# BB7000 Technical Information

Specifications inches (millimeters)  
Specifications subject to change without notice. For precision dimensions consult your factory representative.

## Boring Diameter
- **Standard:** 6 (152.4) min  
  36 (914.4) max.

## Machine Weight
- **Ship weight (approx.):** 2200 lb (988.8 kg)

- **Typical machine consisting of:** rotational drive assembly (15606), axial feed assembly (20352), manual boring head set (15537), axial tool carrier (15567), two bearing assemblies (15574), and 5” diameter x 16 foot boring bar (20349).

## Boring Bar
- **Ship weight (approx.):** 250 lb (113.6 kg)
  5” dia x 10 ft bar (20347): 50 lb (22.6 kg)

## Hydraulic Power Unit
- **Ship weight (approx.):** 750 lb (340.5 kg)

## Components

### Mechanical Axial Feed Assembly
- **Feed rate adjustable, reversible, .003-.025/rev.** (0.076-0.635/rev)

### Rotational Drive Assembly
- **Net weight (w/o motor):** 122 lb (55.4 kg)
- **Gear ratio:** 10.59:1 gear reduction
  (Theoretical values calculated using a 15 hp hydraulic power unit producing 1200 psi (8268 kPa) continuous, 2000 psi (13780 kPa) intermittent and pumping 20 gpm (75.8 l/min.)).

- **With 11.3 in³ (185.3 cm³) hydraulic motor (25476):**
  - **Boring bar torque:** 1224 ft•lb (1665 N•m)
  - **Max boring rpm:** 32 rpm

### Motor, Hydraulic
- **Displacement:** 3.6-17.9 in³ (59.1-293.6 cm³)
- **Net weight:** 15.3 - 19.2 lb (6.9 - 8.7 kg)
- **Fittings:** 3/4-14 SAE O-ring

### Bearing Support Assembly
- **End mount four-arm bearing diameter range:**
  - 4” diameter bar: 17.5 - 34.5 (444.5 - 876.3 mm)
  - 5” diameter bar: 20 - 48” (508 - 1219.2 mm)
- **ID-mount bearing ID diameter range:**
  - 4” diameter bar: 20 - 63.5” (508 - 1612.9 mm)
  - 5” diameter bar: 20 - 63.5” (508 - 1612.9 mm)
- **Mounting spiders require 5/8” or smaller bolts**

### Manual Boring Head Assemblies
- **Diameter range:**
  - 4” machine: 8 - 30” (203.2 - 762 mm) max.
  - 5” machine: 9 - 40” (228.6 - 1016 mm) max.
  - **Tooling:** .5” (12 mm) square HSS tool bits micro adjustable carbide inserts (ass’y requires tool carrier)

### Mechanical Face Facing Head Assemblies
- **Feed rate:** adjustable, up to .010/rev (.254/rev)
- **Stroke:** 4” (101.6 mm)
- **Facing diameters:**
  - 4” machine: 9.5 - 35” (241.3 - 889 mm) max.
  - 5” machine: 10.5 - 36” (266.7 - 914.4 mm) max.
  - **Tooling:** .5” (12 mm) square HSS tool bits micro adjustable carbide inserts (ass’y requires tool carrier)

### Boring Bar
- **Chromed, with full-length leadscrew.** Bar end caps with anti-friction leadscrew bearings allow the axial feed assembly to be mounted to either end of the bar.
- **Net weight:** 5” dia. x 12 ft: 518 lb (236 kg)

### Hydraulic Power Unit
- **Net weight:**
  - 15 hp: 750 lb (341 kg)
  - 25 hp: 875 lb (398 kg)
- **Power sources:** 3-phase electric
The compact Model BB7000 offers big job boring capability on-site. Modular components allow you to choose exactly what you need for your application.

Modular versatility.
- Bearing support system consists of three independent mounting fixtures that can be used alone or in different combinations. If space is limited, mount the bearing cartridge directly on the workpiece. Or use the bearing cartridge with the spacer flange and/or the mounting spider.
- Position the rotational drive unit anywhere along the bar.
- Axial feed unit mounts on either end of the bar.

Compact.
- Rotational drive unit is only 12” by 17”, weighs only 160 lbs (72.6 kg) with the hydraulic motor attached.
- Standard mechanical axial feed is not much larger than the bar diameter and weighs less than 20 lbs (9.1 kg).

Powerful.
- Compact hydraulic power unit designed specifically for portable machining.
- High power-to-weight ratio.
- Smooth, trouble-free power transmission to the boring head.
- Standard boring bar package produces up to 11 hp at the bar at 60 rpm.

Designed with the operator in mind.
- Easy to operate and maintain.
- Roller bearings instead of bronze bushings on support fixtures.
- Split tool carrier for easy mounting on the bar.
- All axial feed units are interchangeable.
- All axial feed units feature a quick-change mounting system.
- The lead screw has replaceable end sections.

