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.

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.

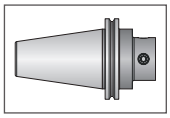
NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

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

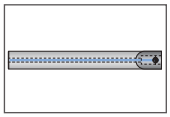
Visit www.alliedmachine.com for the most up-to-date information and procedures.

Applicable Industries

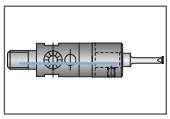
Reference Icons
The following icons will appear throughout the catalog to help you navigate between products.



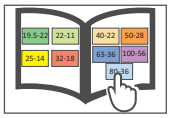
Shanks
A variety of shanks for different machines



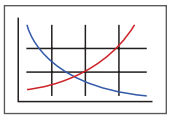
249 (248) Shanks
A variety of shanks for different machines



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



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

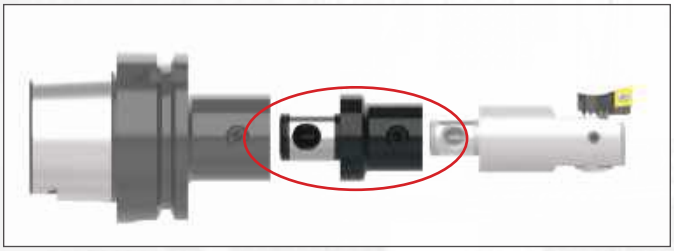
Coolant-Through Option
Indicates that the product is coolant through

Intermediate Modules Table of Contents

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
  Item No. 464038*
  **replacement for 364047*
- Boring insert
  Item No. 297994WHC111
- NOVI^{TECH} vibration damper intermediate module
  Item No. 519004

86.92% cycle time reduction

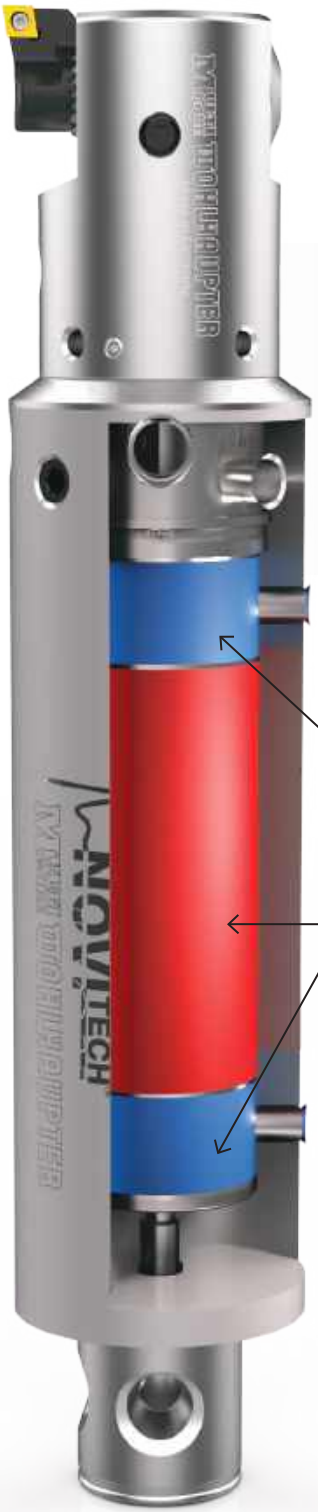
The Wohlhaupter boring head with the NOVI^{TECH} vibration damper module provided:

