



ALLIED MACHINE & ENGINEERING

Holemaking Solutions for Today's Manufacturing



Drilling



Reaming



Burnishing



Threading



Specials



Wohlhaupter®

► *BORING*

Intermediate Modules

WOHLHAUPTER®

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

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.

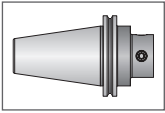
NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

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.

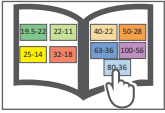
Reference Icons

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



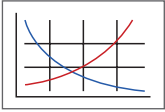
Shanks

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

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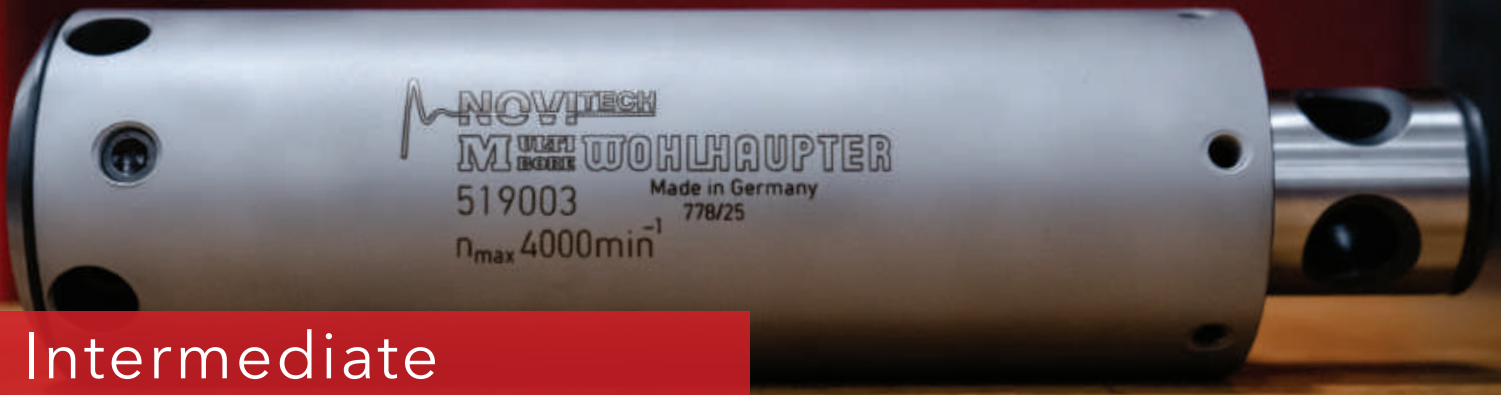
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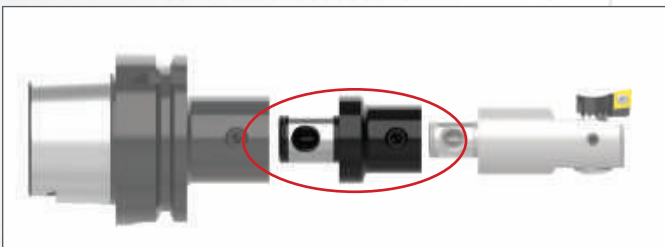
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Intermediate Modules Product Overview



