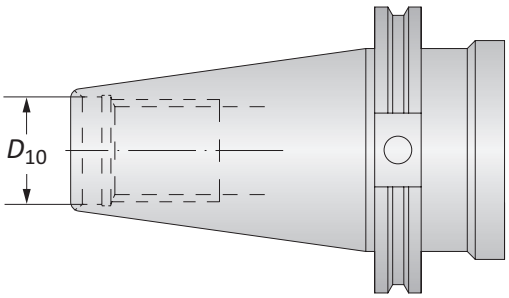
B10: vi-vii



i = Imperial (in)
m = Metric (mm)

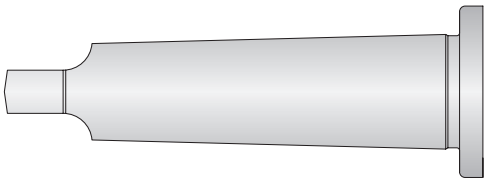
UPA 3 Master Shanks

CAT 40/50 | Morse Taper 40/50



CAT 40/50 Shanks

	Shank Style	Shank D_{10}	Shank Weight	Part No.
i	CAT 40	5/8 - 11	2.336 (lbs)	**130001T013939**
i	CAT 50	1 - 8	7.054 (lbs)	**130001T011624**
m	CAT 40	M16 x 2	1.06 (kg)	**130001T016960**
m	CAT 50	M24 x 3	3.20 (kg)	**130001T016962**

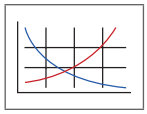


Morse Taper Shanks

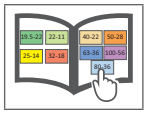
	Shank Style	Shank Weight	Part No.
i	MT 3	0.661 (lbs)	**130001T004509**
i	MT 4	1.212 (lbs)	**130001T003590**
i	MT 5	2.976 (lbs)	**130001T003920**
m	MT 3	0.30 (kg)	**130001T004509**
m	MT 4	0.55 (kg)	**130001T003590**
m	MT 5	1.35 (kg)	**130001T003920**

B10-M: 12-15

Key on B10-I: 1



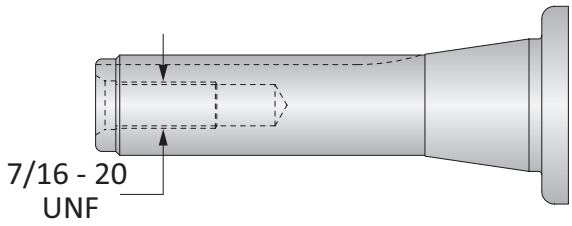
B10: vi-vii



i = Imperial (in)
m = Metric (mm)

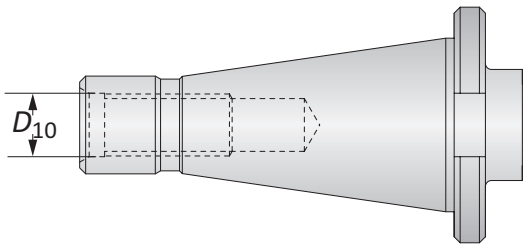
UPA 3 Master Shanks

R-8 | NMTB 40/50



R-8 Shanks

	Shank Weight	Part No.
i	1.058 (lbs)	**130001T007166**
m	0.48 (kg)	**130001T007166**



NMTB 40/50 Shanks

	Shank Style	D_{10}	Weight	Part No.
i	NMTB40	⅝ - 11	1.984 (lbs)	**130001T004498**
	NMTB50	1 - 8	5.798 (lbs)	**130001T004480**
m	NMTB40	⅝ - 11	0.90 (kg)	**130001T004498**
	NMTB50	1 - 8	2.63 (kg)	**130001T004480**

Differential Screw

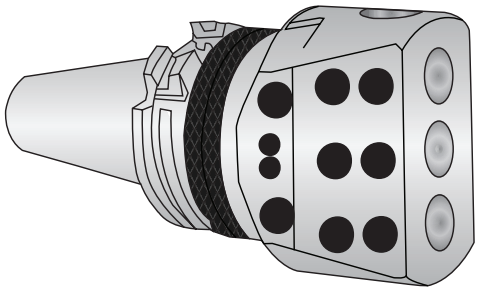
	Thread	Weight	Part No.
i	M16 x 2	0.066 (lbs)	**KW9208**
m	M16 x 2	0.03 (lbs)	**KW9208**

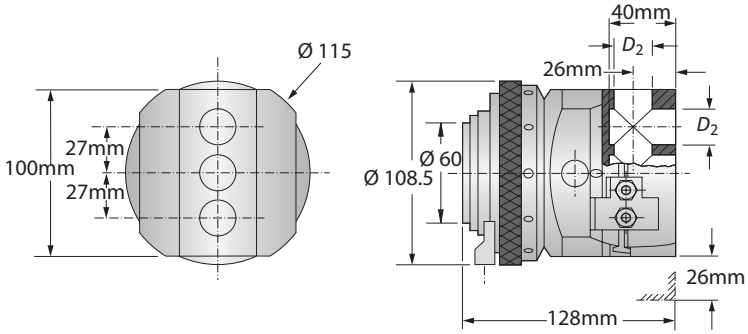
B10-M: 12-15
Key on B10-I: 1
B10: vi-vii

i = Imperial (in)
m = Metric (mm)

UPA 4 Boring Heads and Accessories

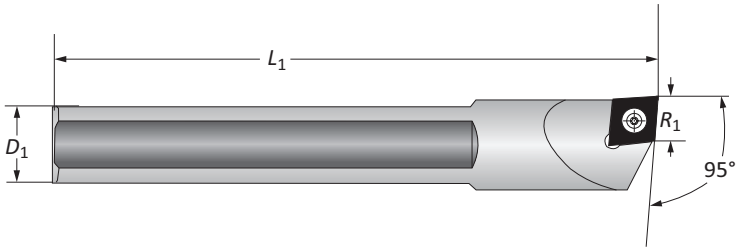
Diameter Range: 0.000" - 15.748" (0.00mm - 400.00mm)





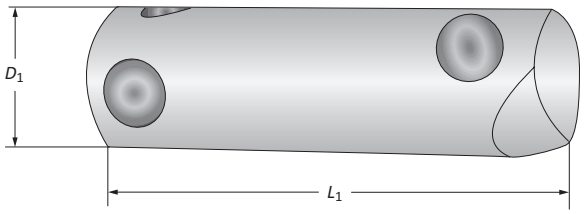
UPA 4 Boring Heads

	Boring Range	Boring Head D_2	Weight	Part No.
i	0.000 - 15.748	0.875	14.330 (lbs)	**008020**
m	0.00 - 400.00	22.00	6.50 (kg)	**007020**



UPA 4 Boring Bars

	Boring Bar D_1	L_1	R_1	Weight	Cutting Direction	Insert Form	Part No.
i	0.875	3.937	0.531	0.220 (lbs)	R	103	**0875BFBR**
	0.875	3.937	0.531	0.220 (lbs)	L	103	**0875BFBL**
m	22.00	100.00	13.50	0.10 (kg)	R	103	**081092**
	22.00	100.00	13.50	0.10 (kg)	L	103	**218089**



UPA 4 Boring Bars

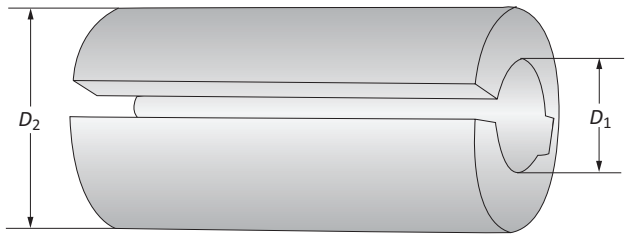
	Boring Bar D_1	L_1	Boring Depth	Designation	Part No.
i	0.875	3.346	1.771	B 408	**074006**
	0.875	4.921	3.346	B 412	**074007**
	0.875	6.496	4.921	B 416	**074008**
m	22.00	85.00	45.00	B 408	**073006**
	22.00	125.00	85.00	B 412	**073007**
	22.00	165.00	125.00	B 416	**073008**

B10-M: 12-15
Key on B10-I: 1
B10: vi-vii

i = Imperial (in)
m = Metric (mm)

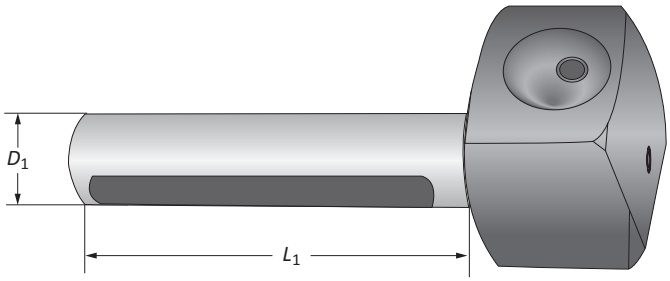
UPA 4 Accessories

Reducing Sleeves | Boring Bar Holders



UPA 4 Reducing Sleeves

	Reducing Sleeve			
	D_2	D_1	Weight	Part No.
i	0.875	0.312	0.220 (lbs)	**072108**
	0.875	0.375	0.220 (lbs)	**072109**
	0.875	0.500	0.220 (lbs)	**072110**
	0.875	0.625	0.176 (lbs)	**072111**
	0.875	0.750	0.176 (lbs)	**072112**
m	22.00	8.00	0.10 (kg)	**071107**
	22.00	10.00	0.10 (kg)	**071108**
	22.00	12.00	0.10 (kg)	**071109**
	22.00	14.00	0.08 (kg)	**071110**
	22.00	18.00	0.08 (kg)	**071111**

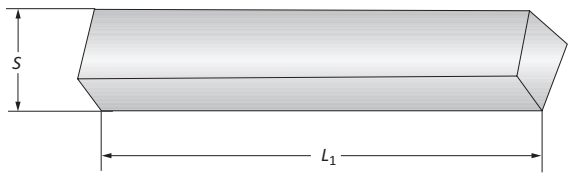


UPA 4 Boring Bar Holders

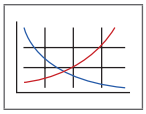
	Boring Bar Holder				
	D_1	L_1	Designation	Working Diameter Range	Part No.
i	0.875	3.858	BH 410	4.527 - 9.448	**076003**
	0.875	7.086	BH 418	8.661 - 15.748	**076004**
m	22.00	98.00	BH 410	115.00 - 240.00	**075003**
	22.00	180.00	BH 418	220.00 - 400.00	**075004**

UPA 4 Square Turning Bit

	Square Turning Bit			
	D_1	L_1	Weight	Part No.
i	0.236	1.574	0.035 (oz)	**089001**
m	6.00	40.00	11 (g)	**089001**

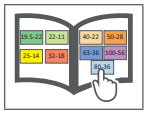


B10-M: 12-15



Key on B10-I: 1

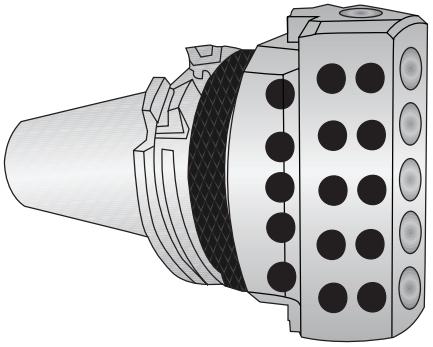
B10: vi-vii

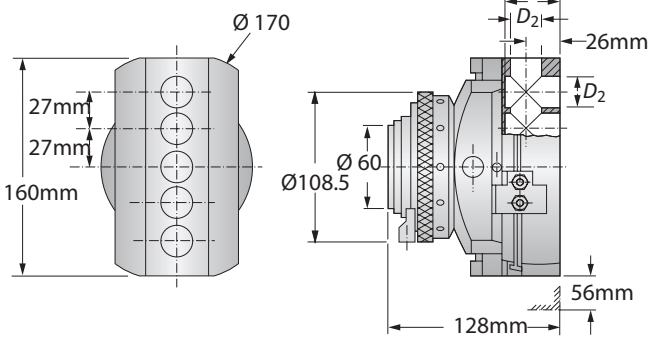


i = Imperial (in)
m = Metric (mm)

UPA 5-S 6 Boring Heads and Accessories

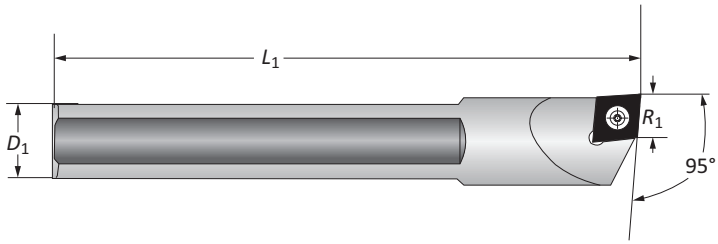
Diameter Range: 0.000" - 24.409" (0.00mm - 620.00mm)





