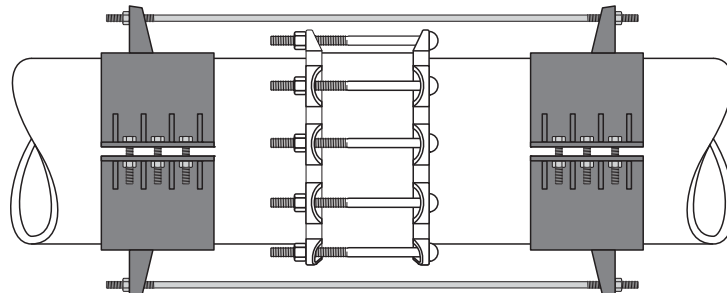


INSTALLATION INSTRUCTIONS

FR STYLE RESTRAINT



1. Clean the pipe surface and make sure it is free from scale and irregularities. Ensure nothing will prevent the inside of the harness from attaining full contact with the pipe.
2. Using the restraint rod as a positioning guide, place the harness on the pipe with the lug side positioned opposite the direction of the joint to be restrained. Position the harness so that a minimum of 1" of the restraint rod will protrude past the lug when installation is complete.

Make sure the lugs from each end of the restraint are properly aligned so that the rods run straight with the pipe.

For steel pipe installations requiring a large number of weld-on lugs, a wrapper plate may be furnished with the lugs attached at the factory. Clamp the wrapper plate onto the pipe. Tighten the bolts as needed to ensure a proper fit for welding. The wrapper plate **MUST** be welded onto the pipe. The clamping bolts are for positioning only and will not provide sufficient restraint.

3. Tighten all clamping bolts evenly to the torque recommended in Table 1. Keep the spacing at the clamping pads equal between the mating harness sections. Alternate between bolts until all bolts reach the recommended torque.
4. Install the restraint rods through the lugs. Install the restraint rod nuts hand tight plus one-half revolution.
5. Recheck clamping bolt torque prior to backfilling and tighten if necessary.

TABLE 1

NOMINAL PIPE SIZE	FR RESTRAINT HARNESS RECOMMENDED BOLT TORQUE (not applicable to weld-on harnesses)
4" – 8"	150 ft-lb.
10" – 12"	200 ft-lb.
14" – 18"	200 – 250 ft-lb.
20" – 24"	225 – 275 ft-lb.
30" – 36"	250 – 300 ft-lb.