- ✓ 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

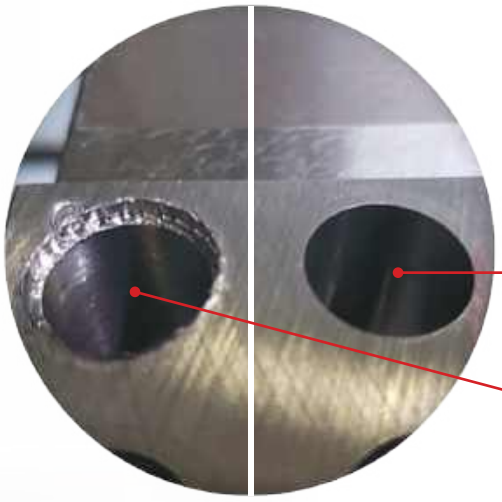


OUR ***SOLUTION***

- 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***

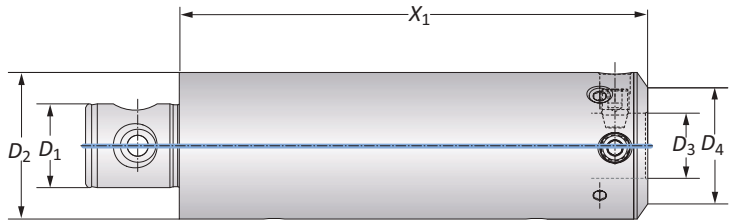
THE SURFACE QUALITY TELLS IT ALL

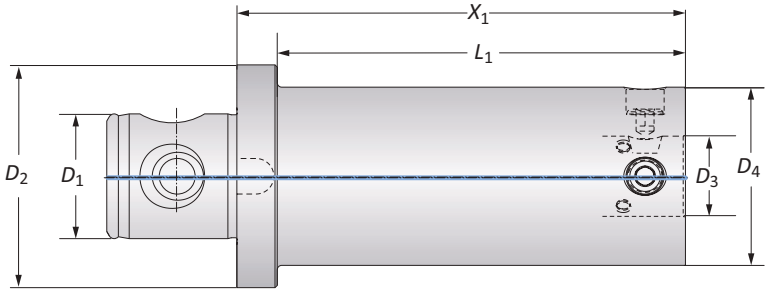


When our customer was machining alloy steel to 9xD, the NOVI[TECH] provided reliable machining, which achieved high surface quality (Ra = 32).

NOVI[TECH®] Vibration Damping Intermediate Modules

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





	MVS Connection		NOVI[TECH]			
	D_2 | D_1	D_4 | D_3	X_1	L_1	Weight	Part No.
ⓘ	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**
ⓜ	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 = 49.50 mm

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

B10-M: 12-19 | 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.
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 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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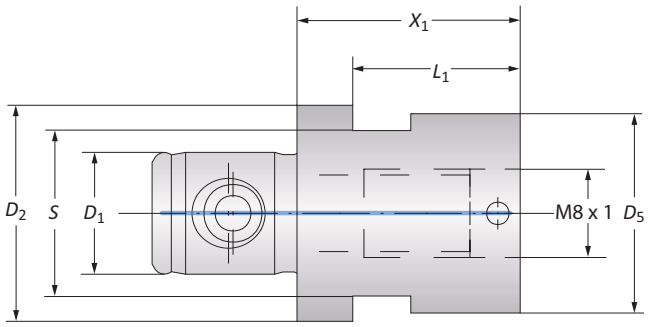
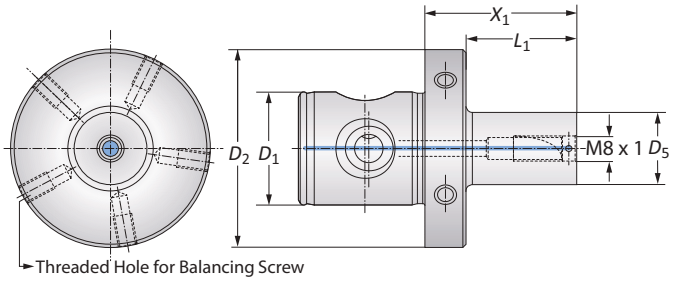
249 (248) Adapters

Adapters | Balanced Adapters



Adapters

	MVS Connection $D_2 \mid D_1$	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 $D_2 \mid D_1$	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: 12-19 | B10-A: 30 | B10-A: 34 | B10: vi-vii

Key on B10-E:1

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-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**