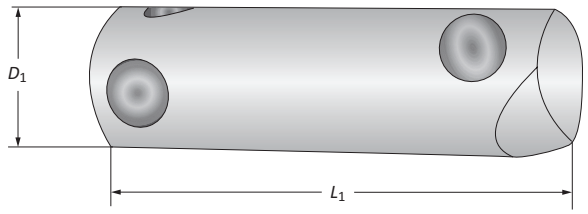
UPA 5-S 6 Boring Heads

	Boring Range	Boring Head D_2	Weight	Part No.
i	0.000 - 24.409	0.875	17.416 (lbs)	**014020**
m	0.00 - 620.00	22.00	7.90 (kg)	**013020**



UPA 5-S 6 Boring Bars

	Boring Bar D_1	L_1	R_1	Weight	Cutting Direction	Insert Form	Part No.
i	0.875	3.937	0.531	0.220 (lbs)	R	103	**0875BFBR**
	0.875	3.937	0.531	0.220 (lbs)	L	103	**0875BFBL**
m	22.00	100.00	13.50	0.10 (kg)	R	103	**081092**
	22.00	100.00	13.50	0.10 (kg)	L	103	**218089**



UPA 5-S 6 Boring Bars

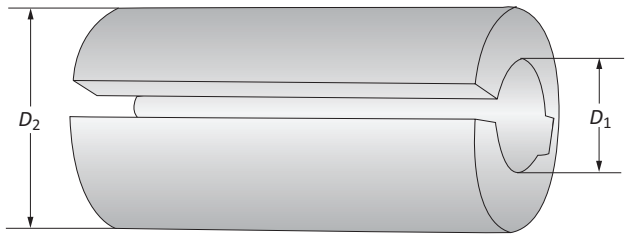
	Boring Bar D_1	L_1	Boring Depth	Designation	Part No.
i	0.875	3.346	1.771	B 408	**074006**
	0.875	4.921	3.346	B 412	**074007**
	0.875	6.496	4.921	B 416	**074008**
m	22.00	85.00	45.00	B 408	**073006**
	22.00	125.00	85.00	B 412	**073007**
	22.00	165.00	125.00	B 416	**073008**

B10-M: 12-15
Key on B10-I: 1
B10: vi-vii

i = Imperial (in)
m = Metric (mm)

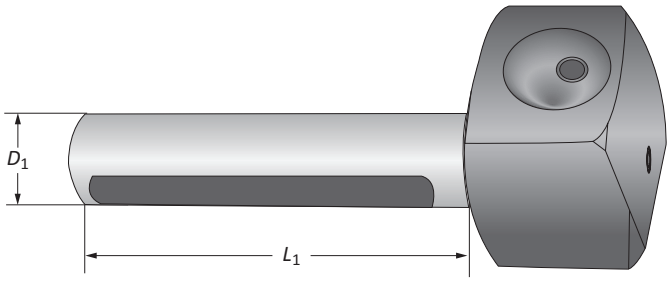
UPA 5-S 6 Accessories

Reducing Sleeves | Boring Bar Holders



UPA 5-S 6 Reducing Sleeves

	Reducing Sleeve			
	D_2	D_1	Weight	Part No.
ⓘ	0.875	0.312	0.220 (lbs)	**072108**
ⓘ	0.875	0.375	0.220 (lbs)	**072109**
ⓘ	0.875	0.500	0.220 (lbs)	**072110**
ⓘ	0.875	0.625	0.176 (lbs)	**072111**
ⓘ	0.875	0.750	0.176 (lbs)	**072112**
ⓜ	22.00	8.00	0.10 (kg)	**071107**
ⓜ	22.00	10.00	0.10 (kg)	**071108**
ⓜ	22.00	12.00	0.10 (kg)	**071109**
ⓜ	22.00	14.00	0.08 (kg)	**071110**
ⓜ	22.00	18.00	0.08 (kg)	**071111**

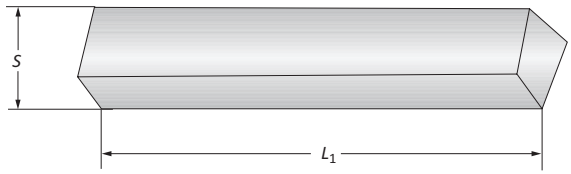


UPA 5-S 6 Boring Bar Holders

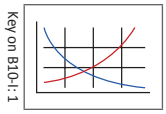
	Boring Bar Holder				
	D_1	L_1	Designation	Working Diameter Range	Part No.
ⓘ	0.875	5.039	BH 513	4.724 - 15.748	**076003**
ⓘ	0.875	9.055	BH 523	10.630 - 24.408	**076004**
ⓜ	22.00	228.00	BH 513	120.00 - 400.00	**075003**
ⓜ	22.00	230.00	BH 523	270.00 - 620.00	**075004**

UPA 5-S 6 Square Turning Bit

	Square Turning Bit			
	D_1	L_1	Weight	Part No.
ⓘ	0.236	1.574	0.035 (oz)	**089001**
ⓜ	6.00	40.00	11 (g)	**089001**

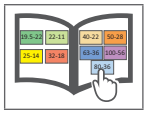


B10-M: 12-15



Key on B10-I: 1

B10: vi-vii



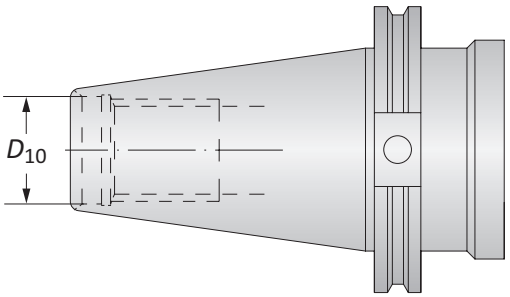
ⓘ = Imperial (in)
ⓜ = Metric (mm)

UPA 4 and 5-S 6 Master Shanks

CAT 40/50 | Morse Taper | NMTB 40/50

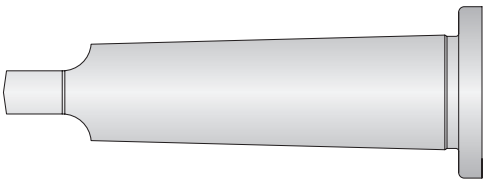
CAT 40/50 Shanks

	Shank Style	Shank D_{10}	Shank Weight	Part No.
i	CAT 40	⅝ - 11	3.196 (lbs)	**130005T013939**
i	CAT 50	1 - 8	7.054 (lbs)	**130005T011624**
m	CAT 40	M16 x 2	1.45 (kg)	**130005T016960**
m	CAT 50	M24 x 3	3.20 (kg)	**130005T016962**



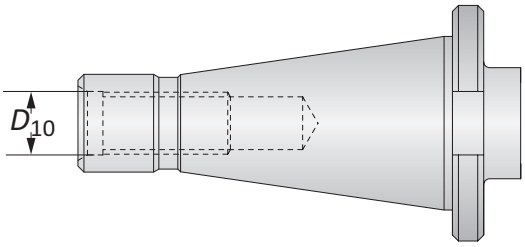
Morse Taper Shanks

	Shank Style	Shank Weight	Part No.
i	MT 4	1.895 (lbs)	**130005T003590**
i	MT 5	3.639 (lbs)	**130005T003920**
m	MT 4	0.86 (kg)	**130005T003590**
m	MT 5	1.65 (kg)	**130005T003920**



NMTB 40/50 Shanks

	Shank Style	Shank D_{10}	Shank Weight	Part No.
i	NMTB40	⅝ - 11	2.866 (lbs)	**130005T004498**
i	NMTB50	1 - 8	6.393 (lbs)	**130005T004480**
m	NMTB40	⅝ - 11	1.30 (kg)	**130005T004498**
m	NMTB50	1 - 8	2.90 (kg)	**130005T004480**



Differential Screw

	Thread	Weight	Part No.
i	M20 x 2.5	0.154 (lbs)	**KW9209**
m	M20 x 2.5	0.07 (lbs)	**KW9209**

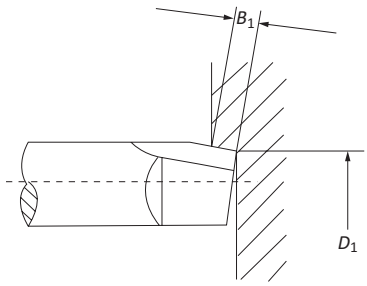
B10-M: 12-15
Key on B10-I: 1
B10: vi-vii

i = Imperial (in)
m = Metric (mm)

Technical Information | Chip Production Values

Technical Data

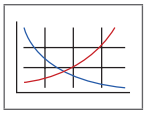
	Type	UPA 3	UPA 4	UPA 5-S 6
	Working accuracy	±0.005	±0.005	±0.005
	Diameter range	25.00	35.00	45.00
	MT shank	3.00	4.00	5.00
	ISO shank	30.00	40.00	40.00
	Facing and boring range	0.00 - 260.00	0.00 - 400.00	0.00 - 620.00
	Adjustment of slide (max)	48.00	52.00	112.00
	Self-activated feed of slide per revolution	0.05	0.02, 0.04, 0.06, 0.08, 0.10, 0.12, 0.14, 0.16, 0.18, 0.20, 0.22, 0.24	0.02, 0.04, 0.06, 0.08, 0.10, 0.12, 0.14, 0.16, 0.18, 0.20, 0.22, 0.24
ⓜ	Fine adjustment of one division	0.01	0.01	0.01
	Fine adjustment of one revolution	1.00	0.40	0.40
	Rapid return per revolution	1.00	–	–
	Rapid return setting per revolution	–	6.00	6.00
	Largest diameter of slide	85.00	115.00	170.00
	Height of boring head without shank	81.00	128.00	128.00
	Tool locations in slide	18.00	22.00	22.00
	Max permissible revolutions	1000	600	600
	End cut off accuracy	±0.05	±0.05	±0.05



Chip Production Values

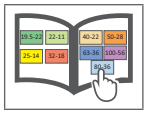
	Chip Cutting Guide	Type	UPA 3	UPA 4	UPA 5-S 6
	Max load	KW	2.50	7.00	9.50
	With slide feed	mm/rev.	0.050	0.08, 0.12, 0.24	0.08, 0.12, 0.24
	For smaller working Ø	D_1	60.00	150.00	200.00
ⓜ	Maximum width of chip	B_1	4.00	7.00, 6.00, 4.00	8.00, 7.00, 5.00
	Maximum working Ø	D_1	260.00	400.00	500.00 / 620.00
	Without reinforcement rings	B_1	2.00	2.20, 2.00, 1.50	2.50, 2.00, 1.50
	With reinforcement rings	B_1	–	4.50, 4.00, 3.00	5.00, 4.00, 3.00

