

BB4500 BORING MACHINE

7 | 2015
BB45

The proven technology of the Climax BB5000 Boring Machine now available in this smaller, affordable package.

Quick and Easy Setup

- Modular components make setup quick and easy.
- Fast and easy setup using high quality cast-iron set-up cones and spherical bearing mounts.
- Typical set-up time for an experienced operator is 30 minutes or less.

Powerful

- Over 100 ft lbs (135 N•m) of torque at the bar.
- Specially-designed rotational drive unit provides a 4:1 worm gear reduction for increased torque at all speeds.

Compact

- Extremely compact, and can be used easily in cramped, tight work spaces.
- Compact design completes jobs where other machines won't fit.

Affordable and Flexible

- The Climax BB4500 Portable Boring Machine is your "best-value" portable boring machine.
- Through-bar design allows the rotational drive and feed unit to be mounted anywhere along the bar, even separate from one another.
- Climax-patented mounting components provide the flexibility to handle challenging boring jobs even when space is limited.



Versatile

- Available with electric, hydraulic, or pneumatic motor options.
- Reversible electric motor.
- Fast, easy two-bolt change-out process to switch motors.
- Available in a variety of bar lengths, from 4 to 20 feet (1219.2 to 6096 mm) Bars are straightened, and have ½ inch or 12 mm square-broached tooling holes.
- Many accessories available, including

small bore kit, facing and grooving head options, and bore measuring tool.

Quality Components

- Keyed, chromed 1-¾ inch (44.5 mm) bar.
- World's best rotational drive and axial feed unit.
- Patented mounting system.
- High-quality components provide smooth, reliable operation to get the job done.

SPECIFICATIONS

	US	Metric
Boring Bar Diameter		
Standard	1.75	44.5
Optional	1.25	31.8
Boring Diameter		
Standard	2 - 10	50.8 - 254
Optional (minimum)	1.5	38.1
Boring Stroke		
Standard	12	304.8
Optional	24	609.6
Power Options		
Electric: 8 - 160 free speed bar RPM	3.35 Hp	2.5 kW
Hydraulic: up to 148 free speed bar RPM	3.9 Hp	2.9 kW
Pneumatic: up to 120 bar free speed RPM	3.0 Hp	2.2 kW
Mounting Options		
Single arm, double arm, and universal mounts available.		
Rotational Drive Unit	4:1 worm gear reduction	
Feed	mechanical, reversible	
Feed Rate (per revolution)	0 - 0.018	0 - 0.46
Set-Up Cones		
Standard	2 - 10	50.8 - 254
Optional	1.5 - 3.25	38.1 - 82.5
Measures		
Ship Weight (approx.) for typical machine (typical machine with single arm mounts, universal mounts, set-up cones, electric motor, and metal shipping container)	406 lbs	185 kg
Ship Weight (approx.) of boring bar (standard 1.75 inch (44.5 mm) bar, including metal shipping container)	1.03 lbs/inch	0.019 kg/mm
Shipping Dimensions for typical machine (Shipped in 2 containers, 3 containers for hydraulic power unit option)		
Machine W, D, H	47 x 26 x 16	1194 x 661 x 407
Bar 72 inch (1829 mm) W, D, H	74.5 x 5 x 5.5	1893 x 127 x 140
HPU (5 Hp) W, D, H	29 x 26 x 44	737 x 661 x 1118

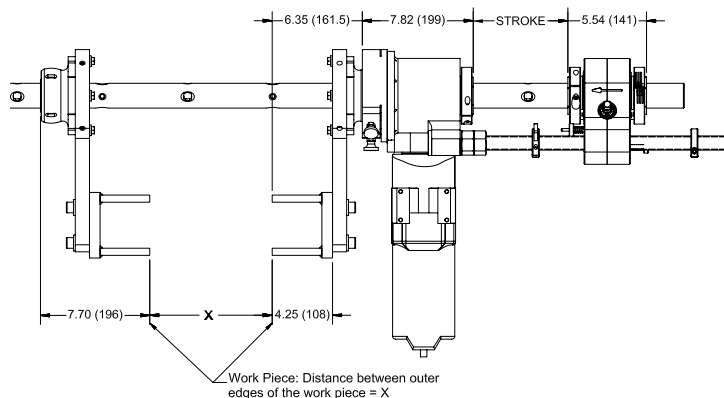
Here's how to determine the length of the boring bar you will require

Length of boring bar required =

$X + 27 \frac{1}{2}$ inches (699mm) + required stroke.

Cutting should be performed within 9 inches (229 mm) of a bearing support. Maximum recommended unsupported bar length between any two bearings is 36 inches (914 mm).

