FOR BAILIFF SINGLE WALL TANKS

We fit every tank with the fittings, options and accessories your application needs. These are the ones our customers ask for most.

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BAILIFF ENTERPRISES INC.

THERMOPLASTIC WELDED COUPLINGS

HDPE · Polypropylene · PVDF · FNPT



Welded couplings provide secure threaded fittings for plastic tanks without the need for gaskets. They also allow for vertical pipe connections on sloped areas of the tank dome. We use thermoplastic welding to fuse couplings to the tanks.

Types & Sizes

- Polyethylene (HDPE) — 1″ to 4″ pipe size, FNPT.
- Polypropylene — 1″ to 4″ pipe size, FNPT.
- PVDF — ½″ to 6″ pipe size, FNPT.

> **Custom-fit:** We custom fit tanks with the fittings, options and accessories our customers need. Contact us to see how we can help you.

BAILIFF ENTERPRISES, INC. ◆ 305 E. Rogers Road ◆ Willis, TX 77378
Contact Dan Miller ◆ dmiller@plasticstoragetanks.com

THERMOPLASTIC WELDED COUPLINGS



THREADED

Welded couplings provide secure threaded fittings for plastic tanks

THEY ALSO ALLOW FOR VERTICAL PIPE

without the need for gaskets. T

CONNECTIONS ON SLOPED AREAS OF THE TANK DOME.

We use

COUPLINGS TO THE TANKS

thermoplastic welding to fuse couplings to the tanks.

THE FOLLOWING TYPES AND SIZES.

Welded couplings are available in t

POLYETHYLENE - 1" TO 3" PIPE SIZE. FNPT .

POLYPROPYLENE - 1" TO 4" PIPE SIZE. FNPT.

PVDF - 1/2" TO 6" PIPE SIZE. FNPT.

We custom fit tanks with the fittings, options and accessories our

customers need. Contact us to see how we can help you.

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Contact Dan Miller ◆ 936-228-1520 ◆ dmiller@plasticstoragetanks.com

BULKHEADS

A bulkhead is how a pipe goes through the wall of a tank. Most are female threaded (FNPT) and made of stainless steel, polypropylene, PVC or CPVC. Other metals and plastics are available but less common.

HOW TO CHOOSE

1	2	3	4
Chemical compatibility	Temperature	Work setting and abuse	Price

BULKHEAD TYPES



Stainless steel

For rugged settings and abuse. Bolted through the tank wall, usually with 4 or 6 bolts. 1/2" through 4". Stocked gaskets: Viton®, EPDM and Buna.



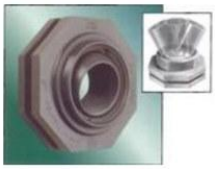
Polypropylene

Our most common bulkhead: reliable, chemical resistant and reasonably priced. Female threaded (FNPT). 1/2" through 4". Stocked gaskets: Viton®, EPDM and Buna.



PVC and CPVC

Hayward BFA Series long pattern, 1/2" through 6". Threaded or socket ends; socket ends let you solvent-weld the pipe for a very secure joint. PVC with EPDM is NSF 61 for drinking water; CPVC takes hotter liquid. EPDM or Viton® gaskets.



Self-aligning

For the dome or cone of a tank. A swivel ball gives a straight vertical pipe on a sloped surface. Top of tank only, never where liquid touches the fitting. See our Self-Aligning Bulkheads sheet for sizes.

Not sure? Tell us the chemical, temperature and fitting location, and we will choose the bulkhead and gasket.

Also available: PTFE (Teflon®) bulkheads, bulkhead flanges, and welded fittings for the harshest service.

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Contact Dan Miller ◆ dmiller@plasticstoragetanks.com

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PVC BULKHEADS

Screw-on PVC bulkheads give a safe, quick pipe connection through the wall of a plastic tank. Our standard is the Hayward BFA Series long pattern bulkhead, molded from Schedule 80 grade PVC. PVC is a good, economical choice for water, brines and many acids and caustics at ambient temperature.

The nut has left hand threads, so it will not back off, and heavy buttress threads help prevent leaks under pressure. A hex body lets one person install it.

1/2"–6"	150 psi	NSF 61
Pipe sizes	@ 70°F, non-shock	Drinking water (EPDM)



Hayward BFA Series PVC bulkhead

WHY CUSTOMERS CHOOSE IT

- **Drinking water ready**
  PVC with EPDM gasket is certified to NSF/ANSI 61 & 372 for potable water.
- **Leak resistant**
  Heavy-duty buttress threads and a thick EPDM or FKM gasket.
- **Your connection**
  Thread × thread (FNPT) standard. Socket × thread and socket × socket available.
- **Stays tight**
  Left hand threads keep the nut from unscrewing.
- **Thick tank walls**
  Long pattern body, about 1" longer than standard, fits walls up to 2" (3.25" on 6").
- **Your gasket**
  EPDM for water, mild acids and caustics; Viton® (FKM) for oils, solvents and strong acids.

PRESSURE VS. TEMPERATURE

Temperature	70°F	100°F	120°F	140°F
Max. working psi	150	125	105	85

Hot liquid? PVC loses strength as it warms and Hayward rates it to zero pressure at about 150°F. Above 120°F we usually recommend **CPVC**.

Our default is thread × thread (FNPT) with an EPDM gasket. Use PTFE paste, not PTFE tape, on threaded plastic joints; tape can bunch up and crack the fitting.

Pressures read from Hayward's BFA operating chart, non-shock. Your tank's own rating may be lower.

TYPICAL USES

- Water and wastewater treatment
- Agriculture and irrigation
- Food and beverage water systems
- Chemical processing and storage
- Metal finishing and plating
- Pools, aquariums and water features

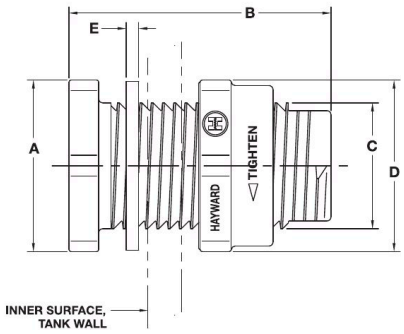
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Contact Dan Miller ◆ dmiller@plasticstoragetanks.com

BAILIFF ENTERPRISES INC.