B10-M: 12-15



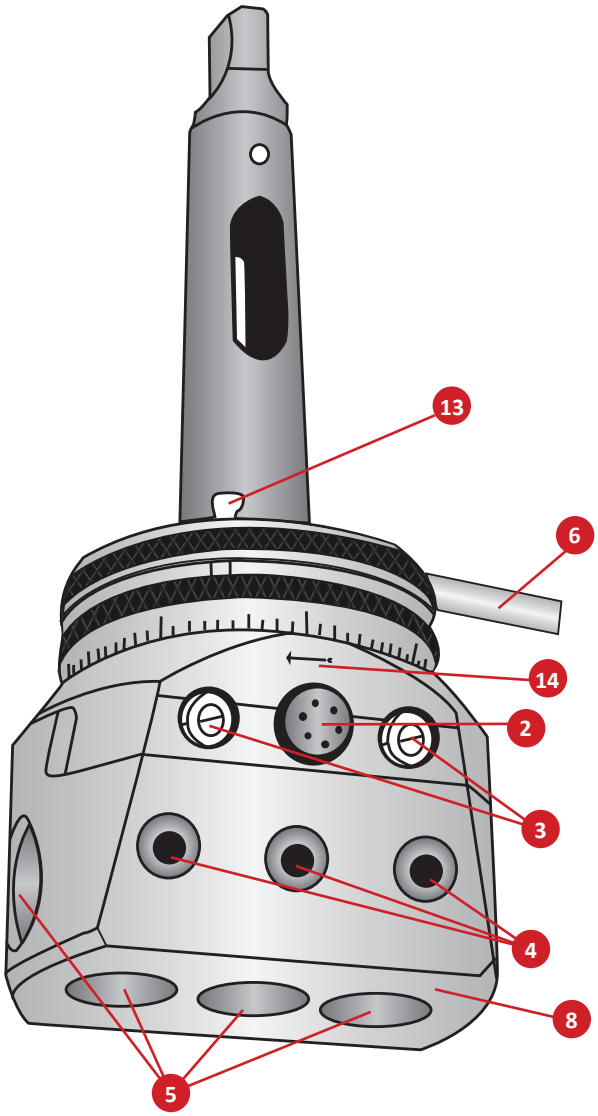
Key on B10-I: 1

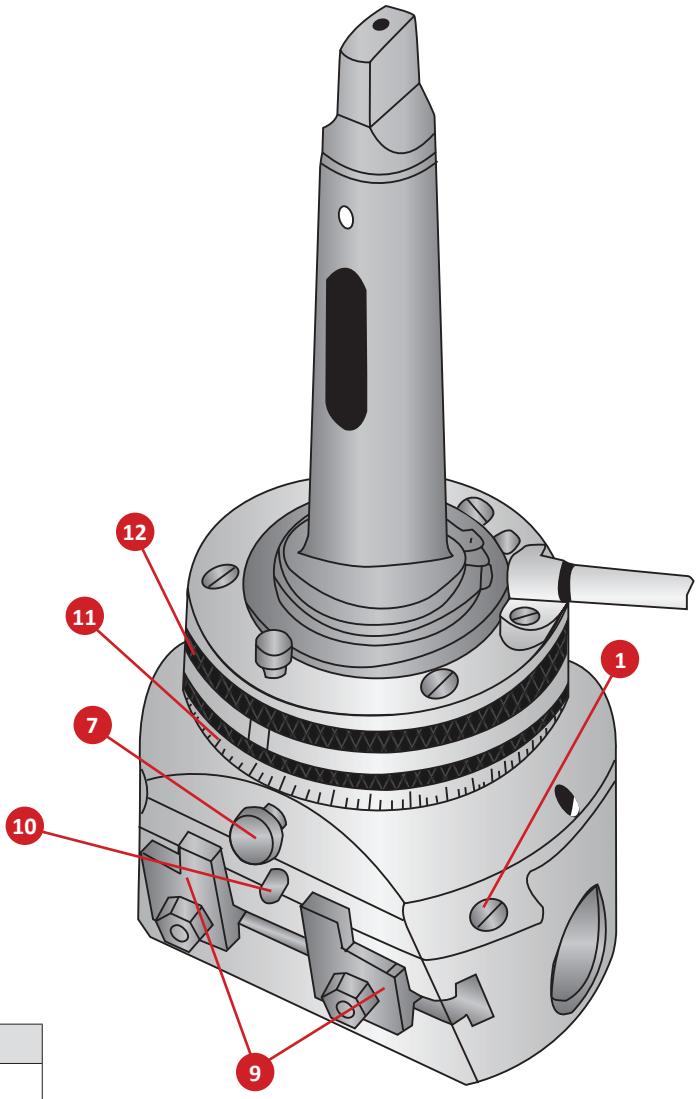
B10: vi-vii



ⓘ = Imperial (in)
ⓜ = Metric (mm)

UPA 3 Boring Head Diagram

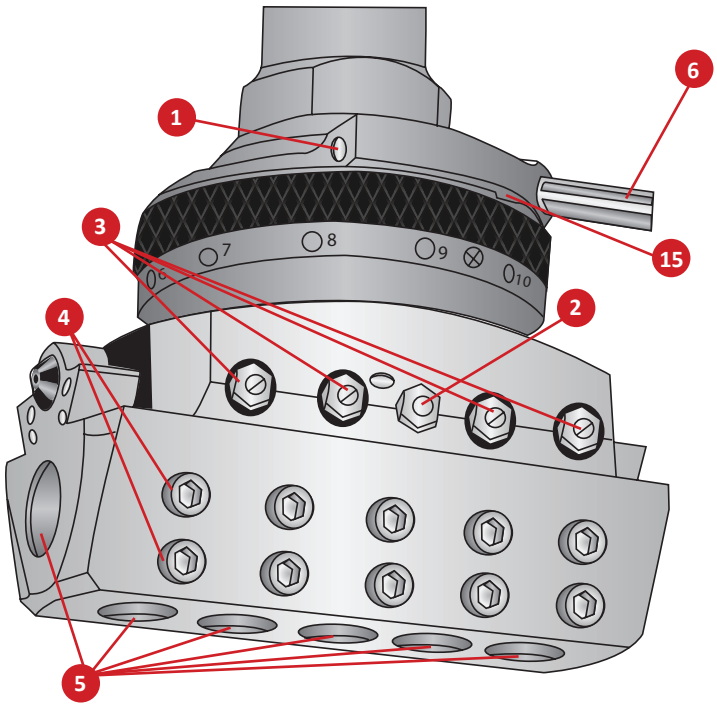


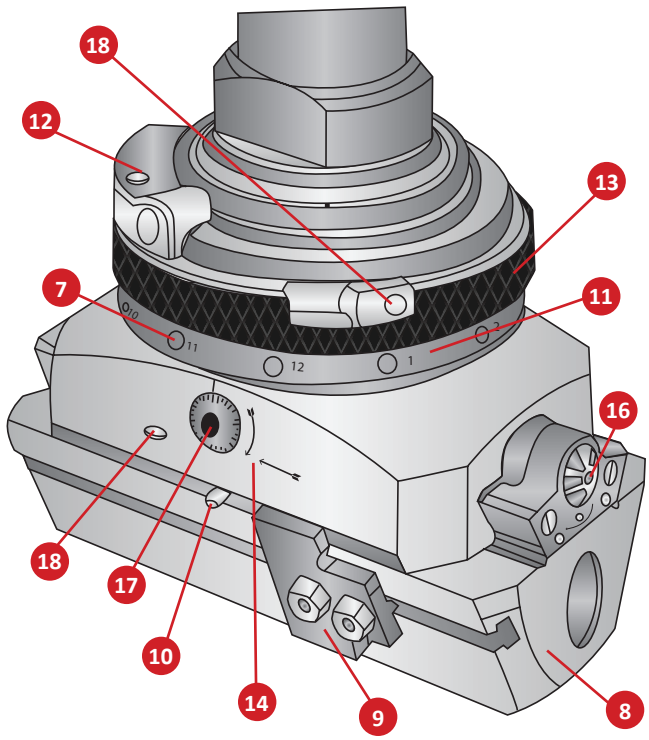


No.	Part	No.	Part
1	Regulating screw	8	Slide
2	Locking screw	9	Stop
3	Setting screws	10	Fixed pin
4	Fastening screw	11	Scale ring
5	Tool post holes	12	Holding ring
6	Stop rod	13	Button for return movement
7	Feed button	14	Arrow

B10-M: 12-15
Key on B10-I: 1
B10: vi-vii

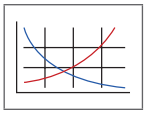
UPA 4 / 5-S 6 Boring Heads Diagram





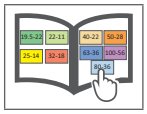
No.	Part	No.	Part
1	Regulating screw	10	Fixed pin
2	Locking screw	11	Scale ring
3	Setting screws	12	Retaining ring
4	Fastening screws	13	Feed ring
5	Tool post holes	14	Arrow
6	Stop rod	15	Recess
7	Feed buttons	16	Quick setting dial
8	Slide with rotation bores	17	Fine setting dial
9	Stop	18	Release ring

B10-M: 12-15



Key on B10-I: 1

B10: vi-vii



SECTION

B10-K

Special Boring Solutions

Wohlhaupter® Special Boring Solutions

Special Design Tooling

When it comes to special solutions for customers, Wohlhaupter has unique capabilities to effectively design and develop special boring tools. Our special boring tools are designed for specific machines, processes, and materials to help save you time and money.

If you have a particularly unique or difficult application, give our Application Engineering team a call.
phone: **330.343.4283** *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Applicable Industries

Aerospace | Agriculture | Automotive | Firearms | General Machining | Oil & Gas | Renewable Energy

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.

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WARNING (shown above) means that failure to follow the precautions in this message could result in tool failure and serious injury.

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NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

Wohlhaupter® Special Boring Solutions Table of Contents

Special Tooling Solutions

EK Goover | Lay Down Cartridge 2

Anti-Vibration | Multistep Boring Tool 3

OD Turning Tool | Padded Line Boring Tool 4

3E^{TECH} Special Tools 5

DigiBore Special Boring Tools 6

Combi-Line Special Boring Tool 7

Online Tools

ToolMD® 8

Boring Insert Selector 9

GROOVING TOOLS

EK GROOVER

- Create complex grooves faster and deeper than ever before
- Eliminate chatter in hard-to-reach internal forms
- The electronically-controlled insert release can be adapted to most machine tools
- Single or double grooving in one operation

ROUGH BORING TOOLS

LAY DOWN CARTRIDGE

- Increase the productivity of your roughing tool while protecting your investment
- If the tool is ever damaged, simply replace a cartridge and resume making chips

SPECIAL BORING TOOLS

ANTI-VIBRATION

- Vibration dampening rings
- Optimized tool weight
- Used to reduce harmonic vibration in deeper boring applications

SPECIAL BORING TOOLS

MULTISTEP BORING TOOL

- Fine adjustment tool for reverse machining
- Combined with multidiameter fine adjustable cartridges for finish machining

SPECIAL BORING TOOLS

OD TURNING TOOLS

- Multistep OD turning
- Drastically reduce cycle time
- Improve surface finish and feature concentricity

SPECIAL BORING TOOLS

PADDED TOOLING

- Aids in stable part processing
- Expands length to diameter capabilities
- Improves surface finish
- Pads are replaceable to extend tool life

NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

3E[TECH] BORING TOOL

MULTISTEP BORING TOOL

- Easy diameter adjustments with 3E[TECH]
- One digital readout module to use on all steps

NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

3E[TECH] BORING TOOL

LINE BORING TOOL

- One digital readout module used on all steps
- Easy diameter adjustment at the machine spindle

DigiBore Special Boring Tools

NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

NOTE: Imperial item pictured

NOTE: Adjustment accuracy of 0.0001" or 0.002mm on diameter

FINISH BORING TOOLS

DIGIBORE WITH 249 (248)

- Standard DigiBore head, standard 249 (248) head, and special slide for precise two-step bore
- MVS connection

FINISH BORING TOOLS

DIGIBORE SPECIAL

- Standard DigiBore boring head with OD turn and OD chamfer insert holder
- MVS connection

Combi-Line Special Boring Tool

ROUGH, FINISH, and CHAMFER BORING TOOLS

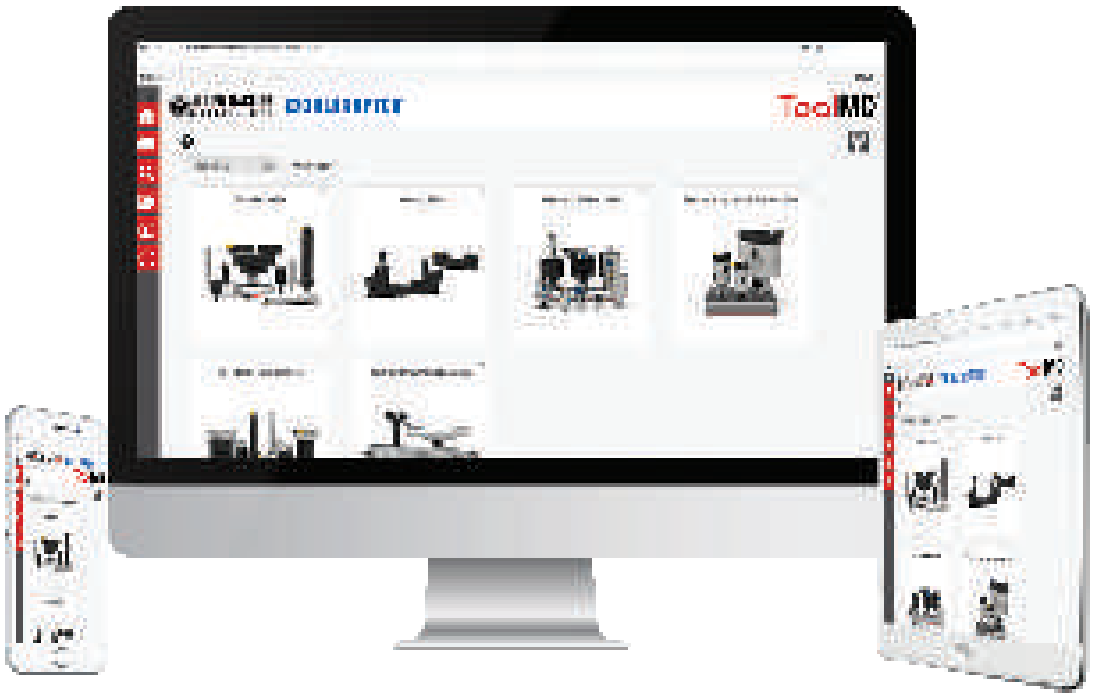
COMBI-LINE

- Standard Combi-Line tooling with added chamfer cartridge
- MVS connection

ToolMD

ToolMD®

www.toolmd.com



Design Your Own Solutions

ToolMD is a configurator for Wohlhaupter modular tooling systems that allows customers to virtually build their own solution. This online-based simulator puts the entire Wohlhaupter product line at your fingertips. It provides a digital bank of every individual part that Wohlhaupter manufactures in either inch or metric.

