

The proven technology of the CLIMAX BB4500 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

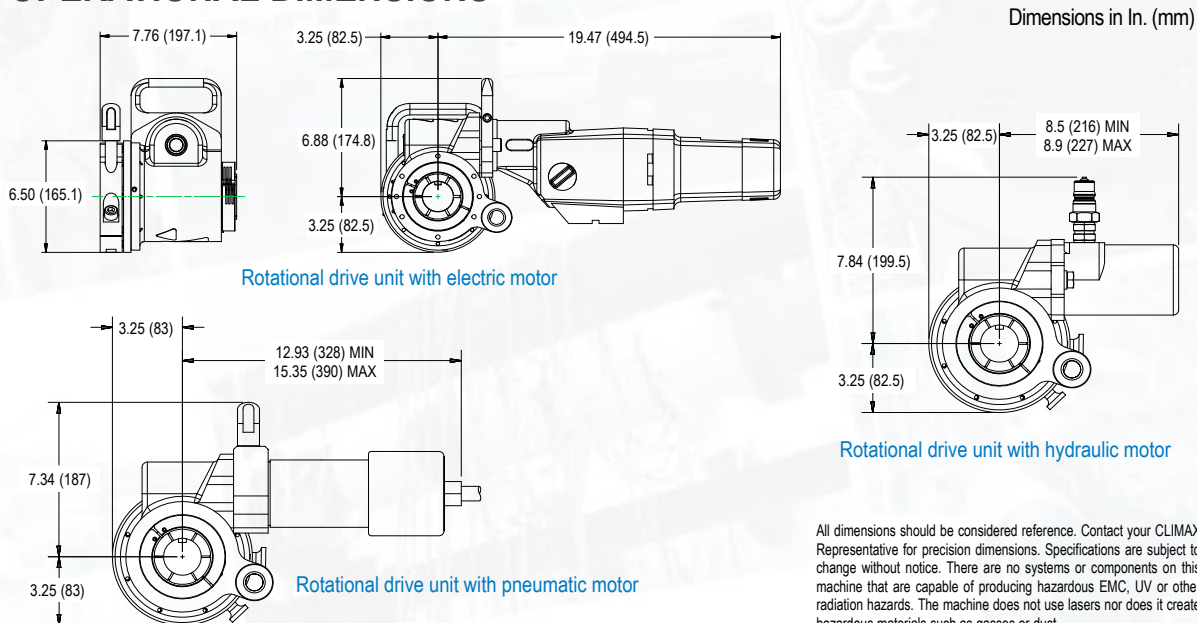
- Keyed, chromed 1-¾ inch (44.5 mm) bar.
- World's best rotational drive and axial feed unit.
- Patented mounting system.
- High-quality components provide smooth, reliable operation to get the job done.