Standard machine (A)
A standard machine package consists of:
- Rotational drive unit
- Mechanical axial feed unit with infinitely variable feed rate and feed direction selector options of forward, neutral or reverse.
- Two, three part mounting spider sets with roller bearing cartridge, tool carrier-boring head set for boring 8-inch to 40-inch diameters, depending on configuration.
- Control pendant with power unit start/stop, bar rotation on/off and rotation jog.
- A 15 or 25 hp hydraulic power unit with all hoses and fittings.

Optional facing head (B)
The facing head features mechanical radial feed with 4” stroke. Feed rate is adjustable up to .010”. Assembly mounts onto either the 4” or 5” tool carrier assembly. On the 4” tool carrier the facing head will face 9.5 to 35 inches diameter.

CNC option (C)
CNC options are available. Contact the factory for information.

Optional electronic axial feed unit (D)
Add digital readout control capabilities and program axial automatic feed stops to the Model BB7000. The electronic axial feed features a reduction lead screw gearbox, slip rings for electrical impulse pickup and two interchangeable feed motors that provide infinitely adjustable feed rates from .026 to 4.8 inches per minute. The pendant provides control of the boring operation and the power unit with the following:
- Axial feed direction selector (forward, neutral, and reverse)
- Axial feed rate selector
- Bar rotation start/stop
- Power unit start/stop
- Digital tool position readout. This option allows the operator to bore to a preset distance without the need for visual inspection.

Features & Options

Operational Dimensions

Determining Required Bar Length
Total required bar length = 32’ (914.4) + distance to bore + (2 x standoff length)
NOTE: Recommended minimum standoff length is 7.5” (190.5)
Easy setup and operation help you maximize your uptime.

There are several ways to set up the Model BB7000, depending on the application and clearances around the work area.

Weld standoffs to the work piece around the bore, positioned to match the slots on the mounting spiders. Next, lift the bar into position, set it on wooden V-blocks and position in the bore. You can now slide the mounting spiders and bearing plate onto each end of the bar, lift the bar to center position and bolt the spiders to the standoffs.

Once the bar is attached to the standoffs you can critically align it using a dial indicator and the jacking screws on the bearing plates. When the bar is centered, slip on the rotational drive unit and lock it in place on the bar with the two clamping collars. Tie down the torque arms on the rotational drive unit to prevent it from rotating. Place the axial feed unit on either end of the bar, install the proper spacer blocks and cutter on the tool head and you are ready to make your first boring pass.

Actual boring operations are simple: adjust the boring depth at the cutter, set the feed rate and direction and start the machine rotation.

Applications throughout industry

Marine Many marine repair operations can be simplified by using the Model BB7000. Line bore a ship’s rudder pins or a submarine’s diving planes or the main bearing seats in a large marine diesel engine. Turbine housings and engine block cylinder sleeves can be bored in place. Ship stern tubes are an ideal application for a portable boring bar. Worn areas can be built up by metalizing and then re-boring to original dimensions. Submarine hatches and torpedo tubes can be re-bored with the portable boring bar.

Industrial Bore large gearboxes, large hydraulic cylinders, plates, or vessels without removing them. Stamping presses with worn bearing seats are ideal candidates BB7000 with long bars for boring tiller gate pivot pin holes eroded by water cavitation. The bottom pins of some gates have blind holes that require the use of the digital readout/autostop option of the Model BB7000.

Canal locks The lock gate hinge pins of the Panama Canal are line bored using the Model BB7000 Portable Boring Bar.

Metropolitan water districts Repairs or modifications on pumps and turbines can be made in place... sometimes saving the cost of the machine with only one or two jobs.

**Operational Dimensions**

<table>
<thead>
<tr>
<th>(Inches/mm)</th>
<th>12.6 (320)</th>
<th>.50 (127) dia</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.99 (355.3) max.</td>
<td>13.64 (346.4) min.</td>
<td></td>
</tr>
<tr>
<td>16.3 (414)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.81 (20.6) dia holes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Rotational Drive Assembly**

**End-Mount Bearing Assembly**

* Alternate spider configurations available upon special request.

**Operation & Applications**

Marine Many marine repair operations can be simplified by using the Model BB7000. Line bore a ship’s rudder pins or a submarine’s diving planes or the main bearing seats in a large marine diesel engine. Turbine housings and engine block cylinder sleeves can be bored in place. Ship stern tubes are an ideal application for a portable boring bar. Worn areas can be built up by metalizing and then re-boring to original dimensions. Submarine hatches and torpedo tubes can be re-bored with the portable boring bar.

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Metropolitan water districts Repairs or modifications on pumps and turbines can be made in place... sometimes saving the cost of the machine with only one or two jobs.
To accommodate a wide range of applications, the Model BB7000 is sold as a combination of components. To order a complete machine, you must specify:

Rotational drive assembly
Axial feed assembly
Hydraulic power unit (not shown)
Hydraulic motor
Tool kit (not shown).