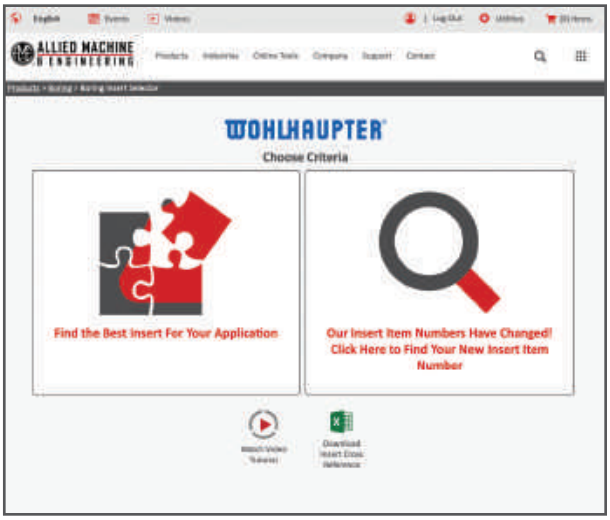
Once you select a component, you will be guided by a series of user-friendly prompts to select the next components until you have built your tooling system. Throughout the process, you can monitor the size of your custom tool and ensure what you're building matches your real-life specifications. Once a complete system is virtually assembled, the program will render the tool in either a 2D or 3D drawing to view on your device.

Designing your tools with ToolMD saves you time and allows you to instantly obtain the right tool for the job.

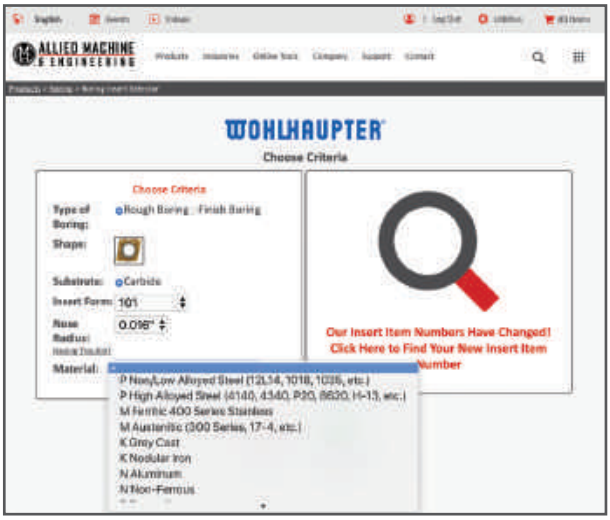
Design anytime from anywhere.
Available online 24/7.

WOHLHAUPTER® | Boring Insert Selector

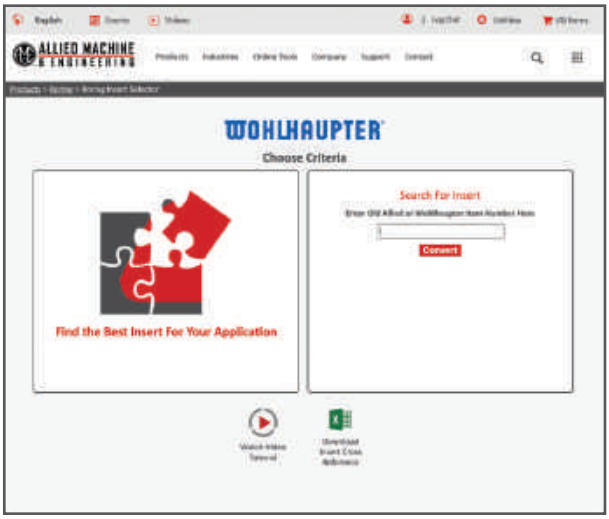
www.alliedmachine.com/bis



- Generate the correct boring insert for your application in just six easy steps



- Choose type, shape, substrate, insert form, nose radius, and workpiece material
- Order easily by adding the item to your cart



- Search for your new insert item number by entering your old item number

SECTION

B10-L

Lay Down Cartridges

Wohlhaupter® Lay Down Cartridges

Holders for Pre-Machining | Holders for Compact Boring Bars | Short Clamp Holders | Fine Boring Holders

Robust. Powerful. Versatile. Engineered Solutions.

From pre-machining holes with heavy stock removal to finish machining with tight tolerances and excellent surface finish, Wohlhaupter's extensive range of lay down cartridges can help you achieve specific boring solutions. Wohlhaupter's lay down cartridges bring innovative concepts designed to improve productivity, reduce scrap, and reduce the cost per part.

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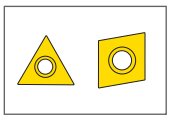
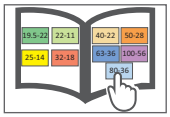
Applicable Industries

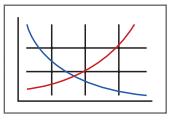
Reference Icons
The following icons will appear throughout the catalog to help you navigate between products.



Inserts
For use with insert holder boring heads and boring bars using indexable inserts



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s)



Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring

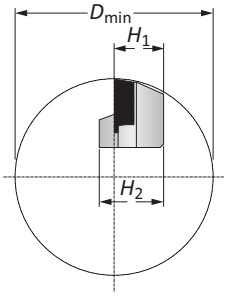
Lay Down Cartridges Table of Contents

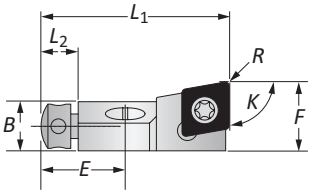
Compact Lay Down Cartridges

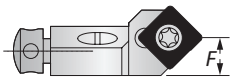
Insert Forms 101, 103, 104 & 105. 2
Insert Form 112. 3
Insert Forms 04 & 05. 4
Accessories. 5

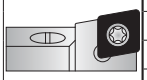
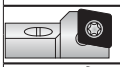
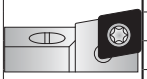
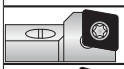
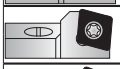
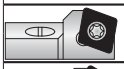
Compact Lay Down Cartridges | Insert Forms 101, 103, 104 & 105

Diameter Range: ≥0.984" (25.00mm)



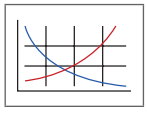




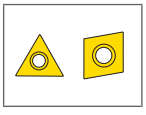
	Holder Type	K	ISO	D_{min} Boring Range	Designation	Insert Holder L_1	L_2	B	H_1	H_2	F	R Radius	E	Insert Form	Part No.
		90°	CC..0602..	0.984	SCFCR08CK-06	1.102	0.236	0.255	0.314	0.393	0.393	0.015	0.511	101	**345001**
		90°	CC..09T3..	1.574	SCFCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.551	0.031	0.669	103	**345002**
		90°	CC..1204..	1.968	SCFCR12CK-12	1.771	0.314	0.551	0.472	0.629	0.787	0.031	0.787	104	**345003**
		90°	CC..1605..	2.165	SCFCR14CK-16	2.125	0.314	0.629	0.551	0.708	0.905	0.031	0.925	105	**345004**
		80°	CC..0602..	0.984	SC0CR08CK-06	1.102	0.236	0.255	0.314	0.393	0.354	0.015	0.511	101	**345014**
		80°	CC..09T3..	1.574	SC0CR10CK-09	1.496	0.295	0.393	0.393	0.511	0.492	0.031	0.669	103	**345009**
ⓘ		75°	CC..0602..	0.984	SCRCR08CK-06	1.102	0.236	0.255	0.314	0.393	0.334	0.015	0.511	101	**345013**
		75°	CC..09T3..	1.574	SCRCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.460	0.031	0.669	103	**345008**
		70°	CC..0602..	0.984	SCPCR08CK-06	1.102	0.236	0.255	0.314	0.393	0.314	0.015	0.511	101	**345012**
		70°	CC..09T3..	1.574	SCPCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.433	0.031	0.669	103	**345007**
		60°	CC..0602..	0.984	SCTCR08CK-06	1.102	0.236	0.255	0.314	0.393	0.275	0.015	0.511	101	**345011**
		60°	CC..09T3..	1.574	SCTCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.381	0.031	0.669	103	**345006**
		45°	CC..0602..	0.984	SCSCR08CK-06	0.944	0.236	0.255	0.314	0.393	0.393	0.015	0.511	101	**345010**
		45°	CC..09T3..	1.574	SCSCR10CK-09	1.259	0.295	0.393	0.393	0.511	0.570	0.031	0.669	103	**345005**
		90°	CC..0602..	25.00	SCFCR08CK-06	28.00	6.00	6.50	8.00	10.00	10.00	0.40	13.00	101	**345001**
		90°	CC..09T3..	40.00	SCFCR10CK-09	38.00	7.50	10.00	10.00	13.00	14.00	0.80	17.00	103	**345002**
		90°	CC..1204..	50.00	SCFCR12CK-12	45.00	8.00	14.00	12.00	16.00	20.00	0.80	20.00	104	**345003**
		90°	CC..1605..	55.00	SCFCR14CK-16	54.00	8.00	16.00	14.00	18.00	23.00	0.80	23.50	105	**345004**
		80°	CC..0602..	25.00	SC0CR08CK-06	28.00	6.00	6.50	8.00	10.00	9.00	0.40	13.00	101	**345014**
		80°	CC..09T3..	40.00	SC0CR10CK-09	38.00	7.50	10.00	10.00	13.00	12.50	0.80	17.00	103	**345009**
ⓜ		75°	CC..0602..	25.00	SCRCR08CK-06	28.00	6.00	6.50	8.00	10.00	8.50	0.40	13.00	101	**345013**
		75°	CC..09T3..	40.00	SCRCR10CK-09	38.00	7.50	10.00	10.00	13.00	11.70	0.80	17.00	103	**345008**
		70°	CC..0602..	25.00	SCPCR08CK-06	28.00	6.00	6.50	8.00	10.00	8.00	0.40	13.00	101	**345012**
		70°	CC..09T3..	40.00	SCPCR10CK-09	38.00	7.50	10.00	10.00	13.00	11.00	0.80	17.00	103	**345007**
		60°	CC..0602..	25.00	SCTCR08CK-06	28.00	6.00	6.50	8.00	10.00	7.00	0.40	13.00	101	**345011**
		60°	CC..09T3..	40.00	SCTCR10CK-09	38.00	7.50	10.00	10.00	13.00	9.70	0.80	17.00	103	**345006**
		45°	CC..0602..	25.00	SCSCR08CK-06	24.00	6.00	6.50	8.00	10.00	10.00	0.40	13.00	101	**345010**
		45°	CC..09T3..	40.00	SCSCR10CK-09	32.00	7.50	10.00	10.00	13.00	14.50	0.80	17.00	103	**345005**

B10-M: 12-15

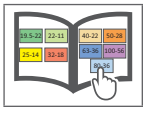
Key on B10-L: 1



B10-H



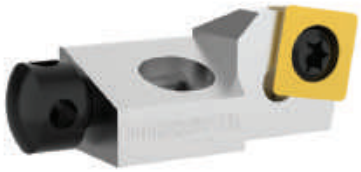
B10: vi-vii

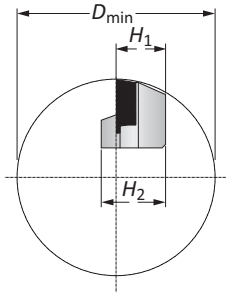


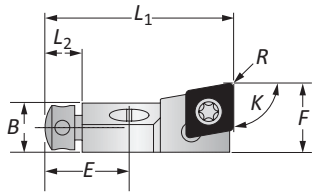
ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

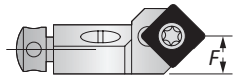
Compact Lay Down Cartridges | Insert Form 112

Diameter Range: ≥1.574" (40.00mm)





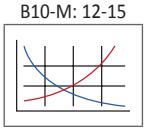




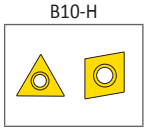
	Holder Type	K	ISO	D_{min} Boring Range	Designation	Insert Holder L_1	L_2	B	H_1	H_2	F	R Radius	E	Insert Form	Part No.
		80°	SC..09T3..	1.574	SS0CR10CK-09	1.496	0.295	0.393	0.393	0.511	0.472	0.031	0.669	112	**345019**
		75°	SC..09T3..	1.574	SSRCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.460	0.031	0.669	112	**345018**
ⓘ		70°	SC..09T3..	1.574	SSPCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.433	0.031	0.669	112	**345017**
		60°	SC..09T3..	1.574	SSTCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.381	0.031	0.669	112	**345016**
		45°	SC..09T3..	1.574	SSSCR10CK-09	1.260	0.295	0.393	0.393	0.511	0.551	0.031	0.669	112	**345015**
		80°	SC..09T3..	40.00	SS0CR10CK-09	38.00	7.50	10.00	10.00	13.00	12.50	0.80	17.00	112	**345019**
		75°	SC..09T3..	40.00	SSRCR10CK-09	38.00	7.50	10.00	10.00	13.00	11.70	0.80	17.00	112	**345018**
ⓜ		70°	SC..09T3..	40.00	SSPCR10CK-09	38.00	7.50	10.00	10.00	13.00	11.00	0.80	17.00	112	**345017**
		60°	SC..09T3..	40.00	SSTCR10CK-09	38.00	7.50	10.00	10.00	13.00	9.70	0.80	17.00	112	**345016**
		45°	SC..09T3..	40.00	SSSCR10CK-09	32.00	7.50	10.00	10.00	13.00	14.00	0.80	17.00	112	**345015**

