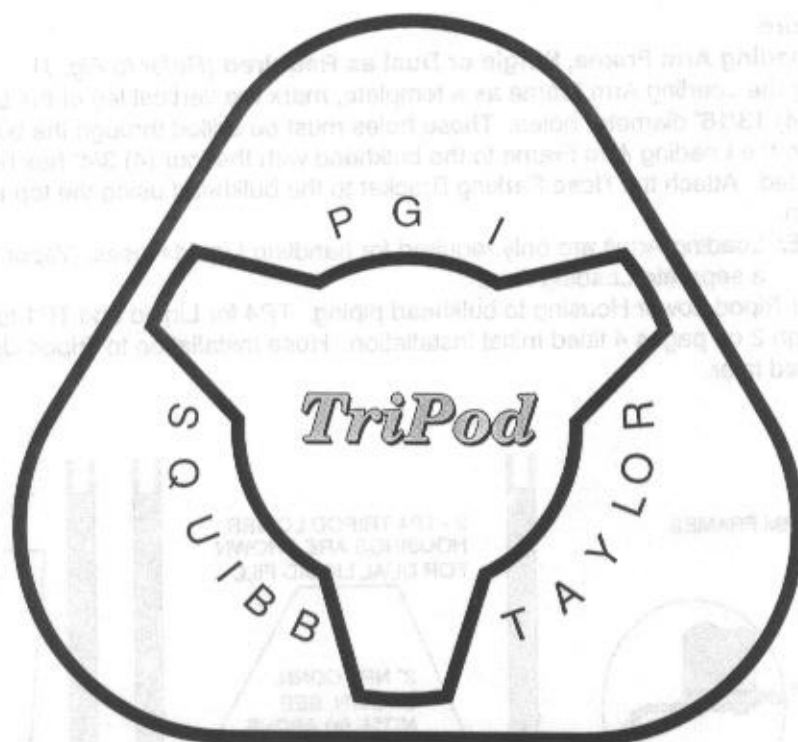


TriPodTM

TP4 & TP1 Safety Coupler

**For Liquid Propane and Anhydrous
Bulkhead Applications**

(TRIPIN LOADING ARM)



INSTALLATION & OPERATING INSTRUCTIONS

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Bulkhead Installation with TriPin™ Loading Arm

The following procedures cover Installation and Operation of bulkheads with Dual or Single Tripin Loading Arm Systems for Transport or Bobtail Load Out Facilities. Before proceeding, safely remove all pressure from system piping to the Bulkhead. Liquid and Vapor system piping should terminate approximately 2" above the top surface of the Bulkhead (Refer to Fig. 1)

System Piping Notes:

- (a). The TP4 Tripod is equipped with a 2"NPT internal pipe thread and a 3" NPT male pipe thread. Depending on the size of the Liquid system piping, either pipe thread may be used for adapting the TP4 to the bulkhead.
- (b). The TP1 Tripod is equipped with 1" NPT male pipe threads. To attach to the Vapor system piping it may be necessary to use a 1-1/4" X 1" pipe reducer to adapt the TP1 to the bulkhead.

Tools Required: 18" and a 24" Pipe Wrench, 1-1/8" Open End Wrench, 15" Adjustable Wrench, 13/16" Drill Bit, and a Portable Electric Drill with extension cord.

New Installation Procedure

(A). Install Loading Arm Frame, Single or Dual as Required (Refer to Fig. 1)

1. Using the Loading Arm Frame as a template, mark the vertical leg of the bulkhead to locate the four (4) 13/16" diameter holes. These holes must be drilled through the bulkhead leg.
2. Attach the Loading Arm Frame to the bulkhead with the four (4) 3/4" hex bolts, nuts, and lock washers provided. Attach the Hose Parking Bracket to the bulkhead using the top two (2) mounting bolts as shown.
NOTE: Loading Arms are only required for handling Liquid Hoses. Vapor Return Hoses do not require a separate Loading Arm.
3. Install Tripod Lower Housing to bulkhead piping. TP4 for Liquid and TP1 for Vapor. Follow Steps 1 through 2 on pages 4 titled Initial Installation. Hose installation to Tripod Upper Housing will be covered later.

