Fitting Standards

Rev: 01.2024

Fiberglass Tanks
Process Vessels
Scrubbers

Composites USA

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Fiberglass Tanks & Process Vessels Standards

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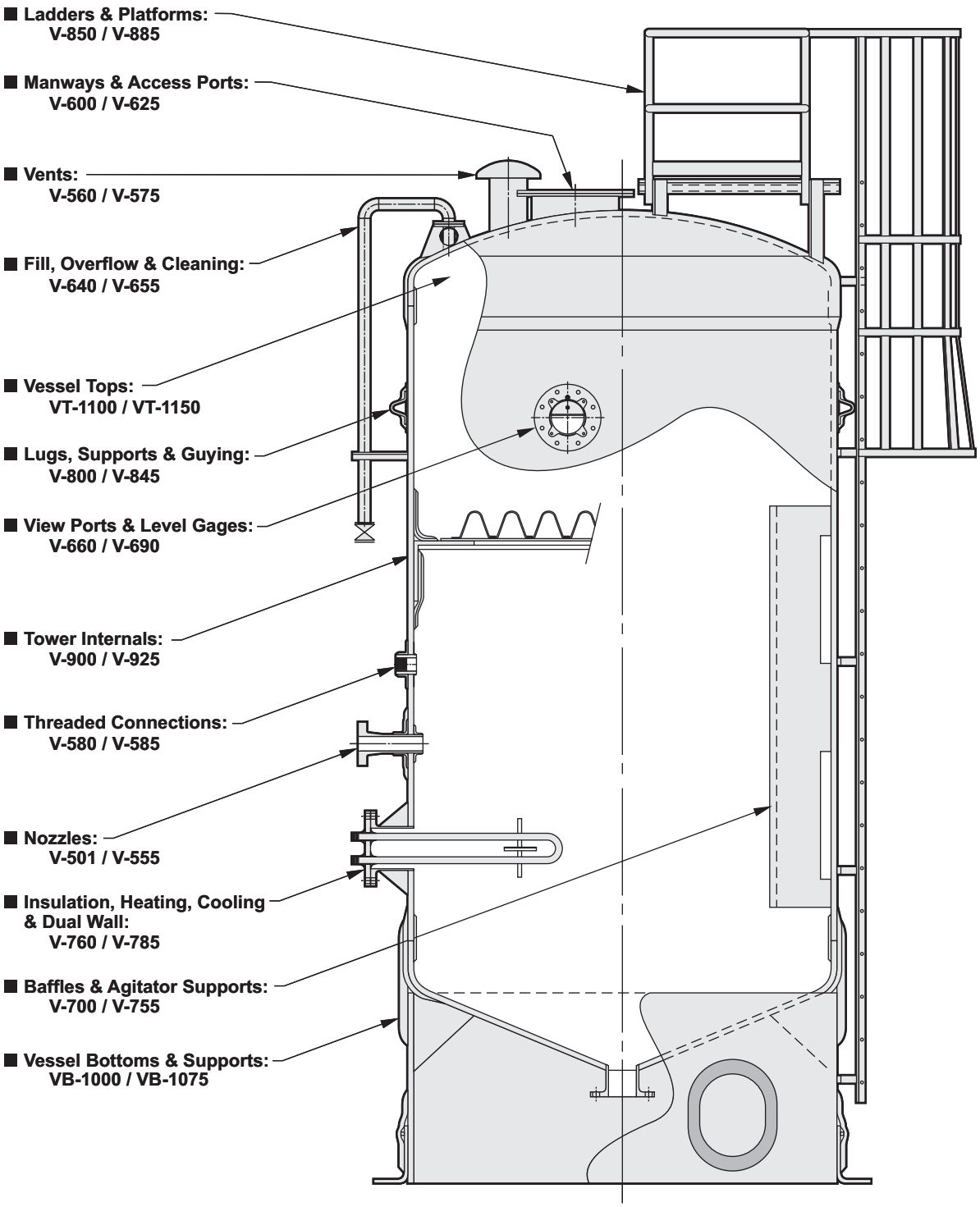
Fitting: **Fitting Style Sheet**



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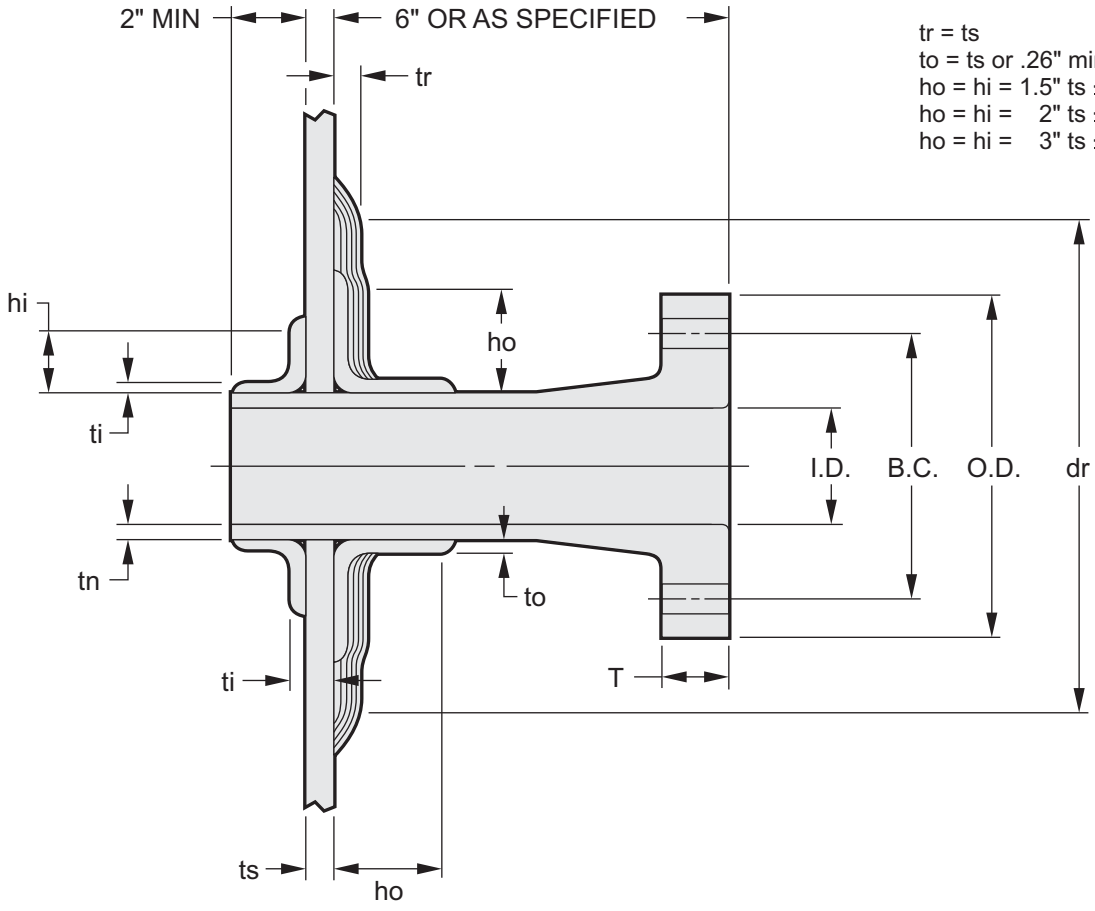
Fitting: **Nozzles (Penetrating)**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Nozzles 4" diameter and smaller are gusseted (#550 cone or #555 plate style) unless otherwise specified.
2. ti as shown unless otherwise specified.

STANDARD TYPE NOZZLE SCHEDULE 150# DRILLING PER ASME RTP-1 (ALL DIMENSIONS IN INCHES)								
PIPE I.D.	FLG O.D.	FLG B.C.	NO. OF HOLES	STD 50 PSI			ti	dr
				HOLE DIA.	T (MIN.)	tn		
1	4-3/4	3-1/8	4	5/8	1/2	3/16	CB+M	7
1-1/2	5-1/2	3-7/8	4	5/8	1/2	3/16	CB+M	7.5
2	6	4-3/4	4	3/4	5/8	3/16	CB+M	8
3	7-1/2	6	4	3/4	5/8	3/16	CB+M	9
4	9	7-1/2	8	3/4	13/16	3/16	CB+M	10
6	11	9-1/2	8	7/8	15/16	3/16	CB+M	12
8	13-1/2	11-3/4	8	7/8	1-1/8	3/16	CB+M	16
10	16	14-1/4	12	1	1-1/4	3/16	CB+M	20
12	19	17	12	1	1-7/16	3/16	CB+M	24
14	21	18-3/4	12	1-1/8	1-1/16	3/16	CB+M	28
16	23-1/2	21-1/4	16	1-1/8	1-9/16	3/16	CB+M	32
18	25	22-3/4	16	1-1/4	1-5/8	3/16	CB+M	36
20	27-1/2	25	20	1-1/4	1-13/16	3/16	CB+M	40
24	32	29-1/2	20	1-3/8	2-1/8	7/16	CB+M	48



tr = ts
to = ts or .26" minimum
ho = hi = 1.5" ts ≤ 3/8"
ho = hi = 2" ts ≤ 1/2"
ho = hi = 3" ts ≤ 3/4"

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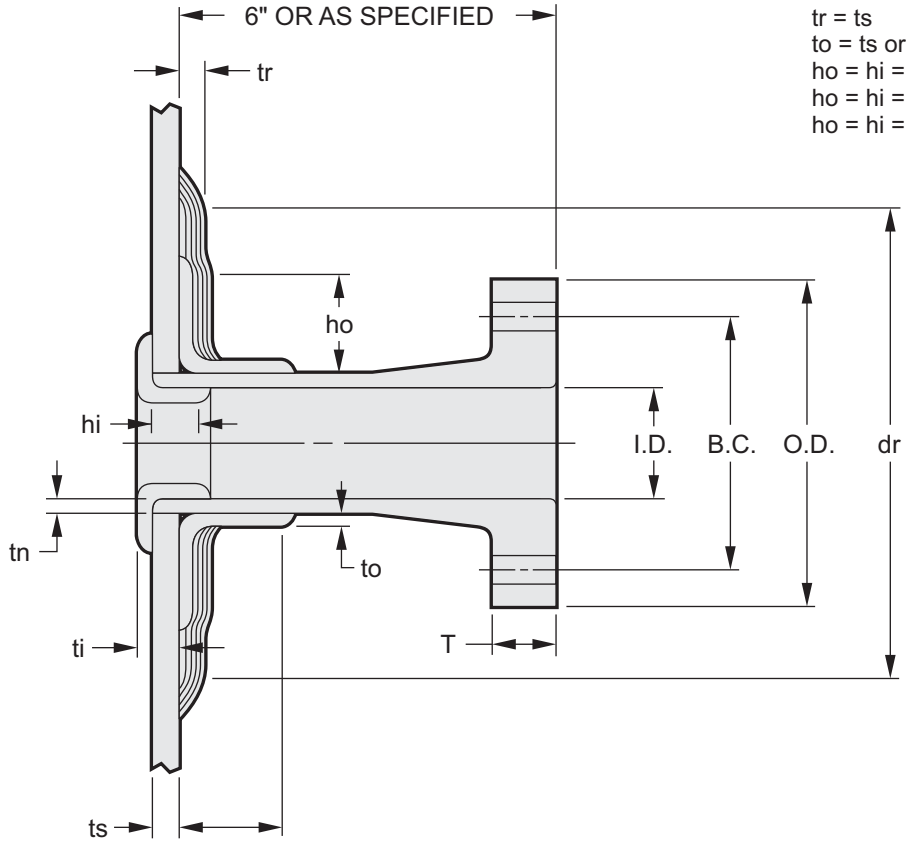
Fitting: **Nozzles (Flush)**

Fiberglass Tanks & Process Vessels Standards

Notes:
1. Nozzles 4" diameter and smaller are gusseted (#550 cone or #555 plate style) unless otherwise specified.
2. ti as shown unless otherwise specified.
3. Nozzle wall may also set flush on the vessel wall.

STANDARD TYPE NOZZLE SCHEDULE 150# DRILLING PER ASME RTP-1 (ALL DIMENSIONS IN INCHES)								
PIPE I.D.	FLG O.D.	FLG B.C.	NO. OF HOLES	STD 50 PSI			ti	dr
				HOLE DIA.	T (MIN.)	tn		
1	4-3/4	3-1/8	4	5/8	1/2	3/16	CB+M	7
1-1/2	5-1/2	3-7/8	4	5/8	1/2	3/16	CB+M	7.5
2	6	4-3/4	4	3/4	5/8	3/16	CB+M	8
3	7-1/2	6	4	3/4	5/8	3/16	CB+M	9
4	9	7-1/2	8	3/4	13/16	3/16	CB+M	10
6	11	9-1/2	8	7/8	15/16	3/16	CB+M	12
8	13-1/2	11-3/4	8	7/8	1-1/8	3/16	CB+M	16
10	16	14-1/4	12	1	1-1/4	3/16	CB+M	20
12	19	17	12	1	1-7/16	3/16	CB+M	24
14	21	18-3/4	12	1-1/8	1-1/16	3/16	CB+M	28
16	23-1/2	21-1/4	16	1-1/8	1-9/16	3/16	CB+M	32
18	25	22-3/4	16	1-1/4	1-5/8	3/16	CB+M	36
20	27-1/2	25	20	1-1/4	1-13/16	3/16	CB+M	40
24	32	29-1/2	20	1-3/8	2-1/8	7/16	CB+M	48



tr = ts
to = ts or .26" minimum
ho = hi = 1.5" ts ≤ 3/8"
ho = hi = 2" ts ≤ 1/2"
ho = hi = 3" ts ≤ 3/4"

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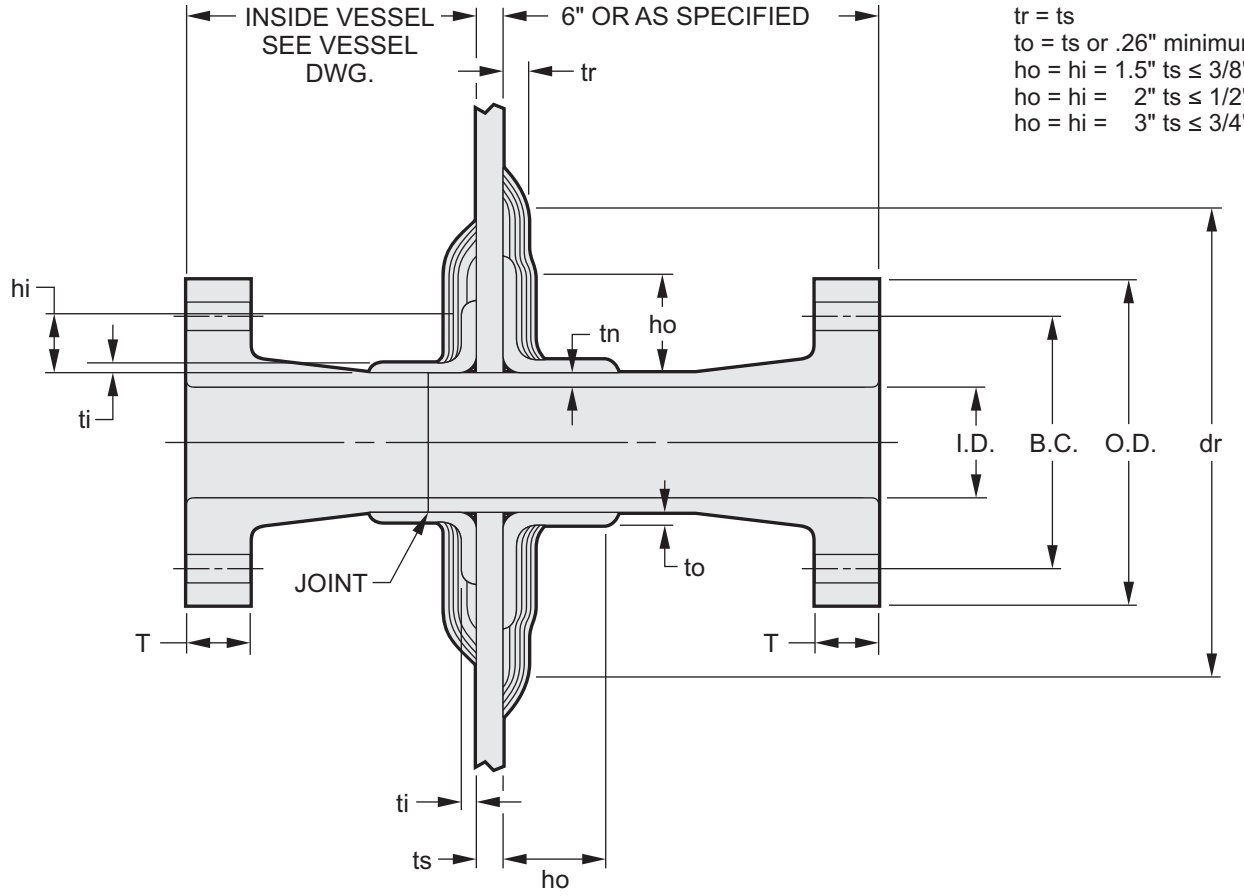
Fitting: Double Flange Nozzles

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Nozzles 4" diameter and smaller are gusseted (#550 cone or #555 plate style) unless otherwise specified.
2. ti as shown unless otherwise specified.

STANDARD TYPE NOZZLE SCHEDULE 150# DRILLING PER ASME RTP-1 (ALL DIMENSIONS IN INCHES)								
PIPE I.D.	FLG O.D.	FLG B.C.	NO. OF HOLES	STD 50 PSI			ti	dr
				HOLE DIA.	T (MIN.)	tn		
1	4-3/4	3-1/8	4	5/8	1/2	3/16	CB+M	7
1-1/2	5-1/2	3-7/8	4	5/8	1/2	3/16	CB+M	7.5
2	6	4-3/4	4	3/4	5/8	3/16	CB+M	8
3	7-1/2	6	4	3/4	5/8	3/16	CB+M	9
4	9	7-1/2	8	3/4	13/16	3/16	CB+M	10
6	11	9-1/2	8	7/8	15/16	3/16	CB+M	12
8	13-1/2	11-3/4	8	7/8	1-1/8	3/16	CB+M	16
10	16	14-1/4	12	1	1-1/4	3/16	CB+M	20
12	19	17	12	1	1-7/16	3/16	CB+M	24
14	21	18-3/4	12	1-1/8	1-1/16	3/16	CB+M	28
16	23-1/2	21-1/4	16	1-1/8	1-9/16	3/16	CB+M	32
18	25	22-3/4	16	1-1/4	1-5/8	3/16	CB+M	36
20	27-1/2	25	20	1-1/4	1-13/16	3/16	CB+M	40
24	32	29-1/2	20	1-3/8	2-1/8	7/16	CB+M	48



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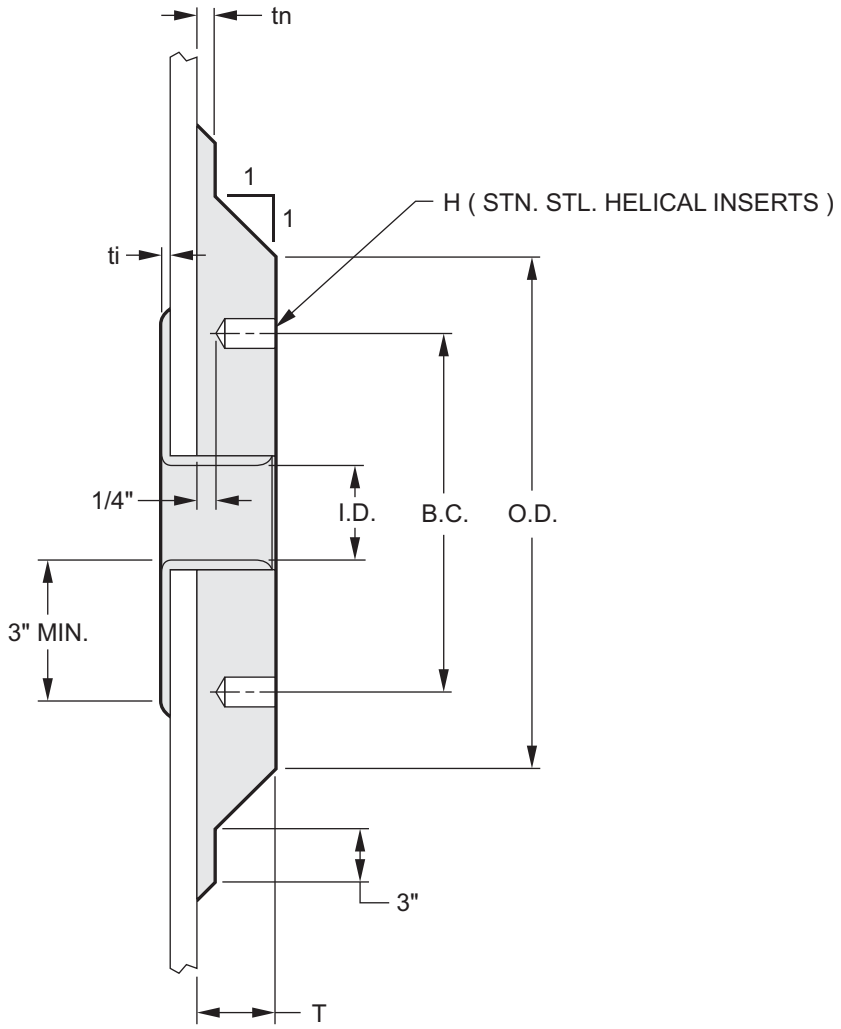
Fitting: **Pad Flange Nozzles**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. ti as shown unless otherwise specified.

STANDARD TYPE NOZZLE SCHEDULE 150# DRILLING PER ASME RTP-1 (ALL DIMENSIONS IN INCHES)						
PIPE I.D.	FLG O.D.	FLG B.C.	NO. OF HOLES	STD 50 PSI		ti
				H (THREADS)	T	
1	4-3/4	3-1/8	4	5/8-11UNC	1-1/4	CB+M
1-1/2	5-1/2	3-7/8	4	5/8-UNC	1-1/4	CB+M
2	6	4-3/4	4	3/4-UNC	1-1/2	CB+M
3	7-1/2	6	4	3/4-UNC	1-1/2	CB+M
4	9	7-1/2	8	3/4-UNC	1-1/2	CB+M
6	11	9-1/2	8	7/8-9UNC	1-3/4	CB+M
8	13-1/2	11-3/4	8	7/8-9UNC	1-3/4	CB+M
10	16	14-1/4	12	1-8UNC	2	CB+M
12	19	17	12	1-8UNC	2	CB+M
14	21	18-3/4	12	1-1/8-7UNC	2-1/4	CB+M



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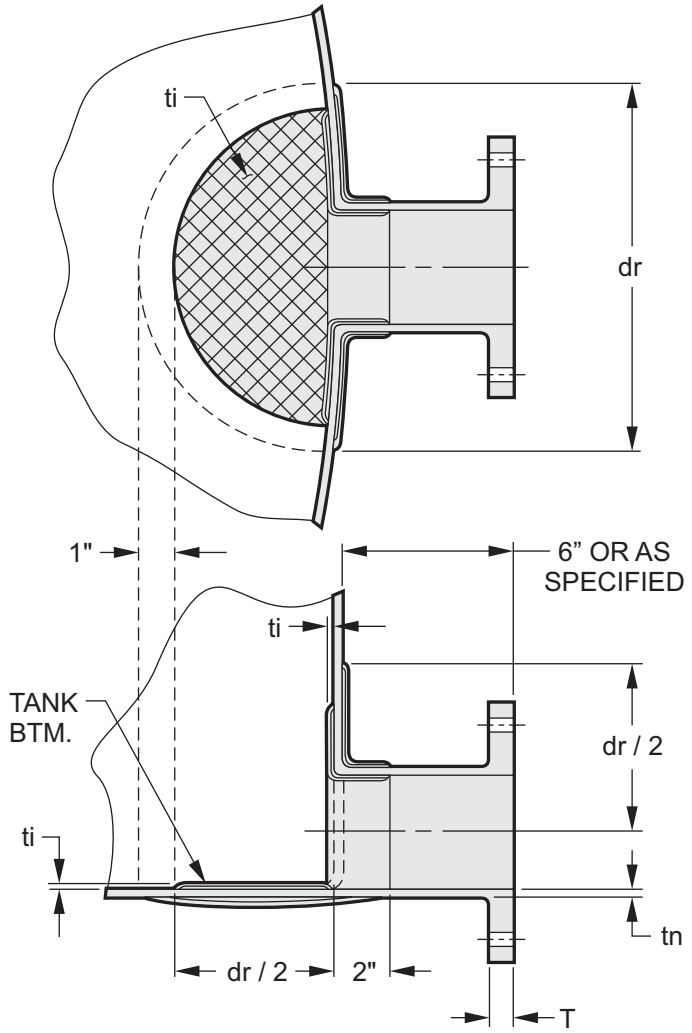
Fitting: **Flush Drain Nozzles**

Fiberglass Tanks & Process Vessels Standards

Notes:
1. Nozzles 4" diameter and smaller are gusseted (#550 cone or #555 plate
2. style) unless otherwise specified.
   ti as shown unless otherwise specified.
3. This type nozzle requires a cutout on the support base to clear the nozzle reinforcement.

STANDARD TYPE NOZZLE SCHEDULE 150# DRILLING PER ASME RTP-1 (ALL DIMENSIONS IN INCHES)								
PIPE I.D.	FLG O.D.	FLG B.C.	NO. OF HOLES	STD 50 PSI			ti	dr
				HOLE DIA.	T (MIN.)	tn		
1	4-3/4	3-1/8	4	5/8	1/2	3/16	CB+M	7
1-1/2	5-1/2	3-7/8	4	5/8	1/2	3/16	CB+M	7.5
2	6	4-3/4	4	3/4	5/8	3/16	CB+M	8
3	7-1/2	6	4	3/4	5/8	3/16	CB+M	9
4	9	7-1/2	8	3/4	13/16	3/16	CB+M	10
6	11	9-1/2	8	7/8	15/16	3/16	CB+M	12
8	13-1/2	11-3/4	8	7/8	1-1/8	3/16	CB+M	16



tr = ts
to = ts or .26" minimum
ho = hi = 1.5" ts < 3/8"
ho = hi = 2" ts < 1/2"
ho = hi = 3" ts < 3/4"

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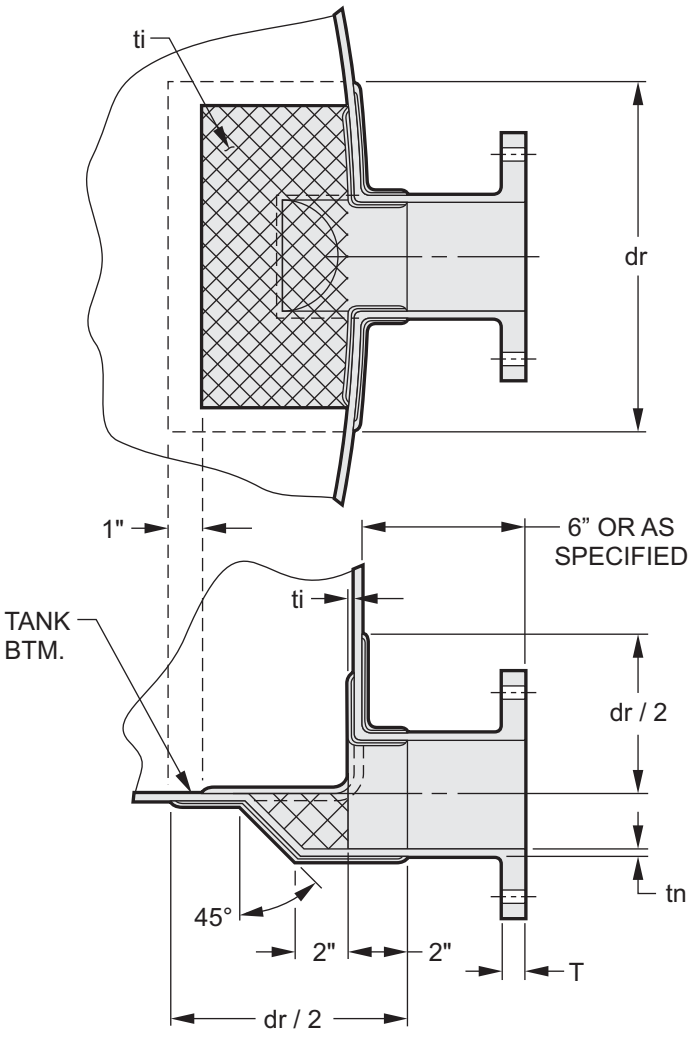
Fitting: Full Drain Nozzles

Fiberglass Tanks & Process Vessels Standards

Notes:
1. Nozzles 4" diameter and smaller are gusseted (#550 cone or #555 plate style) unless otherwise specified.
2. ti as shown unless otherwise specified.
3. Nozzle wall may also penetrate the shell exterior surface.
4. This style nozzle requires a cutout on the support base to clear the nozzle reinforcements.

STANDARD TYPE NOZZLE SCHEDULE 150# DRILLING PER ASME RTP-1 (ALL DIMENSIONS IN INCHES)								
PIPE I.D.	FLG O.D.	FLG B.C.	NO. OF HOLES	STD 50 PSI			ti	dr
				HOLE DIA.	T (MIN.)	tn		
1	4-3/4	3-1/8	4	5/8	1/2	3/16	CB+M	7
1-1/2	5-1/2	3-7/8	4	5/8	1/2	3/16	CB+M	7.5
2	6	4-3/4	4	3/4	5/8	3/16	CB+M	8
3	7-1/2	6	4	3/4	5/8	3/16	CB+M	9
4	9	7-1/2	8	3/4	13/16	3/16	CB+M	10
6	11	9-1/2	8	7/8	15/16	3/16	CB+M	12
8	13-1/2	11-3/4	8	7/8	1-1/8	3/16	CB+M	16



tr = ts
to = ts or .26" minimum
ho = hi = 1.5" ts < 3/8"
ho = hi = 2" ts < 1/2"
ho = hi = 3" ts < 3/4"

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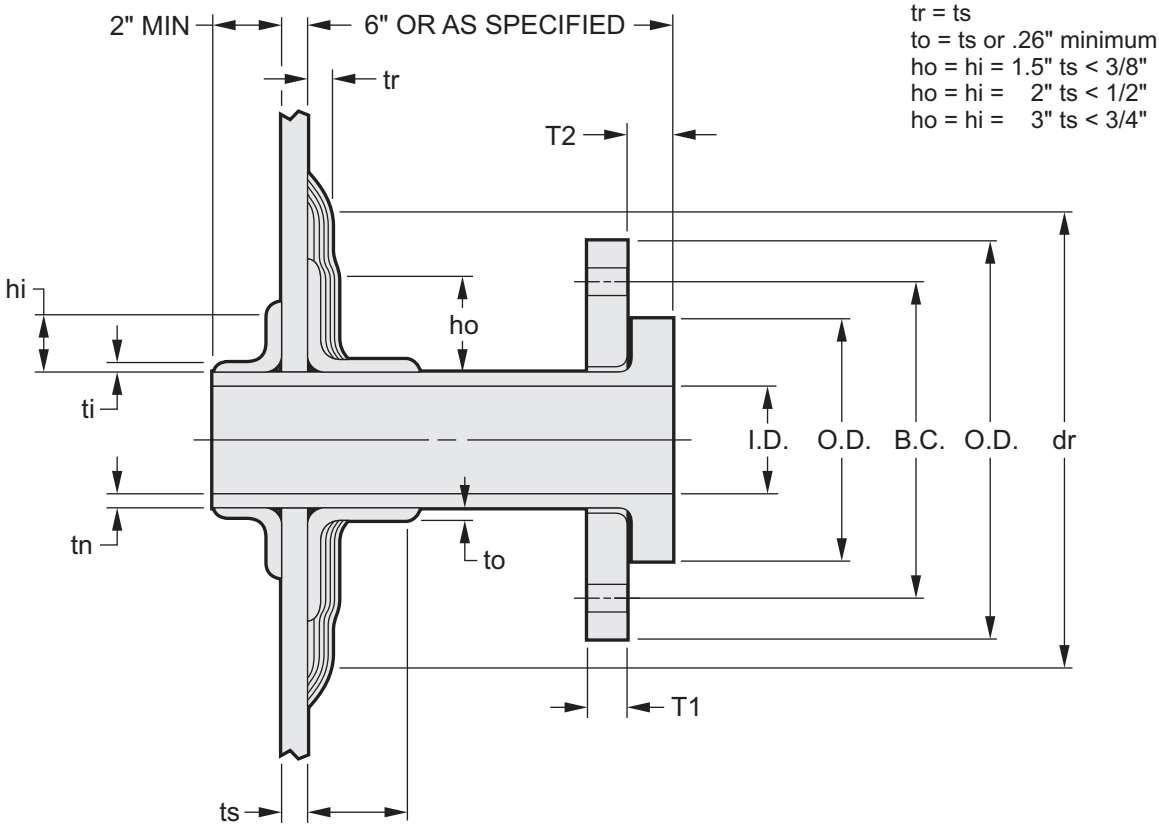
Fitting: Van Stone Style Ring Flange

Fiberglass Tanks & Process Vessels Standards

Notes:
1. T1 will vary depending on material of construction.
2. Nozzles 4" diameter and smaller are plate gusseted, style #555, unless otherwise specified.
3. Nozzles may optionally be installed flush mounted as shown in style #505.

STANDARD TYPE NOZZLE SCHEDULE 150# DRILLING PER ASME RTP-1 (ALL DIMENSIONS IN INCHES)								
PIPE I.D.	FLG O.D.	FLG B.C.	NO. OF HOLES	STD 50 PSI			ti	dr
				HOLE DIA.	T (MIN.)	tn		
1	4-3/4	3-1/8	4	5/8	1/2	3/16	CB+M	7
1-1/2	5-1/2	3-7/8	4	5/8	1/2	3/16	CB+M	7.5
2	6	4-3/4	4	3/4	5/8	3/16	CB+M	8
3	7-1/2	6	4	3/4	5/8	3/16	CB+M	9
4	9	7-1/2	8	3/4	13/16	3/16	CB+M	10
6	11	9-1/2	8	7/8	15/16	3/16	CB+M	12
8	13-1/2	11-3/4	8	7/8	1-1/8	3/16	CB+M	16
10	16	14-1/4	12	1	1-1/4	3/16	CB+M	20
12	19	17	12	1	1-7/16	3/16	CB+M	24
14	21	18-3/4	12	1-1/8	1-1/16	3/16	CB+M	28
16	23-1/2	21-1/4	16	1-1/8	1-9/16	3/16	CB+M	32
18	25	22-3/4	16	1-1/4	1-5/8	3/16	CB+M	36
20	27-1/2	25	20	1-1/4	1-13/16	3/16	CB+M	40
24	32	29-1/2	20	1-3/8	2-1/8	7/16	CB+M	48



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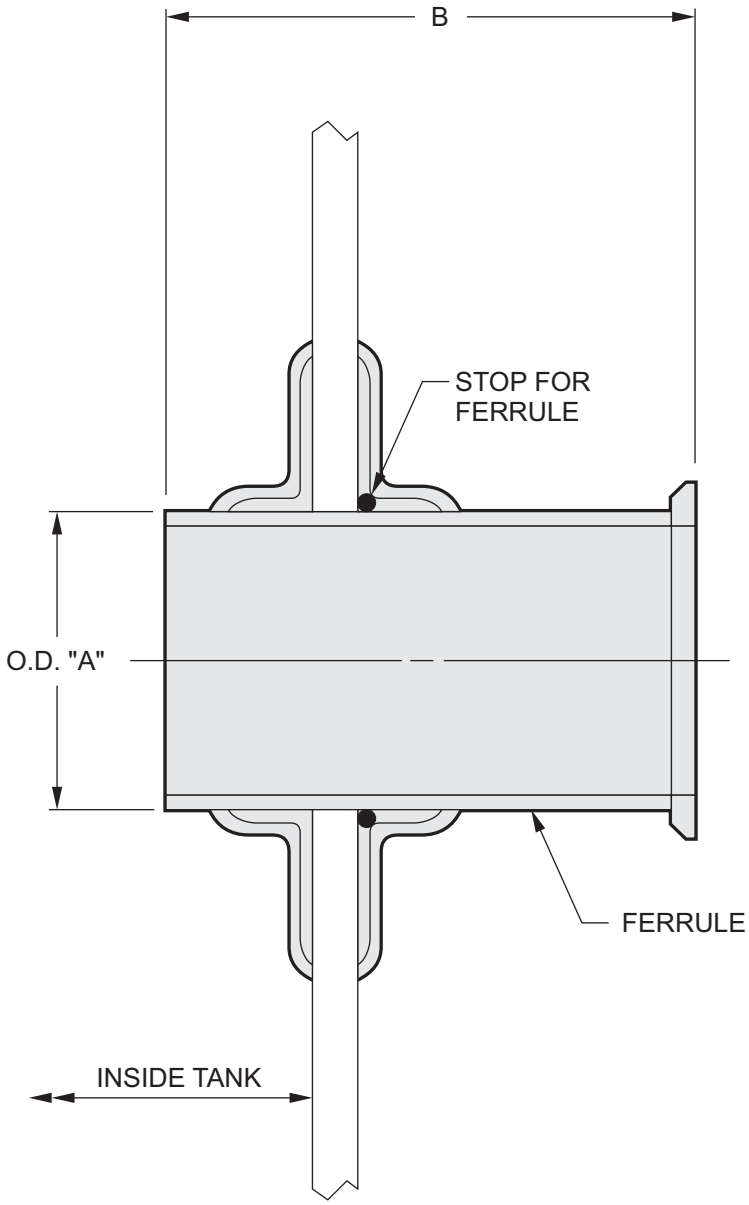
Fitting: **Sanitary Connection**

STANDARD FITTINGS (ALL DIMENSIONS IN INCHES)	
TUBE O.D. "A"	"B"
1/2	1-3/4
3/4	1-3/4
1	1-3/4
1-1/2	1-3/4
2	2-1/4
2-1/2	2-1/4
3	2-1/4
4	2-1/4

FERRULE MATERIAL OF CONSTRUCTION	
STAINLESS STEEL	
FRP	



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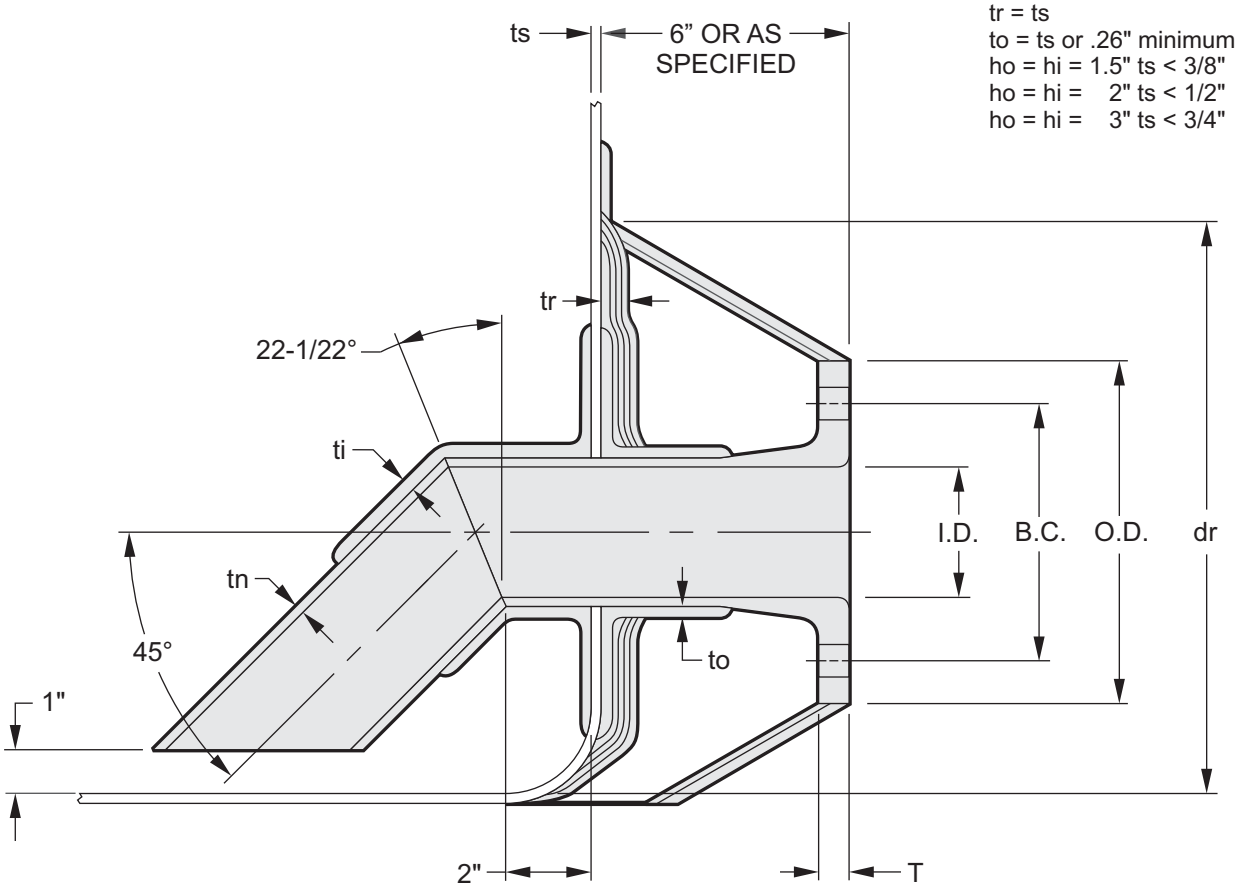
Fitting: 45° Siphon Nozzles

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Nozzles 4" diameter and smaller are gusseted (#550 cone or #555 plate style) unless otherwise specified.
2. ti as shown unless otherwise specified.

STANDARD TYPE NOZZLE SCHEDULE 150# DRILLING PER ASME RTP-1 (ALL DIMENSIONS IN INCHES)								
PIPE I.D.	FLG O.D.	FLG B.C.	NO. OF HOLES	STD 50 PSI			ti	dr
				HOLE DIA.	T (MIN.)	tn		
1	4-3/4	3-1/8	4	5/8	1/2	3/16	CB+M	7
1-1/2	5-1/2	3-7/8	4	5/8	1/2	3/16	CB+M	7.5
2	6	4-3/4	4	3/4	5/8	3/16	CB+M	8
3	7-1/2	6	4	3/4	5/8	3/16	CB+M	9
4	9	7-1/2	8	3/4	13/16	3/16	CB+M	10
6	11	9-1/2	8	7/8	15/16	3/16	CB+M	12
8	13-1/2	11-3/4	8	7/8	1-1/8	3/16	CB+M	16



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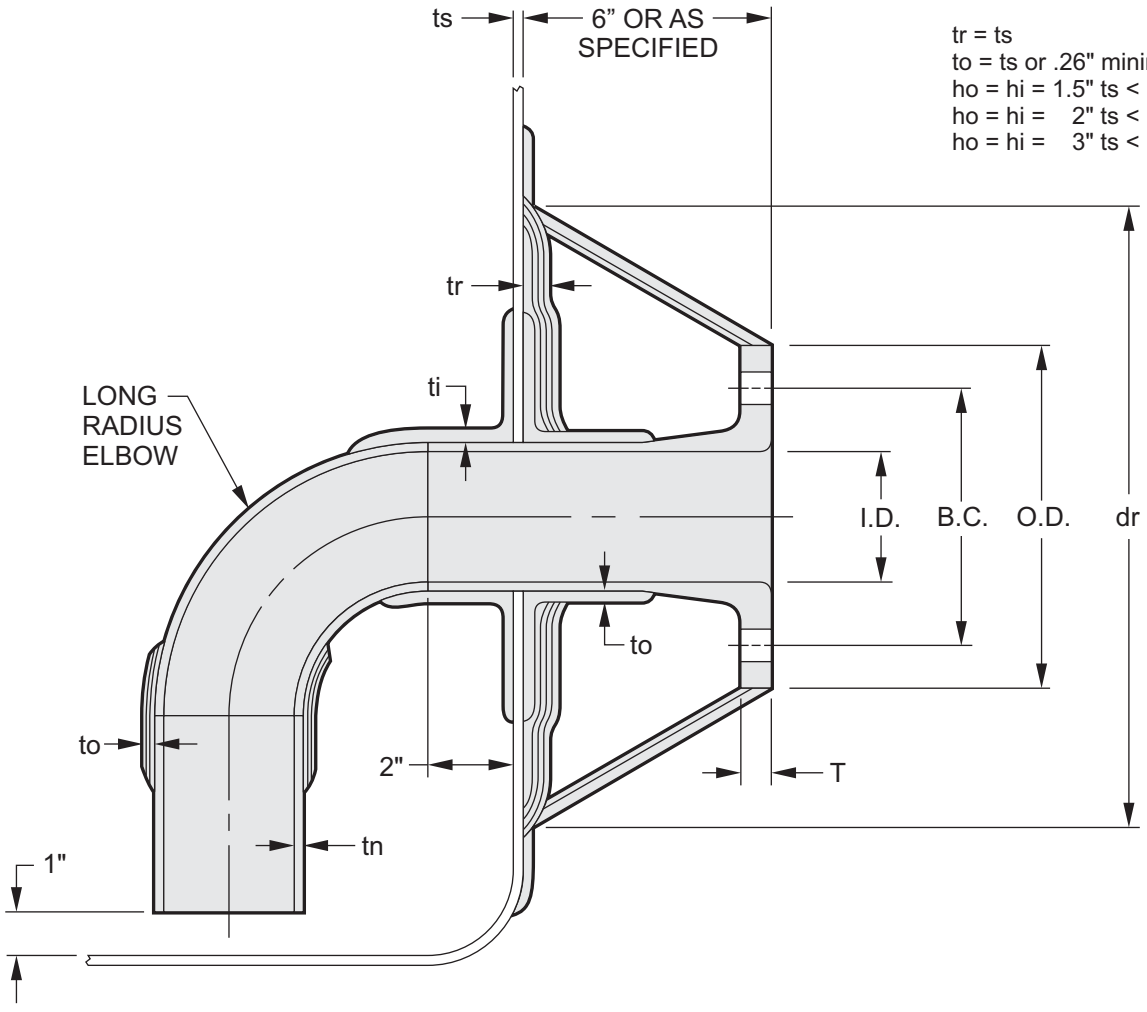
Fitting: 90° Siphon Nozzles

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Nozzles 4" diameter and smaller are gusseted (#550 cone or #555 plate style) unless otherwise specified.
2. ti as shown unless otherwise specified.

STANDARD TYPE NOZZLE SCHEDULE 150# DRILLING PER ASME RTP-1 (ALL DIMENSIONS IN INCHES)								
PIPE I.D.	FLG O.D.	FLG B.C.	NO. OF HOLES	STD 50 PSI			ti	dr
				HOLE DIA.	T (MIN.)	tn		
1	4-3/4	3-1/8	4	5/8	1/2	3/16	CB+M	7
1-1/2	5-1/2	3-7/8	4	5/8	1/2	3/16	CB+M	7.5
2	6	4-3/4	4	3/4	5/8	3/16	CB+M	8
3	7-1/2	6	4	3/4	5/8	3/16	CB+M	9
4	9	7-1/2	8	3/4	13/16	3/16	CB+M	10
6	11	9-1/2	8	7/8	15/16	3/16	CB+M	12
8	13-1/2	11-3/4	8	7/8	1-1/8	3/16	CB+M	16



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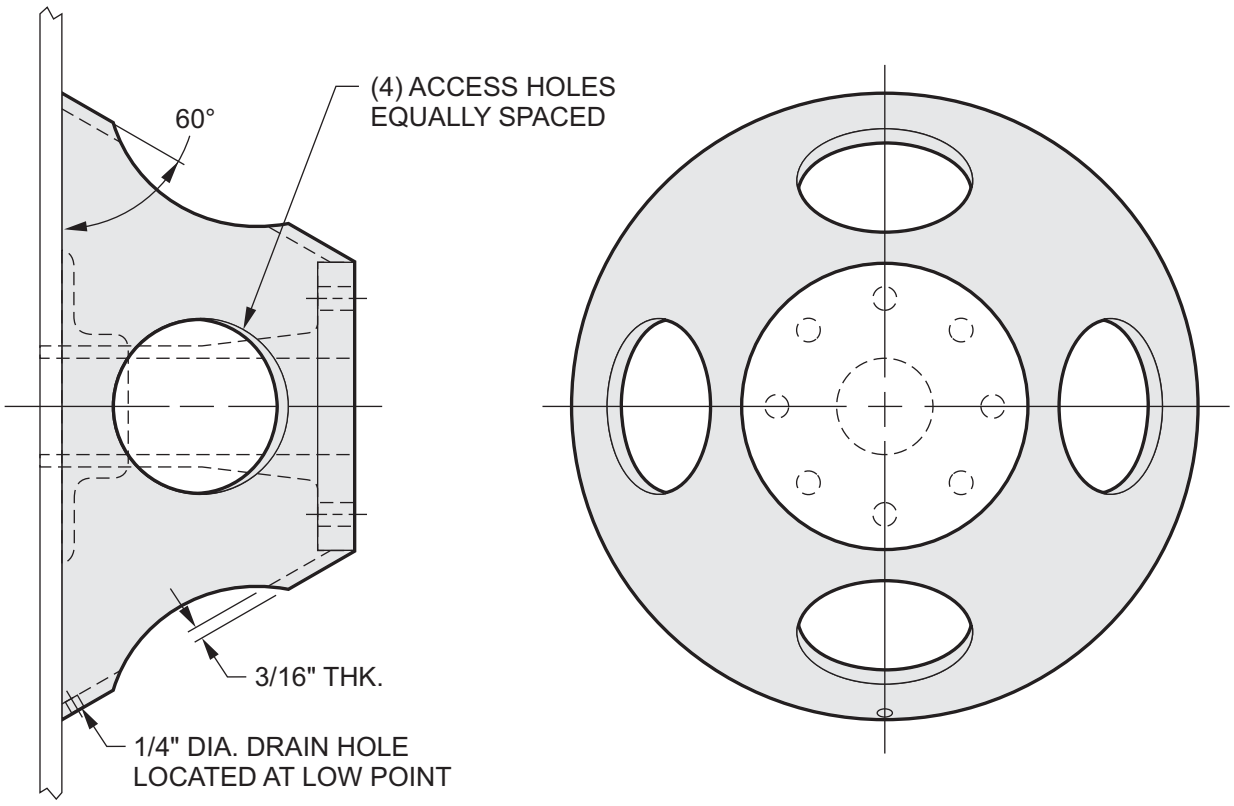
Fitting: **Cone Gussets**



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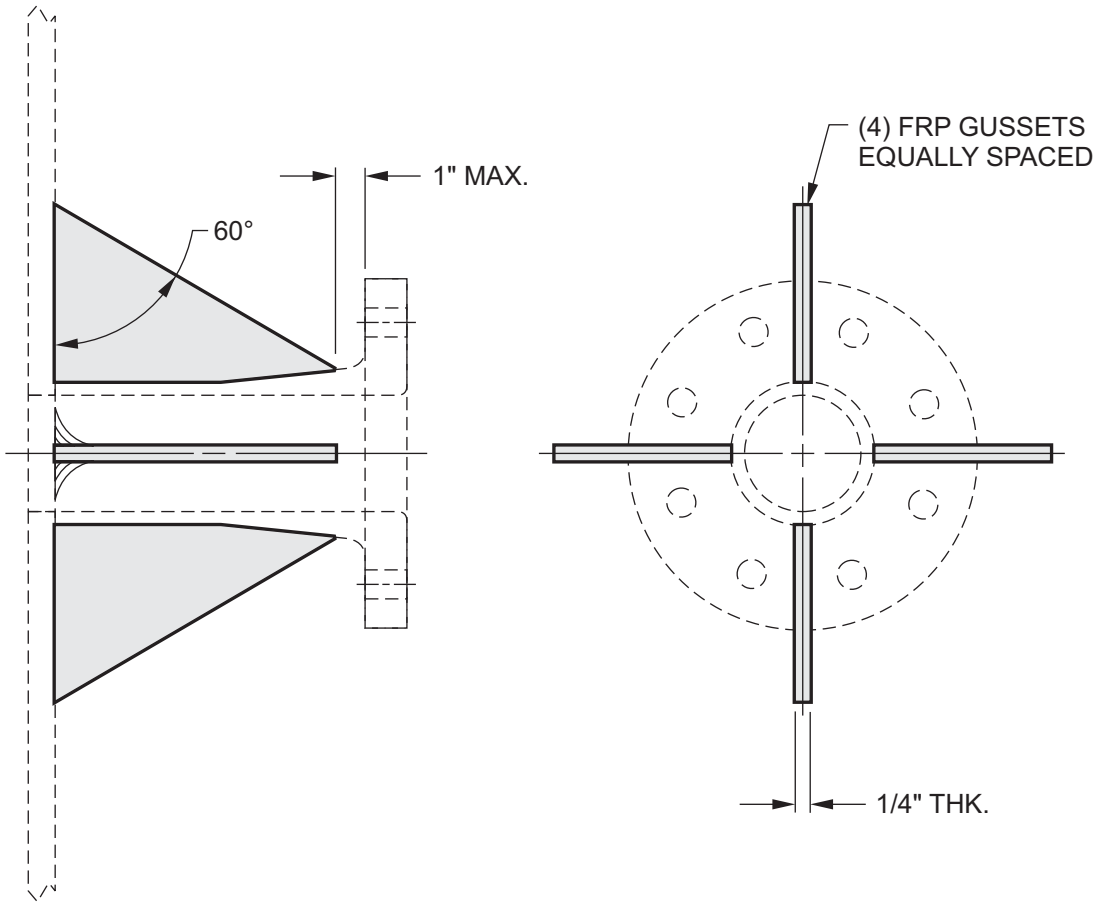
Fitting: **Plate Gussets**

Notes: 1. For Van Stone type flange (V-530) gussets, 1" max. clearance shown is from the back of the ring.



