



OWNER'S MANUAL



STAINLESS STEEL LIQUID TANKS

WARRANTY

1. The manufacturer guarantees its products against any defects in materials or workmanship for a period of twelve (12) months from the date of purchase, provided that the said products are set up according to its instructions and recommendations and also that the said products are operated and used in proper conditions and according to its instructions and recommendations.
2. The manufacturer's responsibility and obligations under this warranty shall be limited to replacement of parts and shall not extend to parts, equipment or accessories that are component parts of the manufacturer's products but that are manufactured by other manufacturers. Those manufacturers' warranty will apply to such parts, equipment or accessories. Any parts set up by reason of the application of this warranty shall be amenable to the terms of this warranty except that the period of twelve (12) months applicable to such parts shall be peremptory and that upon termination of the said period, warranty shall be null and void, for any purpose whatsoever with respect to the said parts substituted to it before the termination of the said period of twelve (12) months.
3. This warranty shall not extend to loss and damage to content of the products, neither to property or loss of revenue. Moreover, it shall not extend to bodily injuries, including death, sustained by any person or animal.
4. The purchaser shall give notice to the manufacturer, without delay, of any damage or defects to its products that he may ascertain before they are set up, otherwise this warranty will not apply to such damage or defects.
5. Any modification or incorporation whatsoever made to products, except those authorized or recommended by the manufacturer, shall void this warranty; this warranty shall not apply to damages resulting from improper installation or erection of products by purchaser.
6. This warranty is the sole and only warranty and it is in lieu of any other warranty, express or implied, statutory or not.
7. Any claim under this warranty shall be notified in writing to the manufacturer's head office within thirty (30) days from the failure.

Specifications and descriptions are subject to change without notice.

Register your product at: www.meridianmfg.com
For warranty information send an email to: warranty@meridianmfg.com

WARRANTY CLAIM PROCEDURE

- Should you find any factory defects, please advise your dealer immediately.
- The dealer will supply you, the customer, with a warranty claim form and/or direct you to Meridian's customer service representative.
- Warranty claims must be completed with ALL required information in order it to be accepted.
Send photographs of the entire piece of equipment, and of the specific area of concern.
- Once the warranty claim has been received by Meridian®, our customer service rep. will contact you. Warranty repair work will only be performed by Meridian® or an approved representative of Meridian®. No warranty work completed prior to approval by Meridian® will be honored. Failure to follow this procedure may affect any or all of this warranty.
- All warranty claims will be dealt with at the discretion of the Meridian Manufacturing Inc. representative.

TABLE OF CONTENTS

DESCRIPTION	PAGE
Section 1: INTRODUCTION	1-1
1.1 Serial Number	1-1
Section 2: SAFETY	2-1
2.1 Safety Orientation	2-2
2.2 General Safety	2-2
2.3 Work Safety	2-2
2.4 Safety Decals	2-3
2.4.1 Safety Decal Application	2-3
2.5 Safety Decal Location	2-3
2.6 Maintenance Safety	2-4
Section 3: SITE AND INSTALLATION	3-1
3.1 Tank Location	3-1
3.2 Tank Foundation	3-2
3.3 Concrete Slab Construction	3-3
3.4 Tank Design	3-3
3.5 Installation	3-4
Section 4: OPERATION	4-1
4.1 Chemical Tank Components	4-2
4.2 Flat Bottom Tank Components	4-3
4.3 Optional Equipment	4-4
4.4 Filling and Discharging	4-6
4.5 Airmix Liquid Fluidizer Operation (Optional)	4-7
Section 5: SERVICE AND MAINTENANCE	5-1
5.1 Slab Inspection	5-2
5.2 Tank Inspection	5-2
5.2.1 Chemical Tank	5-2
5.2.2 Flat Bottom Tank	5-2
5.3 Manway Tightening Procedure	5-3
5.3.1 Flange Condition Pre-Check	5-3
5.3.2 Flange Alignment	5-3
5.3.3 Nut and Bolt/Stud Checks	5-4
5.3.4 Gasket Check	5-4
5.3.5 Manway Flange Bolt Torque Sequence	5-5
Section 6: SIGN-OFF FORM	6-1
Section 7: REFERENCE	7-1
7.1 Chemical Tank Specifications	7-1
7.2 Flat Bottom Tank Specifications	7-2
Drawings	7-3...



This page intentionally left blank

Section 1: INTRODUCTION

Congratulations on your choice of a Meridian Manufacturing Inc. Stainless Steel Liquid Tank for your specialized storage needs.

This equipment has been designed and manufactured to be the best choice for the storage of food grade liquid or corrosive material.

Safe, efficient and trouble free usage of your liquid tank requires that you and anyone else who will be working around or maintaining the tank, read and understand the Safety, Operation and Maintenance information contained within this manual.

Keep this manual handy for future reference. Call your Meridian® dealer or distributor if you need assistance, information or additional/replacement copies, or a digital copy of this document.

Information provided herein is of a descriptive nature. Consistent with Meridian's policy of continued research and development of our products, we reserve the right to modify the equipment design and specifications and change information contained in this publication without any preliminary notice.

1.1 SERIAL NUMBER

The general location of the serial number is shown in Figure 1 and 2. Its location may vary from tank to tank.

Have the serial number available when communicating with the dealer or factory and requesting service or asking for information.

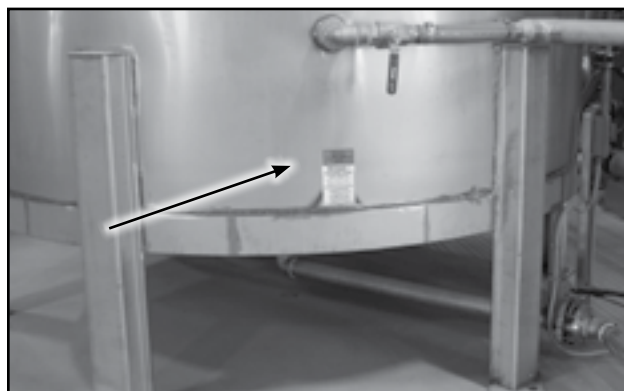


Fig 1 - Serial number location on chemical tank

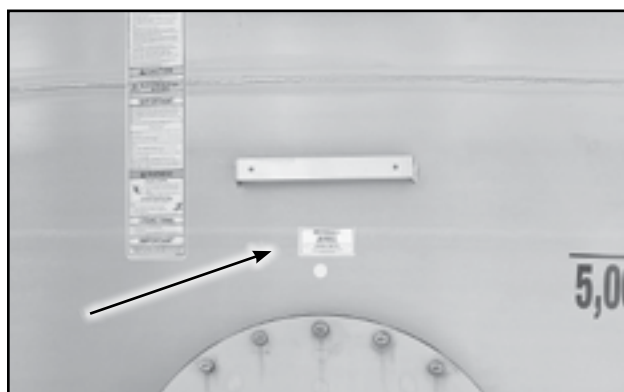


Fig 2 - Serial number location on flat bottom tank



This page intentionally left blank

Section 2: SAFETY

3 Big Reasons why safety is important to you:

- Accidents Disable and Kill
- Accidents Cost
- Accidents Can Be Avoided

The Safety Alert Symbol means:

**ATTENTION!
BECOME ALERT!
YOUR SAFETY IS INVOLVED!**

The Safety Alert Symbol identifies important safety messages on the tank and in this manual.

The following signal words are used in this manual to express the degree of hazard for areas of personal safety.

When you see the symbol and/or the signal words described below, obey the accompanying message to avoid possible injury or death.



Indicates a hazardous situation that, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations. Typically for machine components which, for functional purposes, cannot be guarded.



Indicates a hazardous situation, if not avoided, could result in death or serious injury. This word identifies hazards that are exposed when guards are removed. It may be used to alert against unsafe practices.



Indicates a hazardous situation, if not avoided, could result in minor or moderate injury. It may be used to alert against unsafe practices.



Indicates practices or situations which may result in the malfunction of, or damage to equipment.



Safety instructions (or equivalent) signs indicate specific safety-related instructions or procedures.

2.1 SAFETY ORIENTATION

YOU are responsible for the SAFE usage and maintenance of your Meridian® Stainless Steel Liquid Tank. Be sure that everyone who will maintain or work around it, is familiar with the safety, maintenance procedures.

This manual will take you step-by-step through your working day. It will alert you to all the safe practices that should be adhered to while using the tank.

It has been said, "The best safety feature is an informed, careful worker" Good safety practices not only protect you but also the people around you. Make these practices a dynamic part of your workday.

Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

- Tank owners must give instructions to employees before allowing them to use the tank.

Procedures must be reviewed annually thereafter, as per OSHA (Occupational Safety and Health Administration) regulation 1928.57.

- Develop a comprehensive safety program for your work area.
- The most important safety device is a SAFE worker. It is their responsibility to understand all safety and usage instructions in this document, and to follow them.
- An untrained worker exposes himself and bystanders to possible serious injury or death.
- Think SAFETY! Work SAFELY!

2.2 GENERAL SAFETY

You are responsible for the safe use and maintenance of this tank. Good safety practices not only protects you, but also those around you. All accidents can be avoided.



- Use this tank for its intended purposes only.
- This liquid tank is not intended for use by children.
- Do not modify the tank in any way without written permission from the manufacturer. Any unauthorized modification of the water tank will void the warranty.

2.3 WORK SAFETY

- Mount signage around structure to indicate that this structure is off limits.
No unauthorized persons allowed.
- Drowning can happen in only a few inches of water. Keep manway hatch lids, and barriers locked to prevent unauthorized persons or children from entering the tank.
- Enter the empty tank with extreme caution. Wear protective clothing, and a properly filtered respirator mask to protect against chemical vapour. Connect a safety line to yourself and have a responsible, trained person close at hand to assist in an emergency.
- Wear the appropriate personal protective gear. This list may include but is not limited to:

- Hard hat
- Protective shoes with slip resistant soles
- Eye protection
- Work gloves
- Hearing protection
- Respirator or filter mask
- Hi-Visibility safety vest



2.4 SAFETY DECALS

- Keep safety decals clean/legible at all times.
- Replace safety decals that are missing or have become illegible.
- All safety decals have a part number in the lower right hand corner. Use this part number when ordering replacements.
- Safety decals are available from your authorized distributor, dealer's parts department or from the factory.