PVC BULKHEAD SPECIFICATIONS

HAYWARD BFA SERIES · LONG PATTERN

Material	PVC, cell class 12454 per ASTM D1784
Sizes	1/2", 3/4", 1", 1-1/4", 1-1/2", 2", 3", 4", 6"
End connections	Thread × thread (FNPT), socket × thread, socket × socket
Gaskets	EPDM or FKM (Viton®)
Pressure rating	150 psi @ 70°F, non-shock
Certification	NSF/ANSI 61 & 372 (PVC with EPDM gasket)
Threads	Left hand buttress threads on body and nut
Options	Flanged connection (bulkhead flange)



Dimension key

MINIMUM INSIDE RADIUS OF TANK

Size	Min. rigid tank radius	Min. flexible tank radius	Max. wall thickness
1/2"	7.25"	6.50"	2.08"
3/4"	10.00"	9.25"	2.08"
1"	11.75"	10.70"	2.08"
1-1/4"	16.25"	12.19"	2.00"
1-1/2"	16.25"	12.19"	2.00"
2"	25.75"	19.38"	2.00"
3"	30.00"	25.25"	2.12"
4"	60.00"	55.00"	2.45"
6"	114.00"	97.00"	3.25"

The flange must seat flat against the tank wall. A larger fitting needs a larger tank. On small tanks, or on a dome or cone, ask about our self-aligning bulkheads.

DIMENSIONS (INCHES)

Size	A across flats	B overall length	C install hole	D across flats	E gasket thickness
1/2"	2.00	3.75	1.38	2.00	.19
3/4"	2.38	3.88	1.63	2.38	.19
1"	2.56	3.88	1.88	2.56	.19
1-1/4"	3.25	4.00	2.65	3.25	.19
1-1/2"	3.25	4.00	2.65	3.25	.19
2"	4.38	4.25	3.25	4.38	.25
3"	6.00	4.65	4.50	6.00	.25
4"	8.75	5.75	5.75	8.75	.25
6"	12.00	8.00	8.06	12.00	.31

A and D are across flats: 1/2" to 2" hexagon, 3" to 6" octagon.

Data: Hayward BFA Series data sheet and Bulkhead Fitting Product Guide. Hayward is a trademark of Hayward Industries, Inc.; Viton of Chemours. Subject to change.

BAILIFF ENTERPRISES, INC. ◆ 305 E. Rogers Road ◆ Willis, TX 77378
Contact Dan Miller ◆ dmiller@plasticstoragetanks.com

BAILIFF ENTERPRISES INC.

CPVC BULKHEADS

Screw-on CPVC bulkheads give a safe, quick pipe connection through the wall of a plastic tank. We install Hayward BFA Series long pattern CPVC bulkheads. CPVC handles hotter liquids and many chemicals that are too much for PVC.

The nut has left hand threads, so it will not back off, and heavy buttress threads help prevent leaks under pressure. A hex body lets one person install it.

1/2"–6"	150 psi	200°F
Pipe sizes	@ 70°F, non-shock	Max. service (40 psi)



Hayward BFA Series CPVC bulkhead

WHY CUSTOMERS CHOOSE IT

- **Higher temperature**
  CPVC (cell class 23447, ASTM D1784) keeps its strength about 60°F hotter than PVC.
- **Leak resistant**
  Heavy-duty buttress threads and a thick EPDM or FKM gasket.
- **Your connection**
  Thread × thread (FNPT) standard. Socket × thread and socket × socket available.
- **Stays tight**
  Left hand threads keep the nut from unscrewing.
- **Thick tank walls**
  Long pattern body, about 1" longer than standard, fits walls up to 2" (3.25" on 6").
- **Your gasket**
  EPDM for water, mild acids and caustics; Viton® (FKM) for oils, solvents and strong acids.

PRESSURE VS. TEMPERATURE

Temperature	70°F	100°F	120°F	140°F	160°F	180°F	200°F
Max. working psi	150	135	120	105	90	75	40

Remember the tank. The bulkhead can take more heat than most polyethylene tanks. Tell us the liquid temperature and we will match the tank, fitting and gasket.

Our default is thread × thread (FNPT) with an EPDM gasket. Use PTFE paste, not PTFE tape, on threaded plastic joints; tape can bunch up and crack the fitting.

Pressures read from Hayward's BFA operating chart, non-shock. Your tank's own rating may be lower.

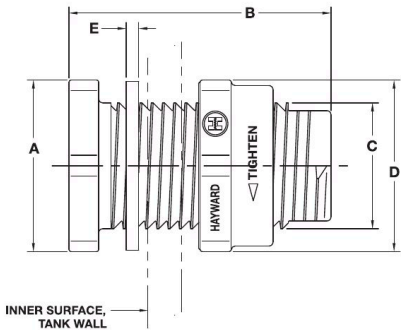
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Contact Dan Miller ◆ dmiller@plasticstoragetanks.com

CPVC BULKHEAD SPECIFICATIONS

BAILIFF ENTERPRISES INC.

HAYWARD BFA SERIES · LONG PATTERN

Material	CPVC, cell class 23447 per ASTM D1784
Sizes	1/2", 3/4", 1", 1-1/4", 1-1/2", 2", 3", 4", 6"
End connections	Thread × thread (FNPT), socket × thread, socket × socket
Gaskets	EPDM or FKM (Viton®)
Pressure rating	150 psi @ 70°F, non-shock
Threads	Left hand buttress threads on body and nut
Options	Flanged connection (bulkhead flange)



Dimension key

MINIMUM INSIDE RADIUS OF TANK

Size	Min. rigid tank radius	Min. flexible tank radius	Max. wall thickness
1/2"	7.25"	6.50"	2.08"
3/4"	10.00"	9.25"	2.08"
1"	11.75"	10.70"	2.08"
1-1/4"	16.25"	12.19"	2.00"
1-1/2"	16.25"	12.19"	2.00"
2"	25.75"	19.38"	2.00"
3"	30.00"	25.25"	2.12"
4"	60.00"	55.00"	2.45"
6"	114.00"	97.00"	3.25"

The flange must seat flat against the tank wall. A larger fitting needs a larger tank. On small tanks, or on a dome or cone, ask about our self-aligning bulkheads.