Bearing support assemblies (ID or end mount) (at least two required)
Boring bar/leadscrew assembly
Tool carrier assembly
Tool head assembly

Use the work on sheet page 5 as a guide.
**BB7000 Components**

<table>
<thead>
<tr>
<th>Order #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25472</td>
<td>Motor, hydraulic - 3.6 in², 105 rpm, 502 in-lb</td>
</tr>
<tr>
<td>25473</td>
<td>Motor, hydraulic - 5.4/5.6 in², 71 rpm, 839 in-lb</td>
</tr>
<tr>
<td>25474</td>
<td>Motor, hydraulic - 7.1/7.3 in², 57 rpm, 1047 in-lb</td>
</tr>
<tr>
<td>25475</td>
<td>Motor, hydraulic - 8.8/8.9 in², 47 rpm, 1277 in-lb</td>
</tr>
<tr>
<td>25476</td>
<td>Motor, hydraulic - 10.6/11.3 in², 37 rpm, 1623 in-lb</td>
</tr>
<tr>
<td>25477</td>
<td>Motor, hydraulic - 12.9/14.3 in², 30 rpm, 2023 in-lb</td>
</tr>
<tr>
<td>25478</td>
<td>Motor, hydraulic - 16.4/17.9 in², 23 rpm, 2546 in-lb</td>
</tr>
</tbody>
</table>

**BB7000 Worksheet**

**(A) Components, 4" bar**

<table>
<thead>
<tr>
<th>Component</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotational drive assembly:</td>
<td>18886</td>
</tr>
<tr>
<td>Collet for 4&quot; dia. bar:</td>
<td>15606</td>
</tr>
<tr>
<td>Mechanical axial feed assembly: 4&quot; dia. bar:</td>
<td>18886</td>
</tr>
<tr>
<td>Bearing support assembly (at least two recommended): End-mount bearing support ass’y: 4&quot; diameter bar:</td>
<td>16849</td>
</tr>
<tr>
<td>ID-mount bearing support ass’y: 20&quot; - 35&quot; (508 - 889 mm) ID’s:</td>
<td>19565</td>
</tr>
<tr>
<td>ID-mount bearing support ass’y: 20&quot; - 49.25&quot; (508 - 1251 mm) ID’s:</td>
<td>19566</td>
</tr>
<tr>
<td>ID-mount bearing support ass’y: 20&quot; - 63.5&quot; (508 - 1613 mm) ID’s:</td>
<td>18885</td>
</tr>
<tr>
<td>ID-mount bearing support ass’y: 20&quot; - 35&quot; (508 - 889 mm) ID’s:</td>
<td>18884</td>
</tr>
<tr>
<td>ID-mount bearing support ass’y: 20&quot; - 63.5&quot; (508 - 1613 mm) ID’s:</td>
<td>18883</td>
</tr>
<tr>
<td>Boring bar assemblies, 4&quot; dia. bars: 8 ft (2.4 m)</td>
<td>18763</td>
</tr>
<tr>
<td>10 ft (3.1 m)</td>
<td>16829</td>
</tr>
<tr>
<td>12 ft (3.7 m)</td>
<td>16830</td>
</tr>
<tr>
<td>14 ft (4.3 m)</td>
<td>16831</td>
</tr>
<tr>
<td>16 ft (4.9 m)</td>
<td>16832</td>
</tr>
<tr>
<td>18 ft (5.5 m)</td>
<td>16833</td>
</tr>
<tr>
<td>20 ft (6.1 m)</td>
<td>16834</td>
</tr>
<tr>
<td>Tool carrier assembly, 4&quot; dia. bar:</td>
<td>16822</td>
</tr>
</tbody>
</table>

**(B) Components, 5" bar**

<table>
<thead>
<tr>
<th>Component</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotational drive assembly:</td>
<td>15604</td>
</tr>
<tr>
<td>Mechanical axial feed assembly: 5&quot; dia. bar:</td>
<td>20352</td>
</tr>
<tr>
<td>Bearing support assembly (at least two recommended): End-mount bearing support ass’y: 5&quot; diameter bar:</td>
<td>15754</td>
</tr>
<tr>
<td>ID-mount bearing support ass’y: 10&quot; - 20&quot; (254 - 508 mm) ID’s:</td>
<td>21232</td>
</tr>
<tr>
<td>10&quot; - 30&quot; (254 - 763 mm) ID’s:</td>
<td>21926</td>
</tr>
<tr>
<td>10&quot; - 40&quot; (254 - 1016 mm) ID’s:</td>
<td>21927</td>
</tr>
<tr>
<td>20&quot; - 35&quot; (508 - 889 mm) ID’s:</td>
<td>21928</td>
</tr>
<tr>
<td>Tool head assembly: 4&quot; boring head assembly: 8&quot; - 30&quot; ID</td>
<td>16847</td>
</tr>
<tr>
<td>8&quot; - 20&quot; ID</td>
<td>18767</td>
</tr>
<tr>
<td>Tool head assembly: 5&quot; boring head assembly: 9&quot; - 40&quot; ID</td>
<td>15937</td>
</tr>
<tr>
<td>9&quot; - 28&quot; ID</td>
<td>18950</td>
</tr>
</tbody>
</table>