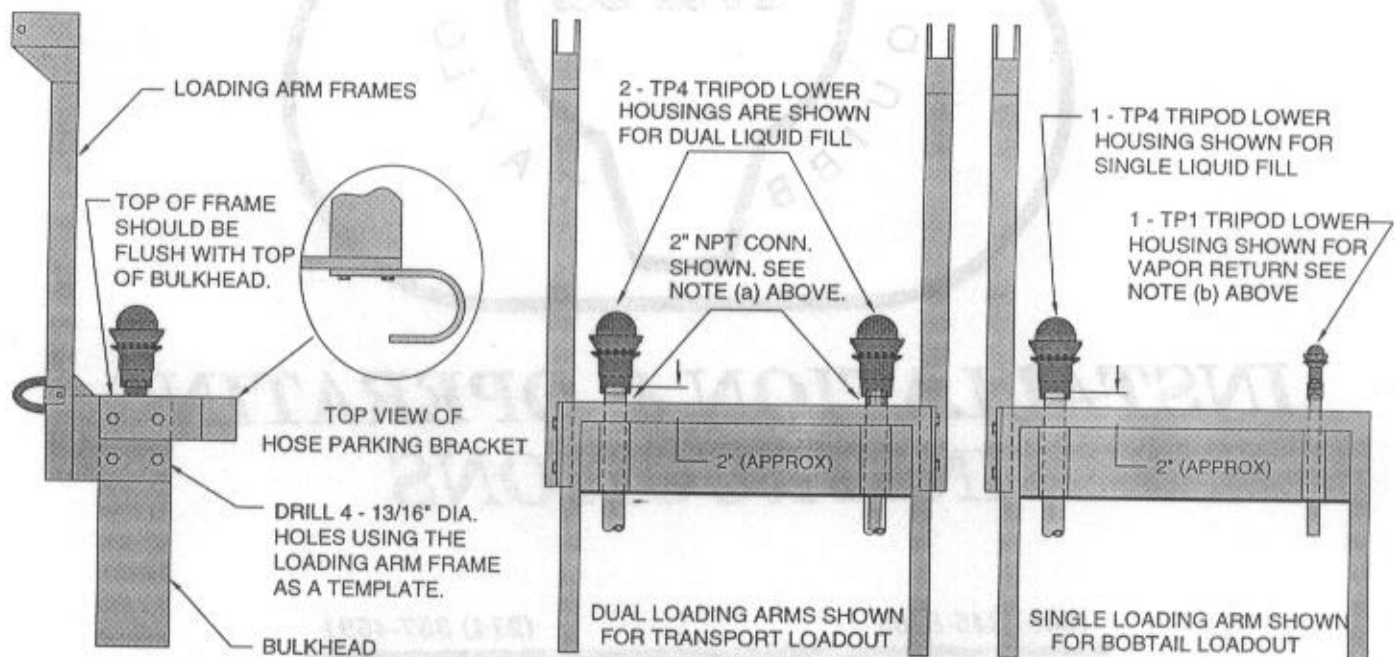


FIG. 1

Bulkhead Installation with TriPin™ Loading Arm

(B). Install Tripin Hose Release to Loading Arm (Refer to Fig. 2)

1. Attach the Tripin Hose Release Assembly to the Loading Arm with four (4) 3/8" bolts and brackets furnished.
2. Attach Hose Support to Tripin Hose Release through Eye Bolt.
3. The Loading Arm Assembly is ready for installation to the Loading Arm Frame.

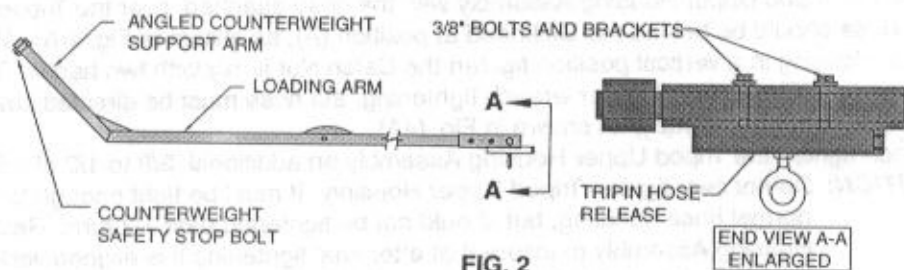


FIG. 2

(C). Install Loading Arm and Counterweight (Refer to Fig. 3)