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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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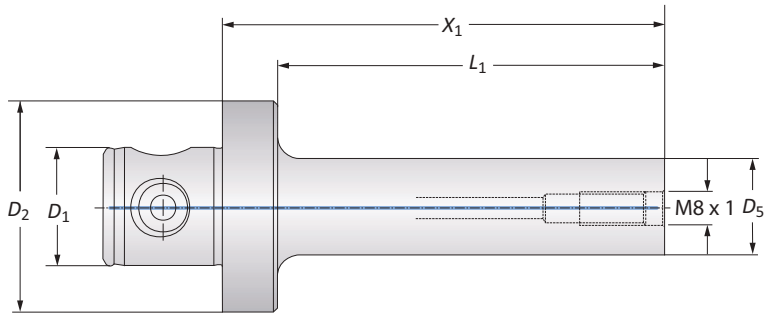
249 (248) Adapters

Vibration Reducing 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: 12-19 | B10-A: 30 | B10-A: 34 | B10: vi-vii

Key on B10-E:1

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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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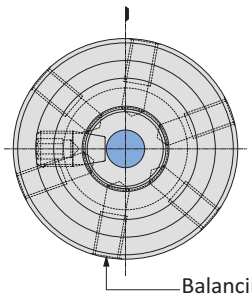
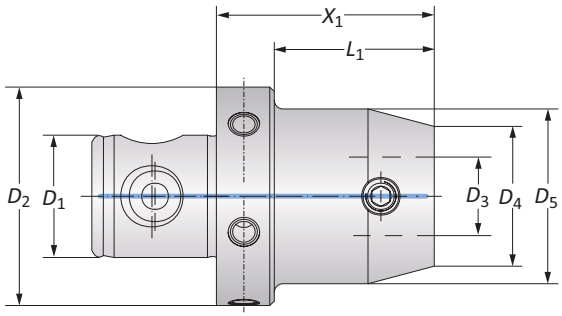
Reducers

Imperial | Balanced





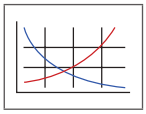
	MVS Connection		Reducer					
	D_2 | D_1	D_4 | D_3	X_1	L_1	D_5	Weight	Balancing Screw	Part No.
	25 - 14	19.5 - 11	1.181	0.827	–	0.220 (lbs)	–	**219034**
	25 - 14	22 - 11	1.181	0.827	–	0.440 (lbs)	–	**219035**
	32 - 18	22 - 11	0.472	0.020	–	0.220 (lbs)	–	**219036**
	32 - 18	25 - 14	1.181	0.827	–	0.220 (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.

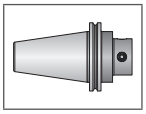
NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg.

B10-M: 12-19

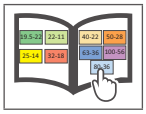
Key on B10-E:1



B10-F



B10: vi-vii



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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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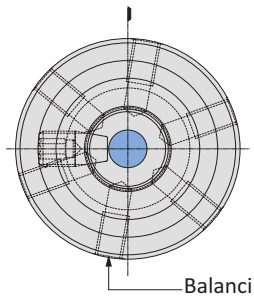
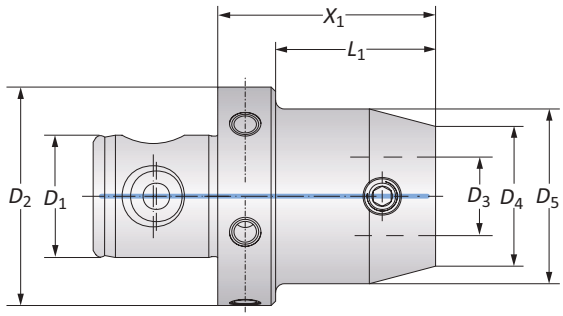
Reducers

