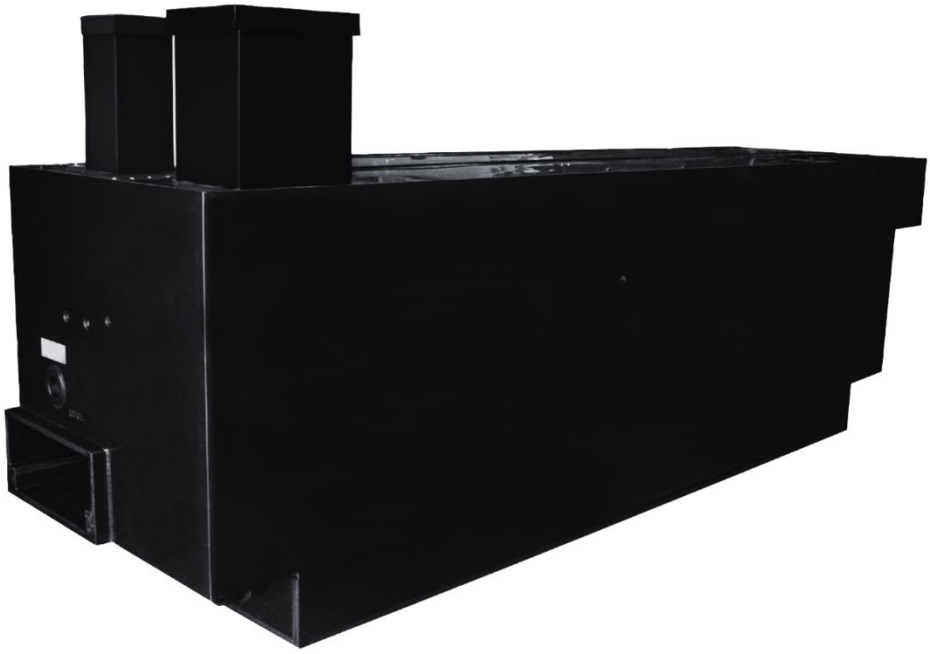
UNITED PLASTIC FABRICATING



POLY-TANK®
INSTALLATION GUIDELINES

P/N 990-1019

Welcome to the UPF Family of Customers

March 31, 2025

Dear Valued Customer,

On behalf of everyone at United Plastic Fabricating, Inc. (UPF), I would like to extend our sincere thanks for choosing the POLY-TANK® and for your continued trust in our products and team.

Since 1986, UPF has proudly served the fire industry, designing and manufacturing the original POLY-TANK®—a revolutionary alternative to steel tanks—purpose-built for the rigorous demands of fire apparatus. It's been our honor to support first responders with dependable, corrosion-free water tank solutions for nearly four decades.

UPF has also provided custom plastic tanks and components to industrial customers since its earliest days. To better serve this growing need, we officially launched our Custom Plastic Fabrications (CPF) division in 2020. CPF is dedicated to innovative, high-quality plastic fabrication for a wide range of tanks for industrial applications—from DEF tanks for gen-sets to highway and road brine tanks and beyond.

Expanding on that commitment to engineered plastic solutions, in 2022, we introduced Tideman Boats US (dba Tideman Marine). This division designs and manufactures rugged workboats, barges, hulls, tanks, and unmanned surface vessels (USVs) made from HDPE for marine, workboat, and military markets. Built to withstand harsh environments and demanding missions, Tideman Marine vessels offer unmatched durability and performance.

As we continue to grow and diversify, our mission remains to provide the highest-quality plastic solutions backed by industry expertise and customer-first service. None of this would be possible without your support.

Again, thank you for purchasing the POLY-TANK® and joining the UPF family. We look forward to serving your needs for fire, industrial, or marine applications for many years to come.

With appreciation,

Andrew Lingel
President
United Plastic Fabricating, Inc.

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POLY-TANK® Installation Guidelines

Contents

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POLY-TANK® Installation Guidelines

Introduction

The following guidelines are to provide the truck builder, dealer and/or end user, with the required information and guidance, for properly and safely mounting the POLY-TANK® in various vehicle situations. Keep in mind that this is only a guideline, and variations of these suggested methods are acceptable, as long as the initial intended parameters are met. Providing the proper installation interface with the vehicle is vital to the performance and longevity of the POLY-TANK®.

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POLY-TANK® Installation Guidelines

1. OUR COMMITMENT TO QUALITY:

The POLY-TANK® represents the "State of the Art" in fire apparatus water and foam storage. The key to the successful service of your POLY-TANK® is the polypropylene material. United Plastic Fabricating Inc. material is the highest-grade polypropylene available. This plastic is lightweight, rugged and completely corrosion-proof. It is the strongest polypropylene available, which makes this the ideal material for the POLY-TANK®.

The POLY-TANK® & Defender™ booster and foam tanks manufactured by United Plastic Fabricating Inc. have been designed and constructed to provide superior performance and reliability with absolutely no maintenance necessary during its lifetime warranty period. To achieve this performance, United Plastic Fabricating Inc. has established and maintains high levels of quality control throughout the many manufacturing processes involved in the assembly of each and every POLY-TANK®.

2. RECEIVING YOUR SHIPMENT:

The Bill-of-Lading is an acknowledgment by the transportation company that products covered by your invoice have been received in good condition, and UPF's responsibility for the shipment is complete. You should thoroughly inspect each shipment as soon as it arrives. If any of the products specified on the Bill-Of-Lading are missing or damaged, do not accept the shipment until the freight agent makes a notation on your freight bill with regard to the problem. If any concealed loss or damage is subsequently discovered, notify your freight agent at once, and request that they make an inspection. This procedure is absolutely necessary in order for the transportation company to consider any claim for loss or damage. If the agent will not perform an inspection, you should complete an affidavit that you notified them (stating the date) and they failed to comply. This, along with other documentation, will properly support your claim. It should be understood that UPF is not responsible for loss or damage which occurs during shipping, when you give the transportation company a clear receipt. We are more than willing to assist you in every possible manner in collecting claims for loss or damage, but this willingness on our part does not make us responsible for collection of claims or replacement of material.

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POLY-TANK® Installation Guidelines

3. THE POLY-TANK®:

Every water and or foam POLY-TANK® sold by United Plastic Fabricating Inc, has been designed and manufactured to our customer's specifications. UPF has developed the following procedures for the storage, moving, and installation of your POLY-TANK®.

WARNING: If these instructions are ignored, severe injury or death may result. This may also result in tank damage, and or poor performance, which might substantially affect its service life. Additionally, it may negate any specific rights covered under the terms of the tank warranty.

3.1 STORAGE:

If your POLY-TANK® will be stored prior to installation, you must leave the tank on the shipping pallet and it must be covered. Even though the tank is protected by Ultra Violet (UV) inhibitors, extended periods of direct sunlight can be harmful. All tank openings have been covered to prevent debris or foreign material from entering the tank during shipment. Do not uncover these openings until just prior to installation. Never allow water to accumulate on or in the tank in climates that are subject to freezing temperatures. Be sure all sumps remain free of water collection. Do not set the tank on its side or end, and, **DO NOT ALLOW THE TANK TO REST ON THE SUMP, OVERFLOW OR FILL TOWER**. The tank must be supported uniformly with proper support under the tank bottom. The tank should never be allowed to hang suspended by a hoist for extended periods of time. When uncrating or moving the tank, exercise extreme care to guard against damaging the sumps, fittings, and overflow pipes. Remove all plastic tank masking, if present, prior to storage in direct sunlight. Tanks received with white shrink wrap covering may be stored safely outside. For periods that exceed 14 days, the tank must be covered with a tarp or other means such as boat wrap, or otherwise stored indoors. Avoid exposing the tank to wide temperature variations while empty. Limit movement of tanks while stored outside. Straps securing the tank to the skid must be removed. Tanks should never be stacked while stored. Failure to follow these instructions may result in damage to your tank and or impact the tank warranty. Tanks not installed within 90 days must be re-certified in order to maintain warranty coverage.

3.2 TANK LIFTING SYSTEM:

The UPF POLY-TANK® is engineered with a lifting system to provide a means for the tank to be installed or removed at a later time if necessary. The lifting system is specific to each tank size and each individual configuration. Common to all tanks is a lift arrangement consisting of two or more lift attachment points. The UPF POLY-TANK® is designed to be installed using a certified overhead lifting device.

Lifting eyes and or lifting brackets with shackles have been provided in the top of the tank as the only authorized mechanism for overhead lifting. USE THEM! All hex lag bolts must be tightened to a maximum of 25 ft-lbs. to properly attach the steel brackets to the tank. Lifting lag eyes must be installed for the entire thread length if equipped. Lag bolts must be installed the entire fastener length. Do not add any spacers or use substitute hardware without approval. Tanks must be carefully moved, lifted and lowered with extreme caution by the use of chains, straps, or cables attached to this hardware. Slack should be slowly removed (10 inches/minute) from the tank lifting system before lifting or moving the tank. The tank lifting system is designed to safely install the tank as shipped. DO NOT add any other equipment or counter balancing weight during installation unless approval has been received from UPF Engineering. DO NOT stand on top, under, alongside, or allow any part of your body under the tank while moving, raising or lowering. Severe injury or death may result. DO NOT under any circumstances, use chains, slings or cables around the tank shell to move, raise, or lower the tank. The tank must be lowered or raised in the vehicle without hitting any obstruction. If the tank becomes wedged in the body it must be freed and never forcibly removed. Failure to follow any of these procedures may result in damage, injury, or death.

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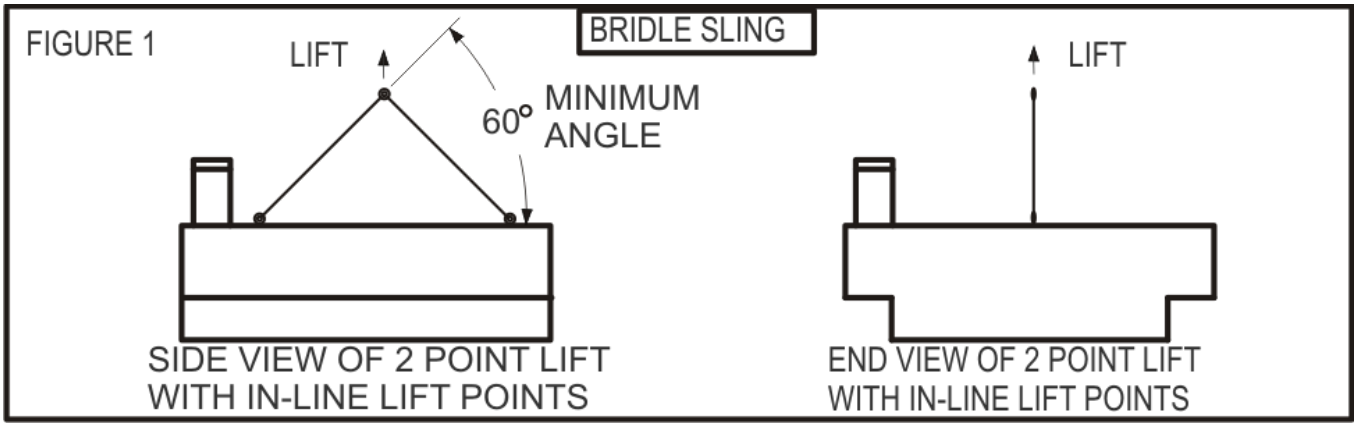
POLY-TANK® Installation Guidelines

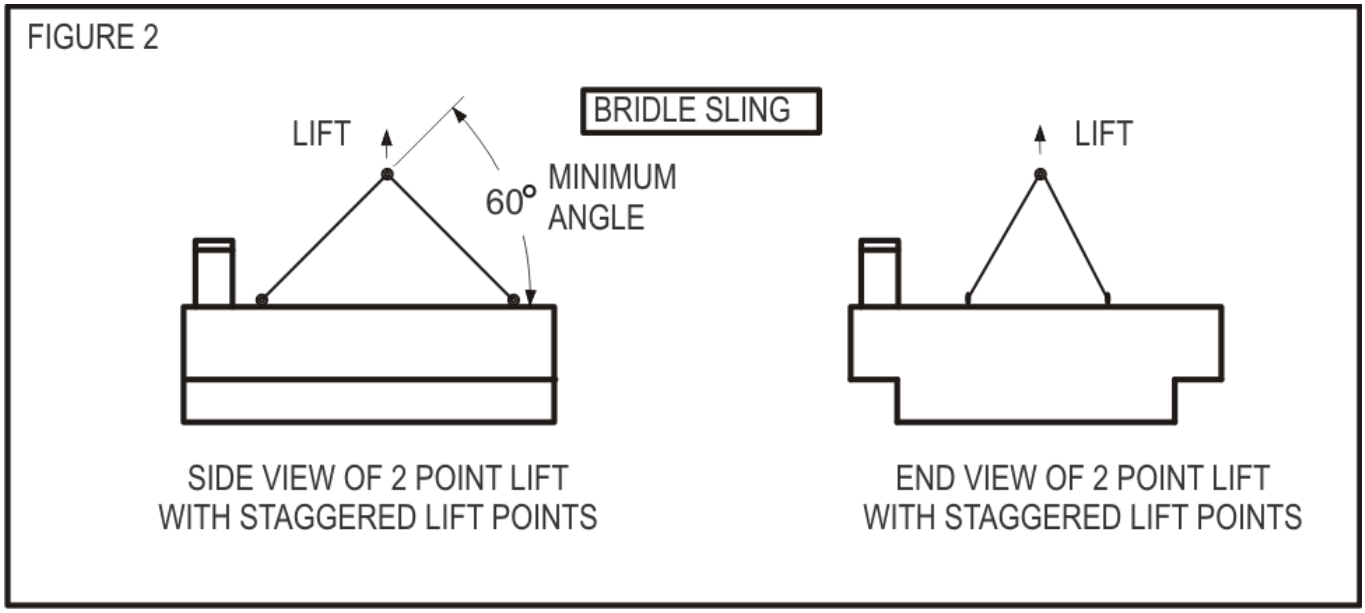
Refer to OSHA 29 CFR 1910.184 and ANSI/ASMEB30.20, B30.9 and B30.26 for hoisting practices. Local, State, and site-specific practices may supersede these. Additional details can be found in UPF instruction 999-1010. Lift System and Tank Handling Instructions.