**(C) Components, both sizes**

<table>
<thead>
<tr>
<th>Component</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic power unit - 15 hp: 3-phase/230V/60 Hz</td>
<td>25343</td>
</tr>
<tr>
<td>3-phase/460V/60 Hz</td>
<td>25344</td>
</tr>
<tr>
<td>3-phase/575V/50 Hz</td>
<td>25345</td>
</tr>
<tr>
<td>3-phase/440V/60 Hz</td>
<td>25346</td>
</tr>
<tr>
<td>3-phase/380V/50 Hz</td>
<td>25348</td>
</tr>
<tr>
<td>3-phase/200V/50 Hz</td>
<td>25350</td>
</tr>
</tbody>
</table>

**To build a machine with a 4" diameter bar, choose components from columns A and C.**

**To build a machine with a 5" diameter bar, choose components from columns B and C.**

**NOTE:** Contact your factory representative for additional information and lead times.
Drawings may not represent actual product.
BB7000 Components

<table>
<thead>
<tr>
<th>Order #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15606</td>
<td>Rotational drive assembly mounts anywhere along the bar. Locking rings hold the assembly securely to the bar. Includes torque arms for stability. Fits both 4&quot; and 5&quot; diameter bars. 4&quot; bars require rotational drive collet (PN 16869). *Customers using their own bars must specify rotational drive key profile and bar diameter.</td>
</tr>
<tr>
<td>16869</td>
<td>Rotational drive collet, 5&quot; to 4&quot; diameter bar. Collets fits inside rotational drive assembly above to enable it to be mounted to 4&quot; diameter bars. Includes collet and key.</td>
</tr>
<tr>
<td>20352</td>
<td>Mechanical axial feed assembly — 5&quot; dia. boring bar</td>
</tr>
<tr>
<td>16883</td>
<td>Mechanical axial feed assembly — 4&quot; dia. boring bar</td>
</tr>
</tbody>
</table>

Mechanical axial feed assembly
Unit mounts to either end of the bar. Manual feed is adjustable and reversible with a feed rate of .003" to .025" (.076 to .635 mm) per revolution. Includes incremental dial for positioning.

25343 3-phase electric powered hydraulic power unit 230V, 60 Hz, 1800 rpm motor. Pumps 20 gpm (75.8 L/min).
25344 3-phase electric powered hydraulic power unit 460V, 60 Hz, 1800 rpm motor. Pumps 20 gpm (75.8 L/min).
25345 3-phase electric powered hydraulic power unit 550V, 50 Hz, 1400 rpm motor. Pumps 16.7 gpm (63.2 L/min).
25346 3-phase electric powered hydraulic power unit 575V, 60 Hz, 1800 rpm motor. Pumps 20 gpm (75.8 L/min).
25347 3-phase electric powered hydraulic power unit 440V, 50 Hz, 1800 rpm motor. Pumps 16.7 gpm (63.2 L/min).
25348 3-phase electric powered hydraulic power unit 220V, 50 Hz, 1400 rpm motor. Pumps 16.7 gpm (63.2 L/min).

Electrical axial feed assembly
Information about the electrical axial feed assembly is available upon request.

BB7000 Components

<table>
<thead>
<tr>
<th>Order #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25349</td>
<td>3-phase electric powered hydraulic power unit 380V, 50 Hz, 1400 rpm motor. Pumps 16.7 gpm (63.2 L/min).</td>
</tr>
<tr>
<td>25350</td>
<td>3-phase electric powered hydraulic power unit 200V, 50 Hz, 1400 rpm motor. Pumps 16.7 gpm (63.2 L/min).</td>
</tr>
<tr>
<td>25410</td>
<td>3-phase electric powered hydraulic power unit 550V, 50 Hz, 1400 rpm motor. Pumps 16.7 gpm (63.2 L/min).</td>
</tr>
</tbody>
</table>

25 hp Hydraulic Power Unit
25 hp (18.65 kW) hydraulic power unit has a hydraulic piston pump and horizontally mounted motor. Features include: a 5 gallon (19 L) fluid reservoir with combination temperature/level gauge, relief valve for system overpressure protection, system pressure gauge, air-cooled heat exchanger, and spin-on 10 micron oil filter. Standard multifunction pendant has Emergency Stop, Power Unit On, Jog, Motor Start, Motor Stop, and Slow/Fast Volume Control. Power unit has two 20-foot (6 m) x 3/4" hoses with quick disconnects and 7/8-14 SAE O-ring fittings to connect to the hydraulic motor. Customer must purchase hydraulic motor separately.

25 hp Hydraulic Power Unit, continued
15 hp hydraulic power unit, 15 hp (11.19 kW) hydraulic power unit has a hydraulic piston pump and horizontally mounted motor. Features include: a 5 gallon (19 L) fluid reservoir with combination temperature/level gauge, relief valve for system overpressure protection, system pressure gauge, air-cooled heat exchanger, and spin-on 10 micron oil filter. Standard multifunction pendant has Emergency Stop, Power Unit On, Jog, Motor Start, Motor Stop, and Slow/Fast Volume Control. Power unit has two 20-foot (6 m) x 3/4" hoses with quick disconnects and 7/8-14 SAE O-ring fittings to connect to the hydraulic motor. Customer must purchase hydraulic motor separately.