Intermediate MODULES

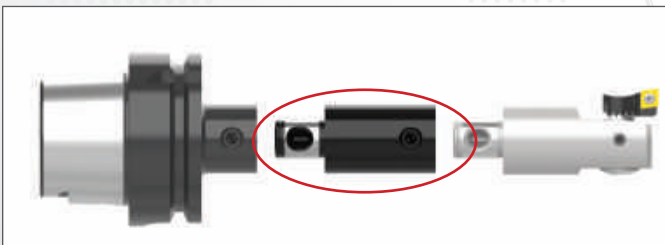
Reducers



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.**



		Measure	Competitor Boring Head	Wohlhaupter Fine Boring Head with NOVI ^{TECH}
Product:	Wohlhaupter analog balanced fine boring head with NOVI ^{TECH}	RPM	106	372
Objectives:	(1) Decrease cycle time (2) Improve process	Speed Rate	131.234 SFM (40 M/min)	459.318 SFM (140 M/min)
Industry:	Renewable energy/energy	Feed Rate	0.003 IPR (0.076 mm/rev)	0.006 IPR (0.16 mm/rev)
Part:	Nuclear fueling machine head rotor	Penetration Rate	0.315 IPM (8 mm/min)	2.362 IPM (60 mm/min)
Material:	ASTM A276-304L	Cycle Time	2 hr 10 min	17 min
Hole Ø:	4.7244" (120 mm)	Tool Life	12 min	65 min
Hole Depth:	40.9449" (1040 mm)	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



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

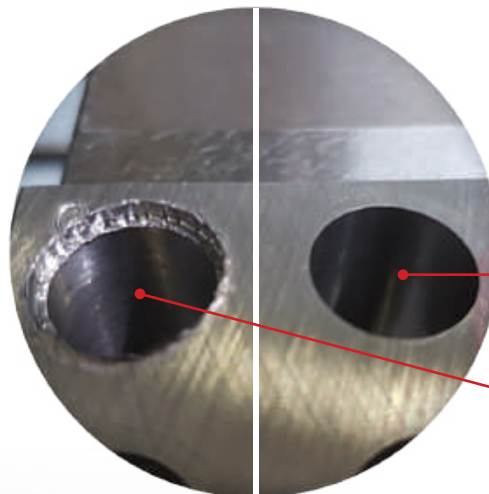
YOUR ADVANTAGE



Damper module with viscoelastic bearing

Absorber mass

THE SURFACE QUALITY TELLS IT ALL



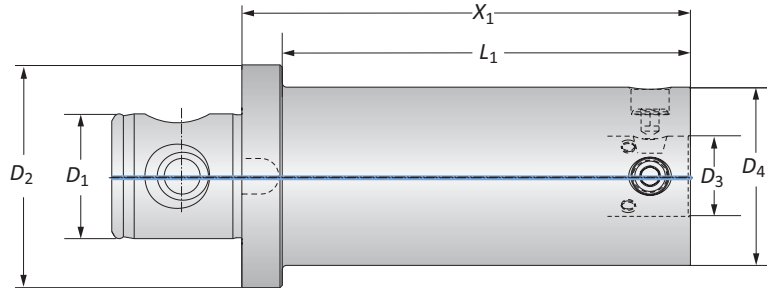
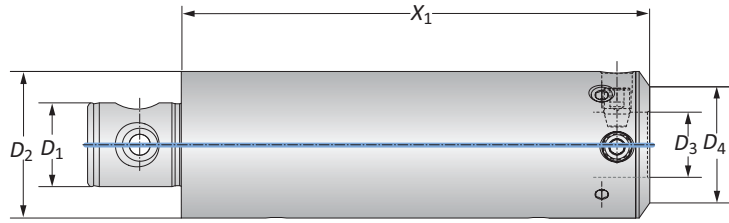
When our customer was machining alloy steel to 9xD, the NOVITECH provided reliable machining, which achieved high surface quality (Ra = 32).

Wohlhaupter NOVITECH with VarioBore precision boring head

Standard tool construction with steel extension

NOVI^{TECH}® Vibration Damping Intermediate Modules

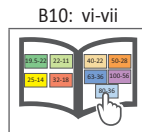
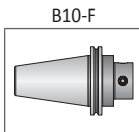
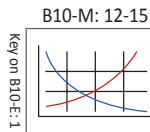
Machining Diameter: 1.969" - 8.071" (50.00 mm - 205.00 mm)