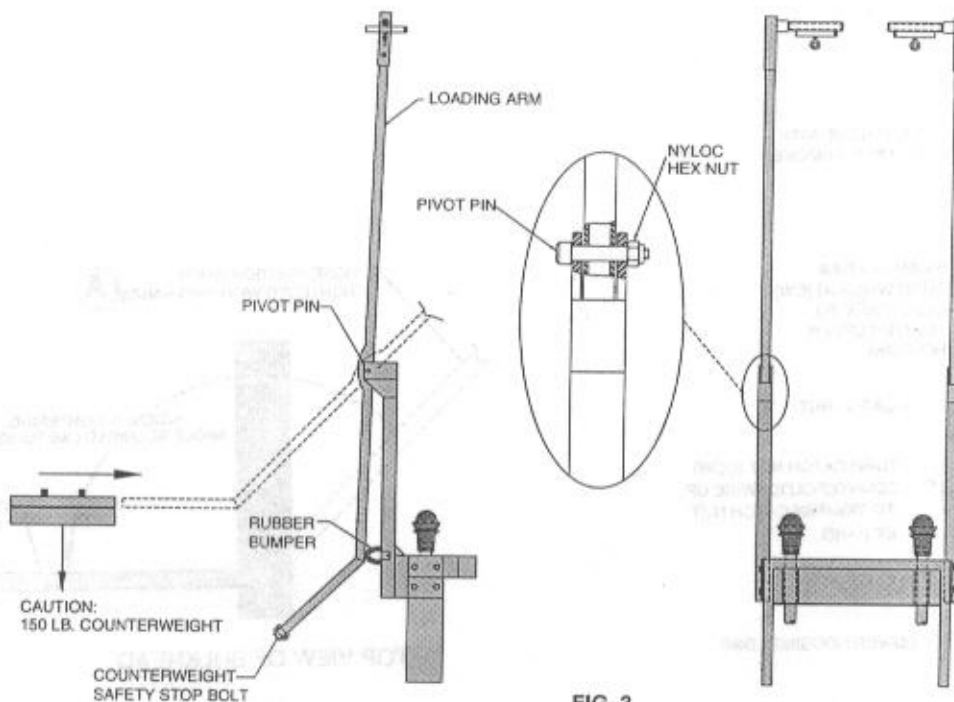


FIG. 3

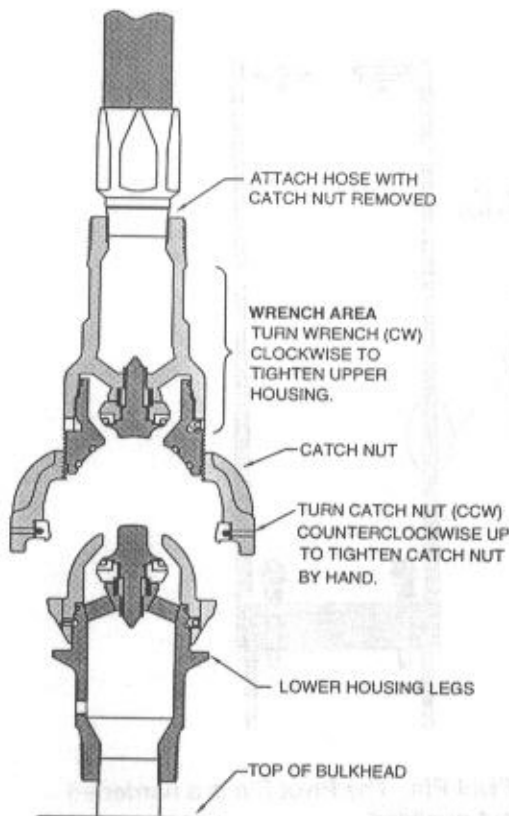
1. Install Loading Arm to Loading Arm Frame, and secure with Pivot Pin. The Pivot Pin is a hardened steel shoulder bolt, and must be secured with the Nyloc hex nut provided.
CAUTION: Do not use a standard hex nut. The Nylon Insert in the nut furnished will lock the threaded connection when tightened, and prevent disassembly of the nut when the Loading Arm is in use.
2. To install the Counterweight, rotate the Loading Arm until the angled part of the Loading Arm is Horizontal. Remove Counterweight Safety Stop Bolt.
CAUTION: The Counterweight as furnished weighs approximately 150 pounds. One person should hold the Loading Arm steady, and a minimum of two people will be required to safely slide the Counterweight onto the Loading Arm. While keeping the Loading Arm in a Horizontal position tighten the two Counterweight locking bolts provided, and secure both lock nuts tight. Reinstall the Counterweight Safety Stop Bolt and tighten nut against Loading Arm.

