READ THE FOLLOWING INSTRUCTIONS THOROUGHLY AND CAREFULLY BEFORE UNPACKING, INSPECTING, OR INSTALLING THE SUNNEN PORTABLE BORING-BAR STAND.
SAFETY INSTRUCTIONS
READ FIRST

This stand, like any machine, may be dangerous if used improperly. Please read all warnings and instructions before attempting to use this stand.

**DO NOT** remove or defeat any safety device.
Always disconnect power at main enclosure before servicing stand.
Always wear eye protection when operating this stand.

**DO NOT** attempt any repair or maintenance procedure beyond those described in this book. Contact your Sunnen Service Representative for repairs not covered in this book.
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Electrical Requirements: 115V
Hydraulic Requirements: 80-100 psi (5,4-6,8 Bars)
Hyd. Reservoir Capacity: 40 L x 13.5 W in. (1016 x 342,9 mm)
Max. Workpiece Capacity -
  Work Area: 56.5 H x 50 W x 36 D. in. (1435,1 x 1270,0 x 914,4 mm)
  Weight: 500 lbs. (226,8 kg)
Floor Space: 106 H x 61.5 W x 36.25 D in. (2692,4 x 1562,1 x 920,8 mm)
Shipping Weight: 1500 lbs. (694,0 kg)
Color: Pearl White and Pewter Gray

INTRODUCTION

These instructions provide information required to install, operate, and maintain Sunnen PBS-1000 Portable Boring-Bar Stand.

When ordering parts for, or requesting information about your Stand, include model and serial number of your Stand.

READ THE FOLLOWING INSTRUCTIONS CAREFULLY AND THOROUGHLY BEFORE UNPACKING, INSPECTING, OR INSTALLING THE SUNNEN PORTABLE BORING-BAR STAND.
GENERAL
Consult this section when unpacking, inspecting, and installing Sunnen PBS-1000 Portable Boring-Bar Stand. Hereafter referred to as the Stand (see Figure 1-1).

SUGGESTED TOOLS & MATERIALS
The following tools and materials are required for unpacking and installing the Stand:

- Knife
- Crowbar
- Hex Wrenches
- Cleaning Solvent
- Slip Joint Pliers

1. Move crate to staging/unpacking area.

WARNING
Use safety glasses or goggles when cutting bands.

2. Remove banding straps.
3. Remove top and sides from shipping crate.
4. Turn handwheel counter clockwise; to release hold on block cart.
5. Remove cart, square bar and accessory pack.
6. Open accessory pack and check contents (see Figure 1-2):
   - Leveling Pads (4)
   - ½-13x1½ Setscrews (4)
   - ½-13 Hex Nuts (4)
   - ½x1½ T-Nut w/½-13x1½ Setscrew (1)
   - Parallel Plates w/Clamp Screws (2)
   - Rubber Covered Boss w/Stud, Washer & Nut (1)
   - Single Cylinder Mount (1)
   - V-Plates w/Pins (2)
   - Tool Tray w/Mounting Hardware (1)

7. Inspect Stand and components for dents, scratches, or damage resulting from improper handling, by carrier. If damage is evident, immediately file a claim with carrier.
8. Remove nuts holding Stand to skid.

NOTE: When ordering parts for, or requesting information about your Stand, include model and serial numbers printed on Nameplate.

INSTALLATION
Read the following instructions carefully and thoroughly before unpacking, inspecting and installing your Stand. All references to right and left in these instructions are, unless otherwise noted, as seen by operator as one looks at Stand or assembly being described (see Figure 1-1).

NOTE: When ordering parts for, or requesting information about your Stand, include model and serial numbers printed on Nameplate.

WARNING
Read handling instructions printed on sides of shipping crate before moving.
9. Using a hoist or cherry picker and Lifting Strap (provided); lift stand off skid (see Figure 1-3).

NOTE: A forklift, may be used to lift Stand.

10. Move Stand to desire location and lower into place.

11. Install four Leveling Screws (see Figure 1-4).

12. Level and stabilize Stand as follows (see Figure 1-5):
   • Turn leveling screws down on opposite corners thereby lifting adjacent corners off floor.
   • Install leveling pads under raised corners.
   • Then, turn leveling screw into countersunk hole provided in pad.
   • Back off on first two screws and install pads.
   • Back off on all four screws until Stand base is resting on all four pads.
   • Using a machinist level; level the stand front-to-back and left-to-right, using four leveling screws.

13. Once table is level, install and tighten locknuts on each leveling screws.

14. Remove Lifting Strap from tabletop. Leave T-nut in T-slot (see Figure 1-6).

15. Install set screw (½-13x1½) and T-Nut from accessory pack (see Figure 1-7).

16. Lift boring bar onto table and slide it over t-nut assembly and engage hold down T-Slot.

17. Position bar as if to bore a cylinder.

18. Tighten hold down clamp, check to be certain that ample hold down force is being applied to T-Nut assembly before attempting to bore a cylinder.