BB4500 BORING MACHINE

SPECIFICATIONS

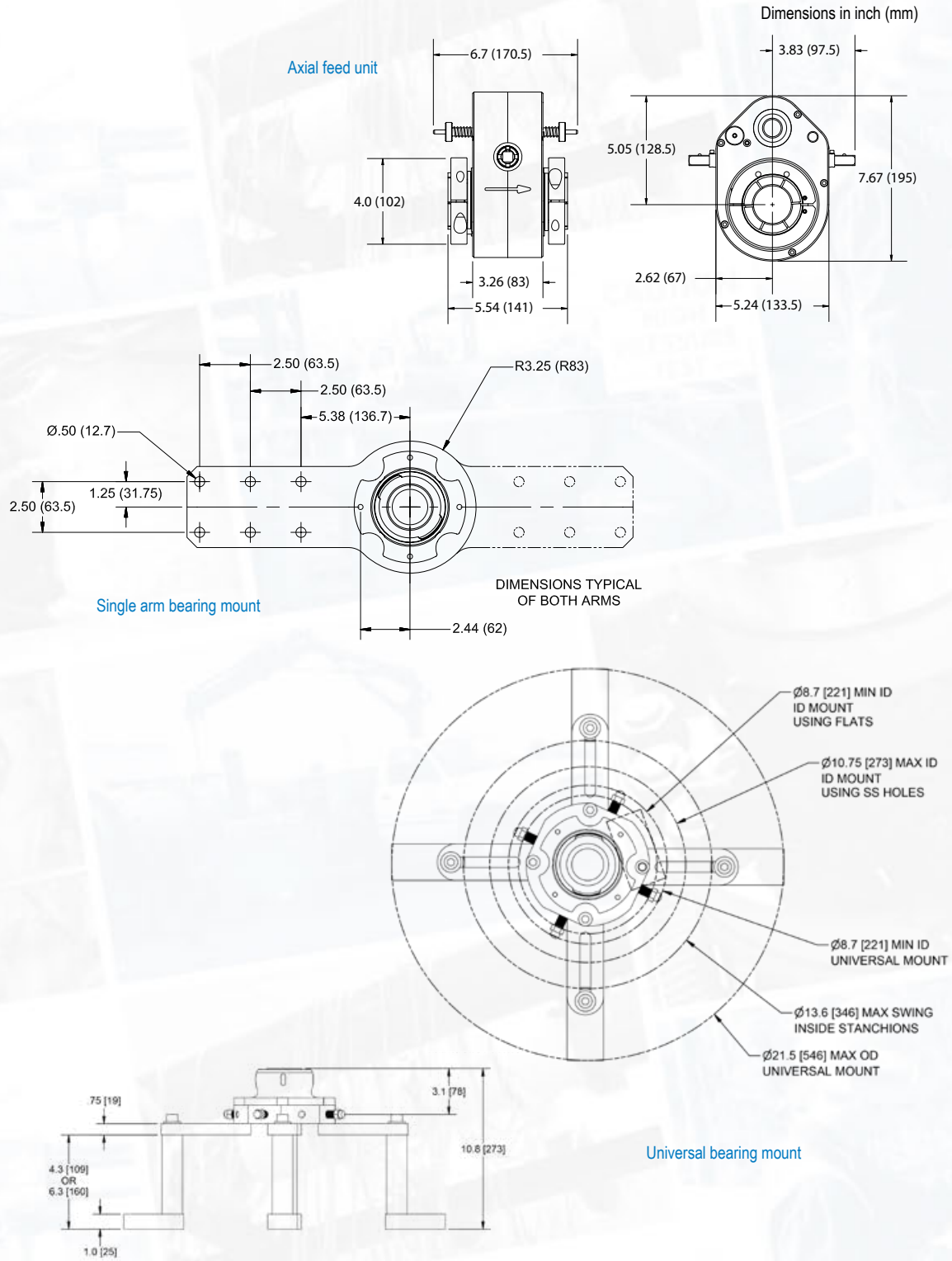
Operating Ranges	
Boring Bar Diameter, Standard	1.75 in. (44.5 mm)
Optional	1.25 in. (31.8 mm)
Boring Diameter, Standard	2 - 10 in. (50.8 - 254 mm)
Optional (minimum)	1.5 in. (38.1 mm)
Boring Stroke, Standard	12 in. (304.8 mm)
Optional	36 in. (914.4 mm)
Power Options	3.35 Hp (2.5 kW)
Electric: 8 to 160 free speed bar RPM	
Hydraulic:	10 Hp (7.5 kW)
10 Hp HPU (240 free speed bar RPM with 60 Hz mains power.	
200 free speed bar RPM with 50 Hz mains power)	
Pneumatic: up to 120 bar free speed RPM	3.0 HP (2.2 kW)
Mounting Options	Single Arm, Double Arm, and Universal
Rotational Drive Unit	4:1 gear ratio reduction
Set-Up Cones, Standard	2 - 10 in. (50.8 - 254 mm)
Optional	1.5 - 3.25 in. (38.1 - 82.5 mm)
Feed Type	Mechanical, Reversible
Feed Rate per revolution	0 - 0.018 in./rev. (0 - 0.46 mm/rev.)
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/in. (0.019 kg/mm)
Shipping Dimensions (Shipped in 2 containers, 3 containers for hydraulic power unit option.)	
Machine W, D, H	47 x 26 x 16 in. (1194 x 661 x 407 mm)
Bar 72 in. (1828.8 mm) W, D, H	74.5 x 5 x 5.5 in. (1893 x 127 x 140 mm)
HPU (5 Hp) W, D, H	29 x 26 x 44 in. (737 x 661 x 1118 mm)