IF LIFTING HARDWARE IS NOT INSTALLED IN YOUR TANK, PLEASE CONTACT UPF FOR INSTRUCTIONS. LIFTING HARDWARE IS A ONE-USE APPLICATION. DISCARD AFTER USE.

A certified overhead lift system must be used when lifting the tank. Personnel should be trained in lifting and rigging before attempting to sling and lift a POLY-TANK®. Using either a certified lifting spreader beam or bridal sling with a flexible lifting apparatus (cables, chain, or straps), attach all of the sling attachment points to the overhead device. Slings should have shackles or hook latches to prevent accidental uncoupling during lifting. The angle created between the lift sling and the top horizontal surface of the tank must be a minimum of 60 degrees. See Figures 1 thru 4. An angle less than 60 degrees may cause damage to the tank and cause an unsafe lifting condition. Be sure that the tank subframe is clear and all isolation rubber is in place before installing the tank.

Once the tank is in place detach the lifting provisions. Use the appropriate tool to remove the eyebolts or lag bolts from the top of the tank by turning counterclockwise.





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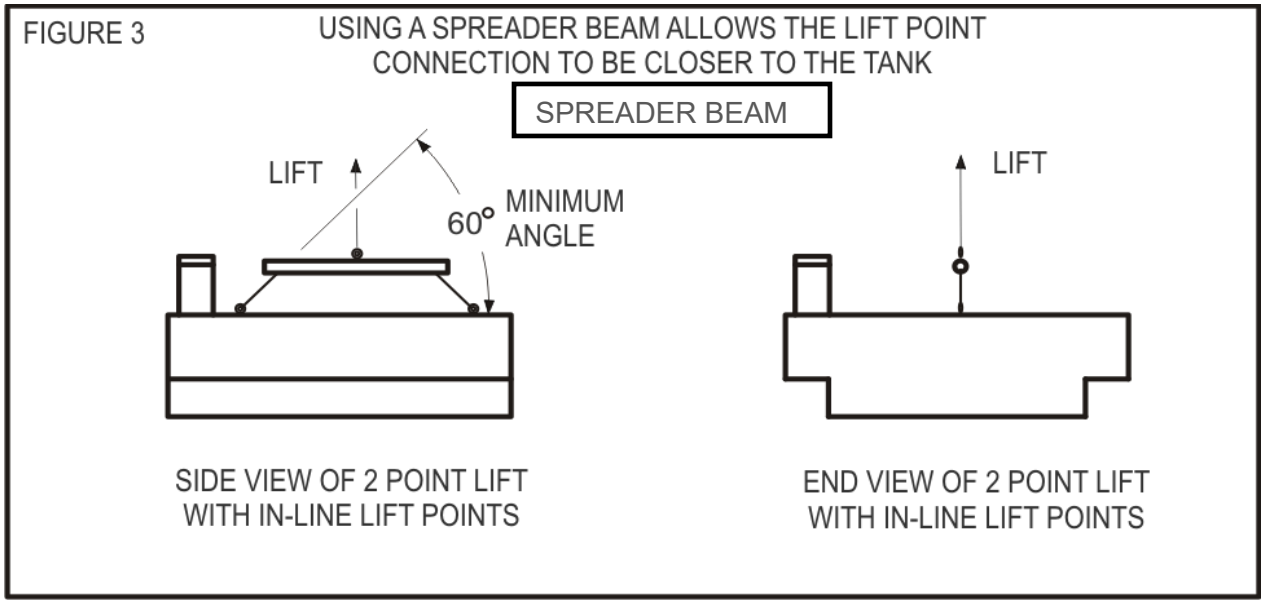

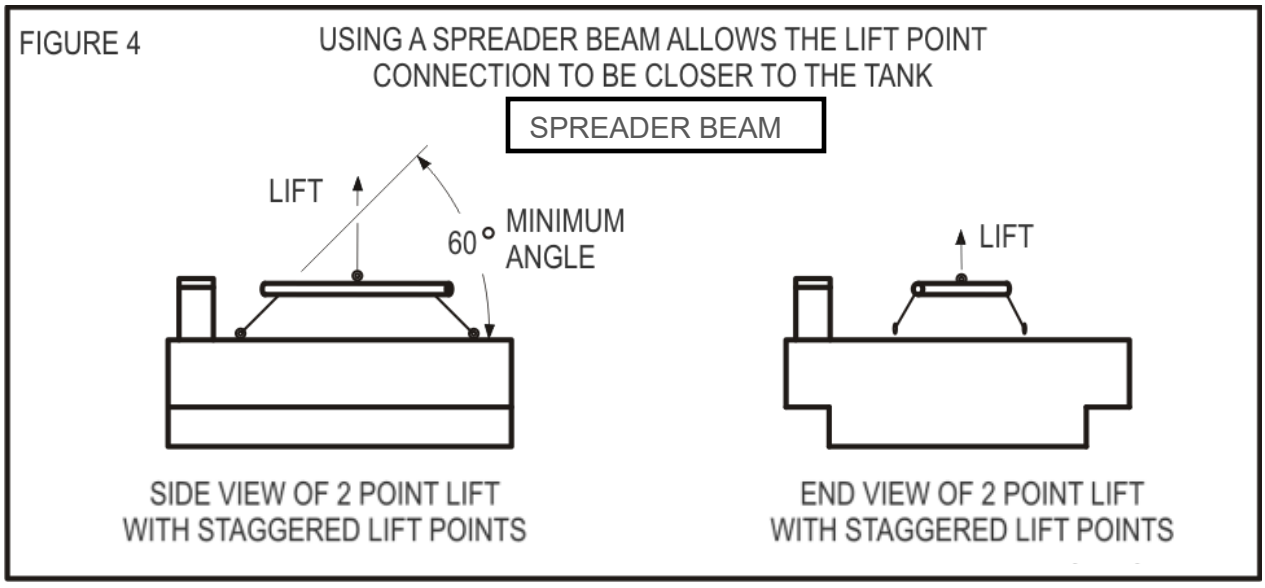

3.3 NOMINAL TANK CLEARANCE:

The required minimum clearance between any tank feature and adjacent body components and or ancillary systems, is one inch. This would include such items as the fill tower from hose partitions, the sump from cross members or drive shafts, and valve actuators from clearance notches. This is to allow for normal flexing of the body and tank. Warranty coverage will not be provided for repair of damage resulting from failure to maintain these clearances. See Figure 5.

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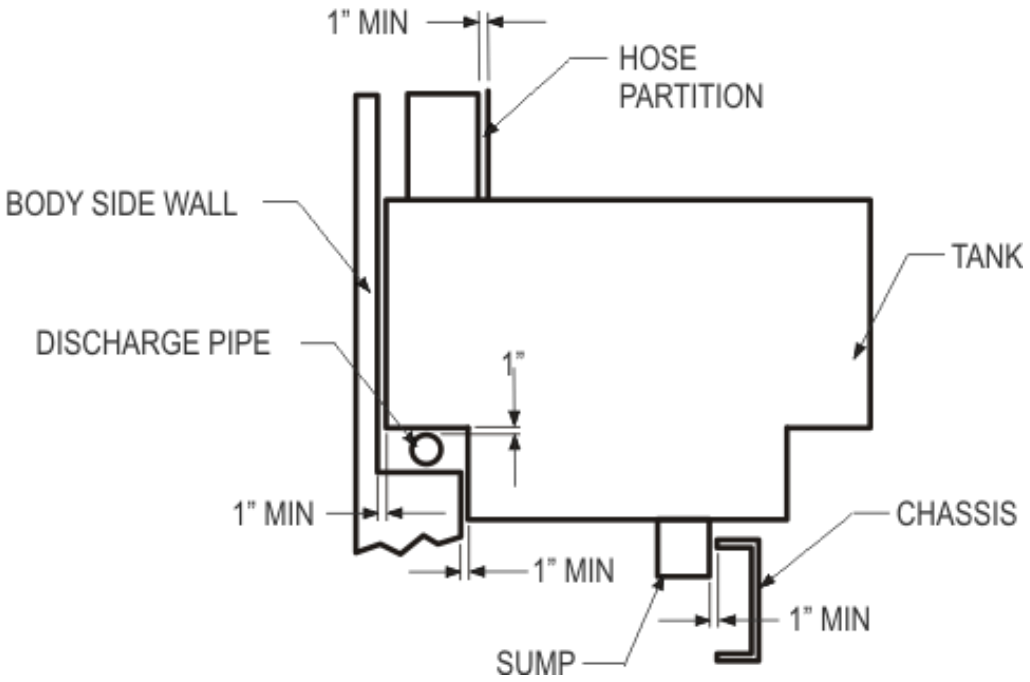
FIGURE 5 EXAMPLES OF CLEARANCES



3.3.1 HOT EXHAUST COMPONENTS:

If a tank is in close proximity with an exhaust system component of the truck, or an auxiliary heat source, a minimum clearance of eight inches, or greater, is required in order to maintain a maximum plastic surface temperature of 140°F. Keep in mind the tank may not be full of water in all conditions limiting the transfer of heat from the tank surface. Some conditions may require heat shields if the maximum plastic surface temperature of 140°F can't be maintained.

3.3.2 VALVE HANDLES:

Tank dump valves may be recessed into notches on the tank. Be sure to allow for adequate swing clearances on actuator handles and tool clearance for maintenance.

3.3.3 DRIVE LINE COMPONENTS:

Notches for components, such as transfer cases or transmissions, must have ample room for tools used in servicing these components.

3.4 TANK MOUNTING SYSTEM:

Realizing that tank mounting can be accomplished in a number of ways, it is extremely important that the intent of the mounting system be fully understood. Tank life expectancy, as well as the lifetime warranty coverage, can be compromised if proper mounting procedures are not followed. The following recommended guidelines will assist in ensuring a proper installation. There are three basic supporting requirements when designing any tank support system; tank floor support, corner/perimeter frame stops, and vertical retention.

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3.4.1 TANK FLOOR SUPPORT:

The tank is designed to rest on a series of cross-members, skid frame, or a flat deck, to properly support the floor of the tank. Rubber isolation is required between the tank and the resting surface and should be 60 Durometer Shore A scale hardness. This rubber is important to reduce shock transmitted to the tank generated by road conditions. The isolation rubber also helps to make up for any slight unevenness of the mounting structure and provides sliding friction resistance. The rubber must be attached to the support structure either by an adhesive or by using an extruded rubber profile to lock in place once the tank is installed. Fasteners should not be used to retain the rubber to the support structure. The heads of such fasteners could possibly damage the tank floor over time, or point load the floor, and result in damage to the tank. The rubber used under the tank must be at least ¼" thick and a minimum of 1" wide. It is recommended that tanks over 40" tall have a minimum rubber thickness of ½", and a minimum width of 2" wide. If the perimeter frame method is chosen, a combination of ¼" and ½" thickness isolation rubber must be used. When sizing the length of the rubber, the installer should make sure the rubber runs the full width and length (if applicable) of the tank. Never use rubber sections that do not run past the edge of the tank floor. This could result in damage due to point loading.

3.4.1.1 REQUIRED FLOOR SUPPORT:

The tank floor support required is based on the height of the tank. The following chart indicates the maximum acceptable unsupported area for a properly supported tank floor. The maximum unsupported area is calculated by multiplying the length x the width of adjacent structural supports. See Figure 6.

	Open Area Less Than
Tank height up to and including 40"	530 square inches
Tanks higher than 40"	400 square inches

FIGURE 6

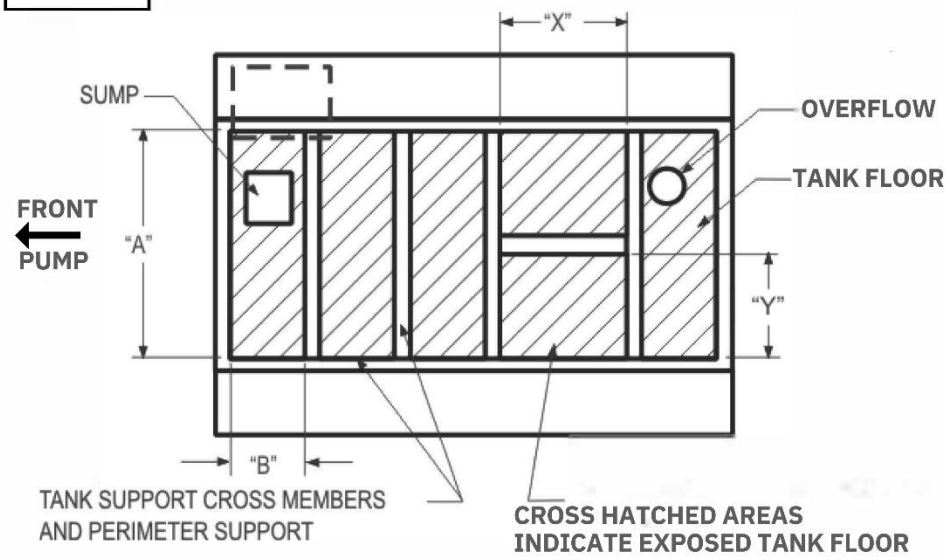


Figure 6 illustration shows a typical layout of a tank floor support arrangement as viewed from under the truck looking up. This frame is constructed from angle to support the entire perimeter of the floor

(see Figure 9 in section 3.4.3.2) and cross members in both directions (either transverse or a combination of transverse and longitudinal are acceptable) to provide the proper floor support based on the chart shown in section 3.4.1.1 indicating the required maximum unsupported floor area.