ELECTRICAL CONNECTION

Connect Power to Stand, as follows (see Figure 1-8)

1. Plug boring bar Cord into pig-tail receptacle at base of drive housing.

2. Route and connect Stand’s Power Cord to a properly grounded electrical outlet (see Figure 1-12).

OPERATIONAL CHECK

Read Sections 2 and 3 carefully and thoroughly before performing Operational Check.

1. Move direction switch to down position (see Figure 1-9).

2. Jog pushbutton allowing bar carrier to contact limit switch (see Figure 1-10).

   Drive motor should not function at this time and downward travel should stop once motor has coasted to a stop.

3. Move direction switch to up position.
4. Jog pushbutton allowing bar carrier to move off limit switch.
5. Move override switch to up position. Amber light above switch should go on. Power cord to boring bar is now energized.

6. Switch boring bar motor ON, to ensure this circuit is working.
7. Move override switch to down position. Boring bar motor should stop.
8. Switch boring bar OFF and leave override switch down.

**FIGURE 1-6, Lifting Strap**

**FIGURE 1-9, Direction Switch**

**FIGURE 1-10, Pushbutton**

**115V STAND**
Outlet for 115 volt stand should look like the following.

Electrical supply cord is equipped with a grounding pin. A temporary adapter, may be used to connect this plug to a 2-pole receptacle, if a properly grounded outlet is not available. Temporary adapter should ONLY be used until a properly grounded outlet can be installed by a qualified electrician. Green-colored rigid ear, lug, etc., extending from adapter MUST be connected to a permanent ground, such as a properly grounded outlet box.

Stand wiring should comply with all local, state, and federal codes and ordinances.

**FIGURE 1-8, Electrical Requirements**
SECTION 2
PREPARING FOR OPERATION

GENERAL
Consult this section when preparing the Stand for operation.

MAJOR COMPONENTS
For location of major components on the Stand see Figures 2-1 & 2-2.

FIGURE 2-1, Cylinder Mounting Kit

FIGURE 2-2, Major Components
OPERATOR CONTROLS
For location and function of operator controls refer to Figure 2-3 & Table 2-1.

TABLE 2-1, Operator Controls

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<thead>
<tr>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
<th>FUNCTION</th>
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<tr>
<td>DIRECTION SWITCH</td>
<td>Two position selector switch.</td>
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<td>Toggle Switch</td>
<td>Determines block bar power travel direction. (Up or Down)</td>
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<tr>
<td>Pushbutton</td>
<td>Engages power up and/or down motor.</td>
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<tr>
<td>OVERRIDE SWITCH</td>
<td>UP position - boring bar will operate at any time.</td>
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<tr>
<td>Toggle Switch</td>
<td>DOWN position - 375 psi safety cutoff is engaged.</td>
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SAFETY SYMBOLS
For a description of safety symbols used on this Stand, refer to Table 2-2.

TABLE 2-2, Safety Symbols

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<tr>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
<th>FUNCTION</th>
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<tr>
<td>!</td>
<td>Warning Label</td>
<td>Warns that an electrical hazard exists.</td>
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<tr>
<td><img src="image.png" alt="image" /></td>
<td>Warning Label</td>
<td>Warns that safety glasses should be worn at all times when operating this stand.</td>
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<tr>
<td><img src="image.png" alt="image" /></td>
<td>Warning Strip</td>
<td>Warns that a physical hazard exists, and that proper precautions should be taken.</td>
</tr>
<tr>
<td><img src="image.png" alt="image" /></td>
<td>Warning Label</td>
<td>Warns that a finger hazard exists.</td>
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SECTION 3
SETUP & OPERATION

GENERAL
This section gives step-by-step operating procedures for Sunnen Portable Boring-Bar Stand.

SAFETY PRECAUTIONS
following precautions should be observed to ensure maximum safety while working on or around Stand.
• Wear proper Safety Items (such as safety glasses and other personal safety equipment as necessary or required).
• DO NOT wear loose fitting clothes or jewelry while working on or around Stand.
• Use proper lifting procedures when loading and unloading engine blocks.
• Use care when loading and unloading blocks in Block Cart.
• Keep area around Stand free of paper, oil, water and other debris at all times.
• Keep Stand and area cleaned of excessive lubricant/water and lubricant/water spills.
• Keep work area clear of tools and other objects. Unsecured items may fall when block is rotated.
• Keep accessories clean and in their proper storage compartments, to maintain them in proper working condition and to prolong life.
• Inspect blocks before boring. Check for cracks, burrs or bent parts that might effect operation.
• Turn OFF power before performing service on your Stand which does not require power.
• Disconnect/unplug Stand from main power supply when performing service inside electrical enclosure.
• Ensure all Guards are in place and are in proper working order.
• Keep all non-essential persons clear of work area. Visitors, especially children, should not be permitted near the work area.
• DO NOT use Stand for other than its intended use. Using your Stand for other purposes could result in loss of warranty or damage to the Stand.
• Use ONLY factory authorized or recommended parts or replacement accessories. Using parts or accessories other than those approved by the manufacturer could result in damage to the Stand and loss of warranty.