2.4.1 Safety Decal Application:

1. Be sure the application area is clean and dry. Ensure the surrounding temperature is above 10°C (50°F).
 - Remove all dirt, grease, wax from the surface.
 - Clean with a non-ammonia based cleaner.
 - Wipe the clean surface with isopropyl alcohol on paper towel, and allow to dry.
2. Determine the exact position before you remove the backing paper.
3. Peel a small portion of the split backing paper.
4. Align the decal over the specified area. Use a squeegee to carefully press the small portion, with the exposed adhesive backing, into place.
5. Slowly peel back the remaining paper and carefully smooth the rest of the decal into place.
6. Small air pockets can be pierced with a pin and smoothed out using the squeegee, or a piece of sign backing paper.

2.5 SAFETY DECAL LOCATION

Safety decals are attached to the structure in a visible and convenient location for readability. A safe workplace requires that you familiarize yourself with the information on the decals.

Fig 3 - Safety decal



16961

2.6 MAINTENANCE SAFETY

- Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
- Create a Lock-Out Tag-Out program for the auxiliary equipment used to fill and discharge liquid from the tank.
- These stainless steel tanks can store a variety of liquids and each site is different. Develop an applicable maintenance program to suit the work area.
- The end-user is responsible to check, before the tank is filled, if a product is compatible with the grade of stainless steel used in its construction.
- If you enter the tank, have a responsible, trained person close at hand to assist in an emergency.
- Enter the empty tank with extreme caution, it is a confined space.
 - Wear protective clothing, and a properly filtered respirator mask to protect against chemical vapour.
 - Connect a safety line to yourself and have a responsible, trained person close at hand to assist in an emergency.

Section 3: SITE AND INSTALLATION

WARNING

- Read and understand the Operator's Manual.
- Clear the area of bystanders, especially children, before starting.
- Prepare the base carefully to be sure the tank is supported evenly to prevent tipping.
- Use extra care when moving tank. Never move a tank with product in it.
- Use only an approved hoist, crane or other lifting system when positioning tank.

3.1 TANK LOCATION

Unless otherwise specifically provided in writing, Meridian® does not take responsibility for any defects or damages to any property, or injury to any persons, arising from or related to any site or assembly considerations, including but not limited to:

- Water tank location and water tank siting.
- Soil conditions and corresponding foundation requirements.
- Field modifications or equipment additions that affect the tank structure.
- Interconnections with neighbouring structures.
- Compliance with all applicable safety standards, including but not limited to, fall restraint systems (ladders or other systems). Local safety authorities should be contacted as standards vary between jurisdictions.

It is important that you, the customer, plan the work site to minimize or eliminate the need to move the tank(s) once positioned.

- We recommend that you consult a civil engineer regarding the chosen site, the soil load bearing capacity, proper method of construction and type of concrete pad.
- Clear area of bystanders, especially children.
- Use only hoists, jack and/or cranes with sufficient lift capacity and reach for the tank being positioned.
- Do not move or transport tanks when it is windy. Wait for a calmer day.
- Ensure the tank is positioned on a base that has been properly prepared to support the weight and loads of the tank when filled.
- Electrocution can occur without direct contact. Do not place tank within 40 ft from power lines.

3.2 TANK FOUNDATION

The foundations for liquid tanks are based on 4000 psf (192 kPa) soil bearing capacity. All foundation designs use 3625 psi (21 MPa) ultimate compressive strength (after 28 days) for concrete and 43,5000 psi (300 MPa) re-bar.

The foundation specifications included in this manual are suggestions only, and may not be applicable to your local soil conditions.

Meridian Manufacturing Inc. will not assume any liability for results arising from their use.

1. Gravel Base (Temporary Base for Flat Bottom Tanks Only):

Meridian® strongly advises you to consult a civil engineer regarding the site you choose. A professional engineer will check the soil conditions and soil load bearing capacity. They can use the tank's empty and full weights (each product has a different weight) to advise on preparing the proper base.

The tank must be placed on a minimum of ten inches of compacted granular fill. The entire circumference of the tank should rest evenly on this area.

The foundation should be uniform and level. It should not vary by more than 1/4" over a span of four feet.

2. Concrete Slab (Permanent Base):

We recommend that you consult a civil engineer regarding the site you choose, the soil conditions, and soil load bearing capacity. A professional engineer can advise on the proper method of construction and type of concrete slab for your needs.

The best type of base, and the one we recommended, is a concrete slab that is located on well drained, level ground that is capable of supporting the concrete slab and a full tank under all environmental conditions.

The design of a concrete slab is based on varied load bearing specifications for the different sized liquid tanks. Meridian® is not responsible for damage caused by an inadequate concrete slab. It is the responsibility of the owner to ensure that good construction practices are followed to obtain the required load carrying capacity for the slab. A concrete slab built to the proper performance specifications will ensure a long, trouble-free life for the storage system.

Meridian® can provide your engineer with the required information, such as tank design and leg reactions (wind and weight load).

The tank must be bolted to the slab so that all the legs or bolt plates sit evenly and are firmly in contact with the concrete. If the concrete is uneven, full "leg base plate" shims can be used.

3.3 CONCRETE SLAB CONSTRUCTION

The following information provides specifications and general guidelines for construction of concrete slabs for supporting tanks.

It is very important that close attention be given to site preparation and soil conditions in order to provide a good base for the concrete slab.

Items to be aware of include but are not limited to the following:

- **Soil Conditions:**

Sod and other organic material must be removed before laying down the gravel fill. Positive drainage must be provided to drain excessive moisture away from the concrete slab.

The concrete slab is designed for load stresses on soils with minimum allowable soil bearing capacity of 1500 psf.

The engineer is not responsible for concrete slab performance on soils with lower than specified bearing capacity or soils that are unsuitable for supporting a concrete pad.

Soil conditions should be assessed on the basis of soil tests, or of the performance history of similar structures in your local area.

- **Slab Structures:**

The following specifications must be followed to construct a concrete slab to meet the load and stress carrying requirements:

- The concrete must have a minimum 28 day strength of 3000 psi (1361 kg).
- Use sulphate resistant cement where required by soil conditions.
- Do not pour concrete on frozen ground or in an excavation that contains ice, snow, excessive moisture or when the air temperature is below 4°C (40°F).

3.4 TANK DESIGN

The tank, and the grade of stainless steel used, must be designed for the product being stored inside. It is your responsibility to inform Meridian Manufacturing Inc. about what product you are planning to store in the tank, and receive approval to do so.

3.5 INSTALLATION

Care must be used when moving, lifting and installing the tank. Installation instructions include but are not limited to:

- Clear the area of bystanders, especially small children.
- Never move a tank that has product in it. Any structural damage occurring during the move, can lead to more problems or damage when the tank is filled at its final position.
- Have at least one other trained and responsible person to assist and who, in case of an emergency or accident, can provide assistance or seek assistance.
- Use only a crane, hoist or lift with sufficient load carrying and reach capacity. It must have the appropriate stability to raise, move, position and lower the tank.
- Always use the lift lugs, welded along the top edge, to lift the tank.
- It is recommended that installing the tank be done on a calm day or one with light winds. A tank is a large, hard-to-handle object that can easily be caught and moved by the wind. Do not take chances with your safety.
- Stay away from power lines when lifting or moving the tank.

Electrocution can occur without direct contact.

- After setting up the tank, use Loctite® 567 sealant (or equivalent) to fasten the plumbing into place. Check with your product's vender about what sealant is compatible with the product to be stored.

- Flat Bottom Tank owners:

If the AirMix Liquid Fluidizer (Refer to Section 4.4) is included with your tank, you may need to level the four diffusers inside the tank. Call Meridian® Service for instructions; (800) 665-7259.



Fig 4 - Unloading tank

Section 4: OPERATION

WARNING

- Read and understand the Owner's Manual.
- Do not attempt to enter tank through the top hatch (chemical tanks).
- Only enter the flat bottom tank when it is empty.
- Establish a Lock-Out Tag-Out policy for your work site. Always Lock-Out Tag-Out equipment before entering tank or performing any maintenance work.
- Wear appropriate personal protective gear, for the task you are performing.

This Meridian® stainless steel tank is designed to be used with any liquid handling operation. There is a wide variety of auxiliary equipment which can be used for filling and discharging the product.

It is the responsibility of the owner and user to be familiar with the tank(s) and all auxiliary filling/discharging equipment before starting. Read this manual and to train all personnel before they start working with the machine. Follow all safety instructions exactly - it is everyone's business. By following the recommended procedures, a safe working environment is provided for the workers and bystanders in the work site.

The design and configuration of this tank includes safety decals. Hazard controls and accident prevention are dependent upon the personnel working with and maintaining it. Their awareness, concern, prudence and proper training are crucial.

Many features incorporated into this tank are the result of suggestions made by customers like you.

By following these instructions, in conjunction with a good maintenance program, your tank will provide many years of trouble free storage.

4.1 CHEMICAL TANK COMPONENTS

The location of components and options may change without notice.

Note:

Images show tanks installed at a customer's facility. All piping and auxiliary equipment was installed by the customer.

16 inch Inspection Hatch:

A 16 inch manhole is provided, for inspection of the inside of the tank.

Lift Lugs:

There are lift lugs along the top edge of the tank. Use a crane or hoist to raise and move it.

Two - 2 inch Couplers on Roof:

One coupler is at the peak of the tank, the other is located beside the inspection hatch. Plugs are inserted at the factory. The customer must install an air vent on at least one of the couplers.

Two - 2 inch Couplers on Either Side:

There is a 2 inch coupler on both sides of the tank, 2 feet up the side. Plugs have been inserted to seal them.

2 inch Coupler with Elbow:

A coupler with an elbow is underneath of the tank. The cone bottom facilitates total cleanout.

A bracket is welded to the side in the direction of the elbow, to support the piping which may be connected to the elbow.