Please note that the floor of dump distribution boxes must always be supported. For tank configurations incorporating overhangs or notches, it is generally not necessary to support these secondary levels. If you feel the situation is extreme or have concerns of support requirements, contact UPF Engineering at 1-800-USA-POLY for guidance. UPF Engineering will review all jobs prior to design to identify any unique areas of concern regarding support. Should an area of concern be found, UPF Engineering will contact the customer to discuss options.

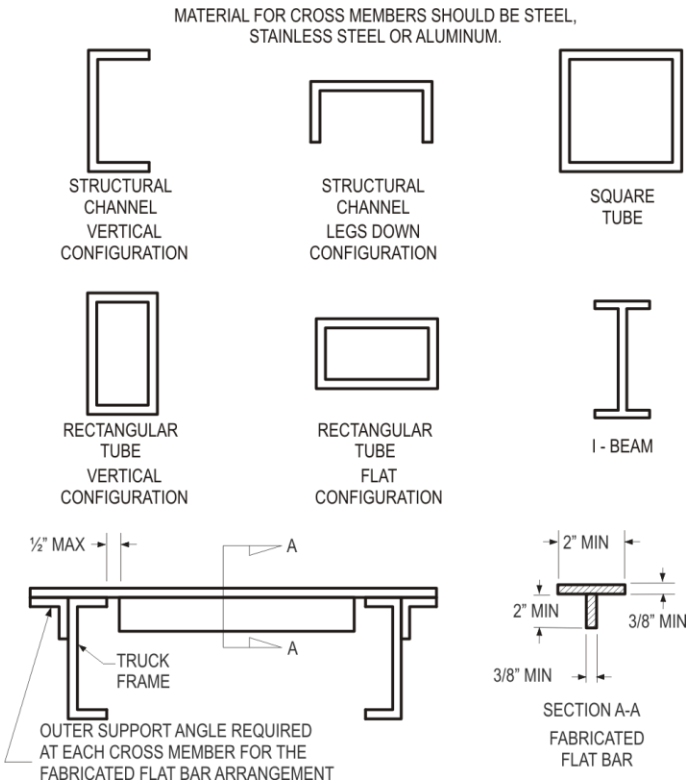
3.4.2 CROSS MEMBERS:

There are several structural profiles that can be used for tank cross members. The required size and material for the cross member is part of the design responsibility of the body builder. It is based on the number of cross members used, as well as the configuration, to support the given load. Tank cross-members may interface with existing body cross members on retrofit applications. It is important to keep in mind that the top surface on which the tank will rest is all in the same plane.

When selecting a cross-member profile, be sure to give consideration to the rubber used to cushion the tank. The top surface of the cross member in which the tank rests upon, must be equal to or greater, than the width of the rubber. See examples of cross member profiles in Figure 7.

3.4.2.1 SOME EXAMPLES OF CROSS MEMBERS

FIGURE 7



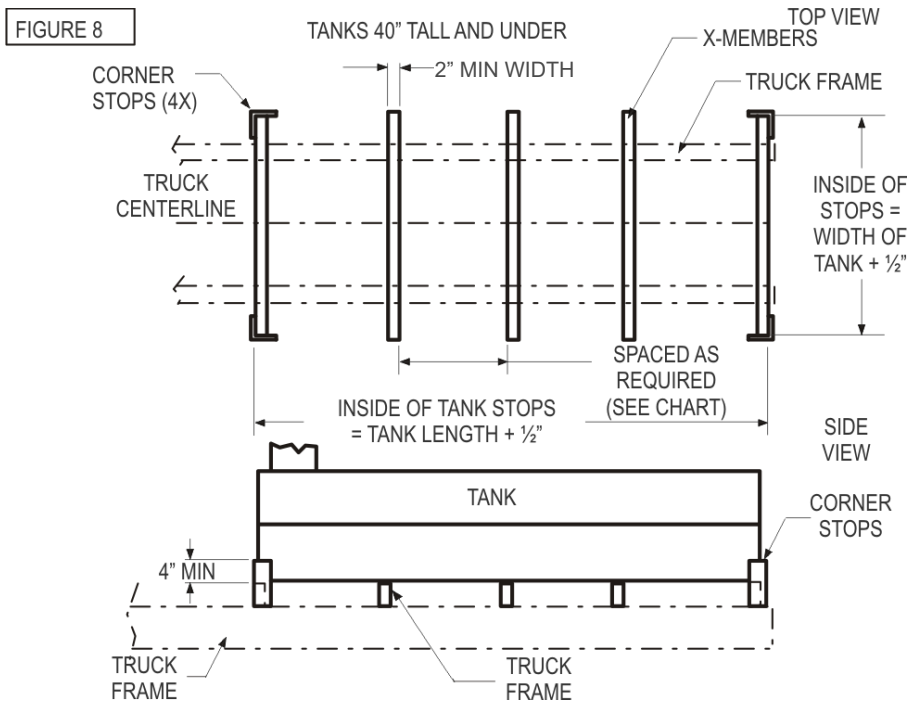
3.4.3 CORNER STOPS:

All tanks greater than 500 gallons, including those that use external plastic mounting tabs, require corner stops as part of the mounting system. This is to prevent excessive movement of the tank under all operating conditions. The angle stop requirements are defined by tank height. See section 3.4.3.1 below for the specific details. Tanks utilizing internal mounting blocks through tank floor for vertical retention also require corner stops.

3.4.3.1 INDIVIDUAL CORNER STOP METHOD:

For tanks up to and including 40”, Figure 8 may be used. If the tank is over 40”, see Figure 9. The four corner stops that keep the tank positioned within the body need to be sized and fabricated in such a way that in the event of rapid acceleration or deceleration, the tank is retained in its installed position. UPF recommends a minimum of 3”x3”x ¼” angle a minimum of four inches above the surface that the tank floor will rest upon. This is to ensure sufficient surface contact should the tank come in contact with the stop.

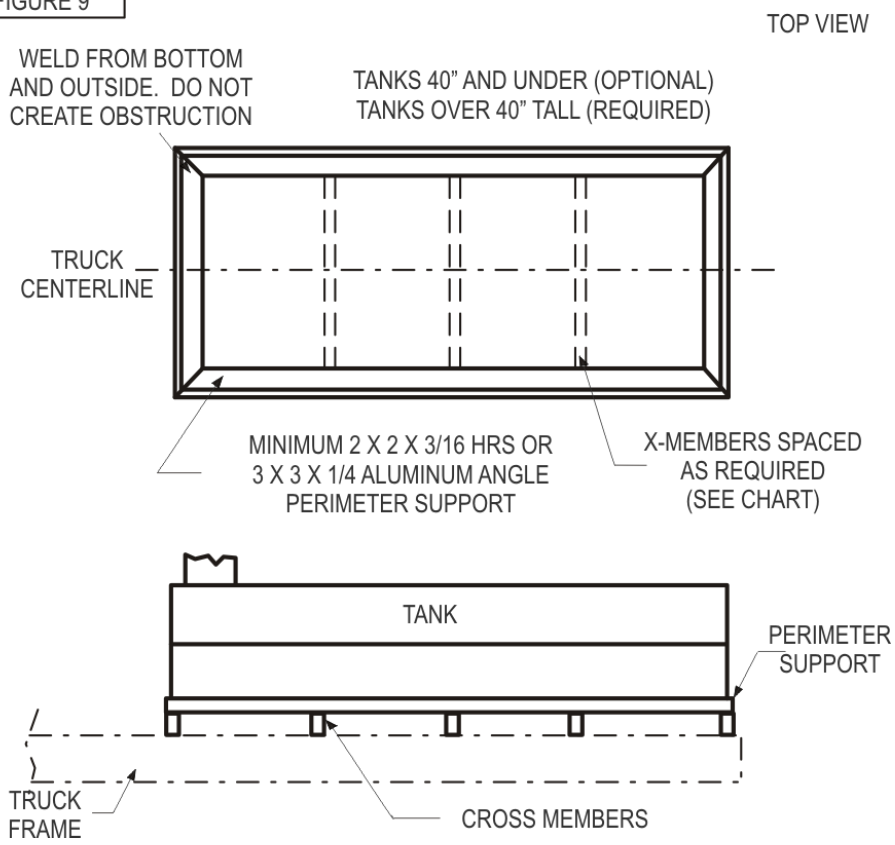
A ¼” clearance between the inside surface of the corner stop angles and the tank should be provided. When installing the tank, be sure to center it in the four angle stops before attaching and piping. This will minimize the amount of movement between the tank and the piping. There is no need for installing rubber on the inside vertical surface of the corner stops. The tank cushioning rubber for this installation would be all of equal thickness as defined in section 3.4.1.



3.4.3.2 PERIMETER FRAME METHOD

The perimeter frame method is the most preferred floor support and corner stop arrangement. It provides the maximum support to manage the load on the tank floor. It is the required method on all tanks over 40" tall. The perimeter frame utilizes a minimum 2"x2"x¼" structural angle material to "cradle" the tank floor perimeter. This perimeter frame rests on top of tank cross-members as covered earlier in this section. This configuration requires the use of two different thicknesses of rubber in order to keep all contact surface in the same plane. Even though the tanks that use this arrangement will be over 40", ¼" rubber must be used around the perimeter and ½" must be used on the cross members. The same rubber requirements for this installation also apply to tanks that are 40 inches or less in height. The rubber strips used must extend at least to the edge of the tank floor and be in the same vertical plane.

FIGURE 9



3.4.4 VERTICAL RETENTION

Once installed in the properly constructed cushioned cradle, vertical tank retention is required. The tank needs to be vertically retained when full, partially filled, and empty. There are no exceptions to this requirement. Vertical retention can be achieved by various methods and each are described and illustrated in this section. Consult UPF engineering for approval on other variations. The tank warranty may be invalidated if the proper vertical retention is not provided.

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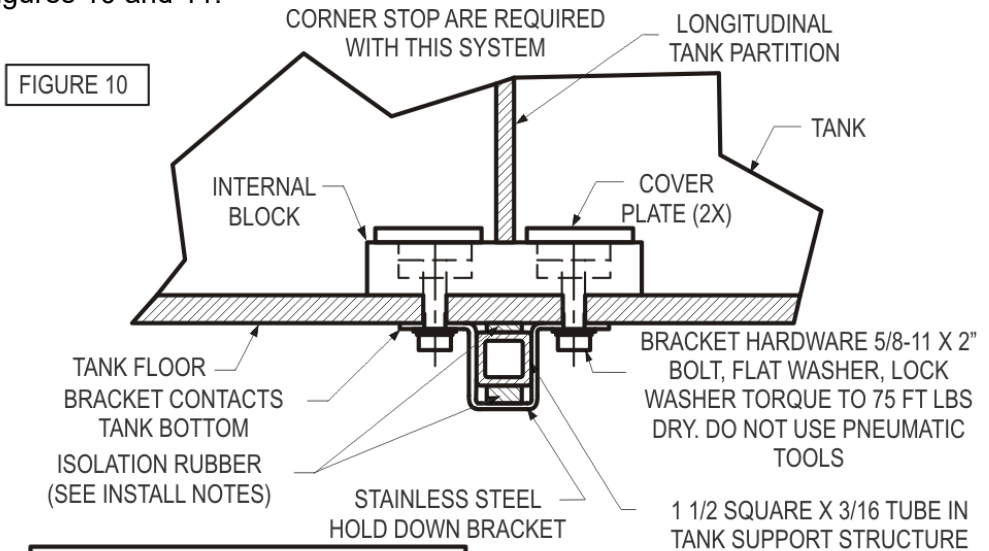
3.4.4.1 INTERNAL 6 BOLT TANK MOUNTING BLOCK RETENTION METHOD:

Optional internal mounting blocks may be specified when ordering the tank. These allow the tank to be retained from the underside. Mounting blocks are installed inside the tank with access to encapsulated threaded plates from under the tank. Prefabricated 10-gauge zinc plated carbon steel brackets are used to slip over a 1 ½" square tube that is built into the tank sub-frame. The brackets are fastened to the underside of the tank using six (6) ⅝-11 bolts. The brackets must be free to slide on the 1 ½" tube to allow for thermal growth and contraction. Mounting blocks are typically used in sets of two, and located along the tank longitudinal centerline. The number of blocks required is based upon the size of the tank. See requirements in Figure 10. Internal mounting blocks may be used in conjunction with other vertical restraint methods as well. All parts for this installation, with the exception of the 1 ½" square tube, are available through UPF. Kits defined on drawing number 824-0021 should be specified when the tank is ordered with internal mounting blocks. See Figures 10 and 11.

FIGURE 10



The external mounting kit is UPF part # 824-0021 specify part # and qty when ordering tank

The following is a guide line to the number of blocks required relative to total volumn: 500-2300 gallons = 2 blocks, 2301 - 3000 = 3 blocks, 3001 to 4000 = 4 blocks.

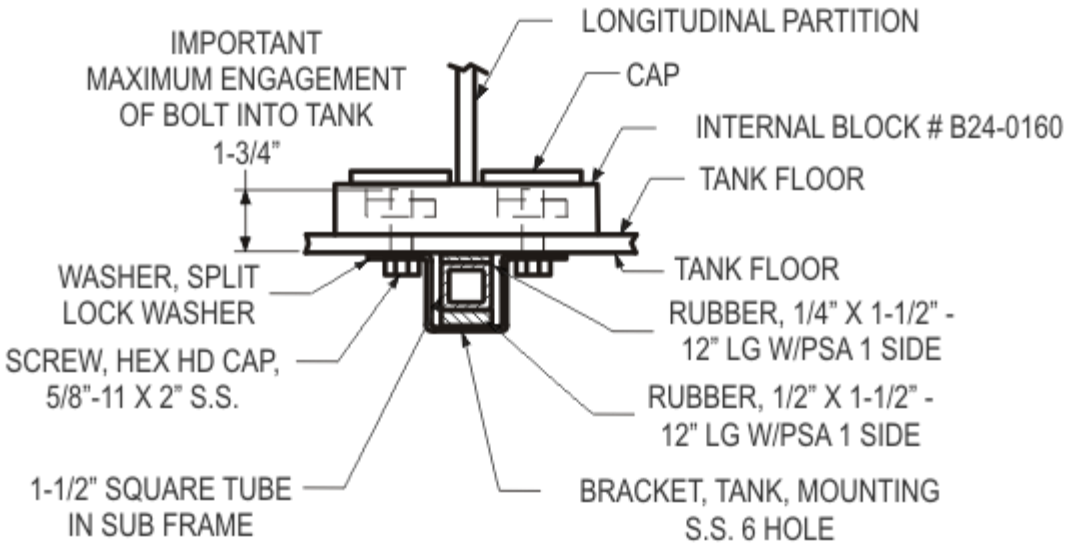
IMPORTANT NOTICE

The holes in the bottom of the tank for bolt access are blind. A maximum engagement of 1-3/4" is allowable, any fastener installed into the tank deeper than 1-3/4" will damage the cover plate on the block and a leak may occur.