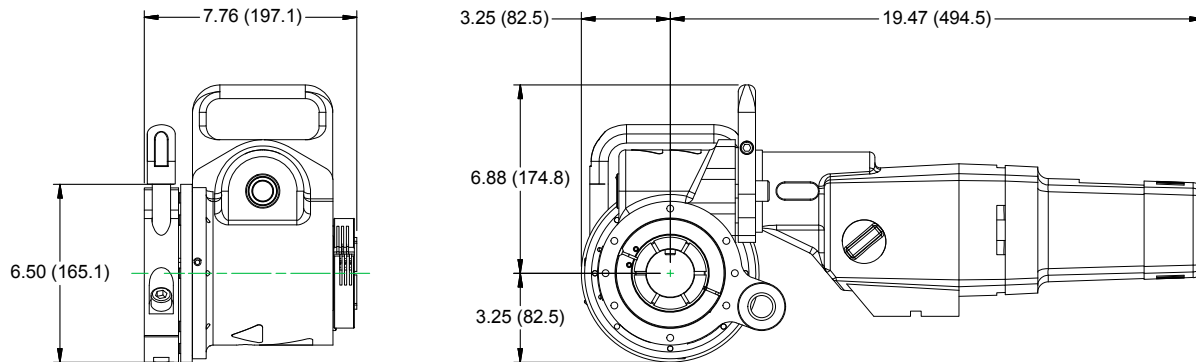
The space between the back of the bearing mounting plate and the face of the bore must be at least 3 inches (76 mm) for set-up cone removal. If the bore has a shoulder or boss, increase the height of the spacer plate and the length of the bar accordingly.



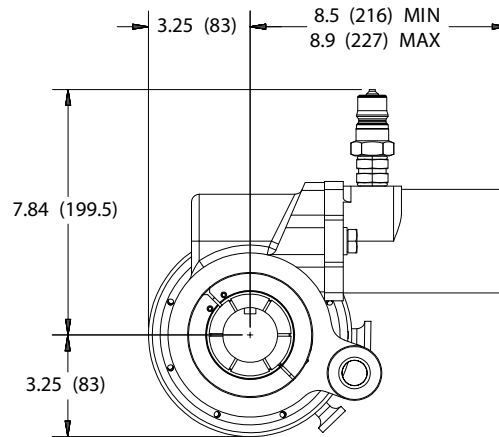
All dimensions should be considered reference. Contact your Climax Representative for precision dimensions. Specifications are subject to change without notice. There are no systems or components on this machine that are capable of producing hazardous EMC, UV or other radiation hazards. The machine does not use lasers nor does it create hazardous materials such as gasses or dust.

OPERATIONAL DIMENSIONS

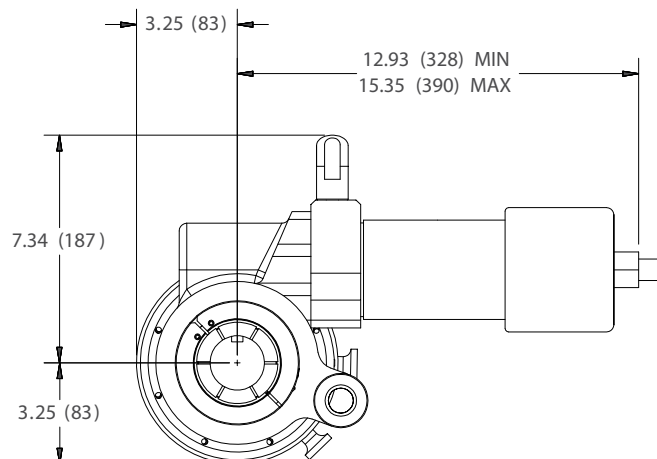
Dimensions in inch (mm)



Rotational drive unit with electric motor



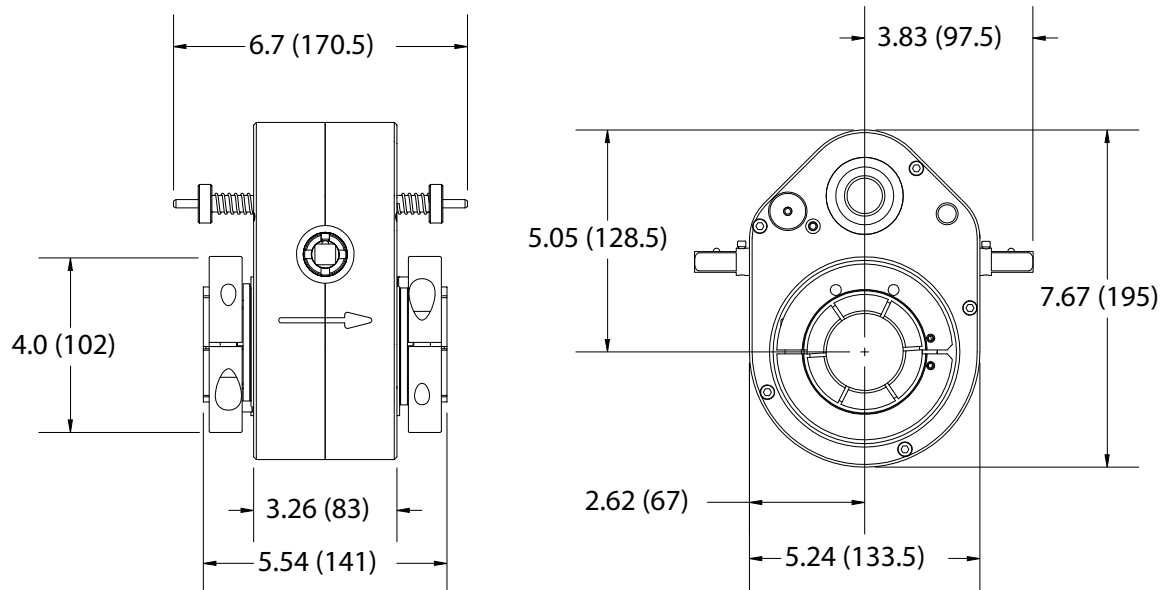
Rotational drive unit with hydraulic motor