Bulkhead Installation with TriPin™ Loading Arm

(D). Install Liquid Hose and Tripod Upper Housing (Refer to Fig. 4)

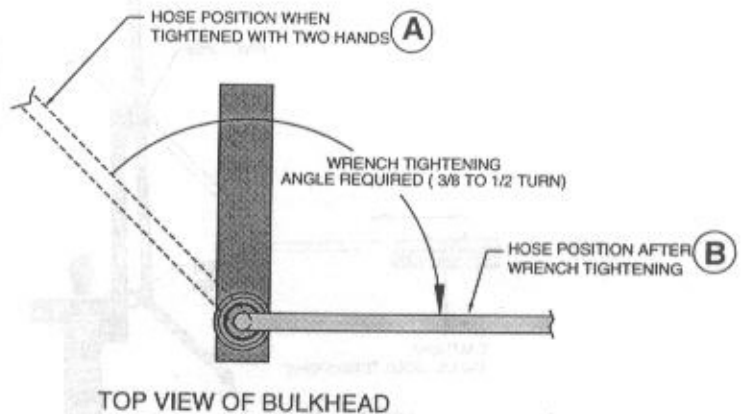
1. To install hose, remove the Catch Nut from the Tripod Upper Housing.
2. Install the hose using the 2" internal thread at the top of the Upper Housing. Reinstall the Catch Nut on the Upper Housing and rotate two full turns clockwise. This will position the Catch Nut for later engagement to the Tripod Lower Housing.
3. Place the Tripod Upper Housing Assembly with the hose attached, over the Tripod Lower Housing Legs. The Hose should be behind the Bulkhead at position (A), as shown in Fig. 4(A). While holding the Upper Housing in a vertical position tighten the Catch Nut firmly with two hands. To tighten the Catch Nut rotate (CCW) upward. After wrench tightening, the hose must be directed straight outward from the bulkhead at position(B), as shown in Fig. 4(A).
4. Wrench tighten the Tripod Upper Housing Assembly an additional $\frac{3}{8}$ to $\frac{1}{2}$ of a full turn.

CAUTION: Do not over tighten Tripod Upper Housing. It must be tight enough to not disengage with normal hose handling, but should not be tightened past $\frac{1}{2}$ turn. Recheck the Upper Housing Assembly to insure that after final tightening it is aligned vertically with the Lower Housing. A flow restriction may result if the Upper and Lower Housings are not oriented vertically. Loosen the Catch Nut and repeat steps 3 and 4 if necessary.



TP4 TRIPOD

FIG. 4

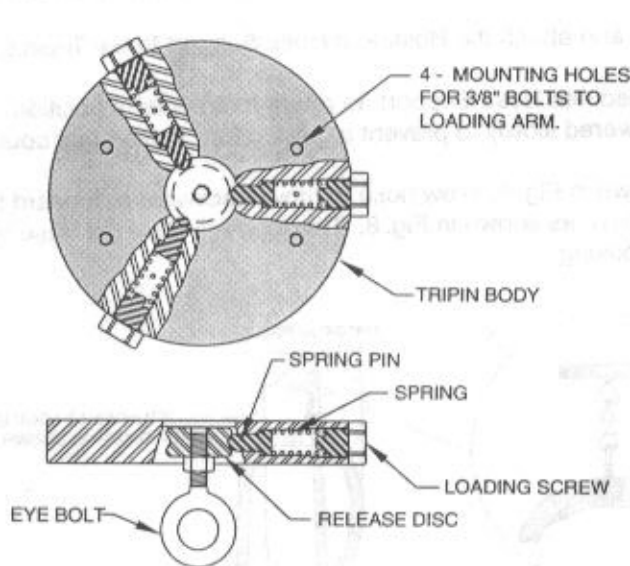


TOP VIEW OF BULKHEAD

FIG. 4(A)

Bulkhead Installation with TriPin™ Loading Arm

NOTE: Read and understand the operation of the Tripin Hose Release Assembly before proceeding to the next step. This procedure will also be followed to reconnect the Hose Support to the Tripin Assembly after a pull away.



TRIPIN HOSE RELEASE ASSEMBLY

FIG. 5

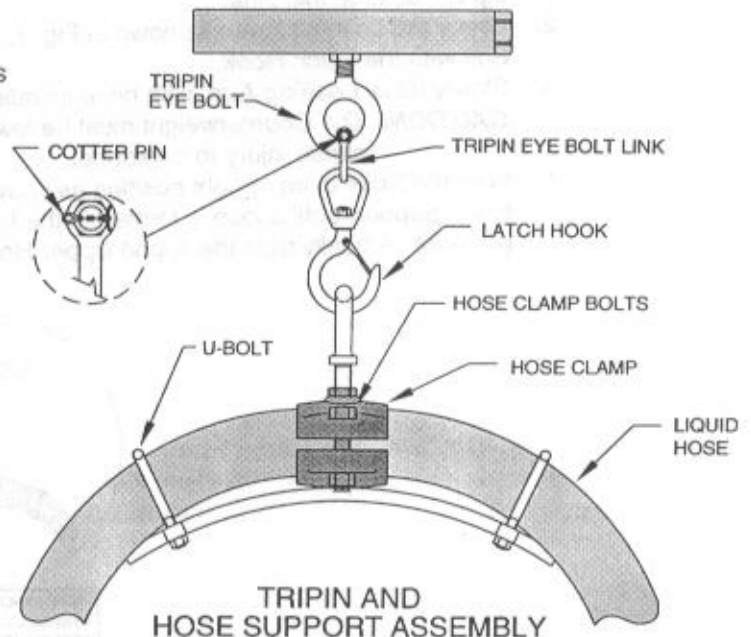


FIG. 6

(E). Operation of the Tripin Hose Release (Refer to Fig. 5)