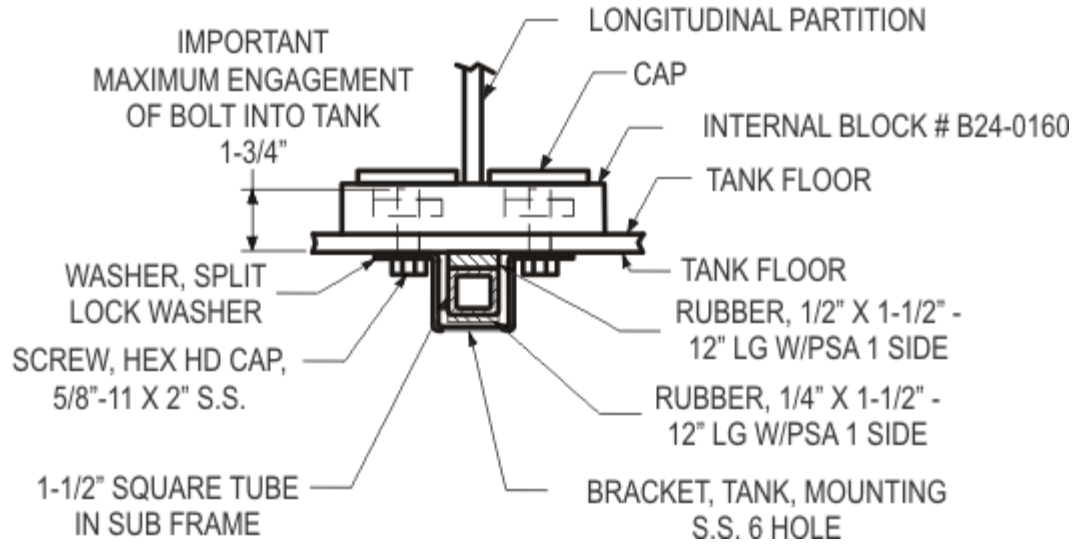
There are two rubber strips provided with each mounting kit. The order of installation depends on the thickness of rubber used on the tank subframe. When the tank is mounted entirely on ¼" thick rubber, install the ¼" thick rubber isolator strip on the top of the 1-½" subframe tube. When the tank is mounted entirely on ½" rubber, install the ½" thick rubber isolator strip on the top of the 1½" sub-frame tube. **Note: When the perimeter subframe method is used, see the requirements under section 3.4.3.2 above**. This keeps the tank interface with the subframe all in one plane.

FIGURE 11

INSTALLATION OF BRACKET WITH TANK RESTING ON 1/4" RUBBER



INSTALLATION OF BRACKET WITH TANK RESTING ON ½" RUBBER



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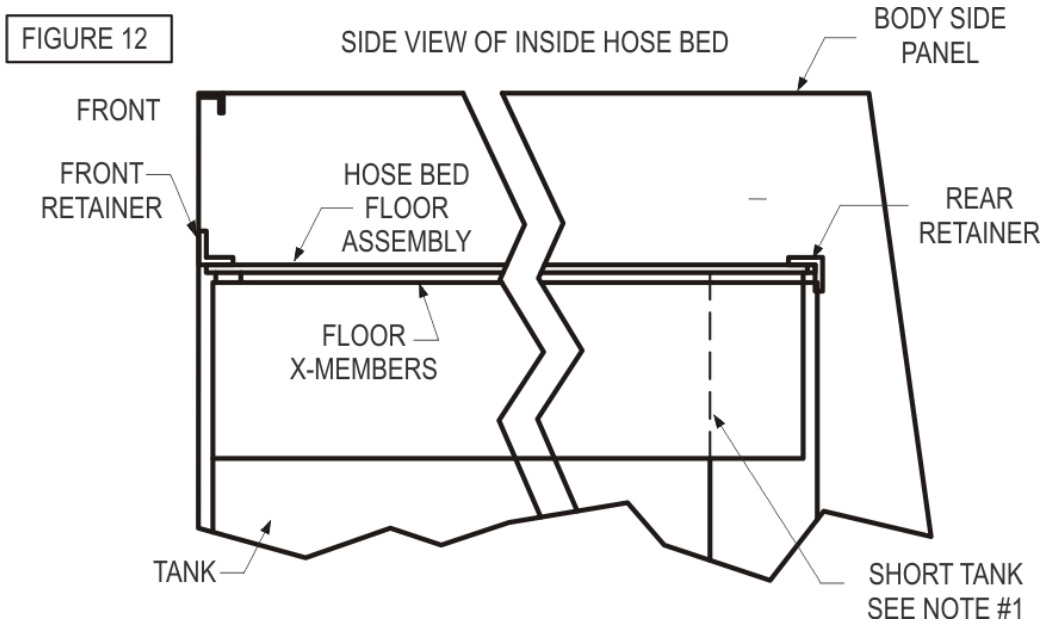
3.4.4.2 HOSE BED FLOOR TYPE RETENTION METHOD:

This type of retention method is most common in trucks with a top hose bed. It is acceptable to use the hose bed floor to retain the tank providing the floor construction is strong enough to resist bending if the tank exerts an upward force on the underside of the floor. It is required that each end of the floor be adequately fastened to the body to hold the floor in place. See Figure 12.



Important Design Notes

1. In cases where the tank does not extend all the way to the back of the body (as shown by the dotted line) the hose bed retention method may not be acceptable. This is to be determined by the truck builder.

2. The tank is designed for the hose bed assembly to sit directly on the top edges of the tank sidewalls and the longitudinal partitions. Hose bed flooring cross members should not have sharp edges contacting the tank. The flooring cross-members must overhang the side of the tank top by a minimum of ⅜". For tanks with recessed covers (covers recessed below the sidewalls), it is important not to allow the hose bed floor supports to rest directly on the tank covers. Damage will result from this arrangement which may invalidate the UPF warranty. Hose bed floor load capacity should not exceed 200 pounds per square foot.

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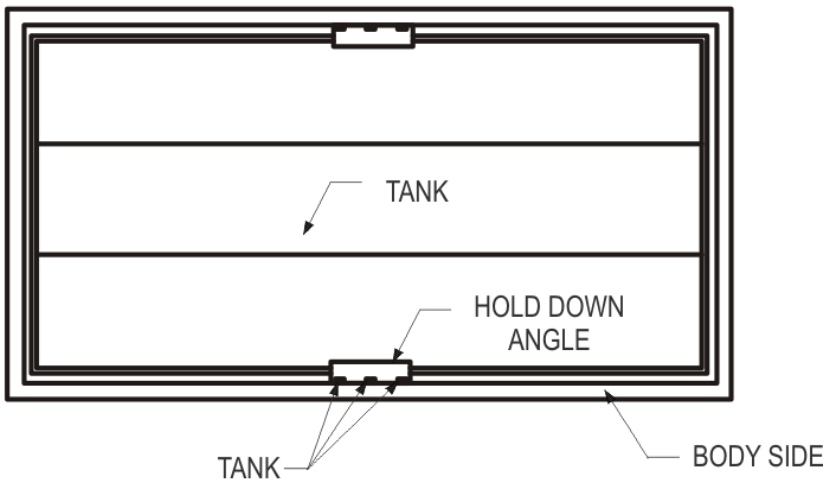
3.4.4.3 TOP TANK ANGLE TYPE RETENTION:

This type of retention method is most common in trucks with no top hose bed, and where the six bolt internal tank mounting bracket is not practical. This is a simple arrangement and only requires that the strength of the body wall material is adequate to retain the tank when fully loaded. This system can be used on tanks with recessed and flush covers. It is intended for the hold-down angles to rest directly on the top edge of the outside wall. Tanks with recessed or flush covers should not allow the angle to solely contact the covers. The angle must be in contact with the tank side or end walls. The angles shown in Figure 13 are located along the side, however they can also be located at the front and rear of the tank, providing their locations are directly opposite.

Vertical stops consist of angles with a minimum dimension of 3”x3”x1/4”x12” long in steel, stainless steel, or aluminum. These should be located on top of the tank (one each side) approximately at the midpoint along the length or width of the tank. The angles should be bolted through the truck body side to allow for removal if necessary. A 1/4” minimum thickness 60D rubber isolator pad should be placed under the angle so it contacts the top surface of the tank sidewall. Do not position the rubber pad so that it solely contacts the tank covers. This could result in damage to the tank. See Figure 13.

FIGURE 13



TOP VIEW OF TANK INSIDE BODY WITHOUT A HOSE BED

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3.5 PIPING SYSTEMS:

All threaded inlets and outlets provided in the POLY-TANK® incorporate a standard NPT tapered pipe thread with a minimum schedule 80 rating. Reasonable care must be taken when installing steel pipes, adapters, and bushings into the plastic fittings to prevent the possibility of cross-threading or cracking. The guidelines provided here will assist with plumbing the POLY-TANK® without damage.

3.5.1 PIPE THREAD SEALANT:

To maintain a proper seal, use ¾" Teflon tape in conjunction with a good grade Teflon paste (Perma-bond) or underwater rated sealant. The pipe thread should be wrapped with five to six overlapping wraps of Teflon tape in a clockwise direction as you look at the end of the thread. Then apply a small amount of Teflon past (Perma-bond), or under water rated sealant, to the first three threads only. During fitting installation, the Teflon paste, or an underwater rated sealant, will be drawn up the threads. Once the fitting has become hand-tight, an additional 2 to 3 full turns is all that is necessary to provide a watertight seal. Over tightening may bottom out the fitting in the port, which could result in damage to the coupling.

3.5.2 PIPE CONNECTIONS AND SUPPORT:

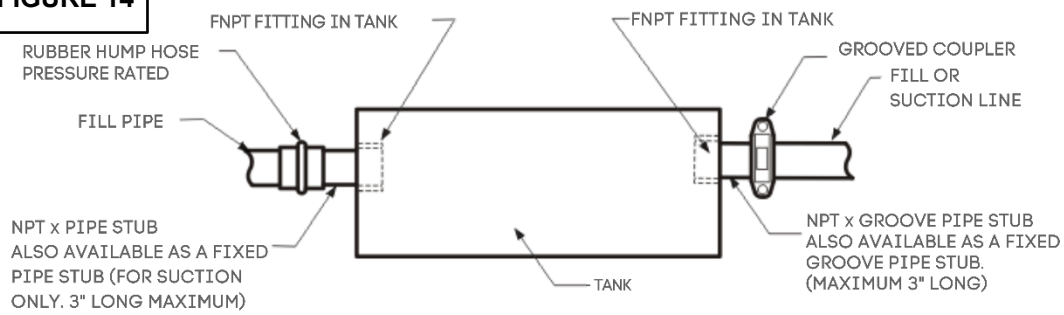
All pipe connections, such as tank suction and fill lines, must be isolated from the tank by use of rubber (hump) hoses, flexible lines, or Victaulic couplings (style 77 or 75 only) or equivalent.

All rear discharge and suction piping passing through the tank must be centered in the sleeves as close as possible, and supported at each end outside the tank. This is required to prevent the pipes from resting on the tank and inducing unnecessary stresses. Heavy piping and valves must be supported independently and isolated from the tank so as not to overload the plastic fittings and pipes. Rear tank fills over 3" valves may not extend beyond the tank more than 2" without a flexible connection, and must be independently supported by the body structure. Rear fills should have 30° sweep elbows to reduce stress on the tank valve connections. See Figures 14 – 17.

UNDER NO CIRCUMSTANCES SHOULD RIGID PIPING CONNECTIONS BE MADE BETWEEN THE TANK AND ANOTHER COMPONENT!