OPERATIONAL DIMENSIONS



BB4500 BORING MACHINE

OPERATIONAL DIMENSIONS

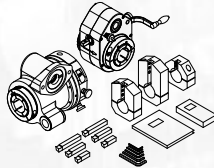


TOOL CONFIGURATIONS

Configure your BB4500 in 3 easy steps by selecting:

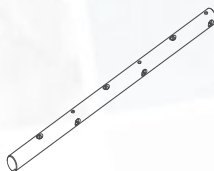
1. Base Unit
2. Boring Bars
3. Additional Accessories

1. **Base Unit** (Includes RDU 4:1, AFU, Leadscrew, Set Up Cones 2 - 10 in. (50.8 - 254 mm) Dia., Tool Head, Tool Kit, Operator's Manual, and Compartmentalized Metal Container)



Part Number	Inch/Metric	Motor	Controller	Mounting Option (2-1/4 Bar)	Leadscrew
94255	Inch	Electric, 50/60 Hz, 8/160 bar rpm, 4 speed reversible, 120 VAC (PN 88008)	120V Controller, NEMA L5-30P (PN 88037)	(2) Single Arm Mount (PN 43262) (2) Universal Mount (PN 43267)	12-in. (304.8 mm)
104973	Metric	Electric, 50/60 Hz, 8/160 bar rpm, 4 speed reversible, 120 VAC (PN 88008)	120V Controller, 150 309/CEE 17, CE Compliant (PN 88038)	(2) Single Arm Mount (PN 43262)	12-in. (304.8 mm)
104972	Metric	Electric, 50/60 Hz, 8/160 bar rpm, 4 speed reversible, 230 VAC (PN 88009)	230V Controller, CEE 7/7 SCHUKO, CE Compliant (PN 88035)	(2) Single Arm Mount (PN 43262) (2) Universal Mount (PN 43267)	12-in. (304.8 mm)

2. **Boring Bars** All bars are made of 1045 S-CPO chrome-plated steel. Standard bars are available in 2 foot (609.6 mm) increments up to 24 feet (7.3 meters) long, with various hole spacing. After machining, bars are straightened to within 0.001 in. per foot (0.025 per 304.8 mm). Bars come packaged in a fitted steel container with quick-release latches. First hole is 1 in. (25.4 mm) from the end of the bar, for all bar lengths. Morse taper and straight shank holders available upon request.



Configurations shown represent standard options. Please contact us for special fixturing, CNC Control options, or other features that may be needed for your specific machining application. NOTE: Drawings are for reference only, are not to scale, and may not represent actual product.