Key on B10-L: 1

B10-M: 12-15



B10-H

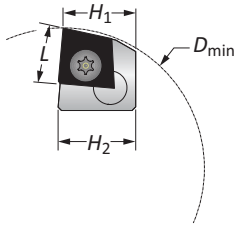


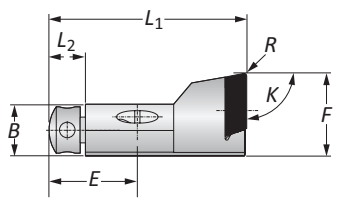
B10: vi-vii

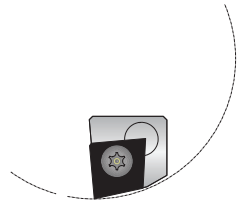
ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

Tangential Compact Lay Down Cartridges | Insert Forms 04 & 05

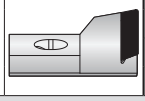
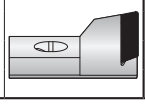
Diameter Range: ≥2.125" (54.00mm)

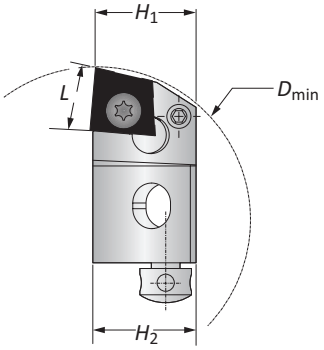


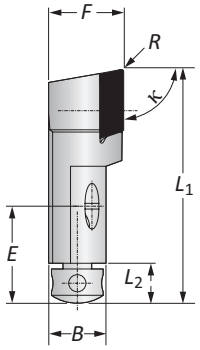




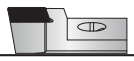
Insert Form 04, 05 Insert Holders

	Holder Type	K	D_{min} Boring Range	Insert Holder L_1	L_2	B	H_1	H_2	F	R Radius	E	Holder Cutting Form	L	Insert Form	Part No.
i		90°	2.125	1.496	0.295	0.393	0.551	0.590	0.629	0.019	0.669	Right	0.413	04	**345023**
		90°	2.125	1.496	0.295	0.393	0.551	0.590	0.629	0.019	0.669	Left	0.413	04	**345025**
		90°	2.755	2.755	0.314	0.551	0.748	0.787	0.866	0.019	0.787	Right	0.570	05	**345020**
		90°	2.755	2.755	0.314	0.551	0.748	0.787	0.866	0.019	0.787	Left	0.570	05	**345022**
m		90°	54.00	38.00	7.50	10.00	14.00	15.00	16.00	0.50	17.00	Right	10.50	04	**345023**
		90°	54.00	38.00	7.50	10.00	14.00	15.00	16.00	0.50	17.00	Left	10.50	04	**345025**
		90°	70.00	45.00	8.00	14.00	19.00	20.00	22.00	0.50	20.00	Right	14.50	05	**345020**
		90°	70.00	45.00	8.00	14.00	19.00	20.00	22.00	0.50	20.00	Left	14.50	05	**345022**



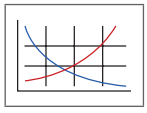


Insert Form 04, 05 Radial Cutting Insert Holders

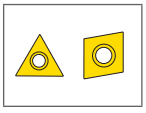
	Holder Type	K	D_{min} Boring Range	Insert Holder L_1	L_2	B	H_1	H_2	F	R Radius	E	Holder Cutting Form	L	Insert Form	Part No.
i		90°	2.125	1.614	0.295	0.393	0.669	0.708	0.511	0.019	0.669	Right	0.413	04	**345024**
		90°	2.755	1.968	0.314	0.551	0.826	0.866	0.669	0.019	0.787	Right	0.570	05	**345021**
m		90°	54.00	41.00	7.50	10.00	17.00	18.00	13.00	0.50	17.00	Right	10.50	04	**345024**
		90°	70.00	50.00	8.00	14.00	21.00	22.00	17.00	0.50	20.00	Right	14.50	05	**345021**

B10-M: 12-15

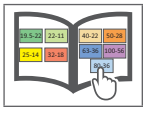
Key on B10-L: 1



B10-H

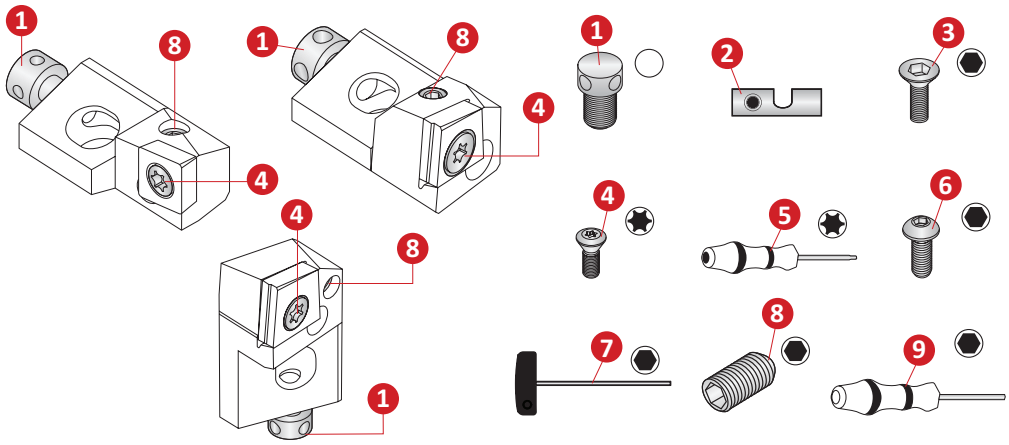


B10: vi-vii



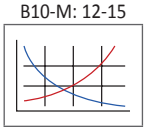
i = Imperial (in)
m = Metric (mm)
Inserts sold separately

Compact Lay Down Cartridges Accessories



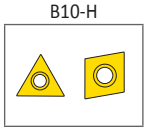
Insert Holder Part No.	1 Axial Barrel Screw	2 Shim	3 Insert Screw	4 Insert Screw	5 Torx Driver	6 Holder Fixing Screw	7 Hex Driver	8 Radial Set Screw	9 Hex Driver
345001	215742	345201	215461	115676	115590	215343	415577	114224	215472
345002	415299	345202	116433	115673	115664	215634	415164	070161	215473
345003	215250	345203	116433	415298	215150	215431	415164	215467	115575
345004	215265	345204	116433	215149	215150	315476	415165	215467	115575
345005	415299	345216	116433	115673	115664	215634	415164	070161	215473
345006	415299	345218	116433	115673	115664	215634	415164	070161	215473
345007	415299	345208	116433	115673	115664	215634	415164	070161	215473
345008	415299	345208	116433	115673	115664	215634	415164	070161	215473
345009	415299	345202	116433	115673	115664	215634	415164	070161	215473
345010	215742	345211	215461	115676	115590	215343	415577	114224	215472
345011	215742	345211	215461	115676	115590	215343	415577	114224	215472
345012	215742	345213	215461	115676	115590	215343	415577	114224	215472
345013	215742	345213	215461	115676	115590	215343	415577	114224	215472
345014	215742	345201	215461	115676	115590	215343	415577	114224	215472
345015	415299	345215	116433	115673	115664	215634	415164	070161	215473
345016	415299	345216	116433	115673	115664	215634	415164	070161	215473
345017	415299	345218	116433	115673	115664	215634	415164	070161	215473
345018	415299	345218	116433	115673	115664	215634	415164	070161	215473
345019	415299	345208	116433	115673	115664	215634	415164	070161	215473
345020	215250	345220	116433	415949	215150	315476	415165	215467	115575
345021	215250	345221	116433	415949	215150	315476	415165	215104	115575
345022	215250	345222	116433	415949	215150	315476	415165	215467	115575
345023	415299	345223	116433	415977	115664	215634	415164	415280	215473
345024	415299	345224	116433	415977	115664	215634	415164	070161	215473
345025	415299	345225	116433	415977	115664	215634	415164	415280	215473

B10-M: 12-15



Key on B10-L: 1

B10-H



B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)
Inserts sold separately

SECTION

B10-M

Accessories / Technical Information

Wohlhaupter® Accessories / Technical Information

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.

This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury.

When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words.

⚠ WARNING

WARNING (shown above) means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

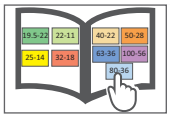
NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

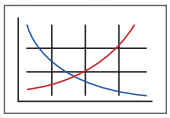
Applicable Industries

Aerospace | Agriculture | Automotive | Firearms | General Machining | Oil & Gas | Renewable Energy

Reference Icons
The following icons will appear throughout the catalog to help you navigate between products.



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s)



Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring

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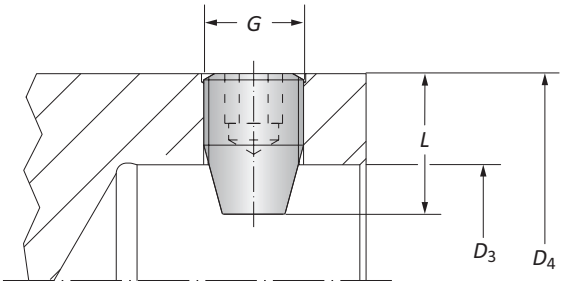
Accessories

Threaded Taper Pins for MVS Connections

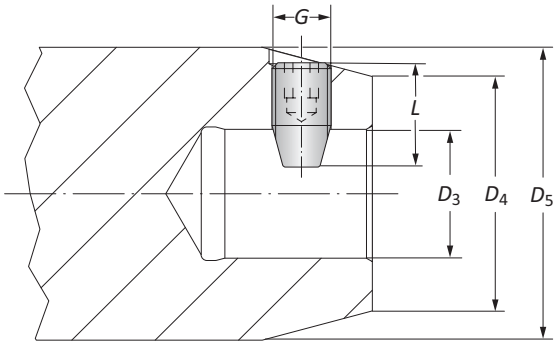


Connection D_4 | D_3	Taper Pin G	L	Service Key	Steel Part No.	Titanium Part No.
19.5 - 11	M5 x 0.5	0.256	s2.5 / A	**115949**	–
22 - 11	M5 x 0.5	0.327	s2.5 / A	**215375**	–
25 - 14	M8 x 1.0	0.327	s4 / B	**132174**	–
32 - 18	M8 x 1.0	0.409	s4 / B	**132142**	–
40 - 22	M10 x 1.0	0.571	s5 / B	**133113**	–
50 - 28	M12 x 1.0	0.657	s6 / B	**132145**	**415334**
63 - 36	M16 x 1.5	0.780	s8 / B	**132146**	**415336**
80 - 36	M16 x 1.5	1.134	s8 / B	**132191**	**415335**
100 - 56	M24 x 2.0	1.339	s12 / B	**215470**	**415337**
19.5 - 11	M5 x 0.5	6.50	s2.5 / A	**115949**	–
22 - 11	M5 x 0.5	8.30	s2.5 / A	**215375**	–
25 - 14	M8 x 1.0	8.30	s4 / B	**132174**	–
32 - 18	M8 x 1.0	10.40	s4 / B	**132142**	–
40 - 22	M10 x 1.0	14.50	s5 / B	**133113**	–
50 - 28	M12 x 1.0	16.70	s6 / B	**132145**	**415334**
63 - 36	M16 x 1.5	19.80	s8 / B	**132146**	**415336**
80 - 36	M16 x 1.5	28.80	s8 / B	**132191**	**415335**
100 - 56	M24 x 2.0	34.00	s12 / B	**215470**	**415337**

NOTE: Steel or titanium taper pins are used in balancing the Alu-Line tooling.