SUGGESTED PIPING INTERFACE – TANK FILLS

FIGURE 14

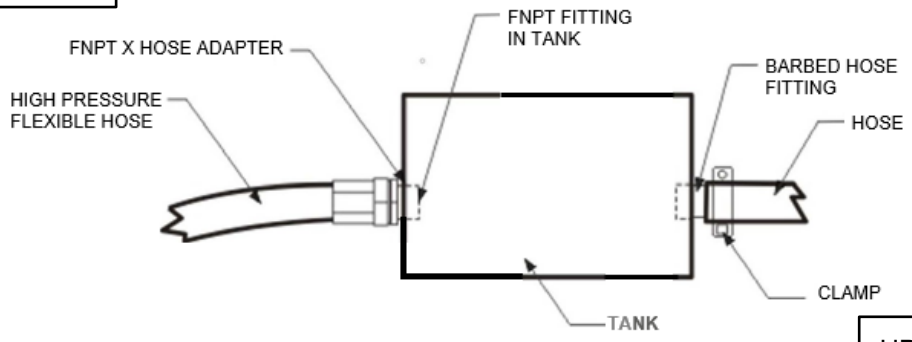


UPF DOES NOT SUPPLY PIPING OR FITTINGS

POLY-TANK® Installation Guidelines

GUIDELINES FOR INTERFACING WITH A UPF TANK (NPT THREADS)

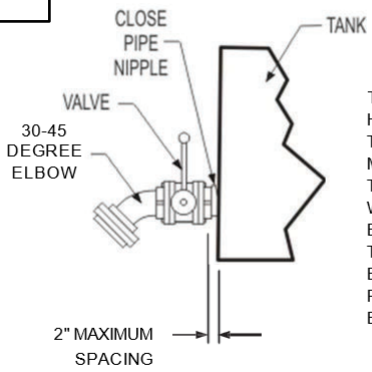
FIGURE 15



UPF DOES NOT SUPPLY PIPING OR FITTINGS

SUGGESTED PIPING INTERFACE FOR TANK FILLS

FIGURE 16



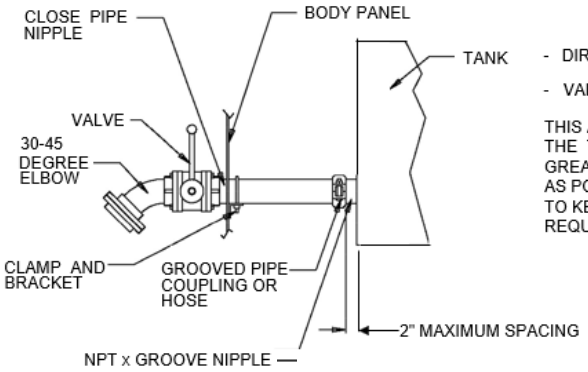
-DIRECT TANK FILL UP TO 3" VALVE
-NO VALVE SUPPORT REQUIRED

THIS ARRANGEMENT IS TYPICALLY USED IN A WETSIDE TANK APPLICATION . HOWEVER, IT CAN ALSO BE USED WHEN THE PIPE NIPPLE PASSES THROUGH A BODY PANEL . WHEN PASSING THROUGH A BODY PANEL, A MINIMUM OF 3/4" CLEARANCE AROUND THE PIPE IS REQUIRED TO ALLOW THE BODY TO MOVE WITHOUT CONTACTING THE PIPE NIPPLE . IN CASES WHERE THE MAXIMUM 2" DISTANCE NEEDS TO BE GREATER, BUT NOT TO EXCEED 10", A BLOCK CAN BE PROVIDED ON THE TANK UNDER THE PIPE TO ALLOW A CUSTOMER SUPPLIED BRACKET TO BE UTILIZED . 3/8-16" BRASS THREADED INSERTS WILL BE SHIPPED LOOSE TO ALLOW PLACEMENT OF THE FASTENERS AS REQUIRED. CONSULT UPF ENGINEERING FOR DETAILS .

UPF DOES NOT SUPPLY PIPING OR FITTINGS

SUGGESTED PIPING INTERFACE FOR TANK FILLS

FIGURE 17



- DIRECT TANK FILL UP TO 3" VALVE
- VALVE SUPPORT REQUIRED

THIS ARRANGEMENT IS USED WHEN TANK FILLS ARE RIGIDLY PIPED TO THE TANK AND THE DISTANCE FROM THE VALVE TO THE TANK IS GREATER THAN 2". A SUPPORT IS REQUIRED AS CLOSE TO THE VALVE AS POSSIBLE. IT IS ALSO RECOMMENDED THAT THE PIPE BE CLAMPED TO KEEP IT FROM TURNING. AN ADAPTER NIPPLE GROOVE X NPT IS REQUIRED AT THE TANK SIDE.

UPF DOES NOT SUPPLY PIPING OR FITTINGS

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3.5.2.1 THREADED TANK CONNECTION:

UNDER NO CIRCUMSTANCES SHOULD RIGID PIPING CONNECTIONS BE MADE BETWEEN THE TANK AND ANOTHER COMPONENT !

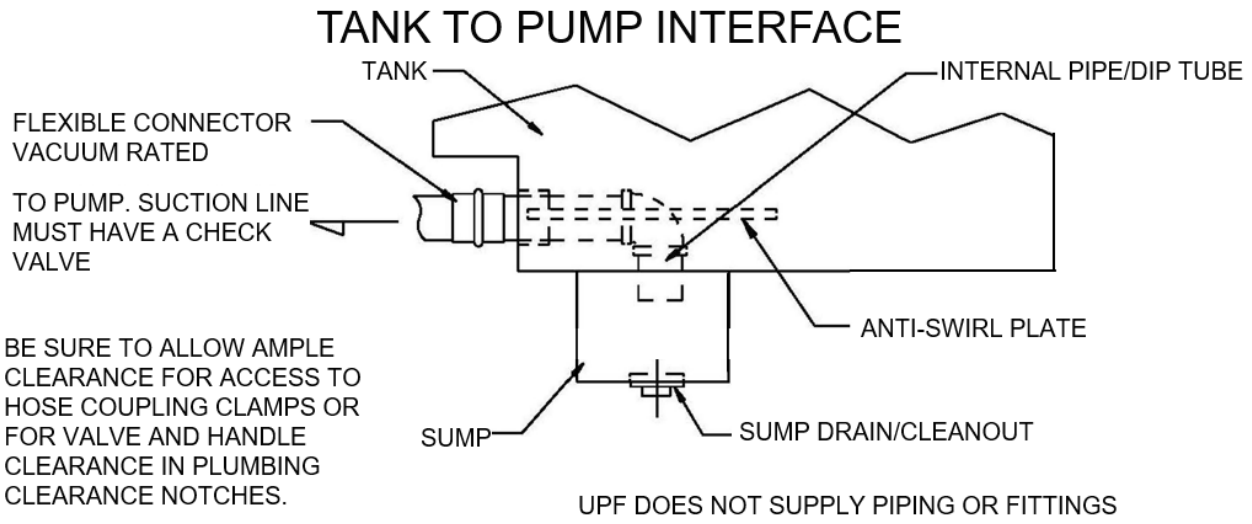
IMPORTANT: UNLIKE THREADING TWO METALLIC PIPE FITTINGS TOGETHER, THE TORQUE REQUIRE TO INSTALL FITTINGS INTO THE PLASTIC THREADED FITTING OF THE TANK IS MUCH LESS. ONE WILL NOT FEEL THE RESISTANCE OF THE THREADS WHILE TIGHTENING. BE SURE TO MONITOR THE DISTANCE OF THE PIPE THREADS THAT HAVE ENGAGED THE TANK FITTING. THE CHART BELOW LISTS AN APPROXIMATE THREAD ENGAGEMENT INTO THE TANK FITTING FOR A TIGHT JOINT.

PIPE TRADE SIZE	THREAD ENGAGEMENT	PIPE TRADE SIZE	THREAD ENGAGEMENT
1/4"	3/8"	1-1/2"	11/16"
3/8"	3/8"	2"	3/4"
1/2"	1/2"	2-1/2"	15/16"
3/4"	9/16"	3"	1"
1"	11/16"	4"	1 1/8"
1-1/4"	11/16"	5"	1 1/4"
		6"	1 5/16"

3.5.3 TANK TO PUMP PLUMBING:

It is mandatory that a check valve be located in the tank to pump line to prevent accidental backfilling when a net positive suction pressure exists. Providing the ability to back fill through the tank to pump line will result in damage to the anti-swirl/vortex plate and negatively impact the tank performance. Refer to the latest edition of NFPA1901/1900.

In all cases the piping system needs to be designed so as not to transmit the entire weight of the external piping to the tank connection. A rigid pipe connection to the tank must be avoided to allow independent movement of the tank and isolation from pump vibration. The final connection near the tank needs to be flexible to avoid tank fitting damage. See the Figure below.



3.5.4 INSTALLING AN EXISTING NEWTON DUMP VALVE ON A NEW POLY-TANK® III:

When re-mounting Newton dump valves originally mounted on a steel, aluminum, or stainless steel tank, the following will be encountered when installing the valve to the new POLY-TANK®.

1. The mounting flange on the POLY-TANK® is much thicker than what is found on a metal tank. The original hardware will be too short for the new installation, so new hardware must be ordered. This is available through AH Stock Mfg. by specifying their part number 101027-2.00A or purchasing from UPF specifying part number 213-0007-000. When ordering the replacement tank, specify that you are remounting a Newton valve and a drawing kit number 824-0007 will be included. Be sure to specify how many kits will be required on multiple valve arrangements. (The gasket is not included. To order a new gasket, contact AH Stock. Their part number 101029B)

2. The rubber seal on the plunger may hit the inside of the square hole in the dump block and not seal properly. This rubber must be trimmed just enough to allow the rubber seal to enter the square hole in the block. Be sure to cut an equal amount of rubber material off each side to keep it centered in the valve. Do not over cut the rubber! It is recommended that the trimming be done with the rubber seal removed from the valve. **THE FOLLOWING STEPS SHOULD BE TAKEN WHEN INSTALLING THE NEWTON DUMP VALVE**:

    1. Be sure the face of the dump valve flange, tank and gasket are free of dirt, weld spatter, or other flaws and is dry. Check the gasket to be sure it is in satisfactory condition.

    2. Install the ⅜” sealing washers on the bolt strips with the rubber side facing away from the bolt head towards the tank.

    3. Insert the four bolt strips from the inside of the tank so that the threaded end of bolt is protruding outside of the tank.

    4. Install the gasket over the bolts. Be sure that the gasket is tight against the tank and that the bolt strips are pulled through as far as possible.

    5. Position the dump valve over the bolts and install the flat washer, lock washer, and then the nut, in each upper corner of the valve flange.

    6. Install the remaining washers and nuts. Torque all nuts to 45-60 in-lbs. (4-5 ft-lbs.) Tighten in an alternating staggered sequence until all are tight. Then re-torque the first four nuts.

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3.5.5 INSTALLING A NEW NEWTON VALVE ON A NEW POLY-TANK®:

To ensure the proper hardware is received with the Newton Valve, always specify that the valve will be mounted to a UPF POLY-TANK®. AH Stock Mfg. will supply all necessary hardware and a gasket. The valve bolt strips must have 2" long hardware. The following steps should be taken when installing the Newton dump valve:

1. Be sure the face of dump valve, tank, and gasket are free of dirt, weld spatter, or other flaws, and are dry. Check the gasket to be sure that it is in satisfactory condition.

2. Install the ⅜ sealing washers on the bolt strips with the rubber side facing away from the bolt head towards the tank.

3. Insert the four bolt strips from the inside of the tank so that the threaded end of the bolt is protruding outside of the tank.

4. Install the gasket over the bolts. Be sure that the gasket is tight against the tank and that the bolt strips are pulled thru as far as possible.

5. Position the dump valve over the bolts and install the flat washer, lock washer, and then the nut in each upper corner of the valve flange.

6. Install the remaining washers and nuts. Torque all nuts to 45-60 in/lbs. (4-5 ft. /Lbs.) Tighten in an alternating staggered sequence until all are tight. Then re-torque the first four nuts.

CAUTION: If for any reason the valve needs to be removed once the nuts are tightened, it is recommended that a thread lubricant be used on the bolt threads prior to removal of the nuts. Also, the ⅜ sealing washers should be replaced. They are designed for a one-time installation, and may not provide a sufficient seal if reused. These washers are available thru AH Stock. See Figure 18.

Large square or round dump valves attached directly to a dump valve flange (provided for that purpose) do not require additional support. However, if a fixed extension (excluding retractable extensions) is to be installed permanently, additional valve/chute support is required. All dump valve hardware must be fastened to the tank or truck chassis. Never mount any dump valve associated components to the body. Contact UPF Engineering for approval of dump valve support arrangements at 1-800-USA-POLY. See Figure 19.

Any questions pertaining to the installation of this valve should be directed to UPF's Product Support Department at 1-800-USA-POLY.