Fig 5 - Top of chemical tank

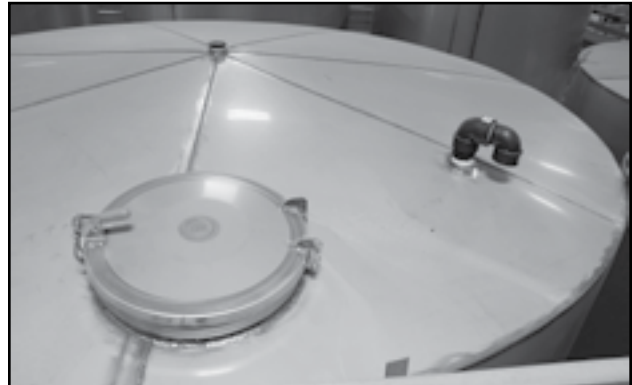


Fig 6 - Components at the top. Vent installed by customer



Fig 7 - Side and bottom couplers



Fig 8 - Bracket to support piping from bottom coupler

4.2 FLAT BOTTOM TANK COMPONENTS

The location of components and options may change without notice.

Roof Air Vent and Lift Lugs:

The air vent includes a 180° PVC fitting. Lift lugs are welded along the top edge of tank.

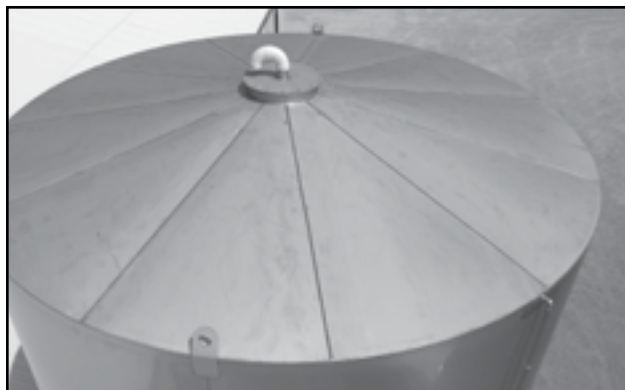


Fig 9 - Top of tank

25 inch Manway:

The bolt-on manway allows for easy access to the interior of the tank. See bolt tightening procedure in Reference Section.

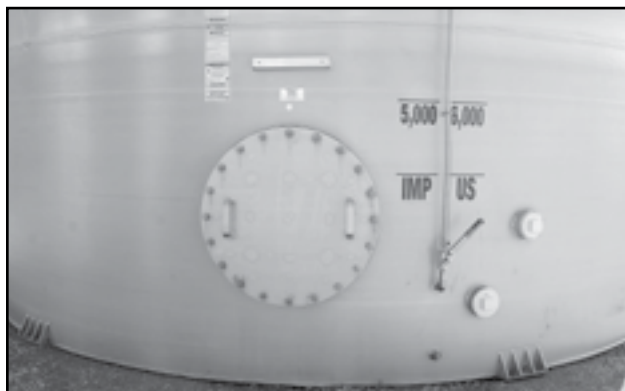


Fig 10 - Components on tank

Two - 4 inch Fill and Discharge Couplers:

The two side couplers have plugs inserted by the factory. The lower coupler has a 90° fitting attached inside pointing down. This coupler is to be used for emptying the tank and will leave only three inches of liquid on the bottom. The higher coupler has a straight fitting inside, and should be used for filling.



Fig 11 - 4 inch couplers

1 inch Port:

A small port is located near the bottom of the tank. The factory has also plugged this opening. This can be used as an air intake for the optional Airmix Liquid Fluidizer.

3/4 inch Sight Tube with Auto Shut-off Valve:

The sight tube shows the quantity of liquid inside the tank. Measurements are shown in Imperial and US gallons.

Push the spring-loaded valve down to allow liquid into the sight tube to measure the quantity inside the tank. When the valve is released, liquid is restricted from entering the tube.

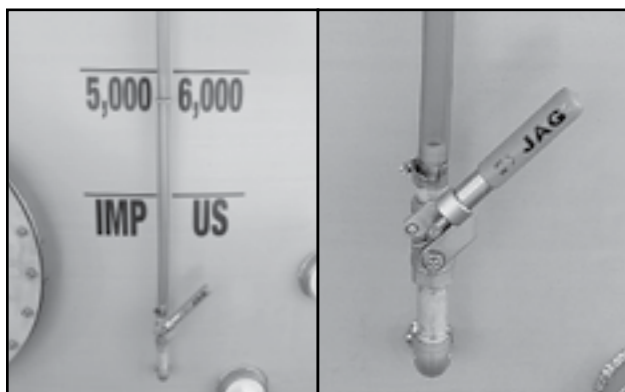


Fig 12 - Sight tube and valve

4.3 OPTIONAL EQUIPMENT

Airmix Liquid Fluidizer

The Airmix Liquid Fluidizer is an automated system which pulsates air through injection diffusers across the bottom of the tank to agitate and suspend liquid product.

- **Airmix Control Box:**

The manuals for the individual electronic components are inside the control box.

- **Air inlet pipe with valve:**

Air is pushed into the tank through this valve, into the 1 inch port. The valve restricts liquid from exiting through the hose.

IMPORTANT:

Remember to close valve prior to connecting or disconnecting the pipe.

- **Air injection diffusers:**

Inside the tank, along the bottom, are 4 diffusers which are the locations from which air is injected into the liquid.

Fill and Discharge Coupler Valve Kits:

There are two valve kits available for the couplers on the flat bottom tank.

- Part #40215
- Part #44515



Fig 13 - Airmix liquid fluidizer control box

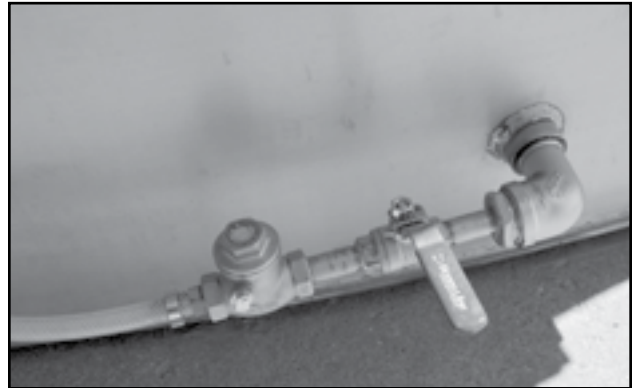


Fig 14 - Air intake pipe with valve

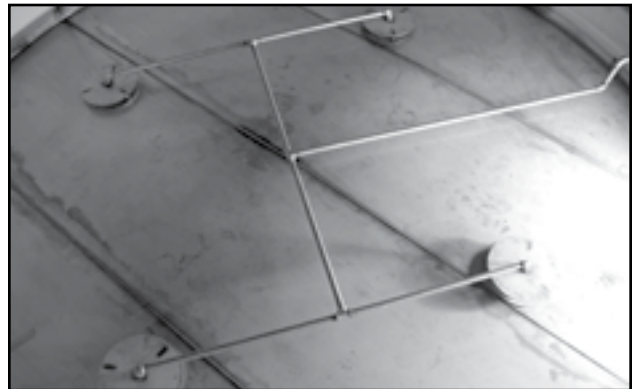


Fig 15 - Air injection diffusers

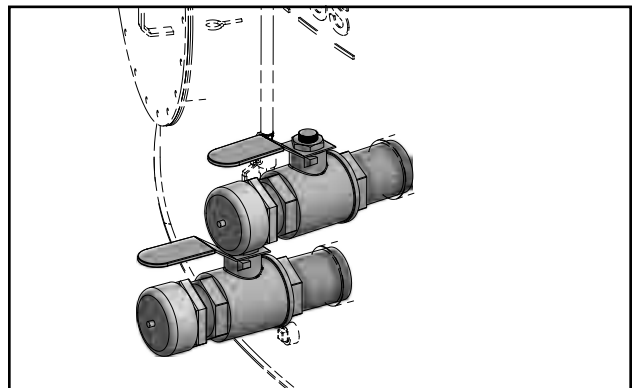


Fig 16 - Valve kits

Insulation and Galvalume Cladding:

The tank can be insulated and covered with cladding.



Fig 17 - Insulation and Galvalume Cladding:

Steam Coil:

An external heating source can be added, to keep the contents from freezing.

A millwright with a seal ticket will be needed to install the steam coils.

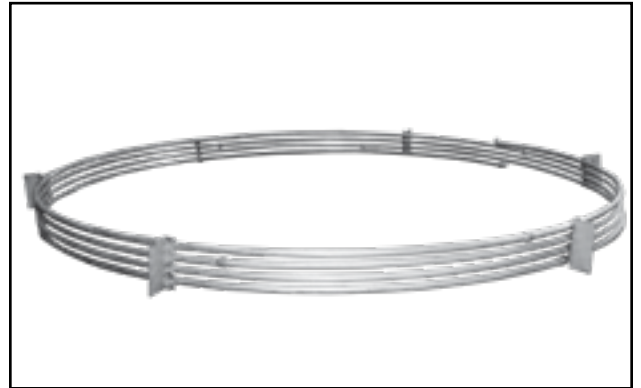


Fig 18 - Steam Coils

4.4 FILLING AND DISCHARGING

NOTICE

IMPLOSION HAZARD

Check that the air vent is clear and open before emptying tank.

Meridian® tanks are designed to be easy to fill and discharge contents.

One hose or pipe can be installed onto a single tank, or a system can be designed for an entire row.

Use auxiliary equipment as appropriate for your site. Set up a lock-out, tag-out system for your safety.

Chemical Tanks:

The coupler at the bottom of the tank ensures that 100% of the contents is emptied.

Flat Bottom Tanks:

The first, coupler (a) has a straight fitting inside the tank, and should be used for filling.

The second, lower coupler (b) has a 90° fitting, pointing downward, attached on the inside. This coupler is to be used for discharging and will leave only about three inches of liquid on the bottom when emptied fully.

IMPORTANT:

When you receive your flat bottom tank(s), check to be sure the coupler fittings are in place and did not move during transport.