Bars with In. Tooling				
Holes spaced every 6 in. (152.4 mm)	Holes spaced every 10 in. (254.0 mm)	Bar Diameter	Bar Length	Hole Size
43288	43317	1-3/4 in. (44.5 mm)	36 inch (914.4 mm)	1/2 in.
43311	43318	1-3/4 in. (44.5 mm)	48 in. (1219.2 mm)	1/2 in.
43312	43319	1-3/4 in. (44.5 mm)	60 inch (1524.0 mm)	1/2 in.
43313	43320	1-3/4 in. (44.5 mm)	72 in. (1828.8 mm)	1/2 in.
43314	43321	1-3/4 in. (44.5 mm)	96 in. (2438.4 mm)	1/2 in.
43315	43322	1-3/4 in. (44.5 mm)	120 in. (3048.0 mm)	1/2 in.
43316	43323	1-3/4 in. (44.5 mm)	144 in. (3657.6 mm)	1/2 in.
40925	NA	1-1/4 in. (31.8 mm)	36 in. (914.4 mm)	3/8 in.
39308	37337	1-1/4 in. (31.8 mm)	48 in. (1219.2 mm)	3/8 in.
43693	37338	1-1/4 in. (31.8 mm)	72 in. (1828.8 mm)	3/8 in.
39447	37339	1-1/4 in. (31.8 mm)	96 in. (2438.4 mm)	3/8 in.
NA	37340	1-1/4 in. (31.8 mm)	120 in. (3048.0 mm)	3/8 in.
NA	37341	1-1/4 in. (31.8 mm)	144 in. (3657.6 mm)	3/8 in.
Bars with Metric Tooling				
Holes spaced every 6 in. (152.4 mm)	Holes spaced every 10 in. (254.0 mm)	Bar Diameter	Bar Length	Hole Size
43304	43304	1-3/4 in. (44.5 mm)	36 inch (914.4 mm)	12 mm
43298	43305	1-3/4 in. (44.5 mm)	48 in. (1219.2 mm)	12 mm
43299	43306	1-3/4 in. (44.5 mm)	60 inch (1524.0 mm)	12 mm
43300	43307	1-3/4 in. (44.5 mm)	72 in. (1828.8 mm)	12 mm
43301	43308	1-3/4 in. (44.5 mm)	96 in. (2438.4 mm)	12 mm
43302	43309	1-3/4 in. (44.5 mm)	120 in. (3048.0 mm)	12 mm
43303	43310	1-3/4 in. (44.5 mm)	144 in. (3657.6 mm)	12 mm
43688	NA	1-1/4 in. (31.8 mm)	36 in. (914.4 mm)	10 mm
43687	37327	1-1/4 in. (31.8 mm)	48 in. (1219.2 mm)	10 mm
43686	37328	1-1/4 in. (31.8 mm)	72 in. (1828.8 mm)	10 mm
43685	37329	1-1/4 in. (31.8 mm)	96 in. (2438.4 mm)	10 mm
NA	37330	1-1/4 in. (31.8 mm)	120 in. (3048.0 mm)	10 mm
NA	37331	1-1/4 in. (31.8 mm)	144 in. (3657.6 mm)	10 mm

TOOL CONFIGURATIONS

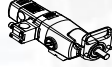
3. Additional Accessories

Drive Motor

Electric, 50/60 Hz, 8/160 bar rpm, 4 speed reversible, CE:

88008 120 VAC

88009 230 VAC



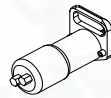
Hydraulic (Reversible hydraulic motor and SAE 2-bolt mounting flange to mount to the rotational drive housing. Motor ports are 7/8 - 14 SAE O-ring type. 1/2 in. dripless quick-connect fitting kit installed. Bar rpm's are max at 6 gpm (22.7 L/min). (For 50 Hz power units, reduce the bar rpm by 15%; bar torque remains the same.) Also available with 3/8 in. (9.5 mm) fitting kits

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	8.3 gpm (31.5 L/min) with 50 Hz mains power	10 gpm (37.9 L/min) with 60 Hz mains power			
2.2	36	204	246	92 (124.7)	39837	65384
3.6	59	124	150	159 (215.6)	39843	63425
5.7	93.4	76	92	270 (367)	39844	63429
7.3	119.6	60	73	342 (463.7)	39845	69434
8.9	145.8	49	60	417 (565.4)	39846	69435
11.3	185.2	40	49	478 (648.1)	43451	69436
14.1	231.1	31	38	652 (884.0)	39847	69438
17.9	293.3	24	30	764 (1035.8)	43452	69439