Metric | Balanced





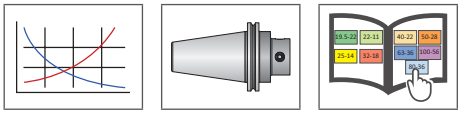
	MVS Connection		Reducer					
	D_2 | D_1	D_4 | D_3	X_1	L_1	D_5	Weight	Balancing Screw	Part No.
	25 - 14	19.5 - 11	30.00	21.00	–	0.10 (kg)	–	**219034**
	25 - 14	22 - 11	30.00	21.00	–	0.20 (kg)	–	**219035**
	32 - 18	22 - 11	12.00	0.50	–	0.10 (kg)	–	**219036**
	32 - 18	25 - 14	30.00	21.00	–	0.10 (kg)	–	**219037**
	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: 12-19 | B10-F | B10: vi-vii

Key on B10-E: 1



ⓘ = Imperial (in)
ⓜ = Metric (mm)

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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.
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-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio.
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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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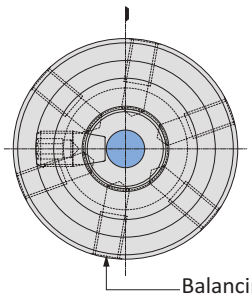
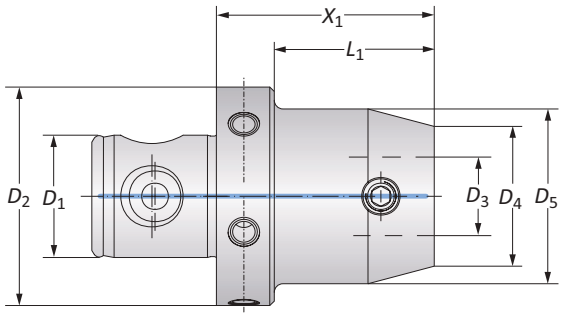
Reducers

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**
ⓘ	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: 12-19 | B10-F | B10: vi-vii

Key on B10-E: 1

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ⓜ = 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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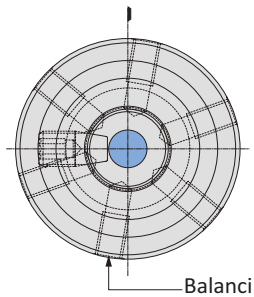
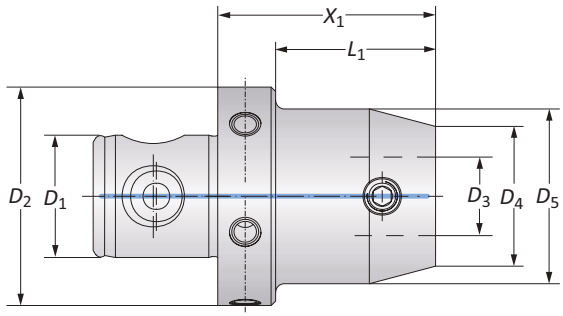
-When using heavy metal components, do not exceed recommended 8xD length-to-diameter ratio.
-When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio.
-When using a NOVI[TECH®] module, do not exceed recommended 10xD length-to-diameter ratio.
-Refer to examples on pages B10-M: 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



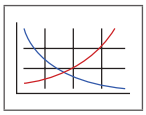


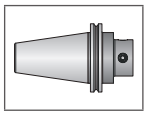
	MVS Connection		Reducer					
	D_2 | D_1	D_4 | D_3	X_1	L_1	D_5	Weight	Balancing Screw	Part No.
	63 - 36	19.5 - 11	54.00	41.00	–	0.60 (kg)	M6 x 1 x 10	**219053**
	63 - 36	22 - 11	14.00	0.50	–	0.60 (kg)	M6 x 1 x 10	**219042**
	63 - 36	22 - 11	54.00	41.00	–	0.70 (kg)	M6 x 1 x 10	**219054**
	63 - 36	25 -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

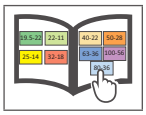
* Reinforced reducer.
**For milling applications.
NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg.