DIMENSIONS (INCHES)

Size	A across flats	B overall length	C install hole	D across flats	E gasket thickness
1/2"	2.00	3.75	1.38	2.00	.19
3/4"	2.38	3.88	1.63	2.38	.19
1"	2.56	3.88	1.88	2.56	.19
1-1/4"	3.25	4.00	2.65	3.25	.19
1-1/2"	3.25	4.00	2.65	3.25	.19
2"	4.38	4.25	3.25	4.38	.25
3"	6.00	4.65	4.50	6.00	.25
4"	8.75	5.75	5.75	8.75	.25
6"	12.00	8.00	8.06	12.00	.31

A and D are across flats: 1/2" to 2" hexagon, 3" to 6" octagon.

Data: Hayward BFA Series data sheet and Bulkhead Fitting Product Guide. Hayward is a trademark of Hayward Industries, Inc.; Viton of Chemours. Subject to change.

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Contact Dan Miller ◆ dmiller@plasticstoragetanks.com

POLYPROPYLENE BULKHEADS

Screw-on polypropylene bulkheads give a safe, quick pipe connection through the wall of a plastic tank, and they are the bulkhead we install most. We use Norwesco and GreenLeaf polypropylene bulkheads. They are double threaded (FNPT), so inside piping such as a siphon tube or anti-vortex adapter threads right onto the back.

1/2"–4"	FNPT	EPDM
Pipe sizes	Double threaded	Standard gasket



Polypropylene bulkhead

WHY CUSTOMERS CHOOSE IT

- **Chemical resistant**
  Polypropylene handles most acids, caustics, fertilizers and salt solutions.
- **Heavy-duty option**
  Heavy-duty 3/4" and 2" bodies for thicker walls and rougher service.
- **Your gasket**
  EPDM standard; Viton® or Buna-N for oils, fuels and strong acids.
- **Inside accessories**
  Siphon tubes, anti-vortex adapters (1-1/4" and 2"), dust plugs and a 3"×2" reducer.

HOLE SIZE TO DRILL

Size	Type	Hole in tank
1/2"	Standard	1-7/16"
3/4"	Standard	1-7/16"
3/4"	Heavy duty	1-5/8"
1"	Standard	2-1/4"
1-1/4"	Standard	2-1/4"
1-1/2"	Standard duty	2-3/8"
1-1/2"	Standard	3"
2"	Standard	3"
2"	Standard duty*	3"
2"	Heavy duty	3-1/4"
2"	Self-aligning (dome)	4-1/2"
3"	Standard	4-1/2"
4"	Standard	5-3/4"

**2" standard duty: tank wall 3/8" thick or less. Hole sizes per Norwesco.*

Hole sizes and accessories from Norwesco fitting data. Viton is a trademark of Chemours. Subject to change.

GOOD TO KNOW

- Place bulkheads on a flat, smooth area of the tank so the gasket seats evenly.
- The **self-aligning** 2" bulkhead is for the dome of a vertical tank, above the liquid level only.
- A **siphon tube** on a bottom outlet lets the tank drain lower; an **anti-vortex** adapter stops air being pulled into a pump.
- Use PTFE paste, not PTFE tape, on threaded plastic joints; tape can crack the fitting.

BAILIFF ENTERPRISES, INC. ◆ 305 E. Rogers Road ◆ Willis, TX 77378
Contact Dan Miller ◆ dmiller@plasticstoragetanks.com

PTFE BULKHEADS



Screw-on PTFE bulkheads offer safe, quick pipe connections for standard wall plastic tanks. We use Micromold's Fluor-o-flow PTFE bulkheads or their equivalent. They offer left hand threads on the tightening ring to keep from loosening.

- The bulkheads are double threaded. They use Nation Pipe Threads (NPT).
- They use special FEP encapsulated o-rings which seal to the interior tank wall. The special silicone hollow core o-ring provides sealing flexibility, and also compensates for any creeprelaxation which may occur in the fitting body. The FEP encapsulation of the o-ring maintains the superior corrosion resistance
- They are available in 1/2", 3/4", 1", 1-1/2", 2", 3" and 4" pipe sizes.

When connecting threaded fittings, be sure to use Teflon (PTFE) impregnated plumbers paste rather than Teflon tape. Teflon tape can bunch up an cause a fitting to crack.

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Contact Dan Miller ◆ dmiller@plasticstoragetanks.com

STAINLESS STEEL BULKHEADS





Bolted Stainless Steel bulkheads offer safe, solid pipe connections for standard wall plastic tanks. We use these Stainless Steel bulkheads or their equivalent for situations where the connection may see rough use or where they will be connected to metal pipes. They are rated to 150 PSI.

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Contact Dan Miller ◆ dmiller@plasticstoragetanks.com

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SELF-ALIGNING BULKHEADS



Self aligning bulkheads are dome fittings that allow vertical pipe orientation on a sloped surface. They are not to be used in any situation where liquid will be against the fitting, such as a sidewall of a tank.

The bulkheads are available in pipe sizes from 1" to 4". They are available in PVC, CPVC and Polypropylene. Not all sizes are available in all materials.

When connecting threaded plastic fittings, be sure to use Teflon (PTFE) impregnated plumbers paste rather than Teflon tape. Teflon tape can bunch up an cause a fitting to crack.

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BAILIFF ENTERPRISES INC.

THERMOPLASTIC WELDED FLANGES

ANSI 150# welded flanges for HDPE, polypropylene and PVDF chemical storage tanks

A **thermoplastic welded flange** is the strongest way to put a pipe connection on a plastic tank. We fuse a flange adapter made of the **same resin as your tank** directly to the tank wall, so the nozzle becomes part of the tank. There is no bulkhead gasket inside the tank to leak, wear out or be attacked by the chemical.

Every flange has a standard **ANSI 150# bolt pattern** and a loose **Van Stone backing ring** that turns freely, so lining the bolt holes up with your piping is quick and easy. Welded flanges are our go-to connection for demanding chemical service such as **sulfuric acid** and **caustic soda**. For **oxidizers** such as sodium hypochlorite, we do not place welded flanges in the lower half of the sidewall.