Minimum speed is 20% of the maximum speed

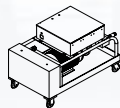
Pneumatic The 3 Hp (2.2 kW) motor comes complete, ready for 2-bolt mounting directly on the rotational drive. **Includes pneumatic conditioning unit**

Part Number.	Max Bar RPM	Torque at the bar (calculated value)
39112 (non-CE)	120 rpm	115 ft-lb (155.9 N·m)
37498 (non-CE)	57 rpm	234 ft-lb (317.3 N·m)



Hydraulic Power Unit

10 Hp (7.5 kW) 10 gpm (37.9 L/min) units with 3-phase electric motor, with variable displacement pump, allow speed control without sacrificing torque. Many models available. Please ask a CLIMAX representative for details.



Controller

88037 120V Controller, NEMA L5-30P **

88038 120V Controller, ISO 309/CEE 17, CE **

88035 230V Controller, CEE 7/7 SCHUKO, CE **

88036 230V Controller, NEMA L6-15P **



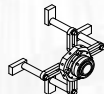
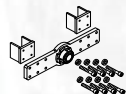
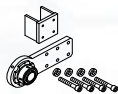
**If a different type of electrical plug is required the end user must replace these standard plugs in the field.

Mounting Options - for 2-1/4 in. dia. bars

43262 Single arm mount assembly (1)

43279 Double arm mount assembly (1)

43267 Universal mount assembly (1)



Single Arm Mount

Double Arm Mount

Universal Mount

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

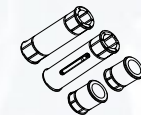
55907 Face adjust ID bearing mount

55828 Extension Kit

Small Bore Kits AFU & RDU Collets Without Bars

49058 1-1/4 inch collets (inch)

49059 31.8 mm collets (metric)



Tooling Kits, 3/8 inch

37502 HSS 0 degree and 15 degree lead angles (3 lengths)

49008 HSS 15 degree lead angle (3 lengths)

49009 Cemented carbide 0 degree and 15 degree lead angle

49010 Cemented carbide 15 degree lead angle (3 lengths)

Tooling Kits, 10 mm

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

49012 HSS 15 degree lead angle (3 lengths)

Small Bore Kit Bearing Collets

35714 1-1/4 inch (31.8 mm) bearing collets

Small Bore Kit Setup Cones

26263 Setup cones, 1-1/2 to 3-1/4 inch (38.1 to 82.6 mm) aluminum

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 1-1/4 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 1-1/4 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 1-1/4 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 1-1/4 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 1-1/4 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

TOOL CONFIGURATIONS

Axial Leadscrew Assembly

Stationary leadscrew assembly is fixed in position by screwing it into the rotational drive assembly or into tack weld mounting block. Acme nut holds leadscrew in place. Includes leadscrew and two Acme nuts.

Leadscrews available in lengths below. Other lengths available by request.

- 28654** 12 in. (304.8 mm) travel
- 28687** 24 in. (609.6 mm) travel
- 28688** 36 in. (914.4 mm) travel



Set-Up Cones

Cones slide onto the bar and into fairly round, in-line holes for fast set-up. Set screws and back-up clamp collars hold the cones in place while the components are being attached.

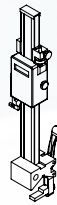


- 43383** Small setup cones, 2 - 6 in. (50.8-151.4 mm) bore ID, set of 2 each
- 43384** Large setup cones, 6-10 inch (151.4-254 mm) bore ID, set of 2 each
- 49060** Full set of setup cones, 2 - 10 inch (50.8 - 254 mm)

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 in. (31.8 to 57.2 mm) in diameter. Measures up to 12 in. (304.8 mm) diameter bores.
- 79151** Thin stylus, mounts on any bar from 1-¼ to 2-¼ in. (31.8 to 57.2 mm) in diameter. Measures up to 12 in. (304.8 mm) diameter bores.
- 67487** Mounts on any bar from 1-¼ to 2-¼ in. (31.8 to 57.2 mm) in diameter. Measures up to 24 in. (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:

- 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 in. range (.001 increment) - white face
- 45397** 0 - 10 mm range (.01 mm increment) - yellow face



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 in. (254.0 mm) ID/OD
- 63330** Measures up to 24 in. (609.6 mm) ID/OD



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.