Order # Description
25 hp Hydraulic Power Unit 380V, 50 Hz, 1400 rpm motor. Pumps 16.7 gpm (63.2 L/min).
25 hp Hydraulic Power Unit 200V, 50 Hz, 1400 rpm motor. Pumps 16.7 gpm (63.2 L/min).

-4 Main disconnect 600V, 3-phase for 15 hp and 25 hp (11.19 kW and 18.65 kW) electric powered hydraulic power unit Factory-installed main disconnect mounts to electrical enclosure for easy access. Fusible, 3-pole heavy-duty safety switches are housed inside a rain-proof enclosure. To order, add "-4" to the desired power unit number. Example: "25343-4". 

25 hp Hydraulic Power Unit
25 hp (18.65 kW) hydraulic power unit has a hydraulic piston pump and horizontally mounted motor. Features include: a 5 gallon (19 L) fluid reservoir with combination temperature/level gauge, relief valve for system overpressure protection, system pressure gauge, air-cooled heat exchanger, and spin-on 10 micron oil filter. Standard multifunction pendant has Emergency Stop, Power Unit On, Jog, Motor Start, Motor Stop, and Slow/Fast Volume Control. Power unit has two 20-foot (6 m) x 3/4" hoses with quick disconnects and 7/8-14 SAE O-ring fittings to connect to the hydraulic motor. Customer must purchase hydraulic motor separately.

25 hp Hydraulic Power Unit, continued
15 hp hydraulic power unit, 15 hp (11.19 kW) hydraulic power unit has a hydraulic piston pump and horizontally mounted motor. Features include: a 5 gallon (19 L) fluid reservoir with combination temperature/level gauge, relief valve for system overpressure protection, system pressure gauge, air-cooled heat exchanger, and spin-on 10 micron oil filter. Standard multifunction pendant has Emergency Stop, Power Unit On, Jog, Motor Start, Motor Stop, and Slow/Fast Volume Control. Power unit has two 20-foot (6 m) x 3/4" hoses with quick disconnects and 7/8-14 SAE O-ring fittings to connect to the hydraulic motor. Customer must purchase hydraulic motor separately.

Order # Description
25 hp Hydraulic Power Unit 380V, 50 Hz, 1400 rpm motor. Pumps 16.7 gpm (63.2 L/min).
25 hp Hydraulic Power Unit 200V, 50 Hz, 1400 rpm motor. Pumps 16.7 gpm (63.2 L/min).

-4 Main disconnect 600V, 3-phase for 15 hp and 25 hp (11.19 kW and 18.65 kW) electric powered hydraulic power unit Factory-installed main disconnect mounts to electrical enclosure for easy access. Fusible, 3-pole heavy-duty safety switches are housed inside a rain-proof enclosure. To order, add "-4" to the desired power unit number. Example: "25343-4".

Customer must purchase hydraulic motor separately. 

Hydraulic fluid 1 gallon (3.79 L) Mobil DTE-24 Anti-Wear brand hydraulic fluid.

Order # Description
25 hp Hydraulic Power Unit 380V, 50 Hz, 1400 rpm motor. Pumps 16.7 gpm (63.2 L/min).
25 hp Hydraulic Power Unit 200V, 50 Hz, 1400 rpm motor. Pumps 16.7 gpm (63.2 L/min).

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-4 Main disconnect 600V, 3-phase for 15 hp and 25 hp (11.19 kW and 18.65 kW) electric powered hydraulic power unit Factory-installed main disconnect mounts to electrical enclosure for easy access. Fusible, 3-pole heavy-duty safety switches are housed inside a rain-proof enclosure. To order, add "-4" to the desired power unit number. Example: "25343-4".
ID-mount self-aligning bearing assembly with jaws: 4" diameter bar.
- Mounts to the inside bore of the work piece. Bar is held in place by a self-aligning bearing assembly. Center the bar by adjusting the four jaws on the support spider. Adjustments can be made from outside the bore.

**Order #** | **Description**
--- | ---
21232 | 4" ID-mount bearing support assembly, 10" - 20" (254 - 508 mm) ID's
21926 | 4" ID-mount bearing support assembly, 10" - 30" (254 - 763 mm) ID's
21927 | 4" ID-mount bearing support assembly, 10" - 40" (254 - 1016 mm) ID's
21294 | 5" ID-mount bearing support assembly, 35" - 50" (889 - 1270 mm) ID's

**Order #** | **Description**
--- | ---
18886 | 4" ID-mount bearing support assembly, 20" - 35" (508 - 889 mm) ID's
19565 | 4" ID-mount bearing support assembly, 20" - 49.25" (508 - 1251 mm) ID's
19566 | 4" ID-mount bearing support assembly, 20" - 63.5" (508 - 1613 mm) ID's
18885 | 5" ID-mount bearing support assembly, 20" - 35" (508 - 889 mm) ID's
18884 | 5" ID-mount bearing support assembly, 20" - 49.25" (508 - 1251 mm) ID's
18883 | 5" ID-mount bearing support assembly, 20" - 63.5" (508 - 1613 mm) ID's