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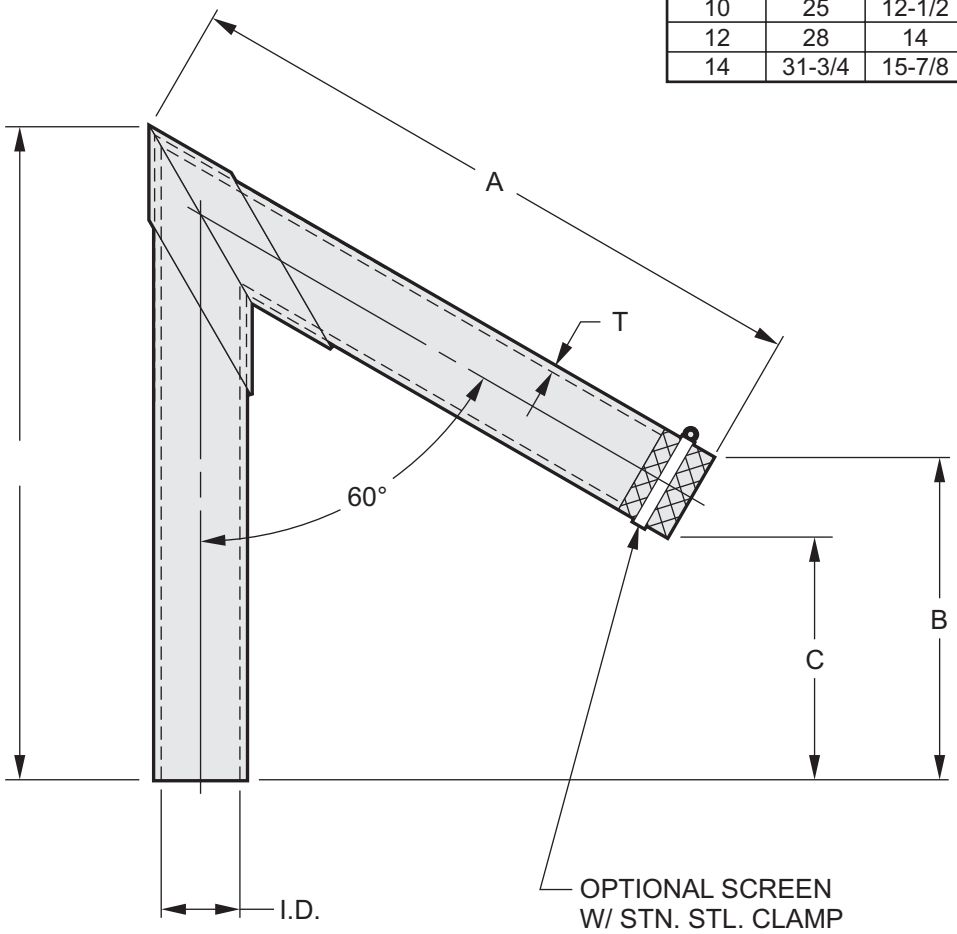
Fitting: **"V" Vent**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Install to tank head flush / penetrating per nozzle specification.

STANDARD FITTINGS (ALL DIMENSIONS IN INCHES)				
I.D.	A	B	C	T
2	11-1/8	5-1/2	3-3/4	1/4
3	12-3/4	6-3/8	3-3/4	1/4
4	14-1/2	7-1/4	3-3/4	1/4
6	18	9	3-3/4	1/4
8	21-1/2	10-3/4	3-3/4	1/4
10	25	12-1/2	3-3/4	1/4
12	28	14	3-3/4	1/4
14	31-3/4	15-7/8	3-3/4	5/16



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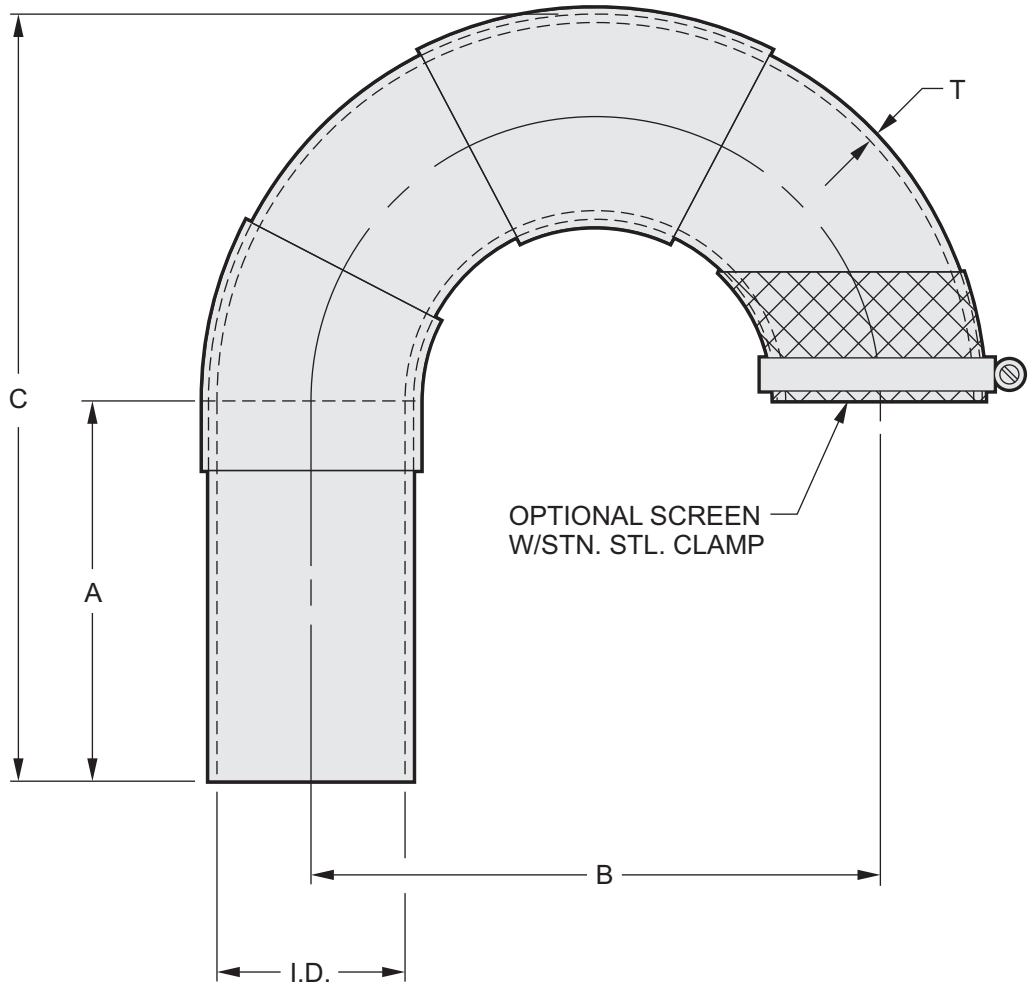
Fitting: Gooseneck Or "U" Vent

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Install to tank head flush / penetrating per nozzle specification.

STANDARD FITTINGS (ALL DIMENSIONS IN INCHES)				
I.D.	A	B	C	T (MIN.)
2	8	6	12-3/16	1/4
3	8	9	14-3/16	1/4
4	6	12	16-1/4	1/4
6	6	18	18-1/4	1/4
8	6	24	22-5/16	1/4
10	6	30	26-5/16	1/4
12	6	36	30-5/16	1/4
14	6	42	34-5/16	5/16



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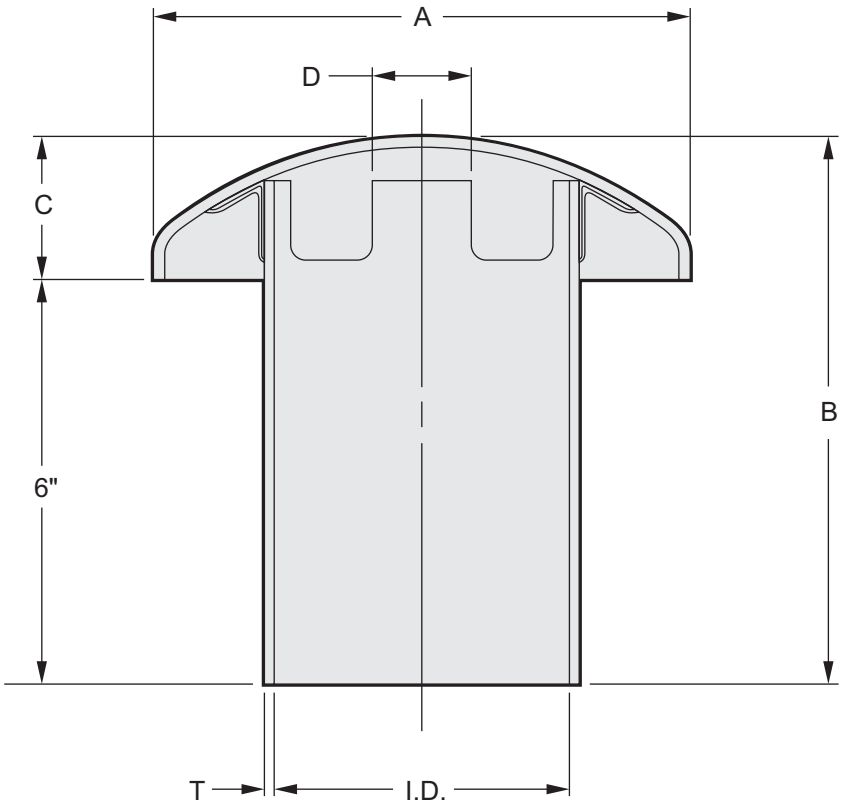
Fitting: **Mushroom Vents**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Install to tank head flush / penetrating per nozzle specification.

STANDARD FITTINGS (ALL DIMENSIONS IN INCHES)					
I.D.	A	B	C	D QTY & WIDTH	T
2	4	8	2	(2) x 1"	1/4
3	6	8-1/2	2-1/2	(2) x 1"	1/4
4	8	8-3/4	2-3/4	(2) x 1"	1/4
6	12	9-1/2	3-1/2	(2) x 2"	1/4
8	16	10-1/4	4-1/4	(4) x 2"	1/4
10	20	10-3/4	4-3/4	(4) x 2"	1/4
12	24	11-1/2	5-1/2	(4) x 2"	1/4
14	28	12-1/4	6-1/4	(4) x 2"	5/16



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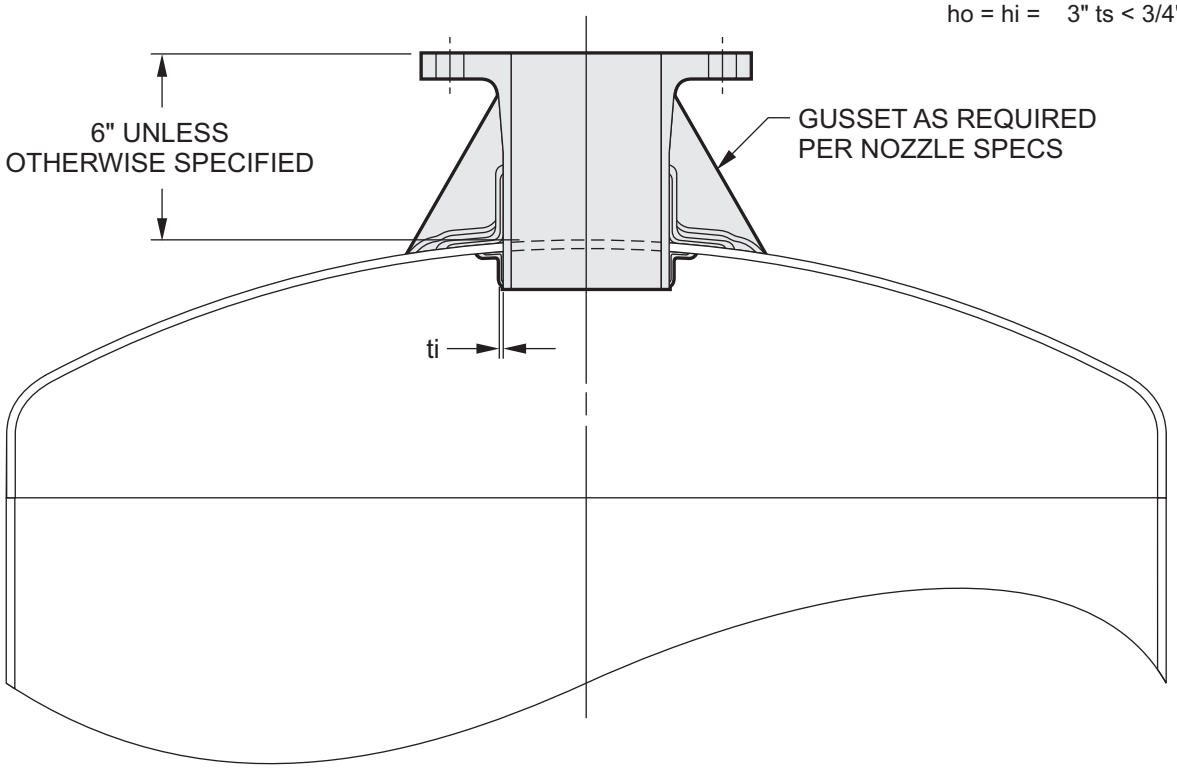
Fitting: **Nozzles Vents**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Nozzles 4" diameter and smaller are gusseted (#550 cone or #555 plate style) unless otherwise specified.
2. ti as shown unless otherwise specified.

STANDARD TYPE NOZZLE SCHEDULE 150# DRILLING PER ASME RTP-1 (ALL DIMENSIONS IN INCHES)								
PIPE I.D.	FLG O.D.	FLG B.C.	NO. OF HOLES	STD 50 PSI			ti	dr
				HOLE DIA.	T (MIN.)	tn		
1	4-3/4	3-1/8	4	5/8	1/2	3/16	CB+M	7
1-1/2	5-1/2	3-7/8	4	5/8	1/2	3/16	CB+M	7.5
2	6	4-3/4	4	3/4	5/8	1/4	CB+M	8
3	7-1/2	6	4	3/4	5/8	1/4	CB+M	9
4	9	7-1/2	8	3/4	13/16	1/4	CB+M	10
6	11	9-1/2	8	7/8	15/16	1/4	CB+M	12
8	13-1/2	11-3/4	8	7/8	1-1/8	1/4	CB+M	16
10	16	14-1/4	12	1	1-1/4	1/4	CB+M	20
12	19	17	12	1	1-7/16	1/4	CB+M	24

tr = ts
to = ts or .26" minimum
ho = hi = 1.5" ts < 3/8"
ho = hi = 2" ts < 1/2"
ho = hi = 3" ts < 3/4"



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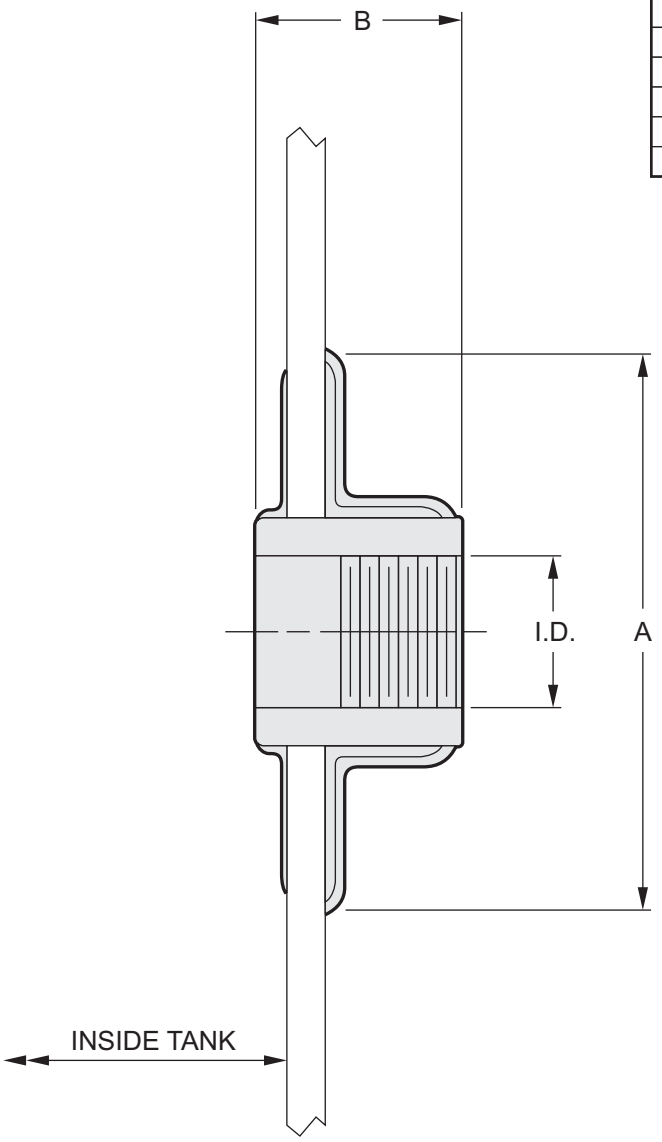
Fitting: **Threaded Half Coupling**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Standard coupling are NPT National pipe thread.

STANDARD FITTINGS (ALL DIMENSIONS IN INCHES)		
I.D.	A	B
3/4	6	
1	7	
1-1/2	7-1/2	
2	8	
2-1/2	8-1/2	
3	9	
4	10	
6	12	

MATERIALS OF CONSTRUCTION
FRP STANDARD
SS, PVC, CPVC OPTIONAL



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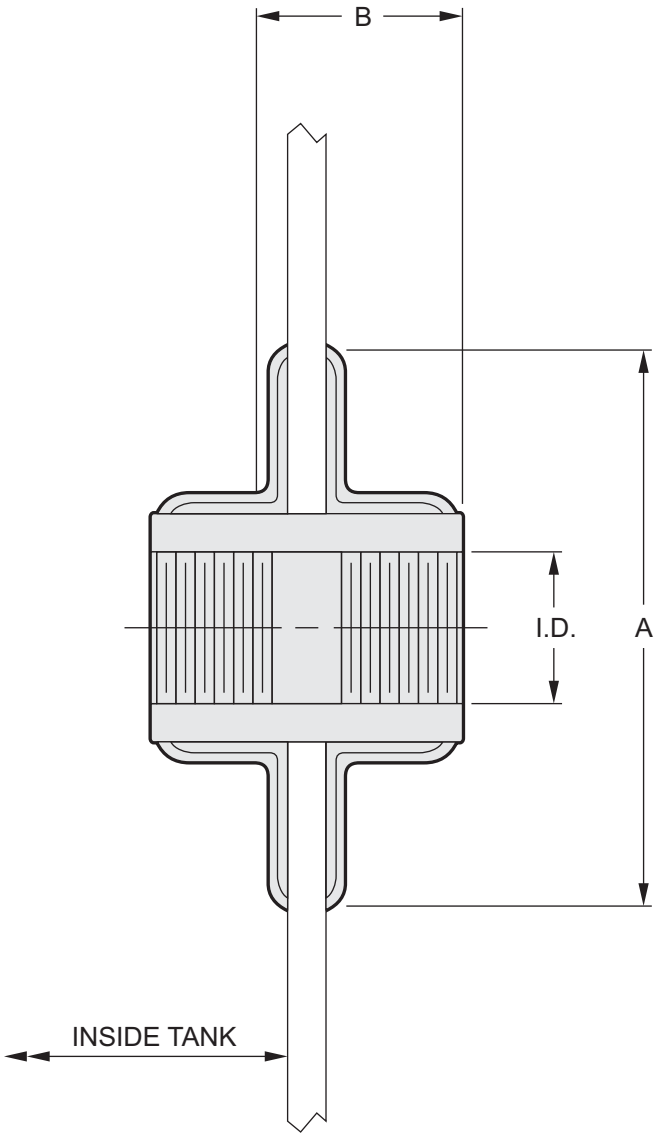
Fitting: **Threaded Full Coupling**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Standard coupling are NPT National pipe thread.

STANDARD FITTINGS (ALL DIMENSIONS IN INCHES)		
I.D.	A	B
3/4	6	
1	7	
1-1/2	7-1/2	
2	8	
2-1/2	8-1/2	
3	9	
4	10	
6	12	

MATERIALS OF CONSTRUCTION
FRP STANDARD
SS, PVC, CPVC OPTIONAL



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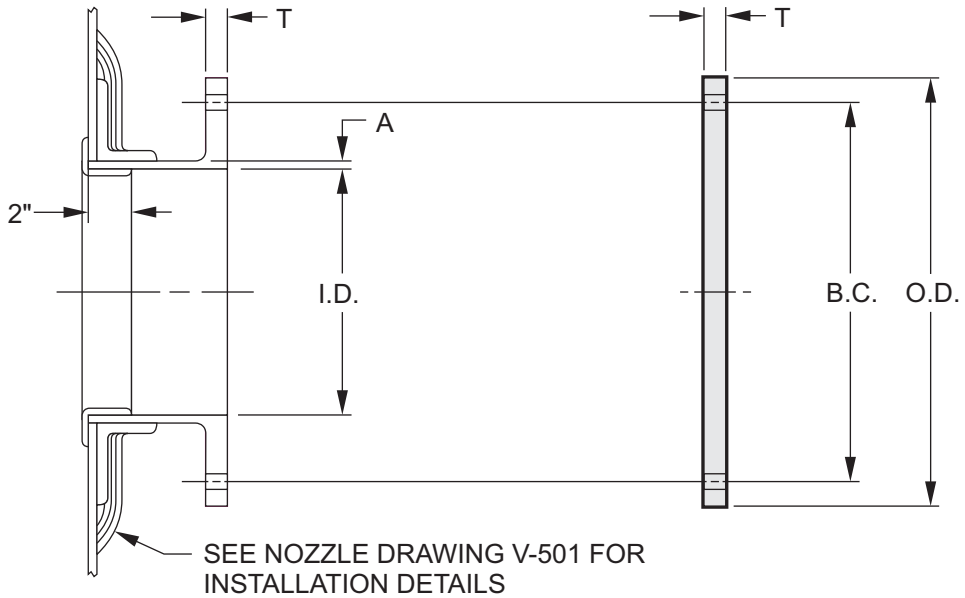
Fitting: Flanged & Bolted Stand-off Manways

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Manway wall may also set flush on the vessel wall.

MANWAY DIMENSION FOR PRESSURE UP TO 15 PSIG (ALL DIMENSIONS IN INCHES)								
I.D.	FLG O.D.	FLG THK. T	WALL THK. A	B.C.	NO. OF BOLT HOLES	HOLE DIA.	BOLT DIA.	BOLT LENGTH
18	25	1	3/8	22-3/4	16	3/4	5/8	3-1/2
20	27-1/2	1	3/8	25	20	3/4	5/8	3-1/2
22	30	1	3/8	27	20	3/4	5/8	3-1/2
24	32	1-1/4	3/8	29-1/2	20	3/4	5/8	4
30	38-3/4	1-3/8	9/16	36	28	3/4	5/8	4-1/4
36	46	1-3/4	9/16	42-3/4	32	3/4	5/8	5

ACCESSORIES AND OPTIONS				
DESCRIPTION	STANDARD SUPPLY	OPTIONAL MATERIAL	INCLUDED	NOTES
BOLTS	PLATED STEEL			
GASKETS	NEOPRENE			
HANDLES	FRP			
DAVITS	NO			



MANWAY DIMENSION FOR ATMOSPHERIC PRESSURE UP TO 0.5 PSIG (ALL DIMENSIONS IN INCHES)								
I.D.	FLG O.D.	FLG THK. T	WALL THK. A	B.C.	NO. OF BOLT HOLES	HOLE DIA.	BOLT DIA.	BOLT LENGTH
18	25	1/2	1/4	22-3/4	16	1/2	3/8	1-3/4
20	27-1/2	1/2	1/4	25	20	1/2	3/8	1-3/4
22	30	1/2	1/4	27	20	1/2	3/8	1-3/4
24	32	1/2	1/4	29-1/2	20	1/2	3/8	1-3/4
30	38-3/4	7/8	5/16	36	28	1/2	3/8	2-1/2
36	46	7/8	5/16	42-3/4	32	1/2	3/8	2-1/2

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Fitting: Rectangular Flanged & Bolted Manway

Fiberglass Tanks & Process Vessels Standards

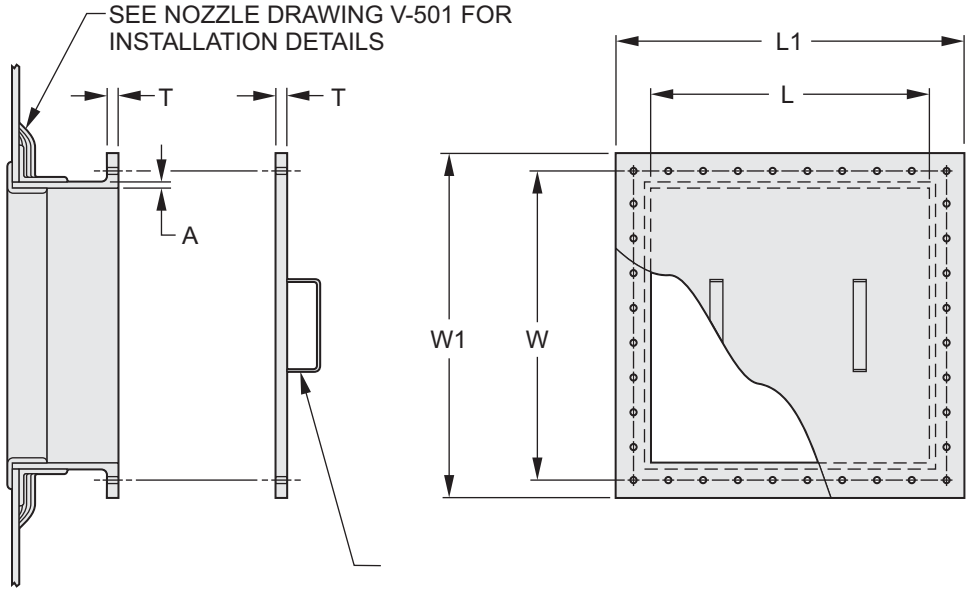
Notes: 1. Manway wall may also set flush on the vessel wall.

MANWAY DIMENSION FOR PRESSURE UP TO 15 PSIG (ALL DIMENSIONS IN INCHES)							
L x W	L1 x W1	FLG. THK (T)	WALL THK (A)	NO. OF BOLT HOLES	HOLE DIA.	BOLT DIA.	BOLT LENGTH
18 x 18	25-1/2 x 25-1/2	1	3/8	*	3/4	5/8	3-1/2
20 x 20	27-1/2 x 27-1/2	1	3/8	*	3/4	5/8	3-1/2
22 x 24	28 x 32	1	3/8	*	3/4	5/8	3-1/2
24 x 24	32 x 32	1-1/2	3/8	*	3/4	5/8	4
24 x 30	32 x 38	1-1/4	7/16	*	3/4	5/8	4-1/4
30 x 30	38 x 38	1-3/8	7/16	*	3/4	5/8	5

MANWAY DIMENSIONS FOR ATMOSPHERIC PRESSURE UP TO 0.5 PSIG (ALL DIMENSIONS IN INCHES)							
L x W	L1 x W1	FLG. THK (T)	WALL THK (A)	NO. OF BOLT HOLES	HOLE DIA.	BOLT DIA.	BOLT LENGTH
18 x 18	25-1/2 x 25-1/2	1/2	1/4	*	1/2	3/8	1-3/4
20 x 20	27-1/2 x 27-1/2	1/2	1/4	*	1/2	3/8	1-3/4
22 x 24	28 x 32	1/2	1/4	*	1/2	3/8	1-3/4
24 x 24	32 x 32	1/2	1/4	*	1/2	3/8	1-3/4
24 x 30	32 x 38	7/8	5/16	*	1/2	3/8	2-1/2
30 x 30	38 x 38	7/8	5/16	*	1/2	3/8	2-1/2

* SEE VESSEL DRAWING

ACCESSORIES AND OPTIONS				
DESCRIPTION	STANDARD SUPPLY	OPTIONAL MATERIAL	INCLUDED	NOTES
BOLTS	PLATED STEEL			
GASKETS	NEOPRENE			
HANDLES	NO			
DAVITS	NO			



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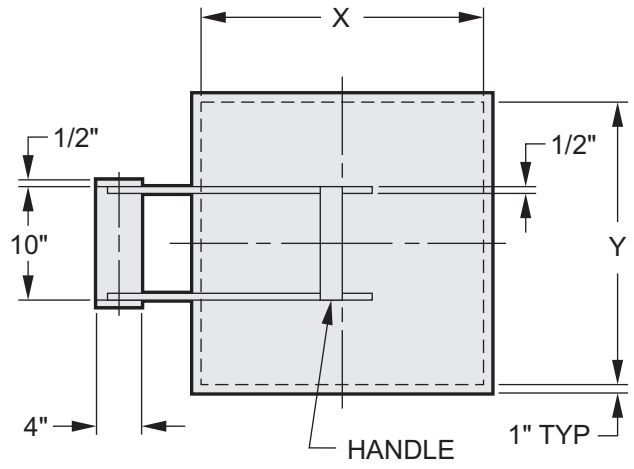
Fitting: **Flush Hinged Manway**

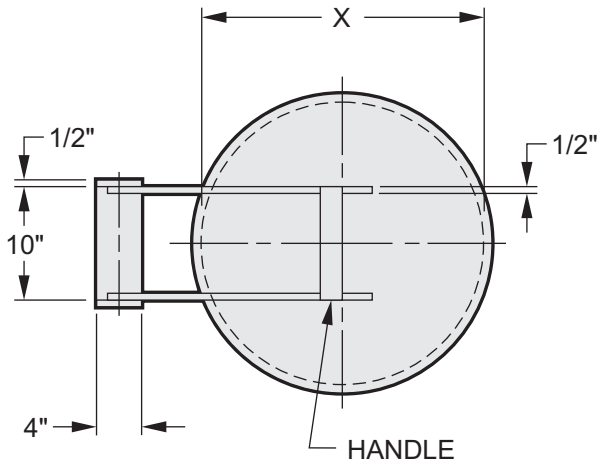
Fiberglass Tanks & Process Vessels Standards

Notes:
1. For vapor tight manways, bolted manway style must be used.
2. Standard hinge bolt hardware is stn. stl., FRP is available as an option.
3. Manway cover is not designed for man loading (walking on cover).

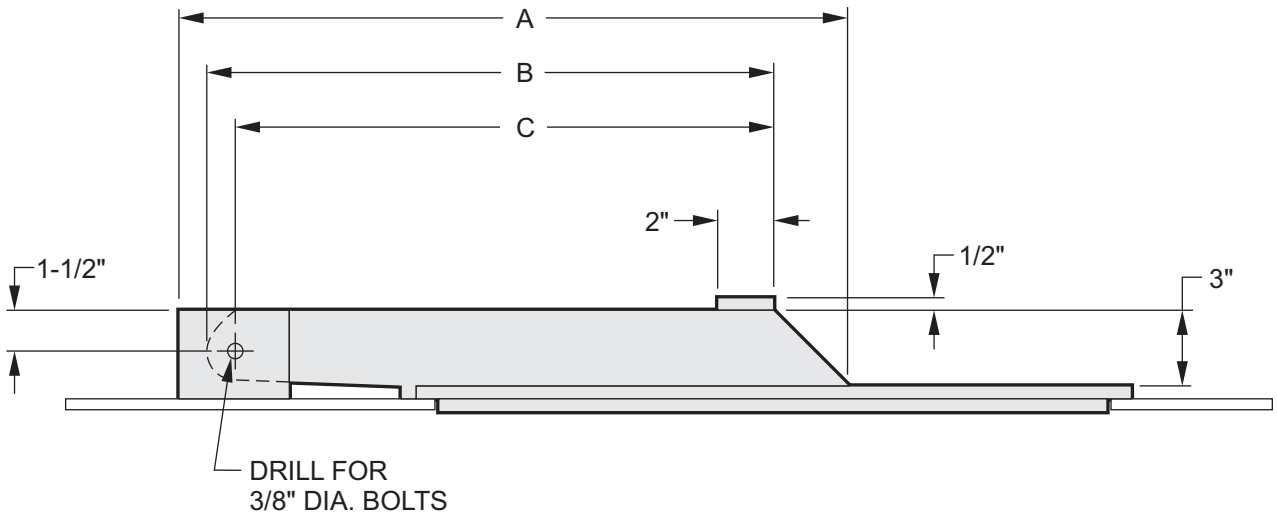
ROUND OPENING				RECTANGULAR OPENING				
D	A	B	C	X	Y	A	B	C
18	21	17	16	18		21	17	16
20	22	18	17	20		22	18	17
24	24	20	19	24		24	20	19



HINGED MANWAY RECTANGULAR



HINGED MANWAY ROUND



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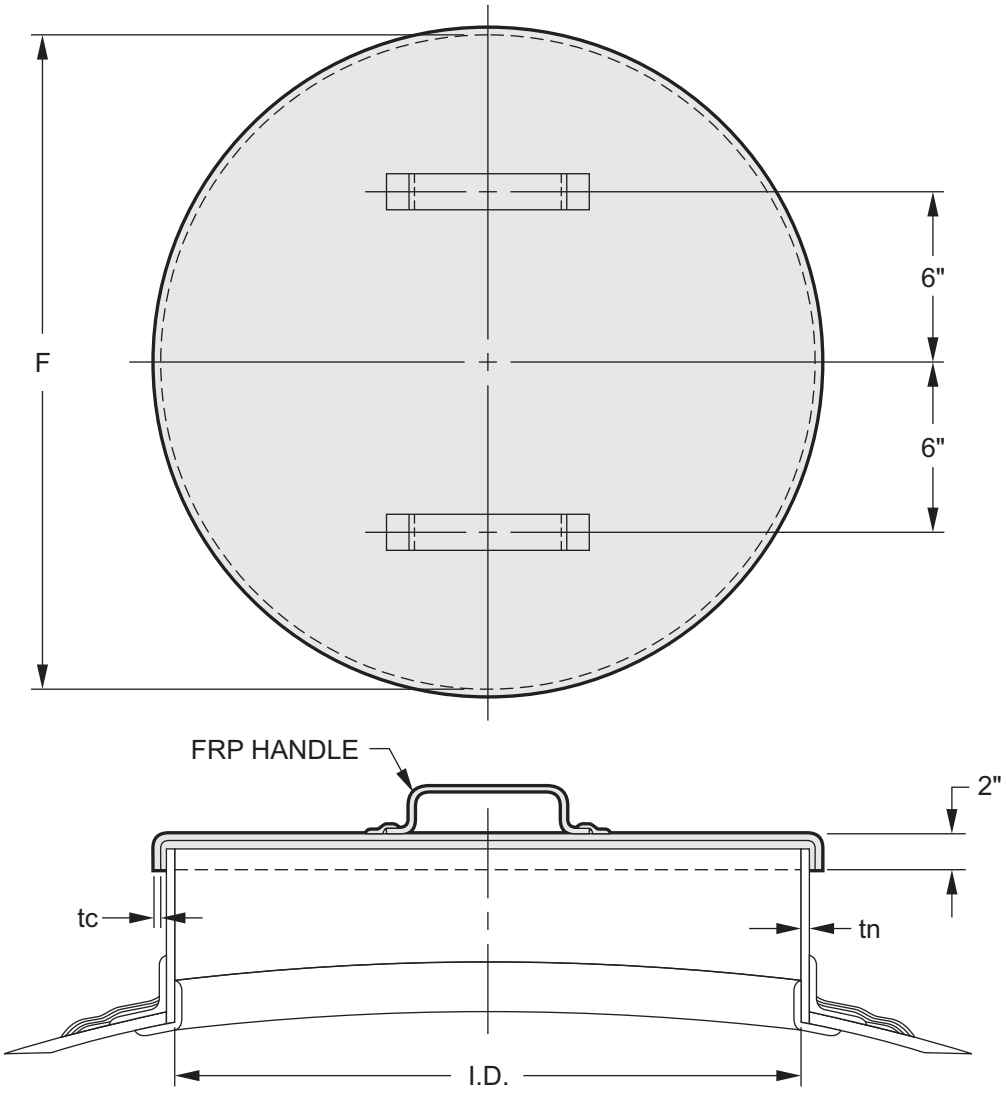
Fitting: **Loose Cap Manway**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. For vapor tight manways, bolted manway styles must be used.
2. Manway cover is not designed for man loading (walking on cover).

COVER I.D. (ALL DIMENSIONS IN INCHES)				
I.D.	F (MIN)	tn	tc	NOTES
18	19	1/4	1/4	
20	21	1/4	1/4	
22	23	1/4	1/4	
24	25	1/4	1/4	
30	31	5/16	5/16	



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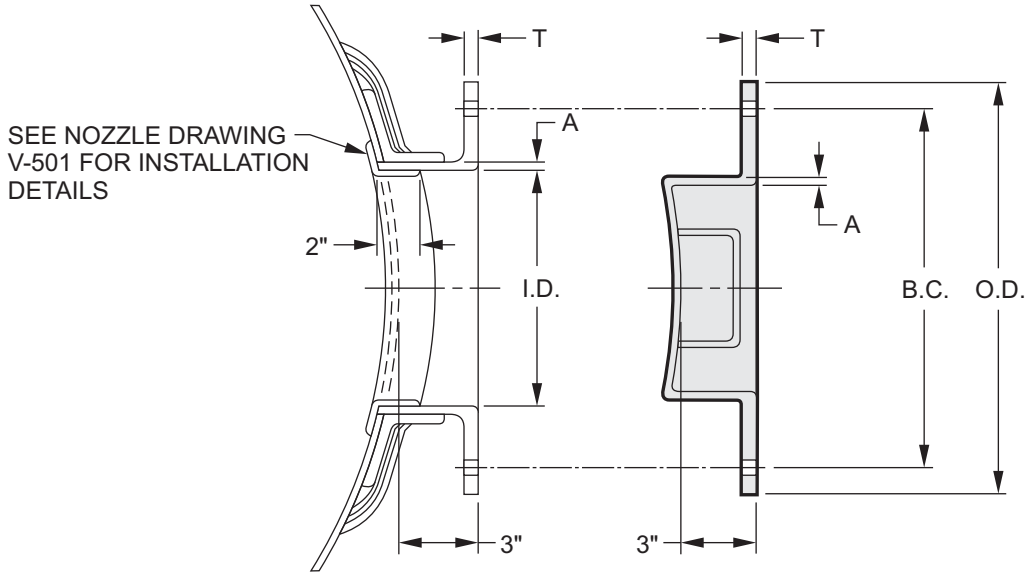
Fitting: Flanged & Bolted Flush Cover Manways

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Manway wall may also set flush on the vessel wall.

MANWAY DIMENSION FOR PRESSURE UP TO 15 PSIG (ALL DIMENSIONS IN INCHES)								
I.D.	FLG O.D.	FLG THK. T	WALL THK. A	B.C.	NO. OF BOLT HOLES	HOLE DIA.	BOLT DIA.	BOLT LENGTH
18	25	1	3/8	22-3/4	16	3/4	5/8	3-1/2
20	27-1/2	1	3/8	25	20	3/4	5/8	3-1/2
22	30	1	3/8	27	20	3/4	5/8	3-1/2
24	32	1-1/4	3/8	29-1/2	20	3/4	5/8	4
30	38-3/4	1-3/8	9/16	36	28	3/4	5/8	4-1/4
36	46	1-3/4	9/16	42-3/4	32	3/4	5/8	5

ACCESSORIES AND OPTIONS				
DESCRIPTION	STANDARD SUPPLY	OPTIONAL MATERIAL	INCLUDED	NOTES
BOLTS	PLATED STEEL			
GASKETS	NEOPRENE			
HANDLES	FRP			
DAVITS	NO			



MANWAY DIMENSION FOR ATMOSPHERIC PRESSURE UP TO 0.5 PSIG (ALL DIMENSIONS IN INCHES)								
I.D.	FLG O.D.	FLG THK. T	WALL THK. A	B.C.	NO. OF BOLT HOLES	HOLE DIA.	BOLT DIA.	BOLT LENGTH
18	25	1/2	1/4	22-3/4	16	1/2	3/8	1-3/4
20	27-1/2	1/2	1/4	25	20	1/2	3/8	1-3/4
22	30	1/2	1/4	27	20	1/2	3/8	1-3/4
24	32	1/2	1/4	29-1/2	20	1/2	3/8	1-3/4
30	38-3/4	7/8	5/16	36	28	1/2	3/8	2-1/2
36	46	7/8	5/16	42-3/4	32	1/2	3/8	2-1/2

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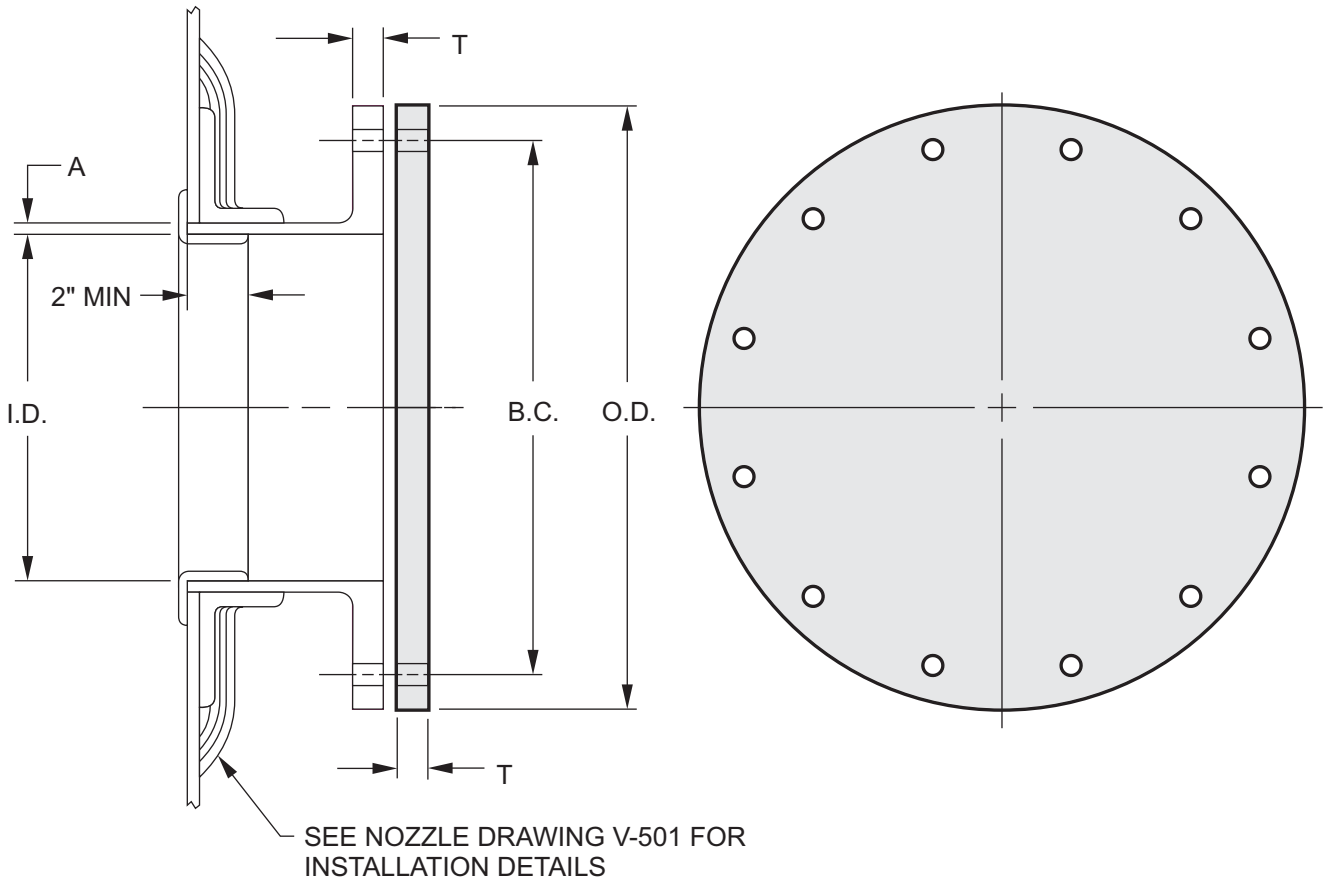
Fitting: **Hand Access Ports**

Fiberglass Tanks & Process Vessels Standards

Notes:
1. See V-660 or V-665 for clear covers and viewports.
2. See nozzle drawing for installation details.
3. Alternative pressure ratings to be reviewed and confirmed by engineering.