150#	½″–30″	4″	0
ANSI bolt pattern	Flange sizes	Standard standoff	Internal gaskets



Flange adapter with loose backing ring



Welded flange with blind flange



Tank with welded flanges

WHY CUSTOMERS CHOOSE WELDED FLANGES

- **Leak-free, gasket-free nozzle**
  Fused to the tank wall, so nothing inside the tank can loosen or leak.
- **Standard ANSI 150# fit**
  Bolts straight up to ANSI 150# pipe flanges, valves and pumps.
- **Large sizes available**
  From ½″ instrument ports up to 30″ manway and outlet nozzles.
- **Same material as the tank**
  HDPE on HDPE, PP on PP and PVDF on PVDF for full chemical compatibility.
- **Easy fit-up**
  The loose Van Stone ring rotates to line up bolt holes without twisting pipe.
- **Placed where you need it**
  Sidewall or dome, at the orientation you specify. Upper sidewall or dome only for oxidizers.

MATERIALS & SIZES

HDPE (polyethylene)	¾″ to 30″ · water and general chemical storage tanks
Polypropylene (PP)	1″ to 10″ · polypropylene tanks and higher-temperature service
PVDF (Kynar®)	½″ to 11″ · PVDF tanks for aggressive acids
Flange face & ring	Raised face (flat face on request), fiberglass-reinforced loose ring · 4″ standoff standard, up to 6″

When you order, tell us: size, material, location (degrees and height), standoff, and any blind flange, gasket or bolts.

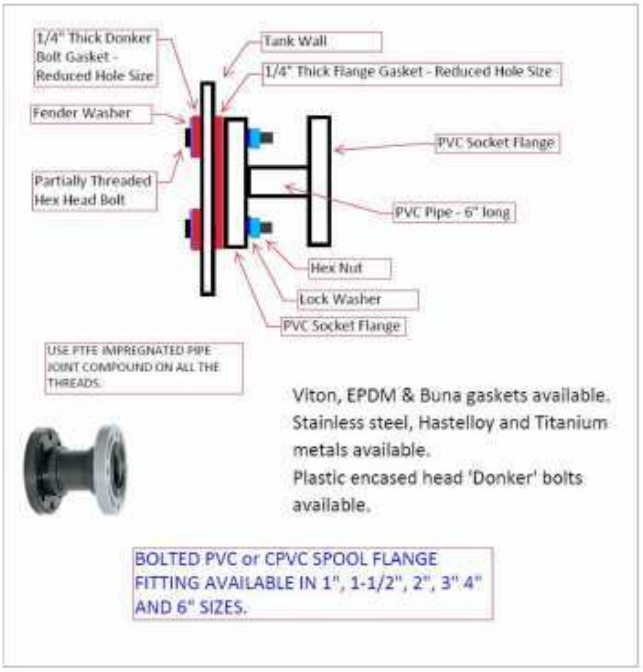
See our **Welded Flanges** packet for dimensions, stub ends and bolt torque settings.

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Contact Dan Miller ◆ dmiller@plasticstoragetanks.com

BOLTED FLANGES

Bolted flanges provide a secure way to attach pipes to a tank and are often used in industrial applications. They are usually made from PVC, CPVC, Polypropylene and Stainless Steel. Other metals and plastics are also available but are much less common. The normal criteria for selection are chemical compatibility for the application, the work setting and amount of abuse the fitting will receive, and the price.

Bolted Spool Flanges offer a secure connection to the tank and an extended flange face to use when attaching valves or pipes. Our PVC and CPVC spool flanges have loose flange rings on the extended flange to make it easier to connect to pipe or valve flanges.



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Contact Dan Miller ◆ dmiller@plasticstoragetanks.com

PVC BULKHEAD FLANGE

A PVC bulkhead flange gives you a bolted connection on the tank wall. We start with a Hayward BFA Series long pattern PVC bulkhead and add a Spears® Schedule 80 PVC flange. Your valve or piping bolts straight to the tank and comes off for service without turning the bulkhead, so the gasket seal is never disturbed.

- **Bolt pattern:** same as Class 150 metal flanges per ANSI B16.5, so it mates with standard valves and piping.
- **Rated 150 psi** with water at 73°F, non-shock. Not for compressed air or gas.
- **1/2" through 6"**; larger sizes need a larger tank (see the bulkhead sheet).
- **Bulkhead gasket:** EPDM or FKM (Viton®).



Bulkhead flange installed on a tank

FLANGE PRESSURE VS. TEMPERATURE (PSI)

Temp.	100°F	110°F	120°F	130°F	140°F	150°F	160°F
PVC	150	135	110	75	50	—	—

PVC flanges drop off fast above 120°F and are not rated at 150°F. For hot liquid, use CPVC. The flange, bulkhead and tank each have a rating; the lowest one governs.

BOLTING IT UP

Flange size	Torque (ft-lb)
1/2–1-1/2"	12
2–4"	25
6"	40

Clean, lubricated threads. Over-torquing will damage the flange.

- Use a full-face, 1/8" thick elastomer gasket, about 70 Shore A.
- Line up and support the pipe so it does not pull on the flange.
- Two flat washers per bolt. Snug all nuts by hand first.
- Tighten in 5 ft-lb steps, crossing the flange (180° opposite bolts), up to the torque shown.
- Do not use the bolts to pull mismatched flanges together. Take care against raised-face flanges or wafer valves.

Threaded joints: use PTFE paste, not PTFE tape. Tape can bunch up and crack a plastic fitting.

Tell us the chemical, temperature and what bolts to the flange, and we will set the size and gaskets.

Flange data: Spears® Flanged Connections data sheet. Spears is a trademark of Spears Manufacturing Co.; Hayward of Hayward Industries, Inc. Subject to change.

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Contact Dan Miller ◆ dmiller@plasticstoragetanks.com

CPVC BULKHEAD FLANGE

A CPVC bulkhead flange gives you a bolted connection on the tank wall. We start with a Hayward BFA Series long pattern CPVC bulkhead and add a Spears® Schedule 80 CPVC flange. Your valve or piping bolts straight to the tank and comes off for service without turning the bulkhead, so the gasket seal is never disturbed.