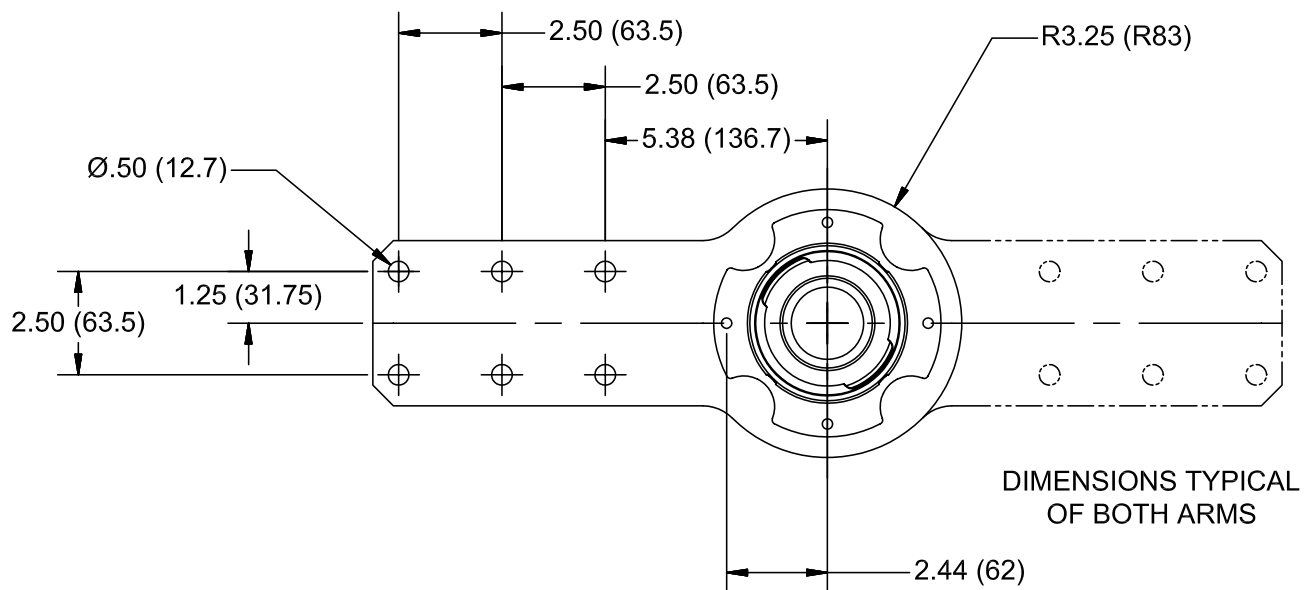
Rotational drive unit with pneumatic motor

OPERATIONAL DIMENSIONS

Dimensions in inch (mm)



