

INSTALLATION & SPECIFICATION

1.0 GENERAL DESCRIPTION

Containment Solutions, Inc. (CSI) can provide pre-fabricated deadmen anchors and turnbuckles for standard models of single-wall, double-wall and triple-wall underground fiberglass storage tanks. Deadmen anchors provide a means to prevent installed fiberglass tanks from floating out of the ground when the tank installation is subject to ground water around the tank. Deadmen anchors, when used with CSI fiberglass hold down straps and other CSI or contractor supplied hardware and installed according to CSI installation instructions, prevent tank flotation and cost less than a concrete pad under the tank.

The CSI deadmen and turnbuckles can be shipped with most 4', 6', 8', and 10' diameter tanks at no additional charge. Deadmen anchors shipped separately will be shipped with freight costs extra. Please consult your CSI representative for details.

These instructions supplement the anchoring section of CSI's Installation Instructions for fiberglass reinforced plastic underground storage tanks (pub. no. INST 6001).

1.1 FEATURES

Deadmen are available in various lengths and are designed with adjustable anchor points.

CSI supplied deadmen allow the connection of the fiberglass hold down strap end to the deadman anchor point using wire rope, turnbuckles, or other mechanical connections. The deadmen are manufactured with slots that allow the anchor points to be easily moved along the deadmen for alignment with tank anchor points during installation.

The deadmen type, lengths, and the number of anchor points are dependent upon the tank diameter, model, and capacity. **Deadmen are not available for all compartment tank sizes.** See the Deadmen Selection Guide to select the proper deadman for a particular tank size.

1.2 SPECIFICATIONS:

Size:

12" wide x 12" high x Length (L)

18" wide x 8" high x Length (L)

Length:

4', 6', & 8' diameter tank – 12', 16', 18', 20' lengths

10' diameter tank – 14' (actual 14'6"), 18', 22' (actual 21' 6") lengths

Connections:

Deadmen anchors provided with galvanized hardware for anchor points.

Prepositioned Slots:

Slots are positioned to accommodate standard strap locations.

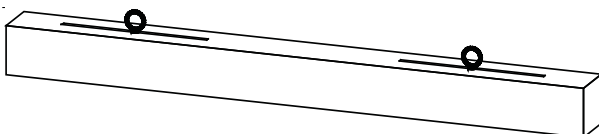
Nominal Weight:

150 lbs per linear foot (12" x 12")

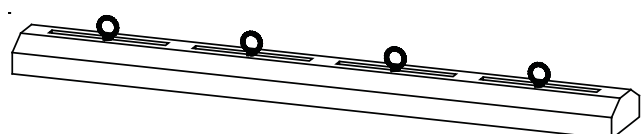
120 lbs per linear foot (18" x 8")

Weight by Anchor Length:

DEADMAN ANCHORS		
Length (ft)		Weight (lbs.)
12" x 12"	18" x 8"	
12		1655
	14	1686
16		2250
18		2550
	18	2100
20		2850
	22	2500



12" x 12" Deadman Anchor



18" x 8" Deadman Anchor

1.3 OPTIONAL TURNBUCKLE ASSEMBLY

CSI offers a galvanized steel turnbuckle assembly as an optional accessory to directly connect the fiberglass hold down strap to the anchor points in the deadmen for 6', 8' and 10' diameter tanks. The turnbuckle attaches directly between the fiberglass hold down strap and the deadman anchor point.

CSI supplied turnbuckle assemblies are a pre-engineered solution to anchoring hardware selection problems and avoid field problems and delays associated with improperly sized and misfitting hardware. With the correct deadmen position and turnbuckle size, no other wire rope or clamps are necessary to anchor the tank. When ordering the turnbuckles to be used with CSI deadmen the position of the deadmen relative to the tank bottom must be specified in order to select the correct turnbuckle size.

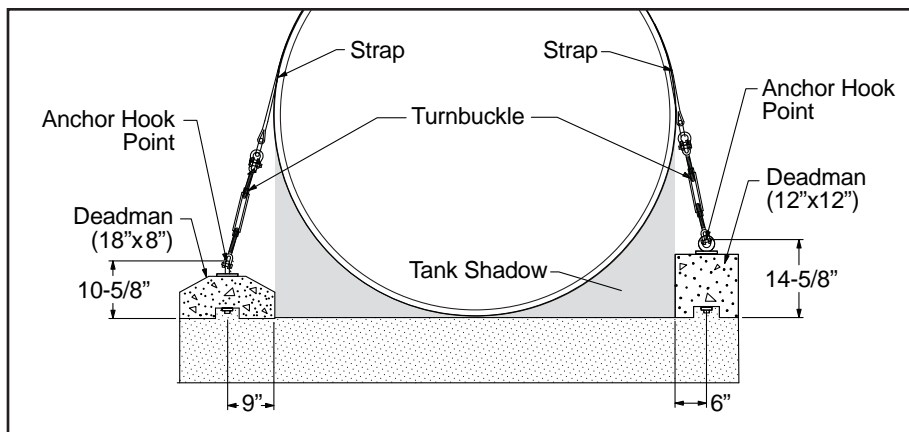
1.4 LIMITATIONS

This specification is limited to only those 4', 6', 8', and 10' diameter tanks shown in the deadmen selection guide. Minimum tank burial depths must comply with the burial depth recommendations in Containment Solutions "Installation Instructions for FRP Underground Storage Tanks (Pub. No. INST. 6001).