MVS Connection		NOVI ^{TECH}		Weight	Part No.
D_2 D_1	D_4 D_3	X_1	L_1		
50 - 28*	40 - 22	7.874	-	6.172 (lbs)	519002
63 - 36	50 - 28	7.874	-	12.560 (lbs)	519003
80 - 36	63 - 36	7.874	-	16.530 (lbs)	519004
80 - 36	80 - 36	7.874	-	16.530 (lbs)	519005
100 - 56	80 - 36	7.874	7.165	21.825 (lbs)	519006
<hr/>					
50 - 28*	40 - 22	200.00	-	2.80 (kg)	519002
63 - 36	50 - 28	200.00	-	5.70 (kg)	519003
80 - 36	63 - 36	200.00	-	7.50 (kg)	519004
80 - 36	80 - 36	200.00	-	7.50 (kg)	519005
100 - 56	80 - 36	200.00	182.00	9.90 (kg)	519006

* D_2 = 49.50mm

NOTE: The NOVITECH intermediate module should always be assembled as close as possible to the cutting edge (i.e. the next component behind the boring head).



I = Imperial (in)
M = Metric (mm)

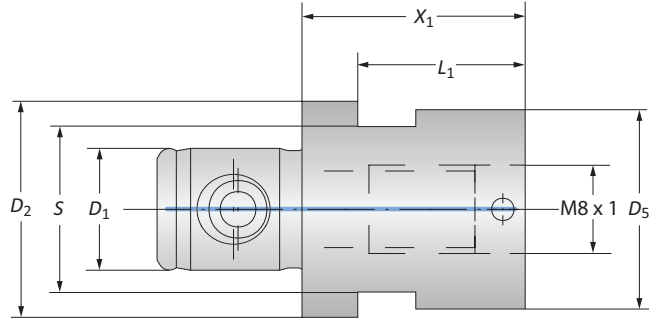
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering 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)
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-When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio
-When using 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 NOVITECH 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

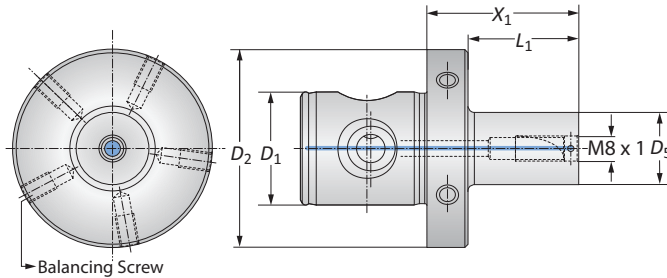
249 (248) Adapters

Adapters | Balanced Adapters



Adapters

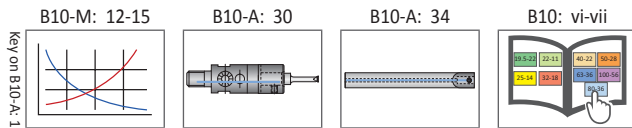
	MVS Connection		Adapter				Weight	Service Key	Part No.
	D ₂ D ₁	Boring Connection	X ₁	L ₁	S	D ₅			
i	19.5 - 11	M8 x 1	0.787	0.590	15/P	0.708	0.110 (lbs)	15 S / P	219168
	23 - 11	M8 x 1	0.787	-	19/P	0.905	0.154 (lbs)	19 S / P	219169
m	19.5 - 11	M8 x 1	20.00	15.00	15/P	18.00	0.05 (kg)	15 S / P	219168
	23 - 11	M8 x 1	20.00	-	19/P	23.00	0.07 (kg)	19 S / P	219169



Balanced Adapters

	MVS Connection		Adapter			Weight	Balancing Screw	Part No.
	D ₂ D ₁	Boring Connection	X ₁	L ₁	D ₅			
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



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

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1. WARNING Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:

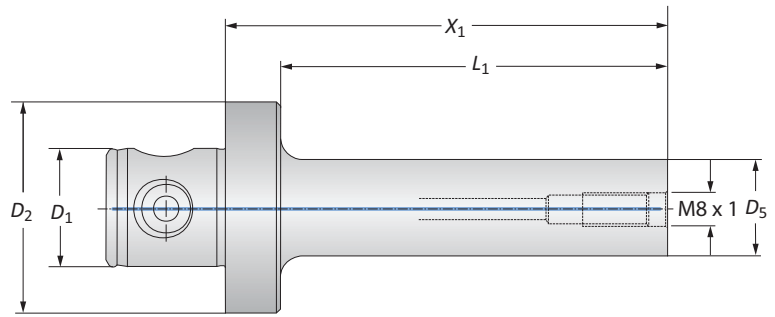
- Consult machine tool builder for machine's weight limitations.
 - Refer to example on page B10-M: 11 for calculating tool assembly weight
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 - When using heavy metal components, do not exceed recommended 8xD length-to-diameter ratio
 - When using a 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
 - 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