The Release Disc is held in place by three (3) spring loaded pins. This holding force is accomplished when the three (3) Loading screws are tightened snugly against the Tripin Body. There is no adjustment required. During a pull away, the Release Disc will release in any direction of pull by the Hose and Hose Support (Fig. 6). One or more of the spring loaded Pins will be retracted back into the body as the pull away force is applied.

NOTE: The weight of the Hose and Valves, plus normal handling of the Hose will not cause the Release Disc to disconnect.

Connecting the Release Disc to the Tripin Hose Release (Refer to Fig. 5)

1. Unscrew one (1) Loading Screw only, until the screw is free turning by hand. This will relax the Spring force against the Spring Pin and allow the Spring Pin to be retracted back into the Tripin Body.
2. Place the Release Disc groove in contact with the two (2) remaining Spring Pins, and retighten the one (1) Loading Screw with a wrench until it is snug against the Tripin Body.

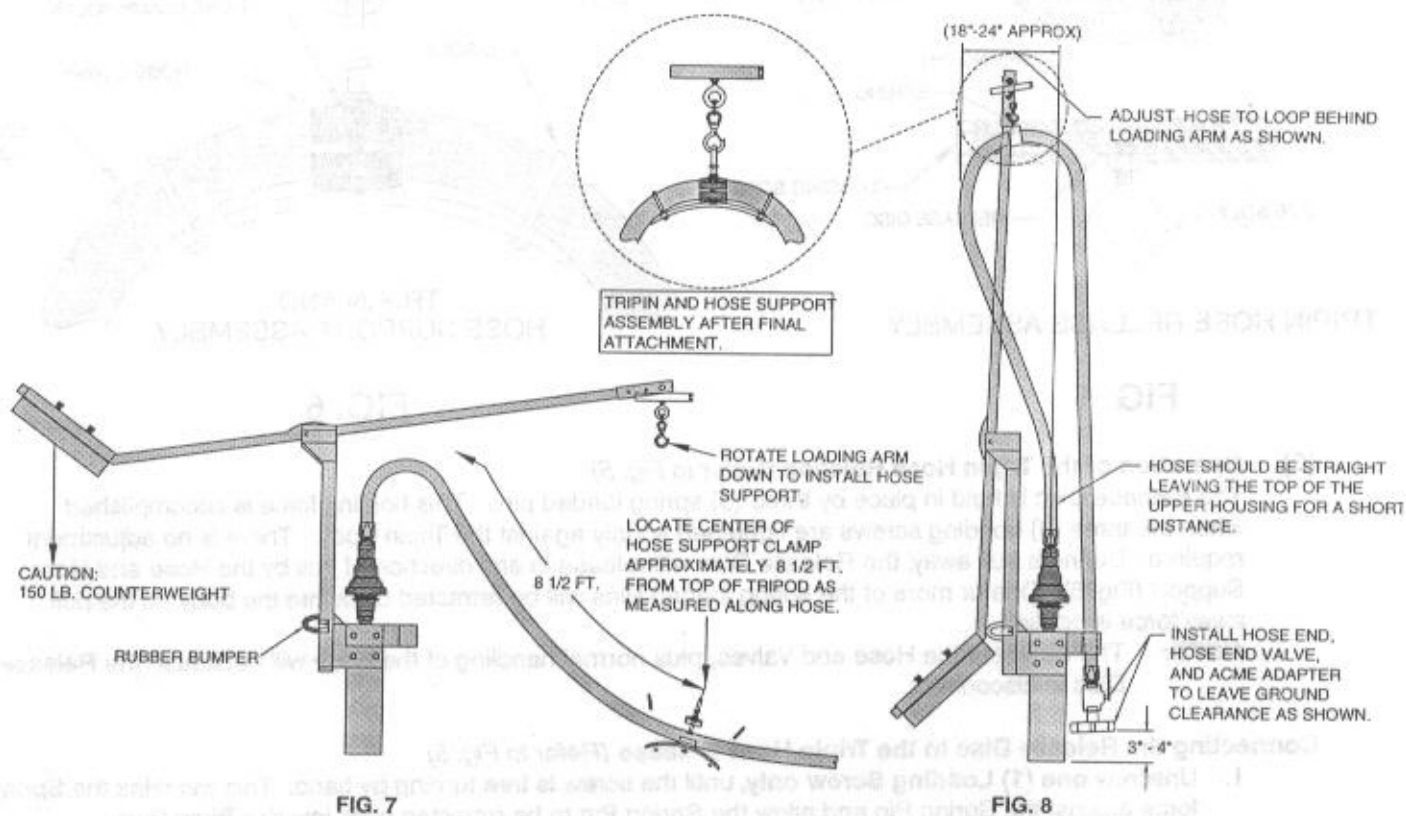
Install Latch Hook to Tripin Hose Release (Refer to Fig. 6)