Bulkhead flange installed on a tank

- **Bolt pattern:** same as Class 150 metal flanges per ANSI B16.5, so it mates with standard valves and piping.
- **Rated 150 psi** with water at 73°F, non-shock. Not for compressed air or gas.
- **1/2" through 6"**; larger sizes need a larger tank (see the bulkhead sheet).
- **Bulkhead gasket:** EPDM or FKM (Viton®).

FLANGE PRESSURE VS. TEMPERATURE (PSI)

Temp.	100°F	110°F	120°F	130°F	140°F	150°F	160°F	170°F	180°F	190°F	200°F	210°F
CPVC	150	140	130	120	110	100	90	80	70	60	50	—

CPVC flanges hold useful pressure up to 200°F. The flange, bulkhead and tank each have a rating; the lowest one governs.

BOLTING IT UP

Flange size	Torque (ft-lb)
1/2–1-1/2"	12
2–4"	25
6"	40

Clean, lubricated threads. Over-torquing will damage the flange.

- Use a full-face, 1/8" thick elastomer gasket, about 70 Shore A.
- Line up and support the pipe so it does not pull on the flange.
- Two flat washers per bolt. Snug all nuts by hand first.
- Tighten in 5 ft-lb steps, crossing the flange (180° opposite bolts), up to the torque shown.
- Do not use the bolts to pull mismatched flanges together. Take care against raised-face flanges or wafer valves.

Threaded joints: use PTFE paste, not PTFE tape. Tape can bunch up and crack a plastic fitting.

Tell us the chemical, temperature and what bolts to the flange, and we will set the size and gaskets.

Flange data: Spears® Flanged Connections data sheet. Spears is a trademark of Spears Manufacturing Co.; Hayward of Hayward Industries, Inc. Subject to change.

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Contact Dan Miller ◆ dmiller@plasticstoragetanks.com

BAILIFF ENTERPRISES INC.

SANITARY TRI-CLAMPS





When Sanitary Tri-Clamps are the preferred fitting, we use a combination of welded couplings and Tri-Clamp adapters. The couplings are used to bond to the tank material and the adapters are used to change to Tri-Clamp connections. To reduce the amount of threaded surface, we can use half couplings rather than full double threaded couplings.

This fitting combination is the following types and available int sizes.

Polyethylene - 1" to 4" pipe size.

Polypropylene - 1/2" to 4" pipe size.

PVDF - 1/2" to 4" pipe size.

We custom fit tanks with the fittings, options and accessories our customers need. Contact us to see how we can help you.

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Contact Dan Miller ◆ 936-228-1520 ◆ dmiller@plasticstoragetanks.com

BRASS FDC ADAPTERS





Brass Fire Department Connection Adapters equip a water tank with the appropriate connection for a fire hose to be connected. That hose supplies a pumper truck with the water supply.

These swivel adapters are available in many sizes. The most common size has a 3" NPT thread on the end that connect with the tank and a 2-1/2" NH thread on the end the connects with the hose. NFPA 14 requires one 2-1/2" connection for each 250 gallons of required water flow.

A brass, NH threaded plug is included to keep the hose connector free of dirt and debris.

Brass construction makes for a rugged connector that give many years of maintenance free use.

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BAILIFF ENTERPRISES INC.

CAM-LOCK COUPLERS

Cam-lock couplers (cam and groove fittings) connect and disconnect a hose in seconds with no tools. Pull the two cam arms back, push the coupler onto the adapter, and fold the arms down to lock. We use polypropylene cam-locks with 304 stainless steel handles and pins, and an EPDM gasket in every coupler.

1/2"–4"	304 SS	EPDM	No tools
Sizes	Cam arms & pins	Standard gasket	Connect in seconds

PICK THE TYPE

A



Adapter
Female NPT

B



Coupler
Male NPT

C



Coupler
Hose shank

D



Coupler
Female NPT

E



Adapter
Hose shank

F



Adapter
Male NPT

DC



Dust cap
Covers an adapter

DP



Dust plug
Plugs a coupler

*An **adapter** (A, E, F) is the male grooved half; a **coupler** (B, C, D) is the female half with the cam arms. Any adapter fits any coupler of the same size. Photos show 2" polypropylene cam-locks.*

Delivery truck connections: most delivery trucks have a **female** cam-lock coupler on the end of the hose. So on a top fill line, or any fitting a truck will hook to, we install a **Type F adapter** (male cam-lock × male NPT) with a dust cap. **2"** is by far the most common truck size.



Type F and cap on a bulkhead elbow

WHERE WE USE THEM

- **Top fill lines** – a 2" Type F adapter with a dust cap, ready for the delivery truck's hose.
- **Tank outlets** – a coupler or adapter on the valve outlet for hose drain-off and transfer.
- **Transfer tanks** – quick hose changes between tanks and pumps.

SIZES AND OPTIONS

- 1/2", 3/4", 1", 1-1/4", 1-1/2", 2", 3" and 4".
- 90° elbows in 1-1/2" and 2"; 3" reducing adapters to 2".
- 1/2" and 3/4" share one coupling size, as do 1-1/4" and 1-1/2"; only the threads or hose barb differ.
- Replacement gaskets, arms and pins available.

Types and sizes from Norwesco coupler data. Cam-lock types follow the common A–F cam and groove standard. Subject to change.

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BAILIFF ENTERPRISES INC.

FIRE WATER STORAGE TANKS



5,000 gallon fire water tank with fire department connections

Rural homes, ranches, churches and businesses beyond the reach of a fire hydrant can keep their own fire water on site. A Bailiff fire water tank stores a dedicated reserve and is fitted with fire department connections, so an engine or brush truck can hook up and draft water the minute it arrives.

2.5K–12K	2	No rust
Gallons per tank	Truck connections	Polyethylene

WHY CUSTOMERS CHOOSE IT

- **Ready for the trucks:** a large connection for the pumper and a smaller one for the grass or brush truck, threaded to match your fire department.
- **Dark, opaque colors:** UV-stabilized dark green or black keeps sunlight out, so algae can't grow in stored water.
- **Won't rust or need paint:** one-piece seamless polyethylene, delivered ready to set.