Vibration Reducing Heavy Metal Adapters



	MVS Connection		Adapter			Weight	Part No.
	D ₂ D ₁	Boring Connection	X ₁	L ₁	D ₅		
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

Key on B10-A-1

B10-M: 12-15

B10-A: 30

B10-A: 34

B10: vi-vii

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

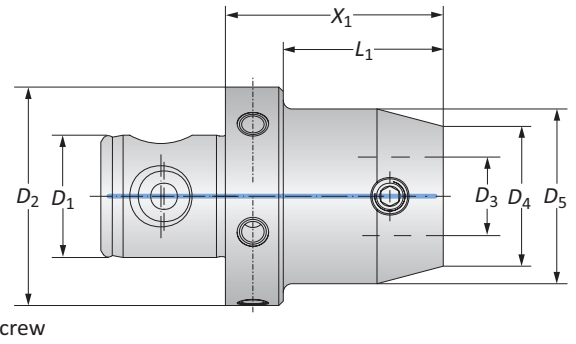
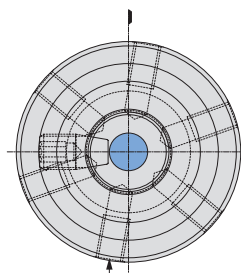
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 -When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio
 -When using a NOVI^{TECH} module, do not exceed recommended 10xD length-to-diameter ratio
 -Refer to examples on pages B10-M: 8-10 for calculating length-to-diameter ratio
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Reducers

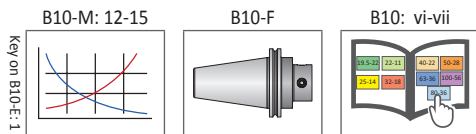
Imperial | Balanced



MVS Connection		Reducer			Weight	Balancing Screw	Part No.
D ₂ D ₁	D ₄ D ₃	X ₁	L ₁	D ₅			
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



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

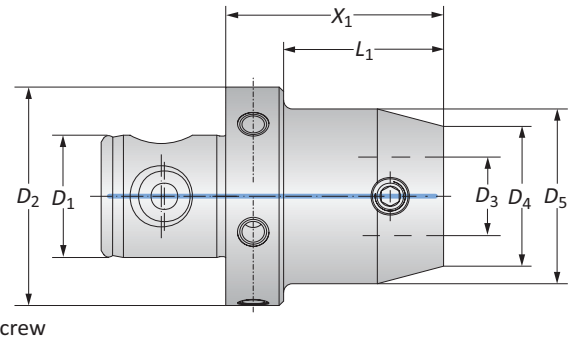
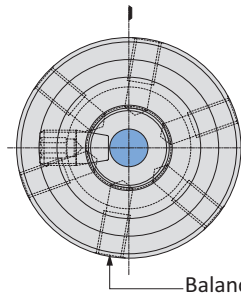
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-When using heavy metal components, do not exceed recommended 8xD length-to-diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length-to-diameter ratio
-Refer to examples on pages B10-M: 8-10 for calculating length-to-diameter ratio
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Reducers

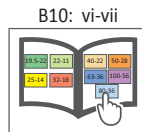
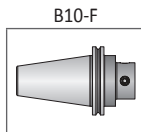
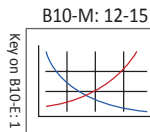
Metric | Balanced



MVS Connection		Reducer			Weight	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1	D_5			
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



Key on B10-E:1

I = Imperial (in)
M = Metric (mm)

