

## Berntsen International, Inc.

PO Box 8670 • Madison, WI 53708-8670 USA  
Tel: 800-356-7388 • Fax: 800-249-9794 (North America)  
Tel: +1 608.249.8549 • Fax: +1 608.249.9794  
Email: [surveymark@berntsen.com](mailto:surveymark@berntsen.com)

### MONUMENT INSTALLATION INSTRUCTIONS

MODELS MH1, MHDR, MSS ROTATING ROD MONUMENTS (U.S. Patent No. 4,087,945)

This series is currently available in the following sizes:

Model MH1 = 5/8" (16mm) diameter aluminum rod and is identified with red protective end caps.  
Model MHDR = 3/4" (19mm) diameter aluminum rod and is identified with blue protective end caps.  
Model MSS = 9/16" (14mm) diameter stainless steel and is identified with yellow protective end caps.

**>>>CAUTION: Before beginning any monument installation, contact your local ONE-CALL Utility Location Service to verify the safety of your chosen location<<<**

#### MATERIALS REQUIRED FOR SETTING MONUMENT:

1. MH1, MHDR, or MSS rods (w/floating threads)
2. MH12, MHDR12, or MSS12 drive points
3. Aluminum (H1 & HDR) or Bronze (SS) compression fit tap-on survey cap
4. Steel stamp set (for marking information on survey cap)
5. Installation tools
  - Sledge hammer (recommended for depths up to 6 feet)
  - Reciprocating driver (*Pionjar 120 or Cobra 148*) for depths 6+ feet
  - Driving Adapter (MDA with sledge hammer, PDA with reciprocating driver)
  - DPA Steel Drive Pin
  - Lubricating oil for driving adapter and stainless drive pin
  - Vise grip pliers (2) **OR** Pipe Wrench (two 6" wrenches)
  - Hacksaw
  - File
6. Work gloves and proper eye protection and clothing

#### INSTALLATION

The Berntsen rod type survey monument is assembled as it is installed. It consists of a simple series of rod sections which are connected together end to end by a precision machined floating thread or screw made from a special alloy stainless steel. This floating thread aligns, joins, and locks the rod sections together. The thread is also used to connect the specially designed drive point to the first rod section to be driven.

**CAUTION: Berntsen sectional rods are machined and use special uniquely designed threads. Therefore, no other threaded fittings should be used in this application. Damage to the rod sections or installer will occur if other threaded fittings, screws, or bolts are attempted to be used in rod sections while driving.**

#### CONNECTING THE POINT

1. Make certain you have the proper size point (MH12 for 5/8" (16mm), MHDR12 for 3/4" (19mm) aluminum rods, or MSS12 for 9/16" (14mm) stainless steel rod) you are about to drive. Examine the point carefully and be certain that the inside threaded fitting is clean.

2. Remove the LARGE protective colored end cap from the FIRST rod you are about to drive (RED=5/8" (16mm) diameter rod, BLUE=3/4" (19mm) diameter rod, YELLOW=9/16" (14mm) diameter rod). A floating thread will be factory installed under the LARGE end cap.

3. Carefully screw the point onto the floating thread protruding from the rod end. Tighten "finger tight" making sure that you are not cross threading. The point should go on smoothly and easily.

### **DRIVING THE RODS**

4. Remove the other end cap from the rod on which you have installed the point.

5. Select the spot you wish to install your monument. Dig a hole about 4 inches (100mm) deep and about 10 inches (250mm) in diameter. Place the drive pointed end of the rod in the center of this hole..

6. Carefully screw the DPA steel drive pin hand-tight onto the rod. Place the Driving Adapter over the steel drive pin.

7. Impact the rod into the ground using either the MDA manual driving adapter with a sledge hammer or the PDA power driving adapter with a power reciprocating drive. *NOTE: Berntsen driving adapters are machined from special case hardened steel and are designed for long term use. Spare DPA steel drive pins and stainless steel floating threads are available.*

8. When the bottom of the adapter is about six (6) inches above ground level, STOP DRIVING and remove the driving adapter and unscrew the steel drive pin from the rod.

9. Examine the driving adapter for wear and be certain it is still clean inside and undamaged. Clean inside bore of adapter if necessary as instructed below.

### **ADDING MORE RODS**

10. Remove large end cap of the next rod section to be driven, taking care not to mix RED, BLUE, or YELLOW CAPPED RODS. Carefully screw the rod onto the rod already in the ground.