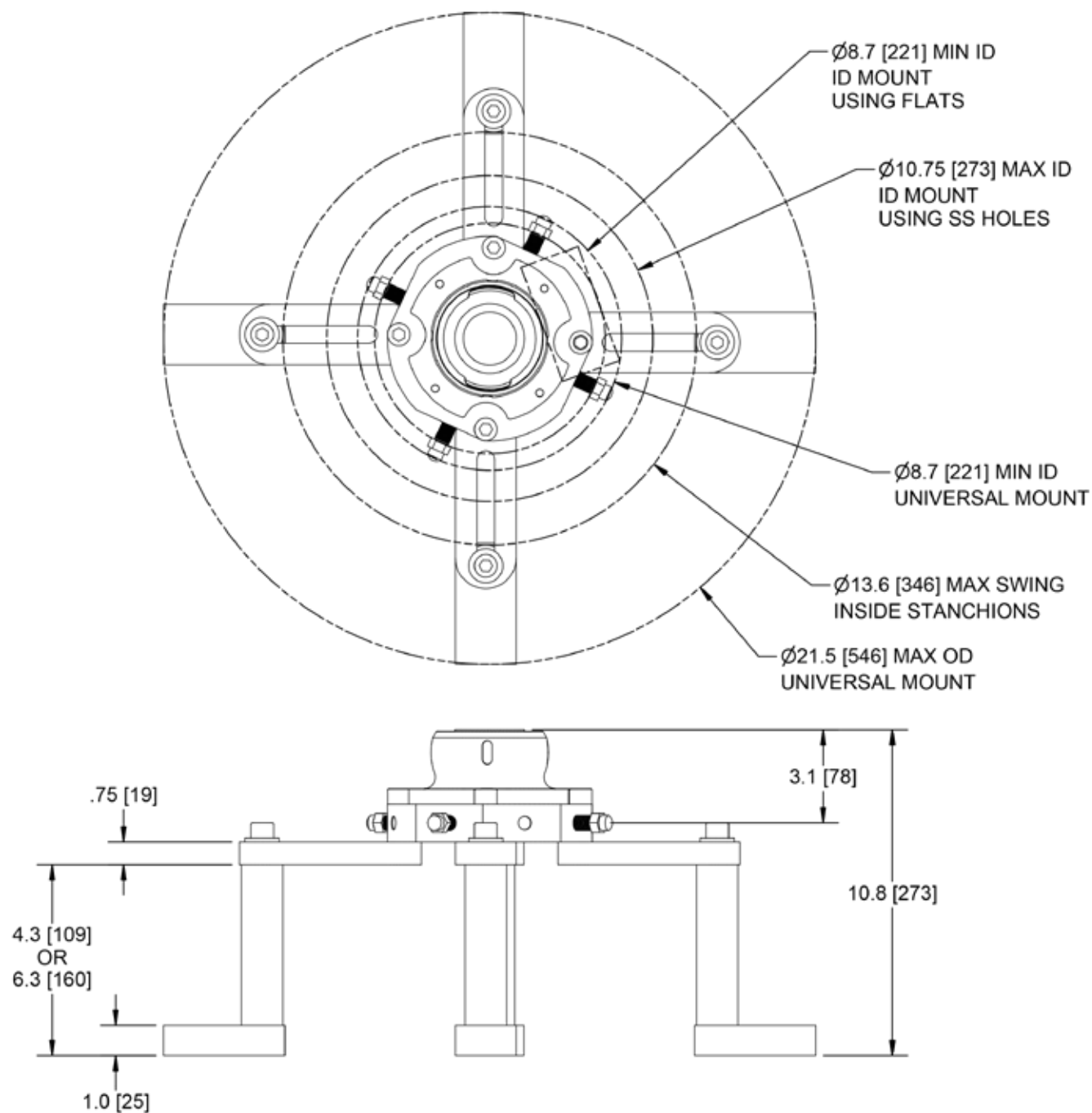
Axial feed unit



Single arm bearing mount

OPERATIONAL DIMENSIONS

Dimensions in inch (mm)



Universal bearing mount

TOOL CONFIGURATIONS

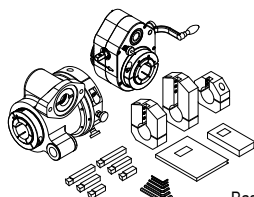
Configure your BB4500 in 8 easy steps:

To configure your BB4500 Boring Machine, you will need to:

- 1 **Select a Base Unit**
- 2 **Select a Boring Bar**
- 3 **Select a Drive Motor Option**
- 4 **Select a Speed Control**
- 5 **Select Additional Lead Screws**
- 6 **Select Setup Cones**
- 7 **Select a Mounting Option**
- 8 **Select Optional Small Bore Kit**

To generate the correct part number for the boring machine you require, simply select the part number needed in each step, and contact your Climax representative.

The Base Unit includes the RDU and AFU, tool kit, tool head, packaging, and instruction manual. The unit comes packed in a durable metal container.



1 Select a Base Unit

Standard Inch Unit

Standard Metric Unit

49056

49057

2 Select a Boring Bar, 1-3/4 inch diameter Holes spaced every 6 inches (152.4 mm)

48 inch bar, 1/2 inch holes

72 inch bar, 1/2 inch holes

96 inch bar, 1/2 inch holes

120 inch bar, 1/2 inch holes

144 inch bar, 1/2 inch holes

48 inch (1219.2 mm) bar, 12 mm holes

72 inch (1828.8 mm) bar, 12 mm holes

96 inch (2438.4 mm) bar, 12 mm holes

120 inch (3048.0 mm) bar, 12 mm holes

144 inch (3657.6 mm) bar, 12 mm holes

*Multiple units may be ordered.

Select a Boring Bar, 1-3/4 inch diameter Holes spaced every 10 inches (254.0 mm)

48 inch bar, 1/2 inch tooling holes spaced

72 inch bar, 1/2 inch tooling holes spaced

96 inch bar, 1/2 inch tooling holes spaced

120 inch bar, 1/2 inch tooling holes spaced

144 inch bar, 1/2 inch tooling holes spaced

48 inch (1219.2 mm) bar, 12 mm holes

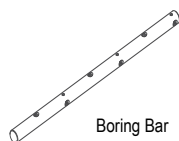
72 inch (1828.8 mm) bar, 12 mm holes

96 inch (2438.4 mm) bar, 12 mm holes

120 inch (3048.0 mm) bar, 12 mm holes

144 inch (3657.6 mm) bar, 12 mm holes

*Multiple units may be ordered.