Tool Kit

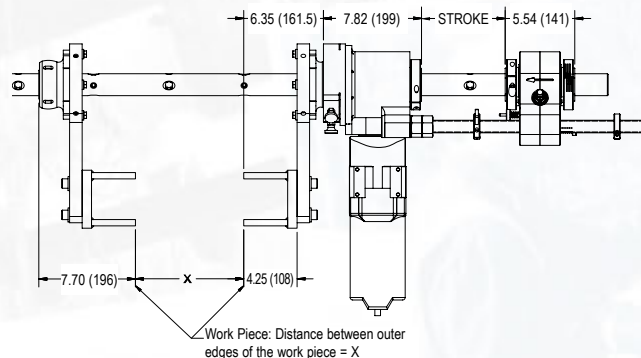
- 43580** Tool Kit, Inch (Kit includes: **Tools bits for single point machining**, HSS ½ in. square x 4 in. (101.6 mm) LH Roughing (1), HSS ½ in. square x 4 in. (101.6 mm) LH Finishing (1), HSS ½ in. square x 2.5 in. (63.5 mm) LH Roughing (1), HSS ½ in. square x 2.5 in. (63.5 mm) LH Finishing (1), HSS ½ in. square x 1.8 in. (45.7 mm) LH Roughing (1), HSS ½ in. square x 1.8 in. (45.7 mm) LH Finishing (1). **Tools**, T-27 torx wrench, ½ in. long end wrench, .050-3/8 in. hex wrench set, 1-1/2 in end wrench.
- 43582** Tool Kit, Metric (Kit includes: **Tools bits for single point machining**, 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), 1 HSS 12 mm square x 1.8 inch (45.7 mm) LH Finishing (1). **Tools**, T-27 torx wrench, ½ in. long end wrench, .050-3/8 in. hex wrench set, 1.5 - 10 mm. hex wrench set..

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

Length of boring bar required =
 $X + 27\text{-}1/2$ inches (699mm) + required stroke.

Cutting should be performed within 9 inches (229 mm) of the bearing support. The 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.



SETUP AND OPERATION

Six Step Setup and Operation

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

STEP 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.



STEP 4

Slide the rotational drive onto the bar. Firmly push it onto the spherical mount, and lock it in place with one bolt. Tighten the rear clamping collar enough to be snug but so the bar can slide through it.

Elapsed time: 4 minutes.



STEP 2

Slide on spherical mounts with tack weld plates, and tack weld them to the work-piece. These mounts have spherical bearings so they can be mounted up to 5° out of perpendicular alignment.

Elapsed time: 10 minutes.



STEP 5

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

Elapsed time: 3 minutes.



STEP 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 centerline of the bore slightly. Final centering adjustments are made with the jacking screws.

Elapsed time: 5 minutes.



STEP 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. Connect to power source. Elapsed time: 5 minutes.

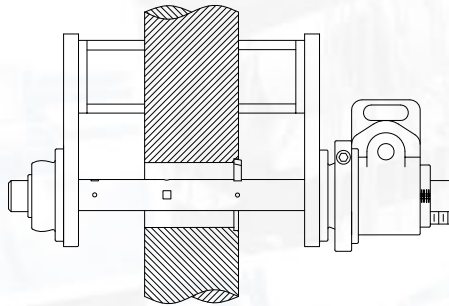
And there you are... ready to begin the first boring pass.