Before you order, ask your local fire marshal for the required gallons, connection sizes and threads, and tank location. See our **Fire Tank Connections & Siting** sheet, then send us the requirements.

HOW WE EQUIP A FIRE WATER TANK

Pumper connection
Typically a 4" outlet with a full-port valve and a 4-1/2" NH male adapter and cap, or Storz to match your department.

Brush truck connection
A smaller outlet, usually 2", with valve and a 1-1/2" or 2-1/2" NH adapter and cap.

Fill and auto-fill
Fill from a well or water line, with an optional float valve that keeps the tank full.

Level you can see
Reverse float level indicator on the outside of the tank shows the water level at a glance.

Vent and lid
Screened vent sized for fast drafting, and a manway lid for inspection.

Marking and restraint
"Fire Department Use Only" decal; wind and seismic tie-downs where required.

POPULAR SIZES, GALLONS (diameter × height)

2,500	3,000	4,000	5,000	6,000	8,000	10,000	12,000
85" × 117"	95" × 116"	102" × 127"	95" × 174"*	102" × 182"	120" × 182"	142" × 150"	141" × 193"

*Molded by Bailiff in Willis, TX through 10,000 gal. *Also 142" × 86" low profile. Tanks can be linked for more volume.*

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FIRE TANK CONNECTIONS & SITING

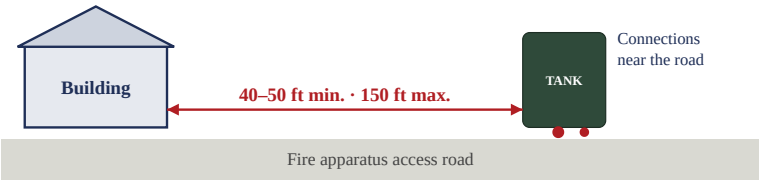
There is no single national number for fire tank connections or placement. NFPA 1142 sets how much water a rural property needs, NFPA 22 covers fire protection tanks, and the International Fire Code covers water supply and fire department access. Each local fire marshal applies these and writes the final rules, so always confirm with yours. Here is what most require.

TWO CONNECTIONS: ONE FOR EACH KIND OF TRUCK

Truck	Typical intake	What we usually install
Engine / pumper	4-1/2" or 6" NH hard suction, or 4", 5" or 6" Storz	4" (or 6") outlet, full-port valve, 4-1/2" NH male adapter and cap (or Storz)
Brush / grass truck	1-1/2" or 2" suction intake	2" outlet, valve, 1-1/2" or 2-1/2" NH male adapter and cap
Hand lines / tender fill	2-1/2" NH (the most common fire hose thread)	2-1/2" NH outlet, or a wye off the pumper connection

NH = National Hose thread (also called NST). Some departments use Storz quick-connect couplings or local threads instead; we match whatever your department uses.

WHERE THE TANK CAN GO



- **Keep it back from the building.** A polyethylene tank must survive the fire it protects. Most fire districts want the tank or its connection 40–50 ft from the structure.
- **Not too far.** Usually no more than 150 ft from the building, so hose lays stay short.
- **Fire shield option.** Where the distance can't be met, some districts accept a 2-hour fire-rated barrier between tank and building.

ACCESS AND SETUP

- Set the connections at the fire access road, typically within about 8 ft, so the truck doesn't block the road.
- Level, compacted pad or concrete ring. Connections about 2–3 ft above grade for easy hose hookup.
- Auto-fill float valve if the district requires the tank to stay full.

QUESTIONS FOR YOUR FIRE MARSHAL

- How many gallons are required for this building?
- Connection sizes, thread type (NH or Storz) and how many?
- Minimum and maximum distance from the building?
- Is a polyethylene tank accepted? Any fire-barrier requirement?
- Auto-fill, signage, inspections?

Send us the answers. We will quote the tank sized, fitted and threaded to your fire marshal's requirements.

Note: NFPA 22 lists steel, concrete, wood, fabric and fiberglass tanks. Polyethylene tanks are approved locally by the fire marshal.

Typical values from published county fire district standards. Local requirements govern; this sheet is a guide, not a code document.

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BAILIFF ENTERPRISES INC.

COMMON VALVES

We stock several types of valves to fit the requirements of many applications. These are the 3 most common types.



True Union Ball Valves are designed for industrial settings. The body of the valve can be replaced without dismantling the surrounding piping. These valves are available in PVC and CPVC. The internal O-rings can be FPM (like Viton) or EPDM. The valve seats are PTFE. Connections can be either threaded or socket. Automated (actuated) versions are available. ($$$)



Polypropylene Bolted Ball Valves are rugged valves. They are constructed from Polypropylene and have PTFE seat material. They have a design pressure rating of 150 psi. Locking arms are available to keep unauthorized persons from opening or closing the valve. ($$)



Compact Ball Valves are simple inexpensive valves . These valves are available in PVC and CPVC. The internal seals can be Viton or EPDM. These valves are available for threaded or socket connections. ($)



Check Valves are used to keep liquid flowing in only one direction. They can be used to keep liquid from siphoning back. These valves are available in PVC and CPVC. The internal seals can be Viton or EPDM. These valves are available for threaded or socket connections.

We can also supply less common valve types that may be more appropriate for applications. These include butterfly valves, PVDF valves and more. Just let us know what you need.

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PVC U-VENTS



Screened PVC U-Vents are a common type of vent for plastic tanks. Since plastic tanks are designed for atmospheric pressure only, it is important that they be vented to keep from developing a vacuum or over-pressure situation.

The normal ‘rule of thumb’ for vent sizing is to supply a vent that is 1” larger in diameter than the largest inlet or drain fitting. If you have a 3” flange or coupling, you would typically use a 4” vent.

We have PVC U-Vents available in screened or unscreened versions. Our normal sizes are 2”, 3” and 4”. For sizes larger than 4”, we have fabricated U-vents available.

