

1. INTRODUCTION

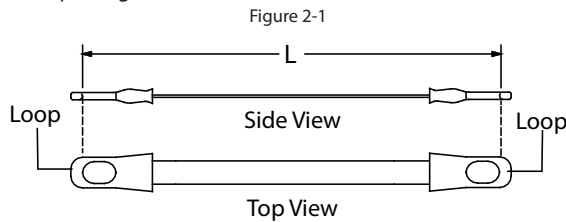
- 1.1. The standard hold down strap anchor system provides a method to attach and tighten the tank anchor strap to concrete deadmen or anchor pad using two turnbuckles per strap. This is the most widely used anchoring system and designed exclusively for underground fiberglass tanks manufactured by CSI.
- 1.2. Follow the Supplemental Instructions as well as all instructions covered in the most recent edition of Containment Solutions, Inc. (CSI) Tank Installation Instructions (Pub. No. INST 6001)
- 1.3. The anchor system components are typically shipped on the same trailer as the tank. Each tank anchor location requires one fiberglass strap and two galvanized turnbuckles.

2. SPECIFICATIONS

2.1. Working Loads

- 2.1.1. For any anchoring system, the tank strap and all hardware should be designed for appropriate load ratings. All CSI anchoring components meet the required load ratings.
- 2.1.2. The installing contractor is responsible for providing hardware and anchor points of sufficient size and strength. Any components not purchased from CSI must meet all the requirements found in INST 6001.

2.2. Strap Design:



2.3. Strap Dimensions:

Table 2-2

Tank Diameter	Strap Length
4'	100" (2546mm)
6'	141" (3185mm)
8'	176" (4464mm)
10'	238" (6045mm)
12'	271" (6877mm)

2.4. Jaw by Jaw Turnbuckles:

Figure 2-3

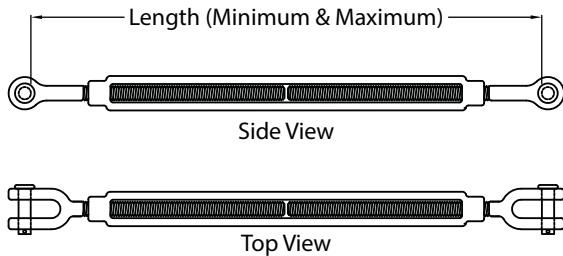


Table 2-4

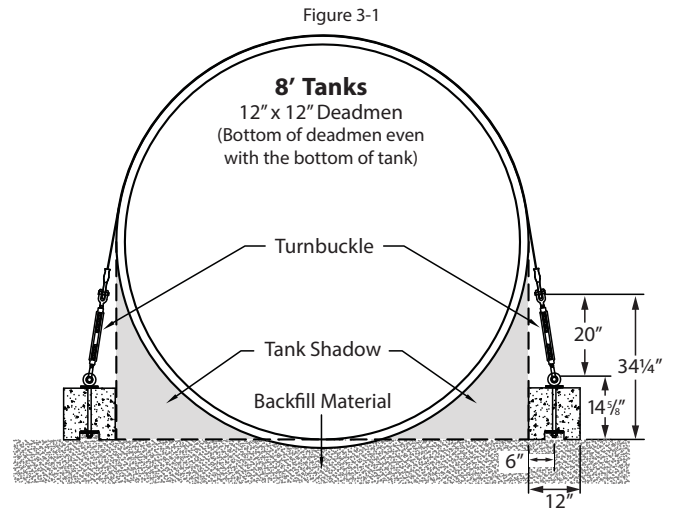
Model #	Diameter	Length		For Use With
		Min	Max	
TB 3406	3/4"	14 1/4"	20 1/2"	4' & 6' tanks
TB 3409	3/4"	17 1/4"	26 1/4"	8' tanks
TB 3412	3/4"	20 1/4"	32 1/4"	---
TB 3418	3/4"	26 1/4"	44 1/4"	10' & 12' tanks

3. ANCHOR POINT POSITION

- 3.1. Proper positioning of the anchor point is critical. If the anchor point is incorrectly positioned, the standard hold down strap may not reach over the tank from one anchor point to the other, or the system may be too long for the take-up length of the turnbuckles.
- 3.2. The standard hold down strap assembly is designed according to tank diameter and specific placement of deadmen anchors, relative to tank bottom and position of tank shadow. These instructions are only applicable when positioning deadmen anchors at the elevations illustrated in this section.

3.2.1. 8' Tanks (12" x 12" Deadmen)

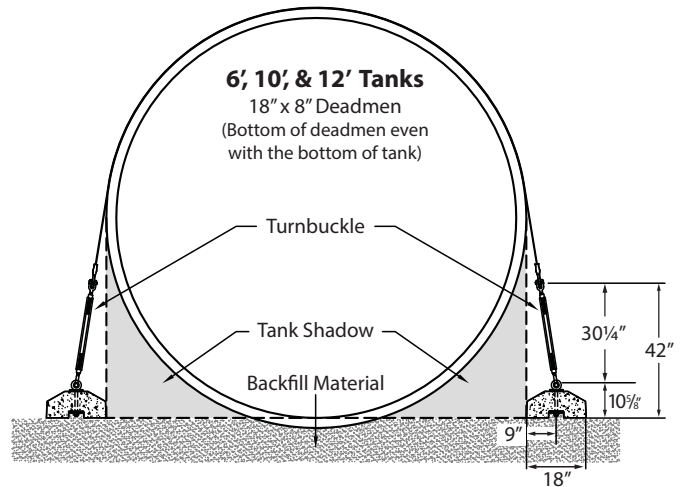
- 3.2.1.1. The anchor point on 12" x 12" CSI supplied deadmen is 14 5/8" above the bottom of the deadman and will be at the correct position if the deadman is installed with the bottom of the deadman level with the bottom of the tank (see Figure 3-1).