1. Remove the nut and cotter pin from the Tripin Eye Bolt Link. Insert the "U" shaped Link through the Latch Hook and Install the Tripin Eye Bolt Link through the Eye Bolt attached to the Release Disc as shown in Fig. 6. Reinstall the nut and cotter pin to insure the nut will remain in place. This assembly will always remain together.

Bulkhead Installation with TriPin™ Loading Arm

(F). Install Hose to Hose Support (Refer to Fig. 7)

1. With the Hose stretched out, measure approximately 8 1/2 feet from the top of the Tripod. Locate the center of the Hose Clamp at this point. Install the Hose Clamp and U-Bolts around the Hose but do not tighten bolts at this time.
2. Lower the Loading Arm as shown in Fig. 7, and attach the Hose and Hose Support to the Tripin Eye Bolt with the Latch Hook.
3. Slowly allow Loading Arm, with hose installed into Hose Support, to return to an upright position.
CAUTION: The Counterweight must be lowered slowly to prevent a quick return motion that could cause injury to personnel.
4. With the Hose in an upright position as shown in Fig. 8, allow hose to move backward or forward through Hose Support until a loop is formed in the hose as shown in Fig. 8. This loop will allow the hose to protrude vertically from the Tripod Upper Housing.



5. After final Hose adjustments, lower the Loading Arm, and secure the Hose Clamp bolts and U-Bolts against Hose.
NOTE: Do not over tighten such that the hose is pinched or deformed.
6. Install the Hose End, Hose End Valve, and Acme Adapter to leave approximately 3" to 4" ground clearance.
NOTE: Approximately 18 1/2 feet of 2" Hose is required for proper assembly.
7. Holding the Hose End Valve and Acme Adapter walk away from the bulkhead as if moving to the filling position to insure the Hose and Loading Arm operate freely. Allow the Loading Arm to slowly return to the upright position, and place Hose in the Parking Bracket. To adjust the amount of pull required while walking the Hose to the normal filling position, adjust the Counterweight inward or outward to decrease or increase the effect of the Counterweight.
NOTE: After the Hose is full of liquid product, the Loading Arm may rotate slightly away from the Rubber Bumper.

Bulkhead Installation with TriPin™ Loading Arm

(G). Installation of Vapor Hose for Bobtail Bulkhead Applications (See Fig. 9)