TURNBUCKLE USED WHEN THE BOTTOM OF DEADMAN IS EVEN WITH BOTTOM OF TANK (4 & 6 FT. N/A)

INSTALLED TURNBUCKLE ADJUSTABILITY

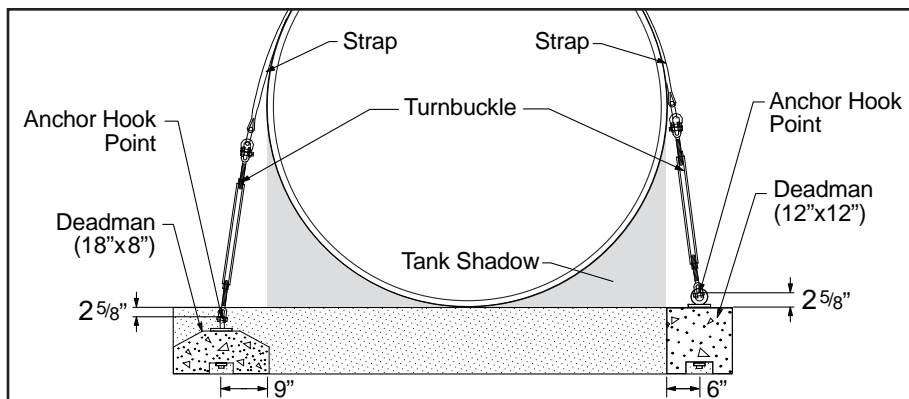
<u>TANK DIAMETER</u>	<u>MODEL</u>	<u>LET OUT</u>	<u>TAKE UP</u>
8 FT.	TB 3409	3.86"	4.51"
10 FT.	TB 3418	15.5"	1.7"



TURNBUCKLE USED WHEN BOTTOM OF DEADMAN IS 12" WITH BOTTOM OF TANK (4 FT. N/A)

INSTALLED TURNBUCKLE ADJUSTABILITY

<u>TANK DIAMETER</u>	<u>MODEL</u>	<u>LET OUT</u>	<u>TAKE UP</u>
6 FT.	TB 3412	6.8"	4.45"
8 FT.	TB 3418	9.98"	7.24"
10 FT.	TB 3418	3.66"	13.56"



1.5 DEADMAN SELECTION GUIDE

SINGLE, DOUBLE, AND TRIPLE WALL FIBERGLASS TANKS

DEADMAN ANCHORS		OPTIONAL TURNBUCKLES REQUIRED	DEADMEN WITH GALVANIZED ANCHOR POINTS	
NOMINAL TANK DIAMETER	NOMINAL TANK CAPACITY		NUMBER & SIZE DEADMEN REQUIRED	LENGTH (FEET)
10	40,000	20	8	18
10	35,000	16	2 - 18' and 4 - 22'	18 and 22
10	30,000	16	6	18
10	25,000	16	4 - 14' and 2 - 18'	14 and 18
10	20,000	12	4	18
10	15,000	8	4	14
10	12,000	8	2	22
10	10,000	6	2	18
8	15,000	12	2 - 12' and 4 - 16'	12 and 16
8	12,000	8	4	18
8	10,000	8	4	16
8	8,000	8	4	12
8	6,000	4	2	18
8	5,000	4	2	16
8	4,000	4	2	12
6	6,000	8	4	16
6	5,000	8	4	12
6	4,000	4	2	20
6	3,000	4	2	16
6	2,500	4	2	16
6	2,000	4	2	12
4	550, 600, 1,000	4	2	12

2.0 INSTALLATION

A. Deadmen with Anchor Points using Containment Solutions Turnbuckles (6', 8' and 10' diameter tanks only)

When using CSI supplied turnbuckles, proper positioning of the deadmen is necessary to insure proper performance and to avoid the need for supplemental wire rope and clamps. CSI supplied turnbuckle assemblies **will not connect the strap to the anchor hook point if positioned incorrectly.**

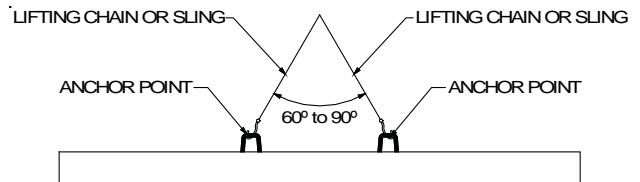
- Position deadmen beside the tank so the tank designated anchor locations align with the deadmen anchor points +/- 1".
- Use only 1 strap per anchor point.
- Deadmen must be positioned so the edges of the deadmen are aligned with the tank shadow.
- Place CSI deadmen with the bottom of deadmen at the same level as the bottom of the tank **or** with the bottom of the deadmen 12" below the bottom of the tank.

To use CSI turnbuckles with contractor supplied deadmen or anchor pads, the anchor hook point must be located in the same position as the CSI deadmen anchor hook points (see turnbuckle section).

B. Offloading Deadmen Anchors

WARNING

Only use anchor points supplied by CSI when lifting and positioning deadmen. Insure lifting equipment is rated to handle the load before lifting. Lift deadman using a minimum of two equally spaced anchor points.





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