3.2.2. 6', 10', 12' Tanks (18" x 8" Low Profile (LP) Deadmen)

- 3.2.2.1. The anchor point on 18" x 8" CSI supplied deadmen is 10 5/8" above the bottom of the deadman and will be at the correct position if the deadman is installed with the bottom of the deadman level with the bottom of the tank (see Figure 3-2).

Figure 3-2

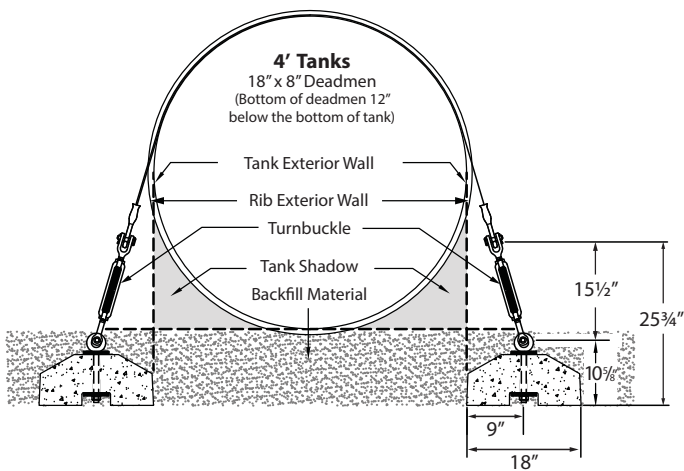


3.2.3. 4' Tanks (18" x 8" Low Profile (LP) Deadmen)

3.2.3.1. For 4' diameter tank installations, the bottom of the deadmen are placed 12" below the bottom of the tank. The anchor point can be no more than 2" above the bottom of the tank.

3.2.3.2. The anchor point on 18" x 8" CSI supplied deadman is 10 $\frac{3}{4}$ " above the bottom of the deadman and will be at the correct position if the deadman is installed with the bottom of the deadman 12" below the bottom of the tank (see Figure 3-3).

Figure 3-3



4. ANCHOR POINT DESIGN

4.1. All CSI deadmen have properly designed anchor points. If using any other mechanical anchoring other than CSI supplied deadmen, the anchor points must conform to CSI's design specifications. Refer to INST 6001 for anchor point design specifications.

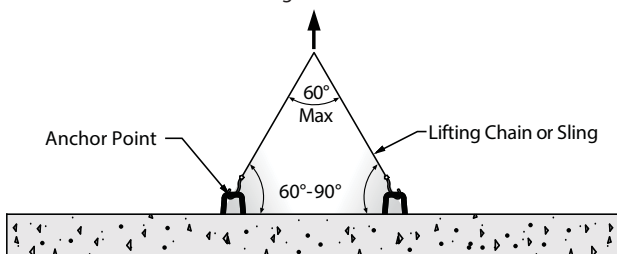
5. INSTALLATION

⚠ WARNING

Use only the anchor points when lifting and positioning CSI deadmen. Failure to do so could result in death or serious injury.

- 5.1. Follow all instructions in Containment Solutions Pub. No INST 6001.
- 5.2. Insure lifting equipment is rated to handle the load before lifting. Refer to INST 6001.
- 5.3. Lift deadman using a minimum of two equally spaced anchor points.
- 5.4. The angle from the deadmen to the lifting equipment should always be between 60° and 90° (see Figure 5-1).

Figure 5-1



- 5.5. Anchor points must be aligned ($\pm 1"$) with tank anchor ribs designated with $\blacktriangleright \blacktriangleleft$ stenciled to the tank wall.
- 5.6. Use only 1 strap per anchor point.
- 5.7. Deadmen anchors must be placed in the excavation parallel to the tank and positioned so the inside edges of the deadmen are aligned with the tank shadow.
- 5.8. Place deadman or anchor pad in the excavation so the anchor point is 12" to 14" above the tank bottom for 6', 8', 10' and 12' tanks (or 0" to 2" above the tank bottom for 4' tanks).
- 5.9. Position personnel on both sides of tank when ready to anchor the tank. Follow all applicable safety requirements.
- 5.10. Place or position the strap over the tank so personnel on both sides of the tank can reach the strap ends. Make sure the strap is centered on a designated anchor rib.
- 5.11. Attach one loop end of strap to a turnbuckle, then attach turnbuckle to anchor point in the deadman.
- 5.12. On the opposite side of the tank, attach loop end of strap to a turnbuckle, then attach turnbuckle to anchor point in the deadman.
- 5.13. Do not use straps between ribs except on 4' tanks.
- 5.14. Repeat strap assembly for remaining strap locations.
- 5.15. After installation there must be at least 1" of clearance between any metal on the anchoring hardware, including the strap ends, and the tank. Metal should never be in contact with the tank.
- 5.16. All anchor straps should be uniformly tightened with turnbuckles. Straps should be snug, but not cause tank deflection.
- 5.17. Measure tank deflection by measuring tank diameter before and after snugging straps. The tank diameter should not change as a result of tightening the straps. If the tank diameter changes, loosen the straps.
- 5.18. After hardware is installed, all exposed metal on the anchoring system should be coated or galvanized to protect against corrosion.