43311

43313

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43301

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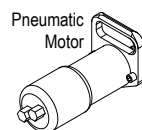
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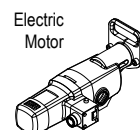
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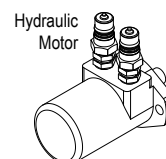
43310



Pneumatic Motor



Electric Motor



Hydraulic Motor

3 Select a Drive Motor

Electric:

120 VAC, 50/60 Hz, 8/160 bar rpm, 4 speed reversible, CE 82113

230 VAC, 50/60 Hz, 8/160 bar rpm, 4 speed reversible, CE 82114

Hydraulic:

Motor Capacity		Max Bar RPM at		Torque at Bar, - Calculated - ft-lbs, (N·m)	Part No. Motors with 60 Series QD Fittings	Part No. Motors with ISO 16028 QD Fittings
in ³	cm ³	6 gpm (22.7 L/min)	10 gpm (37.9 L/min)			
2.2	36	148	246	92 (124.7)	39837	65384
3.6	59	90	150	159 (215.6)	39843	63425
5.7	93.4	55	92	270 (367)	39844	63429
7.3	119.6	44	73	342 (463.7)	39845	69434
8.9	145.8	36	60	417 (565.4)	39846	69435
11.3	185.2	28	49	478 (648.1)	43451	69436
14.1	231.1	23	38	652 (884.0)	39847	69438
17.9	293.3	17	30	764 (1035.8)	43452	69439

Pneumatic:

Pneumatic, 3 Hp (2.2 kW) 57 rpm (includes air cond. unit) 37498

Pneumatic, 3 Hp (2.2 kW) 120 rpm (includes air cond. unit) 39112

* Multiple units may be ordered.

4 Select a Control Box

120V Controller, 60 Hz, Non-CE

120V Controller, 50 Hz, CE

230V Controller, 60 Hz, Non-CE

230V Controller, 50 Hz, CE

82202

82203

82198

81281

5 Select Additional Leadscrews

12 inch (304.8 mm) leadscrew

24 inch (609.6 mm) leadscrew

36 inch (914.4 mm) leadscrew

28654

28687

28688

6 Select Setup Cones

Small setup cones, 2-6 inch (50.8-151.4 mm)
bore ID, set of 2 each

Large setup cones, 6-10 inch (151.4-254 mm)
bore ID, set of 2 each

Full set of setup cones

43383

43384

49060

7 Select a Mounting Option

Single arm mount

Double arm mount

Universal mount

* Multiple units may be ordered.

43262

43279

43267

TOOL CONFIGURATIONS

8 For boring smaller bores, please select from the following items.

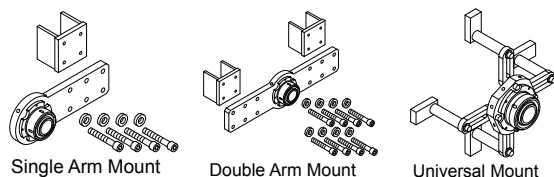
Select Small Bore Kit AFU & RDU Collets

1-¼ inch collets (inch)	49058
31.8 mm collets (metric)	49059

1-¼ inch Boring Bars for the Small Bore Kit holes spaced every 6 inches (152.4 mm)

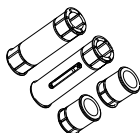
36 inch bar, 3/8 inch holes	40925
48 inch bar, 3/8 inch holes	39308
72 inch bar, 3/8 inch holes	43693
96 inch bar, 3/8 inch holes	39447
36 inch (914.4 mm) bar, 10 mm holes	43688
48 inch (1219.2 mm) bar, 10 mm holes	43687
72 inch (1828.8 mm) bar, 10 mm holes	43686
96 inch (2438.4 mm) bar, 10 mm holes	43685

* Multiple units may be ordered.



Select 1-¼ inch Boring Bars for the Small Bore Kit Holes spaced every 10 inches (254.0 mm)

48 inch bar, 3/8 inch holes	37337
72 inch bar, 3/8 inch holes	37338
96 inch bar, 3/8 inch holes	37339
120 inch bar, 3/8 inch holes	37340
144 inch bar, 3/8 inch holes	37341
48 inch (1219.2 mm) bar, 10 mm holes	37327
72 inch (1828.8 mm) bar, 10 mm holes	37328
96 inch (2438.4 mm) bar, 10 mm holes	37329
120 inch (3048.0 mm) bar, 10 mm holes	37330
144 inch (3657.6 mm) bar, 10 mm holes	37331



* Multiple units may be ordered.