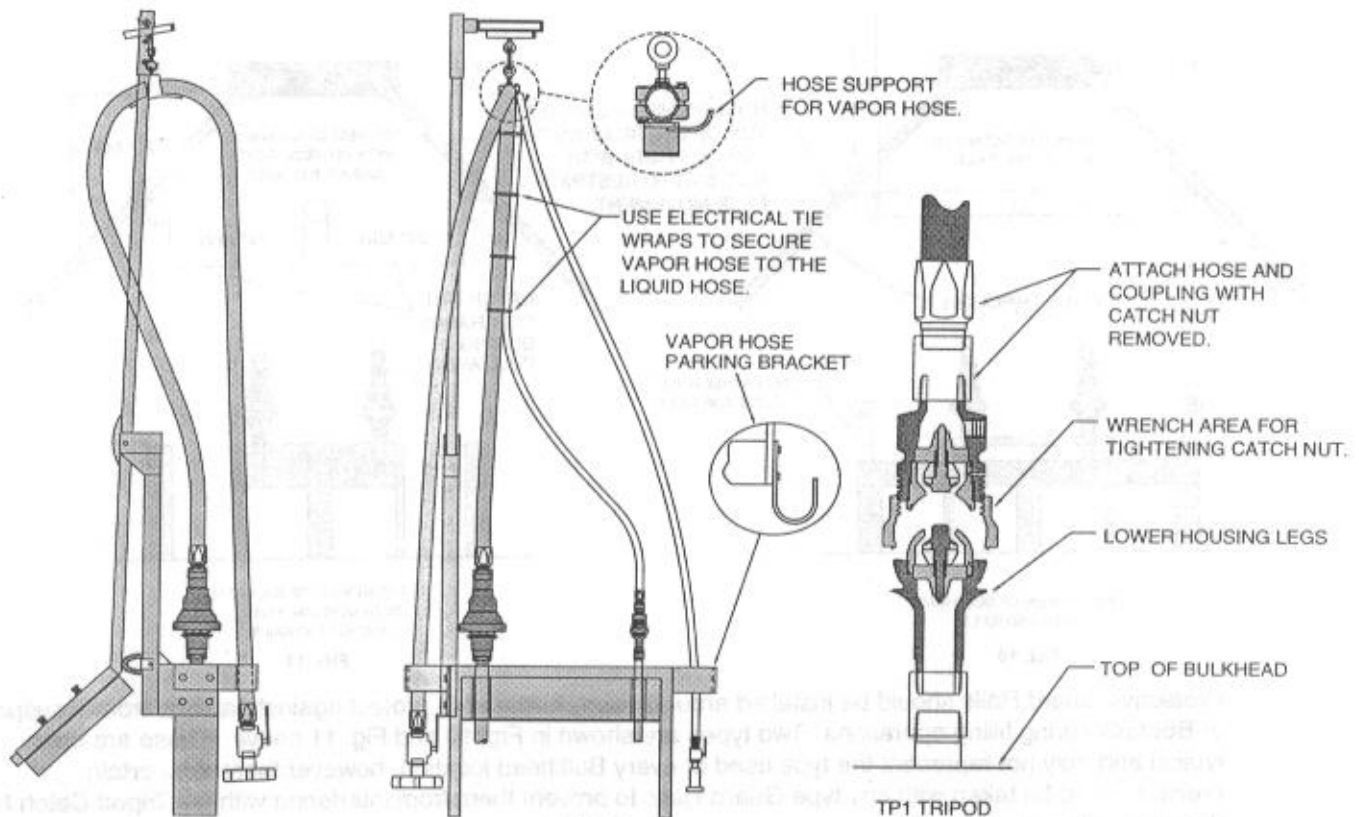
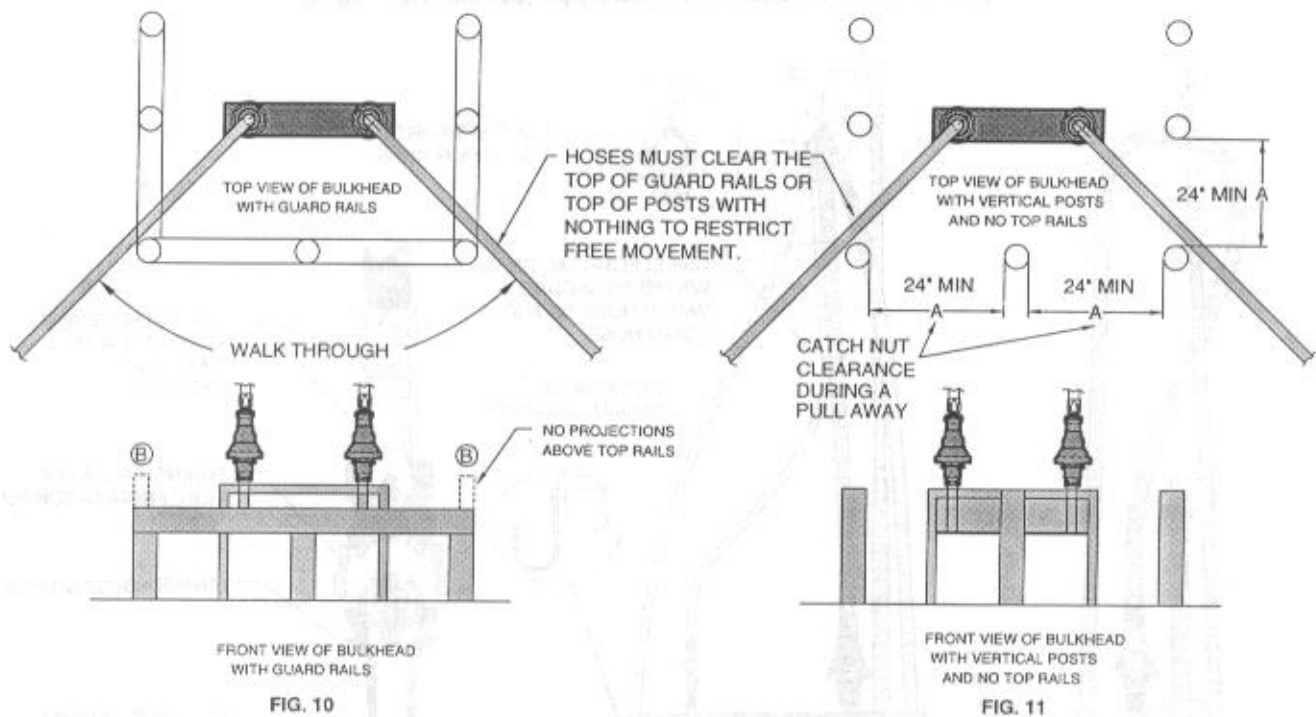