Accessories

Threaded Taper Pins for MVS Connections

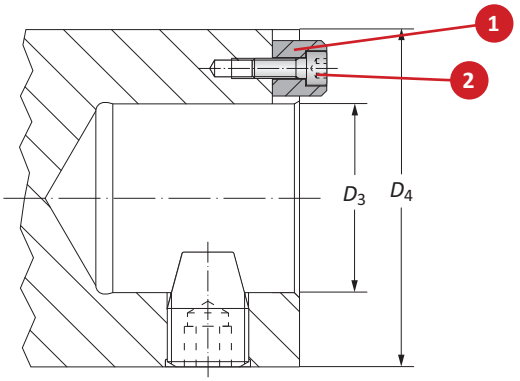


	Connection	Taper Pin				Steel	Titanium
	D_4 | D_3	G	L	D_5	Service Key	Part No.	Part No.
	22 - 11	M5 x 0.5	0.327	1.260	s2.5 / A	**215375**	–
	22 - 11	M5 x 0.5	0.630	1.575	s2.5 / A	**215376**	–
	22 - 11	M5 x 0.5	0.630	1.969	s2.5 / A	**215376**	–
	22 - 11	M5 x 0.5	0.630	2.480	s2.5 / A	**215376**	–
	25 - 14	M8 x 1.0	0.409	1.260	s4 / B	**132142**	–
	25 - 14	M8 x 1.0	0.409	1.417	s4 / B	**132142**	–
	32 - 18	M8 x 1.0	0.409	1.378	s4 / B	**132142**	–
i	32 - 18	M8 x 1.0	0.571	1.457	s4 / B	**132143**	–
	32 - 18	M8 x 1.0	0.571	1.575	s4 / B	**132143**	–
	32 - 18	M8 x 1.0	0.571	1.811	s4 / B	**132143**	–
	40 - 22	M10 x 1.0	0.571	1.575	s5 / B	**133113**	–
	40 - 22	M10 x 1.0	0.701	1.850	s5 / B	**132144**	–
	40 - 22	M10 x 1.0	0.701	1.969	s5 / B	**132144**	–
	50 - 28	M12 x 1.0	0.657	2.480	s6 / B	**132145**	**415334**
	63 - 36	M16 x 1.5	0.780	3.150	s8 / B	**132146**	**415336**
	22 - 11	M5 x 0.5	8.30	32.00	s2.5 / A	**215375**	–
	22 - 11	M5 x 0.5	16.00	40.00	s2.5 / A	**215376**	–
	22 - 11	M5 x 0.5	16.00	50.00	s2.5 / A	**215376**	–
	22 - 11	M5 x 0.5	16.00	63.00	s2.5 / A	**215376**	–
	25 - 14	M8 x 1.0	10.40	32.00	s4 / B	**132142**	–
	25 - 14	M8 x 1.0	10.40	36.00	s4 / B	**132142**	–
	32 - 18	M8 x 1.0	10.40	35.00	s4 / B	**132142**	–
m	32 - 18	M8 x 1.0	14.50	37.00	s4 / B	**132143**	–
	32 - 18	M8 x 1.0	14.50	40.00	s4 / B	**132143**	–
	32 - 18	M8 x 1.0	14.50	46.00	s4 / B	**132143**	–
	40 - 22	M10 x 1.0	14.50	40.00	s5 / B	**133113**	–
	40 - 22	M10 x 1.0	17.80	47.00	s5 / B	**132144**	–
	40 - 22	M10 x 1.0	17.80	50.00	s5 / B	**132144**	–
	50 - 28	M12 x 1.0	16.70	63.00	s6 / B	**132145**	**415334**
	63 - 36	M16 x 1.5	19.80	80.00	s8 / B	**132146**	**415336**

NOTE: Steel or titanium taper pins are used in balancing the Alu-Line tooling.

Accessories

Clamping Pieces for MVS Connection 100 - 56 | D 60 / D 40 Connections



Clamping Pieces for MVS 100 - 56

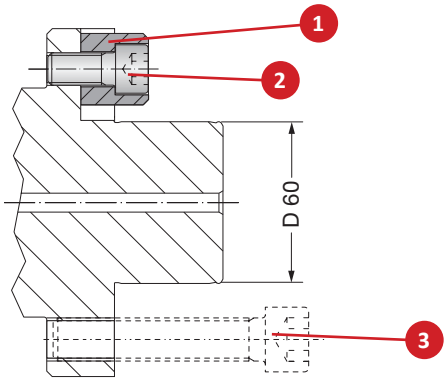
	1 Torque			2 Cap Screw		
Connection	Service Key	*D x L*	Part No.	Service Key	*D x L*	Part No.
100 - 56	–	–	**115641**	S5 / B	M6 x 1 x 16	**115147**

Clamping Pieces for D 60 / D 40

	1 Torque
Connection	Part No.
D 60	**115643 (125mm)**
D 60	**KW31562 (110mm)**
D 40	**117143**

Clamping Pieces for D 60 / D 40

	2 Cap Screw		
Connection	Service Key	*D x L*	Part No.
D 60	s10 / B	M12 x 1.75 x 25	**115237**
D 40	s5 / B	M6 x 1 x 16	**115147**



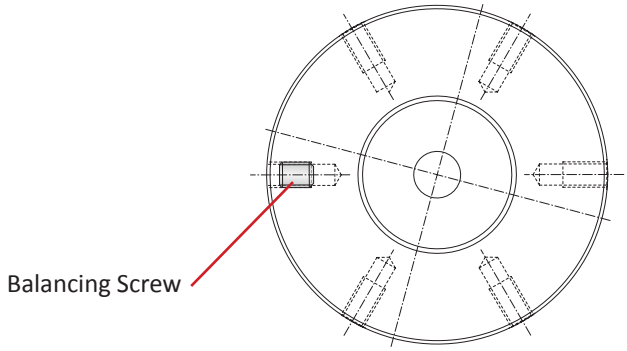
Clamping Pieces for D 60 / D 40

	3 Cap Screw		
Connection	Service Key	*D x L*	Part No.
D 60	s14 / C	M16 x 2 x 80	**115170**[1]
D 60	s14 / C	M16 x 2 x 55	**215189**[2]
D 40	s10 / B	M12 x 1.75 x 75	**315186**[3]
D 40	s10 / B	M12 x 1.75 x 50	**077104**[2]

[1] To mount boring tools above Ø7.874" (200.00mm), see section B10-F
[2] Cap screws used for mounting cutter heads to DIN 1830
[3] Ø7.874" - 20.472" (200.00mm - 520.00mm)

Accessories

Heavy Metal Balancing Screws



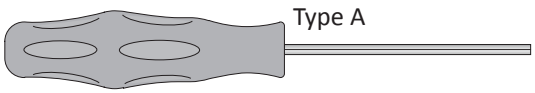
Balancing Screw		
Nominal Size	**Service Key**	**Part No.**
M5 x 0.8 x 6	0.8 x 4 / K	**415573**
M6 x 1 x 6	0.8 x 4 / K	**415284**
M6 x 1 x 8	0.8 x 4 / K	**415341**
M6 x 1 x 10	0.8 x 4 / K	**415283**
M8 x 1.25 x 8	1.2 x 6.5 / K	**415285**
M8 x 1.25 x 10	1.2 x 6.5 / K	**415286**
M8 x 1.25 x 12	1.2 x 6.5 / K	**415287**

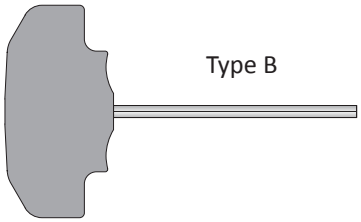
Accessories

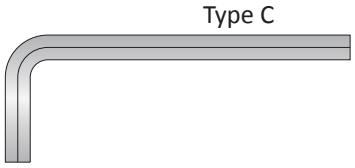
Torque Drivers | Wrenches

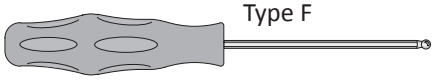
Service Keys for Insert Holders and Fixing Screws (Type A, B, C, F)

Service Key	Part No.
S1.5 / A	**215472**
s2 / A	**215473**
s2 / B	**415761**
s2.5 / A	**115575**
s2.5 / B	**415577**
s3 / A	**115630**
s3 / B	**415578**
s4 / B	**115576**
s4 / F	**315265**
s4 / B	**415164**
s5 / B	**115577**
s5 / B	**415165**
s6 / B	**115578**
s8 / B	**115579**
s8 / C	**415611**
s10 / B	**115580**
s12 / B	**215638**
s14 / C	**215639**



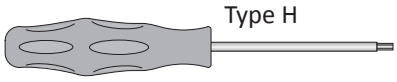






Fixed Torque Driver (Type H)

Service Key	Part No.
T6 / H	**115537**
T7 / H	**115591**
T8 / H	**115590**
T15 / H	**115664**
T20 / H	**215150**
T25 / H	**415121**

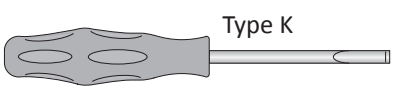


Torque Driver (Type H)

Service Key	Part No.
T6 / H	**415507**
T7 / H	**415508**
T8 / H	**415514**
T15 / H	**415510**
T20 / B	**415543**

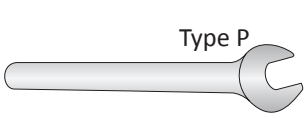
Torque Driver (Type K)

Service Key	Part No.
0.5 x 3 / K	**315322**
0.8 x 4 / K	**415579**
1.2 x 6.5 / K	**415580**



Wrench (Type P)

Service Key	Part No.
13 / P	**315689**
15 / P	**315690**
19 / P	**315691**



Accessories

Torque Driver Set | 25 Piece Wrench Set

NOTE: Torque driver set pictured

Torque Driver Set: Torx® Bits, Hexagon Bits, Flat Blade Bits

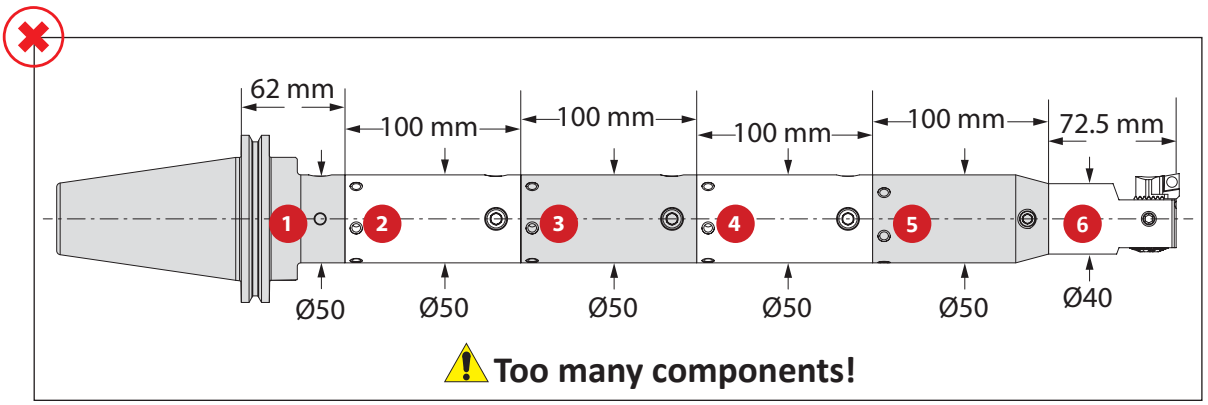
Type	Pieces	Size	Set Part No.
Flat Blade Bit	1	0.3 - 1.2 (Nm)	**103086**
Flat Blade Bit	1	1.2 - 3.0 (Nm)	
Flat Blade Bit	1	4.0 - 8.0 (Nm)	
Torque Driver	3	T6	
Torque Driver	3	T7	
Torque Driver	3	T8	
Torque Driver	1	T16	
Torque Driver	1	T20	
Torque Driver	1	T25	
Hexagon Bit	3	s2	
Hexagon Bit	3	s2.5	
Hexagon Bit	2	s3	
Hexagon Bit	2	s4	
Hexagon Bit	1	s5	
Flat Blade Bit	1	0.5 x 3.0	

25 Piece Wrench Set

Type	Size	Set Part No.
A	s1.5 / s2 / s2.5 / s3 / s4	**103025**
B	s4 / s5 / s6 / s8 / s10 / s12 / s14	
C	s7	
F	s4	
H	T6 / T7 / T8 / T15 / T20 / T25	
K	0.5 x 3	
P	s13 / s15 / s19	

Guidelines for not Exceeding Recommended Length to Diameter Ratio

To calculate, see graphics below:



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.
NOTE: Do not exceed recommended 10xD length to diameter ratio or exceed 4 total components (including shank)

Step 1: Find L : D by component

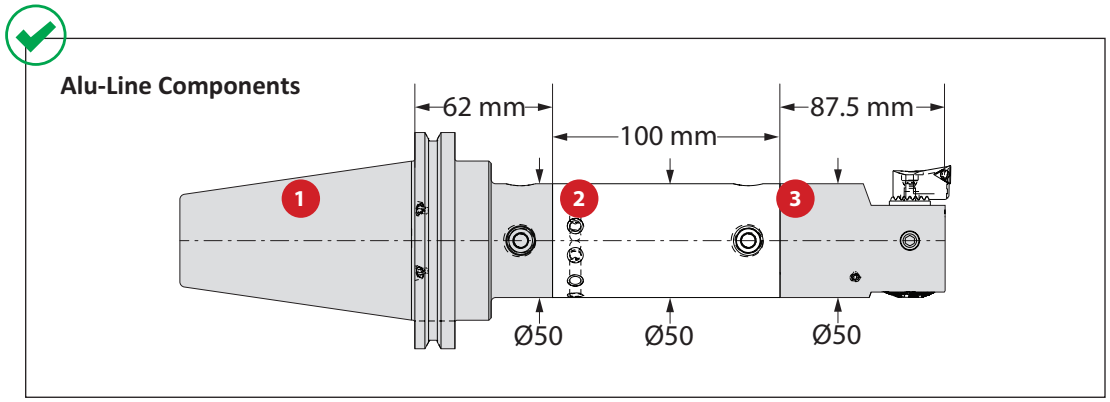
1. 1.2 = 62/50
2. 2.0 = 100/50
3. 2.0 = 100/50
4. 2.0 = 100/50
5. 2.0 = 100/50
6. 1.8 = 72.5/40

Step 2: Add each L : D Average

1.2
2.0
2.0
2.0
2.0
+ 1.8

11.0 = L : D ratio

Too long with too many components!