Select 3/8 inch Tooling Kits

HSS 0 degree and 15 degree lead angles (3 lengths)	37502
HSS 15 degree lead angle (3 lengths)	49008
Cemented carbide 0 degree and 15 degree lead angle	49009
Cemented carbide 15 degree lead angle (3 lengths)	49010

Select 10 mm Tooling Kits

HSS 0 degree and 15 degree lead angles (3 lengths)	49011
HSS 15 degree lead angle (3 lengths)	49012

Select Small Bore Kit Bearing Collets

1-¼ inch (31.8 mm) bearing collets	35714
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Select Small Bore Kit Setup Cones

Setup cones, 1-½ to 3-¼ inch (38.1 to 82.6 mm) aluminum	26263
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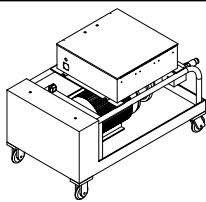
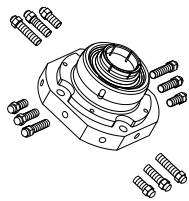
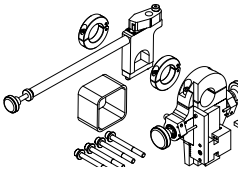
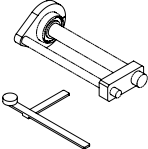
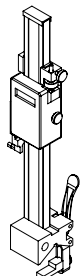
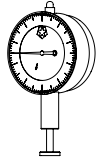
Other Small Bore Adapter Kits and Accessories:

43648	Set of adapter sleeves: 1 for RDU, 1 for AFU, 2 for bearings.
43828	Set of adapter sleeves: 1 for RDU, 1 for AFU, 2 for bearings Includes 1-¼ inch (31.8 mm) diameter, 48 inch (1219.2 mm) long boring bar with 3/8 inch square tooling holes spaced 10 inches (254.0 mm) apart, HSS cutting tools, and set of 2 set-up cones.
43829	Set of adapter sleeves: 1 for RDU, 1 for AFU, 4 for bearings. Includes 1-¼ inch (31.8 mm) diameter, 72 inch (1828.8 mm) long boring bar with 3/8 inch square tooling holes spaced 10 inches (254.0 mm) apart, HSS cutting tools, and set of 2 set-up cones.
46337	Set of adapter sleeves: 1 for RDU, 1 for AFU, 2 for bearings Includes 1-¼ inch (31.8 mm) diameter, 48 inch (1219.2 mm) long boring bar with 10 mm tooling holes spaced 6 inches (152.4 mm) apart, HSS cutting tools, and set of 2 set-up cones.
46340	Set of adapter sleeves: 1 for RDU, 1 for AFU, 4 for bearings Includes 1-¼ inch (31.8 mm) diameter, 48 inch (1219.2 mm) long boring bar with 10 mm tooling holes spaced 6 inches (152.4 mm) apart, HSS cutting tools, and set of 2 set-up cones.
46339	Set of adapter sleeves: 1 for RDU, 1 for AFU, 4 for bearings Includes 1-¼ inch (31.8 mm) diameter, 72 inch (1828.8 mm) long boring bar with 10 mm tooling holes spaced 10 inches (254.0 mm) apart, HSS cutting tools, and set of 2 set-up cones.
26656	Borewelder Alignment Tool for 1-1/4" Diameter Bar

Further customize your BB4500 Boring Machine with these boring bar options. Order separately.

(special customized bars available upon request.
All options shown below are 1-¼ diameter bars.

Part No.	Bar Length	Hole Size	Hole Spacing
43288	36 inch (914.4 mm)	½ inch	every 6 inches (152.4 mm)
43312	60 inch (1524.0 mm)	½ inch	every 6 inches (152.4 mm)
43317	36 inch (914.4 mm)	½ inch	every 10 inches (254.0 mm)
43319	60 inch (1524.0 mm)	½ inch	every 10 inches (254.0 mm)
43297	36 inch (914.4 mm)	12 mm	every 6 inches (152.4 mm)
43299	60 inch (1524.0 mm)	12 mm	every 6 inches (152.4 mm)
43304	36 inch (914.4 mm)	12 mm	every 10 inches (254.0 mm)
43306	60 inch (1524.0 mm)	12 mm	every 10 inches (254.0 mm)