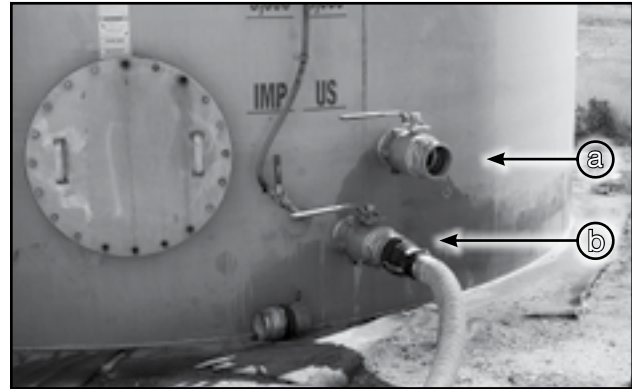


Fig 19 - Fill (a) and discharge (b) couplers



Fig 20 - Permanent fill and discharge system



Fig 21 - Coordinated fill system



Fig 22 - Fill and discharge tubes

4.5 AIRMIX LIQUID FLUIDIZER OPERATION (OPTIONAL)

When the power switch is turned on, the Airmix system is in operation mode.

1. The AirMix system's pressure needs to be set to between 80 - 100 psi as shown on the air regulator dial. See (b) in the image below.
 - Pull up and turn the black knob, to adjust the pressure.
 - Start with a pressure of 90 psi.
2. The system's air volume must be set to between 4 - 8 cfm (cubic feet per minute). See (c) in the image below.
 - Turn the black knob on the outside of the control box to adjust the volume.
 - Start with a volume of 6 cfm.

Note:

For specific questions on pressure or volume, contact your liquid product supplier.





Fig 23 - AirMix control box

The digital timer is preset from the factory, to be 5 seconds ON, and 10 seconds OFF. See (a) in the image to the right.

Note:

The numbers indicated on the screen are referring to seconds.

3. To change the digital timer settings:
 - Press the **MODE** button to switch between SET1 and SET2:
 - SET1 is the air flow "OFF" timer setting.
 - SET2 is the air flow "ON" timer setting.
4. Press the  or  buttons to change the time (in seconds) for SET1 and/or SET2.

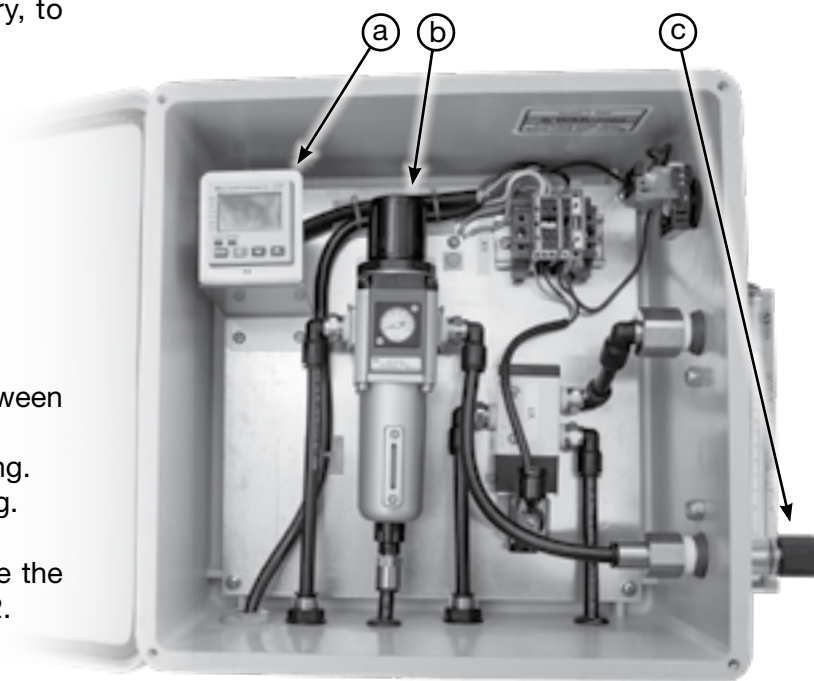


Fig 24 - Inside the control box

IMPORTANT:

For more detailed operation, refer to the manufacturer instructions, provided in the box.



This page intentionally left blank

Section 5: SERVICE AND MAINTENANCE

WARNING

- Read and understand the Owner's Manual.
- Do not attempt to enter tank through the top hatch (chemical tanks).
- Only enter the flat bottom tank when it is empty.
- Establish a Lock-Out Tag-Out policy for your work site. Always Lock-Out Tag-Out equipment before entering tank or performing any maintenance work.
- Wear appropriate personal protective gear, for the task you are performing.
- Attach a safety line to an anchor outside before entering.

Each customer's site is different, and store a variety of liquids. You must develop a service and maintenance program specific to your location and circumstances. You are responsible to ensure that your stainless steel tank(s) are compatible with the product which you wish to store.

By following a careful service and maintenance program for your tank(s), you will enjoy many years of trouble-free storage.

IMPORTANT:

If you enter the tank, make sure that there is no possibility that filling could start up. Lock-out, tag-out the auxiliary equipment. A responsible, trained person must be close at hand for assistance.

WARNING

CONFINED SPACE HAZARD

Wear protective clothing, and a properly filtered respirator mask. Connect a safety line to yourself and have a responsible, trained person outside to assist in an emergency.

5.1 CONCRETE SLAB INSPECTION

Check the foundation conditions regularly. Cracks that are more than 1/8 inch wide in the concrete slab indicate significant movement.

Always consult with a professional engineer when foundation problems arise. If severe cracking exists, slab levels should be taken to determine whether any area of the slab is sinking independently.

Subsoil conditions should be monitored to ensure against bearing capacity losses.

5.2 TANK INSPECTION

1. On all tanks, it is important to check that all air vent(s) are open and clear of any obstructions.

Venting is important to prevent implosion.

2. Inspect welded seams.
3. Inspect and adjust plugs, fittings and valves as required.
4. Use the correct seam sealant around all fittings and valves. Consult your product dealer for their recommendations on what sealant is compatible with the liquid you will be storing.

5.2.1 Chemical Tank:

Use the inspection hatch on the roof of the chemical tanks for observation only. Do not attempt to enter the tank.

5.2.2 Flat Bottom Tank:

Use the manway on the flat bottom tanks only for entry when the tank is empty for inspection and cleaning purposes.

5.3 MANWAY TIGHTENING PROCEDURE

Manway flange joints require proper tightening to avoid leaking. Apply **Loctite® LB 8150**, or equivalent, anti-seize lubricant to the bolt threads. Then, torque each nut to **55 ft-lb**.

This is the procedure for tightening the bolts:

5.3.1 Flange Condition Pre-Check:

- Check conditions of flange faces for scratches, dirt and scale.
- Check for corrosion pitting and tool marks.
- Inspect the gasket seating surfaces.
- Check the areas on the flange where the nuts will seat, it should be flat and free from pitting and excessive wear.
- Ring Type Joint (RTJ) grooves must be kept clean, corrosion free & undamaged.

Contact your Supervisor or Quality Control if you find any uncertainties.

5.3.2 Flange Alignment:

Visually examine the flange alignment to ensure that it fits well. While aligning the flanges make sure that there are no residual stresses in the joint.

IMPORTANT:

Using heat correction for the alignment of flanges is strictly prohibited.

- Flange faces should be parallel and aligned.
- The flange bolt holes should be in line so that the bolts will pass freely.

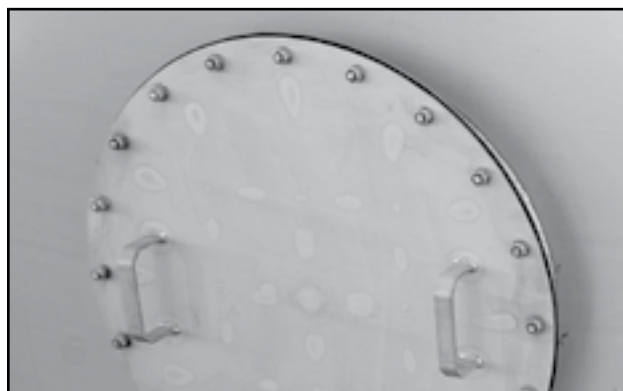


Fig 25 - Manway on flat bottom tank

5.3.3 Nut and Bolt/Stud Checks:

- Visually examine nuts and bolts/studs before using them to ensure that they are free from defects such as corrosion and damaged threads.

Do not use fasteners with damaged threads.

- Check the length of the bolts to avoid short bolting or excessive threads. Meridian® supplies flange bolts with sufficient length to allow the use of bolt tensioning equipment or spades, spacers, drip rings and wafer valves, and the associated extra gaskets.
- Visually examine nuts and bolts/studs after cleaning to ensure they are free from burrs. They should be cleaned using a wire brush to remove any dirt on the threads.
- The nut and bolt material grades should be correctly identified before they are used.
- Nuts and bolts can only be reused if it is known that they have not been overloaded or exceeded their yield point.
- When threading the nut onto the bolt, the nut identification marking must always point outwards.

5.3.4 Gasket Check:

- Do not use sealing compound, grease or other paste or adhesive on gasket or flange faces.
- Clean gasket seating face using a wire brush.
- Visually examine the gasket, before installation, to assure they are free from defects.
- Make sure the material is as specified, look for any possible defects or damage in the gasket such as folds or creases.
- All Soft material gaskets should be replaced with new ones whenever an opened joint is to be closed again.
- Spiral-wound gaskets should be used only once.
- While inserting the gasket, do not force it into the gasket seat between the mating flange faces. Once the gasket is placed, bring the mating flanges together carefully without knocking the gasket out of place. Install all bolts and hand tighten the nuts.

5.3.5 Manway Flange Bolt Torque Sequence:

ALWAYS TIGHTEN THE NUT, NOT THE BOLT!

Note:

Bolts should only be torqued if they are fitted into clearance holes.

Apply Loctite® LB 8150, or equivalent, anti-seize lubricant to the bolt threads. Then, use a torque wrench to tighten the nuts to **55 ft-lb**. If the bolt head is torqued rather than the nut then the torque value should be increased to compensate for the additional friction.

The specified method of bolt tightening is equally applicable to coated, galvanized and ungalvanized bolts.

Torque the nuts or bolts in a “CRISS-CROSS”, then a “CIRCULAR” sequence using two torquing passes as described below:

- Tighten all nuts by hand as far as possible.
- See Figures 26 to 29 for torque sequence.
- **PASS 1:** Torque the nuts to **55 ft-lb**.
Torque in the correct sequence to a 100% of the final torque value. Check that gasket is getting compressed uniformly.
- **PASS 2:** Repeat torquing the nuts using the final torque value in a “CIRCULAR” manner until no further rotation of the nut is observed.