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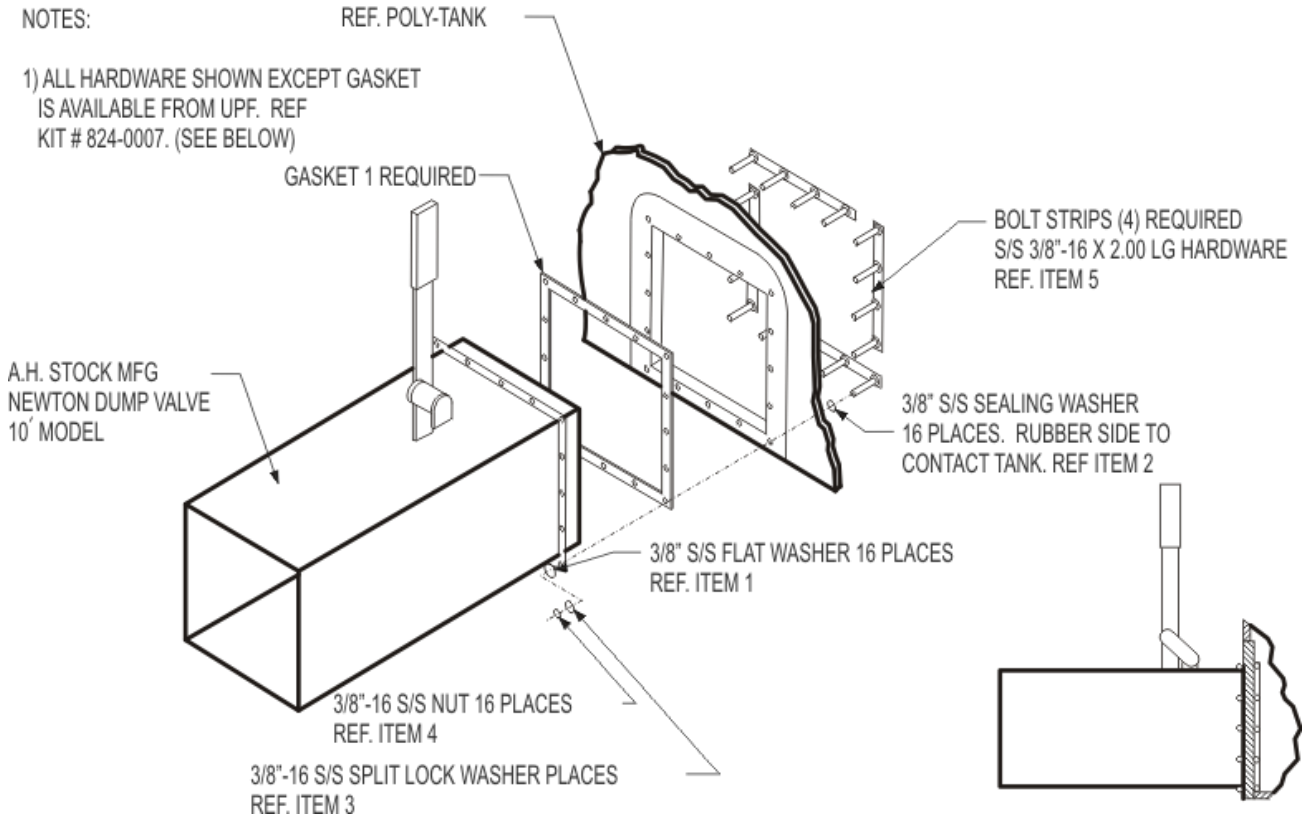
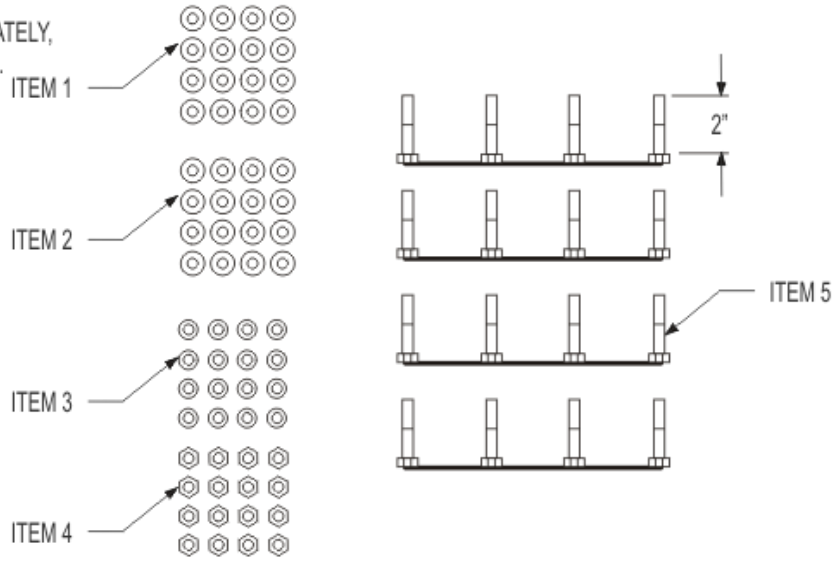
NEWTON DUMP INSTALLATION DIAGRAM

FIGURE 18



THESE PARTS SHOWN ARE CONTAINED IN KIT #824-0007 AND ARE ALSO AVAILABLE SEPARATELY. WHEN ORDERING SEPARATELY, INDICATE QUANTITY AND PART NUMBER.



ITEM	QTY	PART NUMBER	DESCRIPTION
5	4	200-0023-001	BOLT STRIP - STAINLESS, 3/8 X 2" BOLTS
4	16	200-0001-003	3/8-16 STO HEX NUT - STAIN. STEEL
3	16	200-0004-004	3/8 SPLIT LOCK WASHER - STAIN. STEEL
2	16	200-0022-004	3/8 SEALING WASHER - STAIN. STEEL
1	16	200-0003-004	3/8 FLAT WASHER - STAIN. STEEL

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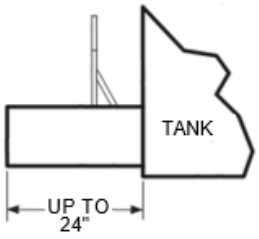
POLY-TANK® Installation Guidelines

DUMP VALVE SUPPORT GUIDE

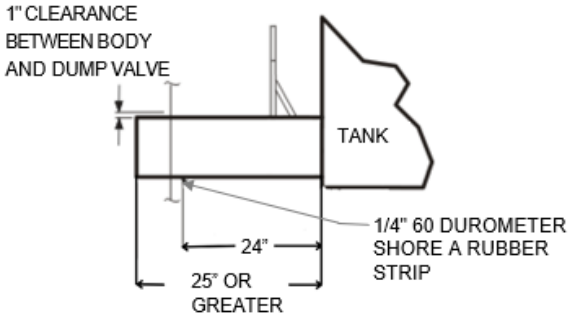
FIGURE 19



ARRANGEMENT "A"

- UP TO 12" SQUARE OR ROUND DUMP VALVE
- MAXIMUM 24" LONG FIXED CHUTE
- NO EXTERNAL VALVE SUPPORT REQUIRED

THIS ARRANGEMENT IS MOST COMMON FOR REAR TANKER DUMPS. IT IS SIMPLY THE VALVE BOLTED TO THE BACK OF THE TANK. THE NEWTON DUMP IS ATTACHED USING THE BOLT STRIPS. THIS APPLIES TO ROUND DUMPS, ANSI 150# BOLT FLANGES, OR BETTS FLANGES.



IF THE VALVE EXTENDS THRU A BODY PANEL. A MINIMUM 1" SPACE IS REQUIRED ON BOTH SIDES AND ABOVE THE EXTENSION.

ARRANGEMENT "B"

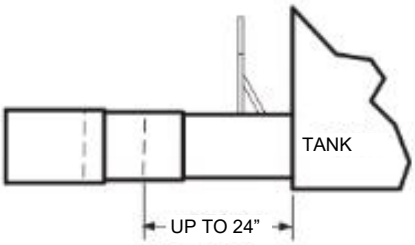
- UP TO 12" SQUARE OR ROUND DUMP VALVE
- FIXED CHUTE OVER 24" LONG.
- ISOLATED VALVE SUPPORT REQUIRED

THIS ARRANGEMENT IS COMMONLY USED ON PUMPER TANKERS WITH A STANDARD REAR BODY COMPARTMENT. THE VALVE EXTENDS THROUGH IT TO THE REAR OF THE TRUCK. IT IS ALSO USED ON SIDE DUMPS WHERE THE VALVE IS CONCEALED INSIDE OF THE BODY PANELS.

ARRANGEMENT "C"

- SQUARE OR ROUND DUMP UP 12"
- CHUTE UP TO 24" LONG WHEN RETRACTED
- NO EXTERNAL VALVE SUPPORT REQUIRED

THIS ARRANGEMENT IS COMMONLY USED ON PUMPER TANKERS WHERE THERE IS A STANDARD REAR BODY COMPARTMENT AND THE VALVE EXTENDS THROUGH IT TO THE REAR OF THE TRUCK. IT IS ALSO USED ON SIDE DUMPS WHERE THE VALVE IS CONCEALED INSIDE OF THE BODY PANEL



A MINIMUM OF 1" CLEARANCE ON ALL SIDES IS REQUIRED.
IF THE VALVE OR CHUTE EXTENDS THRU THE BODY PANEL

ALL CHUTE ACTUATORS MUST BE ATTACHED TO THE TANK AND NOT THE BODY OR FRAME

ARRANGEMENT "D"

- SQUARE OR ROUND DUMP VALVE UP 12"
- CHUTE WITH REMOVABLE EXTENSIONS
- NO EXTERNAL VALVE SUPPORT REQUIRED

THIS ARRANGEMENT IS COMMONLY USED ON TANKERS TO ELIMINATE THE NEED FOR THREE DUMP VALVES TO ACHIEVE THREE WAY DISCHARGE CAPABILITY. THE CHUTES ARE TYPICALLY REMOVEABLE AND DO NOT REQUIRE A SUPPORT UNLESS THEY BECOME PERMANENT.

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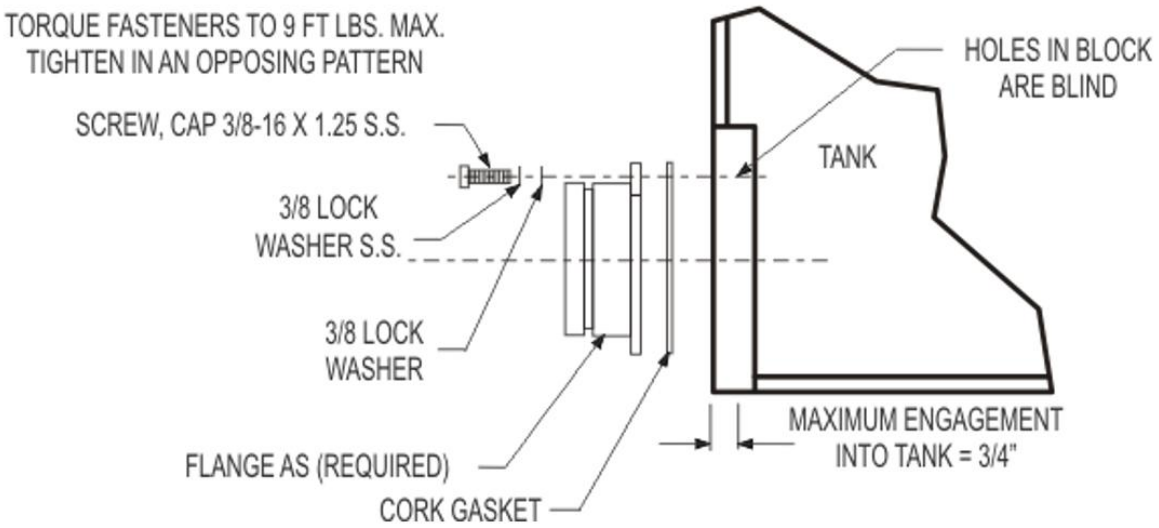
3.5.6 AVAILABLE BETTS (TTMA) FLANGES INTERFACES:

						
Size	**Material**	**Gasket (Gasket Cork/Buna N)**	**Flange x FNPT**	**Flange x MNPT**	**Flange x Groove**	**Flange x Weld Neck**
2"	STEEL	N/A / RGA201CB	N/A / FH2MS	N/A / FT2MS	N/A / FG2MS	N/A / FW2MS
	ALUMINUM		N/A / FH2AL	N/A / FT2AL	N/A / FG2AL	N/A / FW2AL
3"	STEEL	203-0006-002 / RGA301CB	N/A / FH3MS	N/A / FT3MS	N/A / FG3MS	N/A / FW3MS
	ALUMINUM		N/A / FH3AL	N/A / FT3AL	N/A / FG3AL	N/A / FW3AL
4"	STEEL	203-0006-003 / RBA401CB	N/A / FH4MS	N/A / FT4MS	N/A / FG4MS	N/A / FW4MS
	ALUMINUM		211-0003-001/FH4AL	N/A / FT4AL	N/A / FG4AL	N/A / FW4AL
5"	STEEL	203-0006-004 / RGA501CB	211-0003-005/FH5MS	N/A / FT5MS	N/A / FG5MS	N/A / FW5MS
	ALUMINUM		N/A / FH5AL	N/A / FT5AL	N/A / FG5AL	N/A / FW5AL
6"	STEEL	203-0006-006 / RGA601CB	N/A / FH6MS	211-0005-008/FT6MS	N/A / FG6MS	N/A / FW6MS
	ALUMINUM		211-0003-003/FH6AL	211-0005-005/FT6AL	N/A / FG6AL	N/A / FW6AL
8"	STEEL	203-0006-007 / RGA801CB	N/A / FH8MS	N/A / FT8MS	N/A / FG8MS	N/A / FW8MS
	ALUMINUM		N/A / FH8AL	N/A / FT8AL	N/A / FG8AL	N/A / FW8AL
		UPF Part Num/Betts Part Num. N/A = Not Available from UPF. Contact Betts Industries, Inc..				
		Betts part number listed as reference. Other options are available from Betts. Please verify.				



3.6 ACCESSORY SYSTEMS:

Mounting blocks can be provided for accessory items such as hose trays, booster reels, ladder racks, suction racks or other equipment. Provisions can be made on the top or sides of the tank for the mounting of these items in the form of threaded inserts in reinforcing blocks. These inserts have been inspected and tested prior to leaving the factory. To ensure that the insert will provide proper clamping force, the bolt length and torque value must be observed as stated in the table on Figure 20.

Warning: Fill towers are not designed to have equipment bolted to them. Hose bed partitions and other equipment should not be bolted to the fill towers without consulting UPF.

Warning: If the maximum torque values on fasteners are exceeded, the insert may be damaged. Always stay safely below the maximum retainable torque values when tightening hardware.

Warning: Never install fasteners into the cover pins on top of your tank to mount equipment. This will result in a leak.

NEVER USE PNEUMATIC IMPACT TOOLS FOR TORQUING BOLTS.