**Boring bar assemblies, 4" dia. bars:**
- 8 ft (2.4 m) | 18763
- 10 ft (3.1 m) | 16829
- 12 ft (3.7 m) | 16830
- 14 ft (4.3 m) | 16831
- 16 ft (4.9 m) | 16832
- 18 ft (5.5 m) | 16833
- 20 ft (6.1 m) | 16834

**Tool carrier assembly, 4" dia. bar:**
- 14862

**Tool head assembly:**
- 4" boring head assembly:
  - 8" - 30" ID | 18767
  - 8" - 20" ID | 18647

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**Hydraulic motor**
High torque, low speed hydraulic motor mounts directly to the rotational drive assembly. Motor ports are 7/8-14 SAE O-ring type. Fittings are included with the hydraulic power unit. Reverse motor rotational by switching the hydraulic hoses at the motor. Motors can be used on both 4" and 5" diameter bar machines. Hydraulic fluid lubricates the motor during operation. RPM ratings are maximum for boring bar at 20 gpm (75.8 L/min). Torque ratings are constant. Calculated values shown.

**Order #** | **Description**
--- | ---
25472 | Motor, hydraulic - 3.6 in², 97 bar rpm, 390 ft-lb
25473 | Motor, hydraulic - 5.7 in², 61 bar rpm, 625 ft-lb
25474 | Motor, hydraulic - 7.3 in², 48 bar rpm, 806 ft-lb
25475 | Motor, hydraulic - 8.8 in², 40 bar rpm, 966 ft-lb
25476 | Motor, hydraulic - 11.4 in², 31 bar rpm, 1240 ft-lb
25477 | Motor, hydraulic - 13.7 in², 25 bar rpm, 1596 ft-lb
25478 | Motor, hydraulic - 18.2 in², 19 bar rpm, 2150 ft-lb

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**Hydraulic motor fitting kit**
3/4" fittings kit includes fittings needed to connect any hydraulic motor listed above to hydraulic power units that have 3/4" female quick disconnect fittings. Fittings are included with every Climax hydraulic power unit.

**Order #**
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25587

**Tool kit**
Complete set of tools needed to operate the BB7000 Portable Boring Bar. Individual parts listed below.

**Order #** | **Description**
--- | ---
15762

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**Tool head assembly:**
- 5" boring head assembly:
  - 9" - 45" ID | 18885
  - 9" - 28" ID | 18660

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**Boring bar assemblies, 5" dia. bars:**
- 8 ft (2.4 m) | 20344
- 10 ft (3.1 m) | 20346
- 12 ft (3.7 m) | 20347
- 14 ft (4.3 m) | 20348
- 16 ft (4.9 m) | 20349
- 18 ft (5.5 m) | 20350
- 20 ft (6.1 m) | 20351

**Tool carrier assembly, 5" dia. bar:**
- 15567

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**Tool kit**
15762

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**Facing head assembly:**
19096

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To build a machine with a 4" diameter bar, choose components from columns A and C.

To build a machine with a 5" diameter bar, choose components from columns B and C.

**NOTE:** Contact your factory representative for additional information and lead times.
To accommodate a wide range of applications, the Model BB7000 is sold as a combination of components. To order a complete machine, you must specify:

**Rotational drive assembly**

**Axial feed assembly**

**Hydraulic power unit (not shown)**

**Hydraulic motor**

**Tool kit (not shown)**.

Bearing support assemblies (ID or end mount) (at least two required)

**Boring bar/leadscrew assembly**

**Tool carrier assembly**

**Tool head assembly**

Use the work on sheet page 5 as a guide.

### Model BB7000 Components

**Order #** | **Description**
--- | ---
16849 | 4" end-mount bearing support assembly
15574 | 5" end-mount bearing support assembly

**Boring bar assembly**

Turned, ground, and polished bars have a full-length leadscrew. Bar end caps enable the axial feed assembly to be mounted to either end. Bars are available in the lengths listed below. Other length bars are available upon special request. Hardened bars and/or hollow bars with optical targets are available upon special request.

**4" diameter boring bars:**

- 18763 Boring bar, 8 ft (2.44 m)
- 16829 Boring bar, 10 ft (3.05 m)
- 16830 Boring bar, 12 ft (3.66 m)
- 16831 Boring bar, 14 ft (4.27 m)
- 16832 Boring bar, 16 ft (4.88 m)
- 16833 Boring bar, 18 ft (5.49 m)
- 16834 Boring bar, 20 ft (6.10 m)

**5" diameter boring bars:**

- 20344 Boring bar, 8 ft (2.44 m)
- 20346 Boring bar, 10 ft (3.05 m)
- 20347 Boring bar, 12 ft (3.66 m)
- 20348 Boring bar, 14 ft (4.27 m)
- 20349 Boring bar, 16 ft (4.88 m)
- 20350 Boring bar, 18 ft (5.49 m)
- 20351 Boring bar, 20 ft (6.10 m)

**Tool carrier**

Split-design tool carrier mounts anywhere along the boring bar, and has built-in wipers to keep out dirt and chips. Boring and facing heads mount to the tool carrier with screws. If required, spacers. Includes brass nut and drive key.