	NO. DESCRIPTION		NO. DESCRIPTION
	Hydraulic Power Unit The popular 10 Hp (7.5 kW) 10 gpm (37.9 L/min) unit comes with a 3-phase electric motor with variable displacement pump, allowing speed control even while running without sacrificing torque. Many models available. Please ask a Climax representative for details.		Digital Bore Measuring Caliper Get an accurate reading of the bore without removing the bar. Features locking, micro-adjust slide. 61707 Measures up to 10 inches (254.0 mm) ID/OD 63330 Measures up to 24 inches (609.6 mm) ID/OD Tool Kits (included in base unit) 43580 Tool Kit (inch) Tools Bits for Single Point Machining 1 HSS ½ inch square x 4 inch (101.6 mm) LH Roughing
	ID Spherical Bearings Mount inside the bore to provide extra rigidity when other mounting options are not possible. ID mounting range is 7.6 - 10.7 inches (193.1 - 271.7 mm). 43931 ID Bearing Mount and Jacking Bolts. 37621 Jacking Bolt Set which turns a Universal Bearing Mount into an ID Bearing Mount. 55907 Face adjust ID bearing mount 55828 Extension Kit		1 HSS ½ inch square x 4 inch (101.6 mm) LH Finishing 1 HSS ½ inch square x 2.5 inch (63.5 mm) LH Roughing 1 HSS ½ inch square x 2.5 inch (63.5 mm) LH Finishing 1 HSS ½ inch square x 1.8 inch (45.7 mm) LH Roughing 1 HSS ½ inch square x 1.8 inch (45.7 mm) LH Finishing Tools Torx wrench, T-27. End wrench, long, ½ inch. Hex wrench set, .050-3/8 inch. End wrench, 1-1/2 inch. 43582 Tool Kit (metric) Tools Bits for Single Point Machining 1 HSS 12 mm square x 4.0 inch (101.6 mm) LH Roughing. 1 HSS 12 mm square x 4.0 inch (101.6 mm) LH Finishing. 1 HSS 12 mm square x 2.5 inch (63.5 mm) LH Roughing. 1 HSS 12 mm square x 2.5 inch (63.5 mm) LH Finishing. 1 HSS 12 mm square x 1.8 inch (45.7 mm) LH Roughing. 1 HSS 12 mm square x 1.8 inch (45.7 mm) LH Finishing.
	Facing and Grooving Head Assembly 35858 Mounts anywhere on the bar to face 3 - 12 inches (76.2 - 304.8 mm), and cut grooves from 3.5 - 12 inches (88.9 - 304.8 mm) in diameter. Radial feed rate: 0 to .050 in/rev (1.27 mm/rev).		
	Automatic Bore Welding Accessories 43731 The BoreWelding interface kit allows you to attach and quickly align the Climax AutoBoreWelders for efficient bore welding. Includes adapter plate, alignment tool, and spherical bearing removal wrench.		
 	Bore Measuring Tool Features a fine adjustment feature which allows precision bore measurement and sets tool bit height while the bar is still mounted in the work piece. 70645 Mounts on any bar from 1-¼ to 2-¼ inches (31.8 to 57.2 mm) in diameter. Measures up to 12 inches (304.8 mm) diameter bores. 67487 Mounts on any bar from 1-¼ to 2-¼ inches (31.8 to 57.2 mm) in diameter. Measures up to 24 inches (609.6 mm) diameter bores. Magnetic Back Dial Indicator Top quality travel dial indicator with magnetic back, made by Starrett® for Climax. Useful for many things including: <ul style="list-style-type: none"> Precisely setting depth of cut. Measuring and setting boring bar travel when cutting to a shoulder. Facing operations, precision alignment of boring bar to larger bores. 45396 0 - .500 inch range (.001 increment) - white face 45397 0 - 10 mm range (.01 mm increment) - yellow face	Please note: Drawings are for reference only, are not to scale, and may not represent actual product.	

SETUP AND OPERATION

A Fast Six-Step Process

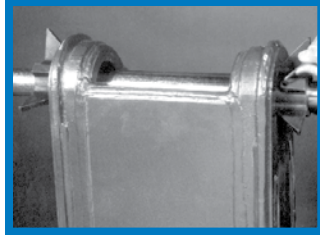
Setup of the BB4500 Portable Boring Machine is quick and easy. An experienced operator can set up the machine in most typical two-bore line boring applications in about half an hour (depending on alignment tolerances).

The three main ingredients of the quick setup system are:

- Setup cones to roughly center the bar in the bore.
- Spherical mounts that can be quickly tack-welded in place.
- Quick-mount rotational drive unit, attaches to spherical mount in seconds

1

Slide the bar through the two holes to be bored and roughly center it with the set-up cones. The set-up cones are forced into the bore with the clamp ring jacking screw and locked onto the bar with a set screw.

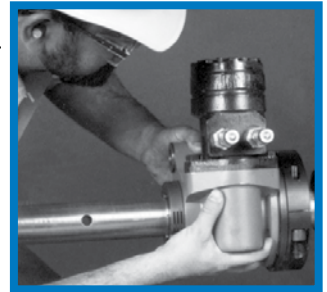


Elapsed time: 4 minutes.

4

Slide the rotational drive onto the bar until the self-aligning mounting collar is firmly seated on the mounting bracket, and lock it in place with one screw.

Elapsed time: 2 minutes.

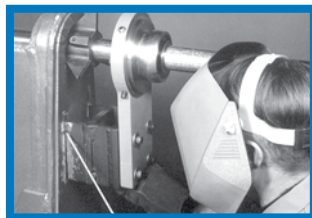


2

Slide on spherical mounts with tack weld plates, and tack weld them to the workpiece.

These mounts have spherical bearings so they can be mounted up to 5° out of perpendicular alignment.

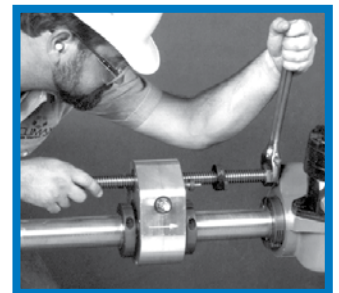
Elapsed time: 10 minutes.



5

The axial feed unit is slipped onto the bar and the feedscrew is screwed into the pocket on the rotational drive unit. Tightening two clamping collars locks the axial feed unit to the bar.

Elapsed time: 2 minutes.



3

Remove the set-up cones and replace the bar. The set-up cones will adequately center the bar, unless you have very precise tolerances, or need to move the center line of the bore slightly. Final centering adjustments are made with the jacking screws.

