

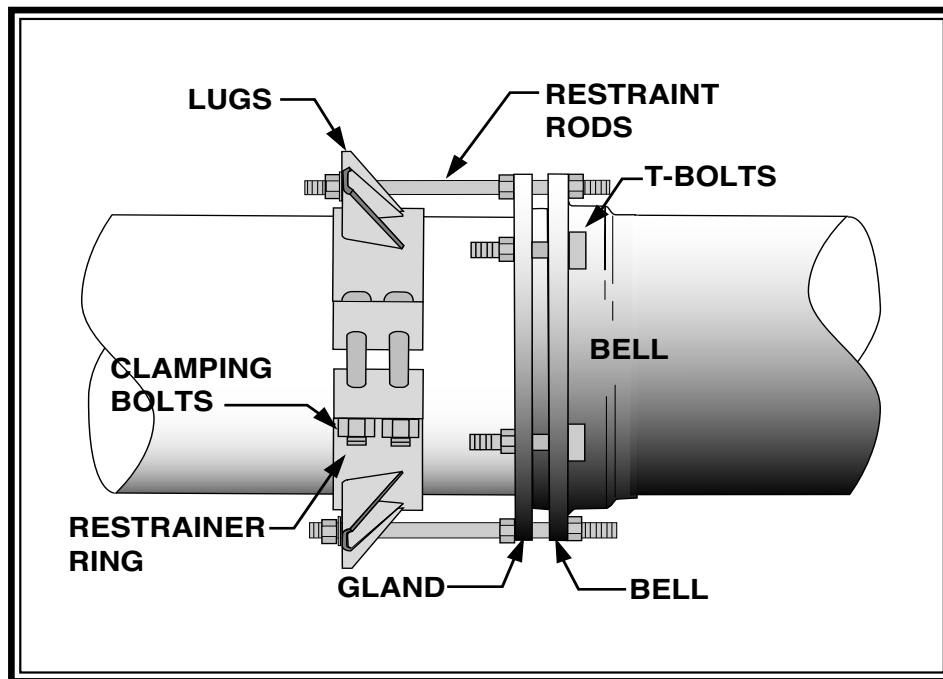


# INSTALLATION INSTRUCTIONS

Read installation instructions first before installing. Check parts to ensure that no damage has occurred during transit and that no parts are missing. Also check the diameter of the pipe and the size marked on the restrainer to ensure you have the proper size.

## Style 470 Restrainer for Mechanical Joint Fittings 14" to 24"

FOR USE ON PVC PIPE ONLY



**Step 1** • Install the mechanical joint fitting onto the pipe end per AWWA C111. Leave the bolts out of the joint.

**Step 2** • Clean pipe surface in the area where the 470 restrainer ring will be placed to remove as much dirt and foreign material as possible. Check diameter of pipe to make sure you are using the correctly sized restrainer.

**Step 3** • Place the restrainer assembly on the pipe. Make sure that the open side of the harness lugs are toward the joint. Loosely install clamping bolts. Restrainer should be 4" to 6" from the joint. Rotate the restrainer to align the harness lugs with the mechanical joint bolt holes.

**Step 4** • Run one nut onto each restraint rod so that there is approximately 5 inches of thread between the nut and the rod end. These nuts will tighten against the gland. Insert a rod through a restrainer lug and into the mechanical joint. Place a nut and washer on the rod end in the restrainer lug. Make sure the nuts are fully engaged on the rod ends. Install the remaining rods in the same manner.

**Step 5** • Make sure the restrainer assembly is perpendicular to the pipe and the restraining rods are parallel to the pipe. Tighten the clamping bolts evenly to 150 ft-lbs. torque.

**Note:** The clamping bolts should be tightened in a manner that keeps the gaps between the restrainer halves equal on both sides.

**Step 6** • Insert T-bolts in the remaining holes in the mechanical joint gland. Tighten all the nuts in the mechanical joint gland to 75-90 ft-lbs. per AWWA C111.

**Step 7** • Tighten nuts against the lugs on the restraining rods hand tight. Finish by tightening these nuts one turn.

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### PRECAUTIONS

1. Check diameter of pipe to make sure you are using the correctly sized restrainer.
2. Clean pipe to remove as much dirt and debris as possible from the surface.
3. Make sure no foreign materials become lodged between the restrainer halves or between the restrainer and pipe.
4. Avoid loose fitting wrenches, or wrenches so short that achieving proper torque is difficult.
5. Keep threads free of foreign material to allow proper tightening.
6. Bolts are often not tightened enough when a torque wrench is not used. Take extra care in this situation to make sure bolts are properly tightened.
7. Overtightening the restraining rod nuts can put excessive stress on the pipe.
8. Pressure test before backfilling.
9. Backfill and compact carefully around pipe and fittings.

### COMMON INSTALLATION ERRORS

1. Not enough torque on clamping bolts.
2. Debris lodged between restrainer halves or between restrainer and pipe.
3. Dirty threads on bolts or nuts.
4. Forgetting to tighten clamping bolts, mechanical joint bolts, and or restraining rod nuts.

### IF RESTRAINER MUST BE REMOVED

1. Make sure pipe is not pressurized. Removing the restrainer could allow the pipe joint to separate.
2. Make sure a restraining system is in place before repressurizing pipe.