ACCESS PORT DIMENSIONS FOR ATMOSPHERIC PRESSURE UP TO 0.5 PSIG (ALL DIMENSIONS IN INCHES)								
I.D.	FLG O.D.	FLG THK. T	WALL THK A	B.C.	NO. OF BOLT HOLES	HOLE DIA.	BOLT DIA.	BOLT LENGTH
6	11	1/2	1/4	9-1/2	8	1/2	3/8	1-3/4
8	13-1/2	1/2	1/4	11-3/4	8	1/2	3/8	1-3/4
10	16	1/2	1/4	14-1/4	12	1/2	3/8	1-3/4
12	19	1/2	1/4	17	12	1/2	3/8	1-3/4
14	21	7/8	5/16	18-3/4	12	1/2	3/8	2-1/2
16	23-1/2	7/8	5/16	21-1/4	16	1/2	3/8	2-1/2

ACCESSORIES AND OPTIONS				
DESCRIPTION	STANDARD SUPPLY	OPTIONAL MATERIAL	INCLUDED	NOTES
BOLTS	PLATED STEEL			
GASKETS	NEOPRENE			
HANDLES	NO			
DAVITS	NO			



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Fitting: **Fill Line**

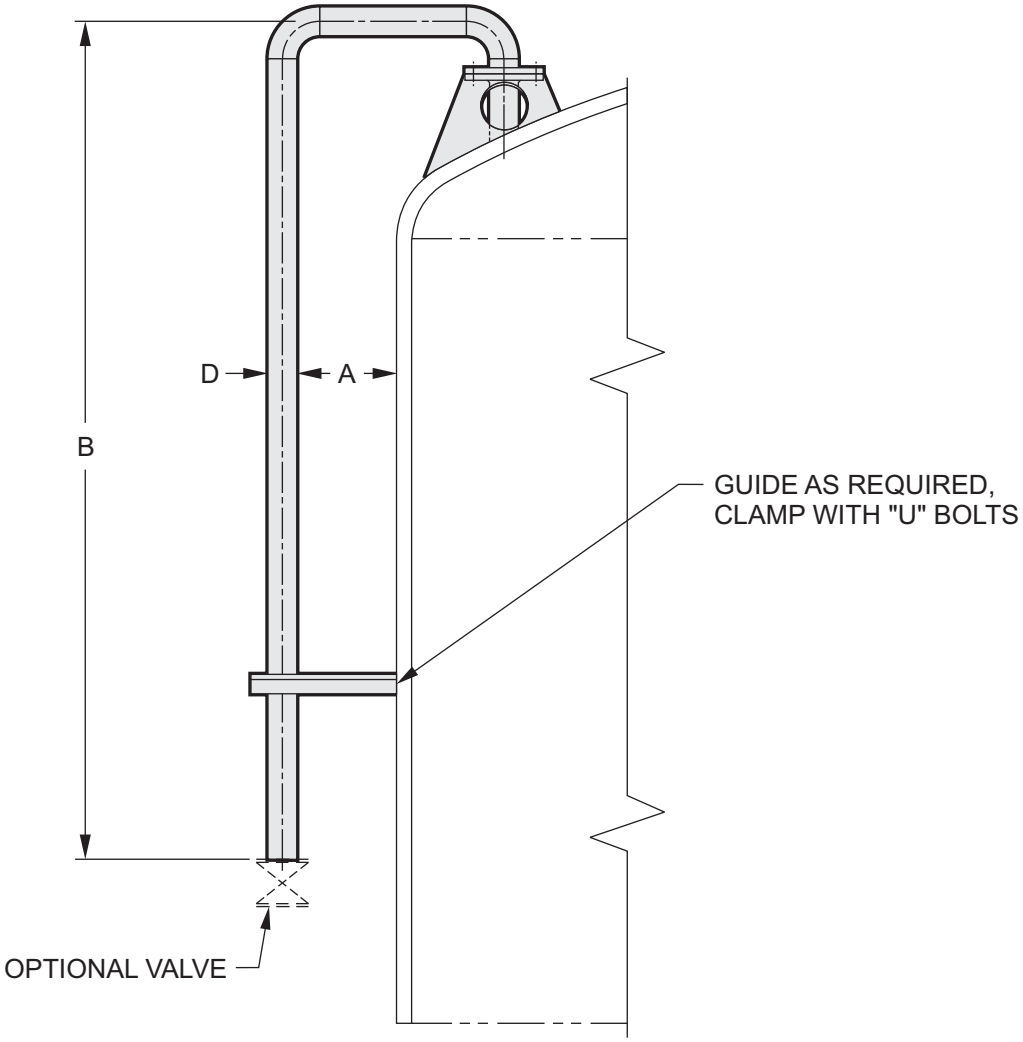
Fiberglass Tanks & Process Vessels Standards

Notes: 1. The fill line V-640 does not include the vessel nozzle, specified elsewhere.
2. Valves on equipment bolted to the fill line require independent support.

SIZE "D"	STANDOFF "A"	LENGTH "B"	PIPE MATERIALS OF CONSTRUCTION	BRACKET STYLE	BRACKET NUMBER	"U" BOLT MATL. OF CONSTRUCTION

"A" IS TYPICALLY 6"

OPTIONS			
DESCRIPTION	INCLUDED	MATERIAL	NOTES
VALVE			
QUICK DISCONNECT FITTINGS			
BOLTS			
GASKETS			



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Fitting: **Overflow Line**

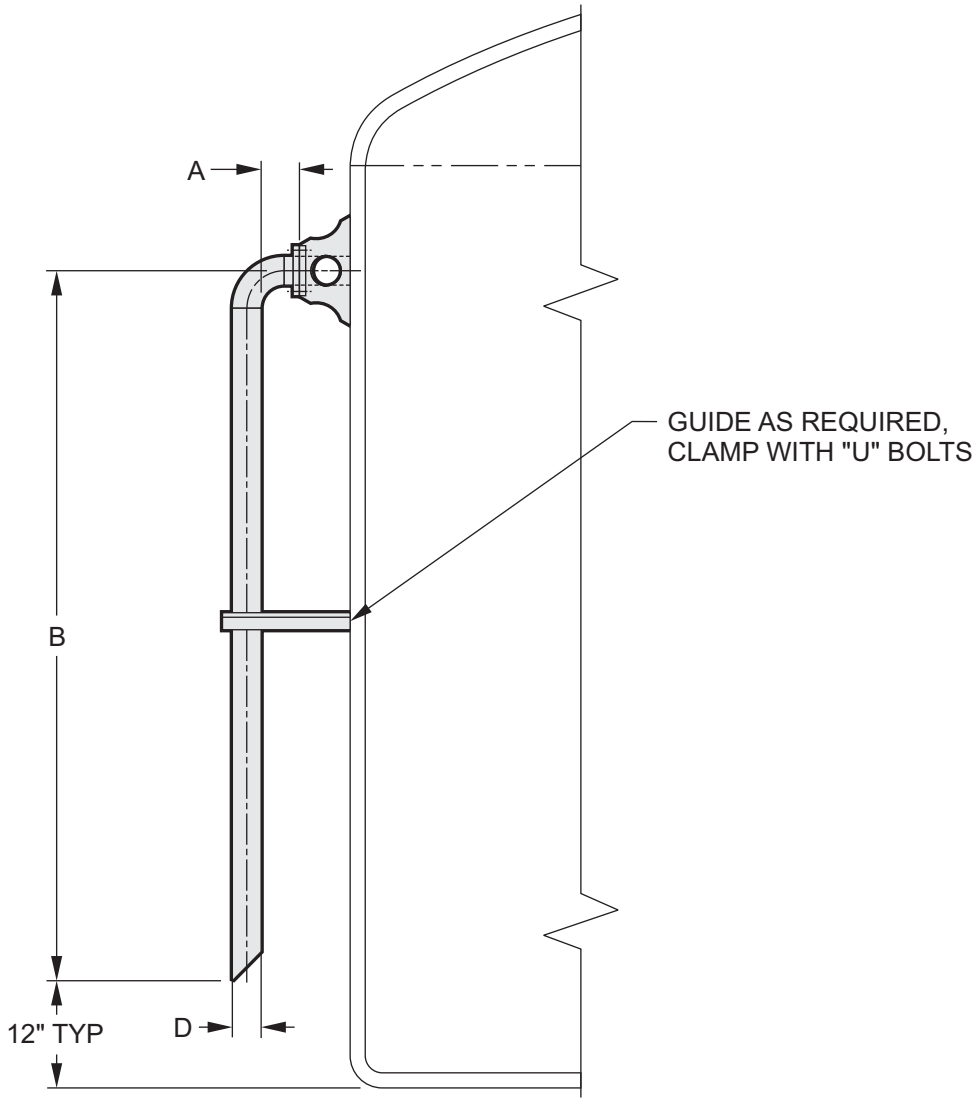
Fiberglass Tanks & Process Vessels Standards

Notes: 1. Overflow line V-643 does not include the vessel nozzle, specified elsewhere.

SIZE "D"	STANDOFF "A"	LENGTH "B"	PIPE MATERIALS OF CONSTRUCTION	BRACKET STYLE	BRACKET NUMBER	"U" BOLT MATL. OF CONSTRUCTION

"A" IS TYPICALLY 1.5 x "D"

ACCESSORIES AND OPTIONS				
DESCRIPTION	STANDARD SUPPLY	OPTIONAL MATERIAL	INCLUDED	NOTES
BOLTS	PLATED STEEL			
GASKETS	NEOPRENE			



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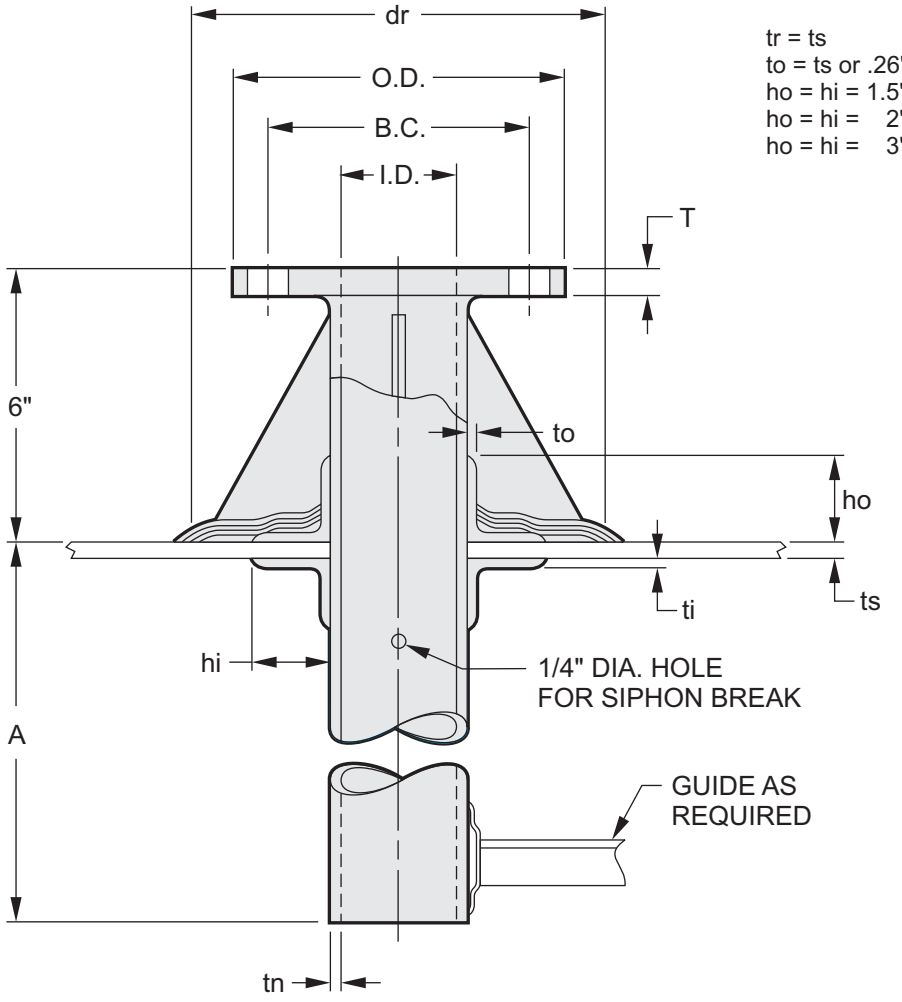
Email: info@compositesusa.com

Fitting: Dip Pipe Fixed

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Nozzles 4" diameter and smaller are plate gusseted, #550 cone or #555 plate style unless otherwise specified.
2. ti as shown unless otherwise specified.

STANDARD TYPE NOZZLE SCHEDULE 150# DRILLING PER ASME RTP-1 (ALL DIMENSIONS IN INCHES)								
PIPE I.D.	FLG O.D.	FLG B.C.	NO. OF HOLES	STD 50 PSI			ti	dr
				HOLE DIA.	T (MIN.)	tn		
1	4-3/4	3-1/8	4	5/8	1/2	3/16	CB+M	7
1-1/2	5-1/2	3-7/8	4	5/8	1/2	3/16	CB+M	7.5
2	6	4-3/4	4	3/4	5/8	1/4	CB+M	8
3	7-1/2	6	4	3/4	5/8	1/4	CB+M	9
4	9	7-1/2	8	3/4	13/16	1/4	CB+M	10
6	11	9-1/2	8	7/8	15/16	1/4	CB+M	12
8	13-1/2	11-3/4	8	7/8	1-1/8	1/4	CB+M	16
10	16	14-1/4	12	1	1-1/4	1/4	CB+M	20
12	19	17	12	1	1-7/16	1/4	CB+M	24



tr = ts
to = ts or .26" minimum
ho = hi = 1.5" ts < 3/8"
ho = hi = 2" ts < 1/2"
ho = hi = 3" ts < 3/4"

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Fitting: Dip Pipe - Removable

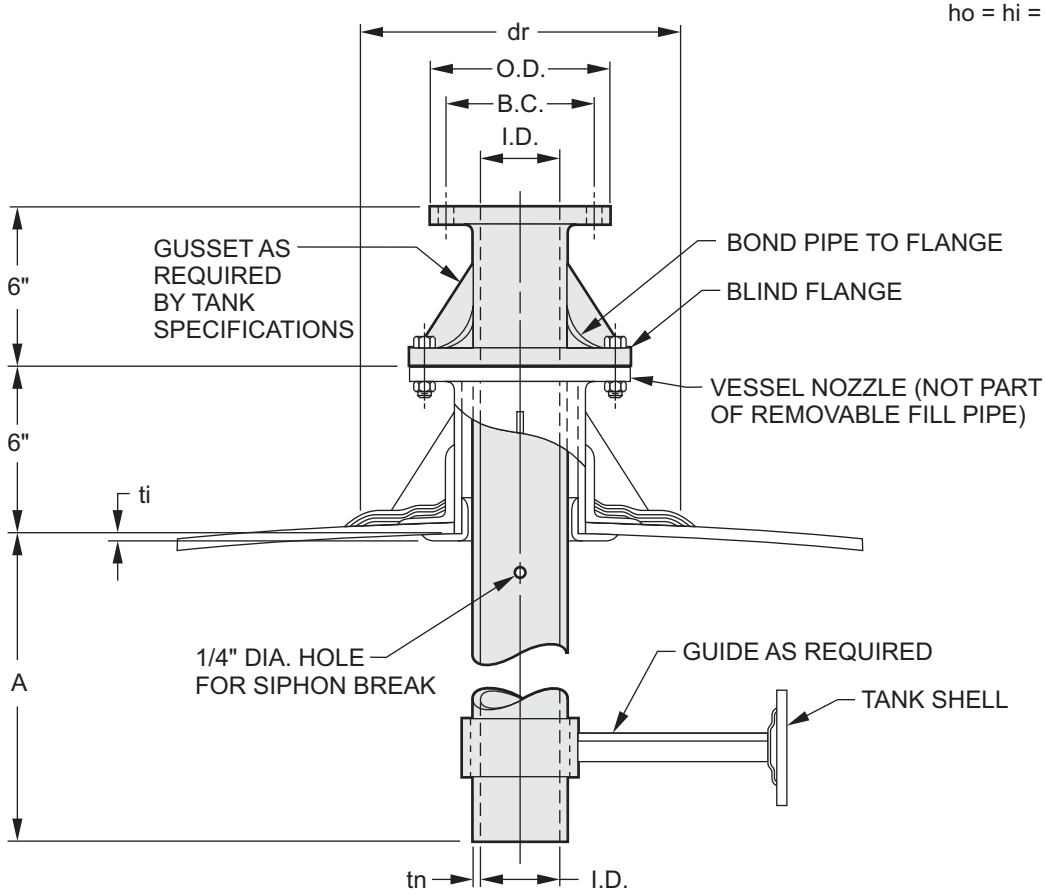
Fiberglass Tanks & Process Vessels Standards

Notes: 1. Nozzles 4" diameter and smaller are plate gusseted unless otherwise specified.

STANDARD TYPE NOZZLE SCHEDULE 150# DRILLING PER ASME RTP-1 (ALL DIMENSIONS IN INCHES)								
PIPE I.D.	FLG O.D.	FLG B.C.	NO. OF HOLES	STD 50 PSI			ti	dr
				HOLE DIA.	T (MIN.)	tn		
1	4-3/4	3-1/8	4	5/8	1/2	3/16	CB+M	7
1-1/2	5-1/2	3-7/8	4	5/8	1/2	3/16	CB+M	7.5
2	6	4-3/4	4	3/4	5/8	1/4	CB+M	8
3	7-1/2	6	4	3/4	5/8	1/4	CB+M	9
4	9	7-1/2	8	3/4	13/16	1/4	CB+M	10
6	11	9-1/2	8	7/8	15/16	1/4	CB+M	12
8	13-1/2	11-3/4	8	7/8	1-1/8	1/4	CB+M	16
10	16	14-1/4	12	1	1-1/4	1/4	CB+M	20
12	19	17	12	1	1-7/16	1/4	CB+M	24

OPTIONAL TABLE			
DESCRIPTION	MATERIAL OF CONSTRUCTION	INCLUDED	NOTES
BOLTS/NUTS	PLATED STL.	YES	
GASKETS	NEOPRENE	YES	
PIPE	FRP	YES	

tr = ts
to = ts or .26" minimum
ho = hi = 1.5" ts ≤ 3/8"
ho = hi = 2" ts ≤ 1/2"
ho = hi = 3" ts ≤ 3/4"



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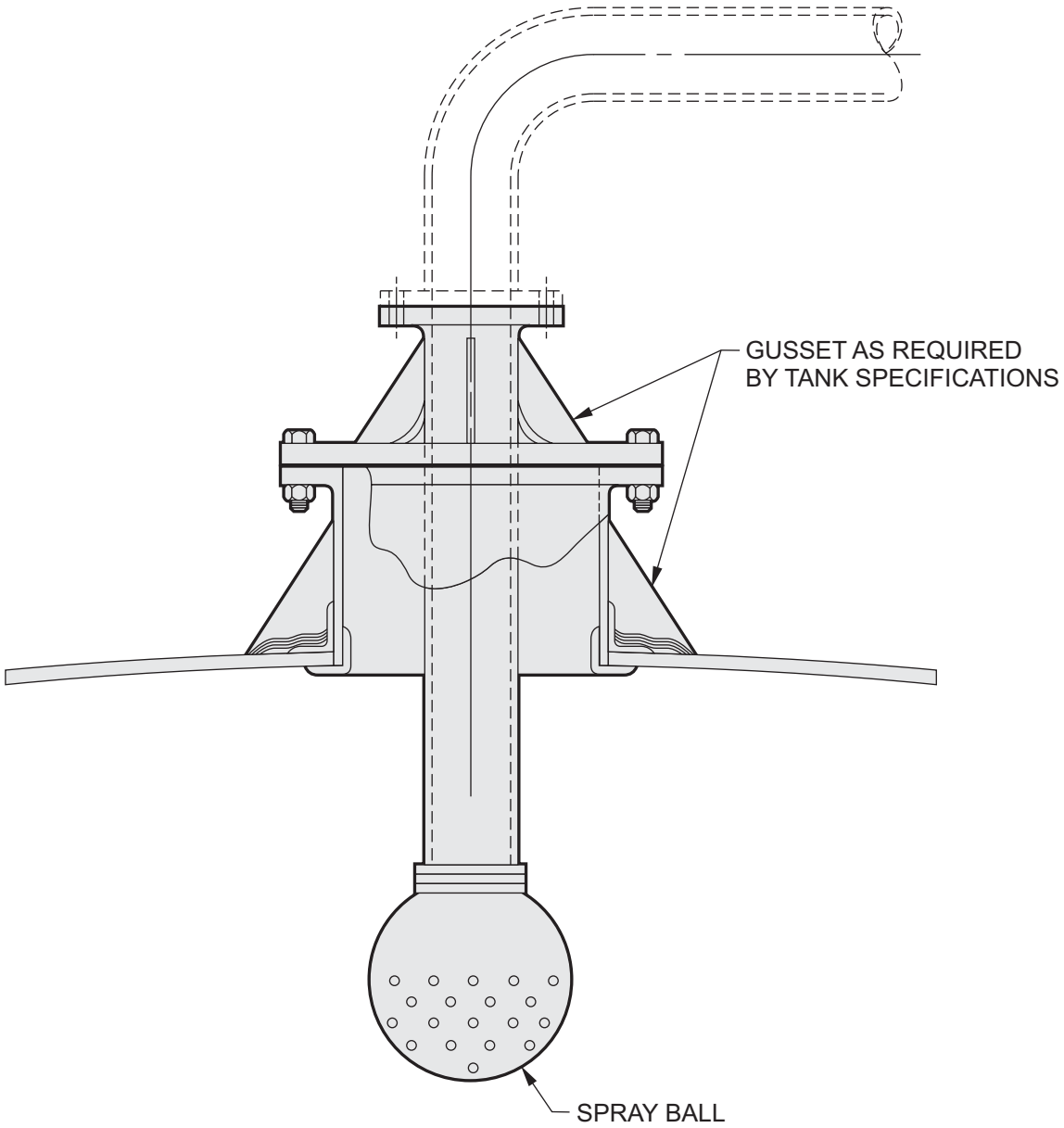
Fitting: **Clean In Place (CIP)**

Fiberglass Tanks & Process Vessels Standards

Notes:
1. See Fitting #505 for standard nozzle installation.
2. Spray balls sized per specified project requirements.
3. Materials of construction and connection styles determined based upon project requirements.



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Fitting: Spray Lance-Directed Spray

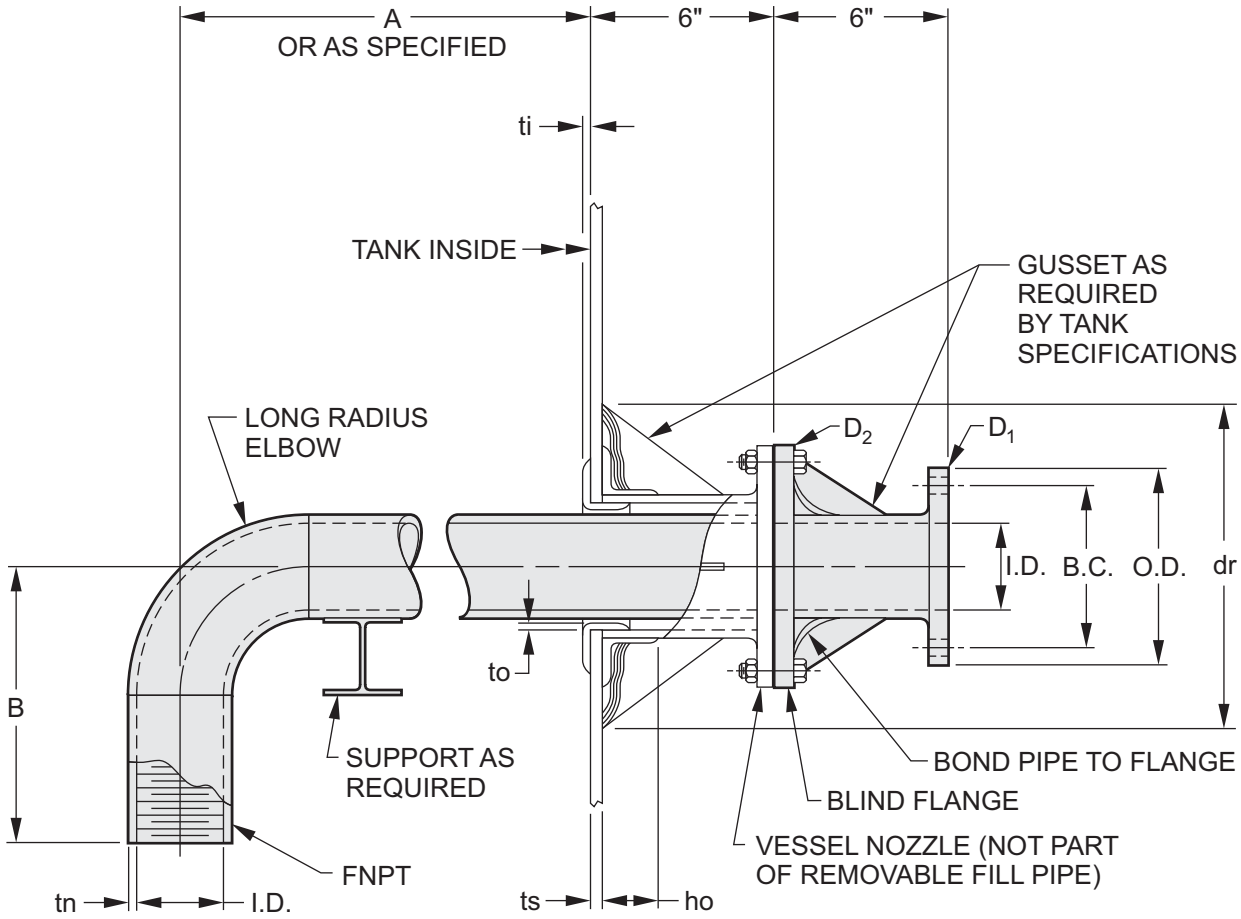
Fiberglass Tanks & Process Vessels Standards

Notes:
1. Nozzles 4" diameter and smaller are plate gusseted unless otherwise specified.
2. Short radius miter joint may replace long radius elbow if clearance requirements dictate.

STANDARD TYPE NOZZLE SCHEDULE 150# DRILLING PER ASME RTP-1 (ALL DIMENSIONS IN INCHES)								
PIPE I.D.	FLG O.D.	FLG B.C.	NO. OF HOLES	STD 50 PSI			ti	dr
				HOLE DIA.	T (MIN.)	tn		
1	4-3/4	3-1/8	4	5/8	1/2	3/16	CB+M	7
1-1/2	5-1/2	3-7/8	4	5/8	1/2	3/16	CB+M	7.5
2	6	4-3/4	4	3/4	5/8	1/4	CB+M	8
3	7-1/2	6	4	3/4	5/8	1/4	CB+M	9
4	9	7-1/2	8	3/4	13/16	1/4	CB+M	10
6	11	9-1/2	8	7/8	15/16	1/4	CB+M	12
8	13-1/2	11-3/4	8	7/8	1-1/8	1/4	CB+M	16

INTERNAL SUPPORT	
REQUIRED Y/N	
SUPPORT MATERIAL	
CLAMP MATERIAL	

tr = ts
to = ts or .26" minimum
ho = hi = 1.5" ts < 3/8"
ho = hi = 2" ts < 1/2"
ho = hi = 3" ts < 3/4"



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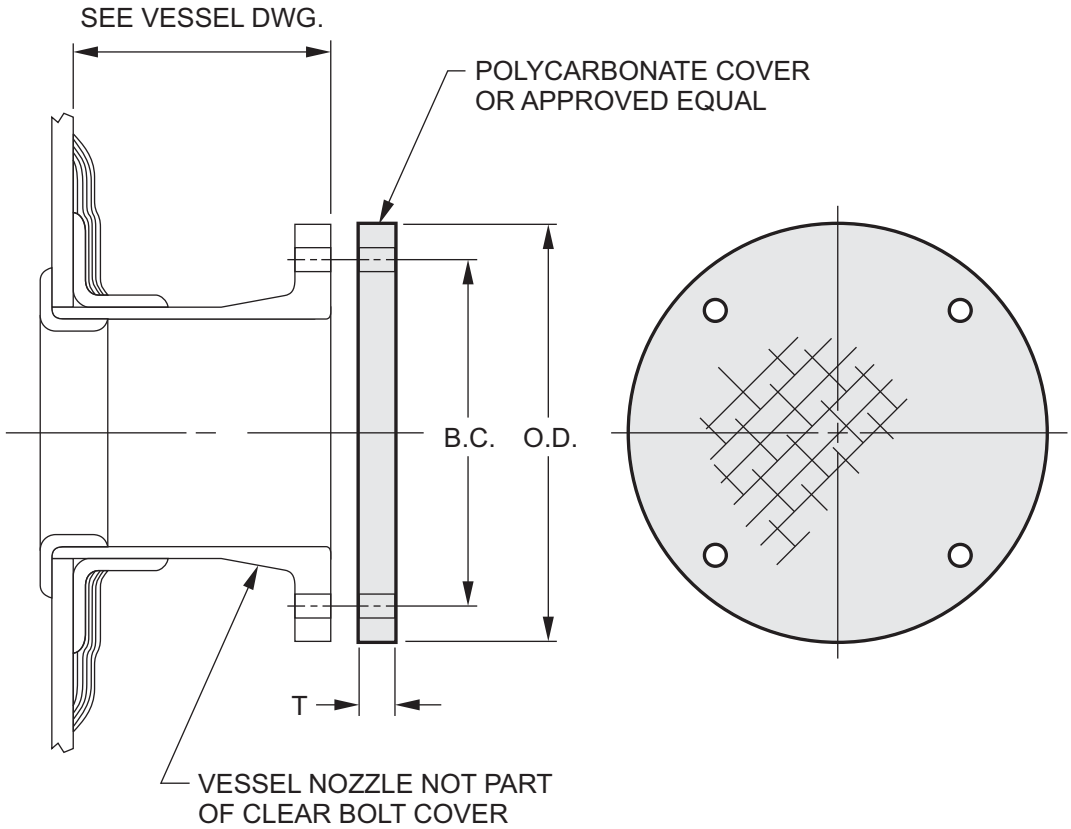
Fitting: View Port With Clear Bolt-on Cover

Fiberglass Tanks & Process Vessels Standards

Notes: 1. For nozzle specifications see standard nozzle schedule.

COVER DIMENSIONS FOR ATMOSPHERIC PRESSURE UP TO 0.5 PSIG (ALL DIMENSIONS IN INCHES)						
SIZE	COVER O.D.	THICKNESS T	B.C.	NO. OF BOLT HOLES	HOLE DIA.	BOLT DIA.
6	11	1/2	9-1/2	8	1/2	3/8
8	13-1/2	1/2	11-3/4	8	1/2	3/8
10	16	1/2	14-1/4	12	1/2	3/8
12	19	1/2	17	12	1/2	3/8
14	21	1/2	18-3/4	12	1/2	3/8
16	23-1/2	1/2	21-1/4	16	1/2	3/8
18	25	1/2	22-3/4	16	1/2	3/8
20	27-1/2	1/2	25	20	1/2	3/8
22	30	1/2	27	20	1/2	3/8
24	32	1/2	29-1/2	20	1/2	3/8
30	38-3/4	1/2	36	28	1/2	3/8



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Fitting: View With Glass Bolt-on Cover

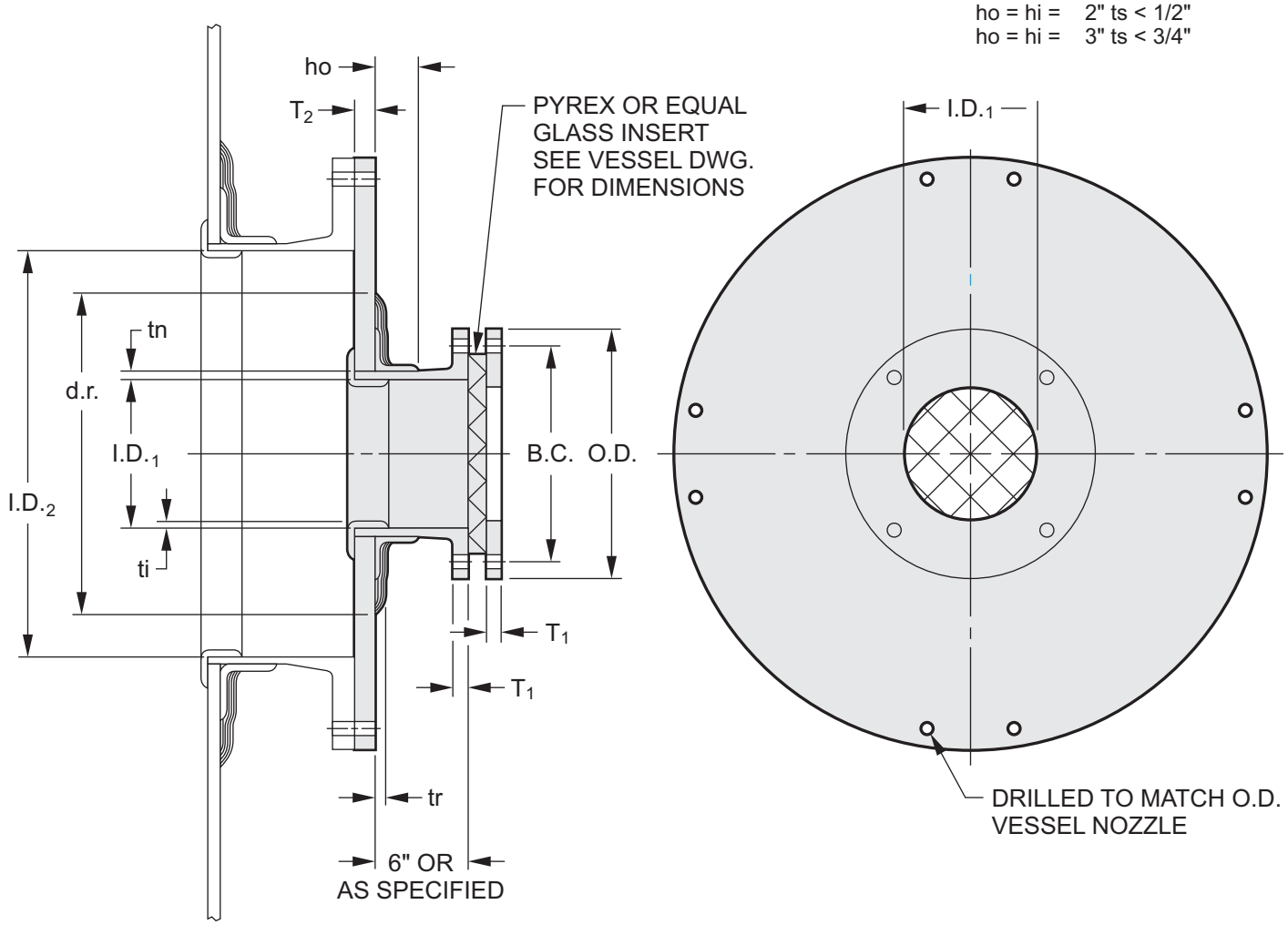
Fiberglass Tanks & Process Vessels Standards

Notes: 1. For nozzle specifications, see standard nozzle schedule.

STANDARD TYPE NOZZLE SCHEDULE 150# DRILLING PER ASME RTP-1 (ALL DIMENSIONS IN INCHES)								
VIEW PIPE I.D.	VIEW FLG O.D.	VIEW FLG B.C.	NO. OF HOLES	STD 50 PSI			ti	dr
				HOLE DIA.	T (MIN.)	tn		
4	9	7-1/2	8	3/4	13/16	3/16	CB+M	10
6	11	9-1/2	8	7/8	15/16	3/16	CB+M	12
8	13-1/2	11-3/4	8	7/8	1-1/8	3/16	CB+M	16
10	16	14-1/4	12	1	1-1/4	3/16	CB+M	20
COVER I.D.2	COVER O.D.	FLANGE B.C.2	COVER NO. OF HOLES	COVER HOLES DIA.	T2			

GLASS O.D.		NOTES
ANNEALED Y/N		
TEMPERED Y/N		

tr = ts
to = ts or .26" minimum
ho = hi = 1.5" ts < 3/8"
ho = hi = 2" ts < 1/2"
ho = hi = 3" ts < 3/4"



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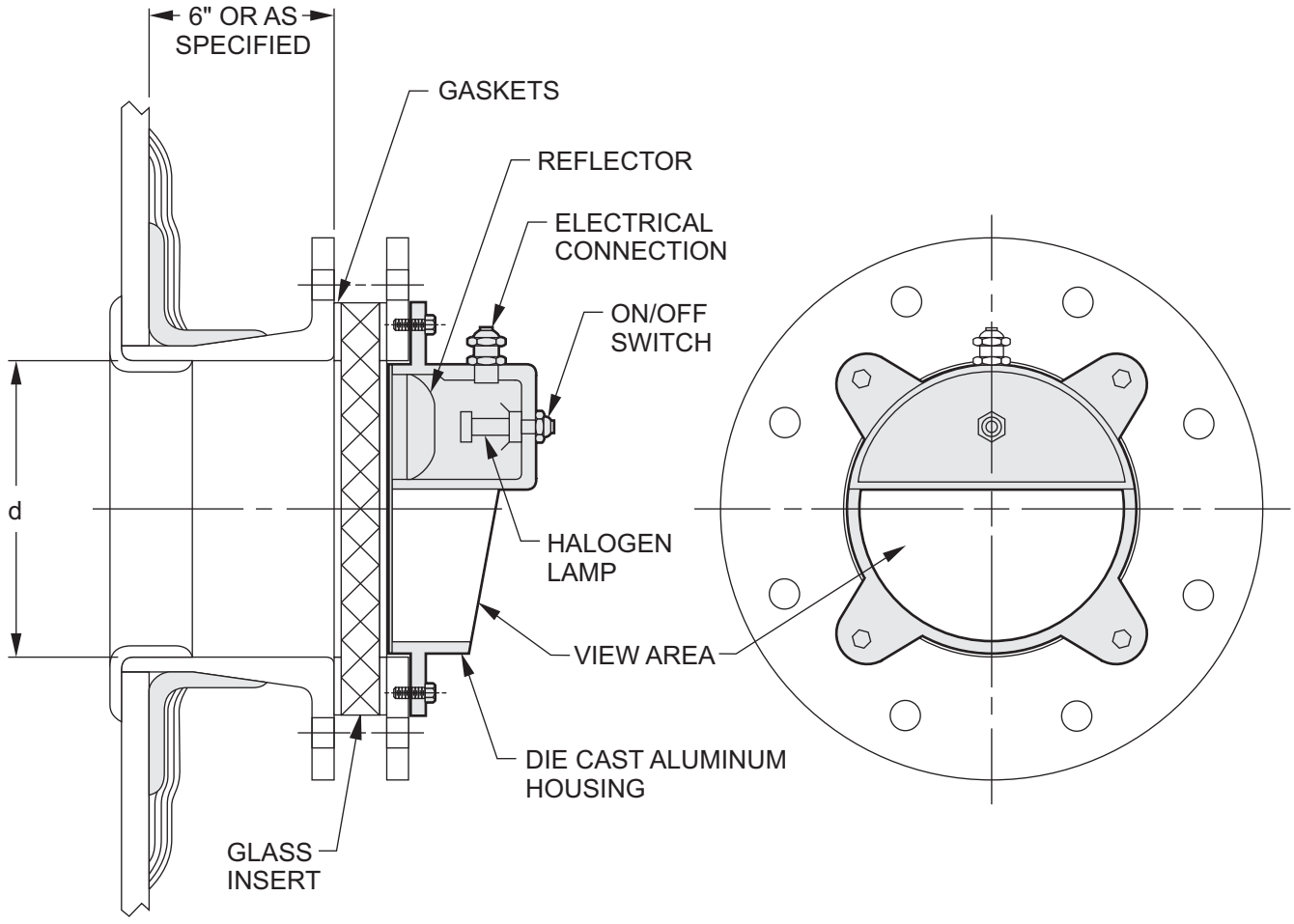
Fitting: **Illuminated View Port**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. For nozzle specifications, see standard nozzle schedule V-505.
2. This unit is suitable for installation in non-hazardous areas. Contact factory for other requirements.

SIZES "d"	VOLTAGE	OPTIONAL VOLTAGE	WATTAGE	NOTES
3	24	NA	20	
4	24	120	50	
5	24	120	50 OR 100	
6	24	120	50 OR 100	
7	24	120	50 OR 100	
9	24	120	100	
BOLTS		PLATED STEEL		
GASKETS		NEOPRENE		

"d" = NOMINAL INCHES



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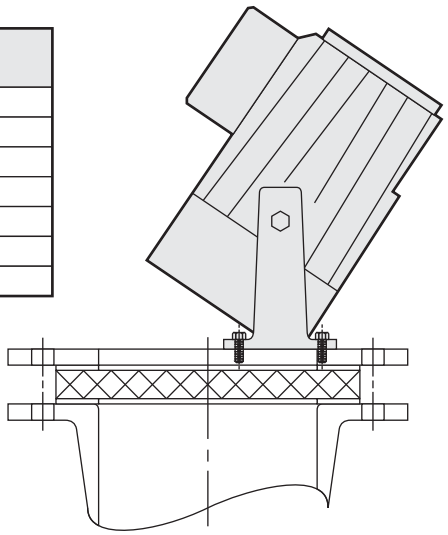
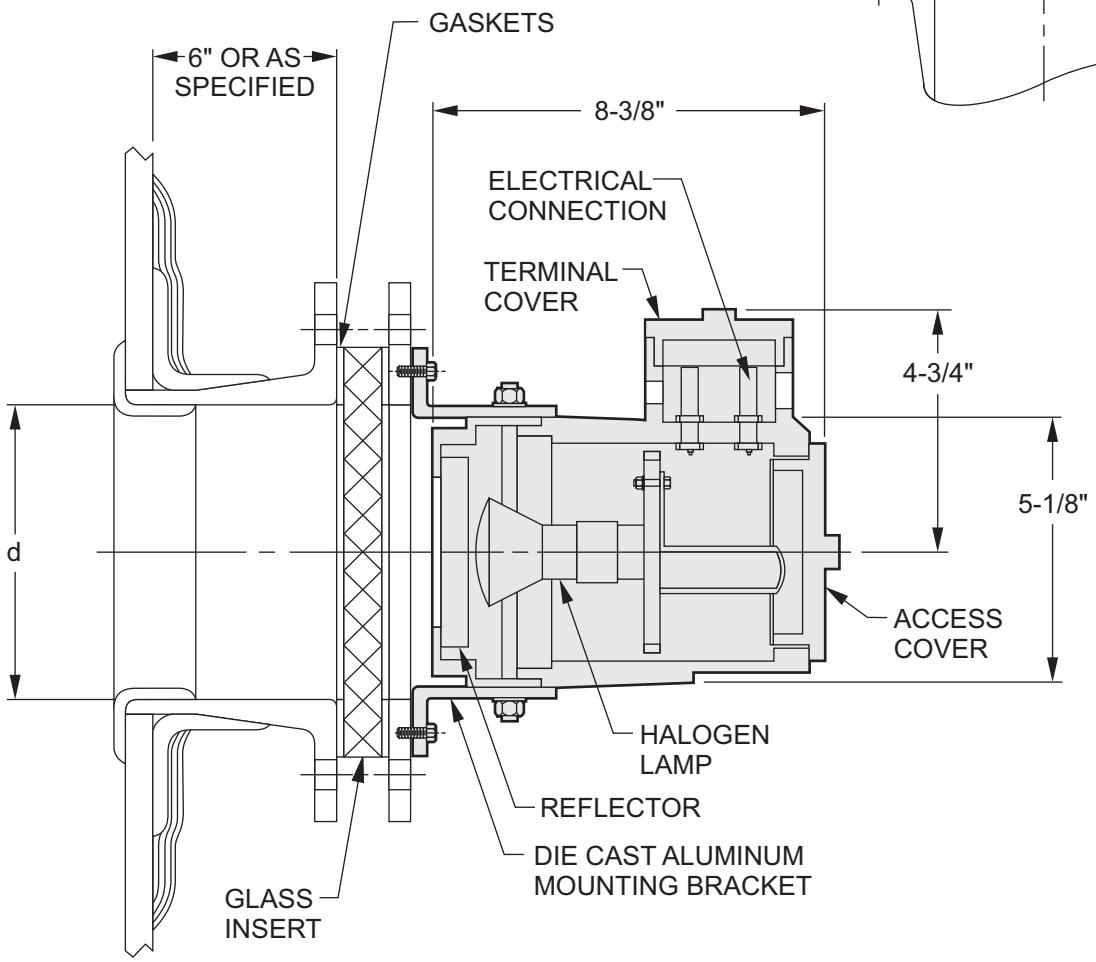
Fitting: **Full Hinged Light Port**

Fiberglass Tanks & Process Vessels Standards

Notes:
1. For nozzle specifications, see standard nozzle schedule V-505.
2. This unit is suitable for installation in Class 1, Div. 1 & 2 Group C & D environment.
3. For light ports 3" diameter and larger.

DESCRIPTION	VOLTAGE	POWER REQUIRED	NOTES
(120V) SPOT 35 W	120	120V/35W	
(120V) FLOOD 35 W	120	120V/35W	
(120V) SPOT 35 W	120	120V/35W	
(120V) FLOOD 35 W	120	120V/35W	
(120V) FLOOD 35 W	120	120V/35W	
BOLTS	PLATED STEEL		
GASKETS	NEOPRENE		





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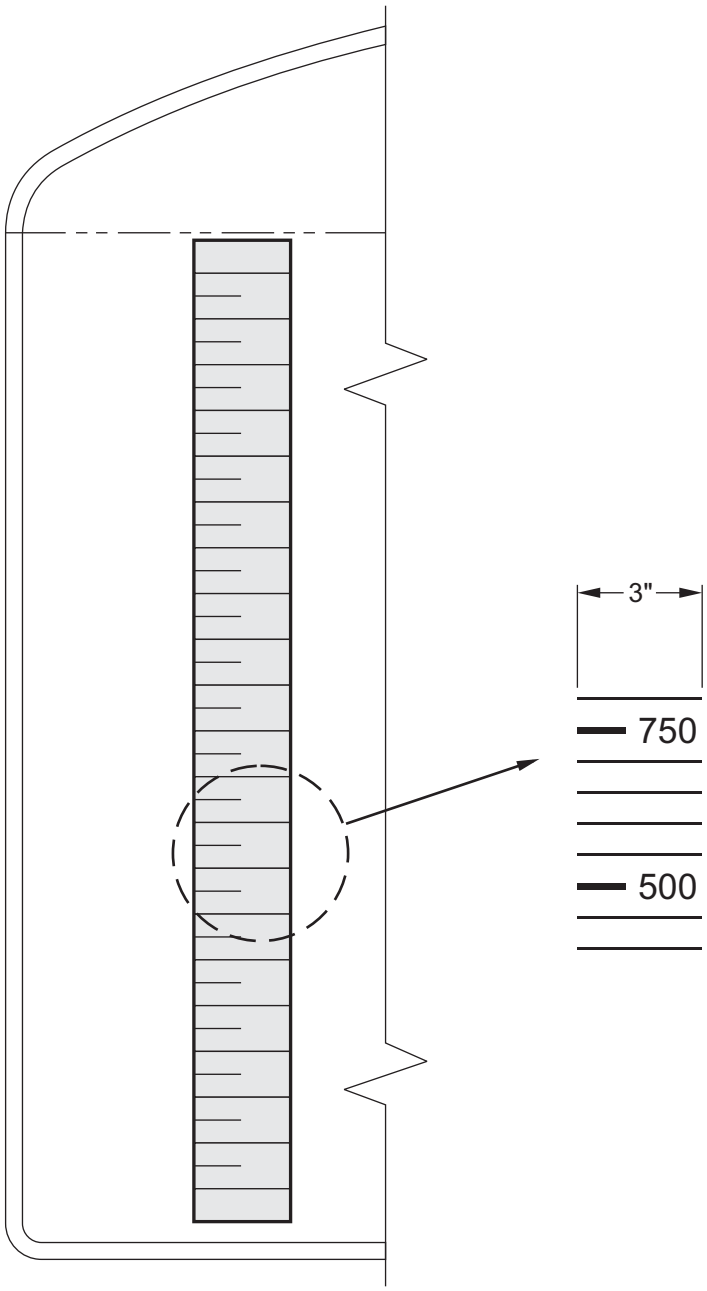
Fitting: **Gage Strip**

Notes:
1. Gages provide large numerals every 50 gallons on 24" & 48" diameter tanks with 10 gallon increments. Every 100 gallons on 72" & 96" diameter tanks with 20 gallon increment marks. And every 250 gallons on 120" & 144" diameter tank with 50 gallon increment marks.
2. Gage strip to be permanently marked on paper label and laminated to outside of vessel.



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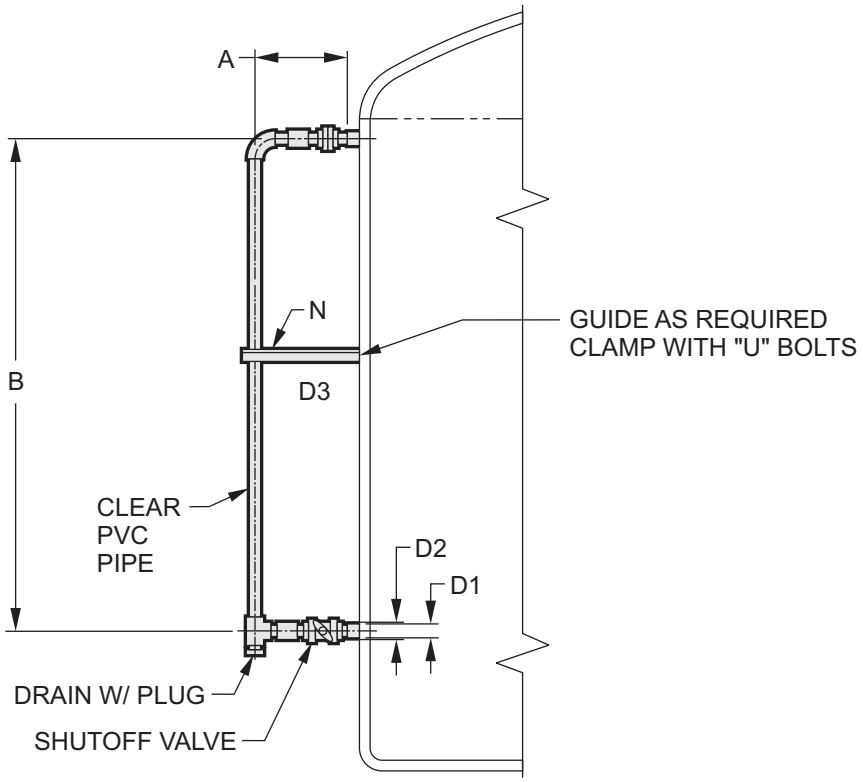
Fitting: Level Stand-off Gages

Notes: 1. The level gauge, V-690, does not include the vessel connections, specified elsewhere.