- 16822 Tool carrier, 4" dia. bar
- 15567 Tool carrier, 5" dia. bar

**Boring head assembly**

The boring head assembly mounts to a 4" or 5" tool carrier. Set desired boring diameter range using the spacers provided. Includes two styles of carbide tool holders for versatility. Leading and trailing tool holders permit heavy boring. Assembly requires either the 4" or 5" tool carrier (P/N 15567 or 16822).

- 16847 4" Boring head assembly, 8" - 30" (203.2-762.0 mm) ID's
- 18767 4" Boring head assembly, 8" - 20" (203.2-508.0 mm) ID's
- 15537 5" Boring head assembly, 9" - 40" (228.6-1016.0 mm) ID's
- 18690 5" Boring head assembly, 9" - 28" (228.6-711.2 mm) ID's

**Facing head assembly**

Mounts onto either the 4" or 5" tool carrier assembly. On the 4" tool carrier, the facing head will face diameters from 9.5" to 35" (241.3 to 889.0 mm). On the 5" tool carrier, the facing head will face 10.5" to 36" (266.7 to 914.4 mm) diameters. Set the facing range using the spacers provided. The facing head features mechanical radial feed with a 4" (101.6 mm) stroke. Adjustable feed rate up to .010" (.254 mm) per revolution. Assembly requires either a 4" or 5" tool carrier (P/N 16822 or 15567) and 1/2" square tool bits.
Easy setup and operation help you maximize your uptime.

There are several ways to set up the Model BB7000, depending on the application and clearances around the work area. Weld standoffs to the work piece around the bore, positioned to match the slots on the mounting spiders. Next, lift the bar into position, set it on wooden V-blocks and position in the bore. You can now slide the mounting spiders and bearing plate onto each end of the bar, lift the bar to center position and bolt the spiders to the standoffs.

Once the bar is attached to the standoffs you can critically align it using a dial indicator and the jacking screws on the bearing plates. When the bar is centered, slip on the rotational drive unit and lock it in place on the bar with the two clamping collars. Tie down the torque arms on the rotational drive unit to prevent it from rotating. Place the axial feed unit on either end of the bar, install the proper spacer blocks and cutter on the tool head and you are ready to make your first boring pass.

Actual boring operations are simple: adjust the boring depth at the cutter, set the feed rate and direction and start the machine rotation.

Applications throughout industry

Marine Many marine repair operations can be simplified by using the Model BB7000. Line bore a ship’s rudder pins or a submarine’s diving planes or the main bearing seats in a large marine diesel engine. Turbine housings and engine block cylinder sleeves can be bored in place. Ship stern tubes are an ideal application for a portable boring bar. Worn areas can be built up by metalizing and then re-boring to original dimensions. Submarine hatches and torpedo tubes can be re-bored with the portable boring bar.

Industrial Bore large gearboxes, large hydraulic cylinders, plates, or vessels without removing them. Stamping presses with worn bearing seats are ideal candidates.

Data Table

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>(Inches/mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max dimensions</td>
<td>13.99 (355.3) max.</td>
</tr>
<tr>
<td>Min dimensions</td>
<td>13.64 (346.4) min.</td>
</tr>
</tbody>
</table>

Rotational Drive Assembly

- .81 (20.6) dia holes
- 9.0 (228.6) wide slots
- 24.0 (609.6)
- 27.0 (685.8)

End-Mount Bearing Assembly*

* Alternate spider configurations available upon special request.
The compact Model BB7000 offers big job boring capability on-site. Modular components allow you to choose exactly what you need for your application.

Modular versatility.
- Bearing support system consists of three independent mounting fixtures that can be used alone or in different combinations. If space is limited, mount the bearing cartridge directly on the workpiece. Or use the bearing cartridge with the spacer flange and/or the mounting spider.
- Position the rotational drive unit anywhere along the bar.
- Axial feed unit mounts on either end of the bar.

Compact.
- Rotational drive unit is only 12" by 17", weighs only 160 lbs (72.6 kg) with the hydraulic motor attached.
- Standard mechanical axial feed is not much larger than the bar diameter and weighs less than 20 lbs (9.1 kg).

Powerful.
- Compact hydraulic power unit designed specifically for portable machining.
- High power-to-weight ratio
- Smooth, trouble-free power transmission to the boring head.

Standard machine (A)
A standard machine package consists of:
- Rotational drive unit
- Mechanical axial feed unit with infinitely variable feed rate and feed direction selector options of forward, neutral or reverse.
- Two, three part mounting spider sets with roller bearing cartridge, tool carrier-boring head set for boring 8-inch to 40-inch diameters, depending on configuration.
- Control pendant with power unit start/stop, bar rotation on/off and rotation jog.
- A 15 or 25 hp hydraulic power unit with all hoses and fittings.