Elapsed time: 5 minutes.



6

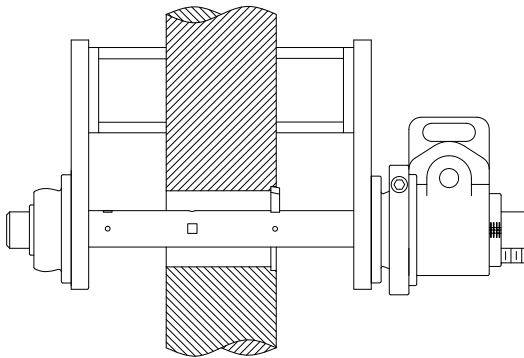
Insert a properly ground tool bit into the tool hole in the bar, adjust for depth of cut, and lock in place with the set screw.

Elapsed time: 4 minutes.

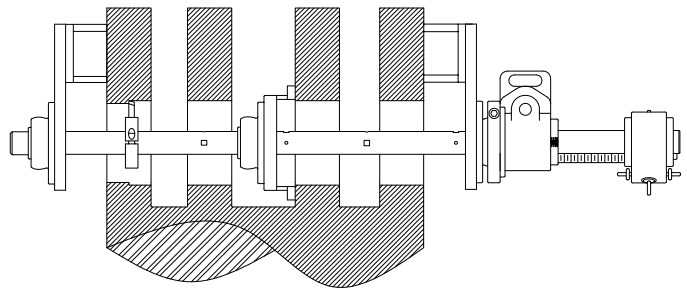
Setup is complete, you are ready to begin the first pass.

Total elapsed time: 27 minutes.

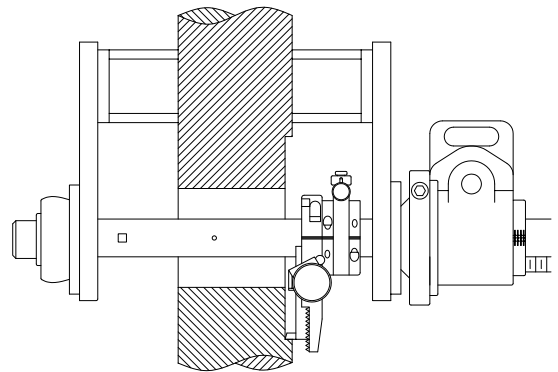
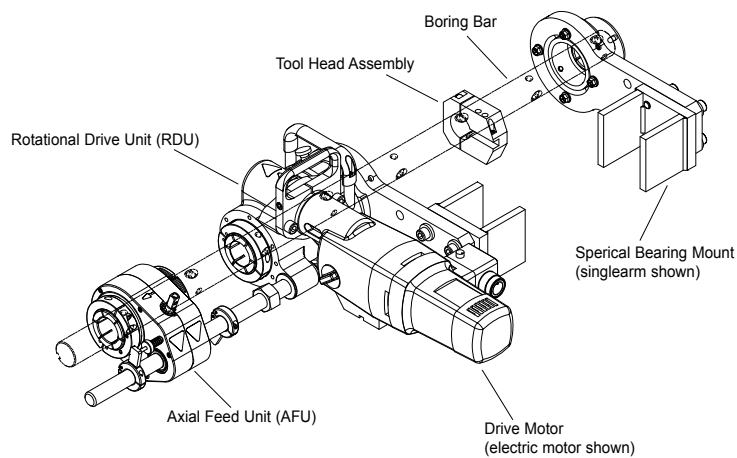




Conventional Boring



Line Boring



Facing/Grooving

Please note: Drawings are for reference only and may not represent actual product.

Machining Ability Example

Bore ID	3.875 inches (98.5 mm)
Bar RPM	40 rpm
Depth of Cut	0.1 inches
Feed Rate per revolution	0.019 inches/rev (0.48 mm/rev)
Material	mild steel
Cutter spec	HSS, ½ inch square
Distance between bearings	28.5 inches (724 mm)
Bar diameter	1.75 inches (44.5 mm)
Motor	42874 - 1.3 Hp (1 kW) electric 120 VAC
Speed Control	43241 - speed control
Distance from bearing to start of cut	6.75 inches (171.5 mm)
Length of cut	3.5 inches (88.9 mm)

Training at the Global Learning Center

Climax has been teaching the fundamentals and fine points of portable machine tool operation for practically as long as we've been inventing and building the tools.

At the Climax Global Learning Center situated in our corporate headquarters near Portland, Oregon, we provide training for machine tool operators on portable machine tool safety, and machine setup and operation. Trainees also receive technical tips and tools to improve operational efficiencies, with the vast majority of every program devoted to hands-on activities and skill development.



The Climax instructional team includes specialists in shipbuilding, power generation, civil engineering, bridge re-building, petrochemical and other industries.

Whether it's a regularly scheduled course at the Global Learning Center, or custom curriculum conducted at your facility, your machinists will benefit from courses developed by some of the most respected authorities in the business.

Call us today to register for a regularly scheduled class, or talk to us about how we can customize a training program for your specialized application.



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