Fig 26 - 12 Bolt sequence



Fig 27 - 16 Bolt sequence



Fig 28 - 20 Bolt sequence



Fig 29 - 24 Bolt sequence



This page intentionally left blank

Section 6: SIGN-OFF FORM

Meridian Manufacturing Inc. follows the general Safety Standards specified by the American Society of Agricultural Engineers (ASAE), and the Occupational Safety and Health Administration (OSHA). Anyone who will be using and/or maintaining the unit must read and clearly understand all Safety, Usage and Maintenance information presented in this manual.

Do not use this equipment until this document has been read. Review this information annually, before the season start-up.

Make periodic reviews of SAFETY and USAGE a standard practice for all of your equipment.

The following Sign-Off Form is provided for your record keeping. Use it to show that all personnel who will be working with the equipment have read and understand the provided information. They also have been instructed in the operation of the equipment. Copy this page to continue the record.

DATE	EMPLOYEE'S SIGNATURE	EMPLOYER'S SIGNATURE



This page intentionally left blank

Section 7: REFERENCE

For information not included here, or for a digital copy of this manual, please call your dealer, or Meridian Manufacturing Inc. directly for assistance. Visit our website at: www.meridianmfg.com.

7.1 CHEMICAL TANK SPECIFICATIONS

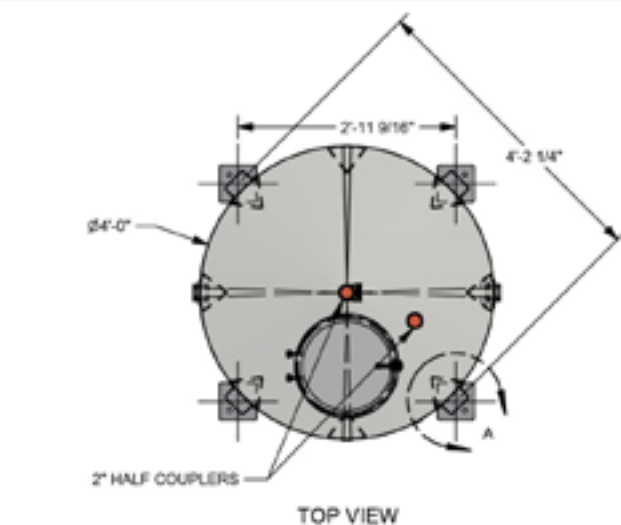
Item #	Model	Cubic Foot	Litre	Imperial Gallon	US Liquid Gallon	Metric Tonne	Imperial Ton	Diameter	Height
170412B	FRI 412 304 2BSS	152	4,311	948	1,139	6	6	4'	13' 6"
170608B	FRI 608 304 2BSS	231	6,544	1,440	1,729	9	9	6'	9' 10"
170610B	FRI 610 304 2BSS	288	8,145	1,792	2,152	11	12	6'	11' 10"
170612B	FRI 612 304 2BSS	344	9,746	2,144	2,575	13	14	6'	13' 10"
170614B	FRI 614 304 2BSS	401	11,347	2,496	2,998	15	16	6'	15' 10"
170616B	FRI 616 304 2BSS	457	12,948	2,848	3,421	17	19	6'	20' 6"
170804B	FRI 804 304 2BSS	213	6,026	1,326	1,592	8	9	8'	6' 1"
170808B	FRI 808 304 2BSS	414	11,718	2,578	3,096	15	17	8'	10' 1"
170810B	FRI 810 304 2BSS	514	14,565	3,204	3,848	19	21	8'	12' 1"
170812B	FRI 812 304 2BSS	615	17,411	3,830	4,600	23	25	8'	14' 1"
170814B	FRI 814 304 2BSS	715	20,257	4,456	5,352	26	29	8'	16' 1"
170816B	FRI 816 304 2BSS	816	23,104	5,082	6,104	30	33	8'	18' 1"
171010B	FRI 1010 304 2BSS	808	22,888	5,035	6,047	30	33	10'	13' 3"
171012B	FRI 1012 304 2BSS	965	27,335	6,013	7,222	36	39	10'	15' 3"
171014B	FRI 1014 304 2BSS	1,122	31,783	6,992	8,397	41	45	10'	17' 3"
171210B	FRI 1210 304 2BSS	1,213	34,353	7,557	9,076	45	49	12'	14' 2"
171212B	FRI 1212 304 2BSS	1,439	40,757	8,966	10,768	53	58	12'	16' 2"
171214B	FRI 1214 304 2BSS	1,666	47,161	10,375	12,460	61	67	12'	18' 2"
171216B	FRI 1216 304 2BSS	1,910	54,080	11,897	14,288	70	77	12'	20' 2"
171220B	FRI 1220 304 2BSS	2,362	66,889	14,714	17,672	87	96	12'	24' 2"
171224B	FRI 1224 304 2BSS	2,796	79,182	17,419	20,920	103	113	12'	28' 2"

Capacities are based on 62 lb/ft³. Tonnes are based on 13 lb/Imp Gallon. Not all sizes available in all regions.
Specifications and measurements are subject to change without notice.

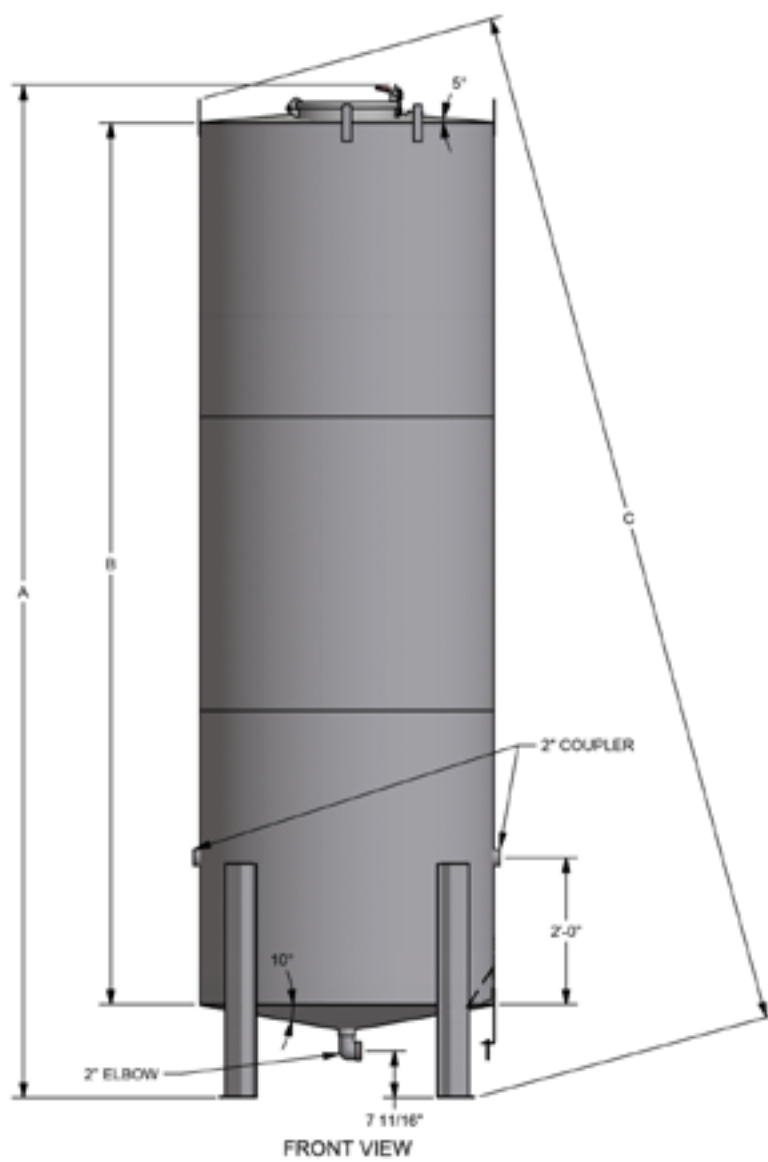
7.2 FLAT BOTTOM TANK SPECIFICATIONS

Model	Cubic Foot	Litre	Imperial Gallon	US Liquid Gallon	Metric Tonne	Imperial Ton	Diameter	Height
SS1220	2,302	65,175	14,336	17,217	85	93	12'	22' 3"
SS1225	2,867	81,187	17,859	21,447	105	116	12'	27' 3"
SS1230	2,433	97,200	21,381	25,678	126	139	12'	32' 3"
SS1235	3,998	113,213	24,903	29,908	147	162	12'	37' 3"
SS1240	4,564	129,226	28,426	34,138	168	185	12'	42' 3"
SS1420	3,142	88,968	19,570	23,503	115	127	14'	22' 5"
SS1425	3,912	110,764	24,365	29,261	144	158	14'	27' 5"
SS1430	4,681	132,559	29,159	35,018	172	190	14'	32' 5"
SS1435	5,451	154,354	33,953	40,776	200	221	14'	37' 5"
SS1440	6,221	176,149	38,747	45,534	228	252	14'	42' 5"
SS1620	4,116	116,540	25,635	30,787	151	167	16'	22' 7"
SS1625	5,121	145,007	31,897	38,307	188	207	16'	27' 7"
SS1630	6,126	173,474	38,159	45,827	225	248	16'	32' 7"
SS1635	7,131	201,942	44,421	53,347	262	289	16'	37' 7"
SS1640	8,137	230,409	50,683	60,868	299	329	16'	42' 7"
SS1830	7,768	219,979	48,389	58,112	285	315	18'	32' 9"
SS1835	9,041	256,007	56,314	67,630	332	366	18'	37' 9"
SS1840	10,313	292,036	64,239	77,148	379	418	18'	42' 9"
SS1850	12,858	364,094	80,089	96,183	472	521	18'	52' 9"

Capacities are based on 62 lb/ft³. Tonnes are based on 13 lb/Imp Gallon. Not all sizes available in all regions.
Specifications and measurements are subject to change without notice.