Optional facing head (B)
The facing head features mechanical radial feed with 4" stroke. Feed rate is adjustable up to .010". Assembly mounts onto either the 4" or 5" tool carrier assembly. On the 4" tool carrier the facing head will face 9.5 to 35 inches diameter.

CNC option (C)
CNC options are available. Contact the factory for information.

Optional electronic axial feed unit (D)
Add digital readout control capabilities and program axial automatic feed stops to the Model BB7000. The electronic axial feed features a reduction leadscrew gearbox, slip rings for electrical impulse pickup and two interchangeable feed motors that provide infinitely adjustable feed rates from .026 to 4.8 inches per minute. The pendant provides control of the boring operation and the power unit with the following:
- Axial feed direction selector (forward, neutral, and reverse)
- Axial feed rate selector
- Bar rotation start/stop
- Power unit start/stop
- Digital tool position readout. This option allows the operator to bore to a preset distance without the need for visual inspection.

Features & Options

Operational Dimensions

Determining Required Bar Length
Total required bar length = 32" (812.8) + distance to bore + (2 x standoff length)
NOTE: Recommended minimum standoff length is 7.5" (190.5)
**BB7000 Technical Information**

**Specifications inches (millimeters)**

Specifications subject to change without notice. For precision dimensions consult your factory representative.

<table>
<thead>
<tr>
<th>Boring diameter:</th>
<th>Boring bar:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard 6 (152.4) min 36 (914.4) max.</td>
<td>Ship weight (approx.): 5” dia x 10 ft bar (20347): 850 lb (385.9 kg)</td>
</tr>
</tbody>
</table>

**Machine ship weight (approx.):** 2200 lb (988.8 kg)

Typical machine consisting of rotational drive assembly (15606), axial feed assembly (20352), manual boring head set (15537), axial tool carrier (15567), two bearing assemblies (15574), and 5” diameter x 16 foot boring bar (20349).

**Boring diameter:**

- 6 (152.4) min
- 36 (914.4) max.

**Machine ship weight (approx.):** 2200 lb (988.8 kg)

**Hydraulic power unit (15 hp):**

- Ship weight (approx.): 750 lb (340.5 kg)
- Ship dimensions (approx.): 24 x 43 x 47 (61 x 109.2 x 119.4 cm)

### Components:

#### Mechanical axial feed assembly:
- Feed rate adjustable, reversible, .003-.025/rev. (.076-635/rev)
- Gear ratio: 10.5:1 gear reduction (Theoretical values calculated using a 15 hp hydraulic power unit producing 1200 psi (8268 kPa) continuous, 2000 psi (13780 kPa) intermittent and pumping 20 gpm (75.8 l/min).)

#### Rotational drive assembly:
- Net weight (w/o motor): 122 lb (55.4 kg)
- Gear ratio: 10.59:1 gear reduction
- (Theoretical values calculated using a 15 hp hydraulic power unit producing 1200 psi (8268 kPa) continuous, 2000 psi (13780 kPa) intermittent and pumping 20 gpm (75.8 l/min.).)

With 11.3 in³ (185.3 cm³) hydraulic motor (25476):
- Boring bar torque: 1224 ft•lb (1665 N-m)
- Max boring rpm: 32 rpm

#### Motor, hydraulic:
- Displacement: 3.6-17.9 in³ (59.1-293.6 cm³)
- Net weight: 15.3 - 19.2 lb (6.9 - 8.7 kg)
- Fittings: 3/4-14 SAE O-ring

#### Bearing support assembly:
- End mount four-arm bearing diameter range:
  - 4” diameter bar: 17.5 - 34.5” (444.5 - 876.3)
  - 5” diameter bar: 20 - 48” (508 - 1219.2)
- ID-mount bearing ID diameter range:
  - 4” diameter bar: 20 - 63.5” (508 - 1612.9)
  - 5” diameter bar: 20 - 63.5” (508 - 1612.9)

Mounting spiders require 5/8” or smaller bolts

### Manual boring head assemblies:

#### Diameter range:
- 4” machine: 8 - 30” (203.2 - 762) max.
- 5” machine: 9 - 40” (228.6 - 1016) max.

#### Tooling:
- .5” (12mm) square HSS tool bits micro adjustable carbide inserts (ass’y requires tool carrier)

### Mechanical facing head assemblies:

#### Diameter range:
- 4” machine: 9.5 - 35” (241.3 - 889) max.
- 5” machine: 10.5 - 36” (266.7 - 914.4) max.

#### Tooling:
- .5” (12mm) square HSS tool bits micro adjustable carbide inserts (ass’y requires tool carrier)

### Boring bar:
- Chromed, with full-length leadscrew. Bar end caps with anti-friction leadscrew bearings allow the axial feed assembly to be mounted to either end of the bar.

- Net weight: 5” dia. x 12 ft: 518 lb (236 kg)

### Hydraulic power unit:
- Net weight: 15 hp: 750 lb (341 kg)
  - 25 hp: 875 lb (398 kg)

Power sources: 3-phase electric

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**Model BB7000 Portable Boring Bar**

- **Machine Features**
- **Setup & Operation**
- **Components & Accessories**
- **Technical Data**