FIGURE 20

THREAD GUAGE	INSERT TYPE	MAXIMUM RETAINABLE TORQUE	DRILL SIZE	THREAD ENGAGEMENT
1/4-20	THREADED PLASTIC	14 INCH POUNDS	#7	1/2"
10-32	BRASS INSERT	13 INCH POUNDS	15/64	1/2"
1/4-20	BRASS INSERT	30 INCH POUNDS	5/16	1/2"
5/16-18	BRASS INSERT	60 INCH POUNDS	3/8	1/2"
3/8-16	BRASS INSERT	105 INCH POUNDS	15/32	1"
1/4-20	HELICOIL	14 INCH POUNDS	17/64	1/2"
5/16-18	HELICOIL	20 INCH POUNDS	21/64	1/2"
3/8-16	HELICOIL	45 INCH POUNDS	25/64	3/4"
7/16-14	HELICOIL	7 FT POUNDS	29/64	3/4"
1/2-13	HELICOIL	10 FT POUNDS	17/32	3/4"
5/8-11	HELICOIL	20 FT POUNDS	21/32	1"
3/4-10	HELICOIL	60 FT POUNDS	25/32	1 1/8"

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3.7 BOLT-ON TOWERS:

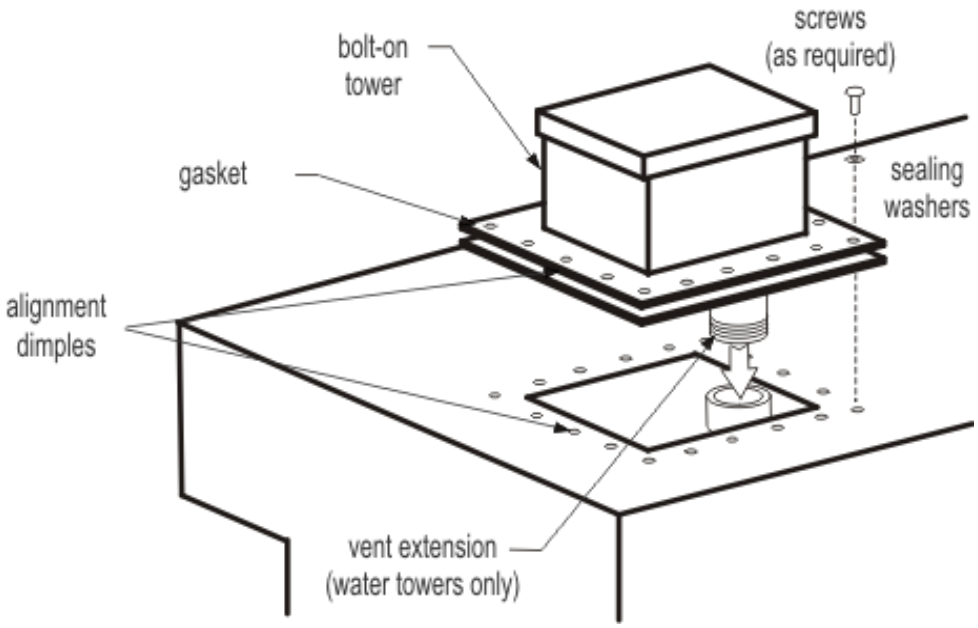
Some tanks are shipped with bolt-on fill towers. This is done to reduce shipping costs and to prevent damage to taller towers. Additionally, foam cells may have bolt-on towers to allow access into the foam cell for cleaning should it be necessary. Bolt-on water towers will also include a vent pipe extension.

If your tank arrived with a bolt-on tower, you will need to attach the tower. The tower will be shipped with a gasket and all the necessary hardware to attach the tower. Water towers will include the threaded vent extension and foam towers will include the fill tube. On water towers, the vent extension should be installed first.

Teflon tape is not required on the vent extension threads. On foam towers, install the tower first and then insert the fill tube. Bolt-on fill towers will be marked with an alignment dimple on the tower flange, which matches a second alignment dimple on the tank cover (See Figure 21). The Tower bolts should be installed and uniformly torqued in an alternating sequence. If 1/4 – 20 x 1 1/4 long S.S. hex cap screw are provided, and brass threaded inserts are present, torque to 30 In-Lbs. If hex cap #14 X 1 1/8 SS HI-LO screws are provided, torque to 14 In-Lbs. Re-torquing the fasteners will be required due to gasket compression.

Note: All hose bed flooring must be held at least 1" away from bolt-on towers. Fire hose may not be packed against either foam or water fill towers. Doing so may result in damage to the towers or the gasket seal under the tower.

FIGURE 21



3.8 RETRO FILL INSTALLATION:

After your tank has been placed into service, additional filling provisions can be added in the form of a retro-fill or suction. Retro-fills and suctions are bolt on tank provisions which utilize a five inch Betts TTMA flange pattern to attach an NPT interface to the tank. If necessary, the coupling can be adapted to a smaller size using a bushing. If you need a Retro-fill or suction, contact UPF at 1-800-USA-POLY and ask for your sales representative. To install a retro-fill or suction, follow the instructions shown below or on UPF drawing 980-0018. If you prefer to have UPF perform the work, please submit a product support request through the UPF field service portal at https://www.unitedplastic.com/contact/product-support/.

1. Drain the tank completely.

2. Determine the proper location for the retro-fill and mark the tank at the fitting center point. The fill must be located in a position that will not interfere with the internal tank supports and allow adequate water flow into the tank. Please call UPF at 1-800-USA-POLY or submit a technical support request through the portal at https://www.unitedplastic.com/contact/product-support/ to determine the correct location.

3. Cut a 5 1/2" diameter hole into the tank at this location using a hole saw or saber saw. Be sure plastic cuttings do not enter the tank.

4. Position the Retro fill into the tank with the diffuser on the inside. Be sure the 7 ¾" flange is sitting flat against the tank wall. The diffuser has an area with no holes. This generally should be position toward the top of the tank or areas such as level gauges or tank to pump connections. This helps to limit the flow of water to features that may be negatively impacted by the diffused water stream.

5. Using the flange as a template, mark the tank for the twelve (12) $^{5}/_{16}$" holes to be drilled. Be careful not to let the flange move during this operation to ensure proper alignment of the holes. Add match marks to the flange and tank wall to indicate the position prior to drilling. This is to ensure that the flange is installed on the tank in the same orientation. Drill the twelve (12) $^{5}/_{16}$" thru holes. Do not allow any plastic turnings to enter the tank.

6. Install the ¼-20 brass threaded inserts into the holes. The installation of the inserts is easily done using a ¼-20 hex head bolt with a ¼" flat washer as shown in Figure 22. Thread the bolt into the insert and tighten snugly by hand. Using a ratchet, start the insert into a $^{5}/_{16}$" hole. Apply slight pressure inward and turn the insert clockwise. **Note: Be sure to keep the insert perpendicular to the surface as you install it.**

7. Thread the insert into the plastic so the flat washer seats against the tank. This will position the end of the insert flush with the tank. Now reverse the ratchet and unscrew the bolt leaving the insert installed in the tank wall. If the insert begins to back out of the tank wall with the screw, reseat the insert and snap the ratchet back in the reverse direction to unseat the washer from the insert. Repeat for all remaining inserts. Once all inserts have been installed, check the surface to be sure it is free from chips or burrs.

8. Install the sealing washers on the ¼-20 hex head bolts making sure the steel side of the washer are toward the head of the bolt.

9. Insert the first bolt through the top hole of the flange. Slide the gasket on to the bolt. Carefully insert the retro-fill into the tank and press gently to seat the flange. Start the top bolt into the insert and hand tighten. Install the remaining bolts and hand-tighten each. Torque each bolt in an alternating sequence to 20 inch-pounds. Re-torquing the bolts will be required due to gasket compression. See Figure 22.

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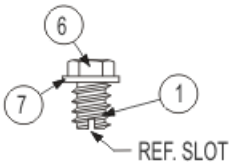
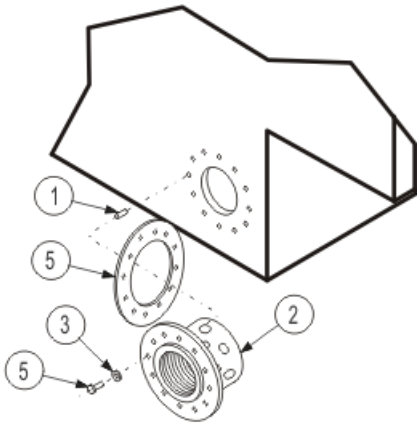
FIGURE 22



ITEM	QUANTITY	DESCRIPTION
1	12	1/4-20 BRASS INSERT
2	1	RETRO-FILL
3	12	1/4" SEALING WASHER
4	12	1/4-20 X 1 1/4" HEX HEAD BOLT
5	1	BETTS GASKET
6	1	1/4-20 X ½" HEX HEAD BOLT
7	1	1/4 HEAVY DUTY FLAT WASHER



3.9 POLY-TANK® DO'S AND DON'TS:

- Care should always be exercised when constructing or repairing a vehicle with a POLY-TANK®. If flame cutting, plasma cutting, soldering, or welding operations are to be performed in close proximity to the tank, precautions should be taken to protect the tank. Auto ignition will occur at temperatures greater than 340°C (644°F) and a flash point of 260°C (500°F) if exposed to an open flame. Consult the Safety Data Sheets for flammability information. SDS can be obtained by contacting UPF Engineering at 1-800-USA-POLY or through the portal at https://www.unitedplastic.com/contact/product-support/ .
- The sump and swirl plate on all tanks are engineered to provide superior performance while drafting through the tank suction line. Never back fill the tank through the tank suction line, **serious internal damage could result!** It is mandatory that a check valve be located in the tank to pump line to prevent accidental backfilling when net positive suction pressure exists. Refer to the latest edition of NFPA1901/1900.
- Run rubber isolator strips beyond the ends of the tank. Do not stop short of tank walls.
- Be sure that rubber isolator strips are all at the same height on all support members so that contact on the bottom of the tank is even.
- Never attach the isolator rubber to the subframe with rivets or screws as these can damage the tank. Always use a rubber adhesive or RTV.
- Care should be taken when drilling into a body panel which is close to the water tank such as high side compartment back walls. Be sure drill will not reach to the tank wall once it has gone through the body. Use extreme caution when nearing the through point of the hole.
- Never use air or electric powered tools to tighten fasteners into any inserts or threaded holes on the tank.
- Be sure there is adequate clearance between the tank and the end of the fastener when installing hardware, such as a bolt or rivet, into a body. A minimum 1 inch is recommended between the end of the fastener and the tank. This gives an adequate clearance should the tank shift.
- When cutting any hole in the tank, do not let debris fall in the tank. If there are any installation questions or concerns encountered when installing a POLY-TANK®, do not hesitate to call UPF for immediate assistance to ensure a proper trouble-free installation.

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- The unobstructed operation of the water fill tower lid provides a means of secondary venting and is a requirement of NFPA. Do not modify or add fasteners to this fill tower lid and use only UPF fill tower lid replacement parts. Any alterations to the design or operation of this fill tower could result in over pressurization causing product damage. This will void the tank warranty.

Do Not Assume – Be Certain.

4. PAINTING YOUR POLY-TANK®

Material used in the construction of UPF tanks can be painted using a paint system designed for the use on polypropylene. The standard black smooth surface finish should be specified to minimize surface prep and provide a high-quality surface finish.

All polypropylene resins are low surface energy materials that make traditional paint systems ineffective. UPF has verified availability of approved processes from multiple major paint manufacturers that will provide a durable satisfactory result.

Unlike typical preparation for painting steel or aluminum, the polypropylene has release agents on the surfaces that are part of the sheet manufacturing process. It is very important that these release agents be completely removed. The plastic also can become charged with static electricity causing issues with dust attraction during the paint process. For further information beyond what is contained in the sample paint instructions found here, contact your local authorized paint supplier.

5. WARRANTY AND CUSTOMER SERVICE TOPICS:

United Plastic Fabricating, Inc. is the manufacturer of the water tank. The truck and any external items are not UPF components. Although there is a warranty on our products, it is up to the customer to keep the product in good working order and reduce the possibility of a tank failure. There are several things that can be done to assist in ensuring a long tank life. Always ensure that the tank mounts are properly in place and follow the Operations and Maintenance Instructions found here or on our website WWW.unitedplastic.com.

5.1 CUSTOMER CHANGES AFTER THE TANK IS BUILT:

All UPF POLY-TANK® are custom built to order. An approval print is sent to the customer for signature prior to the tank being built. Approval drawings should be reviewed carefully to ensure a trouble-free installation, performance, and product longevity. Please don't hesitate to contact the UPF Engineering Department with any questions you may have prior to approving the design. Should after the fact changes be necessary, tank modifications can be made which will result in billable work, and may negatively affect warranty coverage.

5.2 DRILLING HOLES IN THE TANK:

If there is a need to drill a hole in the tank, such as installing or relocate a level gauge, care needs to be taken to protect the integrity of the tank. It is best to contact United Plastic Fabricating at 1-800-USA-POLY or submit a ticket through the Product Support portal at https://www.unitedplastic.com/contact/product-support/ in order to review the modification prior to the performing the work. This will help ensure there will be no interference with internal parts of the tank. Should changes be made without any guidance from UPF that results in damage to the tank, the repair will be billable to the customer as a service job.

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5.3 EXTERNAL PLUMBING:

External plumbing connected to the POLY-TANK® is not supplied by UPF and typically not serviceable by UPF. Questions related to external plumbing should be directed to those that provided the components and installation instructions. This would include water pumps and foam systems.

5.4 INTERNATIONAL CUSTOMERS:

The UPF Warranty does extend outside the continental U.S. with some exceptions. UPF will pay for the cost of the airline travel to the closest U.S. Point of embarkation. The customer will be responsible for the remainder of the airfare to the final tank location. The technician travel and living expenses will remain the responsible of UPF once they arrive in country. If the work being requested is service work, all costs will be assigned to the customer based on the plant location from which the technician is dispatched. In the event the tank is located in an area where unsafe conditions exist for United States Nationals, UPF reserves the right to refuse to honor such requests. Travel safety will be determined based upon conditions reported by the United States Department of State (http://www.state.gov). In such situations, it will be the responsibility of the customer or OEM, to relocate the tank to an area where repairs can be safely performed. UPF will make every reasonable effort to support our products though alternative means.

5.5 OUT OF SERVICE AND REPAIRS:

A tank is considered “Out of Service” by UPF if it will not hold water. If this is the case, a technician will be dispatched to the location for arrival as noted in our warranty. Nuisance leaks on the cover and top of the tank do not force a tank to be considered out of service. Should a customer take a truck out of service due to a less severe problem than a tank failure to hold water, UPF is not responsible for dispatching a technician to arrive on an expedited basis. The repair will be scheduled within the time-frame established by the Field Service Department. UPF will work with the customer to determine when the repair will be completed. Should a customer need a repair made, they can call 1-800-USA-POLY for assistance or submit a product support ticket on the UPF website. A link to the site can be found here.

When a technician is dispatched, there needs to be some preparatory work done before they arrive to repair the tank. If the situation is a cover leak, the top of the tank is to be made accessible to allow repair of the covers or to access the tank internally. Should the tank need to be removed from the truck for a complete repair, as in the case of a floor leak, UPF will reimburse the reasonable cost of tank removal and installation. Prior approval is required by UPF before any work is performed if reimbursement will be sought.