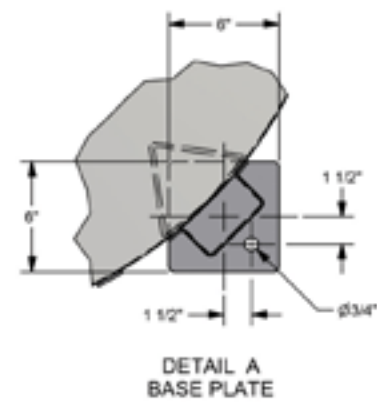
TOP VIEW



FRONT VIEW



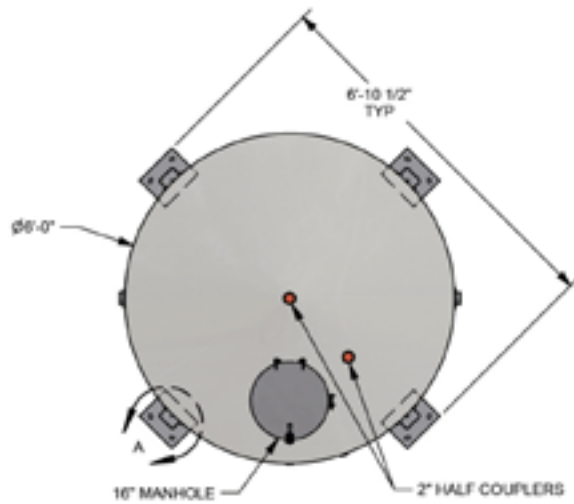
ISO VIEW



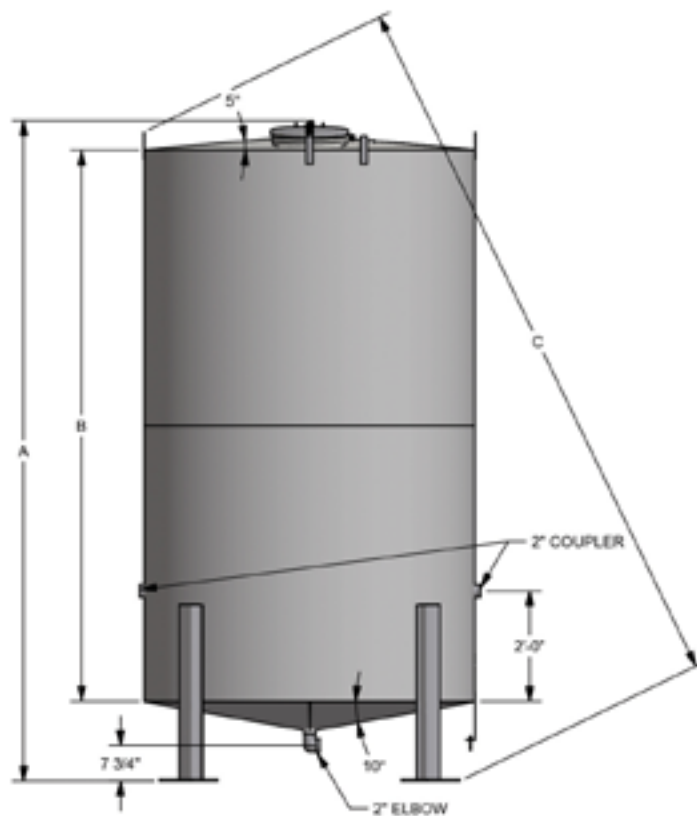
DETAIL A
BASE PLATE

DESIGN NOTES
 MAX. PRODUCT DENSITY: 90 p.c.f.
 (FREE FLOWING MATERIAL ONLY)
 DESIGN PRESSURES: +8oz/-0.4oz PRESS/VAC
 SEISMIC: Ss = 0.15 (U.S.)
 WIND: 105 mph (U.S.)

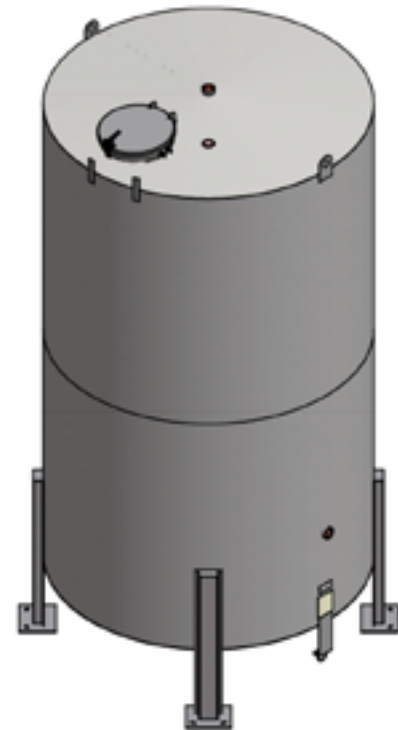
BIN MODEL	ITEM #	MATERIAL	DIMENSION A	DIMENSION B	DIMENSION C	WEIGHT
412 304SS 2B	170412B	304SS	13'-9 7/16"	12'-0"	14'-1 3/16"	685 lb



TOP VIEW



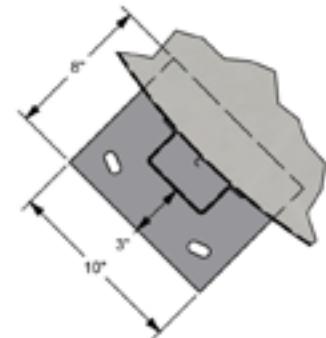
FRONT VIEW



ISO VIEW



DETAIL A - BASE PLATE
* 608 MODEL ONLY

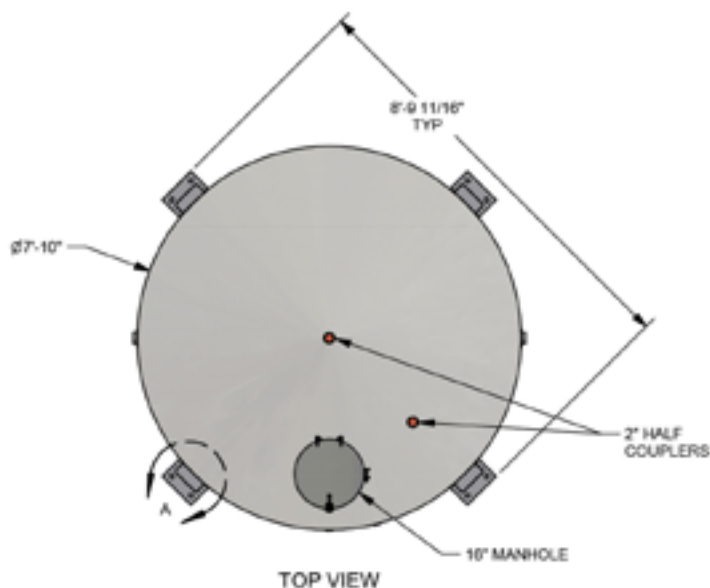


DETAIL A
BASE PLATE

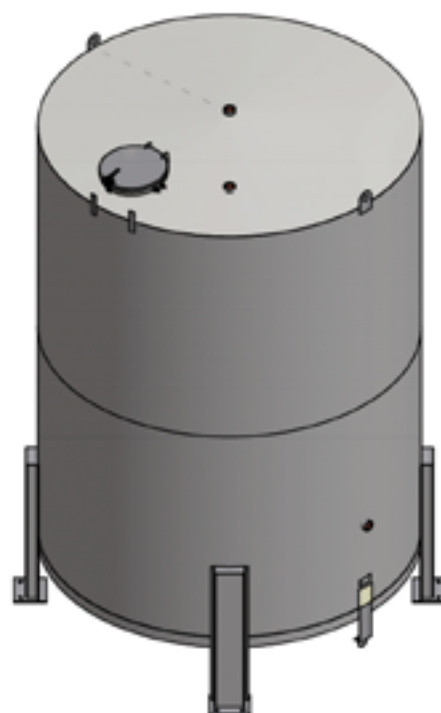
BIN MODEL	ITEM #	MATERIAL	DIMENSION A	DIMENSION B	DIMENSION C	WEIGHT
608 304SS 2B	170606B	304SS	9'-11 11/16"	8'-0"	11'-2 3/16"	907 lb
610 304SS 2B	170610B	304SS	11'-11 13/16"	10'-0"	13'-1 3/16"	1054 lb
612 304SS 2B	170612B	304SS	13'-11 13/16"	12'-0"	14'-11 1/16"	1164 lb
614 304SS 2B	170614B	304SS	15'-11 13/16"	14'-0"	16'-9 7/16"	1320 lb
612 316SS 2B	190612	316SS	13'-11 15/16"	12'-0"	14'-11 3/16"	1167 lb

DESIGN NOTES

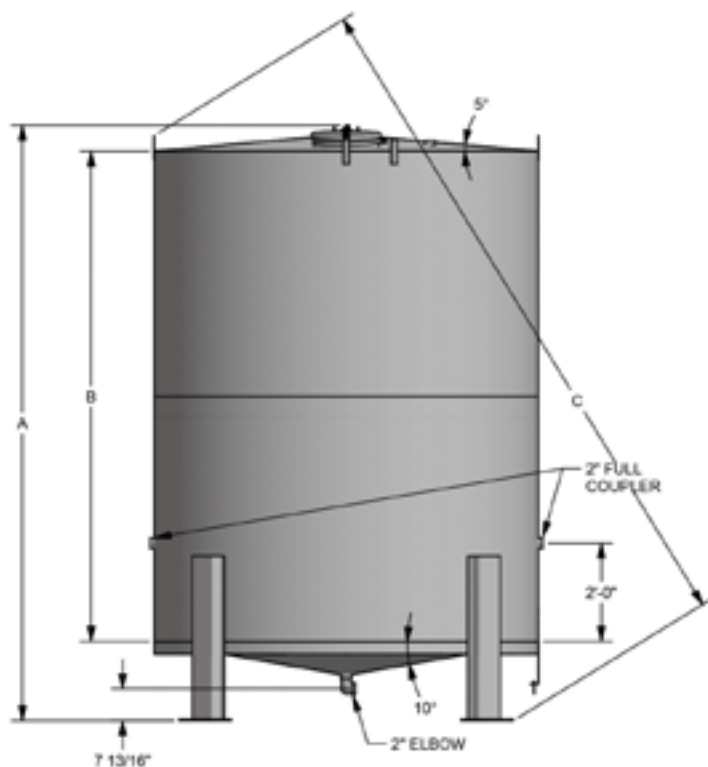
MAX. PRODUCT DENSITY: 90 p.c.f.
(FREE FLOWING MATERIAL ONLY)
DESIGN PRESSURE: +6oz/-0.4oz PRESS/VAC
SEISMIC: $S_s = 0.15$ (U.S.)
WIND: 105 mph (U.S.)