LEVEL GAUGE DIMENSIONS		SIZES, INCHES	NOTES
CONNECTION SIZE (DIAMETER)	D1		
FITTING DIAMETER	D2		
CLEAR TUBE DIAMETER	D3		
STAND-OFF	A		
CENTERLINE LENGTH	B		
NUMBER GAUGE GUIDES	N		

OPTIONS	INCLUDED	STANDARD	OPTIONAL
VESSEL CONNECTIONS		NPT THREADED	FLANGED
FITTING END STYLE	Y	SOCKET WELD	FLANGED, THREADED
FITTINGS	Y	PVC	CPVC, FRP, SS, PVDF, ALLOY
CLEAR TUBE	Y	PVC	GLASS, TEFLON, REFLEX GAUGES
VALVE - BOTTOM SHUTOFF	Y	PVC	CPVC, FRP, SS, PVDF, ALLOY
VALVE - TOP SHUTOFF	N	PVC	CPVC, FRP, SS, PVDF, ALLOY
VALVE - BOTTOM DRAIN	Y	PVC	CPVC, FRP, SS, PVDF, ALLOY
VALVE - TOP VENT	N	PVC	CPVC, FRP, SS, PVDF, ALLOY
GAUGE GUIDE	Y	PVC	SS, PLATED STEEL
BOLT HARDWARE	Y	PLATED STEEL	STAINLESS, FRP, ALLOY
GASKETS	Y	NEOPRENE	EPDM, VITON, TEFLON, OTHER



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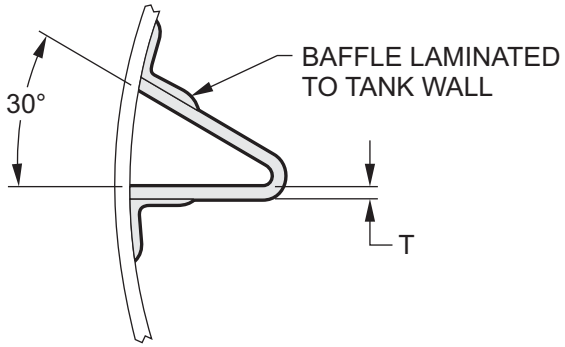
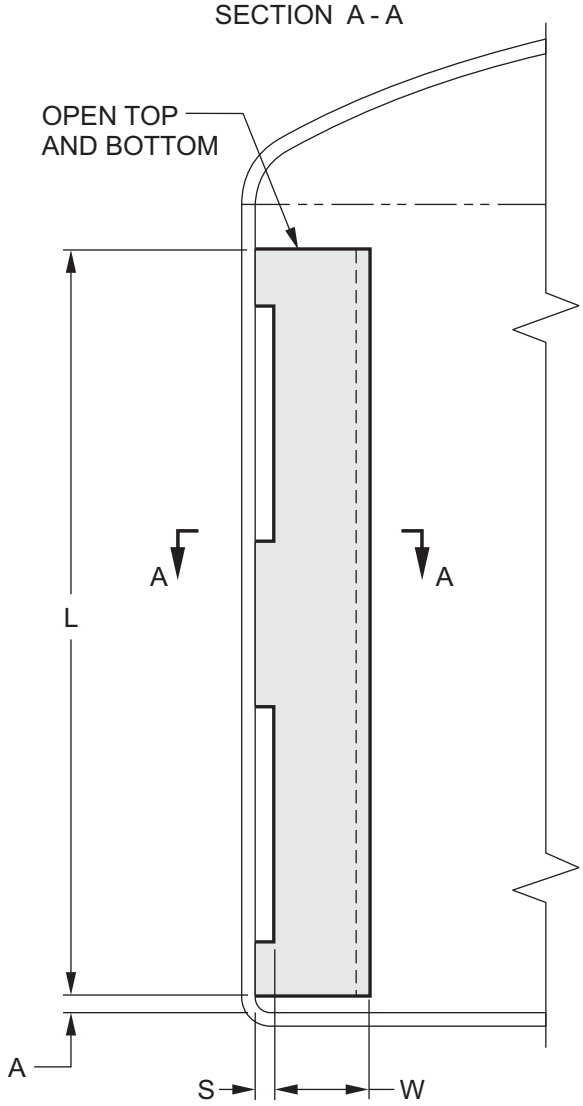
Fitting: **Wedge Baffles With Stand-off**

TABLE					
TANK DIA.	A	L	S	T	W



SECTION A - A



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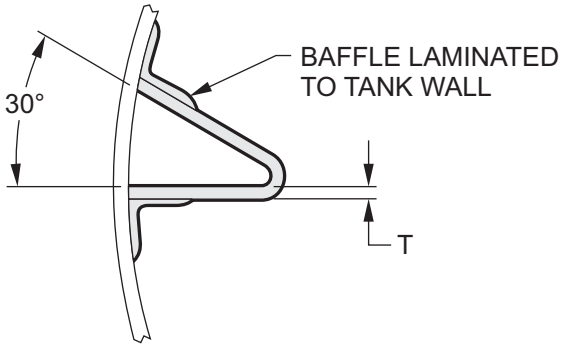
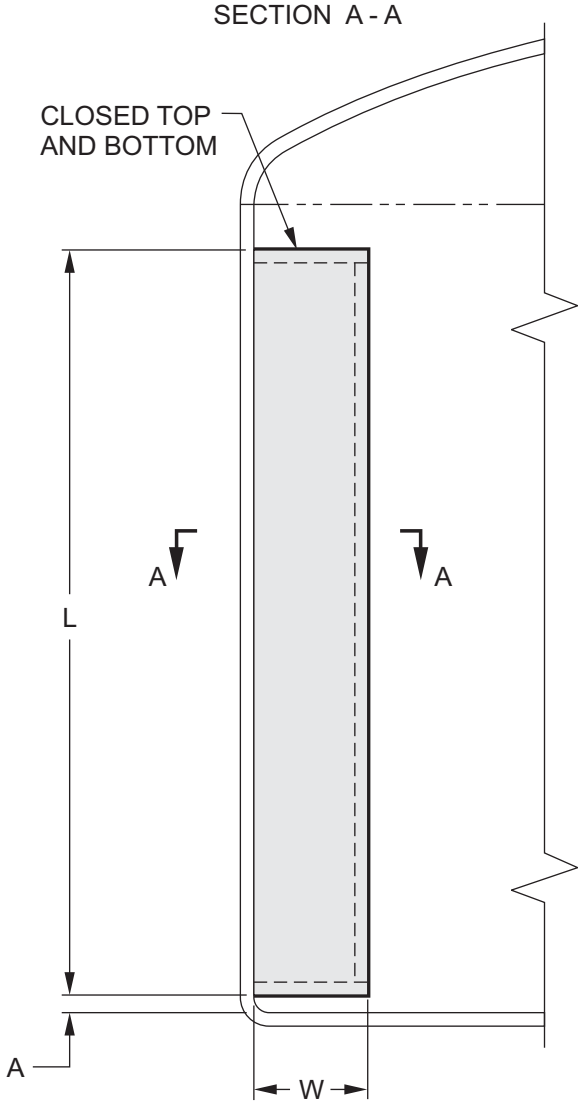
Fitting: **Wedge Baffle Without Stand-off**

TABLE				
TANK DIA.	A	L	T	W

W=1/12 OF TANK DIAMETER, OR AS SPECIFIED



SECTION A - A



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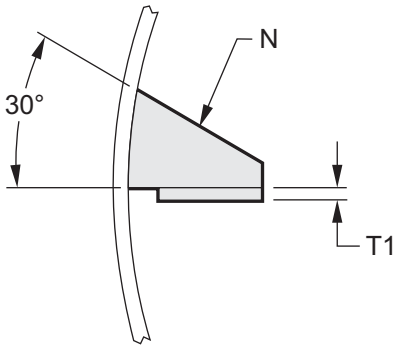
Fitting: **Plate Baffle With Stand-off**

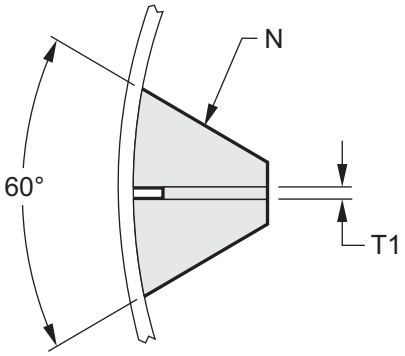
Fiberglass Tanks & Process Vessels Standards

Notes: 1. Standard for clockwise rotation. Specify counter clockwise rotation for opposite flow.

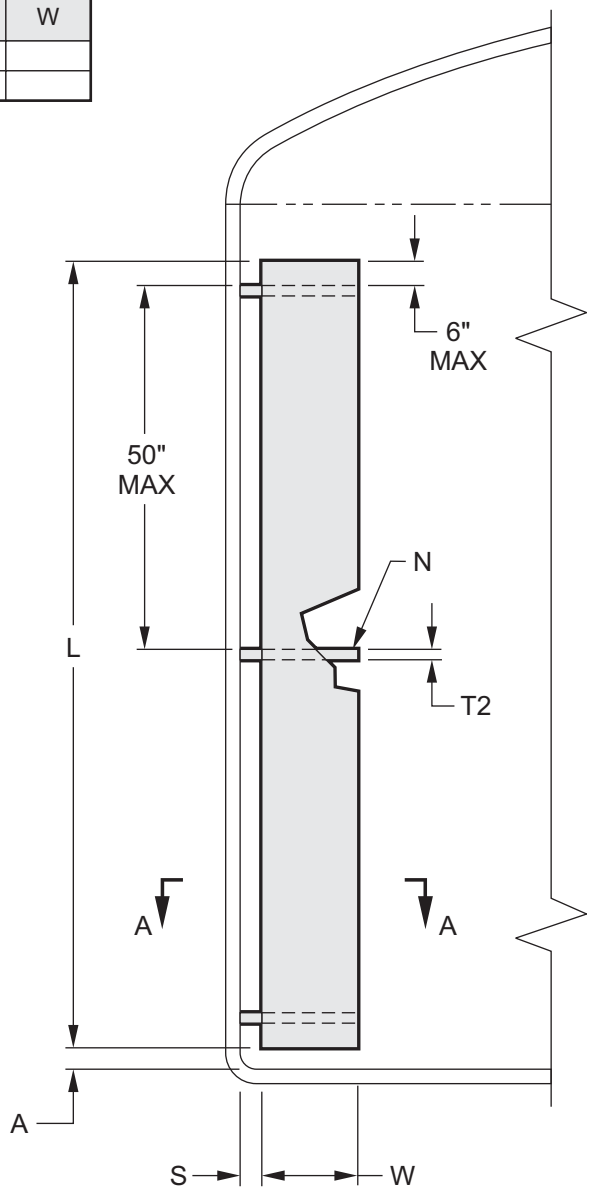
TABLE							
TANK DIA.	A	L	N	S	T1	T2	W



SECTION A - A
STANDARD 30° BRACKET



OPTIONAL 60° BRACKET



W=1/12 OF TANK DIAMETER, OR AS SPECIFIED
S=STANDOFF, 1", OR AS SPECIFIED

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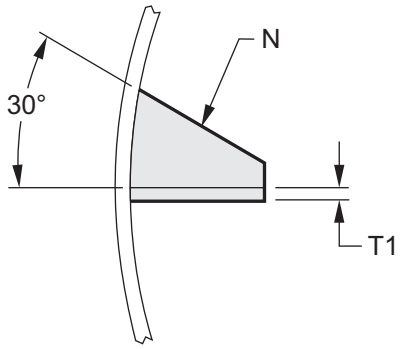
Fitting: **Plate Baffle Without Stand-off**

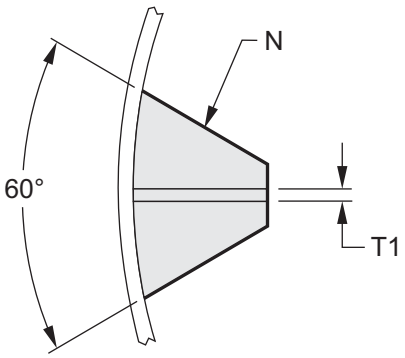
Fiberglass Tanks & Process Vessels Standards

Notes: 1. Standard for clockwise rotation. Specify counter clockwise rotation for opposite flow.

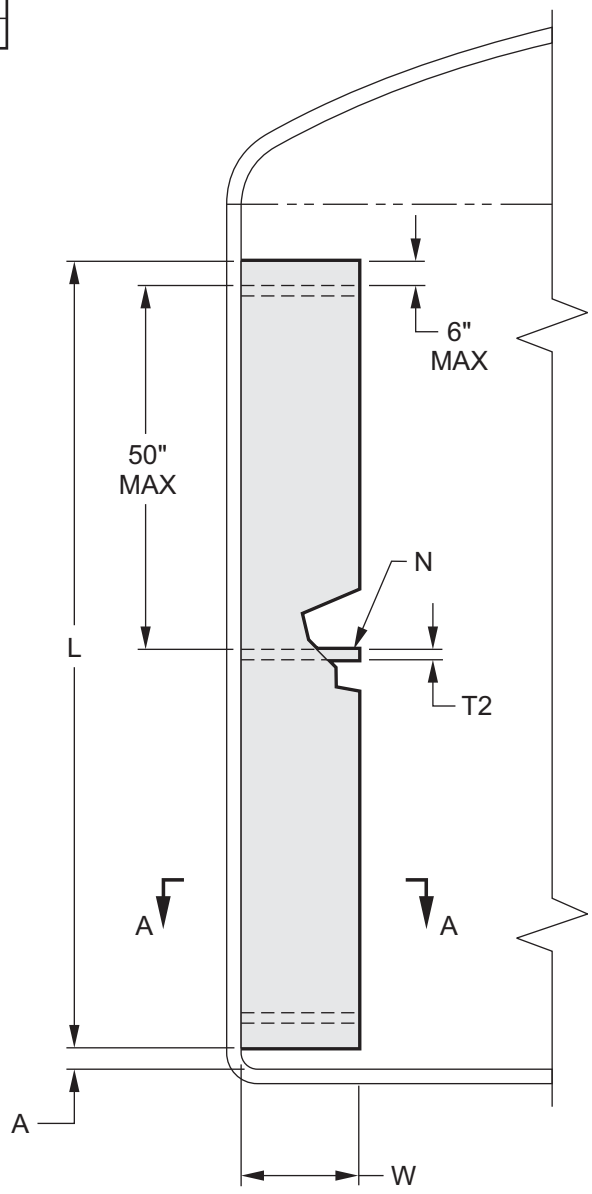
TABLE						
TANK DIA.	A	L	N	T1	T2	W



SECTION A - A
STANDARD 30° BRACKET



OPTIONAL 60° BRACKET



W=1/12 OF TANK DIAMETER, OR AS SPECIFIED
S=STANDOFF, 1", OR AS SPECIFIED

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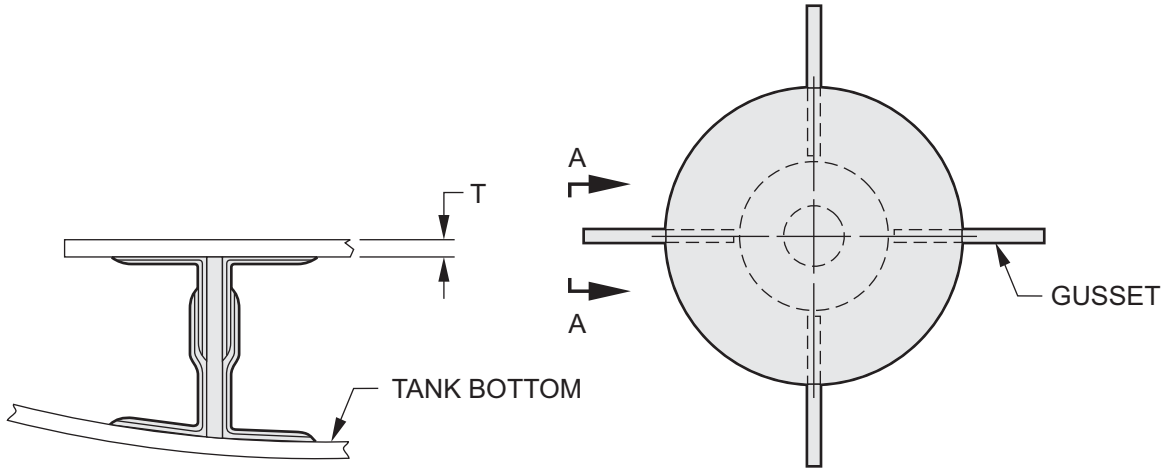
Fitting: **Vortex Breaker**

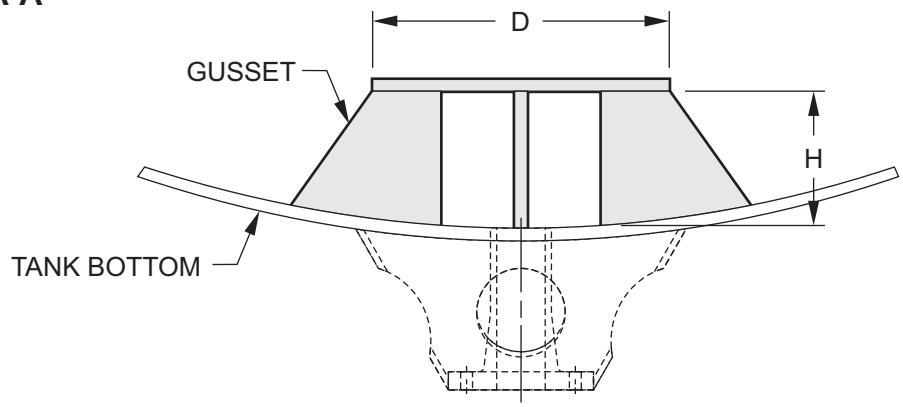
Fiberglass Tanks & Process Vessels Standards

STANDARD TYPE NOZZLE SCHEDULE 150# DRILLING PER ASME RTP-1 (ALL DIMENSIONS IN INCHES)								
PIPE I.D.	FLG O.D.	FLG B.C.	NO. OF HOLES	STD 50 PSI			ti	dr
				HOLE DIA.	T (MIN.)	tn		
1	4-3/4	3-1/8	4	5/8	1/2	3/16	CB+M	7
1-1/2	5-1/2	3-7/8	4	5/8	1/2	3/16	CB+M	7.5
2	6	4-3/4	4	3/4	5/8	1/4	CB+M	8
3	7-1/2	6	4	3/4	5/8	1/4	CB+M	9
4	9	7-1/2	8	3/4	13/16	1/4	CB+M	10
6	11	9-1/2	8	7/8	15/16	1/4	CB+M	12
8	13-1/2	11-3/4	8	7/8	1-1/8	1/4	CB+M	16

TABLE				
"D"	"H"	"T"	NO. OF GUSSETS	NOTES
PLATE O.D.	HEIGHT	THICKNESS		



SECTION "A-A"



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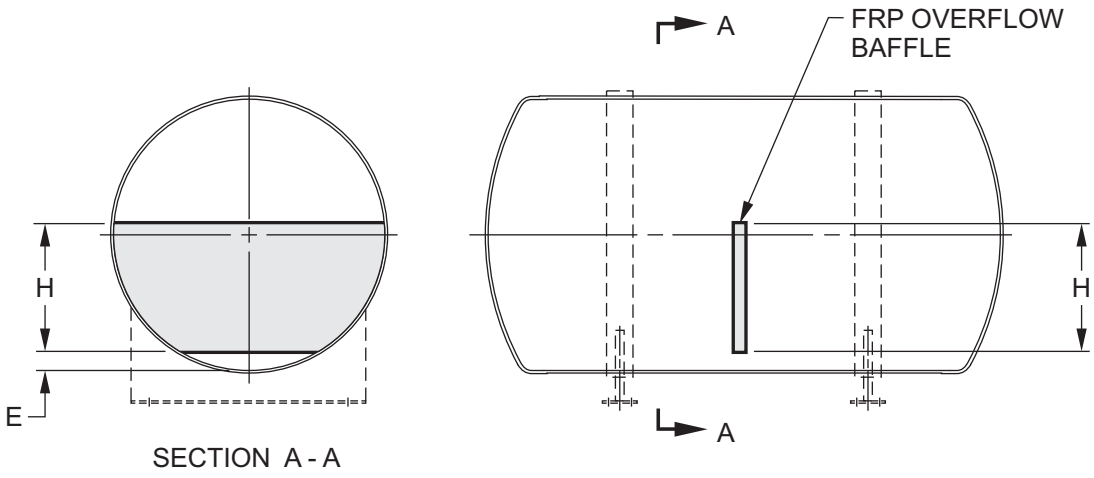
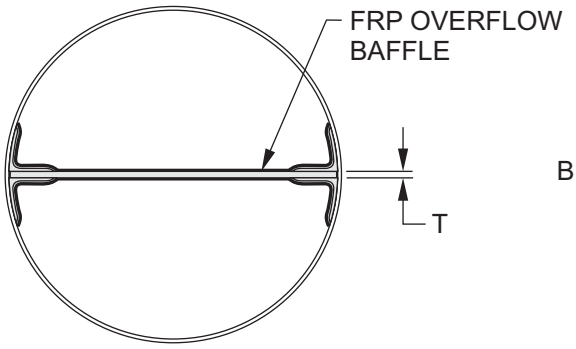
Fitting: **Overflow Baffle**

Notes: 1. "H" = Baffle height
"E" = Opening under baffle
2. For "E" = 0 (bulkhead style baffle), the baffle is designed for full flood at specified liquid specific gravity one side, empty on the other.

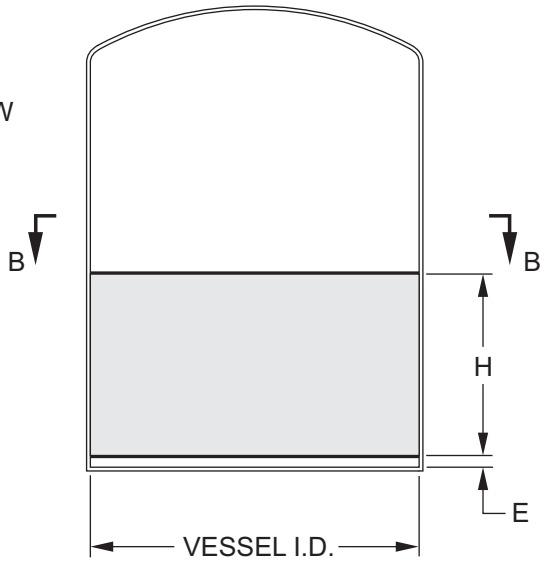


SECTION A - A

HORIZONTAL TANK



SECTION B - B



VERTICAL TANK

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Email: info@compositesusa.com

Fitting: **Top Agitator Support Bridge**

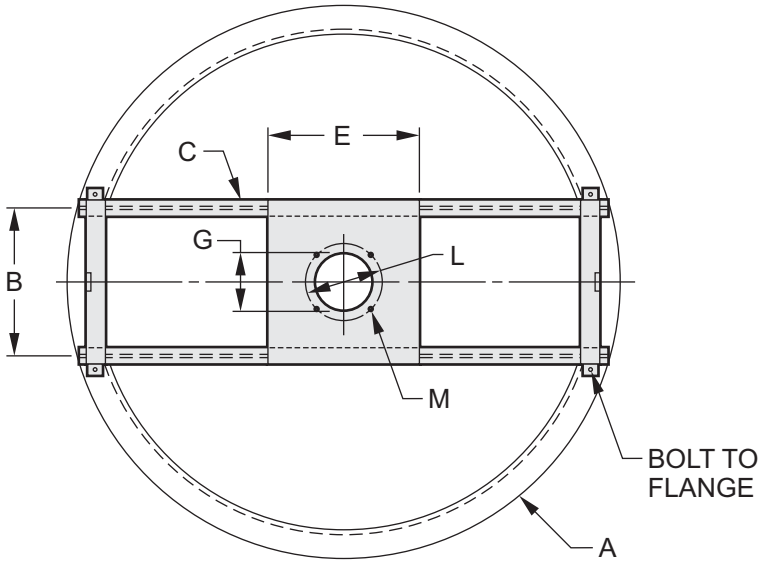
Fiberglass Tanks & Process Vessels Standards

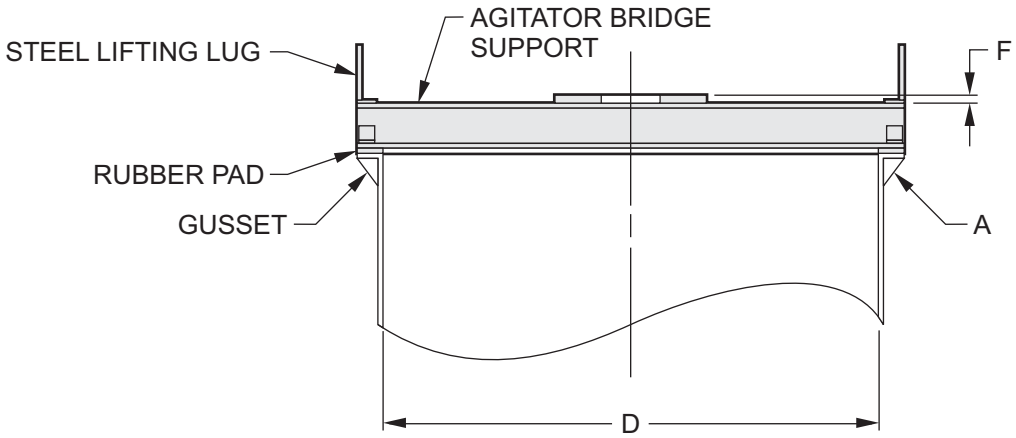
Notes: 1. The agitator design downward force, bending moment and torque must be specified to allow proper design of the agitator bridge support.

TABLE		
D	TANK DIA.	
A	FLG. SIZE	
B	BEAM SPACING	
C	BEAM SIZE	
E	PLATE WIDTH	
F	PLATE THK.	
G	CENTER HOLE DIA.	
L	BOLT CIRCLE	
M	HOLE DIA.	
	HOLD DOWN	
	HOLE DIA.	
	NUMBER	
	SPACING	
	MATERIAL & COATING	
	PAINT	
	GALVANIZED	
	S.S. / C.S.	

STANDARD CONSTRUCTION:
Epoxy coated A-36 steel

OPTIONS:
Galvanized steel
Stainless steel
FRP





STEEL AGITATOR MOUNT
(OPEN TANK W/ FLANGED RIM)

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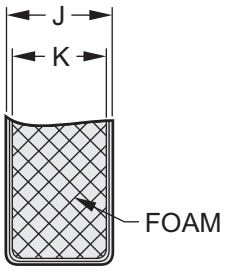
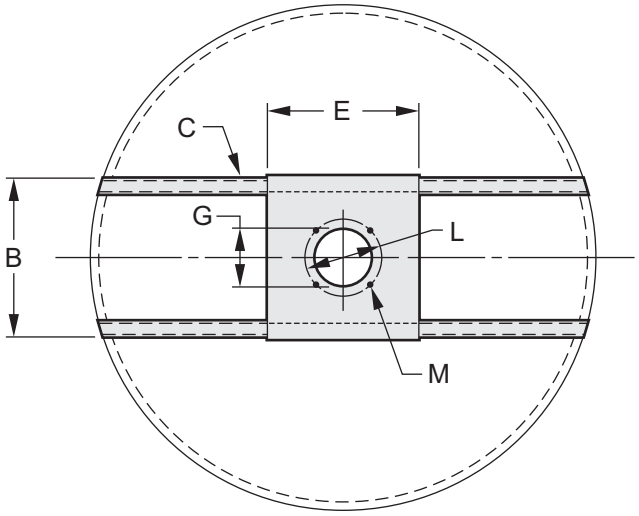
Fitting: Top Bridge Agitator Mount Fiberglass

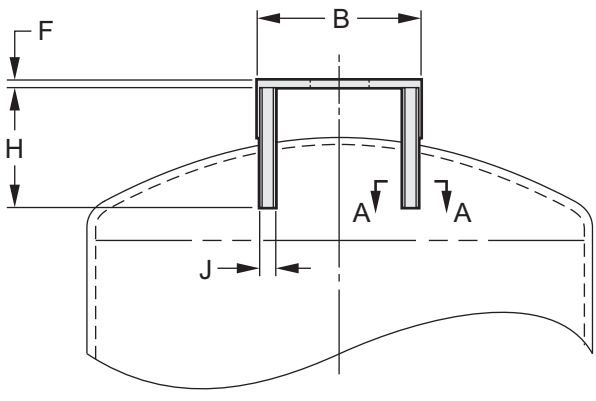
Notes: 1. The agitator design downward force, bending moment and torque must be specified to allow proper design of the agitator bridge support.

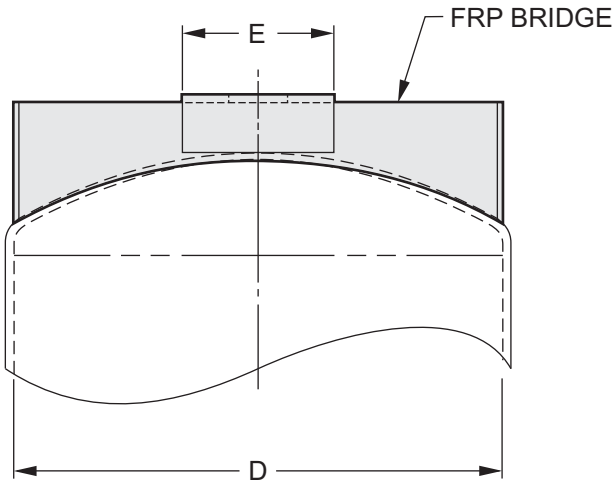
TABLE		
D	TANK DIA.	
B	BEAM SPACING	
C	BEAM SIZE	
E	PLATE WIDTH	
F	PLATE THK.	
G	CENTER HOLE DIA.	
H	HEIGHT	
J	TOTAL WIDTH	
K	FOAM THK.	
L	BOLT CIRCLE	
M	HOLE DIA.	



SECTION A - A







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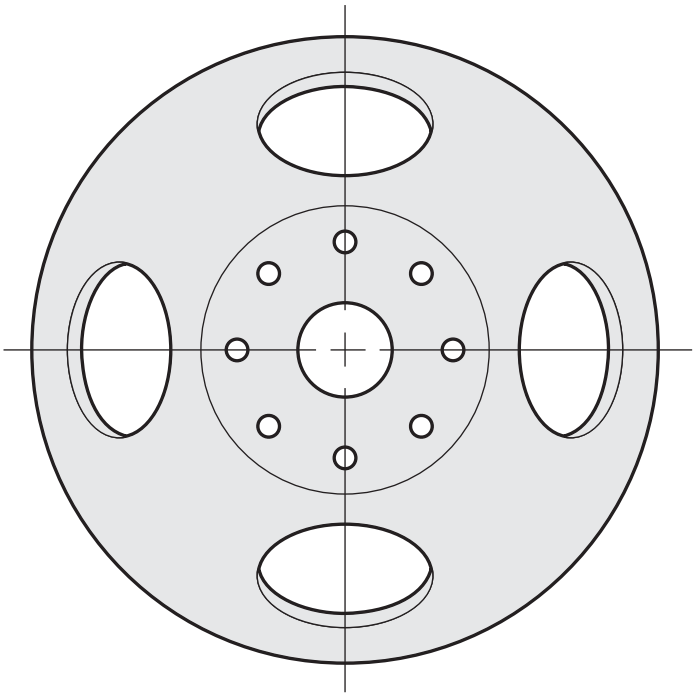
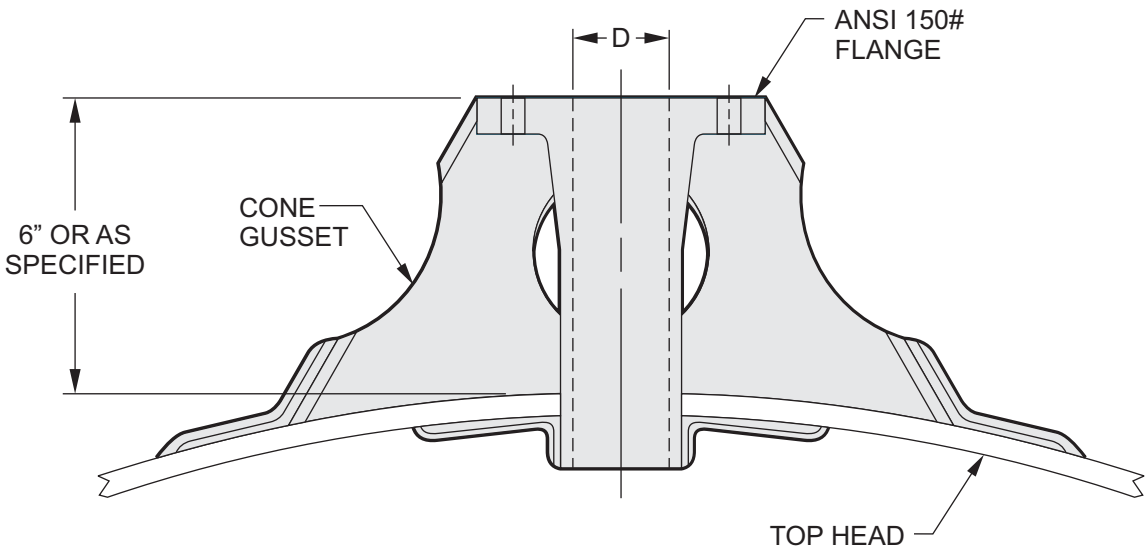
Fitting: **Top Head Flange Mount (Light Duty)**

Notes:
1. The agitator design downward force, bending moment and torque must be specified to allow proper design of the agitator support.
2. This style may be used with independent supported "heavy" duty agitators.
3. Nozzle installation to follow details for penetrating or flush mount, V-501 or V-505 as specified on tank specifications.
4. Cone gussets are standard on this style agitator support.





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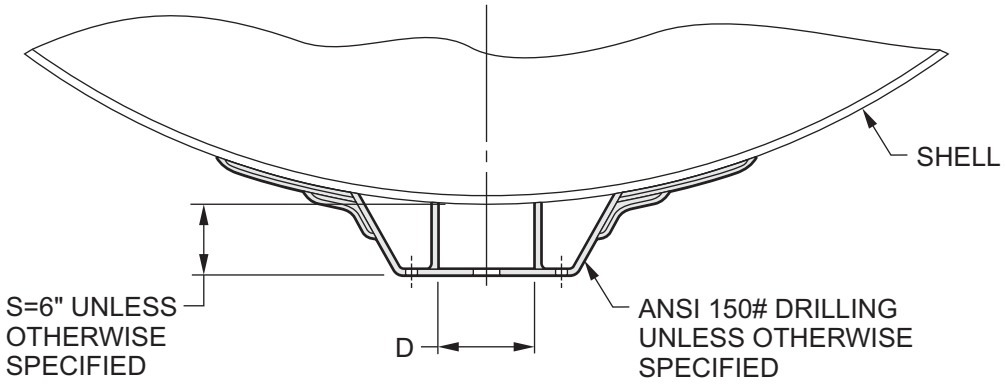
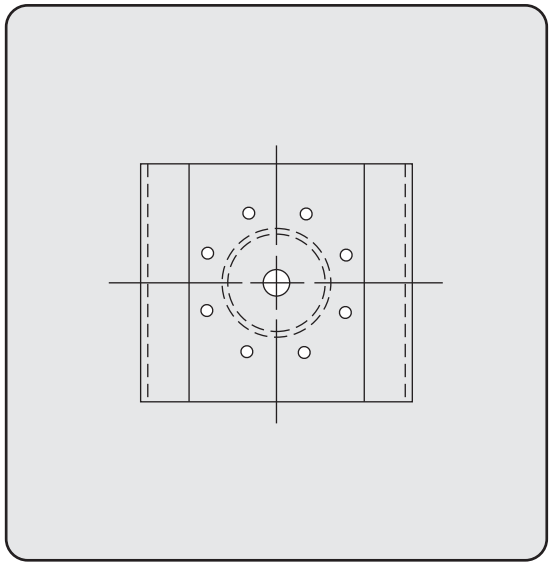
Fitting: **Side Entry Agitator Support**

Fiberglass Tanks & Process Vessels Standards

Notes:
1. The agitator design downward force, bending moment and torque must be specified to allow proper design of the agitator support.
2. This style may be used with independent supported "heavy" duty agitators.





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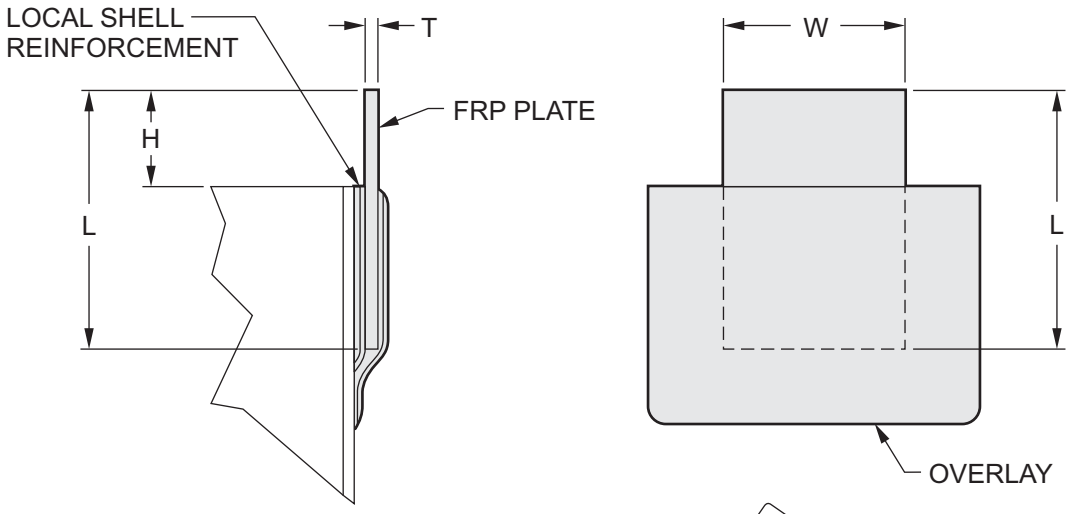
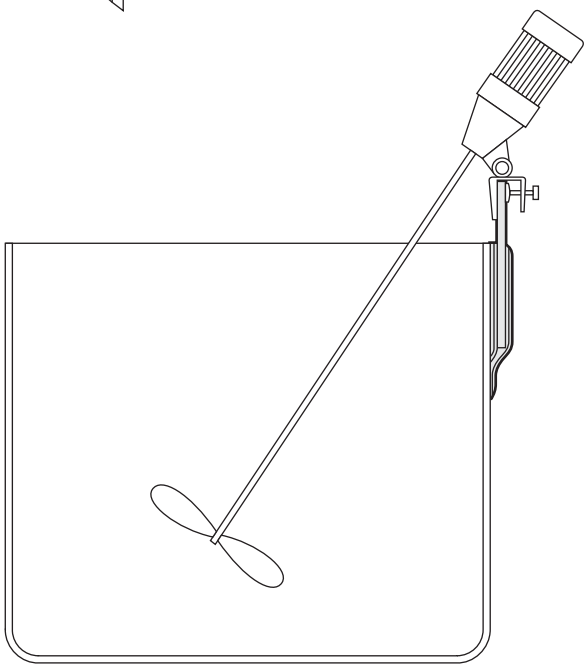
Fitting: **Top Side Bracket For Agitator**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Open top, or closed top tank with agitator cut-out, as specified below.
2. Agitator design for up to 24" I.D. tanks.

TABLE					
STANDARD BRACKET NO.	T	H	W	L	NOTES
AB-0					
AB-1					
AB-2					
AB-3					





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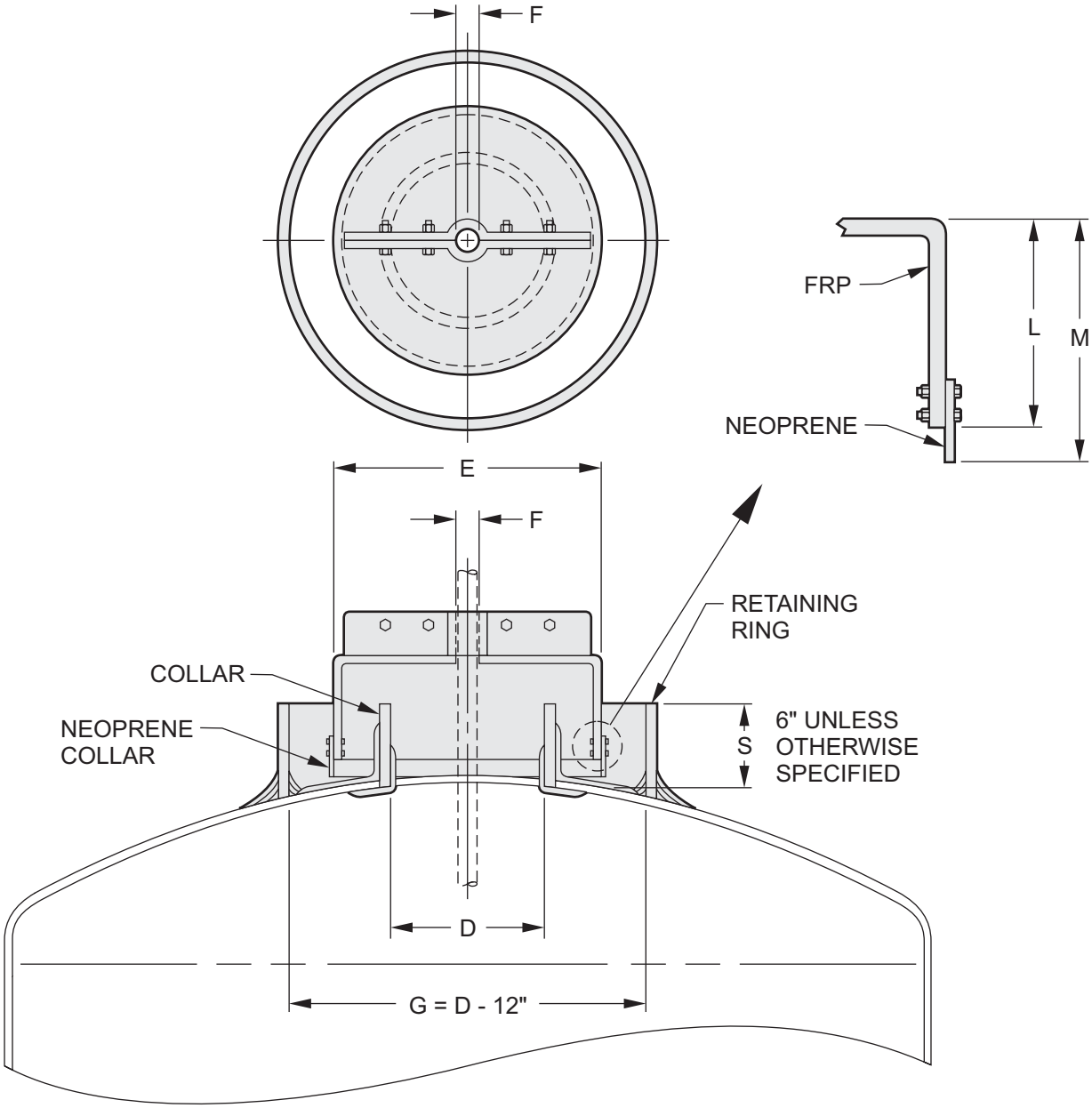
Fitting: **Agitator Shaft Gland Collar**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. See V-505 for standard nozzle installation.

COLLAR I.D. "D"	COVER O.D. "E"	CENTER HOLE DIAMETER "F"	RETAINING RING I.D. "G"	STAND OFF "S"	BOLTS	"L"	"M"	NOTES
FRP	FRP		FRP		PLATED STEEL			STANDARD CONSTRUCTION



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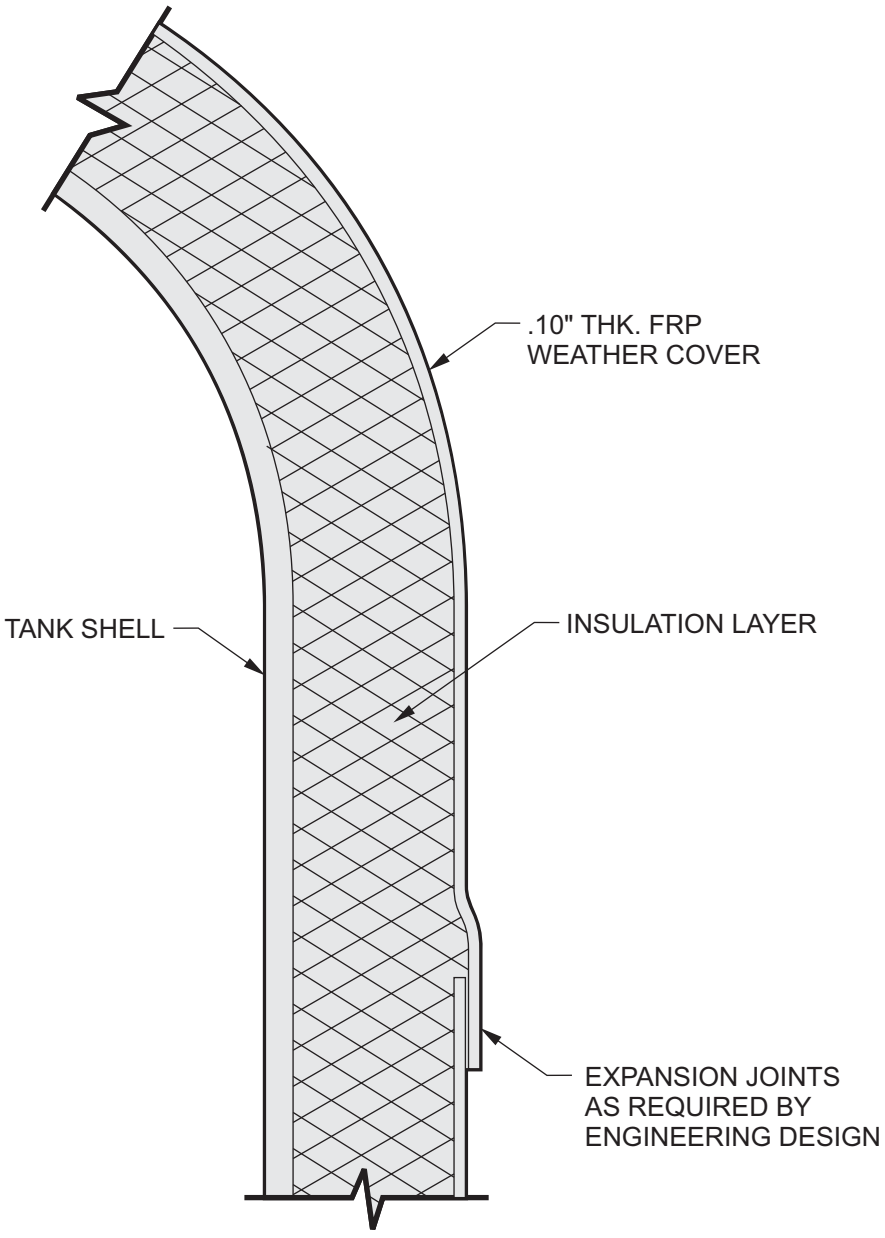
Fitting: **Insulation & Insulation Jacket**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Customer to provide thermal requirements.
2. Standard insulation materials of construction are isocyanurate/urethane foam at a nominal 2 lb/ft^3 density.

INSULATION THICKNESS	1/2	3/4	1	1-1/2	2	3	4	5	6
NOMINAL "R" FACTOR	3	4 - 5	6 - 7	9 - 10	12 - 14	18 - 21	24 - 28	29 - 35	35 - 42



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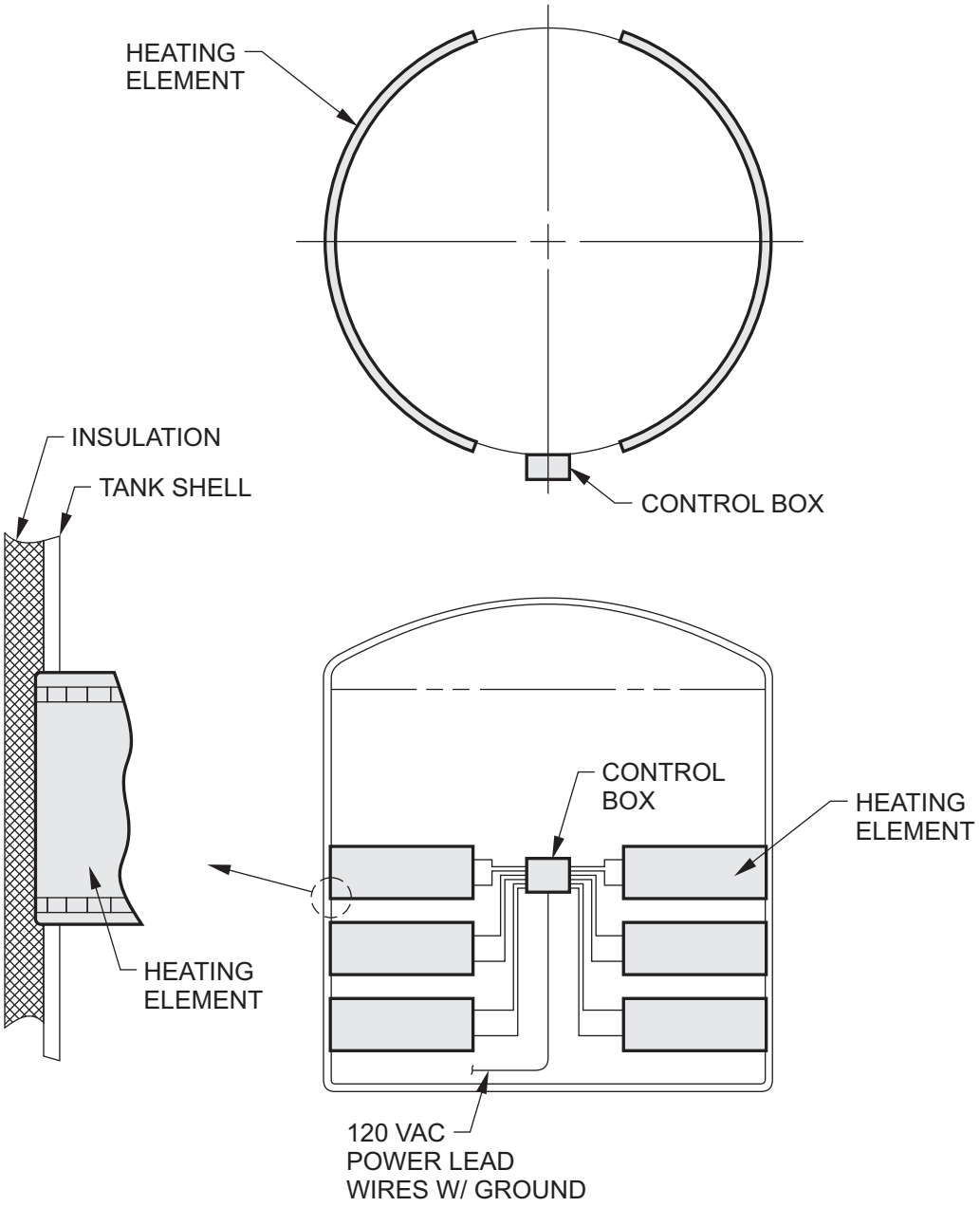
Fitting: **Electric Heat Panels**

Notes: 1. Customer to specify:
- Thermal requirements
- Maintenance temperature
- Control temperature
- Ambient wind speed
- Temperature control or freeze protection

2. Standard electrical configuration
- Includes 120VAC operation with NEMA 4x electrical enclosures. Contact factory for alternative configurations.