OPERATING TIPS
This boring stand lifts and secures engine block from both ends. This type of holding demands equal pressure on both ends of lifting bar.
• To accomplish this, there is a Hydraulic Piston in each bar carrier on which lifting bar sits (see Figure 3-1).
• These pistons are connected together via flexible and Steel Tubing, therefore pressure exerted on one side transfers to the other until a balance is obtained (see Figure 3-2).
• In the case of one main bore being larger than the other, as in 400cid chevy block, one piston will sit lower, but the holding force will be equal.
The hydraulic pressure that is generated goes through a steel line that runs from rear of stand to rear of motor housing.
• On front of housing is a hydraulic gage that shows precisely how much hydraulic pressure is being generated to secure block. (Gage reading X2 is force holding block up.)
Inside motor housing is a hydraulic limit switch that performs three functions:

FIGURE 3-1, Hydraulic Piston

FIGURE 3-2, Steel Tubing
• It cuts power to drive motor avoiding overload when securing a block.
• It turns on power to boring bar.
• It is a safety power shut off to boring bar should hydraulic pressure drop due to mechanical failure or human error. In either of these cases, the boring bar will stop before holding pressure is lost completely.

NOTE: The switch activates at 375 PSI.

SETUP & OPERATION
The following procedure is offered as a starting point. There may be other methods that the operator is more familiar with and would work just as well. If this is the case, make certain that all safety precautions are observed, and that the Stand is not operated in a manner its design was not intended for.

1. Turn OFF all power to Stand.
2. Place a block to be bored on Block Cart; install Block Bar and Roll Control Handle (see Figure 3-3). Secure Handle to Bar by tightening Locking Knob.
3. Install sliding Parallel Plates, separate them to approximate block width centered on bore slot.
4. Lower Bar Carriers allowing block bar to pass over outside Retaining Plate.
5. Roll cart in, until block bar makes contact with inside Retaining Plate (see Figure 3-4).
6. Raise carriers, as block rises, use roll control handle to maintain block position.
7. When top of block is 4 to 5 inches from plate, roll block to deck surface you wish to bore first.
8. Continue to raise block until deck is about 1 inch from Parallel Plates; then stop and check the position of Parallel Plates (see Figure 3-5).
9. Tapping Pushbutton, jog block up until it contacts parallel plates.
10. Continue to jog pushbutton, until button no longer activates drive motor.
11. Manually turn Handwheel clockwise while watching pressure Gage.
   • 700 to 900 lbs. is sufficient to hold cast iron blocks with bores ranging from 3½ to 4½ inches.
   • Smaller bore blocks require 500 to 700 lbs.
12. After first bank of cylinder has been bored, turn handwheel counter clockwise until amber light goes out.
13. Then flip direction switch down and jog Pushbutton until deck is 3 to 4 inches away from parallel plates.
14. Roll block to second bank and repeat process.
15. After second bank is bored, release and lower block. While lowering block rotate it to an up right position.

16. With cart against stop bar, lower block onto cart. Continue to lower carriers until block bar will pass over outside retaining plate.

**SINGLE CYLINDER MOUNTING KIT**

Single Cylinder Mounting Kit allows you to mount independent cylinders; such as, motorcycles, lawn mowers, compressors, etc. on Boring-Bar Stand.

1. Install Block Bar in Carriers with ½ inch hole facing up (see Figure 3-6).

2. Install Channel Mount so capscrew head engages ½ inch hole (see Figure 3-7).
   - Channel mount has a cross bar screwed to flat side, which allows channel to teeter, so cylinder will sit squarely against parallels (see Figure 3-8).

3. Install V-Plates on channel (see Figure 3-9).

4. Position Cylinder Head to be bored on V-Plates. Center Head and V-Plates on Channel Mount (see Figure 3-10).
   - Cylinder Head may be bored from either the top or the bottom.

5. Raise carriers until cylinder is about 1 inch from top plate.

6. Position Parallels, as required (see Figures 3-11).

7. Tapping pushbutton, jog cylinder up until it contacts parallels.

8. Back off handwheel slightly.
9. Twist cylinder to check that it is contacting the parallels squarely.

10. Manually turn handwheel clockwise while watching pressure gage.
• 200 to 400 lbs. is sufficient to hold cylinders with 2-3 inch bore.

11. Flip override switch to up position; allowing boring bar to operate under 375 lbs.

12. Bore cylinders following instructions packaged with your boring equipment.

**OPTIONAL FIXTURING**
Multi-bore cylinder heads are positioned similar to single cylinder heads (see Figures 3-12 thru 3-15).

---

**FIGURE 3-12, V-Plates**

**FIGURE 3-13, V-Plates**

**FIGURE 3-14, Cylinder Head**

**FIGURE 3-15, Position Parallels**
Like any machinery, this equipment may be dangerous if used improperly. Be sure to read and follow the instructions for the operation of the equipment.
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<td>METERS (m)</td>
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