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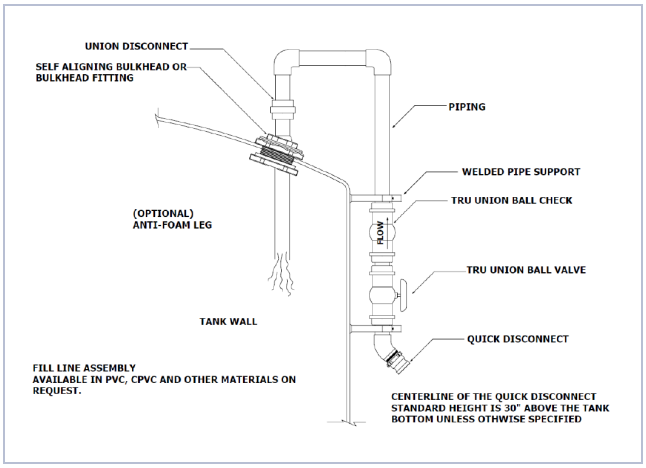
TOP FILL LINE

A ‘Top Fill Line’ is the preferred option for chemical delivery from a truck. It allows a delivery truck to easily connect with a hose, and fill the tank.

No added sidewall penetration is required since the Top Fill Line connects through the dome of the tank. This is of extra advantage on a double wall tank.

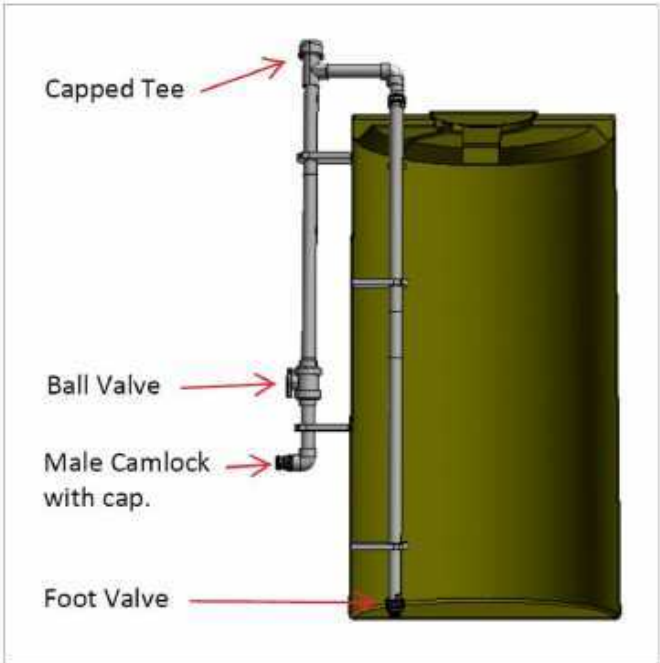
The fill line is equipped with a Ball Valve for liquid flow control and a Check Valve for safety. A version for non-hazardous liquids is available without the Check Valve. A tube is optionally available. An Anti-Foam bend is optionally available to direct fluid down the side of the tank.

Welded Pipe supports are used to support the Top Fill Line. No wall penetrations are needed for these braces.



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TOP DRAIN LINES



Top Drain Lines allow a tank to be drained without sidewall penetration. This is beneficial in every tank but especially important in double wall tanks.

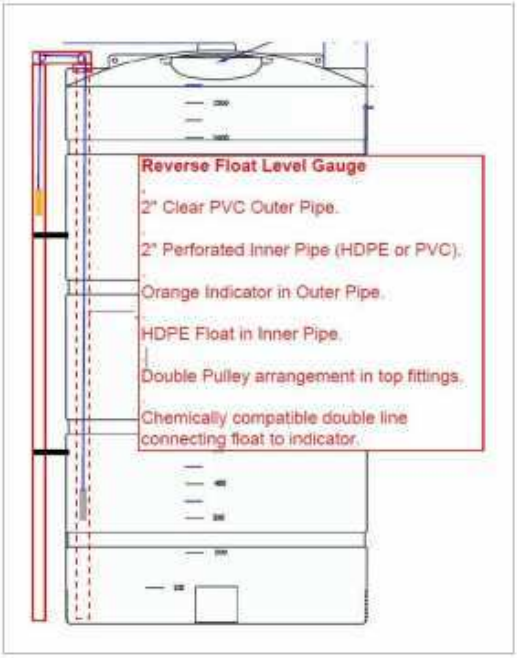
- Top Drains are available in 2", 3" and 4" sizes.
- Available in PVC, CPVC, PVDF, HDPE and Stainless Steel.
- Top Drains are braced with welded supports.

Our Top Drain Lines can terminate outside the tank with a cam lock fitting, flange or NPT threaded fitting. The flanged and threaded fittings are normally used for pump connections. A flexible connection should be used between the pump and tank.

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REVERSE FLOAT LEVEL INDICATOR

Our Reverse Float Level Indicator is a simple effective mechanical method for tracking the fill level of a storage tank. This is especially good for a double wall tank since it does not require sidewall pene-trations.



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BAILIFF ENTERPRISES INC.

ULTRASONIC LEVEL SENSOR & DISPLAY

Know how much is in your tank without climbing up, opening a lid or reading a float backwards. The EchoSonic® II ultrasonic sensor mounts in a 2" top fitting and measures the liquid surface with sound. It sends a continuous 4–20 mA level signal.

Add the optional DataView™ LI55 display to read gallons, inches or percent full right at the tank. Or wire the signal to your PLC or SCADA system. Nothing touches the liquid.

18 ft	±0.2%	4–20 mA	Non-contact
Max. range	Accuracy	Output	No wetted parts



LU23-01 Sensor — LI55-1211 Display

WHY CUSTOMERS CHOOSE IT

- **Non-contact measurement**
  Reads from above the liquid. No floats, ropes or moving parts to stick or wear.
- **Reads in gallons**
  32-point linearization converts level to true volume, even in domed tanks.
- **One power connection**
  The display runs on 85–265 VAC and supplies 24 VDC to the sensor.
- **Built for corrosive chemicals**
  PVDF transducer, Viton® gasket and a sealed Type 6P housing.
- **Alarms and pump control**
  Two relays for high/low alarms or auto fill, plus a 4–20 mA repeater output.
- **More usable capacity**
  An 8" dead band and narrow 3" beam measure nearly to the top of the tank.

THE LEVEL PACKAGE

SENSOR
LU23-01
EchoSonic® II transmitter. 18 ft range, 2" NPT mount, 10 ft cable, USB calibration fob included.