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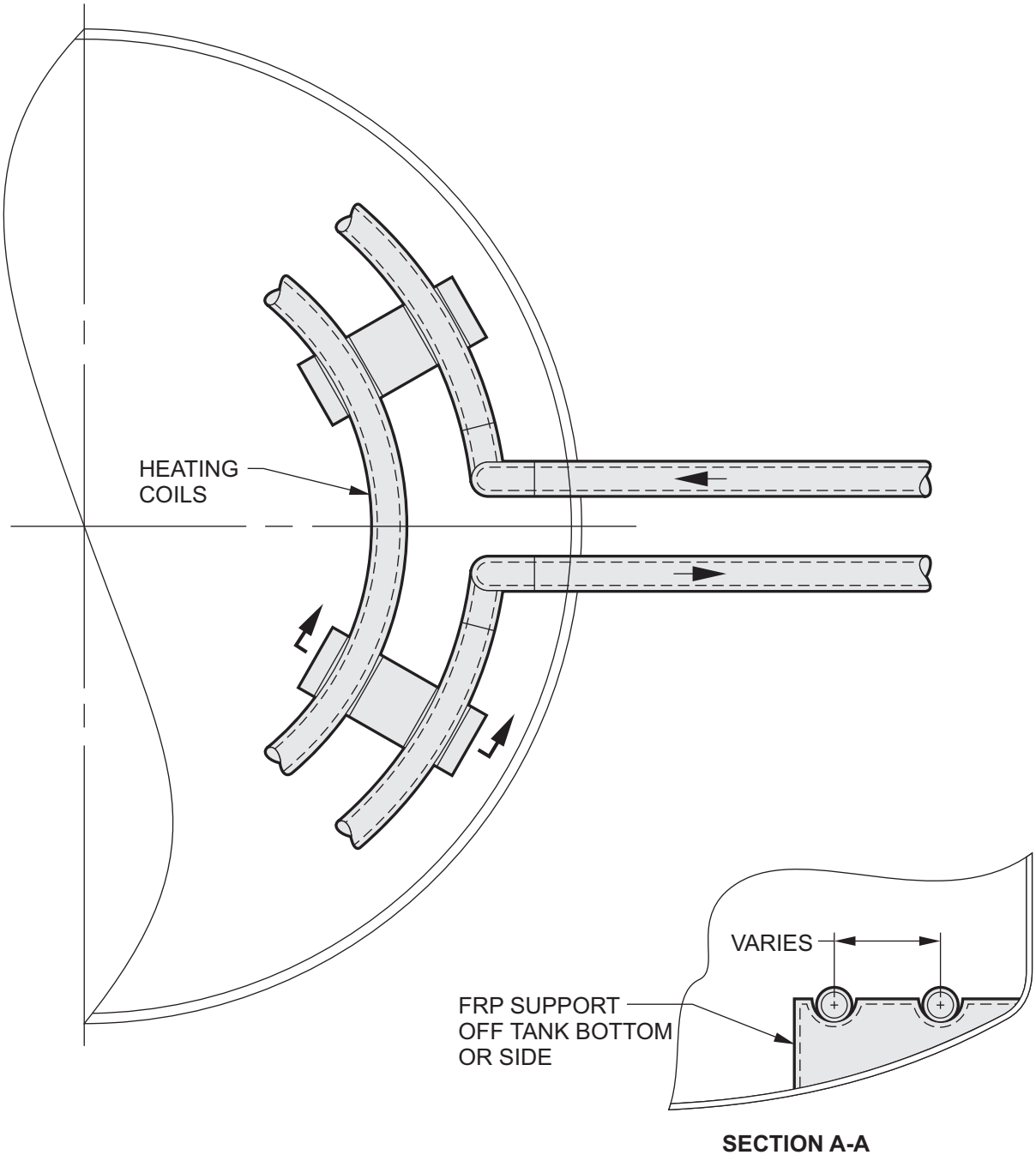
Fitting: **Internal (Fixed) Coils**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Customer to specify:
- Thermal requirements
- Materials of construction
- Coil design pressure

2. Inlet and outlet may be through the side wall or the top of the tank.



SECTION A-A

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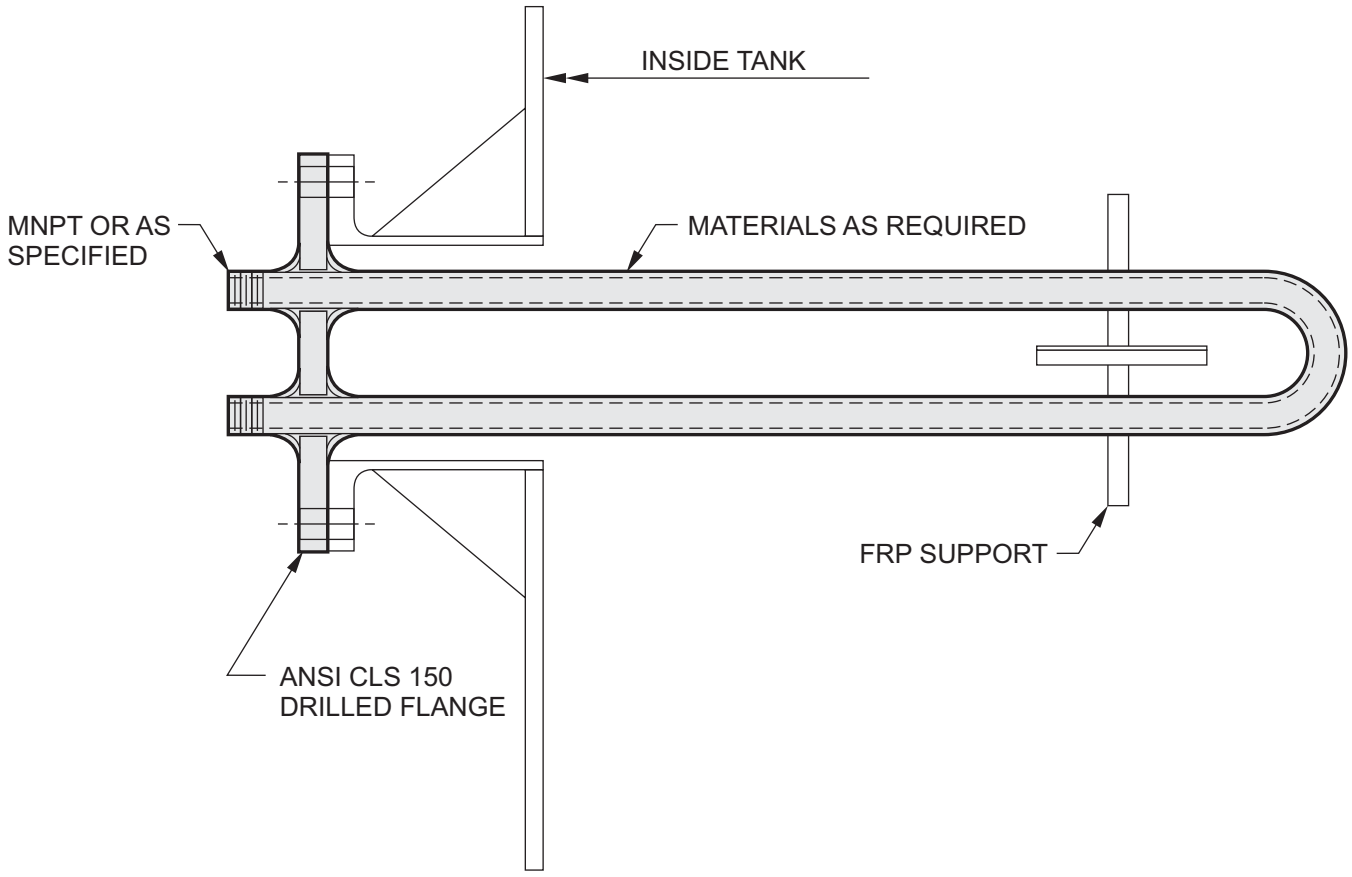
Fitting: **Flanged (Removable) Insert Coils**

Notes: 1. Customer to specify:
- Thermal requirements
- Materials of construction
- Coil design pressure



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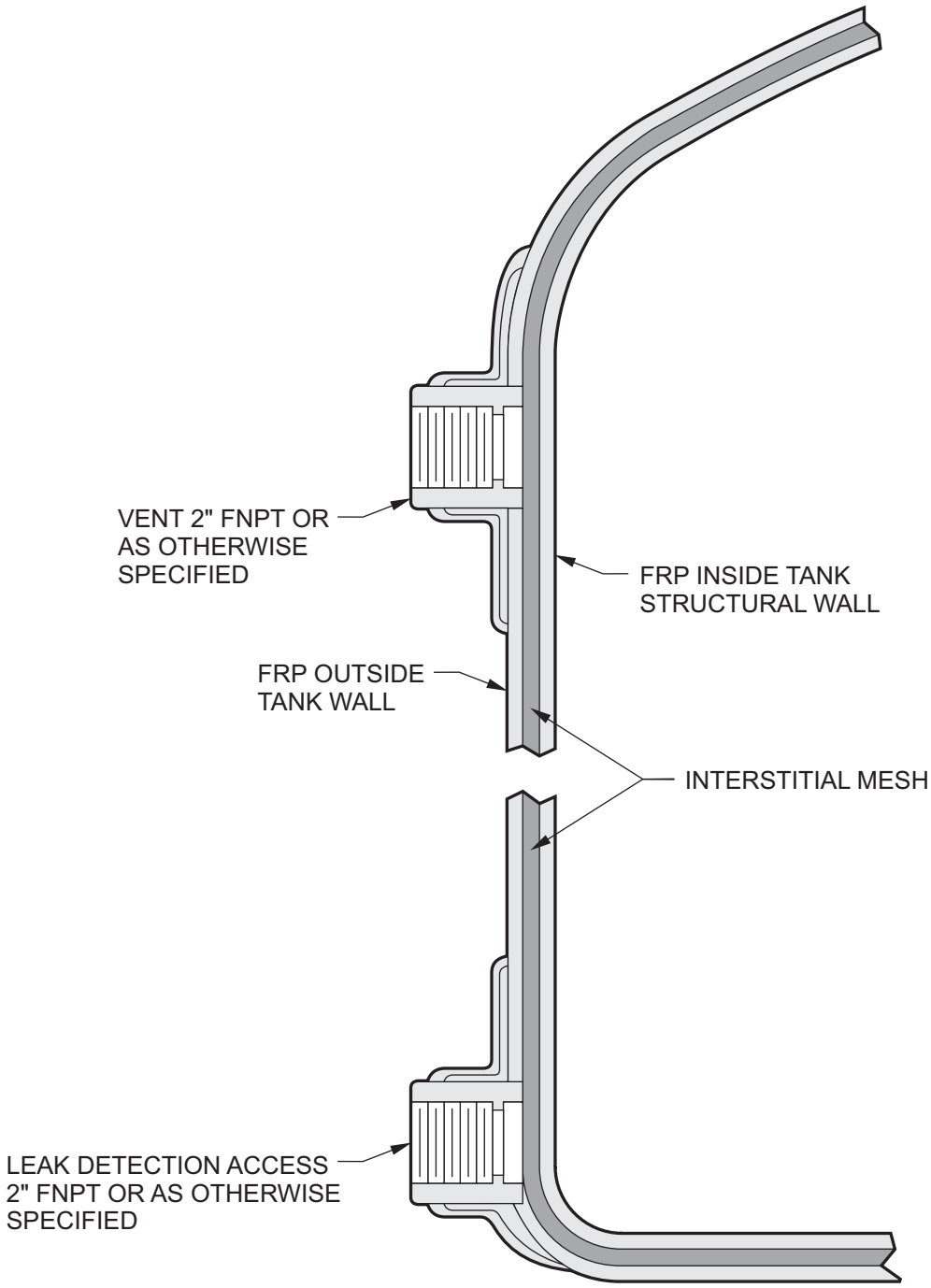
Fitting: **Double Wall Containment Tank Design**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Leak detection access is typically provided near the vessel low point.
Vents are usually located near the top of the side wall.



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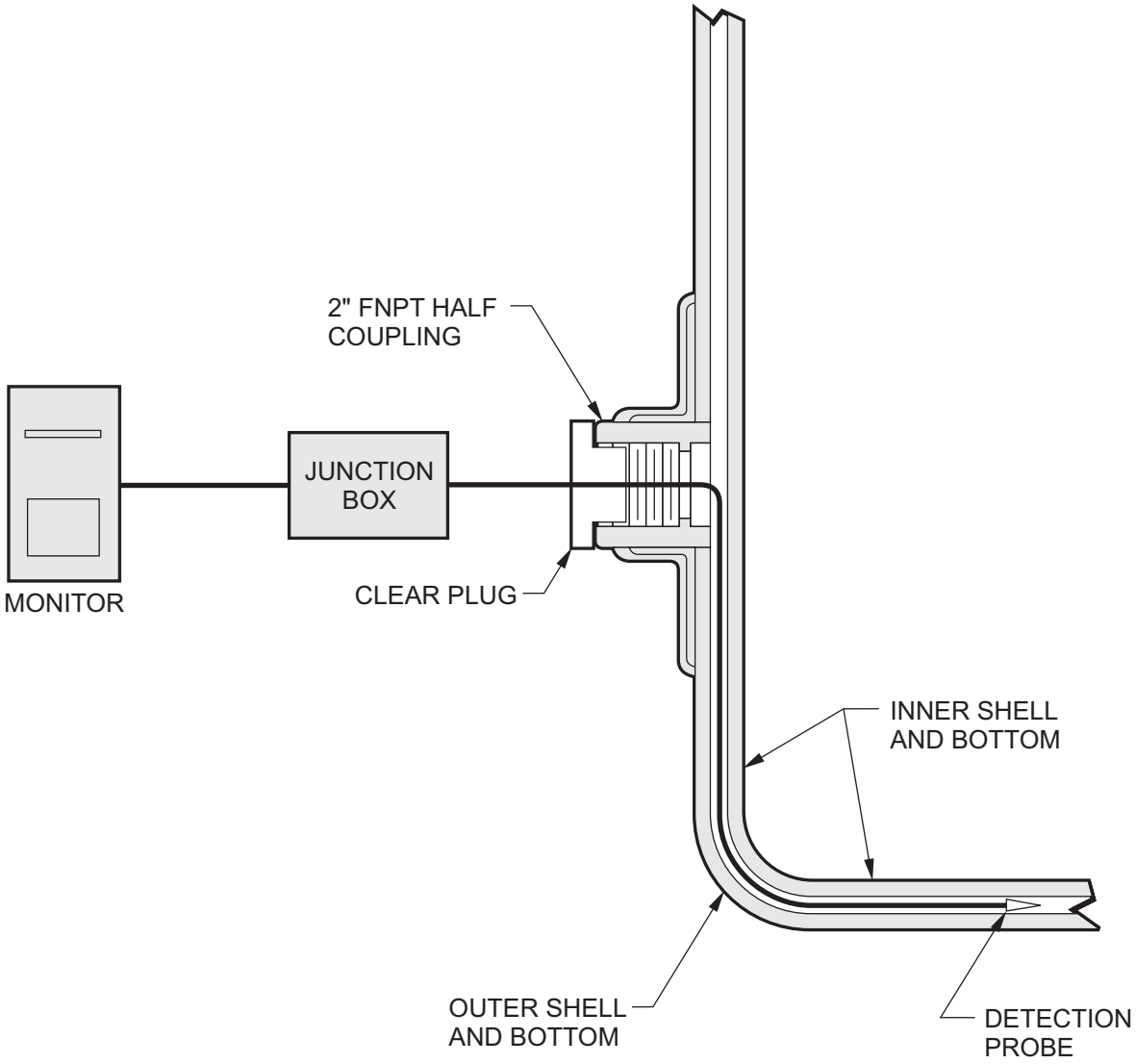
Fitting: **Integral Leak Detection System**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Standard Features:
- Single channel monitor: 120 VAC 50/60 HZ, 40 watts
- Operating temperature: 32° - 120°
- Probe operating temp: 0° -100°
- Standard cable: dual probe for hydrocarbon & water based liquids
- Standard length: 25"

Optional Features:
- Multi channel monitor
- Acid sensor cable
- Hydrocarbon corrosive cable
- Junction box NEMA 4x



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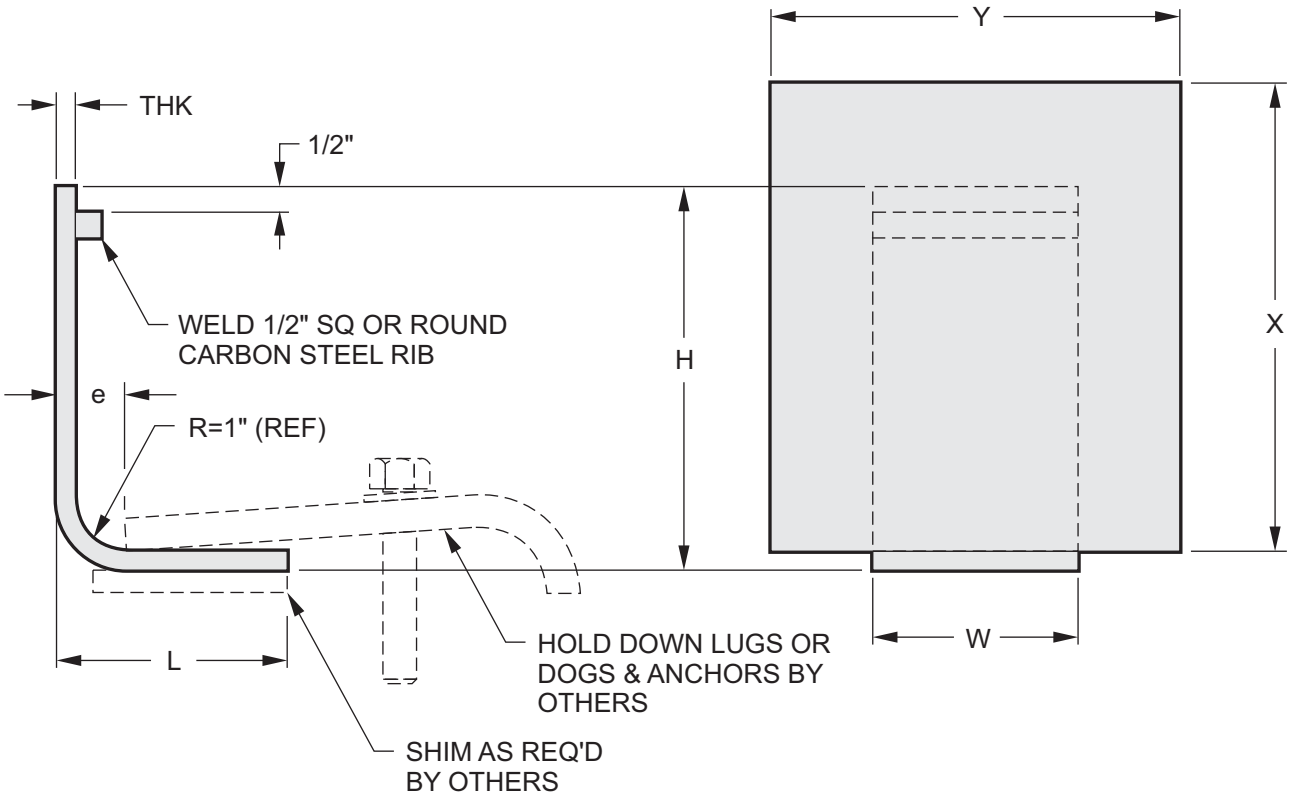
Fitting: Flush Bottom "L" Hold Down Lugs

Fiberglass Tanks & Process Vessels Standards

Notes:
1. Materials of construction options include: 304 stainless steel (standard unless otherwise specified), carbon steel, galvanized carbon steel.
2. LP ratings are based on e+2" maximum, for design in accordance with ASME RPT-1.
3. Design data requirements include wind exposure and seismic zone.

NO.	W	H	THK	L	MAT'L	LB RATING	HAND LAY UP OVERLAY X-Y	HAND LAY UP OVERLAY THICK	MIN. KNUCKLE THICKNESS	FW THICKNESS
P0	4"	6"	1/4"	4-1/2"	304SS	521	12 x 10	.27	.57	.06
P1	4"	6"	3/8"	4-1/2"	304SS	1172	12 x 10	.45	.85	.13
P2	6"	8"	1/2"	4-1/2"	304SS	3125	14 x 12	.56	1.00	.13
P3	6"	10"	3/4"	4-1/2"	304SS	7031	14 x 14	.84	1.20	.18
P4	6"	10"	7/8"	4-1/2"	304SS	9570	14 x 14	1.02	1.40	.25
P5	8"	12"	7/8"	4-1/2"	304SS	12760	16 x 16	.92	1.29	.17



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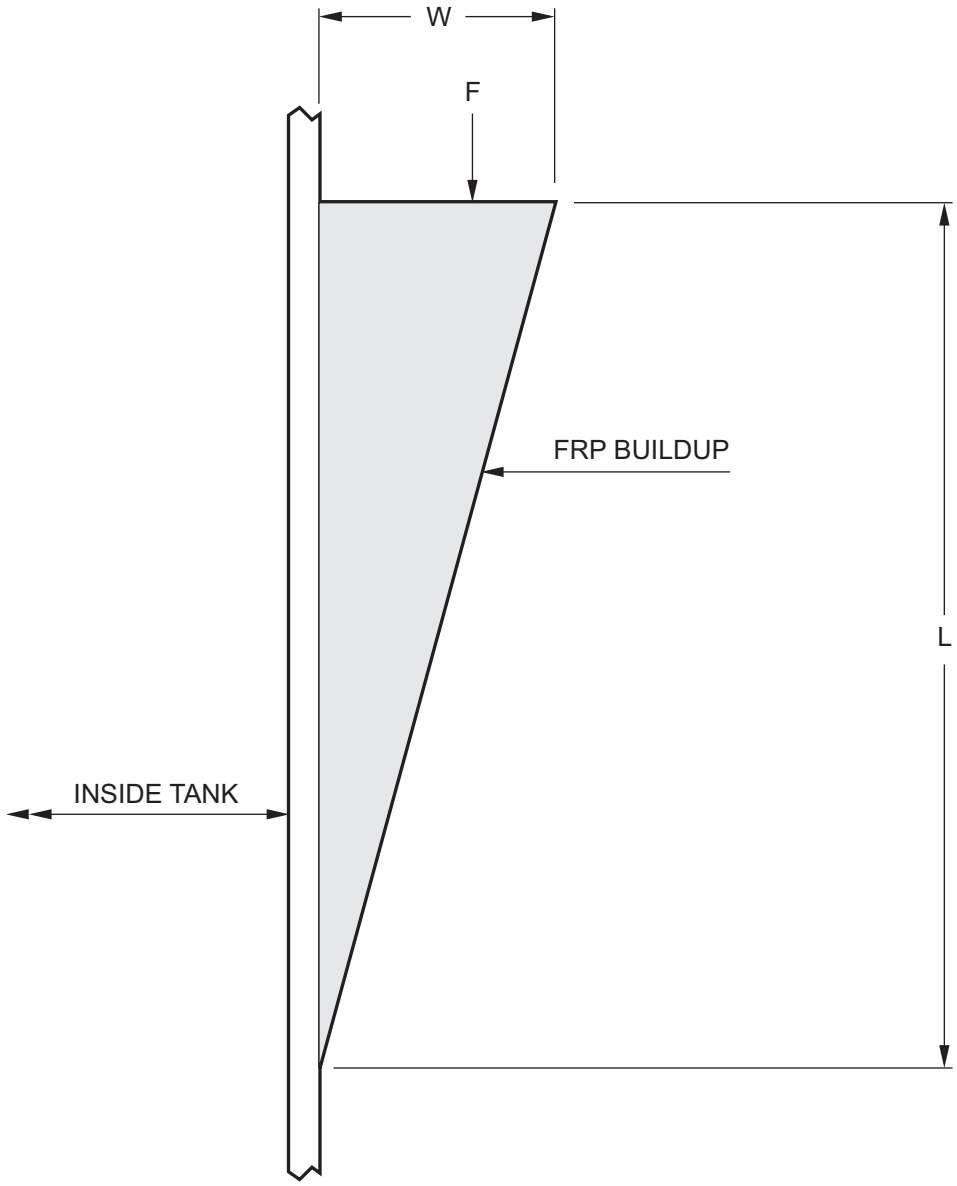
Fitting: **Shear Ledge Hold Down**

Notes: 1. Dimensions based on wind and seismic loads.



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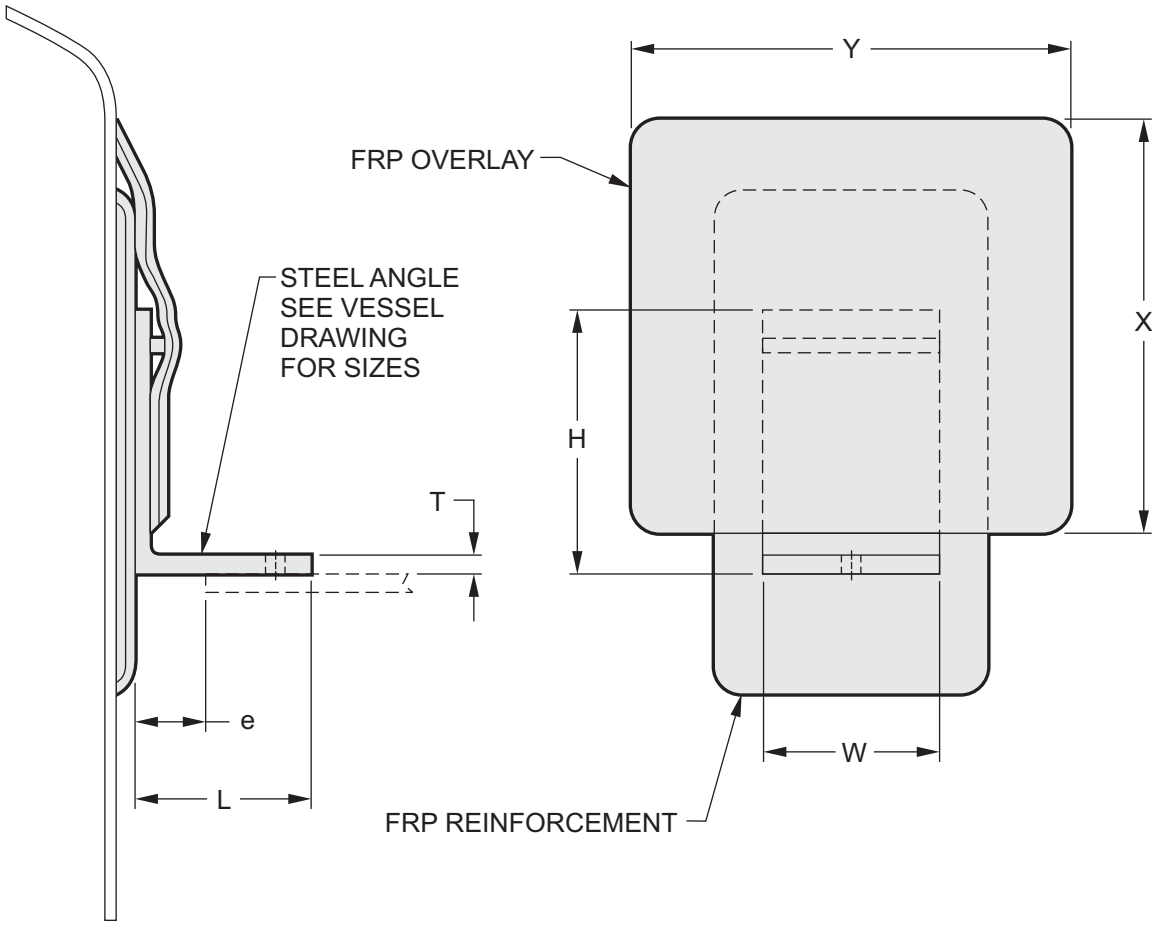
Fitting: **Side Wall Chair Support Lugs**

Fiberglass Tanks & Process Vessels Standards

Notes:
1. Vessel side wall supports with required shell wall reinforcement and overlay will be engineered on a project specific basis.
2. Side wall lug materials of construction options include stainless steel, carbon steel, galvanized carbon steel or fiberglass. Fiberglass lugs are typically gusseted.
3. Design data requirements include wind exposure and seismic zone.
4. For e>2" load bearing values for lugs shown above must be reduced, contact engineering for revised values.

NO.	W	H	THK	L	MAT'L	LB RATING	HAND LAY UP OVERLAY X-Y	HAND LAY UP OVERLAY THICK	MIN. KNUCKLE THICKNESS	FW THICKNESS
P0	4"	6"	1/4"	4-1/2"	304SS	521	12 x 10	.27	.57	.06
P1	4"	6"	3/8"	4-1/2"	304SS	1172	12 x 10	.45	.85	.13
P2	6"	8"	1/2"	4-1/2"	304SS	3125	14 x 12	.56	1.00	.13
P3	6"	10"	3/4"	4-1/2"	304SS	7031	14 x 14	.84	1.20	.18
P4	6"	10"	7/8"	4-1/2"	304SS	9570	14 x 14	1.02	1.40	.25
P5	8"	12"	7/8"	4-1/2"	304SS	12760	16 x 16	1.02	1.40	.25



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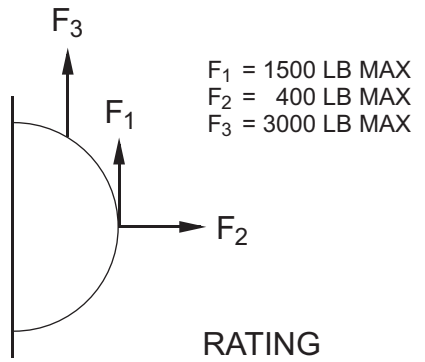
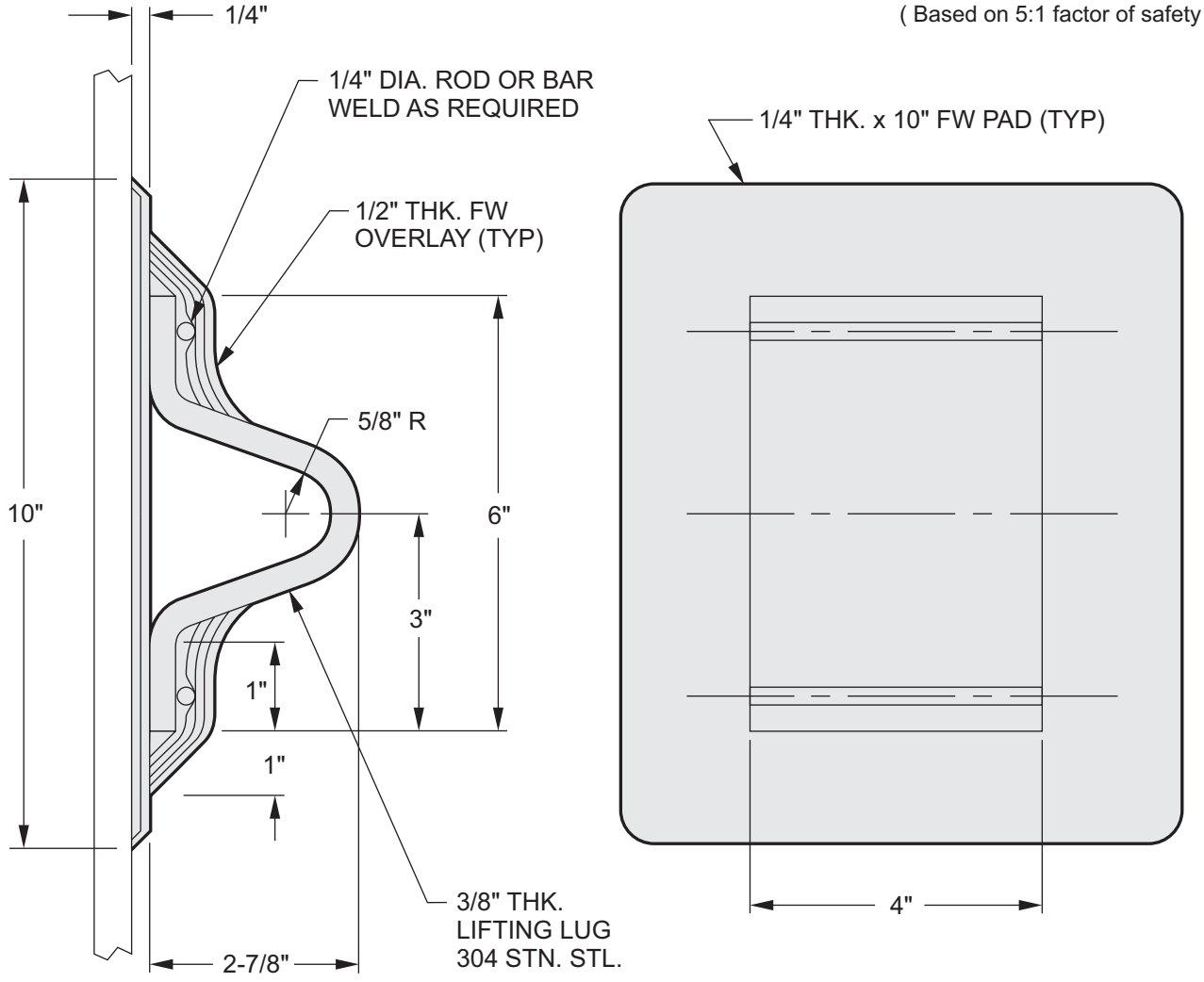
Fitting: **Universal Lift & Hold Down Lugs**



RATING
(Based on 5:1 factor of safety)



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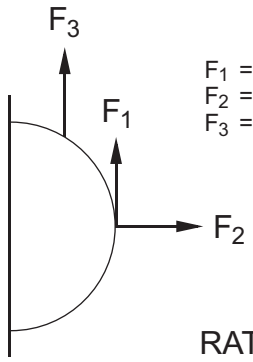
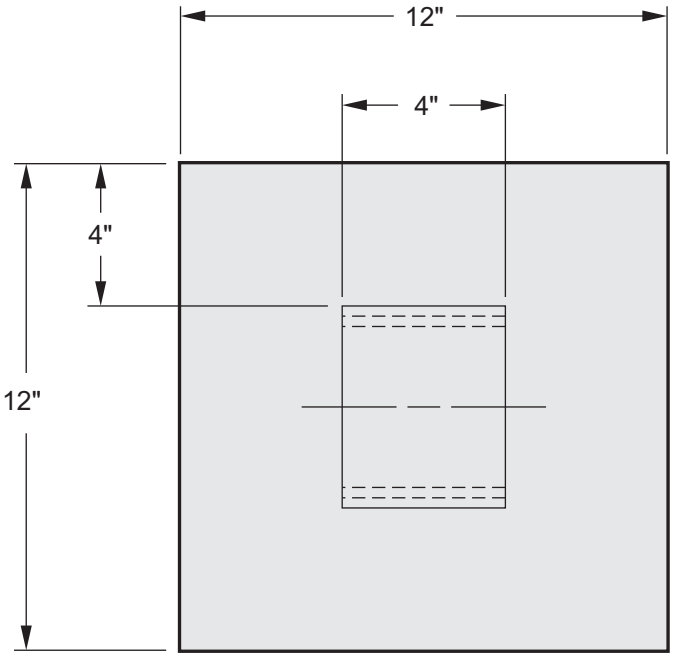
Fitting: **Half Round Lift Lugs**

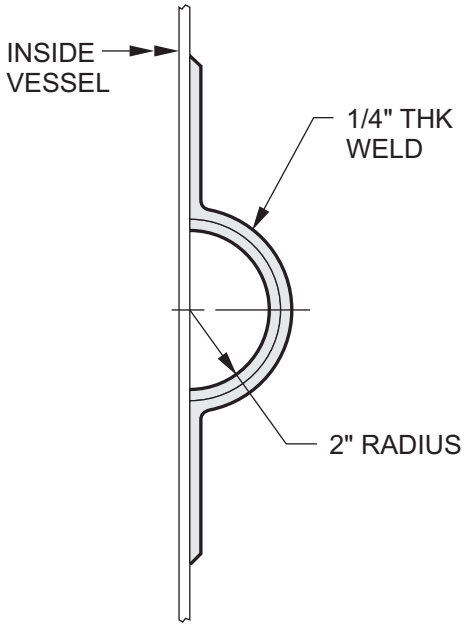
Notes: 1. Materials of construction: FRP standard.



F_1 = 1500 LB MAX
F_2 = 400 LB MAX
F_3 = 3000 LB MAX

RATING
(Based on 5:1 factor of safety)





HALF ROUND LIFTING LUG
X 1/4" WELD
(MRMRMRM / M)

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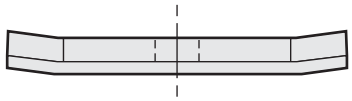
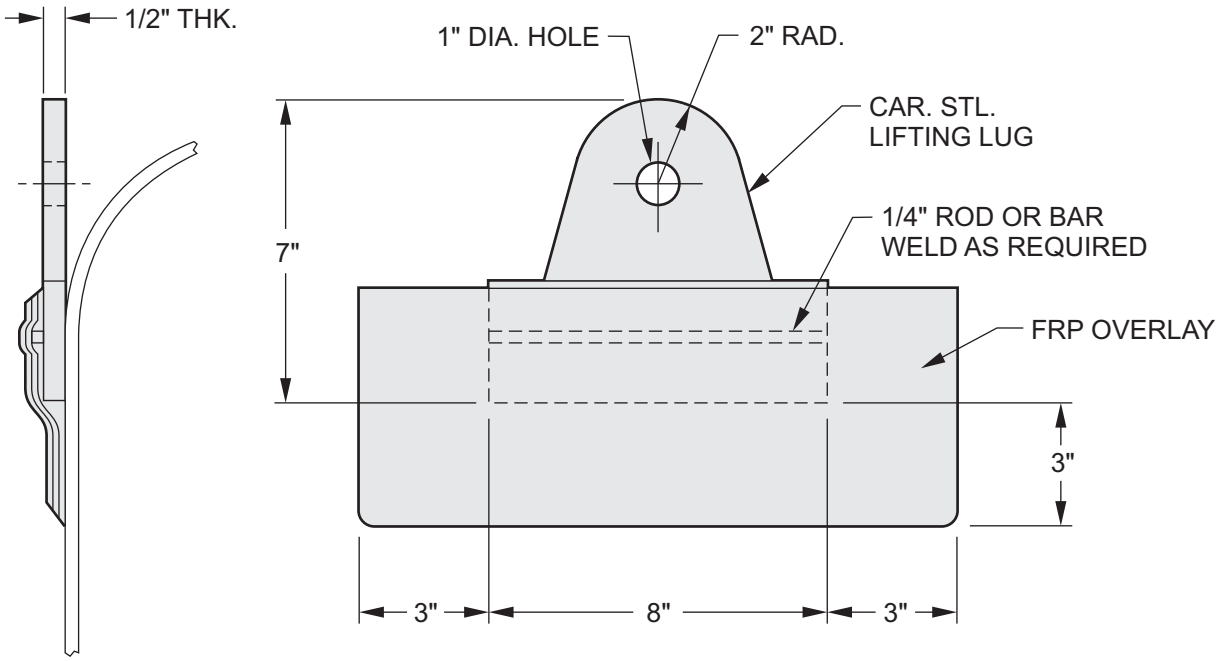
Fitting: **Drilled Plate Lift Lugs**

Notes: 1. Typical rating: 8000 lb/lug.



(LIFT LUG SHOWN ONLY THIS VIEW)



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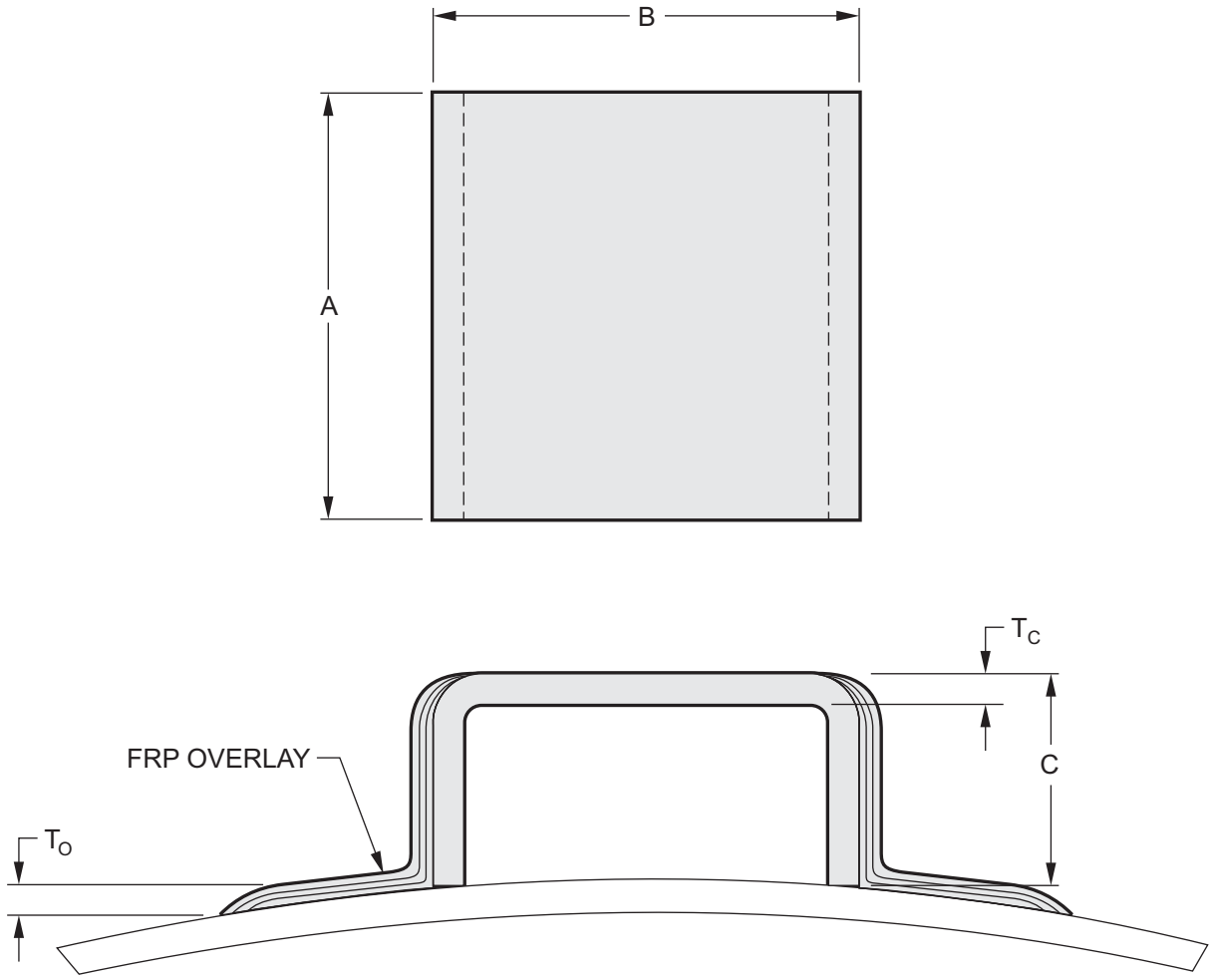
Fitting: **Universal Mounting Clip**

MATERIAL	A	B	C	T_C	T_O	NOTES
FRP	4	4	2	0.250"	4M	STANDARD CONSTRUCTION



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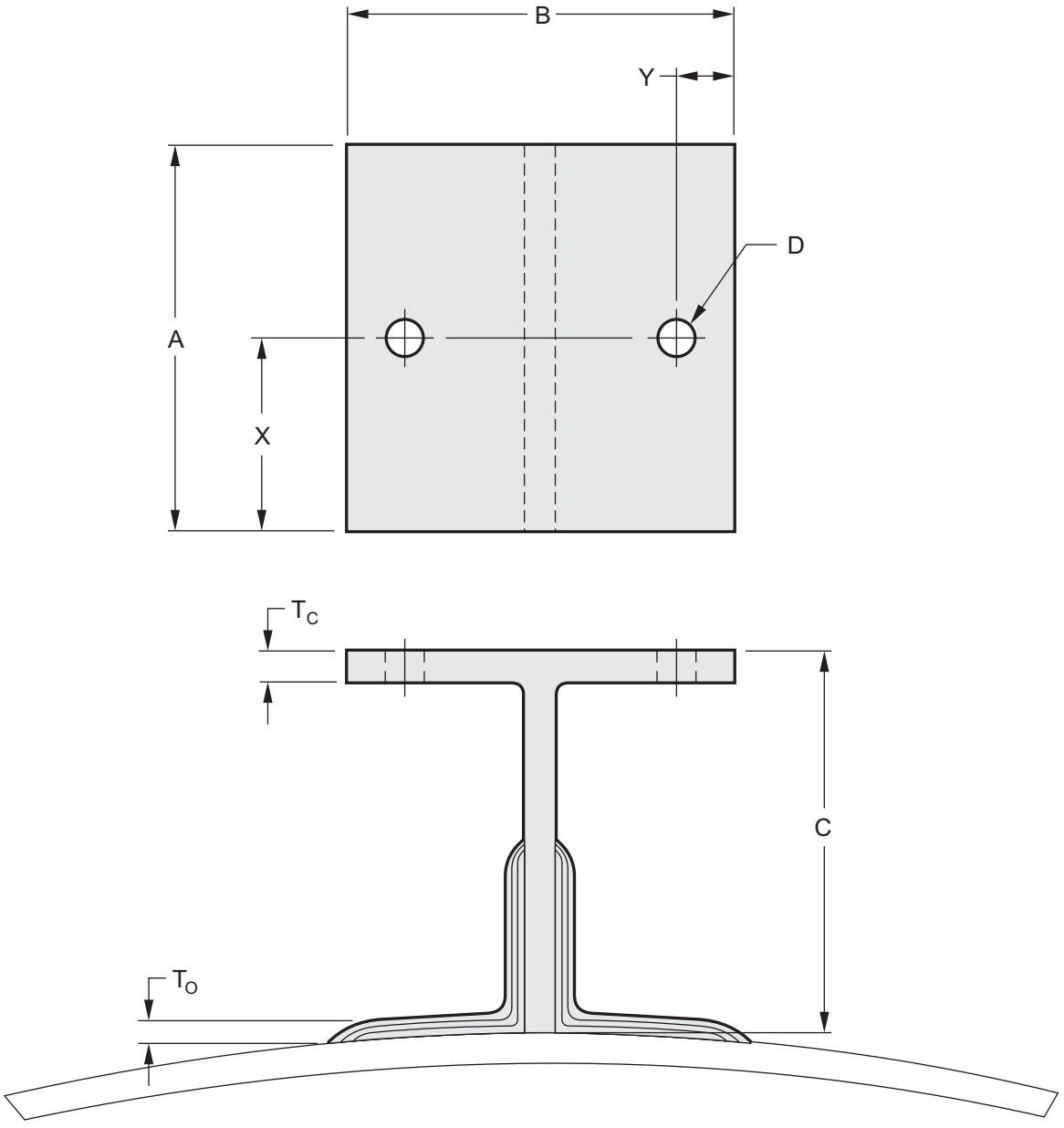
Fitting: **Tee Mounting Clip**

Fiberglass Tanks & Process Vessels Standards

MATERIAL	A	B	C	T_C	T_O	D	X	Y	NOTES
FRP	4	4	4	0.375"	6M	-	-	-	STANDARD CONSTRUCTION

ALL DIMENSIONS ARE IN INCHES



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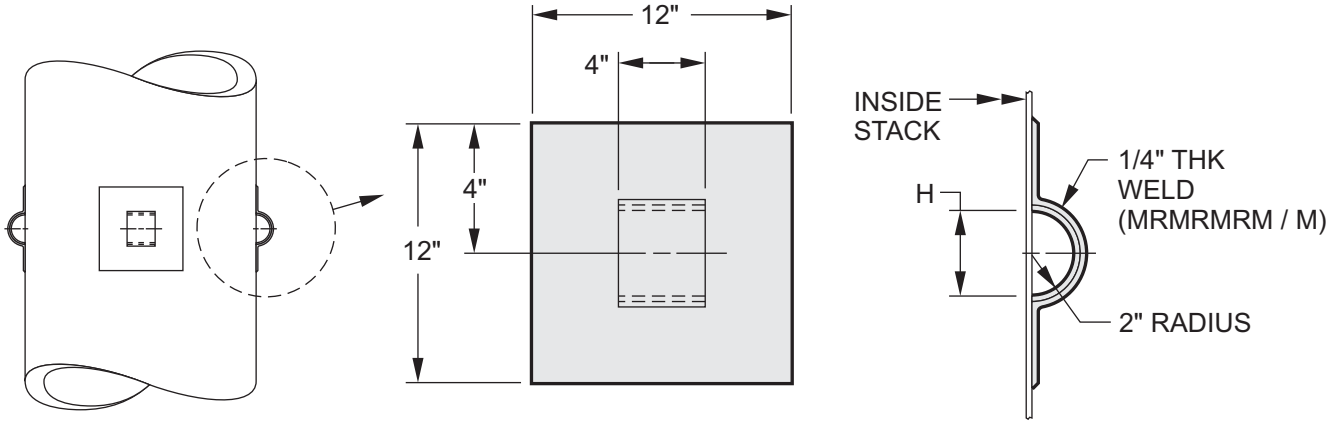
Fitting: **Guy Lug**

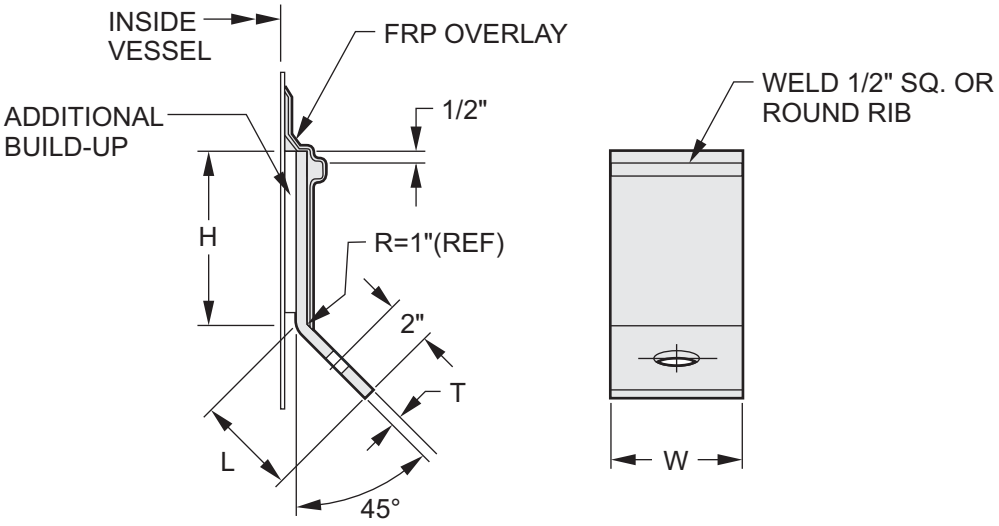
Fiberglass Tanks & Process Vessels Standards

Notes:
1. Allowable cable force on each lug based upon guying at 45° to the axis of the equipment.
2. Optional materials of construction include FRP, stainless steel, carbon steel, galvanized carbon steel.