11. Finger tighten the rods. Then use the pipe wrenches or vise grips to further tighten the connection. *NOTE: 1) DO NOT OVER TIGHTEN (1/4 turn is the correct tightness). 2) Be sure to tighten in opposite directions.*

12. Check the drive point for tightness by trying to rotate the top rod clockwise about its axis with a single wrench or vise grip. In soft soil it may rotate with some resistance but as greater depths are reached it will become increasingly difficult to turn the point and the rod. At refusal, it will probably be impossible to turn the rod clockwise, even with a wrench. You must check for tightness after driving every rod to assure yourself that everything is still tight from top to bottom.

13. Remove the end cap from the other end of the rod section.

14. Repeat steps 6 through 9 until desired depth or "refusal"\* is reached. Be certain that there is no floating thread remaining in the top of the installed rod assembly.

### **ADDING THE TAP-ON CAP**

15. If the rod has met refusal at a depth where too much rod remains above the ground, cut off the desired amount of rod with a hack saw. Retain, if desired, the cut-off portion for use at another location.

16. If possible, stamp any additional data onto the survey cap before installing the cap onto the rod assembly.

17. Take note that the rod sections are stamped **BERNTSEN** about one inch (25mm) from each rod end.

18. Attach a pipe wrench or vise grip onto the rod (about one inch (25mm) below the stamped BERNTSEN). Using a Berntsen urethane-faced deadblow hammer (or wood or leather), to protect the markings on the survey cap, tap the cap firmly onto the rod until the bottom stem portion of the cap has met or passed the BERNTSEN stamp on the rod. Properly installed, tremendous force must be used to remove the cap from the rod. No additional bonding is necessary.

19. Fill in the remaining hole and carefully tamp the soil down around the monument assembly.

20. Your monument is now completely installed.

\*"Refusal" for a rod monument is defined by most federal agencies as "No more than one foot (300mm) of penetration of the rod in one (1) minute of impacting with a gasoline powered reciprocating driver (i.e. Pionjar 120 or Cobra 148).

### **CARE OF DRIVING ADAPTERS**

Day to day care of the Berntsen Manual or Power Driving Adapter is very important but quite simple:

#### **Day To Day Schedule:**

1. Select the proper adapter for the day's work (MDA Manual Driving Adapter or PDA Power Driving Adapter).
2. Make sure the inside bore of the adapter and drive pin are clean and free from mushrooming or chipping.
3. Place a drop or two of oil in the bore hole of the adapter to prevent rust and allow for easy insertion and removal from the steel drive pin. Do the same with the threaded section of the stainless steel drive pin.

#### **During The Day As Needed**

1. Check the adapter and steel drive pin. Keep them clean and free from dirt, chipping, and/or mushrooming. If these occur, replace adapter and/or steel drive pin.
2. If no replacement adapter or steel drive pin is available, grind off affected areas (MDA Manual Driving Adapter ONLY!) as you would with any tool. **REMEMBER: NO TOOL IS UNBREAKABLE.** If the adapters were made harder, hammer would break during the tremendous forces you are applying to the small rod and adapter surfaces. **NEVER GRIND DOWN POWER ADAPTERS!!**
3. Assist and instruct new or casual operators of your equipment in the proper methods of driving rods and cleaning adapters.

#### **End Of Day:**

1. Clean and inspect the adapter for damage.
2. Place a drop or two of oil in the adapter to prevent rust and store for future use in a protective cloth.

**IMPORTANT: FOR YOUR SAFETY AND THE SAFETY OF OTHER SURVEYORS, PLEASE NOTE: *If you suspect a driving adapter is not manufactured by Berntsen, do not paint it. Non-tolerance drivers are being manufactured that closely resemble Berntsen driving adapters. They may be cold rolled steel and can be a hazard to the user. If you are using a driving adapter that is mushrooming or chipping rapidly, discard it immediately and buy a new one. The price of a tool cannot replace your eye, or the eye of your friend.***

**QUESTIONS? PLEASE CALL US FOR ASSISTANCE. CALL TOLL-FREE IN THE U.S.A.,  
CANADA, AND THE CARIBBEAN ISLANDS AT 1-800-356-7388.  
OUTSIDE THIS AREA CALL +1 608.249.8549**