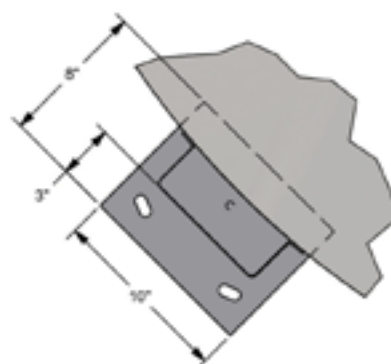
TOP VIEW



ISO VIEW



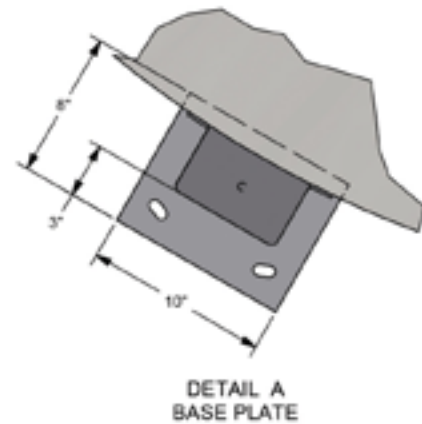
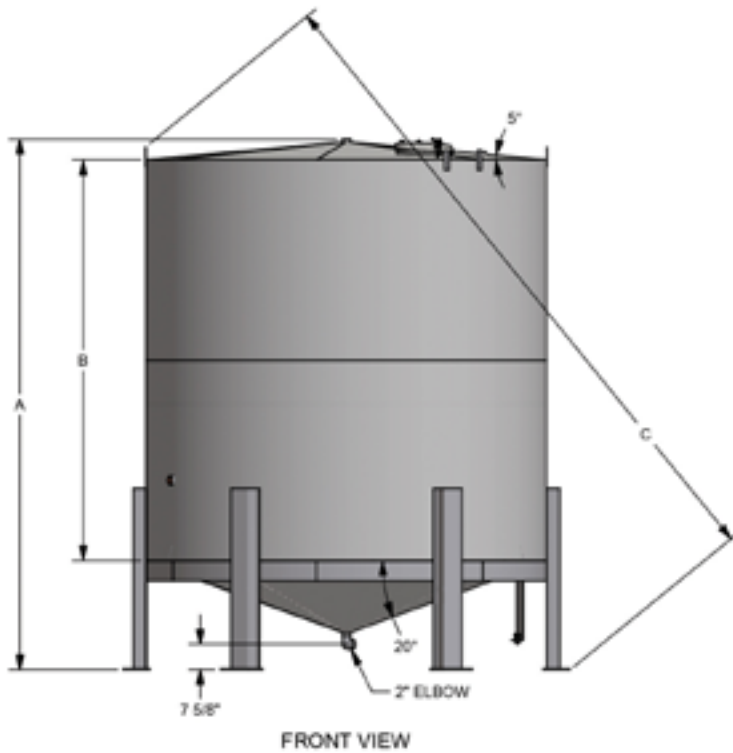
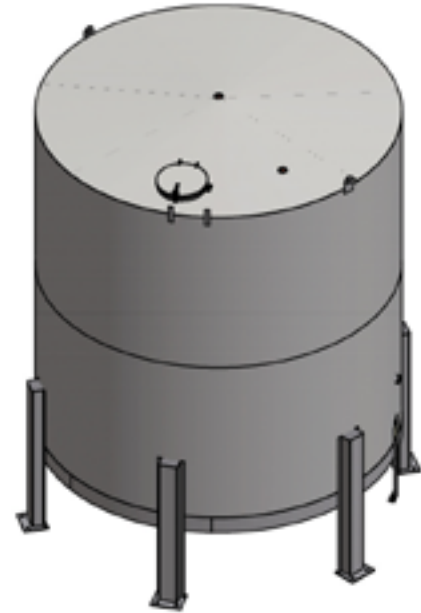
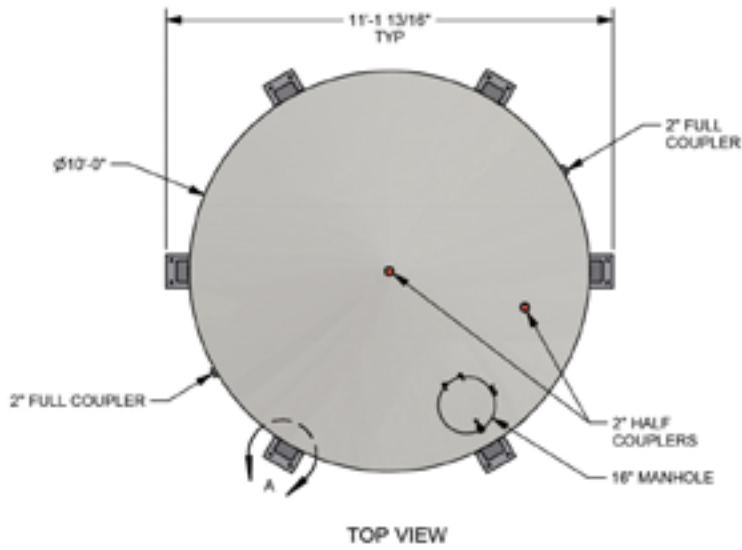
FRONT VIEW



DETAIL A
BASE PLATE

BIN MODEL	ITEM #	MATERIAL	DIMENSION A	DIMENSION B	DIMENSION C	WEIGHT
808 304SS 2B	1708088	304SS	10'-1 7/8"	8'-0"	12'-4 1/4"	1560 lb
810 304SS 2B	1708108	304SS	12'-1 7/8"	10'-0"	14'-0 3/16"	1812 lb
812 304SS 2B	1708128	304SS	14'-1 7/8"	12'-0"	15'-9 1/16"	1796 lb
814 304SS 2B	1708148	304SS	16'-1 7/8"	14'-0"	17'-6 9/16"	2385 lb
816 304SS 2B	1708168	304SS	18'-1 7/8"	16'-0"	19'-4 5/8"	2623 lb
808 316SS 2B	190808	316SS	10'-1 13/16"	8'-0"	12'-4 3/16"	1573 lb
810 316SS 2B	190810	316SS	12'-1 13/16"	10'-0"	14'-0 1/8"	1819 lb
812 316SS 2B	190812	316SS	14'-1 13/16"	12'-0"	15'-9"	1800 lb
814 316SS 2B	190814	316SS	16'-1 13/16"	14'-0"	17'-6 1/2"	2416 lb
816 316SS 2B	190816	316SS	18'-1 13/16"	16'-0"	19'-4 1/2"	2640 lb

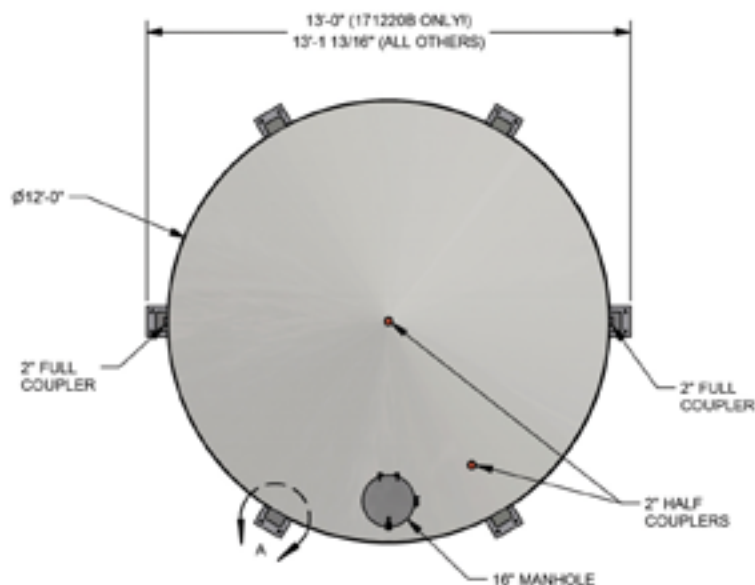
DESIGN NOTES
 MAX. PRODUCT DENSITY: 90 p.c.f.
 (FREE FLOWING MATERIAL ONLY)
 DESIGN PRESSURES: +6oz/-0.4oz PRESS/VAC
 SEISMIC: S_s = 0.15 (U.S.)
 WIND: 105 mph (U.S.)



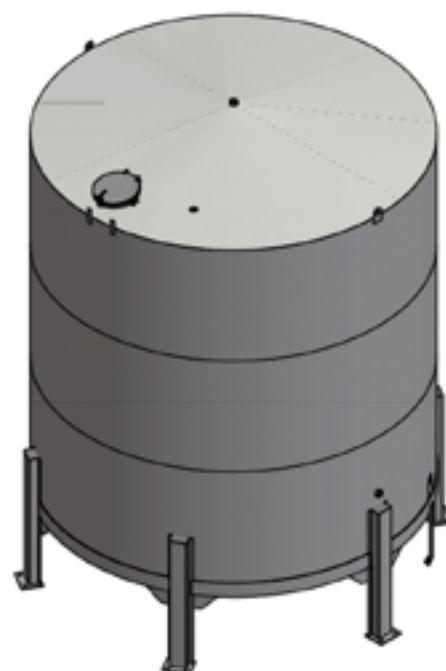
BIN MODEL	ITEM #	MATERIAL	DIMENSION A	DIMENSION B	DIMENSION C	WEIGHT
1010 304SS 2B	179010B	304SS	13'-3"	10'-0"	16'-0 5/8"	2605 lb
1012 304SS 2B	179012B	304SS	15'-3"	12'-0"	18'-4 3/4"	3102 lb
1014 304SS 2B	179014B	304SS	17'-3"	14'-0"	19'-5 3/8"	3606 lb