5.6 THIRD PARTY REPAIRS:

Occasionally UPF will use a third party to repair a tank on our behalf. Should this be the case, UPF will work with both the third party and the customer to complete the repair. UPF will not perform third party repairs on other manufacturers’ tanks without written authorization. If the manufacturer is no longer in business, UPF will perform repairs as service work. Repair on other manufacturers’ tanks will be warranted for a period of one year on just the work in which UPF performed. UPF shall not be responsible for repairs of future failures if such failures are attributable design defects, defective materials, or user abuse.

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5.7 USING THE DUMP VALVE AS A STEPPING SURFACE:

UPF strongly recommends that provisions be made to provide access to the top of the tank in order to prevent damage to the tank rear wall. This prevent the dump valve from being used as a stepping surface. Clearly marking the dump valve body as “No Step” will help with preventing such use. UPF Engineering can assist the truck builder with designing appropriate stepping surfaces in some situations. Should dump valve blocks become damaged as a result of being used as a step, the repair will not be covered under the UPF limited lifetime warranty.

5.8 TIGHTENING/REPLACING BOLTS & HELICOILS:

The customer should take the time to ensure that they are using the correct torque when tightening fasteners as well as the correct bolt lengths. Recommended torque values can be found in section 3.6 ACCESSORY SYSTEMS. Should the thread interface on the tank become damaged due to over-tightening, or the use of incorrect fasteners, the repair will be not be covered under the UPF limited lifetime warranty.

5.9 UV DAMAGE:

The POLY-TANK® is susceptible to damage from long term exposure to UV radiation from sunlight. Should the need exist to store your tank outside for more than 30 days, where it will be exposed to direct sunlight and or high heat, it must be protected. Keep the tank covered or protected in areas with either continuous sun exposure and or extreme temperature fluctuations. Both of these situations put additional stress on welds in various parts of the tank. UV damage presents itself with a white chalky appearance on the material and results in permanent damaged to the welds. Constant expanding and contracting of the plastic due to extreme temperature fluctuation can cause welds to crack or weaken. Painting or coating the tank with a product like LINE-X® and Rhino Linings® will provide a more permanent solution in preventing UV damage. Covering the tank with a reflective tarp provides a temporary solution in limiting UV damage.

Fill tower lids that fail or separate due to normal wear and tear are covered under warranty. This excludes damage due to wind or accidents. Lid failure due to UV damage under any circumstance is not covered under the UPF limited lifetime warranty.

5.10 ROUTINE MAINTENANCE & SERVICE:

Both the POLY-TANK® booster/foam tanks and the Defender series skid units are designed to be completely maintenance free throughout their service life. None of the polypropylene components should ever require routine maintenance. Always exercise care when removing or reinstalling bolt-on accessories. Over-tightening can damage the threaded inserts in the plastic. Should your POLY-TANK® or Defender ever require service, please contact United Plastic Fabricating, Inc. at 1-800-USA-POLY or through the portal at https://www.unitedplastic.com/contact/product-support/
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5.11 WARRANTY EXCLUSIONS:

Products must be stored, handled, installed, used and maintained in accordance with instructions provided by Company, and this Warranty is conditioned upon compliance with all such instructions. This Warranty does not cover defects caused by: (a) improper installation; (b) modification, alteration or repair of the Product by any unauthorized third-party; (c) misuse, including, without limitation, improper storage or handling of the Product (e.g. excessive exposure to UV rays); chemical abuse (e.g. harsh cleansers and solvents), thermal abuse or shock (e.g. excessive heat or cold); (d) damage not resulting from manufacturing defects that occur while the Product is not in Company's possession (e.g. accidents); or (e) unreasonable or unintended use of the Product. Copies of the Company's operation and maintenance instructions are available on the Company's website https://www.unitedplastic.com/upf-documents/

6. STATEMENT OF LIABILITY:

United Plastic Fabricating, Inc. manufactures a complete line of plastic fabricated components. Each component is designed to be of the highest quality. It is the apparatus builder's responsibility to ensure proper mounting of these components in accordance with all applicable state, federal, local, NFPA, SAE, ANSI and DOT regulations and guidelines, as well as to ensure the integrity of all structural components. Since this document and suggested configurations are not designed as standards, the apparatus builder must confirm the chassis capacity and the structural integrity.

Limitation of Liability. No claim by owner of any kind, including claims for indemnification, shall be greater in amount than the purchase price of the product in respect to which damages are claimed. In no event shall company be liable to owner in tort, contract or otherwise, for any special, indirect, incidental, consequential (including, without limitation, any obligation of company to repair or replace any chassis, sub-frames, bodies, valves, dumps, hoses, pressure vacuum vents or other similar components), reliance, statutory, special, punitive or exemplary damages, including, but not limited to, lost profits, loss of use, loss of time, loss of revenues, inconvenience, loss business opportunities, or damage to good will or reputation, even if advised of the possibility of such damages or such damages could have been reasonably foreseen, in connection with, arising out of, or as a result of, the sale, delivery, servicing, use or loss of use of the products sold hereunder, or for any liability of buyer to any third party with respect thereto.

7. CONCLUSION:

If you require specific information about the use or mounting of your tank, please contact UPF Engineering at 1-800-USA-POLY. Product manuals for all UPF products are available and may be obtained by calling UPF at 1-800-USA-POLY, or by visiting our website at www.unitedplastic.com.

8. DISCLAIMER:

This manual is the exclusive property of United Plastic Fabricating, Inc. and may not be duplicated in any way without the expressed written consent of United Plastic Fabricating, Inc. The information contained herein may not be incorporated into any commercial programs, books, databases, or any kind of software without the written consent of United Plastic Fabricating, Inc. Making copies of this manual, or any portion for any purpose other than your own use, is a violation of United States copyright laws.

Addendum

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UPF LIMITED LIFETIME WARRANTY

UNITED PLASTIC FABRICATING
Limited Lifetime Warranty
Effective as of January 1, 2024

1. General. United Plastic Fabricating, Inc. (the "Company") warrants to the owner (the "Owner") that the products set forth on Exhibit A, attached hereto (the "Product") will be reasonably free from defects in materials and workmanship for the service life of the Product. This Limited Lifetime Warranty (the "Warranty") only applies to Company Products that are: (a) owned by a federal, state, county or local government, a volunteer fire department or dedicated commercial fire service operation; (b) continuously and actively used in emergency response and/or fire suppression vehicles; and (c) used, stored, handled and installed in the manner recommended by Company.

2. Warranty Obligations. Subject to the exclusions and limitations set forth in this Warranty, Company will, at its option, repair or offer a one (1) time replacement of the Product without charge, if the Product fails or does not perform as warranted during the warranty period due to a manufacturing defect or a defect in materials. Repair or replacement shall include reasonable labor charges necessary to repair or replace the defective Product but shall not include: (a) the costs associated with removal of the Product from the vehicle or the cost to otherwise provide access to the Product in the vehicle; (b) the cost associated with any required upgrades the vehicle (including, without limitation, upgrades required to strengthen the vehicle's frame); or (c) travel costs, except as provided by Section 3. Company's obligation as to repair or replacement shall further be limited to repair or replacement with the models of the Product that are available at the time of the repair or replacement, and shall be limited to the repair or replacement of only the specific Product that fails due to a manufacturing defect. In the event a Product becomes unavailable or cannot be supplied by Company for any reason a substitute Product of equal quality and functionality of the subject Product may be substituted by Company. Any repaired Product shall remain subject to this Warranty and any repair shall not extend the warranty period in any manner or start a new warranty period. Any Product that is replaced by Company shall be excluded from this Warranty. In no event shall Company be required to expend, in any one (1) or series of expenditures, more than the purchase price of the Product to repair or replace a defective Product. Amounts expended by Company shall include all amounts paid by Company in connection the repair or replacement, including without limitation, amounts paid to third-parties, material costs, incidental costs and travel costs (except as provided by Section 3).

3. Travel; Expenses; Product Access. Company shall be responsible for any travel costs incurred to repair or replace the Product provided that: (a) the Product is located in the continental United States or Canada; and (ii) the warranty claim is initiated prior to the date on which NFPA 1912 Standards (Annex D) recommends replacement of the Product. All other travel costs incurred by Company or its agents to repair or replace the Product shall be the responsibility of the party asserting the warranty claim. Company reserves the right to require, as a condition to undertaking any repair or replacement: (y) pre-payment of its anticipated travel costs; and (z) satisfactory arraignments concerning scheduling and access to the Product. If the subject Product is located in an area of the world considered, in Company's sole discretion, to be unsafe Company may refuse to process the claim or require relocation of the Product, at no expense to Company, to an area where such repairs can be performed safely by Company or its agents. In the event Company or Company's agents are dispatched to repair or replace a defective Product and the vehicle in which the Product has been installed is not available or the Product is not readily accessible, for any reason, Company or Company's agents, as the case may be, shall be immediately reimbursed for all expenses incurred therewith.

4. Exclusions: Products must be stored, handled, installed, used and maintained in accordance with instructions provided by Company, and this Warranty is conditioned upon compliance with all such instructions. This Warranty does not cover defects caused by: (a) improper installation; (b) modification, alteration or repair of the Product by any unauthorized third-party; (c) misuse, including, without limitation, improper

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storage or handling of the Product (e.g. excessive exposure to UV rays); chemical abuse (e.g. harsh cleansers and solvents), thermal abuse or shock (e.g. excessive heat or cold); (d) damage not resulting from manufacturing defects that occur while the Product is not in Company's possession (e.g. accidents); or (e) unreasonable or unintended use of the Product. Copies of the Company's operation and maintenance instructions are available on the Company's website https://www.unitedplastic.com/upf-documents/

5. Disclaimer. THE WARRANTIES SET FORTH HEREIN ARE THE ONLY WARRANTIES MADE BY COMPANY IN CONNECTION WITH THE PRODUCT. COMPANY CAN NOT AND DOES NOT MAKE ANY IMPLIED OR EXPRESS WARRANTIES WITH RESPECT TO THE PRODUCT, AND DISCLAIMS ALL OTHER WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. PRODUCTS SOLD BY COMPANY ARE SOLD ONLY TO THE SPECIFICATIONS SPECIFICALLY SET FORTH BY COMPANY IN WRITING. OTHER THAN THE LIMITED WARRANTY SET FORTH HEREIN, COMPANY MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED. COMPANY'S SOLE OBLIGATION UNDER THIS WARRANTY SHALL BE REPAIR OR REPLACEMENT OF NON-CONFORMING PRODUCT. BUYER ASSUMES ALL RISK WHATSOEVER AS TO THE RESULT OF THE USE OF THE PRODUCT PURCHASED, WHETHER USED SINGULARLY OR IN COMBINATION WITH ANY OTHER PRODUCTS OR SUBSTANCES.

6. Limitation of Liability. NO CLAIM BY OWNER OF ANY KIND, INCLUDING CLAIMS FOR INDEMNIFICATION, SHALL BE GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT IN RESPECT TO WHICH DAMAGES ARE CLAIMED. IN NO EVENT SHALL COMPANY BE LIABLE TO OWNER IN TORT, CONTRACT OR OTHERWISE, FOR ANY SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL (INCLUDING, WITHOUT LIMITATION, ANY OBLIGATION OF COMPANY TO REPAIR OR REPLACE ANY CHASSIS, SUB-FRAMES, BODIES, VALVES, DUMPS, HOSES, PRESSURE VACUUM VENTS OR OTHER SIMILAR COMPONENTS), RELIANCE, STATUTORY, SPECIAL, PUNITIVE OR EXEMPLARY DAMAGES, INCLUDING, BUT NOT LIMITED TO, LOST PROFITS, LOSS OF USE, LOSS OF TIME, LOSS OF REVENUES, INCONVENIENCE, LOSS BUSINESS OPPORTUNITIES, OR DAMAGE TO GOOD WILL OR REPUTATION, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR SUCH DAMAGES COULD HAVE BEEN REASONABLY FORESEEN, IN CONNECTION WITH, ARISING OUT OF, OR AS A RESULT OF, THE SALE, DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS SOLD HEREUNDER, OR FOR ANY LIABILITY OF BUYER TO ANY THIRD PARTY WITH RESPECT THERETO.

7. Reformation. If any term or provision of this Warranty shall be held or deemed to be, or shall in fact be, invalid, inoperative, illegal or unenforceable as applied in any case or in any jurisdiction or jurisdictions because of the conflicting nature of any provision with any constitution or statute or rule of public policy or for any other reason, then: (a) such circumstance shall not have the effect of rendering the provision or provisions in question invalid, inoperative, illegal or unenforceable in any other jurisdiction or in any other case or circumstance or of rendering any other provision or provisions herein contained invalid, inoperative, illegal or unenforceable to the extent that such other provisions are not themselves actually in conflict with such constitution, statute or rule of public policy; and (b) any such invalid, inoperative, illegal or unenforceable provision shall be reformed and construed in any such jurisdiction or case so that such provision would be valid, operative and enforceable to the maximum extent permitted in such jurisdiction or case.

8. Headings. The headings contained herein are for convenience and reference only, and shall be given no effect in the interpretation of any term or condition of this Warranty.

9. Submitting a Warranty Claim. To request coverage under this Warranty you must submit a claim through Company's_website:
https://www.unitedplastic.com/contact/product-support/

10. Transferability. This Warranty is transferable and entitles the transferee to coverage for the remainder of the original warranty period.

11. Modification. This Warranty may be modified (a) as set forth on a binding sales order for the Product or (b) by a written agreement between Company and the Owner.

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Exhibit A

Covered Product List

- Poly-Tanks®
- PolySide® Wetside Tanks
- Defender™ Skid Tanks
- Ellip-T™ Elliptical Tanks
- ARFF Tanks

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NOTES:

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VEHICLE INFORMATION:

MANUFACTURER: _____

YEAR BUILT: _____

PUMP: _____

TANK: _____