(ALL DIMENSIONS IN INCHES UNLESS NOTED)						
	W	H	T	L	LB/LUG NOTE 1	MATERIAL
G0	4	4	.250	-	280	FRP
G1	4	6	.375	4.5	663	CARBON STL.
G2	6	8	.500	4.5	1767	CARBON STL.
G3	6	10	.750	4.5	3977	CARBON STL.
G4	8	10	.875	4.52	7656	CARBON STL.



GUY LUG STYLE V-840 SIZE G0



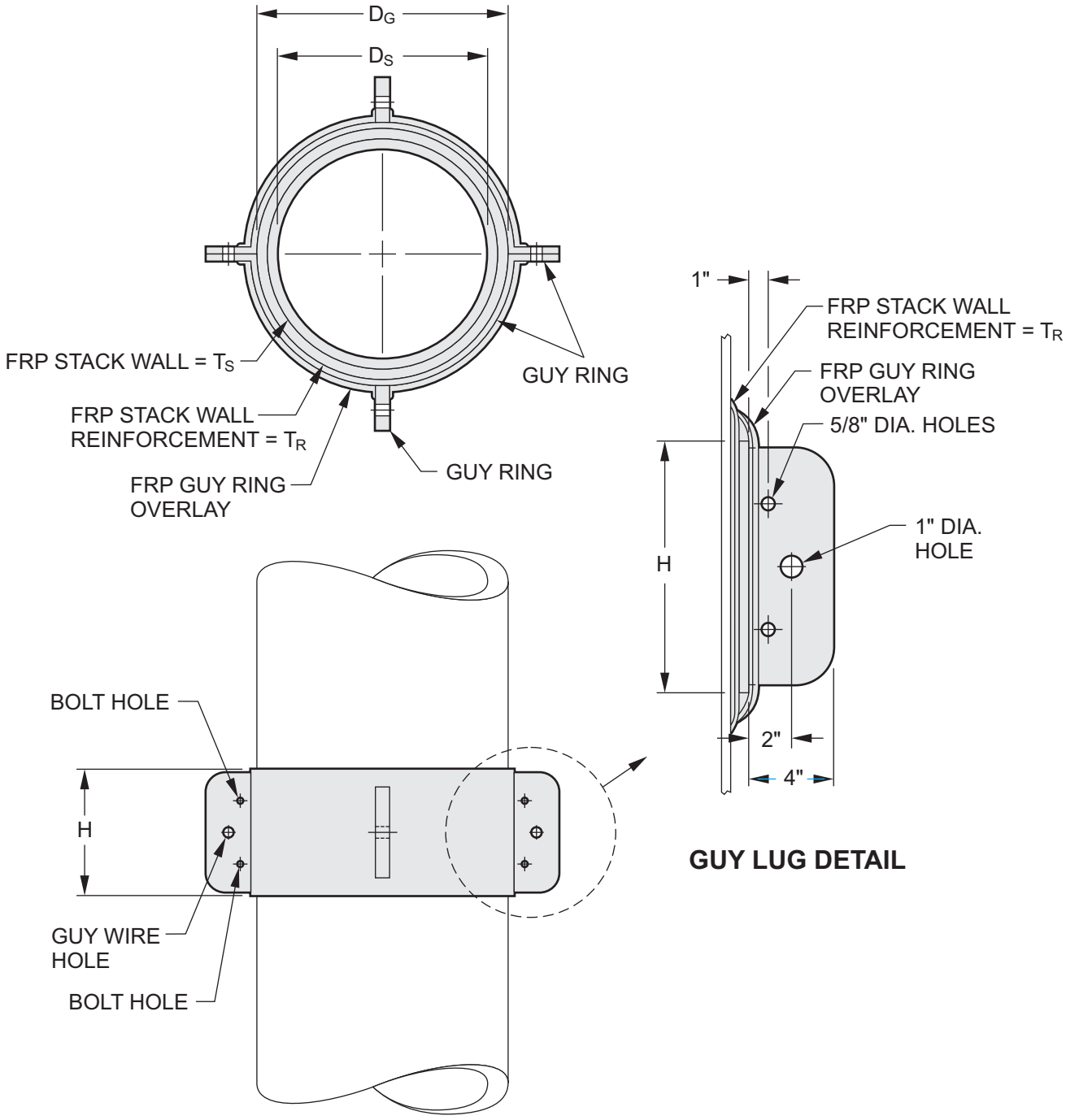
GUY LUG STYLE V-840 SIZE G1-G4

Composites USA
One Peninsula Drive / North East, MD 21901
T 410.287.2700 / F 410.287.5222
Email: info@compositesusa.com

Fitting: **Guy Ring**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Contact factory for project specific design loads and construction details.
2. Materials of construction: carbon steel unless otherwise specified.
3. "D_S" + 2* (T_R + T_S) = ring I.D.



GUY LUG DETAIL

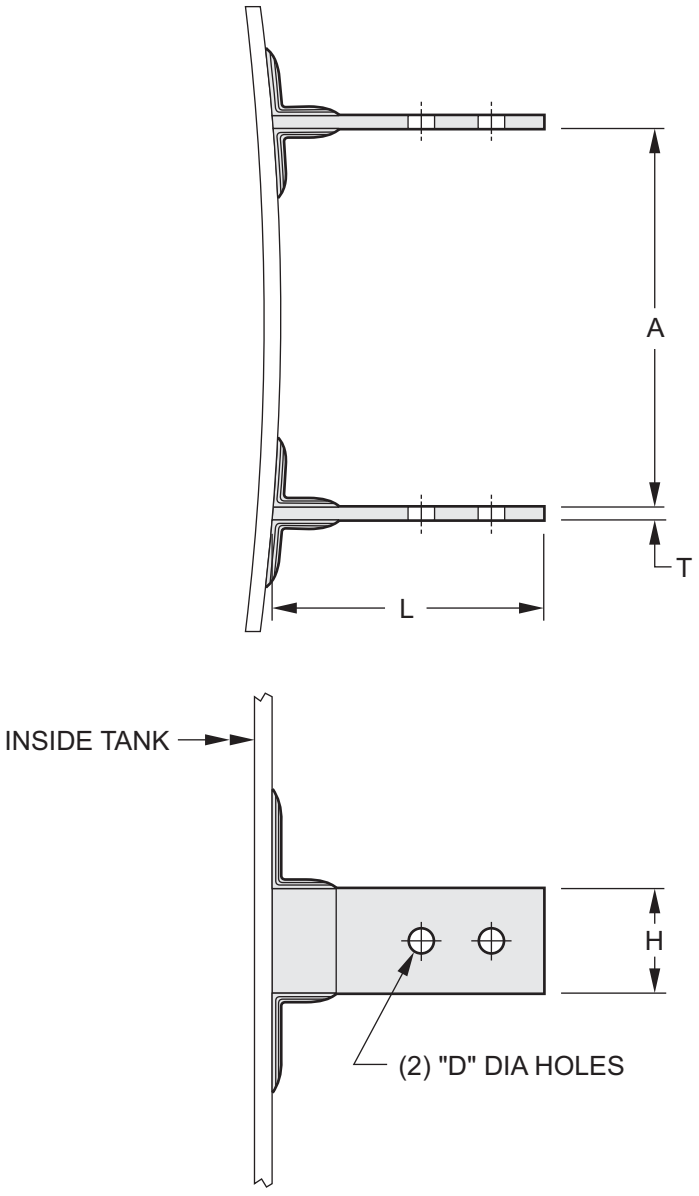
Composites USA
One Peninsula Drive / North East, MD 21901
T 410.287.2700 / F 410.287.5222
Email: info@compositesusa.com

Fitting: **Ladder Clips**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. This style ladder clip is to provide lateral support only. Ladder is to be fully supported off ladder base.

"A" LADDER WIDTH	"L" CLIP LENGTH	"H" CLIP HEIGHT	"D" HOLE DIAMETER	"T" CLIP THICKNESS	MATERIAL OF CONSTRUCTION	NOTES
16"	6"	3"	3/4"	3/8"	FRP	STANDARD CONSTRUCTION



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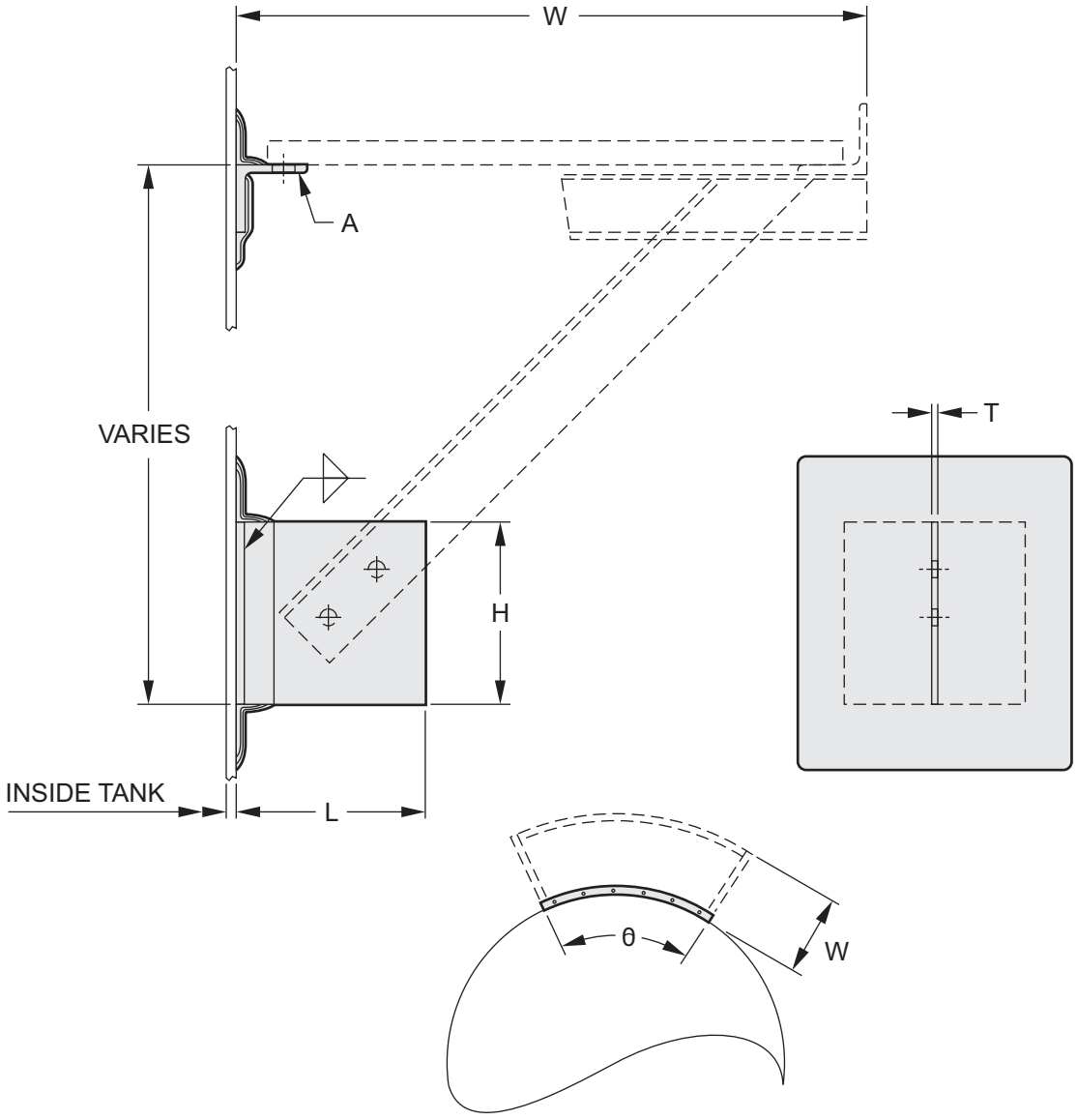
T 410.287.2700 / F 410.287.5222
Email: info@compositesusa.com

Fitting: **Platform Clips**

Fiberglass Tanks & Process Vessels Standards

Notes:
1. This detail provides for vessel ring and clip only, not the platform and knee brace.
2. Standard construction provides top angle ring undrilled for field location and drilling as required. Optional shop drilling available at customer's request.

"A" ANGLE SIZE	"H" HEIGHT	"L" LENGTH	"T" THK.	"W" WIDTH	θ RING	PLATFORM LOADING	MATERIAL OF CONSTRUCTION	NOTES



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One Peninsula Drive / North East, MD 21901
T 410.287.2700 / F 410.287.5222
Email: info@compositesusa.com

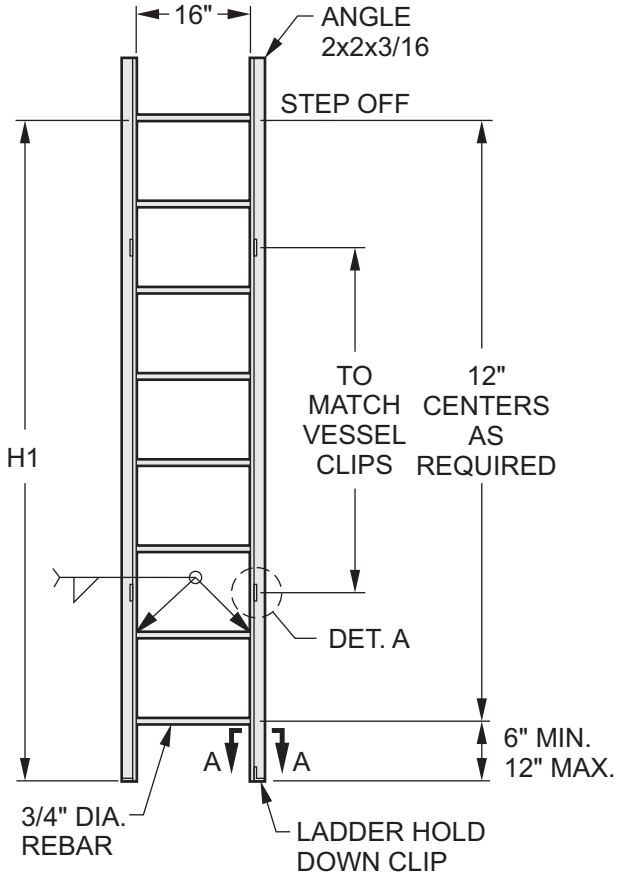
Fitting: **Ladders**

Fiberglass Tanks & Process Vessels Standards

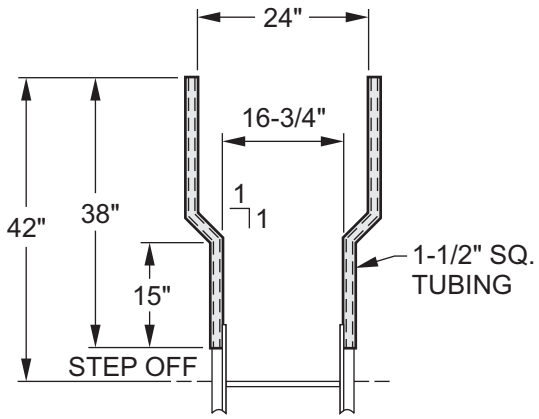
Notes: 1. Dimensions may vary. Shown are typical dimensions for carbon steel ladder.
2. Ladder overall height = H1 + walk through (if any).

Options: 1. Materials of construction: FRP, carbon steel, galvanized steel, stainless steel, aluminum.
2. Walk through or straight.
3. Side rail construction: flat bar, angle or square tubing.

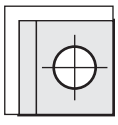
RAIL	RUNG	WALK THROUGH	STAND OFF CLIPS	HOLD DOWN CLIPS	LADDER OVERALL HEIGHT	STEP OFF H1	WALK THROUGH HEIGHT	LADDER MATERIAL	NOTES
2-1/2" X 3/8" FLAT BAR					H1 = 42"		42"	FR-PE	STANDARD LIGHT DUTY FIBERGLASS
ANGLE							42"	FR-PE	STANDARD MEDIUM DUTY FIBERGLASS
TUBE							42"	FR-PE	STANDARD HEAVY DUTY FIBERGLASS
2" x 2" x 3/16" ANGLE	3/4" DIA. REBAR	1-1/2" SQ. TUBING					42"	C.S.	STANDARD METAL
									OTHER



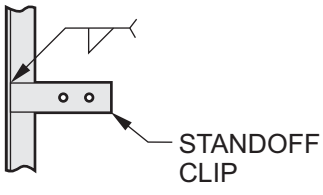
ITEM 2
LADDER



ITEM 1
OPTIONAL WALK TROUGH



SECTION A - A



DETAIL A

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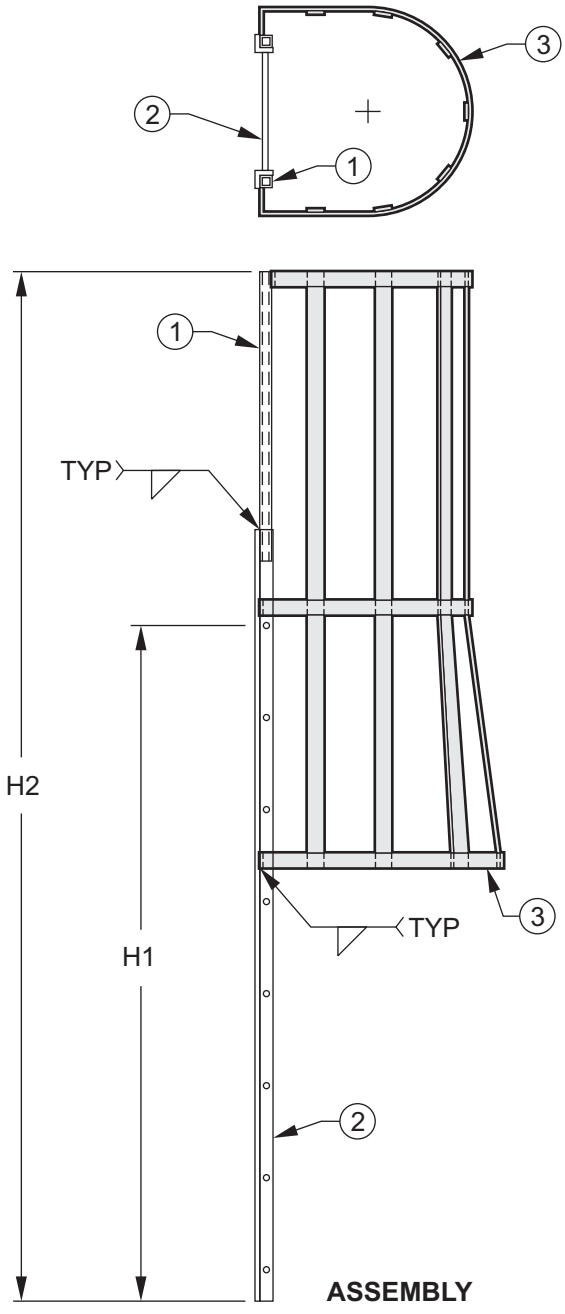
Email: info@compositesusa.com

Fitting: **Ladders With Cages**

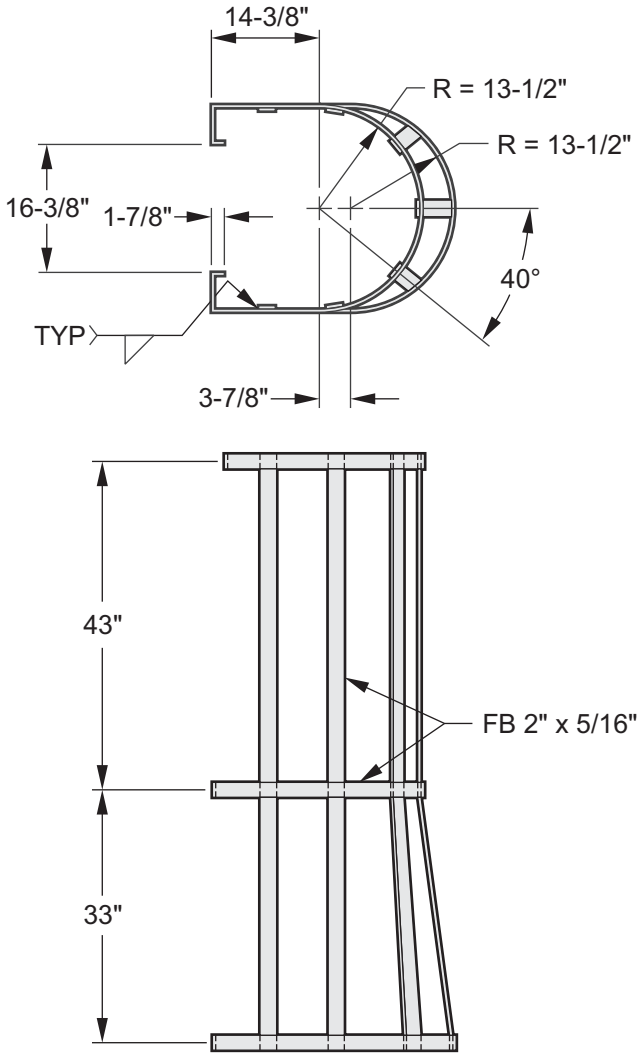
Fiberglass Tanks & Process Vessels Standards

Notes:
1. Dimensions may vary. Shown are typical dimensions for carbon steel ladder and cage. See V-860 for alternative ladder construction.
2. Ladder overall height = H1 + walk through (if any).

Options:
1. Materials of construction: FRP, carbon steel, galvanized steel, stainless steel, aluminum.
2. Walk through or straight.
3. Rail construction: flat bar, angle or square tubing.



ASSEMBLY



ITEM 3
CAGE

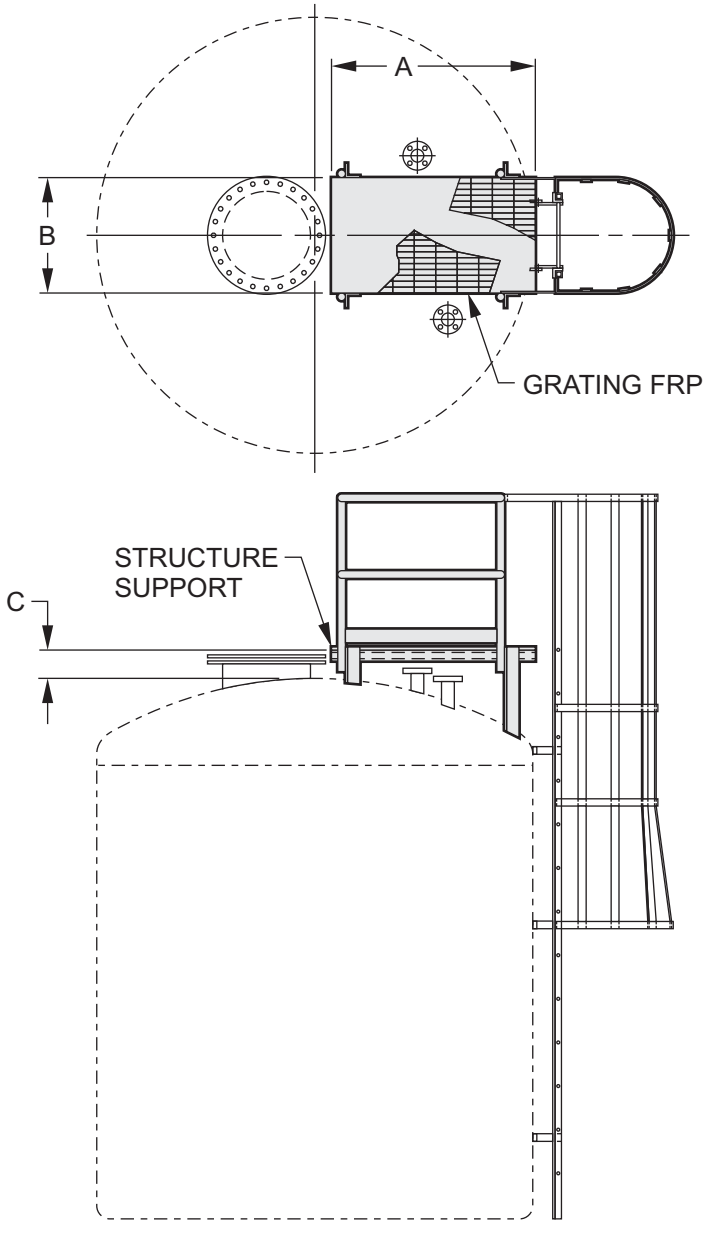
Composites USA
One Peninsula Drive / North East, MD 21901
T 410.287.2700 / F 410.287.5222
Email: info@compositesusa.com

Fitting: **Top Access Platforms**

Fiberglass Tanks & Process Vessels Standards

Notes:
1. Specify ladders with V-860 or V-865.
2. Platform support designed based on specified size and loading.
3. Handrail spacing per OSHA.
4. Specify: (a) "A" = Length (b) "B" = Width (c) "C" = Clearance - vessel dome to underside grating.

Options:
1. Materials of construction: FRP, carbon steel, galvanized steel, stainless steel, aluminum.
2. Walk through or straight.
3. Rail construction: flat bar, angle or square tubing.



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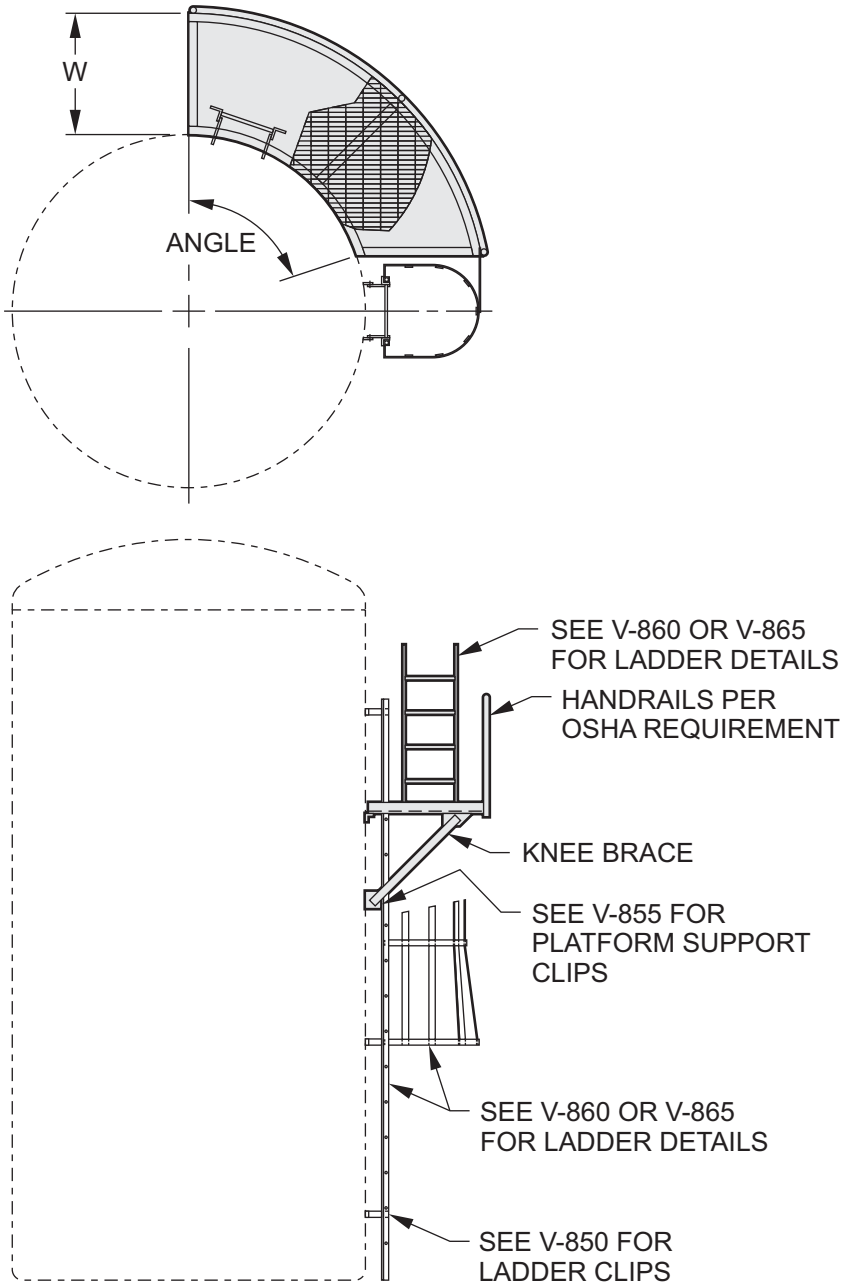
Email: info@compositesusa.com

Fitting: **Intermediate Level Platforms**

Notes:
1. Specify ladders with V-860 or V-865.
2. Platform support designed based on specified size and loading.
3. Handrail spacing per OSHA.
4. Specify: (a) "W" = Width (b) Angle (c) Materials of construction

Options:
1. Materials of construction: FRP, carbon steel, galvanized steel, stainless steel, aluminum.
2. Walk through or straight.
3. Rail construction: flat bar, angle or square tubing.



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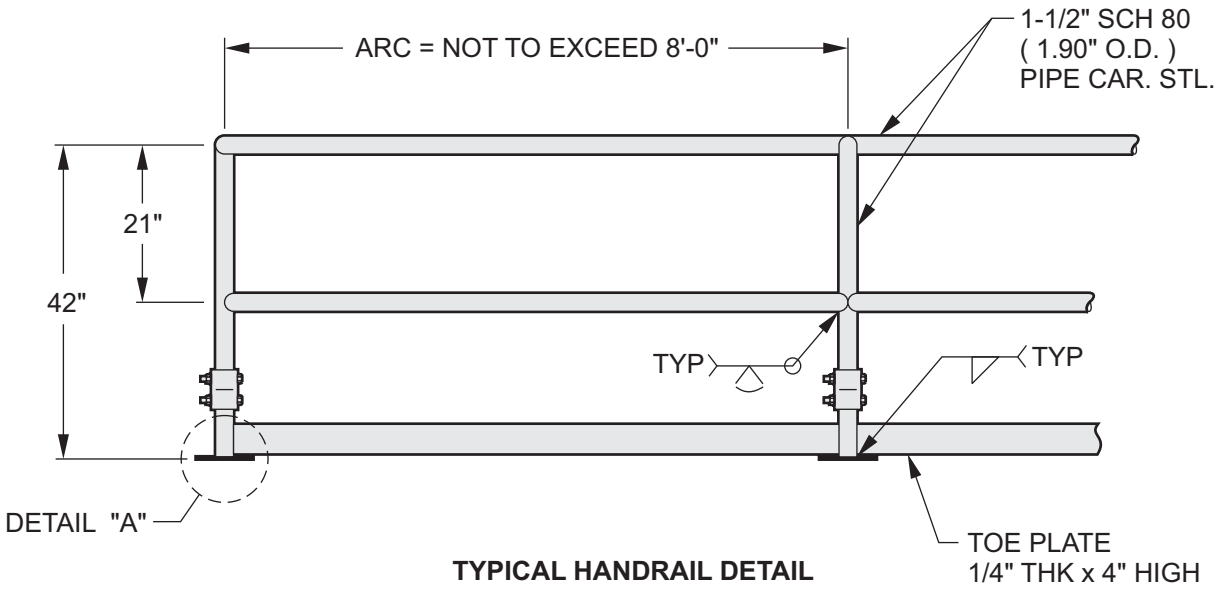
Email: info@compositesusa.com

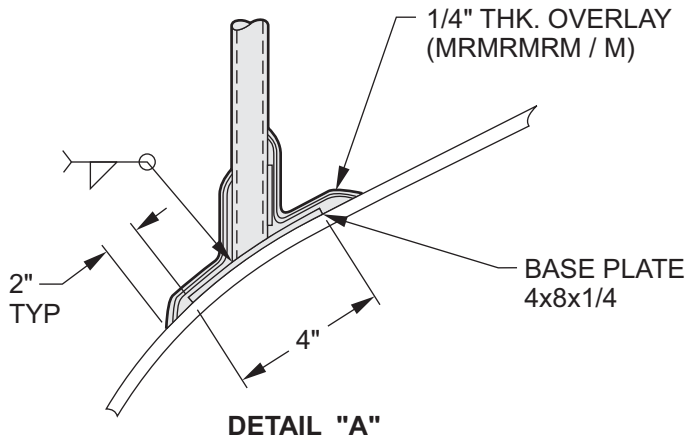
Fitting: **Top Guard Rail Systems**

Notes:
1. Handrail system sleeved and pinned as required to allow shipment loose from the vessel. Factory pre-fit for field final assembly.
2. Handrail spacing per OSHA.

Options:
1. Materials of construction: FRP, carbon steel, galvanized steel, stainless steel, aluminum.
2. Walk through or straight.
3. Rail construction: flat bar, angle or square tubing.



TYPICAL HANDRAIL DETAIL



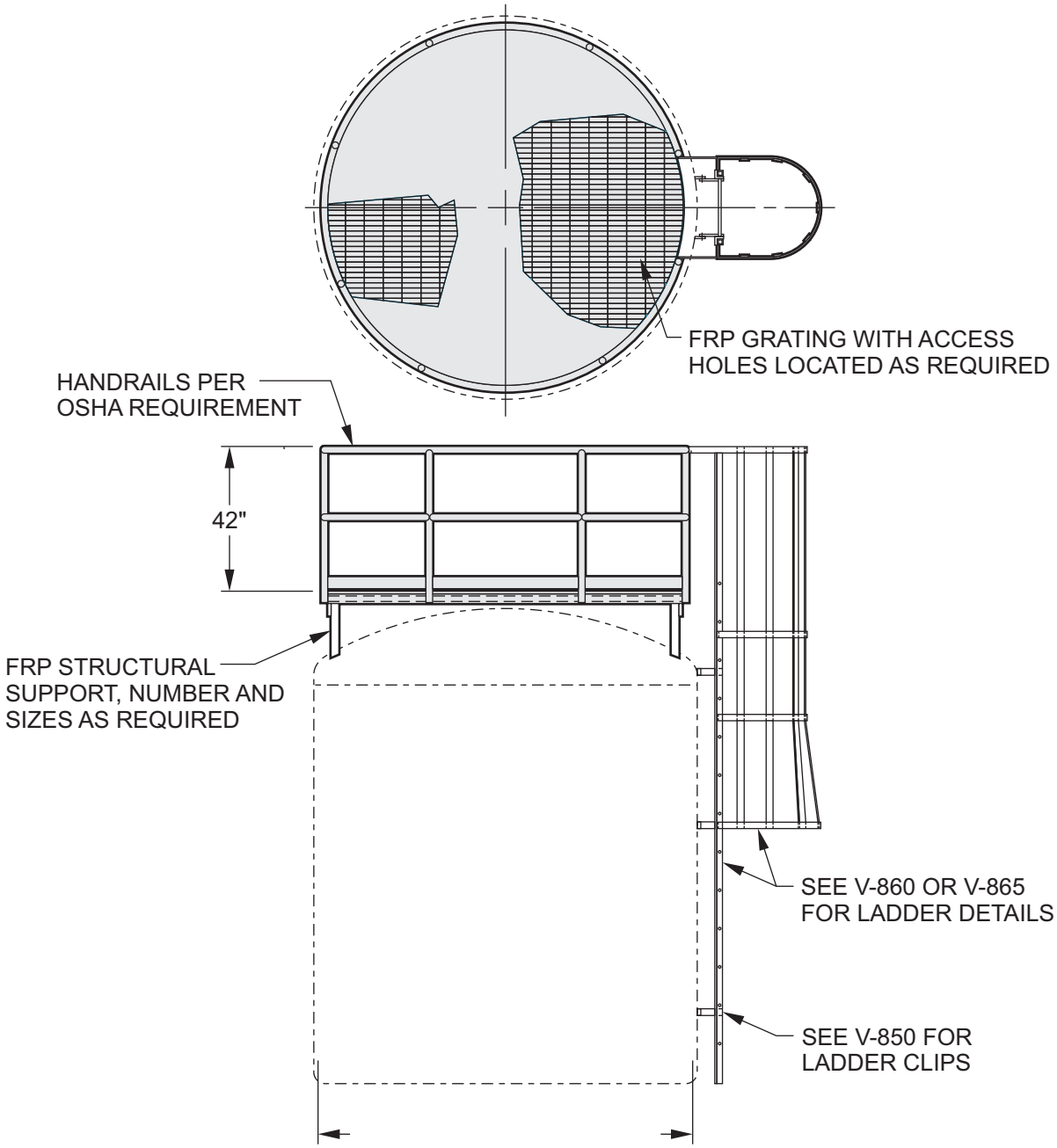
DETAIL "A"

Composites USA
One Peninsula Drive / North East, MD 21901
T 410.287.2700 / F 410.287.5222
Email: info@compositesusa.com

Fitting: **Full Top Platforms**

Notes:
1. Specify ladders with V-860 or V-865.
2. Platform support designed based on specified size and loading.
3. Handrail spacing per OSHA.

Options:
1. Materials of construction: FRP, carbon steel, galvanized steel, stainless steel, aluminum.
2. Walk through or straight.
3. Rail construction: flat bar, angle or square tubing.



Composites USA
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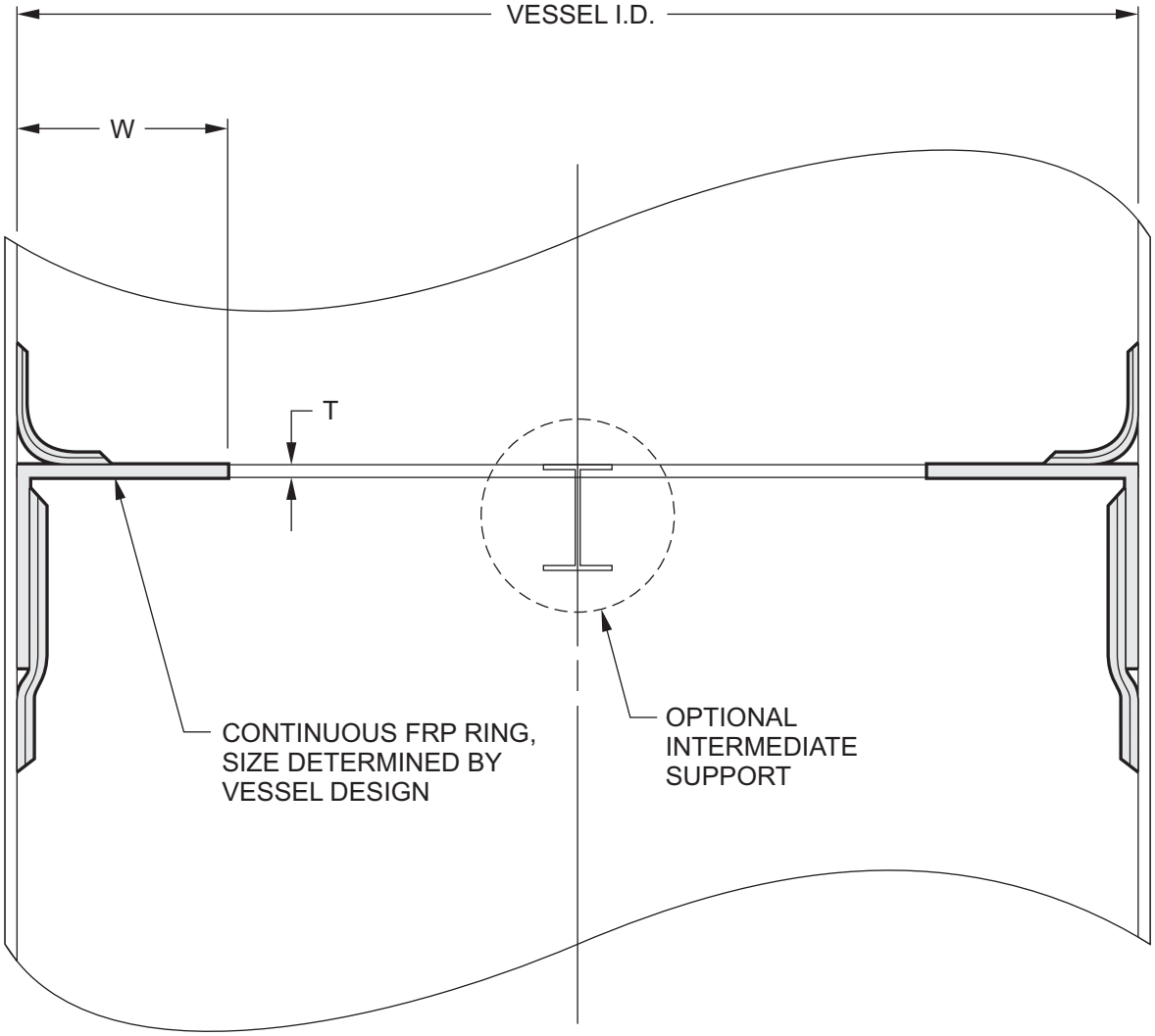
T 410.287.2700 / F 410.287.5222
Email: info@compositesusa.com

Fitting: **Support Rings**

Notes: 1. Standard width, unless otherwise specified is 2".
2. Design loads are required prior to Composites USA verification of construction.

VESSEL I.D. "D"	RING WIDTH "W"	RING THK. "T"	DESIGN LOAD LB/FT ^{2}	INTERMEDIATE SUPPORT REQUIRED	DRILLING IF ANY	NOTES



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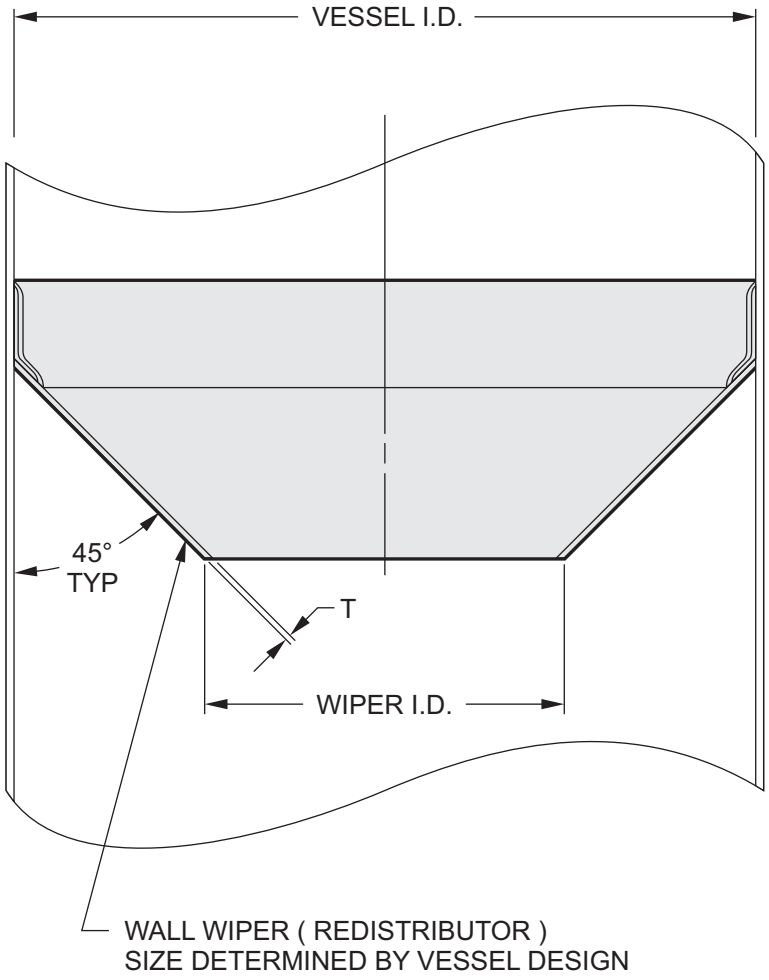
Email: info@compositesusa.com

Fitting: **Wall Wipers**



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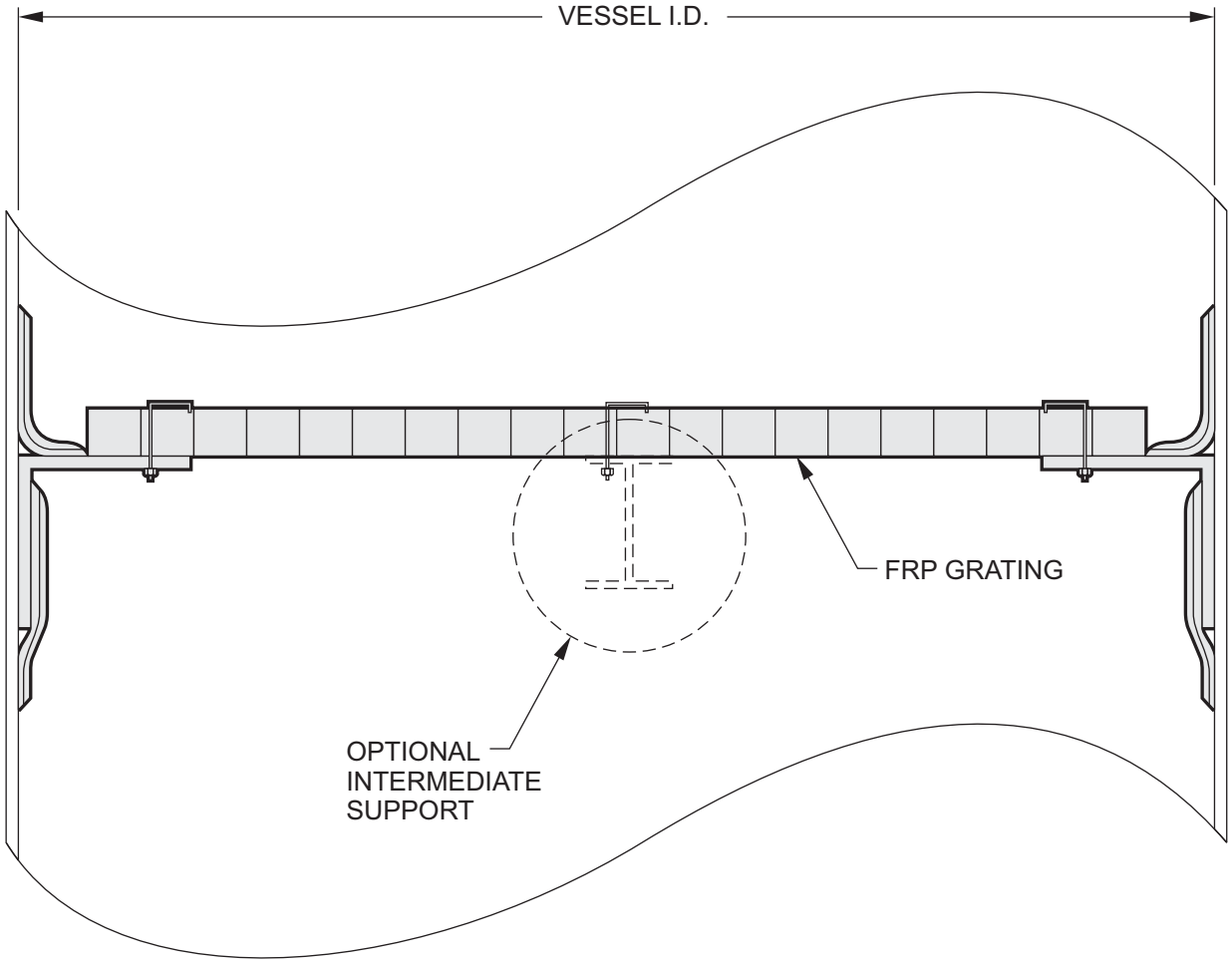
Email: info@compositesusa.com

Fitting: **Support Grating**

Notes:
1. Design loads are required prior to Composites USA verification of construction.
2. Standard grating material of construction include fire retardant polyester and vinyl ester resin.

THICKNESS	LAYOUT	GRATING	HOLD DOWN CLIPS		NOTES
		MATERIAL OF CONSTRUCTION SEE NOTE 2	NO.	MATERIAL OF CONSTRUCTION	
1"	1-1/2" x 1-1/2"				
1-1/2"	1-1/2" x 1-1/2"				
2"	1-1/2" x 1-1/2"				
2"	2" x 2"				



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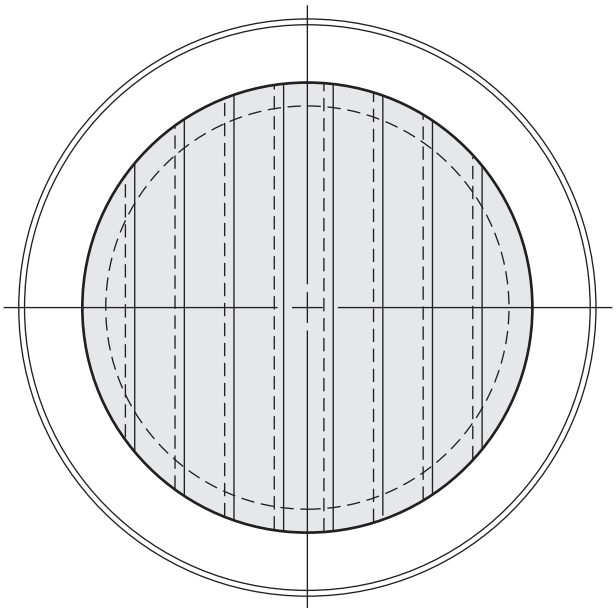
Email: info@compositesusa.com

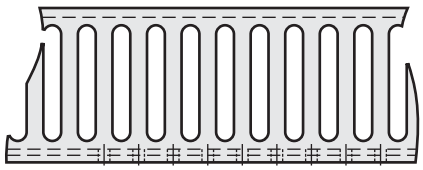
Fitting: **Support Trays**

Fiberglass Tanks & Process Vessels Standards

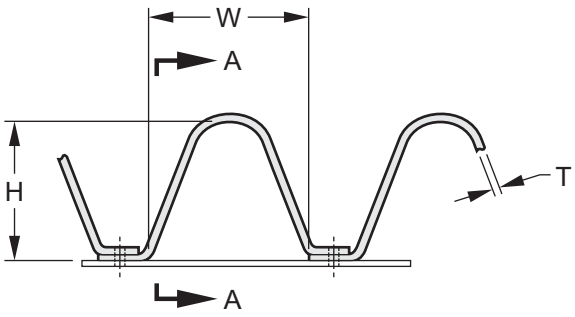
Notes: 1. Design loads are required prior to Composites USA verification of construction.
2. Free cross-section approx. 100%.