B10-M: 12-19 | B10-F | B10: vi-vii

Key on B10-E:1







ⓘ = Imperial (in)
ⓜ = 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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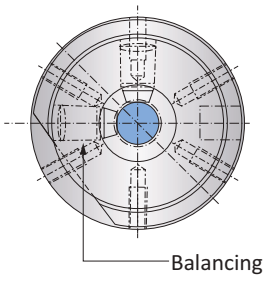
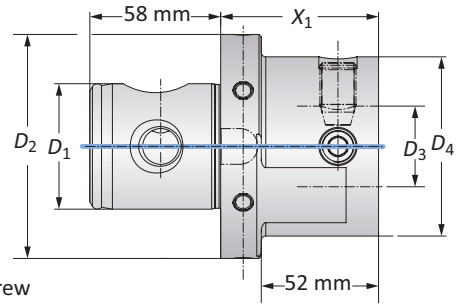
Reducer

Balanced Alu-Line



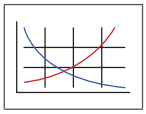


	MVS Connection		Reducer				
	D_2 | D_1	D_4 | D_3	X_1	L_1	Weight	Balancing Screw	Part No.
ⓘ	100 - 56	80 - 36	2.756	2.047	2.866 (lbs)	M8 x 1.25 x 20	**319013**
ⓜ	100 - 56	80 - 36	70.00	52.00	1.30 (kg)	M8 x 1.25 x 20	**319013**

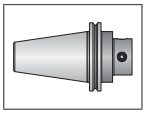
NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg.

B10-M: 12-19

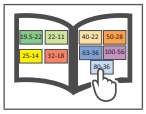
Key on B10-E:1



B10-F



B10: vi-vii



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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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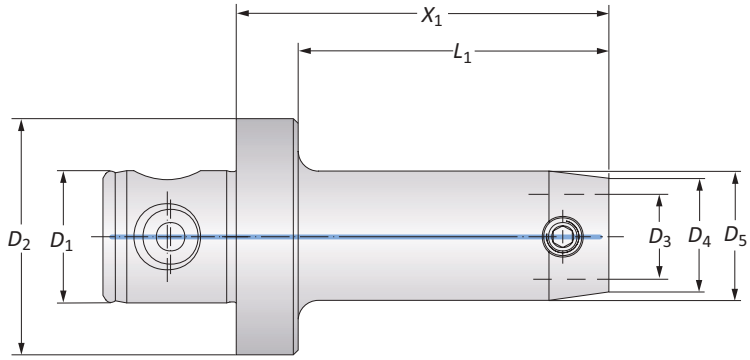
Heavy Metal Reducers

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 = 0.10 mm.

B10-M: 12-19 | B10-F | B10: vi-vii

Key on B10-E:1

ⓘ = Imperial (in)
ⓜ = 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.
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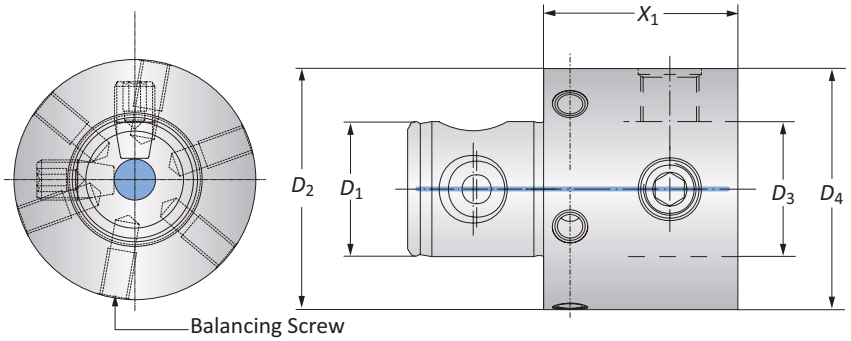
Extensions

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" (49.50 mm) for boring 1.969" (50.00 mm) diameter applications.
NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg.