DISPLAY · OPTIONAL
LI55-1211
DataView™ controller. 6-digit LED display, 85–265 VAC, 2 relays and 4–20 mA repeater.

ENCLOSURE · OPTIONAL
LM92-1002
NEMA 4X polycarbonate windowed box. Mounts the display on the tank, a stand or a wall.

Ideal for: bulk chemical, water and wastewater storage and process tanks with a calm liquid surface, and remote reading to a PLC or SCADA system.

Ask us first if your liquid foams heavily, gives off dense fumes, or is stored above 140°F. We will recommend the right level option.

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BAILIFF ENTERPRISES INC.

ULTRASONIC SPECIFICATIONS

SENSOR · LU23-01

EchoSonic® II Ultrasonic Level Transmitter

Range	8" to 18.0' (20 cm to 5.5 m)
Accuracy	±0.2% of range
Resolution	0.039" (1 mm)
Dead band	8" (20 cm)
Beam width	3" (7.6 cm)
Signal output	4–20 mA, two-wire
Fail-safe	4, 20, 21, 22 mA or hold last
Supply	24 VDC loop, 0.5 W
Process temp.	-4° to 140°F (-20° to 60°C)
Ambient temp.	-31° to 140°F (-35° to 60°C)
Max. pressure	30 psi (2 bar)
Enclosure	Type 6P, encapsulated, submersible
Materials	Polycarbonate housing, PVDF transducer, Viton® gasket
Cable	10' (3 m), 4-conductor shielded
Process mount	2" NPT
Configuration	WebCal® software; LI99-1001 USB fob included
Approvals	cFMus, CE, RoHS

DISPLAY · LI55-1211

DataView™ Level Controller (optional)

Display	LED, 6-digit
Digit height	Main 0.6", secondary 0.46"
Units	Gallons, liters, in., ft., m or %
Linearization	2–32 point (level to volume)
Sensor input	(1) 4–20 mA
Supply voltage	85–265 VAC, 50/60 Hz
Consumption	20 W max.
Sensor supply	24 VDC @ 200 mA (powers the sensor)
Relays	(2) SPDT, 3 A @ 30 VDC / 250 VAC
Repeater output	Isolated 4–20 mA to PLC/SCADA
Setup	Front push buttons, password protected
Memory	Non-volatile
Ambient temp.	-40° to 149°F (-40° to 65°C)
Enclosure	1/8 DIN, polycarbonate
Faceplate rating	NEMA 4X (IP65)
Approvals	UL, cULus, CE

ENCLOSURE · LM92-1002 (OPTIONAL)



Single-indicator windowed box for one LI55 display. NEMA 4X polycarbonate with a clear cover for outdoor, on-tank or wall mounting.

Size: approx. 7.9" W × 7.9" H × 6.3" D **Includes:** mounting plate, stand-offs, #8-32 screws and washers.

INSTALLATION NOTES

- Mount the sensor vertically in a 2" top fitting, away from the fill inlet, sidewall and obstructions.
- Wire the sensor to the LI55's 24 VDC sensor supply. The display powers the loop.
- Keep the highest liquid level at least 8" below the sensor face.
- Enter tank height and capacity so the display reads in gallons.

Specifications from Flowline datasheets DS300610 and DS301033. EchoSonic, DataView and WebCal are trademarks of Flowline, Inc. Specifications subject to change.

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FIBERGLASS LADDERS & CAGES

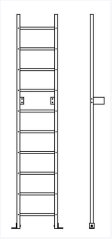
We supply OSHA-compliant fiberglass ladders for your tank. They are light, strong and will not rust or corrode, which makes them a good fit for chemical plants and other harsh locations. Ladders mount to the tank with wall brackets and can be shipped installed or as a kit.

The height of the ladder decides whether a cage or a fall arrest device is required. OSHA is moving away from cages and toward straight ladders with fall arrest devices.



Walkthrough ladder on a Bailiff tank

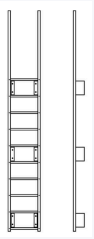
THREE STANDARD STYLES



STRAIGHT

Straight ladder

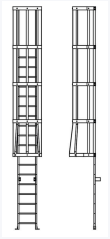
The simplest choice for shorter tanks.



MOST POPULAR

With walkthrough

Grab rails extend past the top rung for a safer step onto the tank.



TALLER TANKS

Caged ladder

Cage starts 7 to 8 ft above the ground.

CONSTRUCTION

Width	28" standard
Side rails	2" × 1/4" FRP square tube
Rungs	1-1/4" dia. × 3/16" FRP fluted tube, 12" spacing
Resin	Fire retardant (IFR) polyester with UV inhibitor; vinyl ester for very corrosive service
Color	OSHA safety yellow
Mounting	Base mounted with wall brackets
Delivery	Installed, or as a kit for field assembly

WHY FIBERGLASS

- Will not rust or corrode; outlasts steel and aluminum
- Non-conductive and fire retardant
- Light enough to handle without a crane
- Little or no maintenance
- Custom heights, cages, platforms and brackets available

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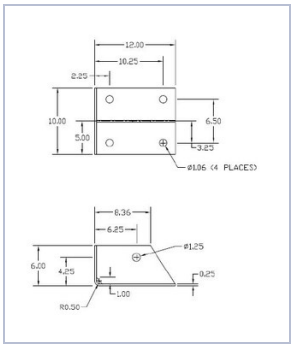
WIND / SEISMIC RESTRAINT SYSTEM

Our wind/seismic tie-down systems consist of:

- Four heavy duty tie-down points molded in or bolted to the dome of the tank.
- 1/4" galvanized steel cable that is strong and flexible. Vinyl coated or stainless steel cable is available at additional cost.



- The cable is rated at 7,000 pounds breaking strength. The cable is cut to length for each anchor point.
- 6" tall x 10" wide x 12" deep anchors made from galvanized A-36 steel connect with the cables and are bolted into the concrete base. The holes are designed for 1" bolts.



- The cables, anchors and cable clips are all included. The cable clips are galvanized, drop forged steel shackles.
- The restraints are rated for 155 mph winds. We offer site specific, stamped wind and seismic calculations at additional cost.
- Due to foundation variances, bolts are not included.

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