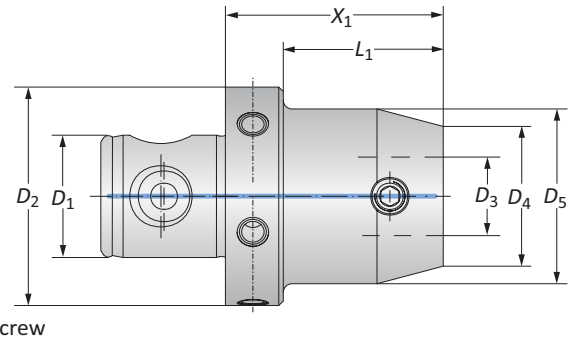
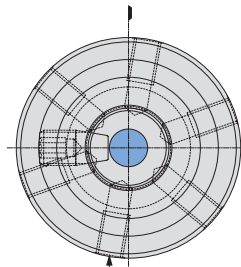
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering 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)
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-When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio
-When using 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
-Refer to examples on pages B10-M: 8-10 for calculating length-to-diameter ratio
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Reducers

Imperial | Balanced

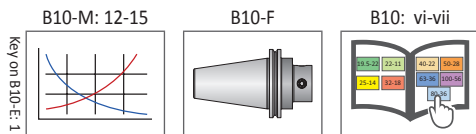


MVS Connection		Reducer			Weight	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1	D_5			
63 - 36	19.5 - 11	2.126	1.614	-	1.322 (lbs)	M6 x 1 x 10	219053
63 - 36	22 - 11	0.551	0.020	-	1.322 (lbs)	M6 x 1 x 10	219042
63 - 36	22 - 11	2.126	1.614	-	1.543 (lbs)	M6 x 1 x 10	219054
63 - 36	25 - 14	0.551	0.020	-	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
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



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

1. WARNING Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:

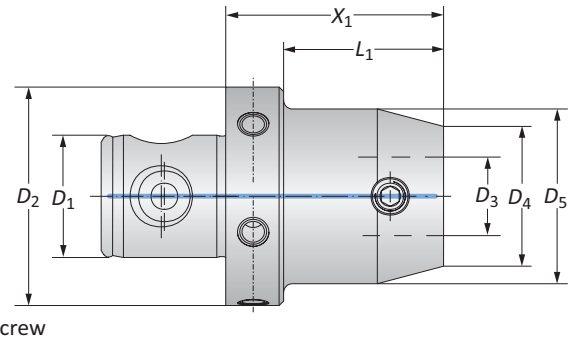
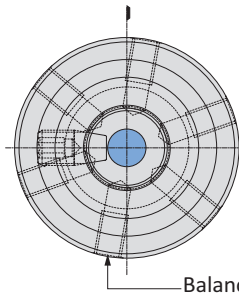
- Consult machine tool builder for machine's weight limitations.
 - Refer to example on page B10-M: 11 for calculating tool assembly weight
- Factory technical assistance is also available for specific applications through our Application Engineering department. ext: 7611 | email: appeng@alliedmachine.com

1. 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 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
 - 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

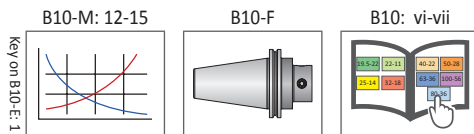


MVS Connection		Reducer			Weight	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1	D_5			
63 - 36	19.5 - 11	54.00	41.00	-	0.60 (kg)	M6 x 1 x 10	219053
63 - 36	22 - 11	14.00	0.50	-	0.60 (kg)	M6 x 1 x 10	219042
63 - 36	22 - 11	54.00	41.00	-	0.70 (kg)	M6 x 1 x 10	219054
63 - 36	25 - 14	14.00	0.50	-	0.60 (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



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

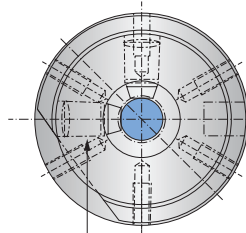
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering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