B10-M: 12-19
Key on B10-E:1
B10-F
B10: vi-vii

ⓘ = Imperial (in)
ⓜ = Metric (mm)

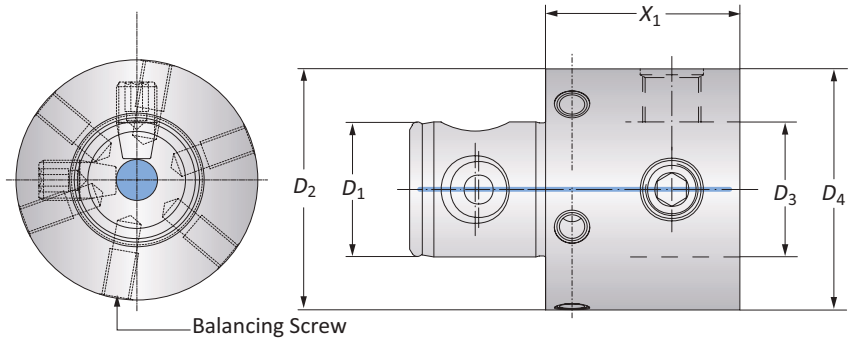
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to page B10-M: 12 for recommended application-specific parameters. Factory technical assistance is available for your specific applications through our Application Engineering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

⚠ 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.
Factory technical assistance is available for your specific applications through our Application Engineering department. *ext:* **7611** | *email:* **appeng@alliedmachine.com**

Extensions

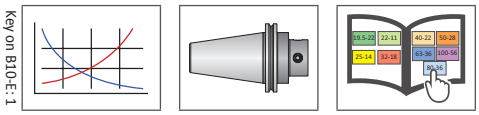
Metric | Balanced



	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" (49.50 mm) for boring 1.969" (50.00 mm) diameter applications.
NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg.

B10-M: 12-19 B10-F B10: vi-vii
Key on B10-E:1



ⓘ = Imperial (in)
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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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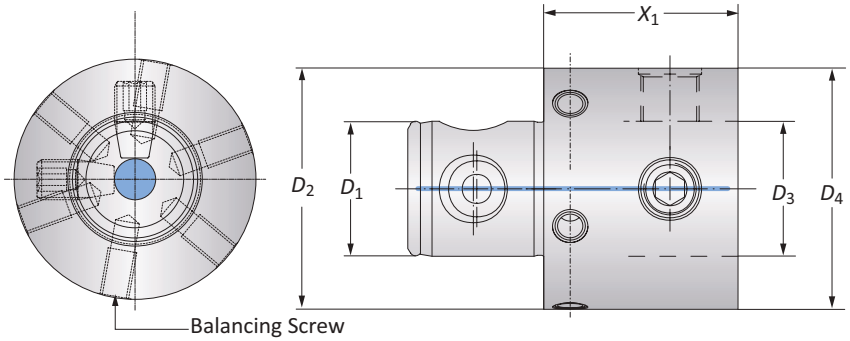
-Do not exceed recommended 10xD length-to-diameter ratio or exceed 4 total components (including shank).
-When using Alu-Line components, do not exceed recommended 5xD length-to-diameter ratio.
-When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio.
-When using heavy 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**

Extensions

Balanced Alu-Line



	MVS Connection $D_2 \mid D_1$	MVS Connection $D_4 \mid D_3$	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.

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ⓜ = 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.
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Notes

Notes

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.)

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:
- ☐ 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

ALLIED MACHINE & ENGINEERING

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Dover, OH 44622

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ALLIED MACHINE & ENGINEERING

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.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Allied Machine shall have no liability or responsibility for any claim, whether in contract, tort or otherwise, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery or use of any product sold hereunder, in excess of the cost of replacement or repair as provided herein.

Allied Machine shall not be liable in contract or in tort (including, without limitation, negligence, strict liability or otherwise) for economic losses of any kind or for any special, incidental, indirect, consequential, punitive or exemplary damages arising in any way out of the performance of, or failure to perform this agreement.

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