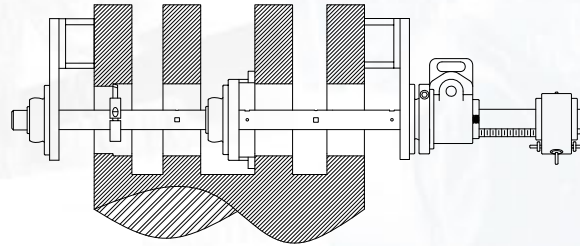
Total elapsed time: 31 minutes.

BB4500 BORING MACHINE

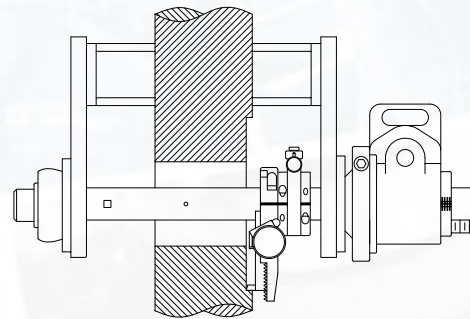
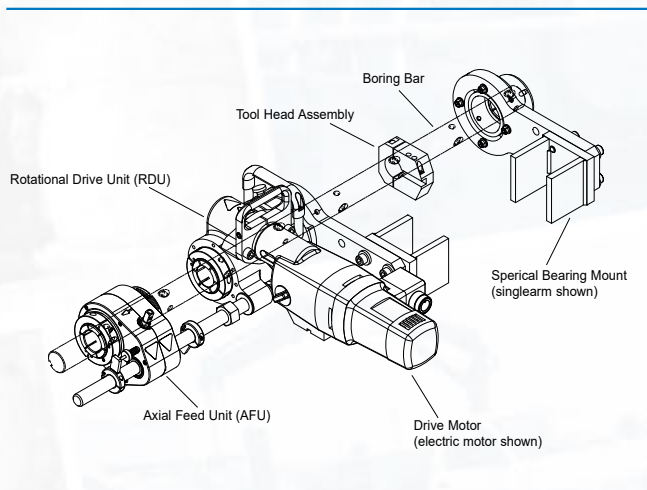
APPLICATIONS



Conventional Boring



Line Boring



Facing/Grooving

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

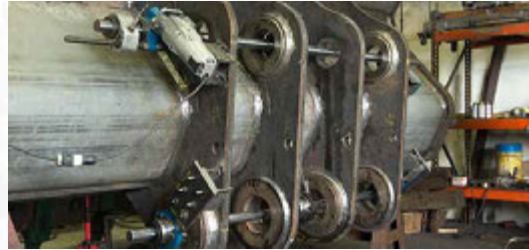
Machining Ability Example

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, 1/2 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)

BB4500 BORING MACHINE

GET THE MOST OUT OF YOUR MACHINE

Customers who bought the **CLIMAX BB4500 Line Boring Machine** also bought the below products:



BW1000 AUTO BORE WELDER

Highly portable and easily affordable automated spiral welding system.

Part # 70594



BW2600 AUTO BORE WELDER

Interfaces directly with users existing MIG Wire feed systems.

Part # 86686



BW3000 AUTO BORE WELDER

Automated step welding system provides you with a new degree of welding performance and precision.

Part # 85680



DIGITAL BORE MEASURING CALIPER

Get accurate bore readings without removing the bar.

Part # 61707



BORE MEASURING TOOL

Quick and easy way to accurately measure the bore and tool bit.

Part # 79151



FACING & GROOVING TOOL

For machining end flanges, or precision grooves.

Part # 35858



RIGHT ANGLE BASE ASSEMBLY

Base assembly for drilling and blind hole boring system.

Part # 57140



OPTICAL ALIGNMENT

Simple and accurate way to align many CLIMAX machines.

Part # 62226



SMALL BORE KIT

An easy way to convert your 1.75-in. drive down to a 1.25-in. bar, allowing you to machine in smaller bores.

Part # 79458

BB4500 BORING MACHINE