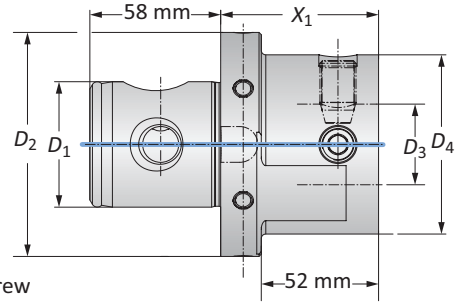
WARNING Tool failure can cause serious injury. To prevent:
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank)
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio
-When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio
-When using 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
-Refer to examples on pages B10-M: 8-10 for calculating length-to-diameter ratio
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Reducer

Balanced Alu-Line

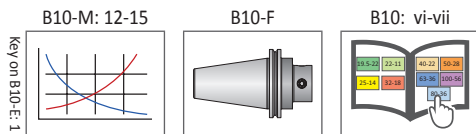


Balancing Screw



	MVS Connection		Reducer		Weight	Balancing Screw	Part No.
	$D_2 D_1$	$D_4 D_3$	X_1	L_1			
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



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

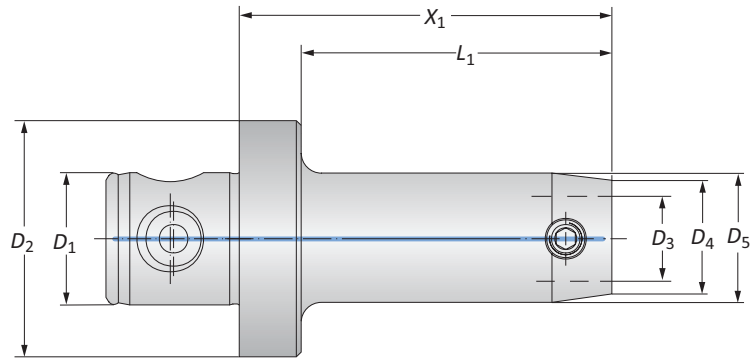
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-When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio
-When using heavy metal components, do not exceed recommended 8xD length-to-diameter ratio
-When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio
-When using a NOVI^{TECH} module, do not exceed recommended 10xD length-to-diameter ratio
-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			Weight	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1	D_5		
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
<hr/>						
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 $r = 0.10\text{mm}$.

B10-M: 12-15

B10-F

B10: vi-vii

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

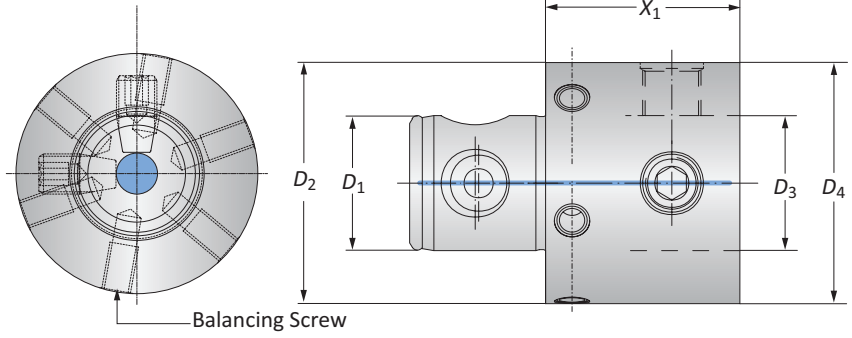
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WARNING Tool failure can cause serious injury. To prevent:
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 -When using heavy metal components, do not exceed recommended 8xD length-to-diameter ratio
 -When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio
 -When using a NOVI^{TECH} module, do not exceed recommended 10xD length-to-diameter ratio
 -Refer to examples on pages B10-M: 8-10 for calculating length-to-diameter ratio
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Extensions

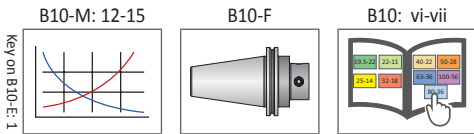
Imperial | Balanced



MVS Connection		Extension		Weight	Balancing Screw	Part No.
D ₂ D ₁	D ₄ D ₃	X ₁				
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	

