

Engineering Bulletin 1-2008

Date: January 2, 2008 – Revised: August 8, 2008

Subject: Installation of Tiona Betts Clamp Ring Style Manhole Assemblies



Before working on a cargo tank, insure that the tank is completely free of vapor and/or product that could present a risk of fire, explosion, asphyxiation or other hazard.

1. Inspect manhole collar and gasket for imperfections and damage. Replace if necessary.
2. Install manhole gasket into the groove of the collar. Insure gasket is flat and fully seated in the channel.
3. If manhole cover has an integral 10" Pressure Relief Valve (10" PRV), open 10" PRV as shown in Figure 1 and leave open until after manhole installation is completed. Opening 10" PRV relieves stresses in the manhole cover so that the clamp ring can more effectively flatten the manhole cover against the mating collar gasket.
4. Place manhole cover on collar gasket and orient as specified below. Further details can be found in TTMA TB 117.

4.1. Typical Cargo Tank - If the manhole has an integral 10" PRV, manhole should be installed so that 10" PRV hinges open toward the rear of the cargo tank.

4.2. Aircraft Refueler - If the manhole has an integral 10" PRV with a self-closing catch and the manhole is to be mounted to a tank built to comply with NFPA 407, the manhole must be installed so the 10" PRV hinges open toward the front of the cargo tank.



Figure 1

5. Center manhole cover on collar gasket.
6. Install clamp ring making sure the bolt lugs on the clamp ring are oriented so that the stamped Betts logo faces up (away from the manhole). See Figure 2. Insure clamp ring is completely engaged over cover and lip of collar.
7. Apply thread lubricant to clamp ring bolt. Install bolt, washer, and nut onto clamp ring. Install bolt, washer, and nut onto clamp ring. Using a 9/16" deep socket on the nut and a 9/16" open-ended wrench on the bolt, tighten the nut until snug while holding bolt stationary.
8. Use a non-sparking hammer to strike the outer circumference of the clamp ring starting at one lug and making approximately six equally spaced blows around the clamp ring to seat ring into position. Retighten nut and repeat hammer blows. Repeat this process until subsequent tapping does not significantly loosen the nut and bolt (approximately 3-4 times).
9. Tighten nut and bolt to a final torque of 20 ft·lbs (27 N·m)



Figure 2



If clamp ring bolt lugs touch each other after tightening, clamp ring will not hold manhole securely. Replace clamp ring if lugs touch after final tightening.

10. Close 10" PRV, if present.
11. Perform any leakage and/or pressure testing required per applicable authority.