FIG. 9

1. Install the Vapor Hose and coupling with the Catch Nut removed. The Upper Housing is furnished with a 1" NPT male pipe thread. If a 1/14" vapor hose is used a 1" X 1 1/4" reducer bushing will be required.
2. Reinstall the Catch Nut on the Upper Housing and rotate two full turns clockwise. This will position the Catch Nut for later engagement to the Tripod Lower Housing.
3. Place the Tripod Upper Housing Assembly with the hose attached over the Tripod Lower Housing Legs.
NOTE: It is not necessary to position the hose behind the Bulkhead as with the TP4 Liquid Hose. While holding the Upper Housing in a vertical position tighten the Catch Nut firmly with two hands. To tighten the Catch Nut rotate (CCW) upward. To wrench tighten the Catch Nut, place the wrench on the wrench surface provided on the Catch Nut and rotate and additional 1/8 turn. **Do not over tighten.**
4. Attach Vapor Hose to the Liquid, as shown in Fig. 9, and secure with electrical tie wraps along the Hose until the Hoses separate for installation in their separate Hose supports. The Vapor Hose only lays into the curved support provided on the side of the Hose Support Bracket.
5. Install the Vapor Hose Support Bracket to the side of the Bulkhead. Two (2) 13/16" diameter holes must be drilled in the leg of the Bulkhead. Two (2) 3/4" bolts are provided to complete the mounting.
6. To insure the Vapor Hose will operate smoothly, remove both the Liquid and Vapor Hoses from their Parking Brackets and walk away from the Bulkhead as if moving to the filling position. If necessary remove one or more tie wraps to insure the Vapor Hose will move smoothly with the Liquid Hose.
7. Install the Vapor Hose End, Hose End Valve, and Acme Adapter. With the Vapor Hose in its Parking Bracket, and the Loading Arm returned to the upright position there should be 3" to 4" ground clearance below the Acme Adapter.
8. With the Hose End Valve in the closed position, pressure the system and check all threaded connections and Tripod interfaces for leaks.
9. To test, a pull away by hand may be desirable, to insure all equipment is operating properly.

Bulkhead Installation with TriPin™ Loading Arm

(H). Final Check for Hose Obstructions (Refer to Figs. 10 and 11)



Protective Guard Rails should be installed around each Bulkhead to protect against damage from Transports or Bobtails during filling operations. Two types are shown in Fig. 10 and Fig. 11 above. These are only typical and may not represent the type used at every Bulkhead location, however there are certain precautions to be taken with any type Guard Rails to prevent them from interfering with the Tripod Catch Nut during a pull away.

PRECAUTIONS TO BE TAKEN

1. Remove the Hoses from their parked position and walk outward from the Bulkhead in the same manner that a filling operation will take place. Walk in an arc as shown in Figs. 10 and 11 above and check for any type of Hose obstruction that could interfere with the Hose or Catch Nut as it releases and starts to follow the path of the Load Out Vehicle.
2. Remove any vertical projections from the top of the guard rail, such as is shown at (B) in Fig. 10. The top of the guard rail must be continuous and smooth without any vertical obstruction.
3. If Vertical Posts without top guard rails are used, as is shown in Fig. 11, the distance between Posts must be no less than 24", to provide enough spacing for the Catch Nut to pass between them without becoming wedged. See spacing shown at (A), in Fig. 11. Caution: The Catch Nut will become airborne for a short distance when disconnected from the Lower Housing during a pull away. A clear path for it to travel must be available without any obstructions that could cause it to become entangled. Should the Hose or the Catch Nut become entangled, the Hose could be pulled apart, which will leave the Transport or Bobtail unprotected from a dangerous release of product.
4. Make sure no piping, instrument tubing, light fixtures, or electrical conduit will interfere with Hose movement in any direction.

(J). Safety Recommendation

1. After installation it is recommended that a manual pull away be conducted to insure no obstructions have been overlooked.
2. To insure all equipment is operating properly it is recommended that a manual pull away be conducted once a year.