*D₂ / D₄ = 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



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

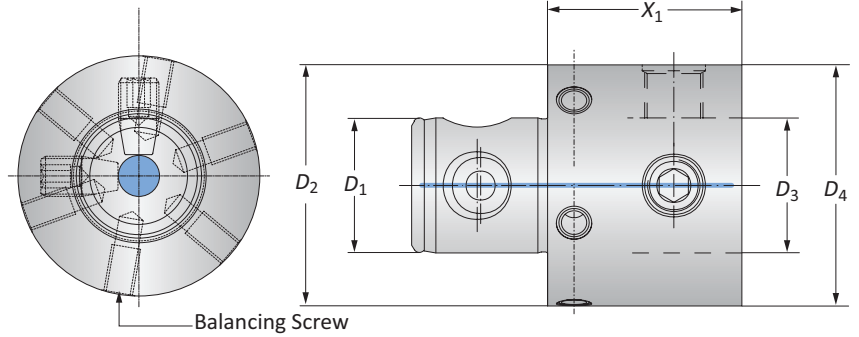
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering department.
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1. 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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1. WARNING Tool failure can cause serious injury. To prevent:
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-When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio
-When using 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
-Refer to examples on pages B10-M: 8-10 for calculating length-to-diameter ratio
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Extensions

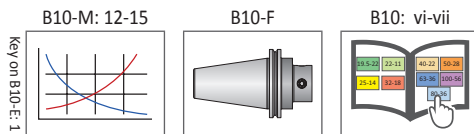
Metric | Balanced



MVS Connection		Extension		Weight	Balancing Screw	Part No.
D_2 D_1	D_4 D_3	X_1				
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



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

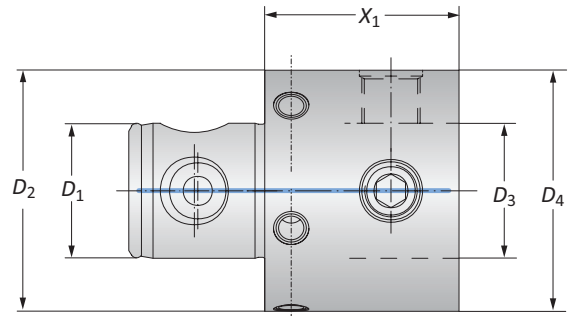
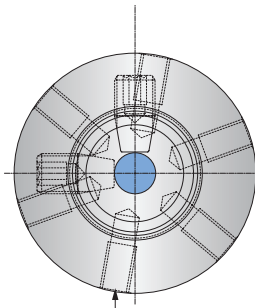
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering 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 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
-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		Modules		Weight	Balancing Screw	Part No.
D ₂ D ₁	D ₄ D ₃	X ₁				
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	
<hr/>						
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.
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 -When using 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
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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.)
Preexisting 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: _____ <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Poor	Orientation: _____ <input type="checkbox"/> Vertical <input type="checkbox"/> Horizontal	Tool Rotating: _____ <input type="checkbox"/> Yes <input type="checkbox"/> 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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Warranty Information



Allied Machine & Engineering ("Allied Machine") warrants to original equipment manufacturers, distributors, industrial and commercial users of its products for one year from the original date of sale that each new product manufactured or supplied by Allied Machine shall be free from defects in material and workmanship.

Allied Machine's sole and exclusive obligation under this warranty is limited to, at its option, without additional charge, replacing or repairing this product or issuing a credit. For this warranty to be applied, the product must be returned freight prepaid to the plant designated by an Allied Machine representative and which, upon inspection, is determined by Allied Machine to be defective in material and workmanship.

Complete information as to operating conditions, machine, setup, and the application of cutting fluid should accompany any product returned for inspection. This warranty shall not apply to any Allied Machine products which have been subjected to misuse, abuse, improper operating conditions, improper machine setup or improper application of cutting fluid or which have been repaired or altered if such repair or alteration, in the judgement of Allied Machine, would adversely affect the performance of the product.

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