PLATE THICKNESS	SUPPORT BEAM			MATERIAL OF CONSTRUCTION	NOTES
T	NUMBER	W WIDTH	H HEIGHT	FRP, PP, PVDF	STANDARD CONFIGURATION THICKNESS BASED ON LOADS
	PER VESSEL DIAMETER	7.5"	11"		

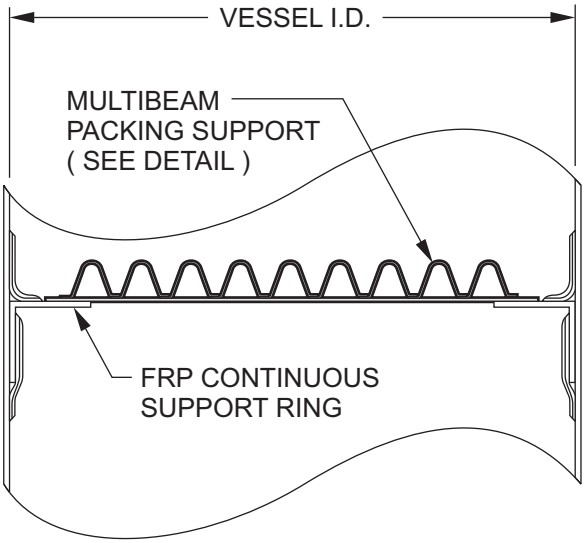




SECTION A - A



DETAIL



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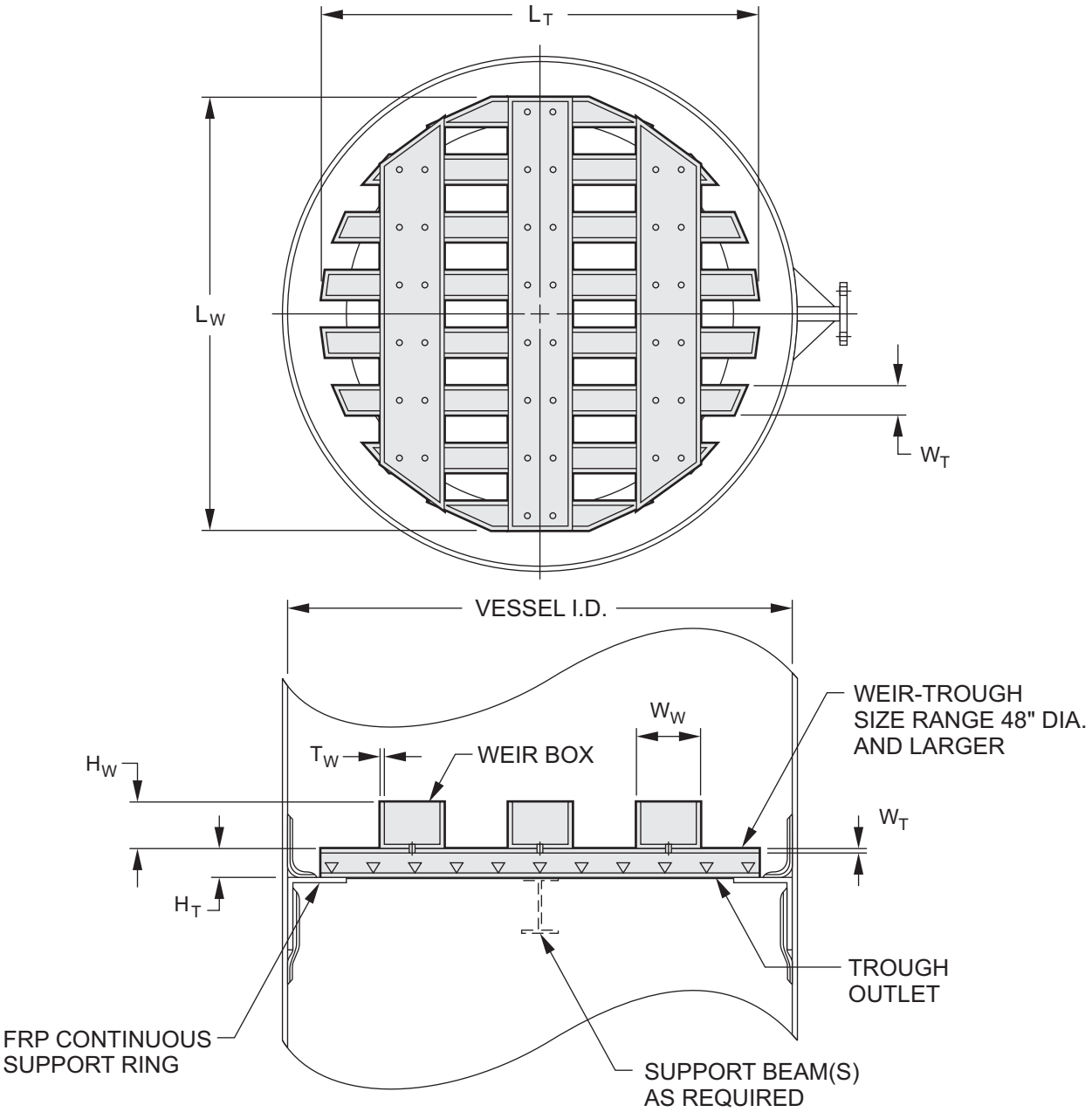
Email: info@compositesusa.com

Fitting: Liquid Weir Distributors

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Design loads are required prior to Composites USA verification of construction.

TROUGH					WEIR					MATERIAL OF CONSTRUCTION	NOTES
NUMBER N_T	MAX LENGTH L_T	WIDTH W_T	HEIGHT H_T	THICKNESS T_T	NUMBER N_T	MAX LENGTH L_T	WIDTH W_T	HEIGHT H_T	THICKNESS T_T		



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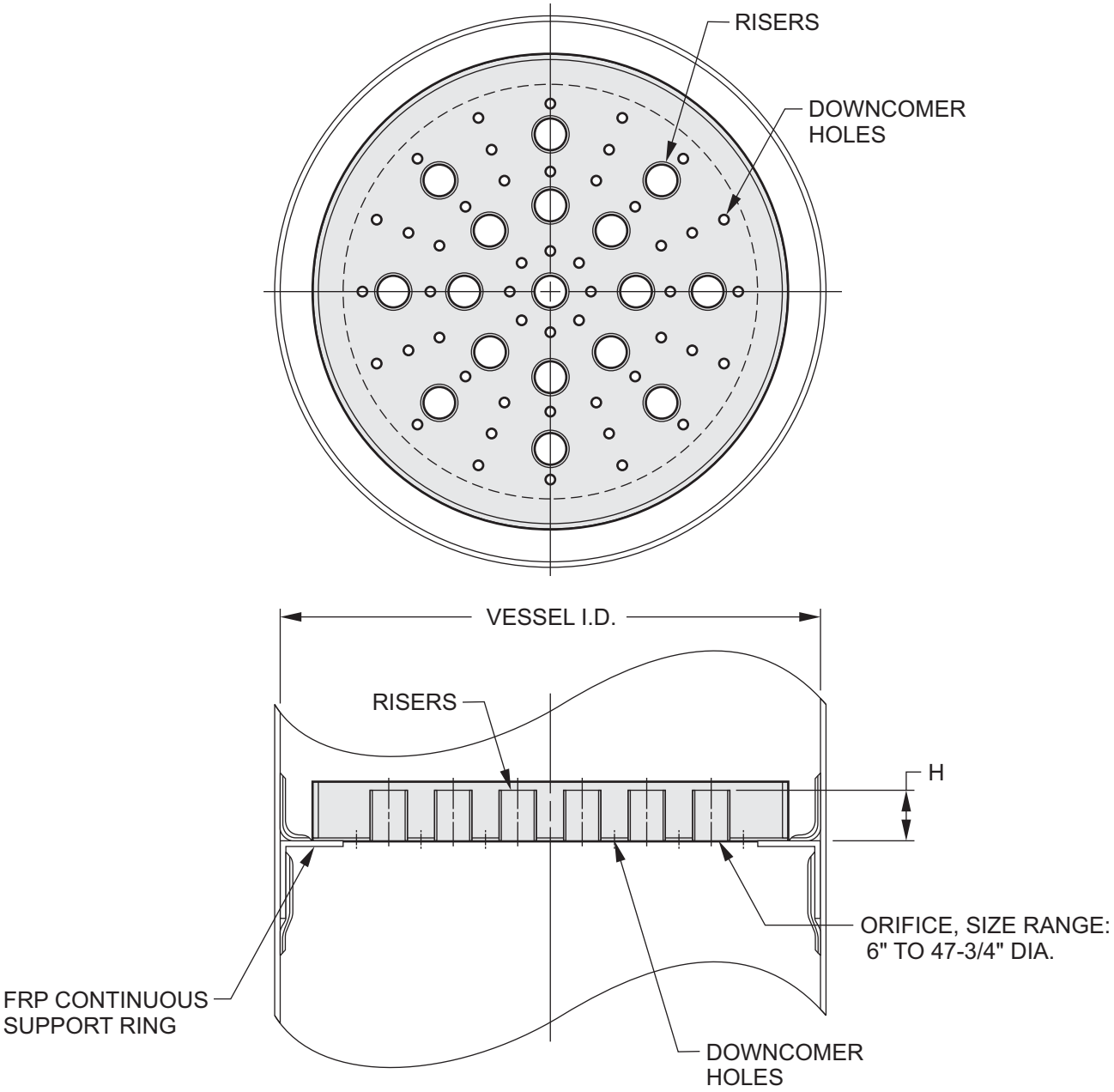
T 410.287.2700 / F 410.287.5222
Email: info@compositesusa.com

Fitting: **Flow Redistributors**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Design loads are required prior to Composites USA verification of construction.

PLATE THICKNESS	RISER			DOWNCOMER HOLES		MATERIAL OF CONSTRUCTION	NOTES
INCHES	NUMBER	DIAMETER	HEIGHT	NUMBER	DIAMETER		



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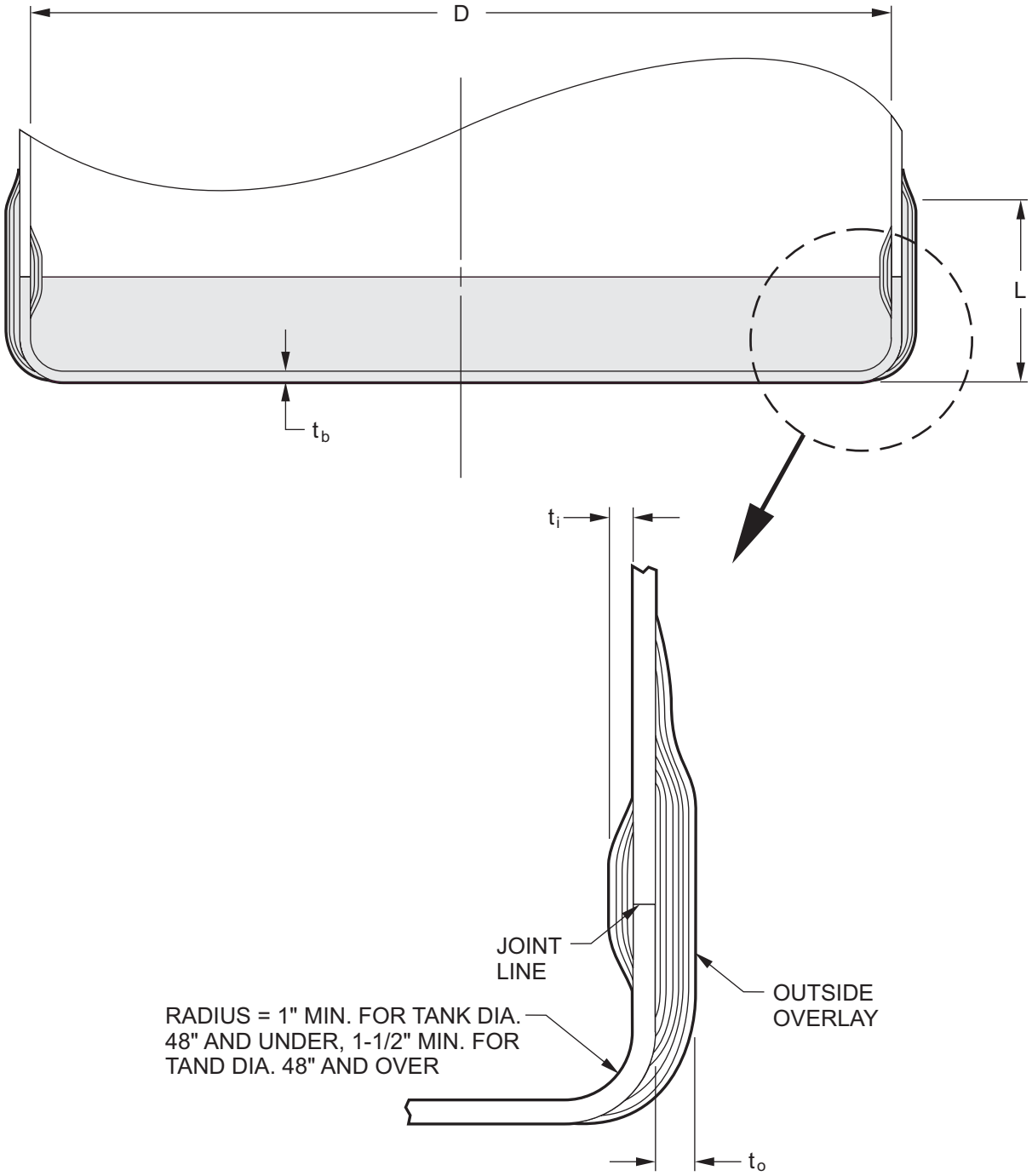
Email: info@compositesusa.com

Fitting: **Flat Bottom**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Full bottom support required.
2. t_i and t_o and "L" are determined per the design calculations for ASME RTP-1, ASTM D-4097, or D-3229, as specified.



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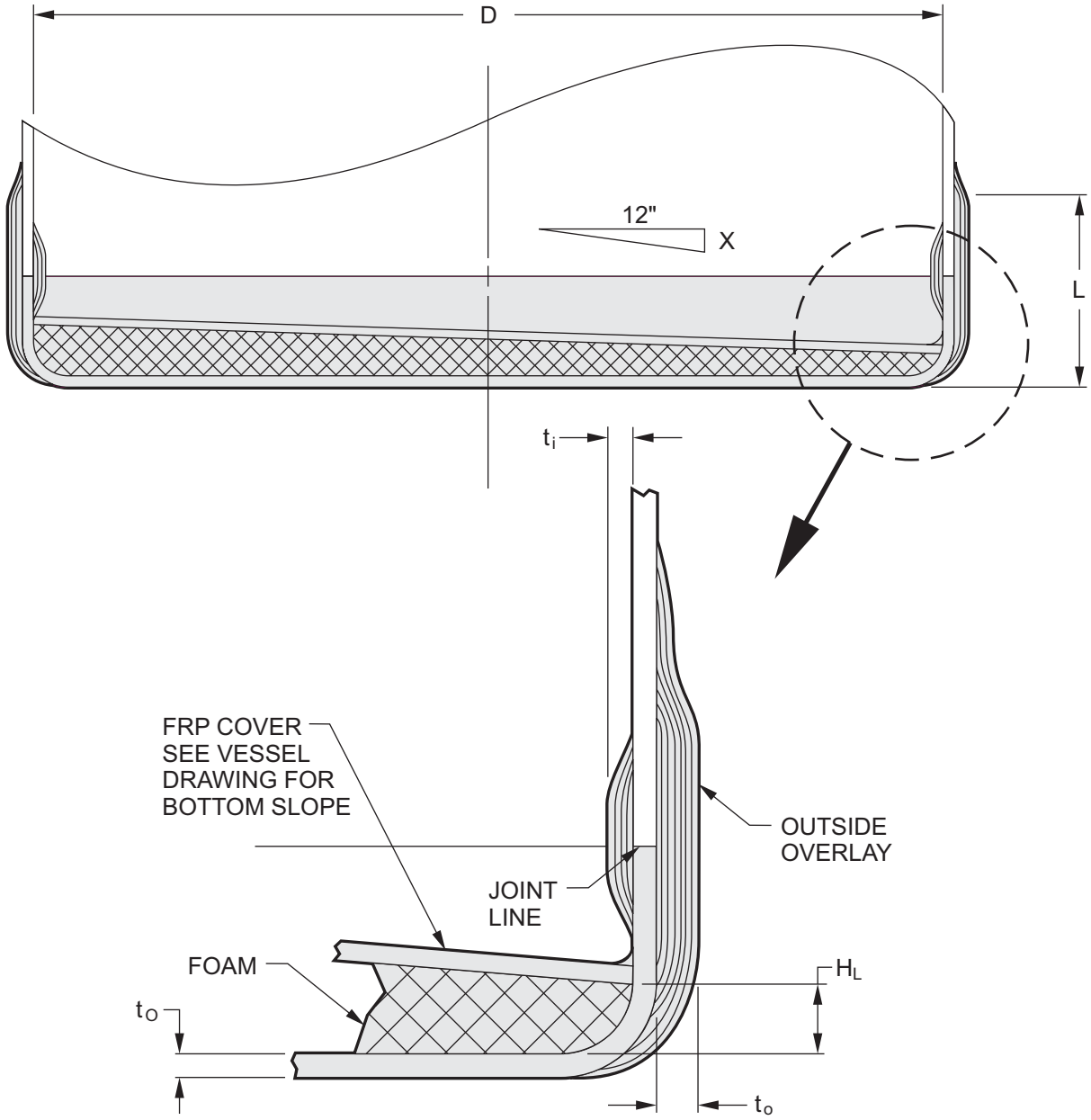
T 410.287.2700 / F 410.287.5222
Email: info@compositesusa.com

Fitting: Flat Bottom With Internal Slope

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Full bottom support required.
2. T_i , T_o , t_i and t_o are determined per ASME RTP-1, ASTM D-4097, or D-3229, as specified.

TANK INTERNAL DIAMETER "D"	BOTTOM INSIDE LAMINATE THK. T_i	BOTTOM OUTSIDE LAMINATE THK. T_o	SLOPE IN/FT "X"	LOW SIDE HEIGHT H_L	CORE DENSITY	CROSS BRACING REQUIRED Y/N
			.25"/FT	1"	2.2 LB/FT^3	STANDARD



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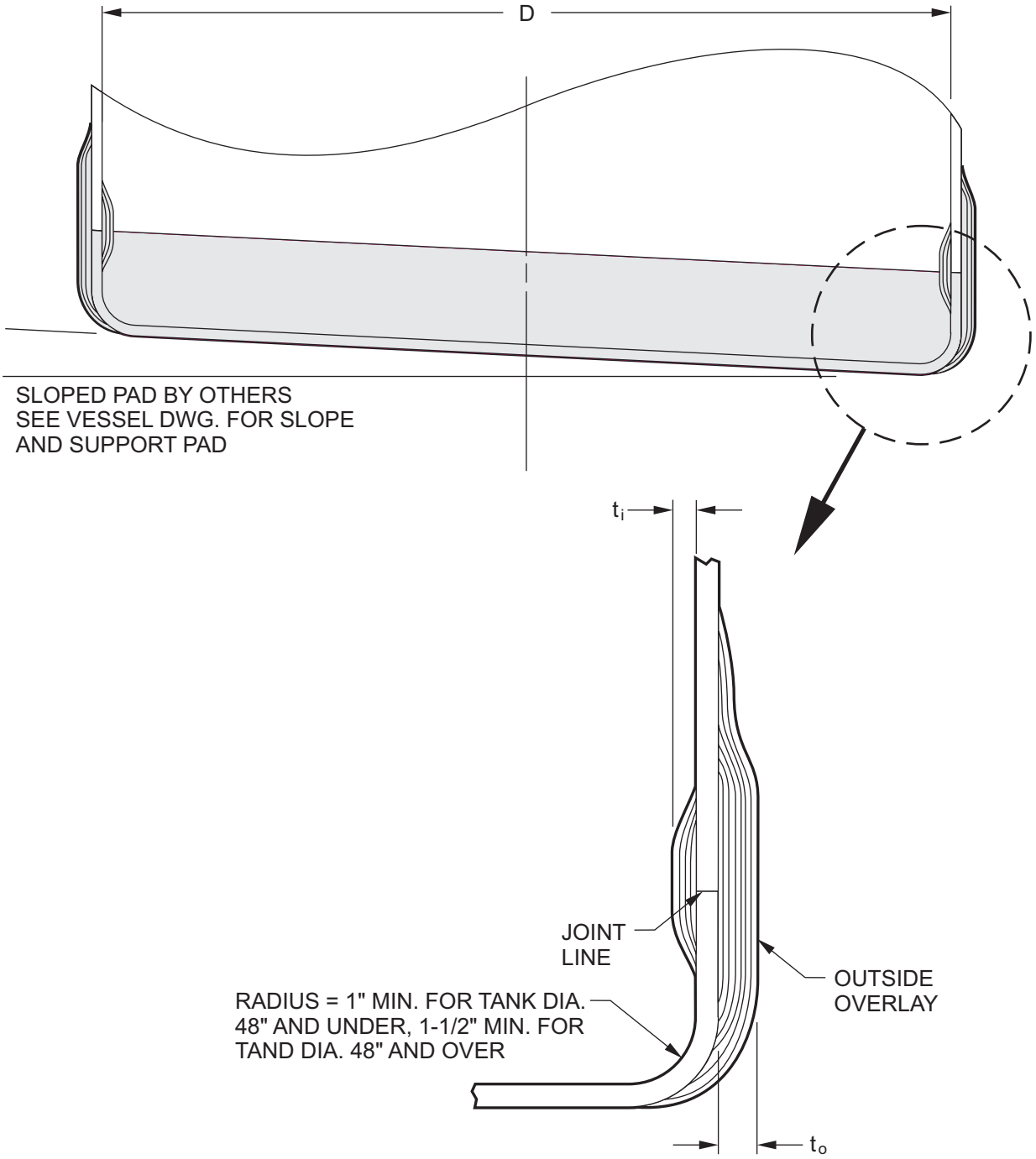
Email: info@compositesusa.com

Fitting: **Flat Bottom With External Slope**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Full bottom support required.
2. t_i and t_o and "L" are determined per the design calculations for ASME RTP-1, ASTM D-4097, or D-3229, as specified.



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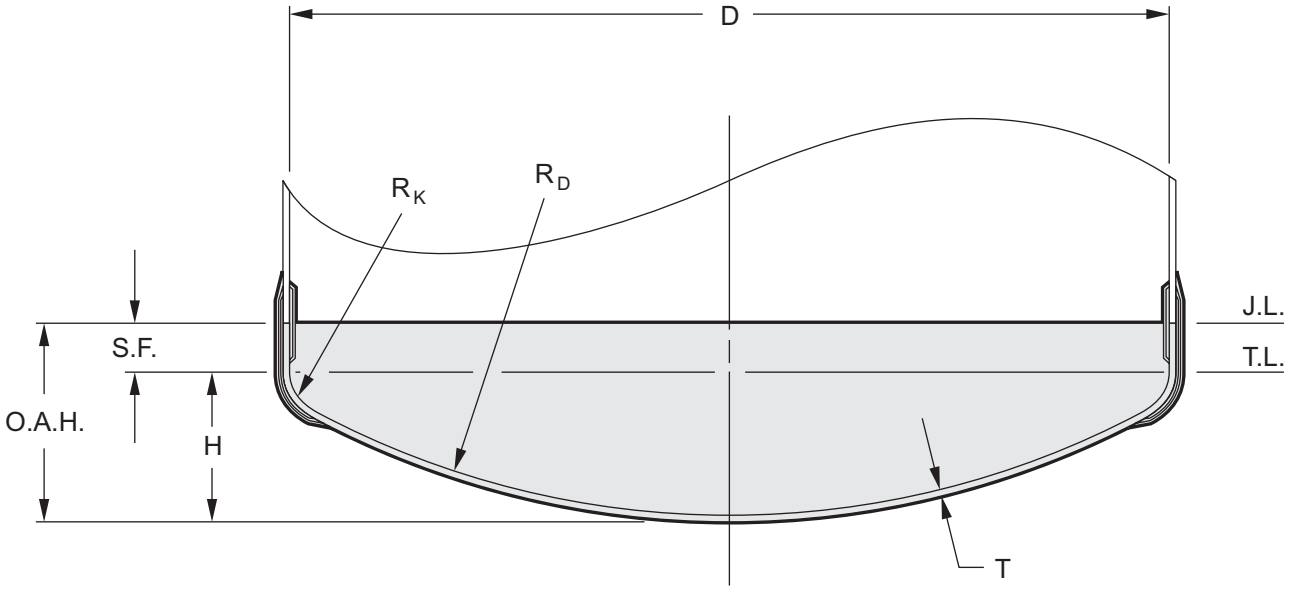
T 410.287.2700 / F 410.287.5222
Email: info@compositesusa.com

Fitting: ASME (Torispherical) Dished Bottom

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Standard design is for the worst case analysis of pressure, and vacuum, in accordance with ASME RTP-1, ASTM D-3299 and ASTM D-4097.

NOMINAL VESSEL I.D. "D"	DISH RADIUS R_D	DISH KNUCKLE RADIUS R_K	DISH HEIGHT H	DISH THICKNESS "T"	NOTES
	$R_D = D$	$R_K = \geq 6\%$ D	0.17 x D		STANDARD



J.L. = JOINT LINE
T.L. = TANGENT LINE
S.F. = STRAIGHT FLANGE

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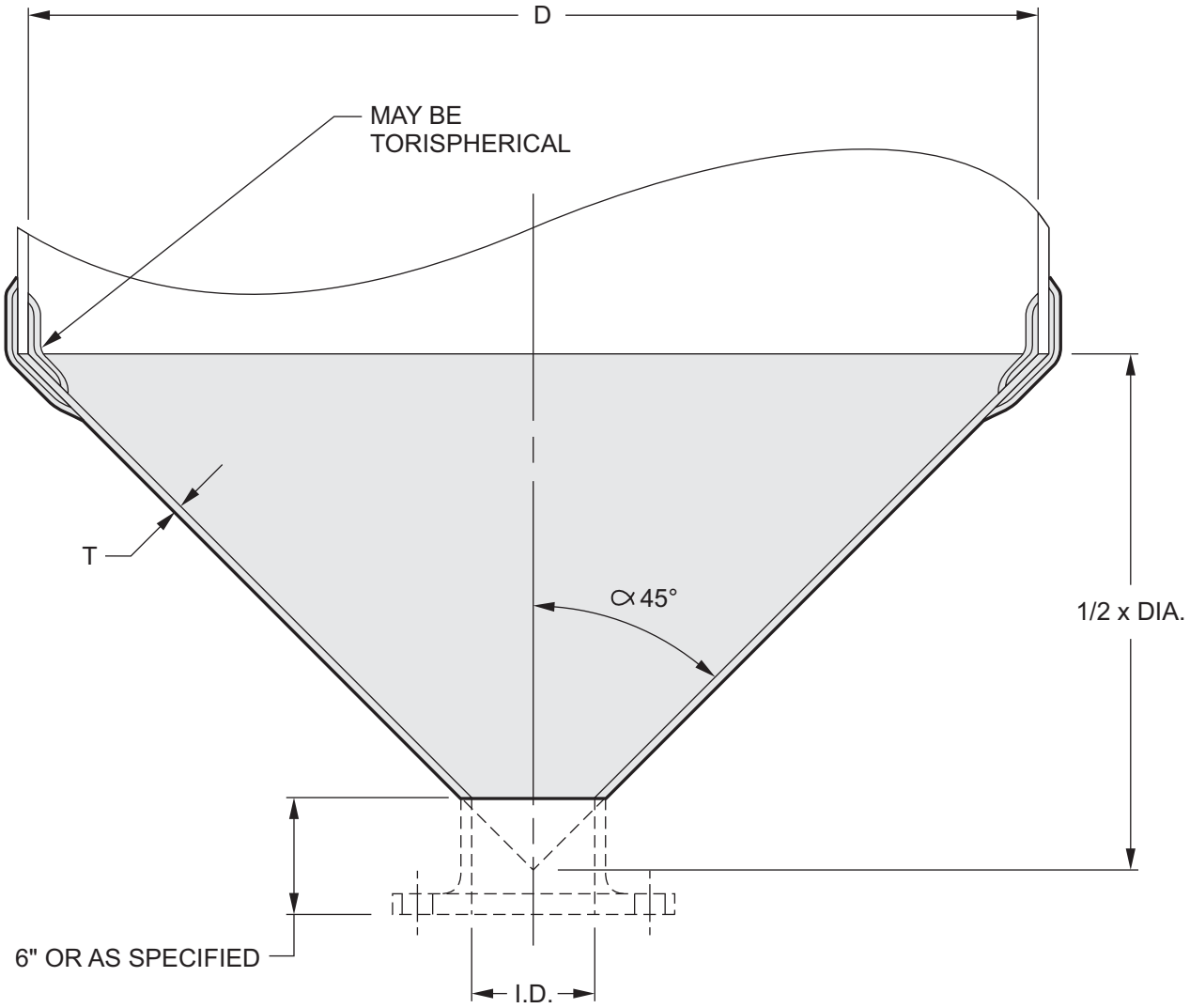
Email: info@compositesusa.com

Fitting: Cone Bottom 90° Included Angle

Notes: 1. Design thickness and joint require special engineering consideration based on the loading condition for α > 30°.



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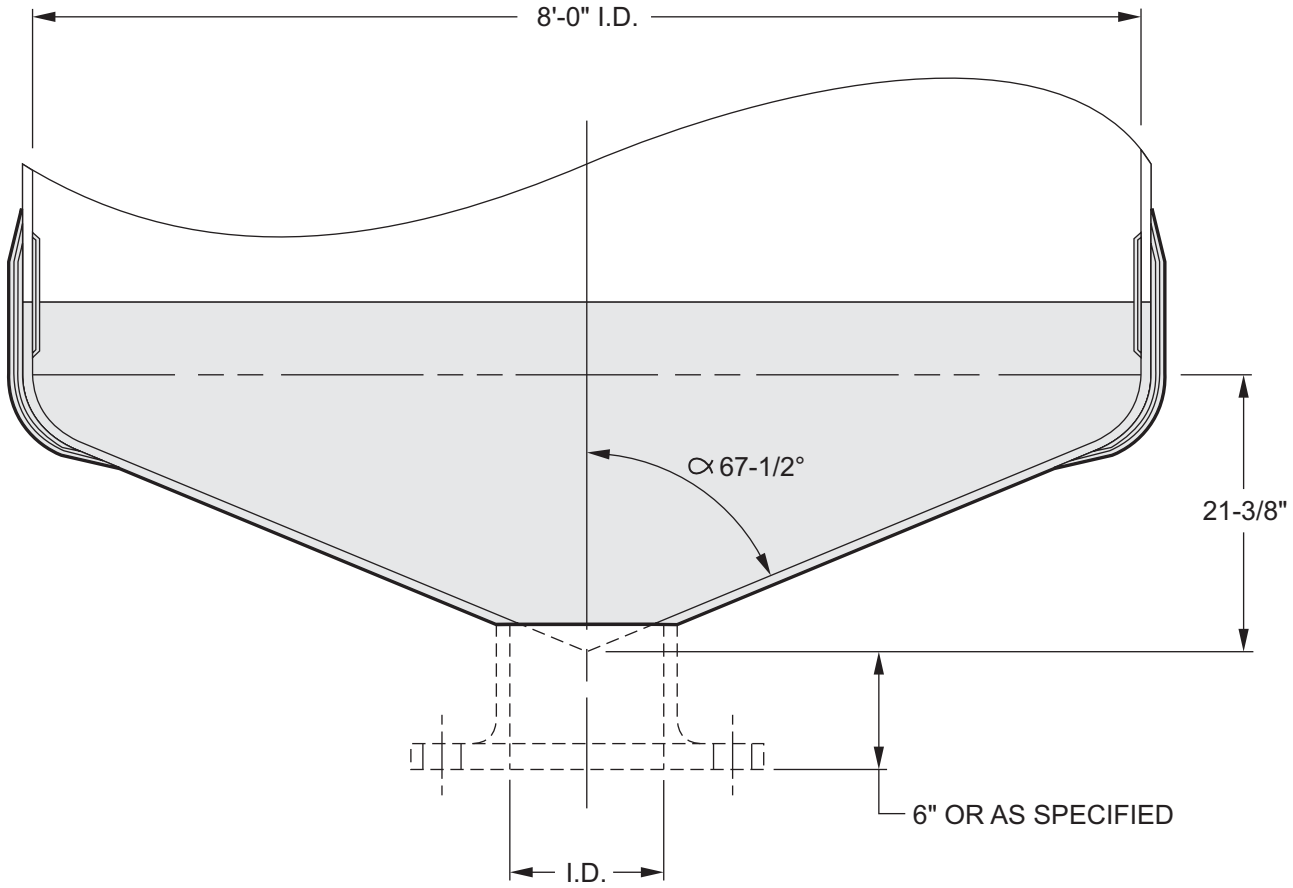
Email: info@compositesusa.com

Fitting: **Cone Bottom 135° Included Angle**

Notes: 1. Design thickness and joint require special engineering consideration based on the loading condition for ∝ > 30°.



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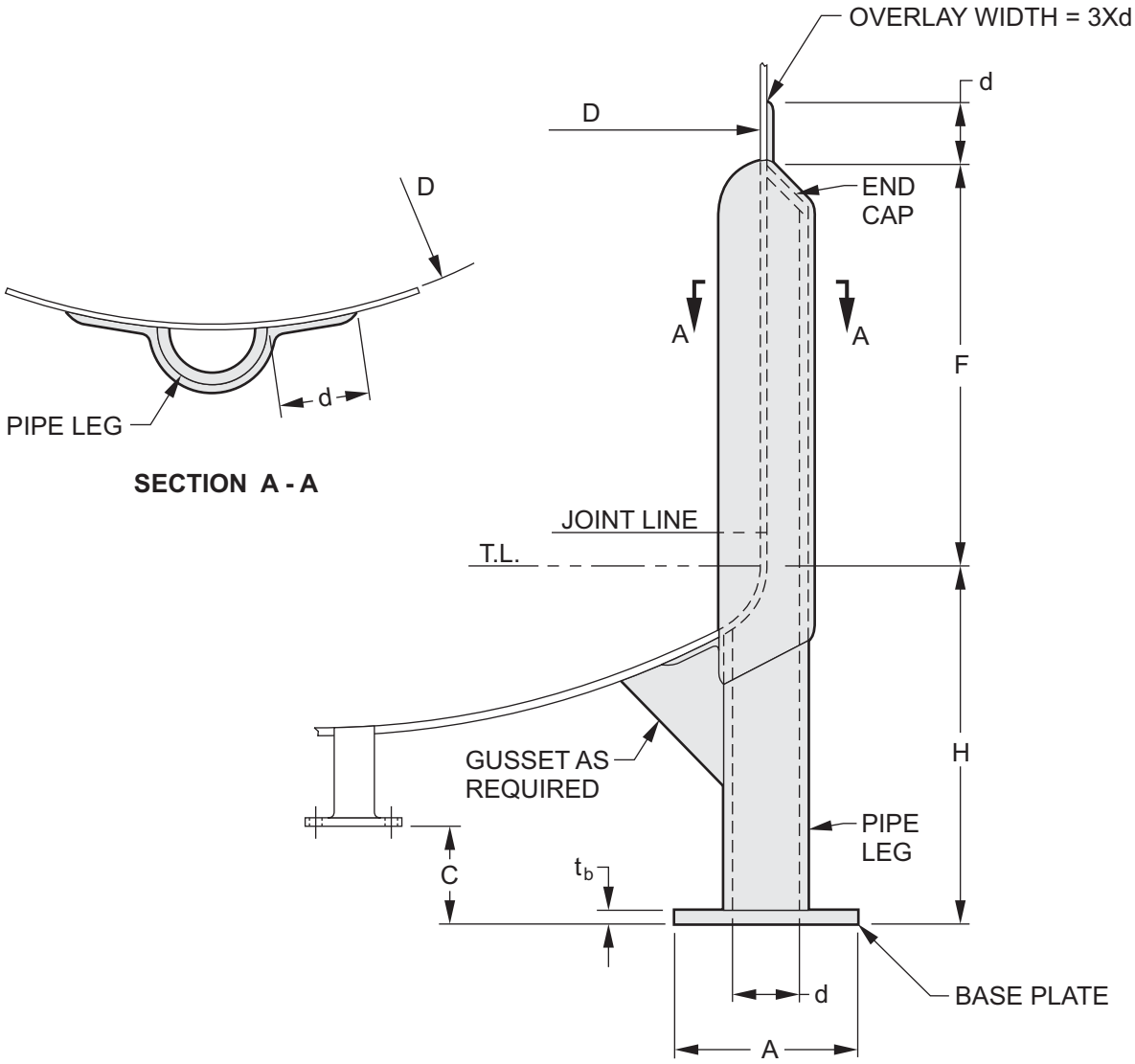
Email: info@compositesusa.com

Fitting: **Pipe Legs**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Leg design based upon vessel design inputs including fluid specific gravity, wind & seismic loads, as well as final desired geometry including number and height of legs.

NO. LEGS	LEG MATERIAL OF CONSTRUCTION	BOTTOM CLEARANCE "C"	LEG DIA. "d"	LEG THK.	OVERLAY THICKNESS	BASE PLATE A x A x t_b	BASE PLATE DRILLED Y/N	GUSSETS REQUIRED Y/N	NOTES
	FRP								



SECTION A - A

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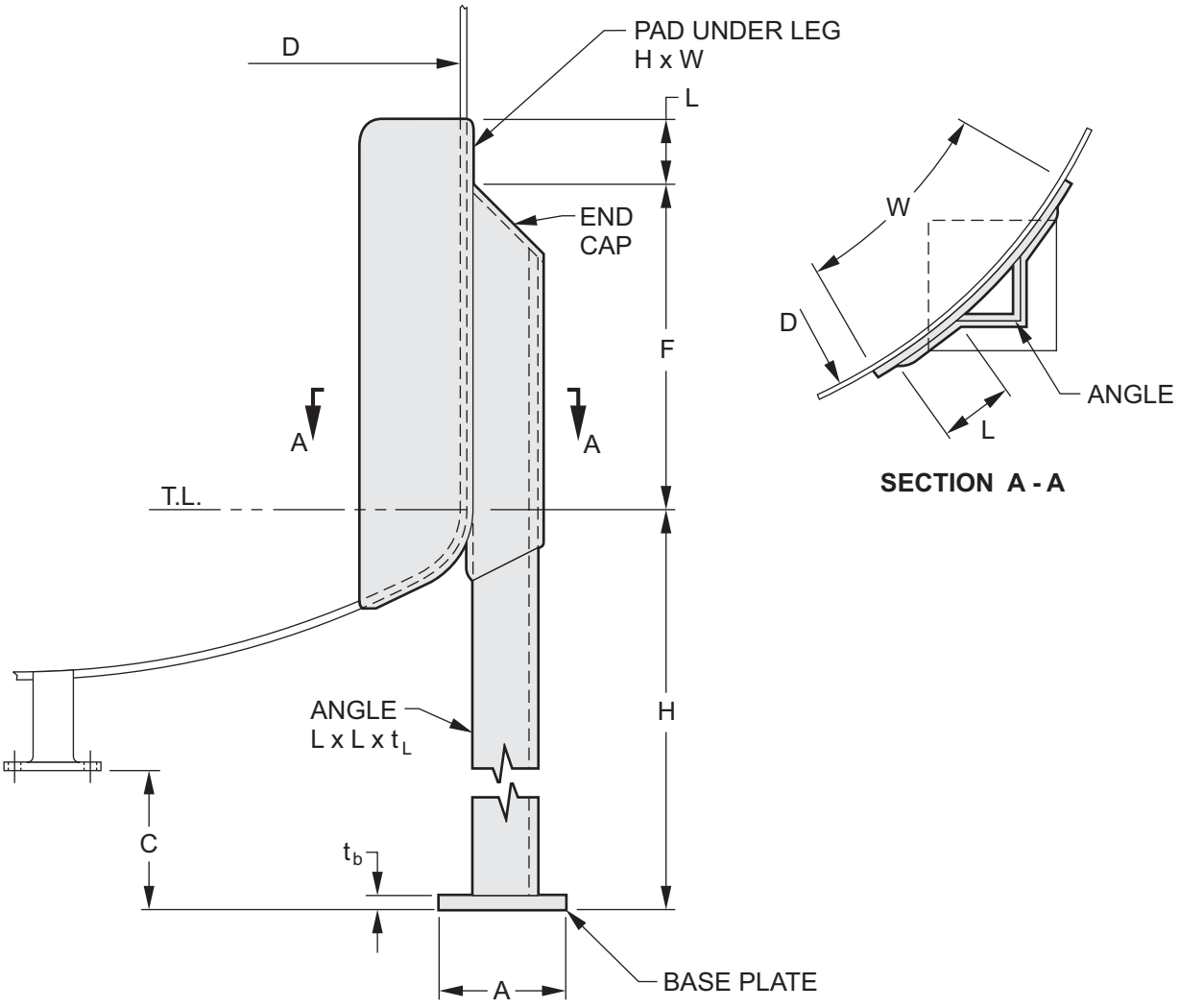
Email: info@compositesusa.com

Fitting: **Angle Legs**

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Leg design based upon vessel design inputs including fluid specific gravity, wind & seismic loads, as well as final desired geometry including number and height of legs.

NO. LEGS	LEG MATERIAL OF CONSTRUCTION	BOTTOM CLEARANCE "C"	LEG ANGLE SIZE $L \times L \times t_L$	BASE PLATE $A \times A \times t_b$	BASE PLATE DRILLED Y/N	PAD THICKNESS	CROSS BRACING REQUIRED Y/N
	FRP						



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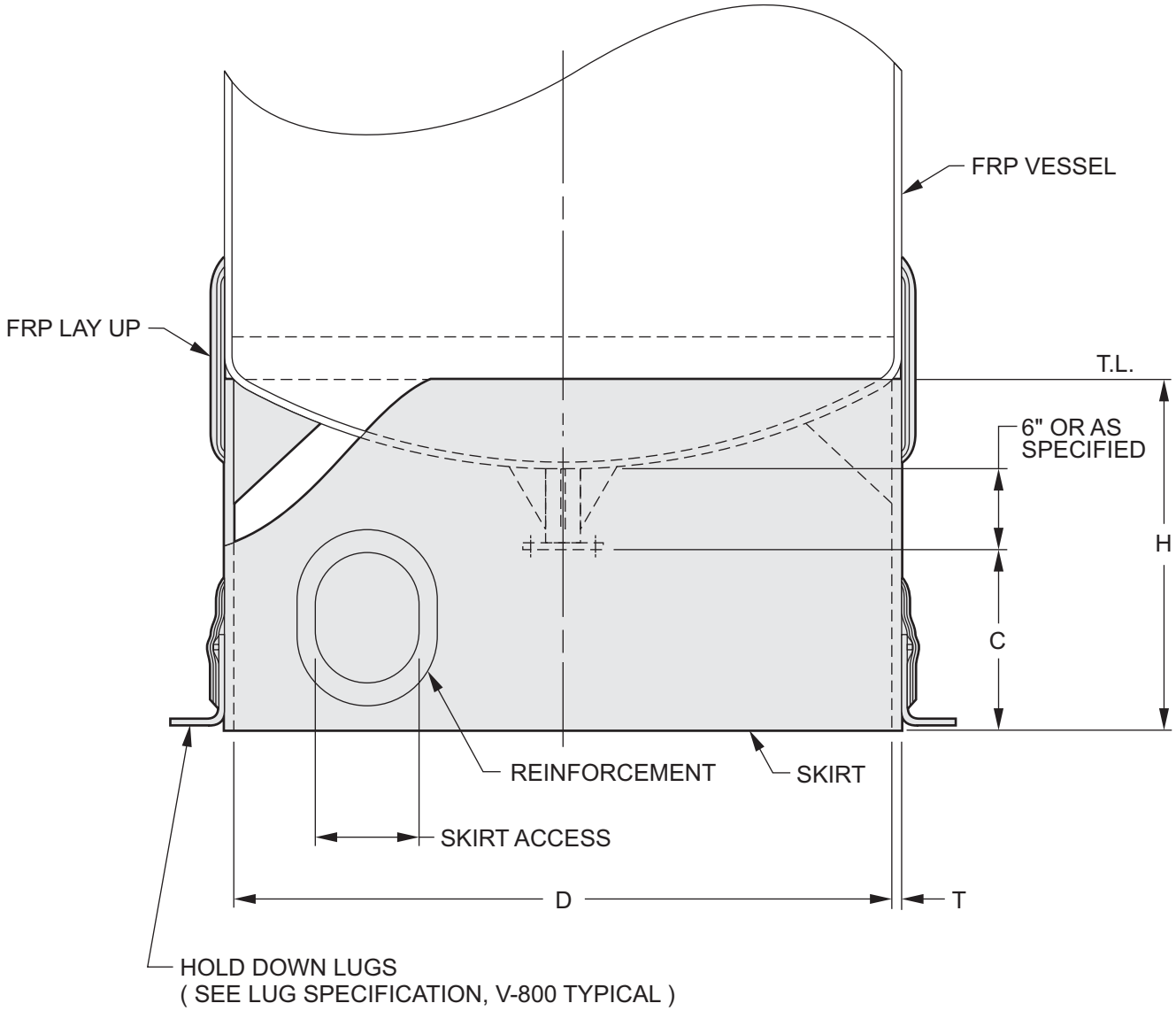
Fitting: **Skirt Support**

VESSEL INTERNAL DIA.	SKIRT HEIGHT	SKIRT CLEARANCE	SKIRT MATERIAL OF CONSTRUCTION	THICKNESS	SKIRT OPENING		NOTES
"D"	"H"	"C"		"T"	NO.	SIZE	
	CALCULATED		FRP				STANDARD



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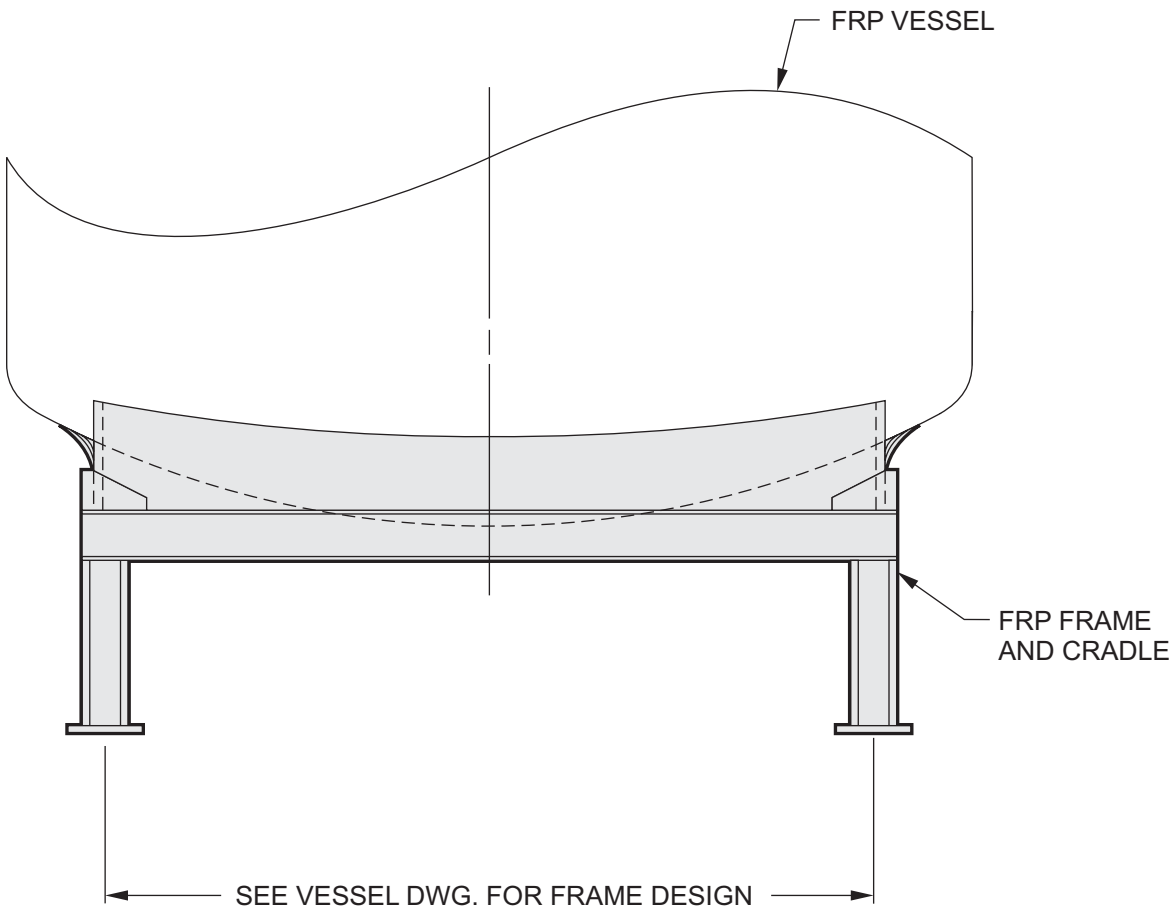
Fitting: **Integral Stand**



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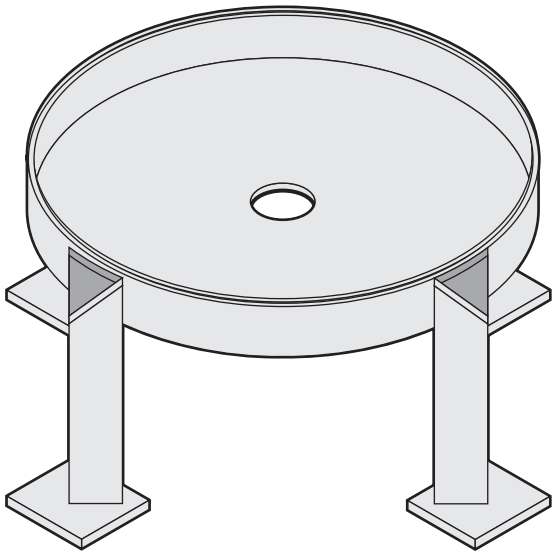
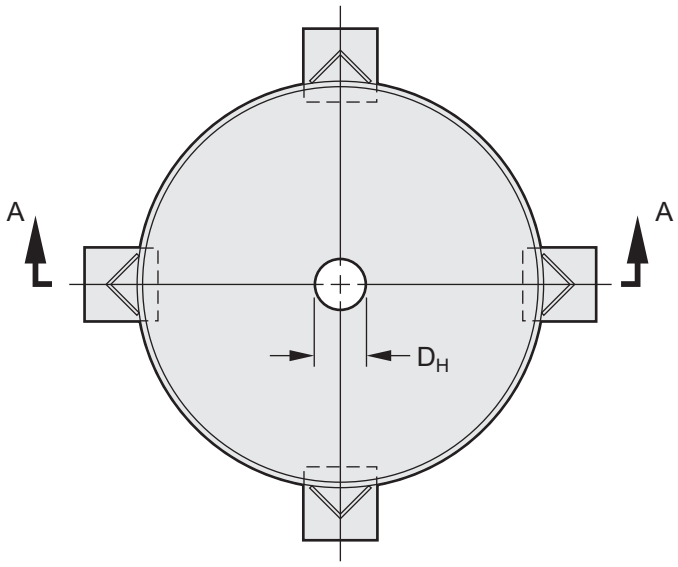
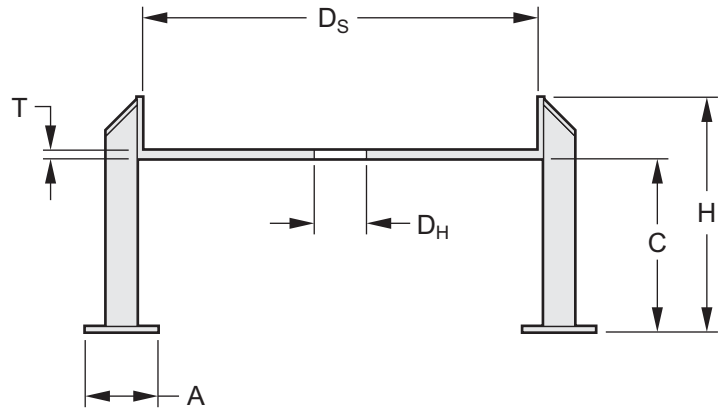
Fitting: **Loose Stand**

Fiberglass Tanks & Process Vessels Standards

STAND DIAMETER	HOLE DIAMETER	OVERALL HEIGHT	BOTTOM THICKNESS	ANGLE LEG SIZE	BASE PAD SIZE	BASE CLEARANCE	MATERIAL OF CONSTRUCTION
"D_S"	"D_H"	"H"	"T"		"X"	"C"	







SECTION A - A

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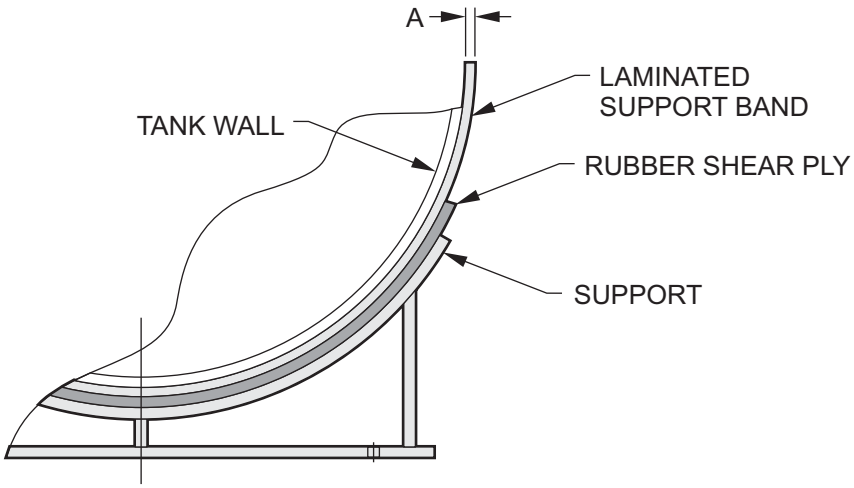
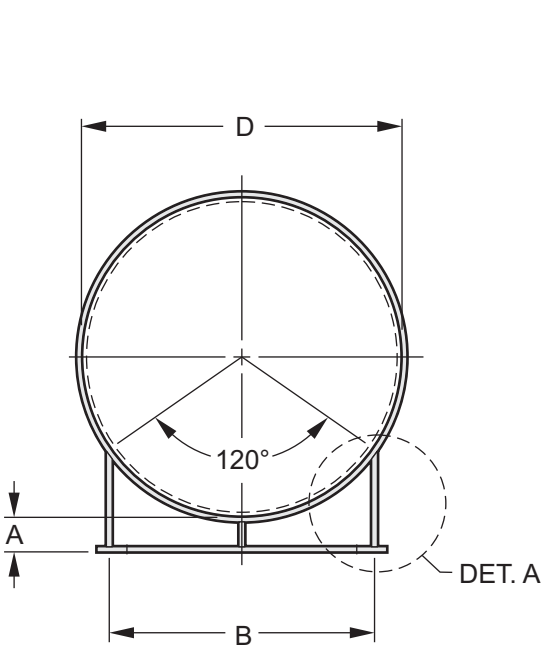
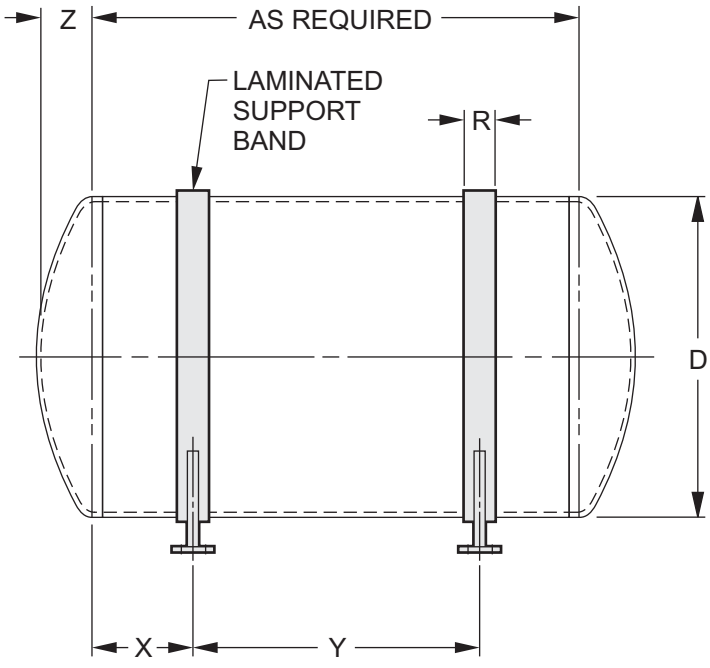
Fitting: Saddle Supports (For Horizontal Tanks)

Notes:
1. See vessel drawing for "R", "X", "Y" and "Z".
2. Detail shown for standard steel saddle support alternative designs available for fiberglass.
3. Support design based on vessel design inputs including fluid specific gravity, wind and seismic loads, as well as final desired geometry including support height.
4. Dished heads typically on horizontal vessels.



