

	Form Title:	ENGINEERING BULLETIN	Document #:	EB-01-08 (Form: DEF-003A-1)
			Revision:	3
	Document Title:	<i>Proper Installation of Betts Clamp Ring Style Manhole Assemblies</i>	Date:	Oct. 14, 2024
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Original Released Date: 1/2/08

Description of Bulletin: For proper function and safety of the manhole, the clamp ring must be installed correctly which includes seating the clamp ring with hammer blows to the perimeter of the ring, prior to the final torque of the clamp ring bolt. Read the entire bulletin for details.

Bulletin Instructions: Prior to performing any work on a cargo tank, review all relevant safety precautions. Several known hazards are listed below but any additional hazards must be identified and addressed by the tank manufacturer or owner/operator.

 WARNING		Fall Hazard – Climbing on top of a cargo tank is dangerous and should be avoided without proper safety equipment. Falling can result in death or serious injury.
 WARNING		Pressure Hazard – Cargo tank may contain residual pressure. Failure to safely relieve could result in sudden loss of pressure causing death or serious injury.
 WARNING		Flammable Product – Cargo tank may contain product that could present a risk of fire, explosion, asphyxiation or other hazards resulting in death or serious injury.
 CAUTION		Pinch Point – Clamp ring may be challenging to install. Keep fingers away from the interior diameter of the clamp ring.

- 1) Inspect the sealing lip of the manhole collar for corrosion, damage or flatness issues. Problems with the collar may affect the proper installation of the manhole and result in product failure.
- 2) Install manhole gasket into the retaining channel of the collar. Ensure gasket is flat and fully seated in the channel.
- 3) Place the manhole on the gasket and rotate as needed to line-up the strongback and latch properly with respect to the cargo tank.
- 4) It is very important to release the tension in the manhole by opening the strongback and latch (see figure 1). If this step is not performed, the 10" PRV will not seal properly on the seat. **Keep the 10" PRV open until the clamp ring is fully installed.**
- 5) Make sure the manhole is centered on the collar.
- 6) Install the clamp ring by seating one lug into position while simultaneously flexing the ring open and pushing down on the opposite side. Keep fingers or any area of the palm clear from pinch points while the clamp ring is snapped into position.



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- 7) The Betts logo on the lugs should be visible on the top of the manhole (see figure 2) and the clamp ring should be completely engaged over the cover and lip of the collar along the entire perimeter of the clamp ring.
- 8) Apply thread lubricant to the clamp ring bolt. Use a 9/16" deep socket on the nut and a 9/16" open-ended wrench on the bolt and pre-tighten the nut to approximately 10 ft·lbs (13 N·m).
- 9) Use a non-sparking hammer to strike the outer circumference of the clamp ring (see figure 3) starting at one lug and making approximately six equally spaced blows around the clamp ring to seat the ring into position. Retighten the nut and repeat hammer blows as needed until the hammer blows do not significantly loosen the nut and bolt.

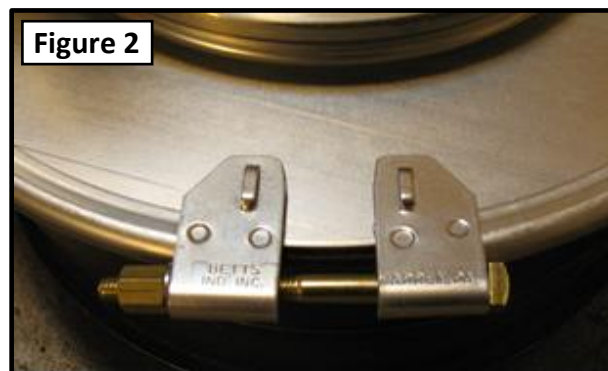


Figure 2

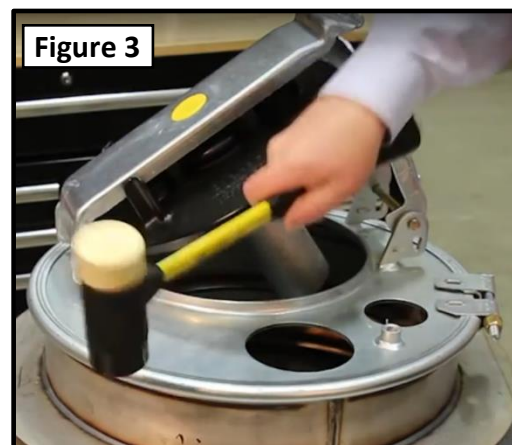


Figure 3

CAUTION

The hammer blows to the perimeter of the clamp ring are imperative to ensure proper manhole installation.

- 10) Tighten nut and bolt to a final torque of 15 to 18 ft·lbs (20 to 24 N·m).
- 11) Verify the ends of the clamp ring have not come together or bottomed out on each other. After installation, a visible gap should remain between the ends of the clamp ring.

CAUTION

If the clamp ring ends touch each other after installation, the manhole may not be properly secured. Clamp ring must be replaced.

- 12) If the clamp ring bottoms out, this indicates damaged or worn components. Replace the gasket and clamp ring. Contact Betts if this issue persists after new components are installed.
- 13) Close the 10" PRV. The latch should close with a noticeable "snap" and fit securely to the strongback.
- 14) Perform any leakage and/or pressure tests required per applicable authority.
- 15) Adjust PRV as needed to meet required set pressure.

For additional details see applicable maintenance manuals and maintenance video # MV-PRV001.