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.
NOTE: Do not exceed recommended 5xD length-to-diameter ratio when using Alu-Line (Aluminum) components or exceed four total components (including shank).

Step 1: Find L : D by component

1. 1.2 = 62/50
2. 2.0 = 100/50
3. 1.8 = 87.5/50

Step 2: Add each L : D average

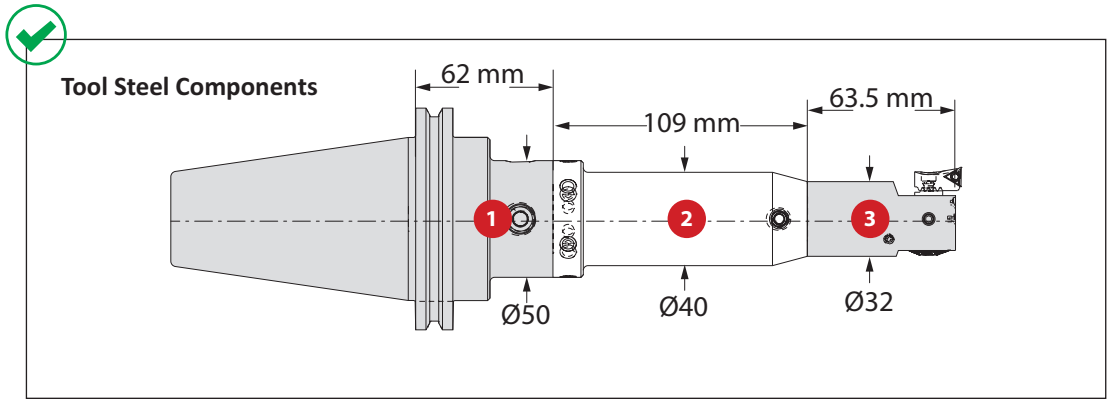
1.2
2.0
+ 1.8

5.0 = L : D ratio

WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio
-When using a heavy metal components, do not exceed recommended 8xD length-to-diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio
-When using a NOVI[TECH®] module, do not exceed recommended 10xD length-to-diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Guidelines for not Exceeding Recommended Length to Diameter Ratio

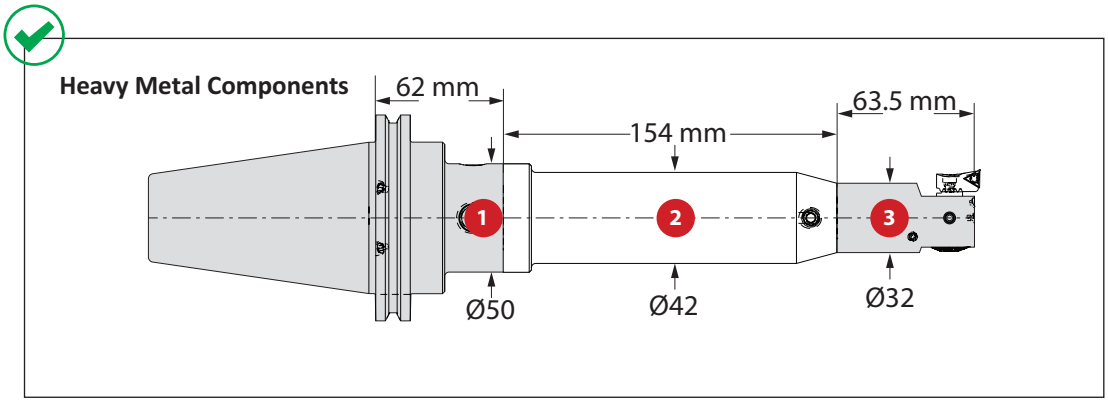
To calculate, see graphics below:



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.
NOTE: When using steel components, do not exceed recommended 6xD length to diameter ratio or exceed 4 total components (including shank).

Step 1: Find L : D by component
1. 1.2 = 62/50
2. 2.7 = 109/40
3. 2.0= 63.5/32

Step 2: Add each L : D average
1.2
2.7
+ 2.0
5.9 = L : D ratio



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.
NOTE: When using a heavy metal components, do not exceed recommended 8xD length-to-diameter ratio or exceed four total components (including shank).

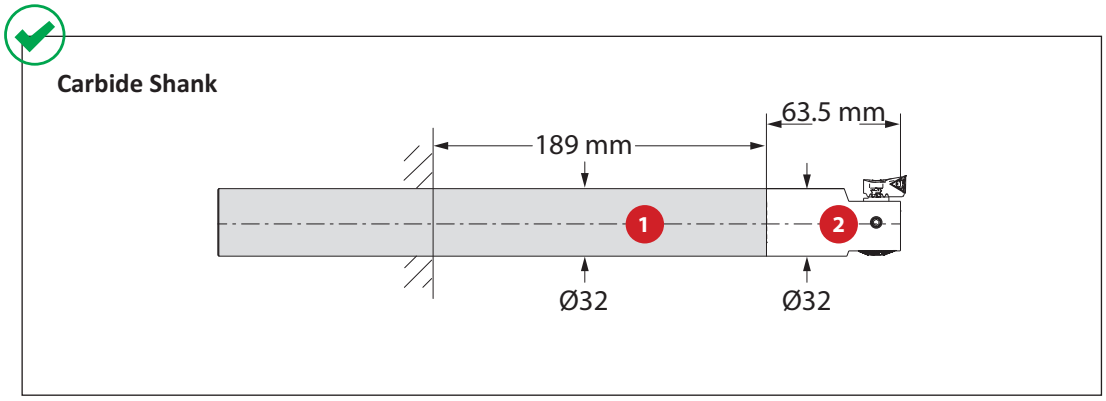
Step 1: Find L : D by component
1. 1.2 = 62/50
2. 3.6 = 154/42
3. 2.0 = 63.5/32

Step 2: Add each L : D average
1.2
3.6
+ 2.0
6.8= L : D ratio

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio
-When using a heavy metal components, do not exceed recommended 8xD length-to-diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio
-When using a NOVI[TECH®] module, do not exceed recommended 10xD length-to-diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Guidelines for not Exceeding Recommended Length to Diameter Ratio

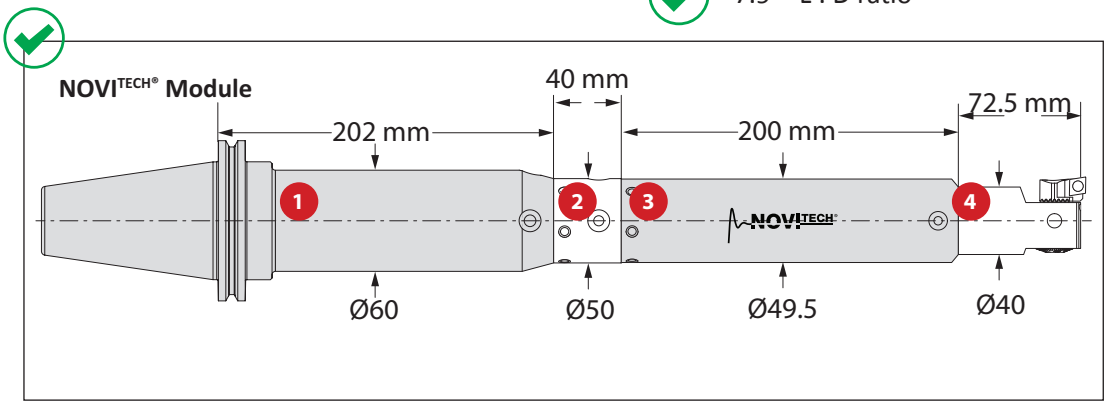
To calculate, see graphics below:



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.
NOTE: When using carbide shank components, do not exceed recommended 9xD length to diameter ratio or exceed 4 total components.

Step 1: Find L : D by component
1. 8.1 = 189/32
2. 2.0 = 63.5/32

Step 2: Add each L : D average
5.9
+ 2.0
7.9 = L : D ratio



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.
NOTE: Do not exceed recommended 10xD length to diameter ratio when using NOVI^{TECH} intermediate modules or exceed four total components (including shank)

Step 1: Find L : D by component
1. 3.2 = 202/60
2. 0.8 = 40/50
3. 4.0 = 200/49.5
4. 1.8 = 72.5/40

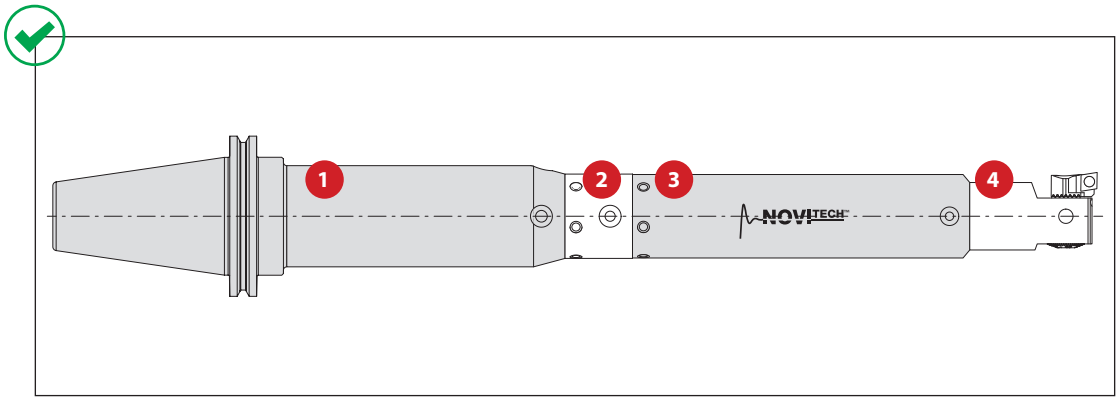
Step 2: Add each L : D average
3.2
0.8
4.0
+ 1.8
9.8 = L : D ratio

Component	Length to Diameter Ratio
Alu-Line	5xD
Tool Steel Components	6xD
Heavy Metal	8xD
Carbide	9xD
NOVI$^{TECH®}$	10xD

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio
-When using a heavy metal components, do not exceed recommended 8xD length-to-diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio
-When using a NOVI$^{TECH®}$ module, do not exceed recommended 10xD length-to-diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Calculating Tool Assembly Weight

To calculate, see graphics below:



Step 1: Find weight for each component circled in the example table below

Example:

	MVS Connection	Boring Range	4 Boring Head					
	D_1 & D_2	A	X_1	X_2	L_2	D_5	Weight	Part No.
i	40 - 22	2.087 - 2.598	2.953	1.535	2.854	–	1.543 (lbs)	**320004**
m	40 - 22	53.01 - 65.98	75.00	39.00	72.50	–	0.70 (kg)	**320004**

Step 2: Calculate total assembly weight

1 6.6 kg
2 0.6 kg
3 3.5 kg
\+ 4 0.7 kg
11.4 kg

Step 3: Consult machine tool builder to ensure tool assembly weight does not exceed machine capabilities.

⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
-Consult machine tool builder for machine's weight limitations.
Factory technical assistance is also available for specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Recommended Cutting Data | Imperial (inch)

ISO	Material	(BHN) Hardness	Grade	*Speed SFM	Recommended Feed (inch / tooth) Nose Radii 0.004"	0.008"	0.016"	0.031"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 250	Carbide	525 - 975	0.001 - 0.003	0.002 - 0.005	0.004 - 0.006	0.006 - 0.009
P	**Low-Carbon Steel** 1010, 1020, 1025, 1522, 1144, etc.	85 - 275	Carbide	475 - 925	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
P	**Medium-Carbon Steel** 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 325	Carbide	475 - 825	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
P	**Alloy Steel** 4140, 5140, 8640, etc.	125 - 375	Carbide	400 - 700	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
P	**High-Strength Alloy** 4340, 4330V, 300M, etc.	225 - 400	Carbide	325 - 600	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
P	**Structural Steel** A36, A285, A516, etc.	100 - 350	Carbide	475 - 925	0001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
P	**Tool Steel** H-13, H-21, A-4, 0-2, S-3, etc.	150 - 250	Carbide	325 - 600	0.001 - 0.002	0.002 - 0.003	0.003 - 0.004	0.004 - 0.006
S	**High-Temp Alloy** Hastelloy B, Inconel 600, etc.	140 - 310	Carbide	100 - 225	0.001 - 0.002	0.002 - 0.003	0.003 - 0.005	0.004 - 0.006
S	**Titanium Alloy**	140 - 310	Carbide	125 - 300	0.001 - 0.002	0.002 - 0.003	0.003 - 0.005	0.004 - 0.006
S	**Aerospace Alloy** S82	185 - 350	Carbide	125 - 300	0.001 - 0.002	0.002 - 0.003	0.003 - 0.005	0.004 - 0.006
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 350	Carbide	300 - 525	0.001 - 0.002	0.002 - 0.004	0.003 - 0.004	0.004 - 0.006
M	**Stainless Steel 300 Series** 304, 316, 17-4PH, etc.	135 - 275	Carbide	300 - 525	0.001 - 0.002	0.002 - 0.004	0.003 - 0.004	0.004 - 0.006
M	**Super Duplex Stainless Steel**	135 - 275	Carbide	300 - 525	0.001 - 0.002	0.002 - 0.004	0.003 - 0.004	0.004 - 0.006

*Not to exceed max recommended RPM for boring head found in corresponding Wohlhaupter Operation Manual

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool Length				
Boring Type	**7xD**	**8xD**	**9xD**	**10xD**
Roughing	❖	❖	❖	❖
Finishing	0.70	0.50	0.30	❖

❖ Contact our Application Engineering department for assistance when boring these depths without NOVI^{TECH}.