DETAIL A





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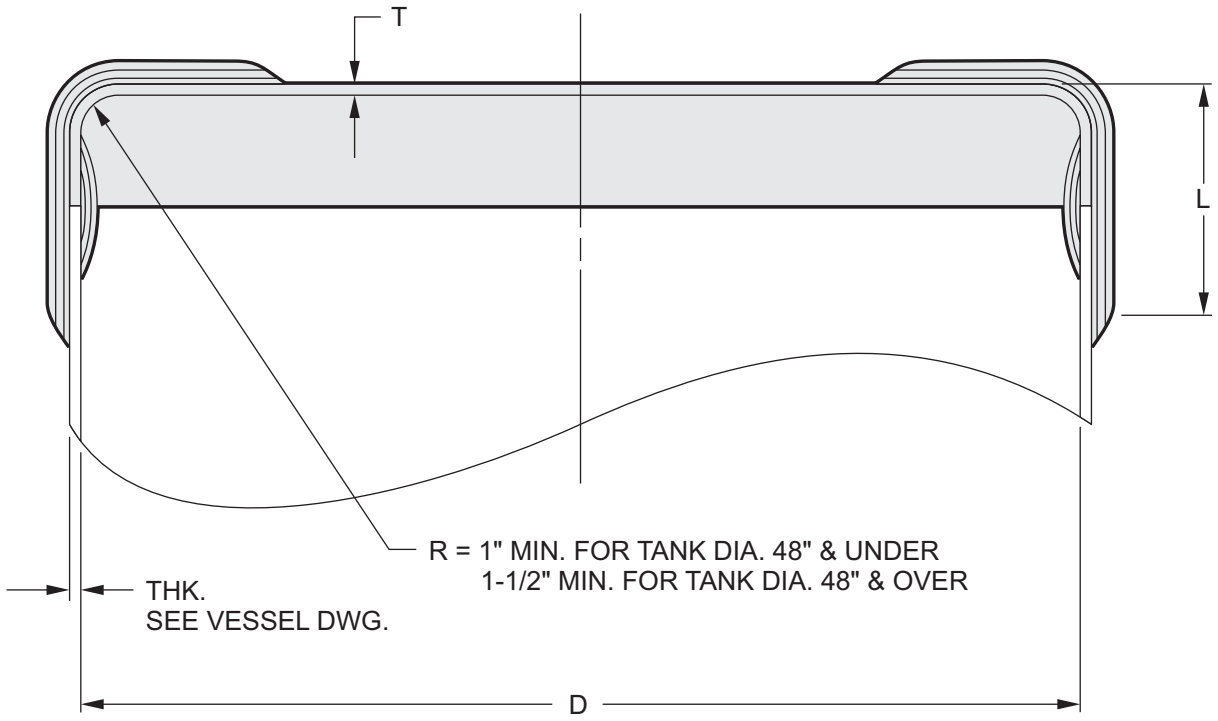
Fitting: **Flat Welded Top**

Fiberglass Tanks & Process Vessels Standards

Notes:
1. Standard design is for a 250 lb concentrated man load in accordance with ASME RTP-1, ASTM D-3299 and ASTM D-4097.
2. Flat cover will be reinforced as required by the design above.
3. Alternative top load bearing capabilities will be designed per specific customer request.



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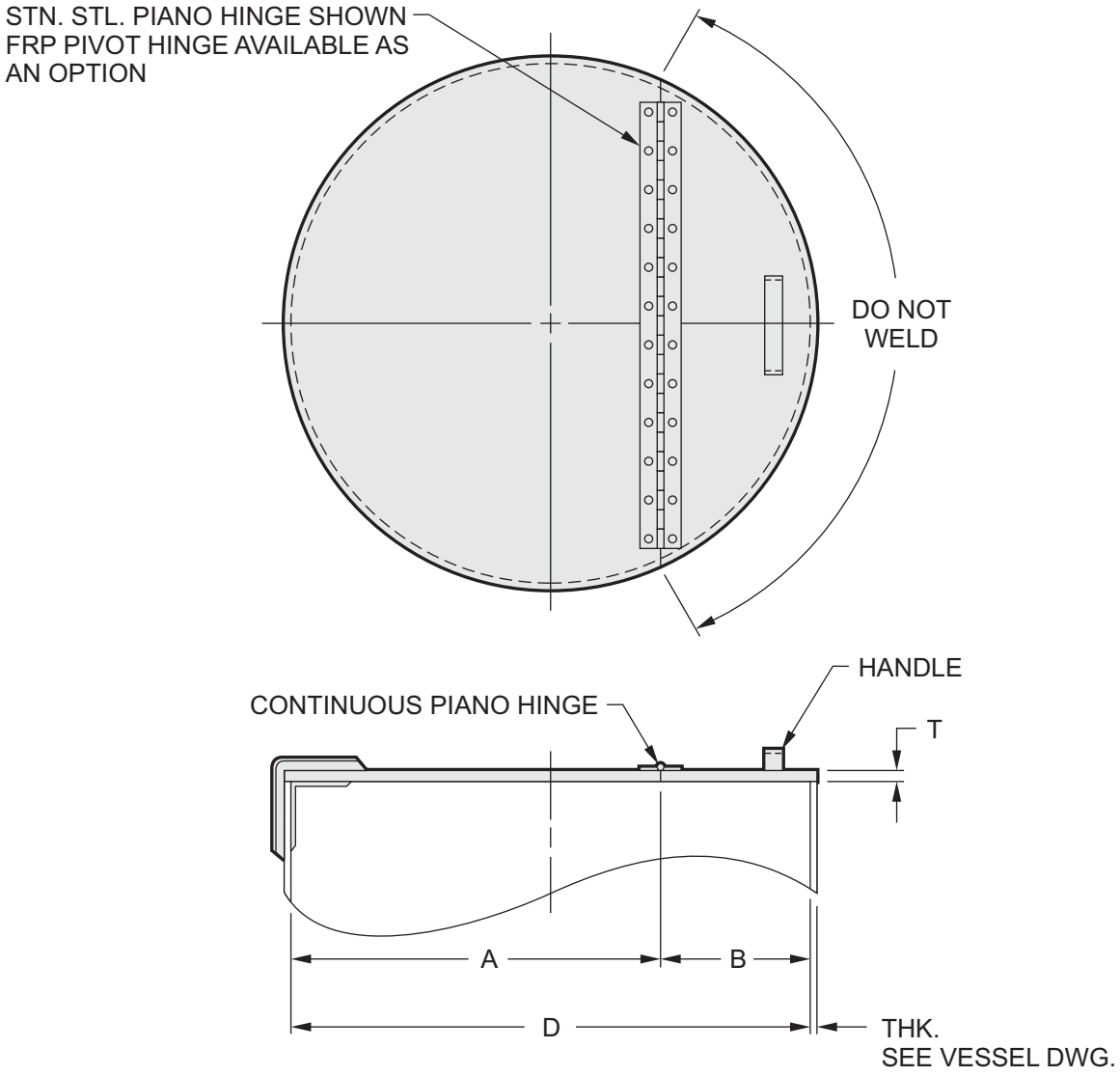
Fitting: Flat Welded Top With Hinged Split

Fiberglass Tanks & Process Vessels Standards

Notes:
1. Standard design is for a 250 lb concentrated man load in accordance with ASME RTP-1, ASTM D-3299 and ASTM D-4097.
2. Flat cover will be reinforced as required by the design above.
3. Alternative top load bearing capabilities will be designed per specific customer request.
4. Hinged covers are non-vaportight design.

"D"	"A"	"B"	"T"	NO. OF HOLES	NOTES



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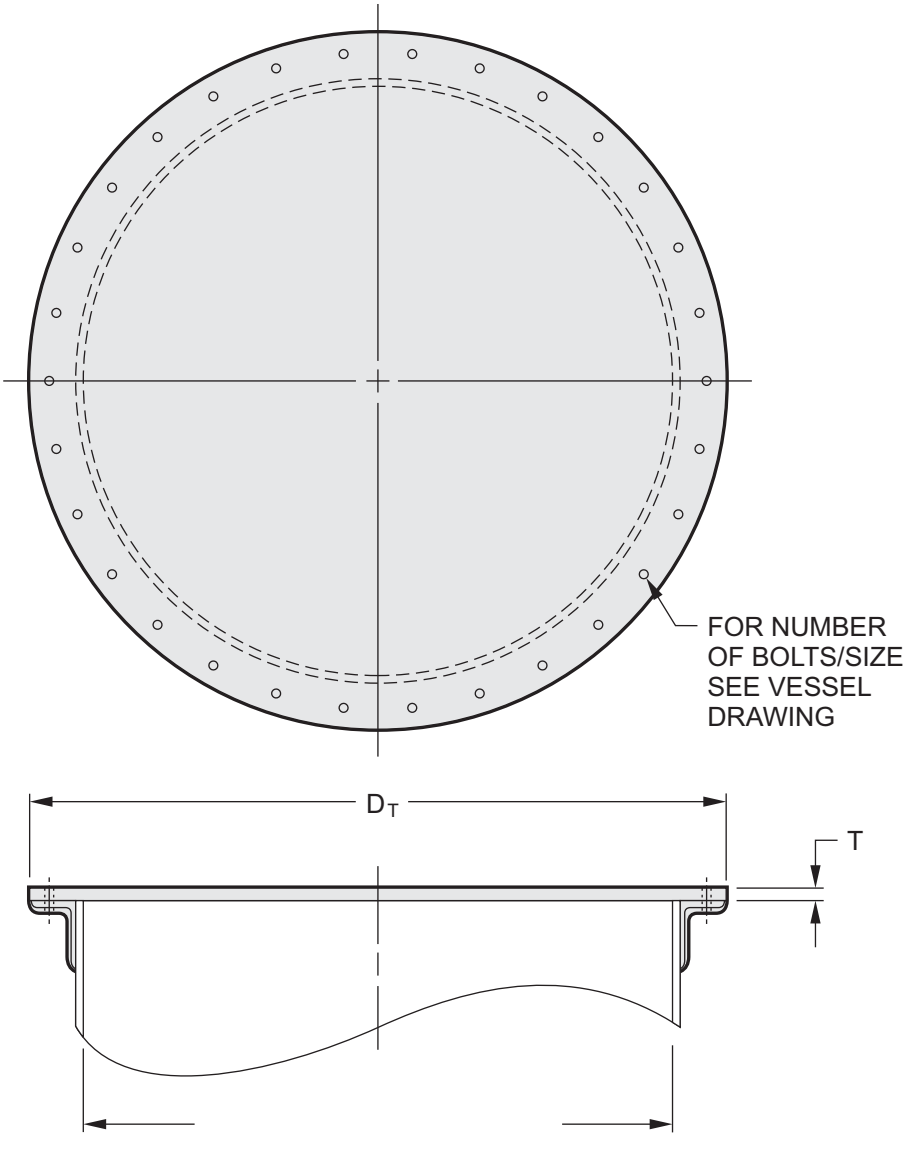
Fitting: **Flat Flanged Top**

Fiberglass Tanks & Process Vessels Standards

Notes:
1. Standard design is for a 250 lb concentrated man load in accordance with ASME RTP-1, ASTM D-3299 and ASTM D-4097.
2. Flat cover will be reinforced as required by the design below.
3. Alternative top load bearing capabilities will be designed per specific customer request.

"D_T"	"T"	NO. OF HOLES	HOLE DIA.	HOLE B.C.	GASKET MATERIAL	BOLT MATERIAL	NO. OF HANDLES	NOTES
					NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	STANDARD CONSTRUCTION



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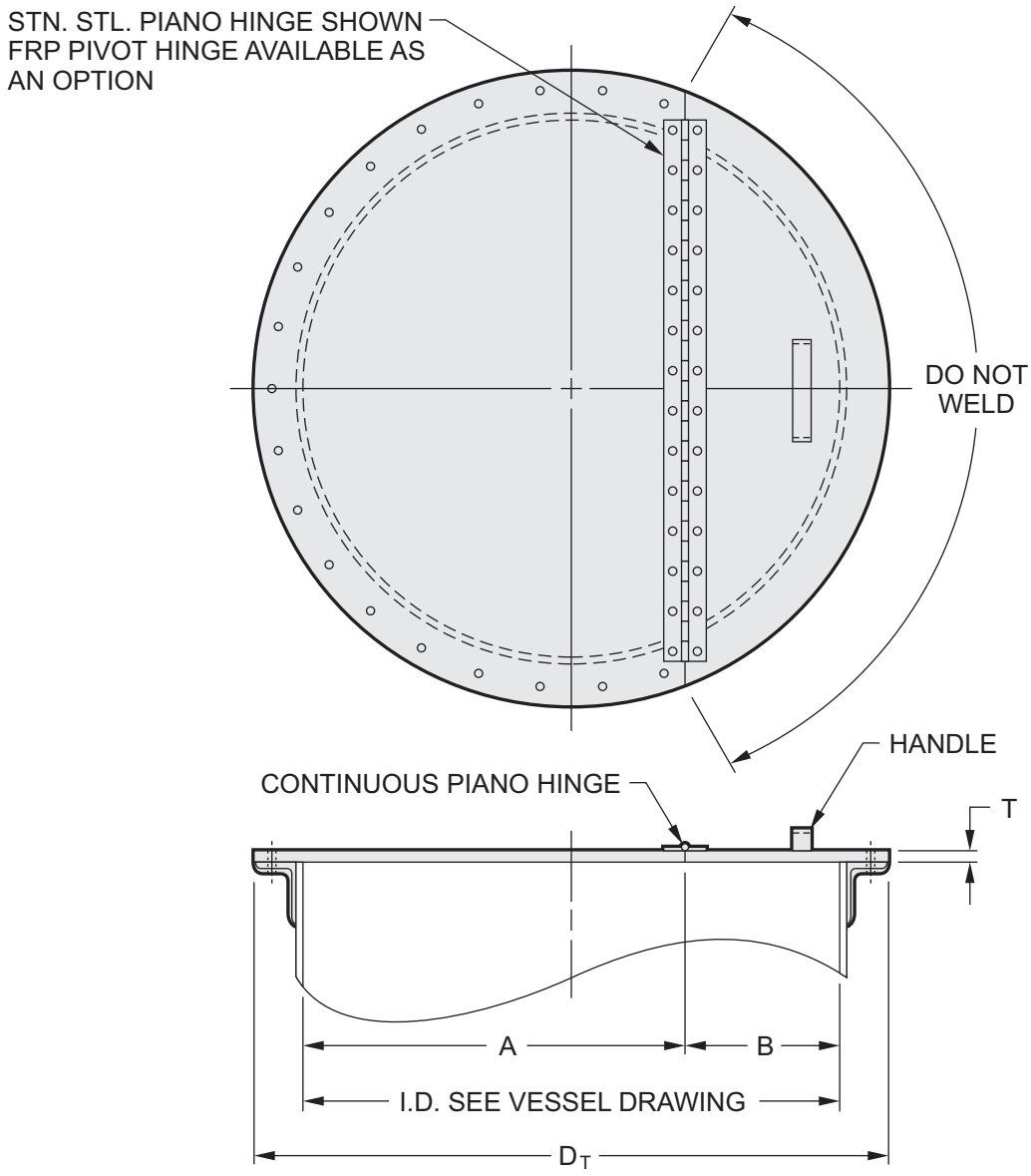
Fitting: Flat Flanged Top With Hinged Split

Fiberglass Tanks & Process Vessels Standards

Notes:
1. Standard design is for a 250 lb concentrated man load in accordance with ASME RTP-1, ASTM D-3299 and ASTM D-4097.
2. Flat cover will be reinforced as required by the design below.
3. Alternative top load bearing capabilities will be designed per specific customer request.
4. Hinged covers are non-vaportight design.

"D_T"	A	B	"T"	NO. OF HOLES	HOLE DIA.	HOLE B.C.	HINGE MATERIAL	GASKET MATERIAL	BOLT MATERIAL	NO. OF HANDLES	NOTES
	2/3X"D"	1/3X"D"					STN. STL.	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	STANDARD CONSTRUCTION



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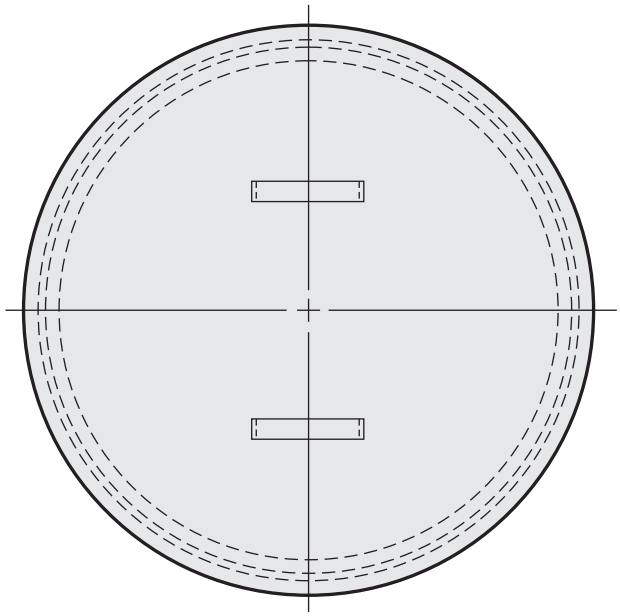
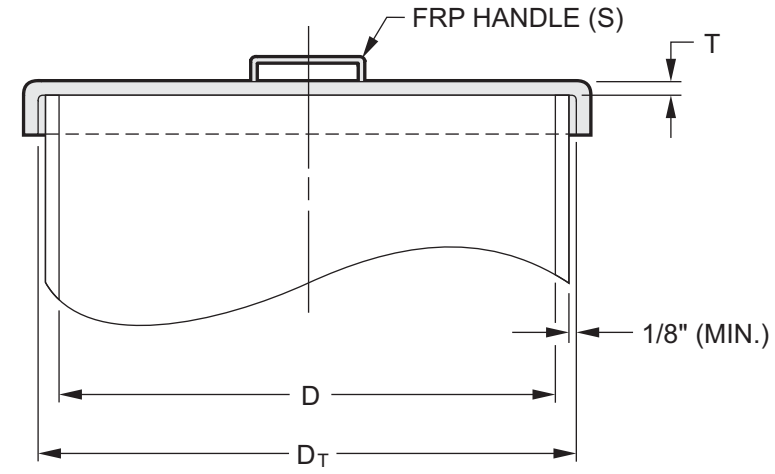
Fitting: **Loose Flat Cover**

Fiberglass Tanks & Process Vessels Standards

Notes:
1. Standard design is for a 250 lb concentrated man load in accordance with ASME RTP-1, ASTM D-3299 and ASTM D-4097.
2. Flat cover will be reinforced as required by the design above.
3. Alternative top load bearing capabilities will be designed per specific customer request.
4. One handle standard through D=24', two (2) handles on larger sizes.

NOMINAL VESSEL I.D. "D"	COVER I.D. D_T	THICKNESS "T"	NUMBER OF HANDLES	NOTES





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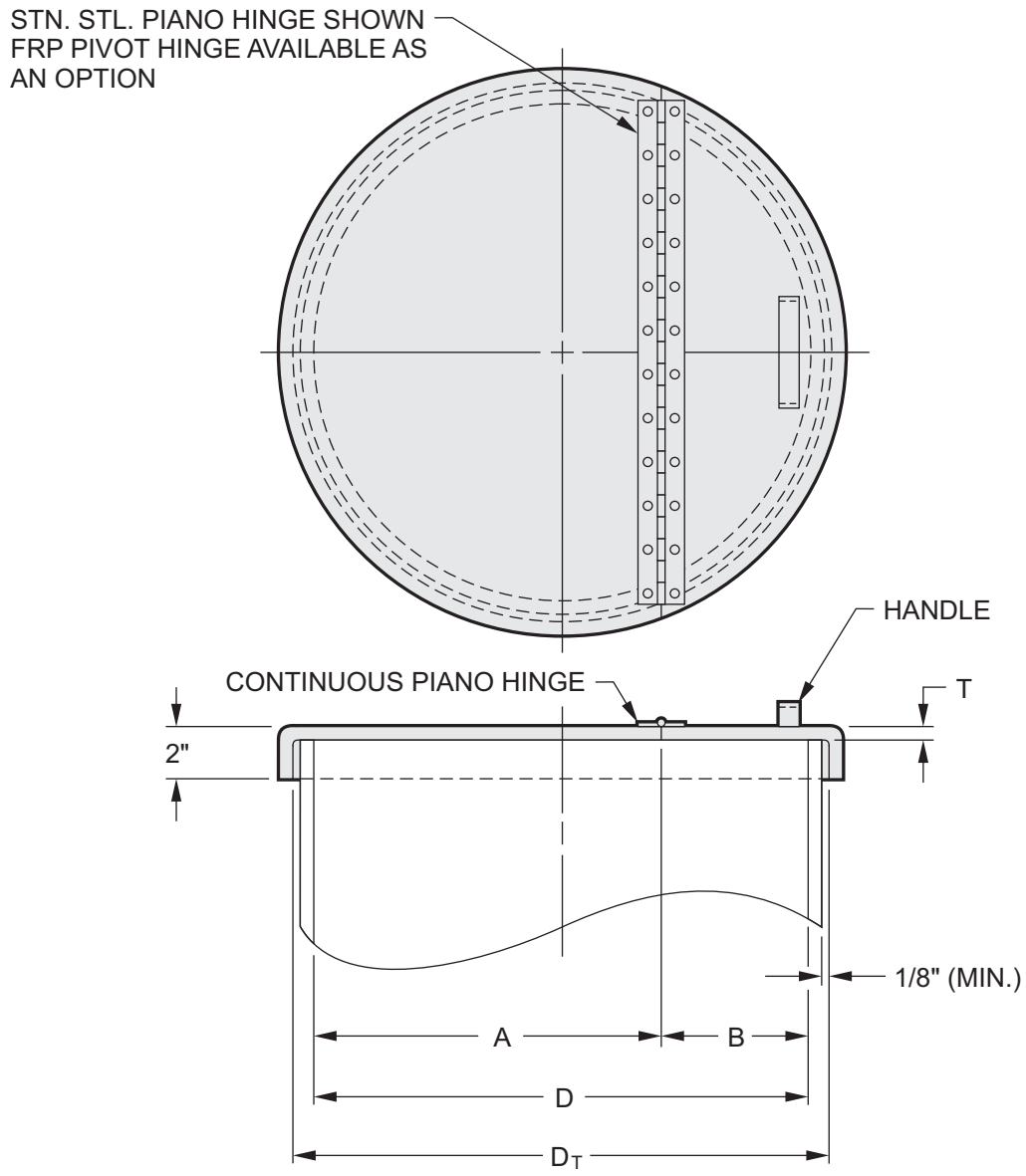
Fitting: Loose Flat Cover With Hinged Split

Fiberglass Tanks & Process Vessels Standards

Notes:
1. Standard design is for 250 lb concentrated man load in accordance with ASME RTP-1, ASTM D-3299 and ASTM D-4097.
2. Flat cover will be reinforced as required by the design below.
3. Alternative top load bearing capabilities will be designed per specific customer request.
4. Hinged covers are non-vaportight design.

NOMINAL VESSEL I.D. "D"	COVER I.D. "D_T"	"A"	"B"	"T"	HINGED MATL. OF CONSTRUCTION	NO. OF HANDLES	NOTES



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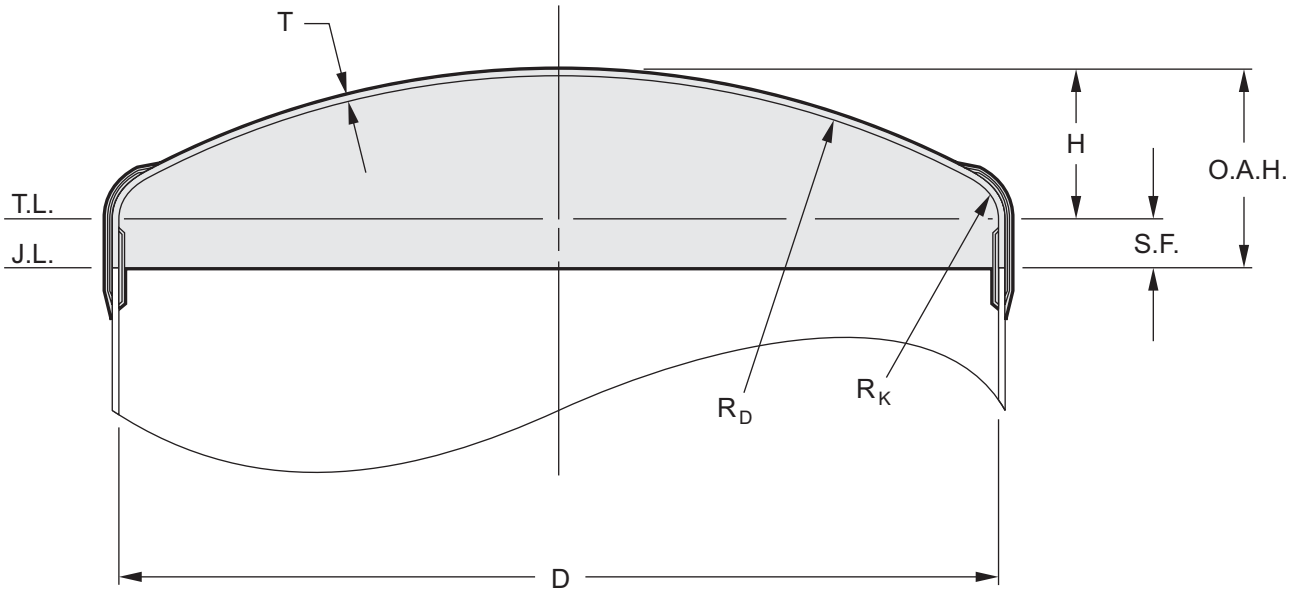
Fitting: ASME (Torispherical) Dished Top

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Standard head & joint design is for the worst case analysis of pressure, vacuum, and 250 lb concentrated man load (250 lb over a 4" x 4" area in the center of the head) in accordance with ASME RTP-1, ASTM D-3299 and ASTM D-4097.

NOMINAL VESSEL I.D. "D"	DISH RADIUS R_D	DISH KNUCKLE RADIUS R_K	DISH HEIGHT H	DISH THICKNESS "T"	NOTES
	$R_D = D$	$R_K = \geq 6\%\ D$	0.17 x D		STANDARD



J.L. = JOINT LINE
T.L. = TANGENT LINE
S.F. = STRAIGHT FLANGE

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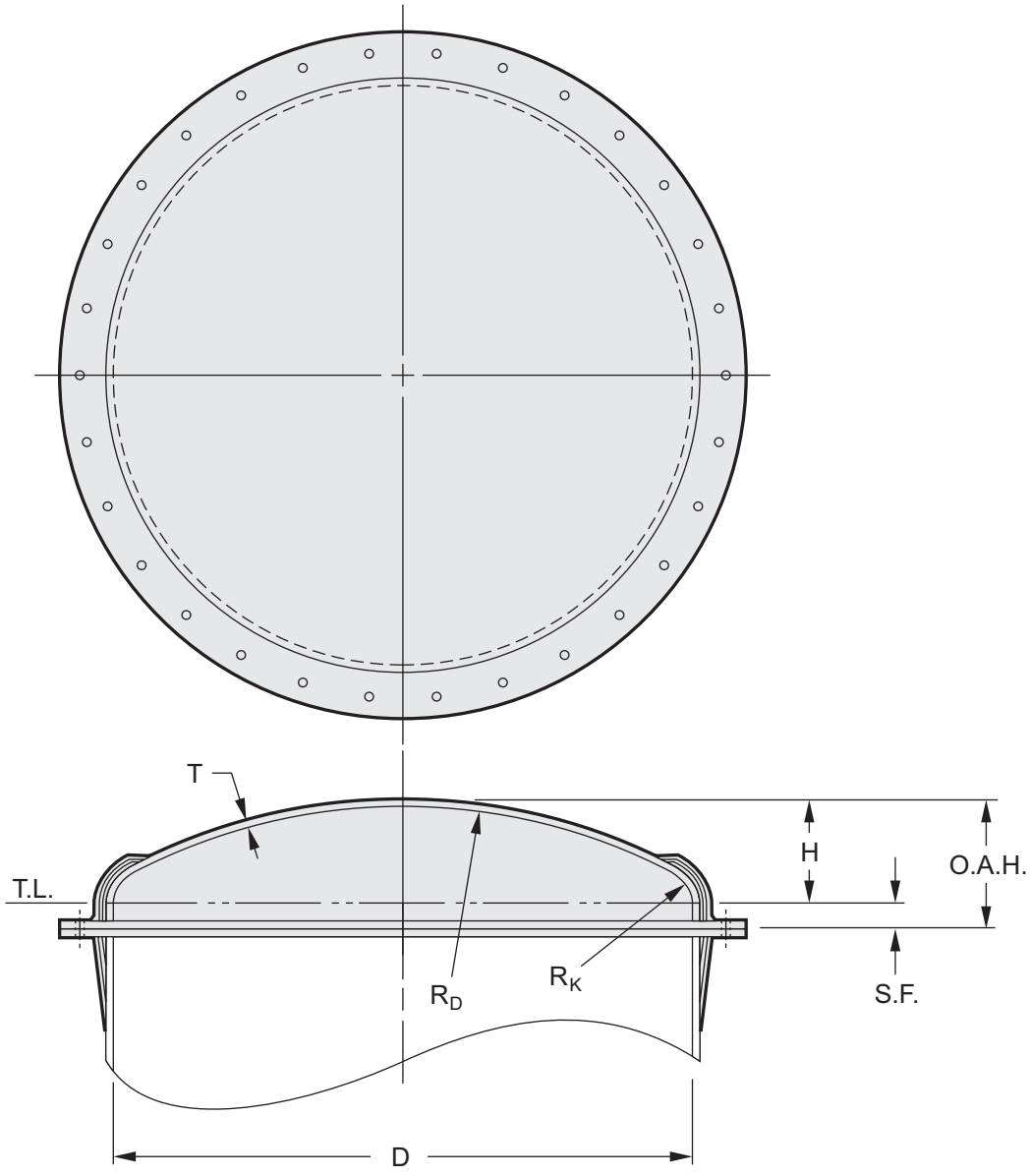
Fitting: **Dished Flanged Top**

Fiberglass Tanks & Process Vessels Standards

Notes:
1. Standard head & joint design is for the worst case analysis of pressure, vacuum, and 250 lb concentrated man load (250 lb over a 4" x 4" area in the center of the head) in accordance with ASME RTP-1, ASTM D-3299 and ASTM D-4097.
2. Not provided unless specified.

TANK I.D. D	DISH RADIUS R	DISH KNUCKLE RADIUS R	DISH HEIGHT H	DISH THK. T	FLANGE WIDTH	FLANGE THICKNESS	NO. BOLT HOLES	BOLT DIA.	BOLT CIRCLE	GASKET	BOLTS
	$R_D = D$	$R_K = \geq 6\%\ D$	0.17 x D							NOTE 2	NOTE 2



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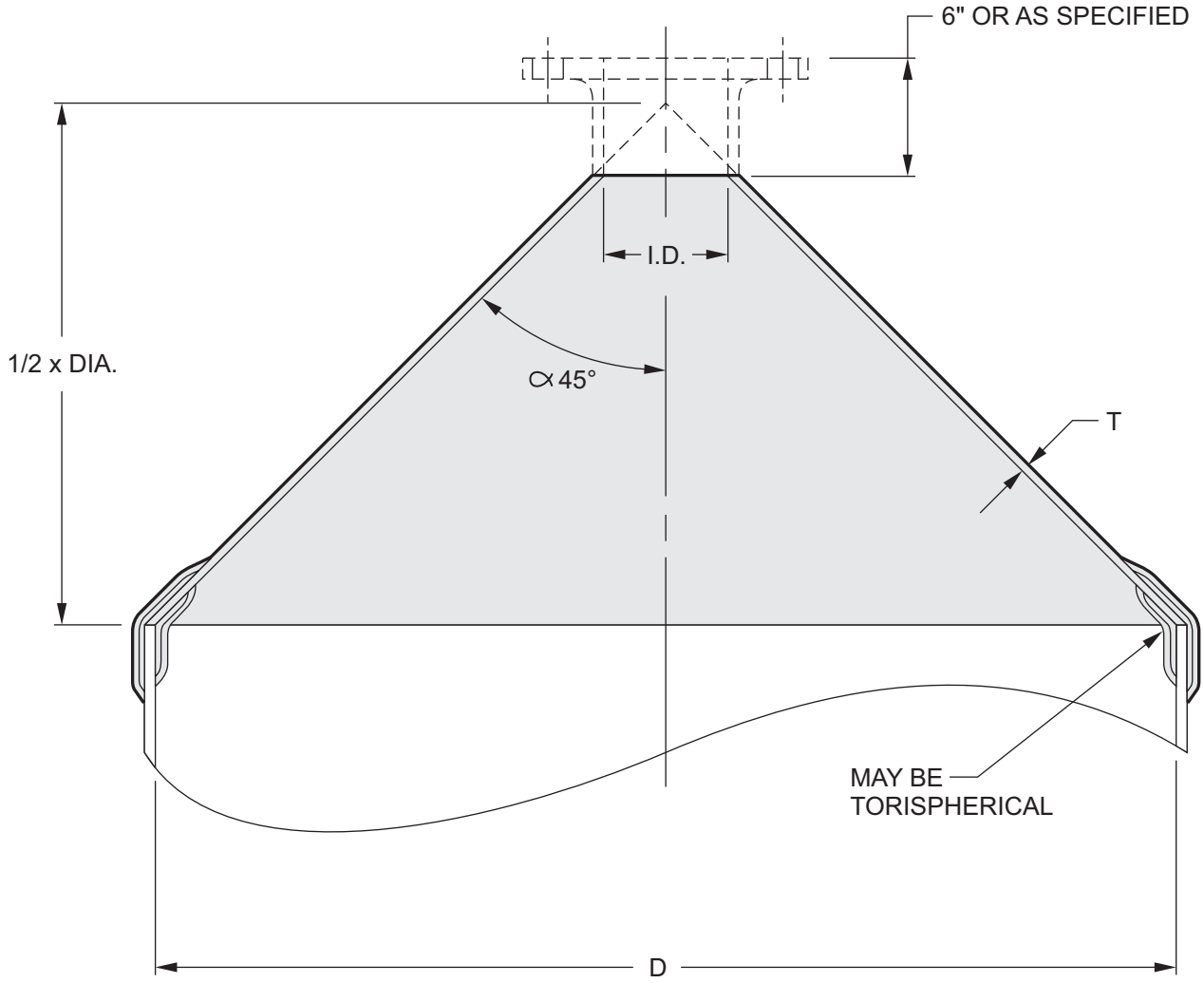
Fitting: **Cone Top 90° Included Angle**

Fiberglass Tanks & Process Vessels Standards

Notes:
1. Standard head & joint design is for the worst case analysis of pressure, vacuum, in accordance with ASME RTP-1, ASTM D-3299 and ASTM D-4097.
2. Design thickness and joint require special engineering consideration based on the loading condition for α > 30°.



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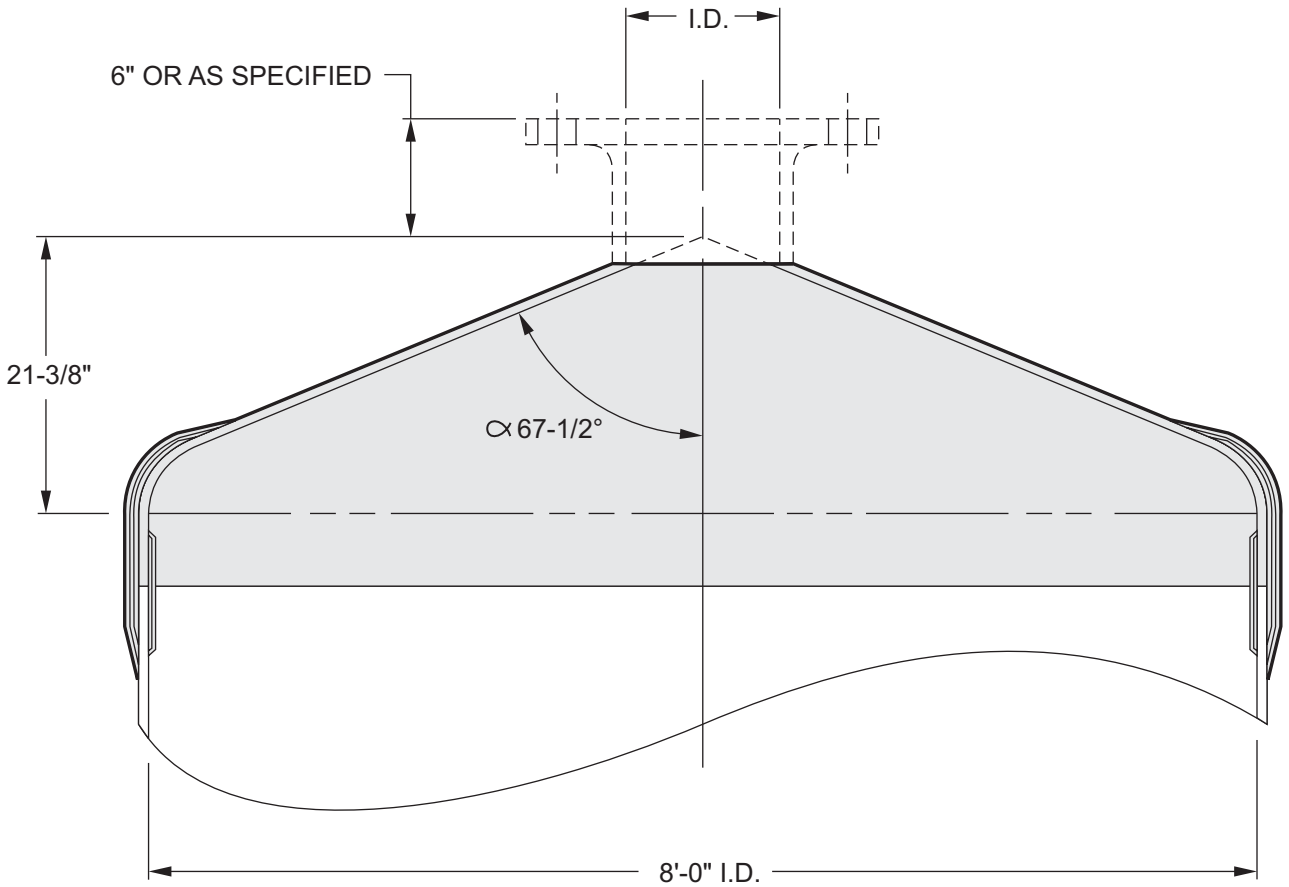
Fitting: **Cone Top 135° Included Angle**

Fiberglass Tanks & Process Vessels Standards

Notes:
1. Standard head & joint design is for the worst case analysis of pressure, vacuum, in accordance with ASME RTP-1, ASTM D-3299 and ASTM D-4097.
2. Design thickness and joint require special engineering consideration based on the loading condition for α > 30°.



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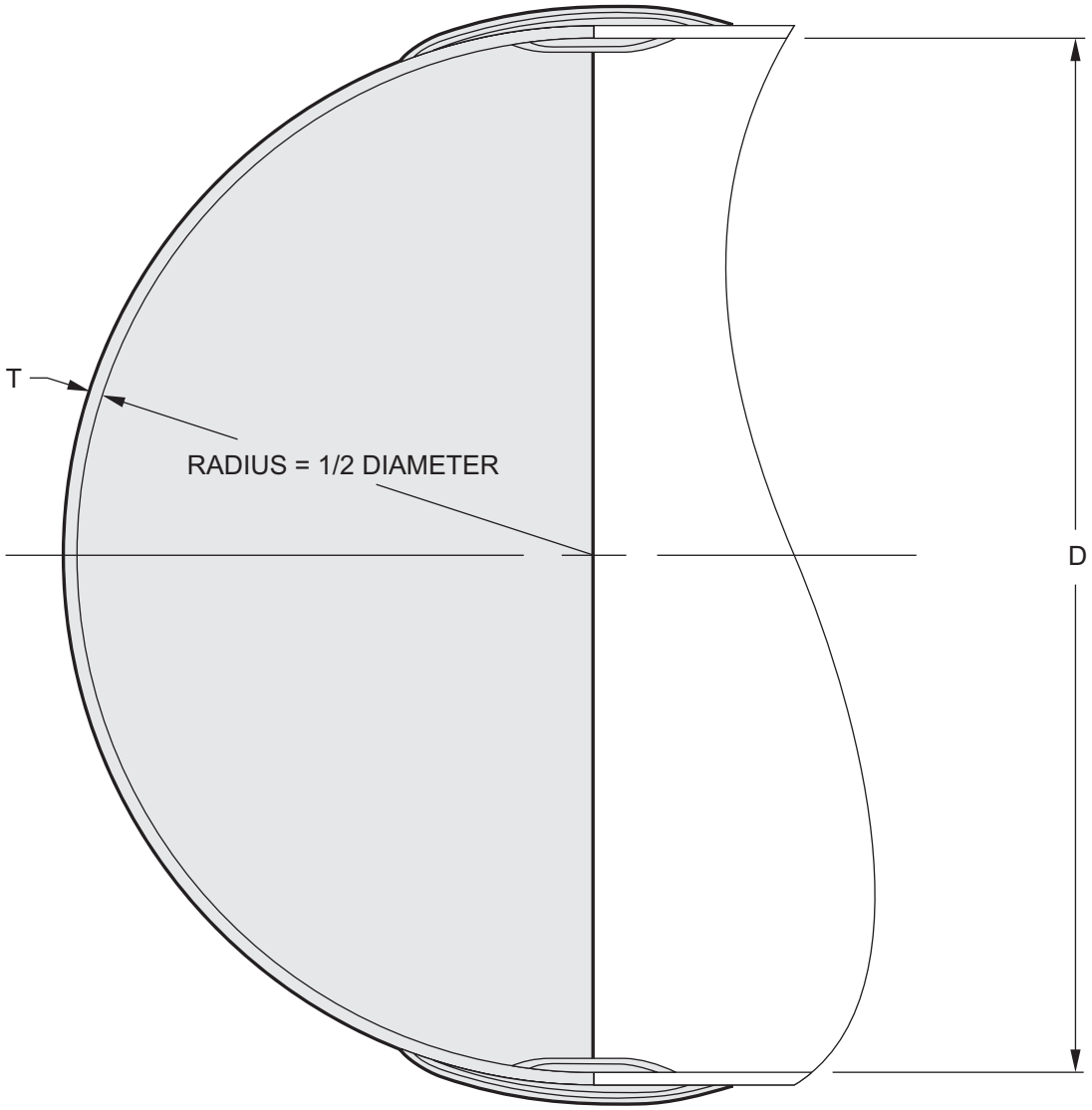
Fitting: Hemispherical Heads (Horizontal Vessels)

Fiberglass Tanks & Process Vessels Standards

Notes: 1. Sizes shown are standards available. Other sizes may be available on request.
2. Design thickness and joint details determined by vessel design parameters.

STANDARD VESSELS (ALL DIMENSIONS IN INCHES)		
TANK I.D.	T	NOTES
24		
48		
96		



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