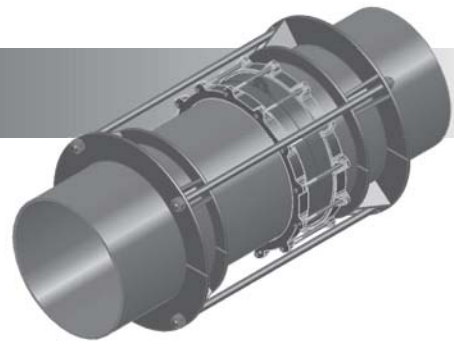




# M-11 HARNESS

## FOR STEEL PIPE



### APPLICATIONS

Joint Harness specified per AWWA M-11 are designed to restrain flexible couplings on steel pipelines. The harnesses will be supplied bare steel to allow for field welding into place. Sizes available 6" – 96". Larger sizes available on request.

### MATERIAL SPECIFICATIONS

**Restraint Rings:** Carbon Steel per ASTM A193 grade B7

**Tie Rods:** ASTM A193 grade B7  
Stainless steel available on request  
(Twice as many rods required)

**Coating:** Bare, shop blasted

**Pressure:** Design pressures from 50 PSI - 250 PSI  
Detailed in the AWWA M-11 manual

### INFORMATION REQUIRED FOR ORDERING

- 1 Total quantity
- 2 Steel pipe outside diameter + wall thickness
- 3 Maximum working and test pressure
- 4 Type of tie rods (ss or ms), if required
- 5 Complete harness (used to restrain steel pipe x steel pipe) or half harness (used in a transition application on steel pipe)



# 4800 / 4900

## TRIANGLE RESTRAINT LUG

### APPLICATIONS

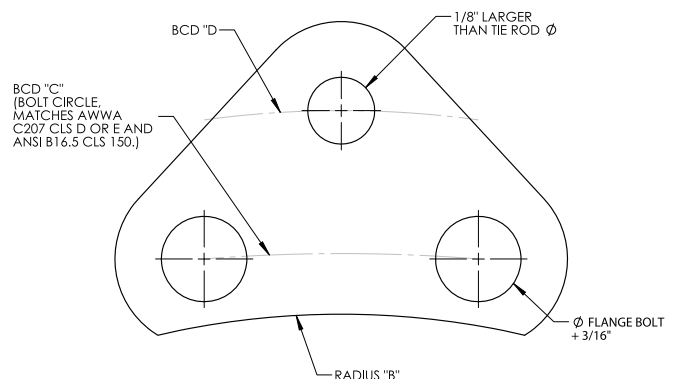
The Robar Restraint Lug is designed to provide clearance over flanges to allow restraint rods to clear the flange and tie back to another location. The radius of the restraint lugs are to allow compatibility with AWWA C207 cls D or E flanges or ANSI B16.1 class 125 and ANSI B16.5 class 150 Flanges.

### MATERIAL SPECIFICATIONS

**Lugs:** ASTM A36 Steel.  
T-304L or T-316L available on request

**Tie Rods:** ASTM A193 Gr B7 (low alloy). B8 (304SS) or B8M (316SS) available on request  
Twice as many tie rods required when using stainless steel rods

**Coating:** 4800-Two coats Enamel or bare  
4900-Fusion Bonded epoxy coated per AWWA C-213



Note: 4 Nuts required per tie rod (double nut configuration).

Tie Rods sold separately, please specify length when ordering.  
Contact Robar for quantity of lugs required for your application.

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