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool NOVI^{TECH} Length			
Boring Type	**8xD**	**9xD**	**10xD**
Roughing	0.80	0.60	0.40
Finishing	0.90	0.70	0.50

*Not to exceed recommended RPM printed on NOVI^{TECH} module

Recommended Speed Example

If the recommended speed for a finish boring assembly under 5xD is 400 SFM, then the speed for a 10xD finish boring assembly in the same application would be 200 SFM. (400 SFM x 0.50 = 200 SFM)

5xD = 400 SFM	10xD = 200 SFM

IMPORTANT: Max spindle speed refers to maximum possible speed for individual boring head and is not a recommended parameter. Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

⚠ **WARNING** **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Recommended Cutting Data | Imperial (inch)

ISO	Material	(BHN) Hardness	Grade	*Speed SFM	Recommended Feed (inch / tooth) Nose Radii 0.004"	0.008"	0.016"	0.031"
H	**Wear Plate**	400 - 600	Carbide	100 - 200	0.001 - 0.002	0.002 - 0.003	0.003 - 0.004	0.004 - 0.006
	Hardox, AR400, T-1, etc.		CBN	225 - 600	0.001 - 0.002	0.002 - 0.003	0.003 - 0.004	0.004 - 0.006
	Hardened Steel	300 - 500	Carbide	125 - 275	0.001 - 0.002	0.002 - 0.003	0.003 - 0.004	0.004 - 0.006
			CBN	225 - 600	0.001 - 0.002	0.002 - 0.003	0.003 - 0.004	0.004 - 0.006
K	**SG / Nodular Cast Iron**	120 - 320	Carbide	475 - 850	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
	Grey / White Iron	180 - 320	Carbide	600 - 1050	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
			CBN	1325 - 3275	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
N	**Cast Aluminum**	30 - 180	Carbide	850 - 2800	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
			PCD	1625 - 6550	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
	Wrought Aluminum	30 - 180	Carbide	675 - 1975	0.001 - 0.003	0.002 - 0.005	0.004 - 0.006	0.006 - 0.009
	Aluminum Bronze	100 - 250	Carbide	475 - 925	0.001 - 0.002	0.002 - 0.004	0.004 - 0.005	0.005 - 0.008
	Brass	100	Carbide	675 - 1975	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
	Copper	60	Carbide	325 - 600	0.001 - 0.002	0.002 - 0.003	0.003 - 0.004	0.004 - 0.005

*Not to exceed max recommended RPM for boring head found in corresponding Wohlhaupter Operation Manual

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool Length				
Boring Type	**7xD**	**8xD**	**9xD**	**10xD**
Roughing	❖	❖	❖	❖
Finishing	0.70	0.50	0.30	❖

❖ Contact our Application Engineering department for assistance when boring these depths without NOVI^{TECH}.

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool NOVI^{TECH} Length			
Boring Type	**8xD**	**9xD**	**10xD**
Roughing	0.80	0.60	0.40
Finishing	0.90	0.70	0.50

*Not to exceed recommended RPM printed on NOVI^{TECH} module

Recommended Speed Example

If the recommended speed for a finish boring assembly under 5xD is 400 SFM, then the speed for a 10xD finish boring assembly in the same application would be 200 SFM. (400 SFM x 0.50 = 200 SFM)

5xD = 400 SFM	10xD = 200 SFM

IMPORTANT: Max spindle speed refers to maximum possible speed for individual boring head and is not a recommended parameter. Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

⚠ **WARNING** **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Recommended Cutting Data | Metric (mm)

ISO	Material	(BHN) Hardness	Grade	*Speed M / Min	Recommended Feed (mm / tooth) Nose Radii 0.1mm	0.2mm	0.4mm	0.8mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 250	Carbide	150 - 300	0.02 - 0.08	0.05 - 0.13	0.10 - 0.15	0.15 - 0.23
P	**Low-Carbon Steel** 1010, 1020, 1025, 1522, 1144, etc.	85 - 275	Carbide	145 - 280	0.02 - 0.05	0.05 - 0.10	0.08 - 0.13	0.13 - 0.20
P	**Medium-Carbon Steel** 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 325	Carbide	145 - 280	0.02 - 0.05	0.05 - 0.10	0.08 - 0.13	0.13 - 0.20
P	**Alloy Steel** 4140, 5140, 8640, etc.	125 - 375	Carbide	120 - 215	0.02 - 0.05	0.05 - 0.10	0.08 - 0.13	0.13 - 0.20
P	**High-Strength Alloy** 4340, 4330V, 300M, etc.	225 - 400	Carbide	100 - 180	0.02 - 0.05	0.05 - 0.10	0.08 - 0.13	0.13 - 0.20
P	**Structural Steel** A36, A285, A516, etc.	100 - 350	Carbide	145 - 280	0.02 - 0.05	0.05 - 0.10	0.08 - 0.13	0.13 - 0.20
P	**Tool Steel** H-13, H-21, A-4, 0-2, S-3, etc.	150 - 250	Carbide	100 - 180	0.02 - 0.05	0.05 - 0.08	0.08 - 0.10	0.10 - 0.15
S	**High-Temp Alloy** Hastelloy B, Inconel 600, etc.	140 - 310	Carbide	30 - 70	0.02 - 0.05	0.05 - 0.08	0.08 - 0.13	0.10 - 0.15
S	**Titanium Alloy**	140 - 310	Carbide	40 - 90	0.02 - 0.05	0.05 - 0.08	0.08 - 0.13	0.10 - 0.15
S	**Aerospace Alloy** S82	185 - 350	Carbide	40 - 90	0.02 - 0.05	0.05 - 0.08	0.08 - 0.13	0.10 - 0.15
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 350	Carbide	90 - 160	0.02 - 0.05	0.05 - 0.10	0.08 - 0.10	0.10 - 0.15
M	**Stainless Steel 300 Series** 304, 316, 17-4PH, etc.	135 - 275	Carbide	90 - 160	0.02 - 0.05	0.05 - 0.10	0.08 - 0.10	0.10 - 0.15
M	**Super Duplex Stainless Steel**	135 - 275	Carbide	90 - 160	0.02 - 0.05	0.05 - 0.10	0.08 - 0.10	0.10 - 0.15

*Not to exceed max recommended RPM for boring head found in corresponding Wohlhaupter Operation Manual

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool Length				
Boring Type	**7xD**	**8xD**	**9xD**	**10xD**
Roughing	❖	❖	❖	❖
Finishing	0.70	0.50	0.30	❖

❖ Contact our Application Engineering department for assistance when boring these depths without NOVI^{TECH}.

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool NOVI^{TECH} Length			
Boring Type	**8xD**	**9xD**	**10xD**
Roughing	0.80	0.60	0.40
Finishing	0.90	0.70	0.50

*Not to exceed recommended RPM printed on NOVI^{TECH} module

Recommended Speed Example

If the recommended speed for a finish boring assembly under 5xD is 120 M/Min, then the speed for a 10xD finish boring assembly in the same application would be 60 M/Min (120 M/Min x 0.50 = 60 M/Min)

5xD = 120 M/Min	10xD = 60 M/Min

IMPORTANT: Max spindle speed refers to maximum possible speed for individual boring head and is not a recommended parameter. Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Recommended Cutting Data | Metric (mm)

ISO	Material	(BHN) Hardness	Grade	*Speed M / Min	Recommended Feed (mm / tooth) Nose Radii 0.1mm	0.2mm	0.4mm	0.8mm
H	**Wear Plate**	400 - 600	Carbide	30 - 60	0.02 - 0.05	0.05 - 0.08	0.08 - 0.10	0.10 - 0.15
	Hardox, AR400, T-1, etc.		CBN	70 - 180	0.02 - 0.05	0.05 - 0.08	0.08 - 0.10	0.10 - 0.15
	Hardened Steel	300 - 500	Carbide	40 - 80	0.02 - 0.05	0.05 - 0.08	0.08 - 0.10	0.10 - 0.15
			CBN	70 - 180	0.02 - 0.05	0.05 - 0.08	0.08 - 0.10	0.10 - 0.15
K	**SG / Nodular Cast Iron**	120 - 320	Carbide	145 - 260	0.02 - 0.05	0.05 - 0.10	0.08 - 0.13	0.13 - 0.20
	Grey / White Iron	180 - 320	Carbide	180 - 320	0.02 - 0.05	0.05 - 0.10	0.08 - 0.13	0.13 - 0.20
			CBN	400 - 1000	0.02 - 0.05	0.05 - 0.10	0.08 - 0.13	0.13 - 0.20
N	**Cast Aluminum**	30 - 180	Carbide	260 - 850	0.02 - 0.05	0.05 - 0.10	0.08 - 0.13	0.13 - 0.20
			PCD	495 - 1995	0.02 - 0.05	0.05 - 0.10	0.08 - 0.13	0.13 - 0.20
	Wrought Aluminum	30 - 180	Carbide	205 - 600	0.02 - 0.05	0.05 - 0.13	0.10 - 0.15	0.15 - 0.23
	Aluminum Bronze	100 - 250	Carbide	145 - 280	0.02 - 0.05	0.05 - 0.10	0.10 - 0.13	0.13 - 0.20
	Brass	100	Carbide	205 - 600	0.02 - 0.05	0.05 - 0.10	0.08 - 0.13	0.13 - 0.20
	Copper	60	Carbide	100 - 180	0.02 - 0.05	0.05 - 0.08	0.08 - 0.10	0.10 - 0.13

*Not to exceed max recommended RPM for boring head found in corresponding Wohlhaupter Operation Manual

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool Length				
Boring Type	**7xD**	**8xD**	**9xD**	**10xD**
Roughing	❖	❖	❖	❖
Finishing	0.70	0.50	0.30	❖

❖ Contact our Application Engineering department for assistance when boring the depths without NOVI[TECH].

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool NOVI[TECH] Length			
Boring Type	**8xD**	**9xD**	**10xD**
Roughing	0.80	0.60	0.40
Finishing	0.90	0.70	0.50

*Not to exceed recommended RPM printed on NOVI[TECH] module

Recommended Speed Example

If the recommended speed for a finish boring assembly under 5xD is 120 M/Min, then the speed for a 10xD finish boring assembly in the same application would be 60 M/Min (120 M/Min x 0.50 = 60 M/Min)

5xD = 120 M/Min	10xD = 60 M/Min

IMPORTANT: Max spindle speed refers to maximum possible speed for individual boring head and is not a recommended parameter. Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

⚠ **WARNING** **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using tool steel components, do not exceed recommended 6xD length to diameter ratio
-When using a heavy metal reducer, do not exceed recommended 8xD length to diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length to diameter ratio
-When using a NOVI[TECH] module, do not exceed recommended 10xD length to diameter ratio
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

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Notes

Guaranteed Test / Demo Application Form

Distributor PO #	

The following must be filled out completely before your test will be considered

IMPORTANT: For processing, send Purchase Order to your Allied Field Sales Engineer (FSE). Please clearly mark the paperwork as "Test Order."

Distributor Information

Company Name: _____

Contact: _____

Account Number: _____

Phone: _____

Email: _____

End User Information

Company Name: _____

Contact: _____

Industry: _____

Phone: _____

Email: _____

Current Process List all tooling, coatings, substrates, speeds and feeds, tool life, and any problems you are experiencing

_____

_____

Test Objective List what would make this a successful test (i.e. penetration rate, finish, tool life, hole size, etc.)

_____

_____

Application Information

Hole Diameter: _____ in/mm

Tolerance: _____

Material: _____ (4150 / A36 / Cast Iron / etc.)

Pre-existing Diameter: _____ in/mm

Depth of Cut: _____ in/mm

Hardness: _____ (BHN / Rc)

Required Finish: _____ RMS

State: _____ (Casting / Hot rolled / Forging)

Machine Information

Machine Type: _____ (Lathe / Screw machine / Machine center / etc.)

Builder: _____ (Haas, Mori Seiki, etc.)

Model #: _____

Shank Required: _____ (CAT50 / Morse taper, etc.)

Power: _____ HP/KW

Thrust: _____ lbs/N

Rigidity:
- ☐ Excellent
- ☐ Good
- ☐ Poor

Orientation:
- ☐ Vertical
- ☐ Horizontal

Tool Rotating:
- ☐ Yes
- ☐ No

Coolant Information

Coolant Delivery: _____ (Through tool / Flood)

Coolant Pressure: _____ PSI / bar

Coolant Type: _____ (Air mist, oil, synthetic, water soluble, etc.)

Coolant Volume: _____ GPM / LPM

Requested Tooling

QTY	Item Number

QTY	Item Number

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