DESIGN NOTES

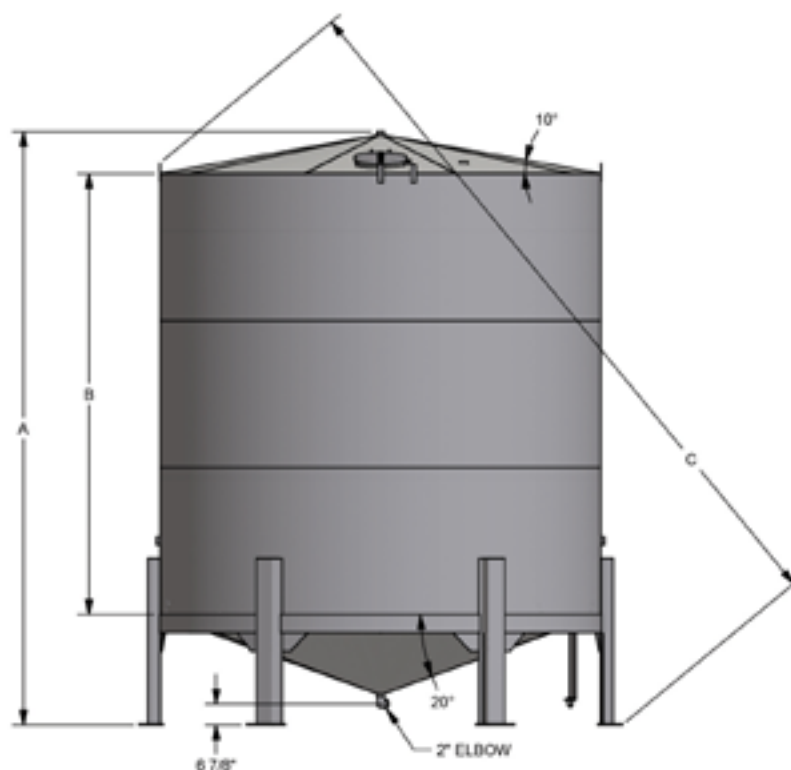
MAX. PRODUCT DENSITY: 90 p.c.f.
(FREE FLOWING MATERIAL ONLY)
DESIGN PRESSURES: +8oz/-0.4oz PRESS/VAC
SEISMIC: $S_a = 0.15$ (U.S.)
WIND: 105 mph (U.S.)



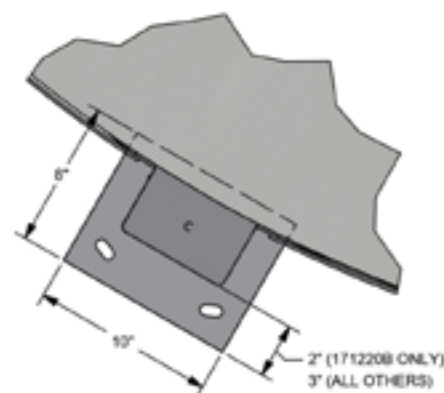
TOP VIEW



ISO VIEW



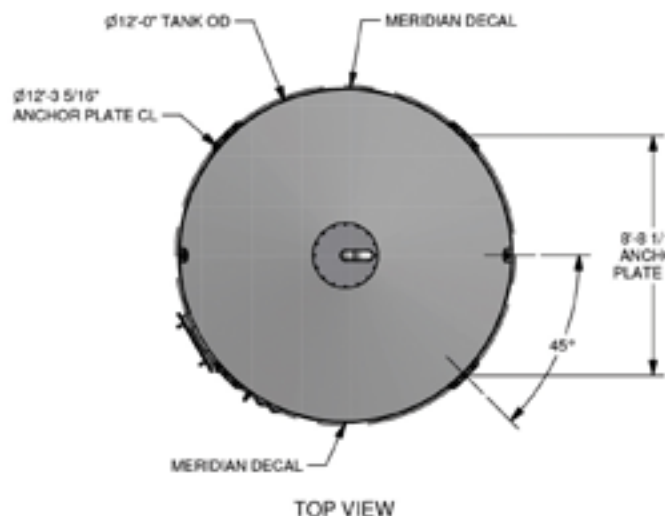
FRONT VIEW


DETAIL A
BASE PLATE

BIN MODEL	ITEM #	MATERIAL	DIMENSION A	DIMENSION B	DIMENSION C	WEIGHT
1210 304SS 2B	171210B	304SS	14'-1 7/8"	10'-0"	18'-4 1/16"	3417 lb
1212 304SS 2B	171212B	304SS	16'-1 7/8"	12'-0"	19'-9 5/8"	3846 lb
1214 304SS 2B	171214B	304SS	18'-1 7/8"	14'-0"	21'-4 5/8"	4484 lb
1216 304SS 2B	171216B	304SS	20'-1 7/8"	16'-0"	23'-0 7/16"	5034 lb
1220 304SS 2B	171220B	304SS	24'-1 7/8"	20'-0"	26'-5 3/8"	6512 lb

DESIGN NOTES

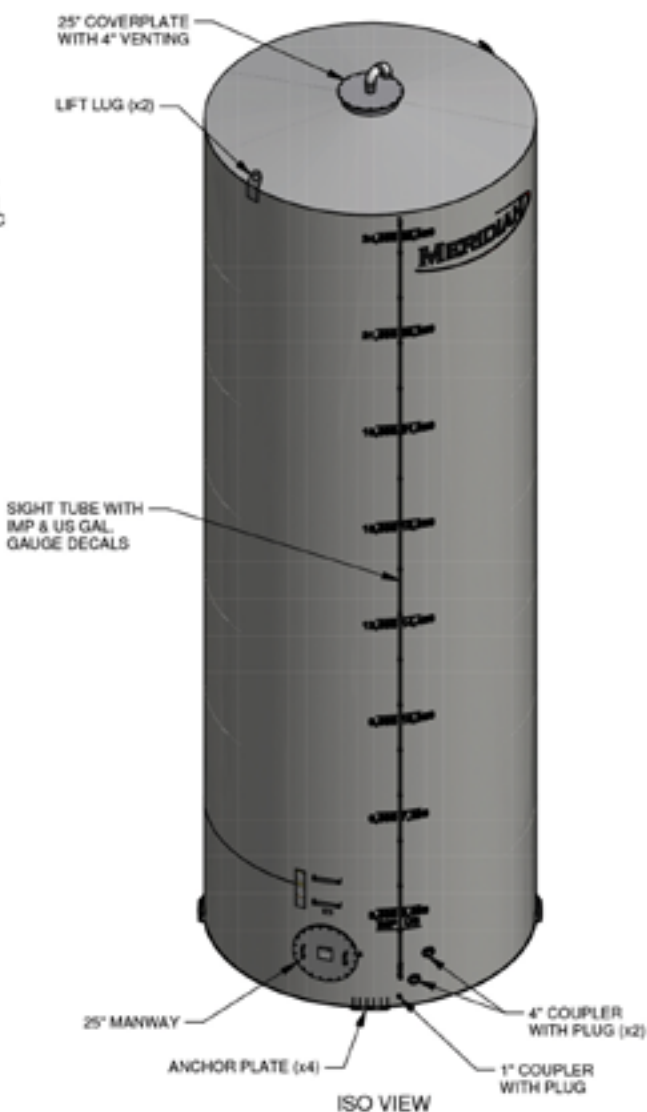
MAX. PRODUCT DENSITY: 90 p.c.f.
 (FREE FLOWING MATERIAL ONLY)
 DESIGN PRESSURES: +6oz/-0.4oz PRESS/VAC
 SEISMIC: $S_s = 0.15$ (U.S.)
 WIND: 105 mph (U.S.)



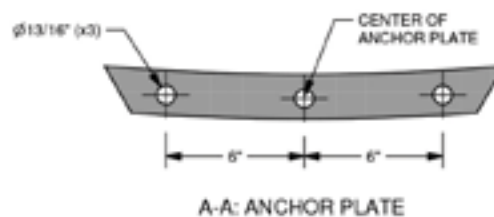
TOP VIEW



FRONT VIEW



ISO VIEW



A-A: ANCHOR PLATE

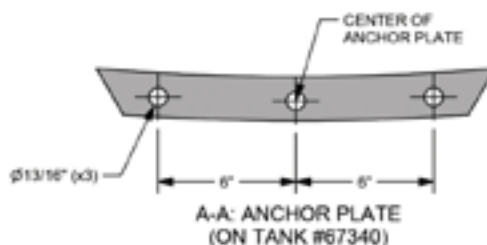
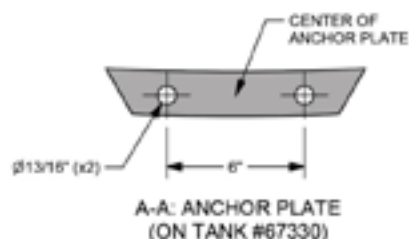
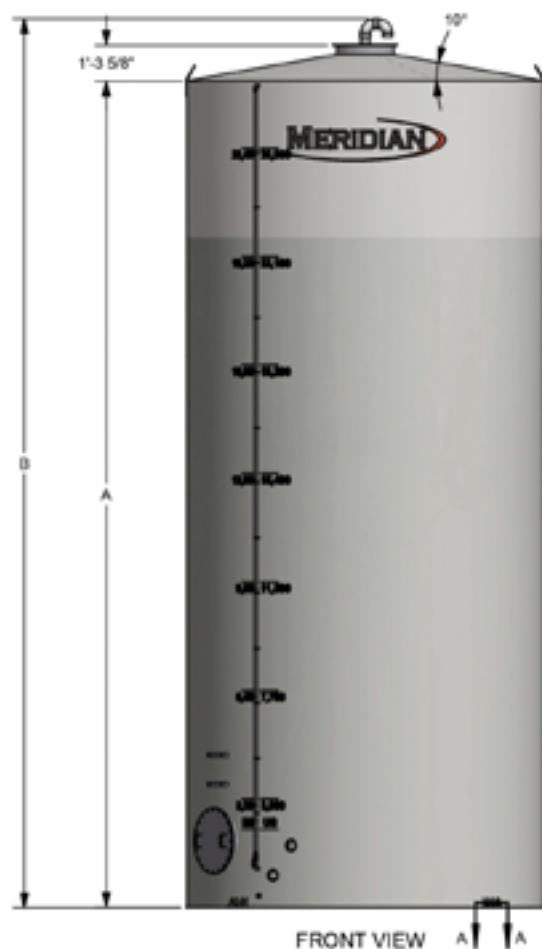
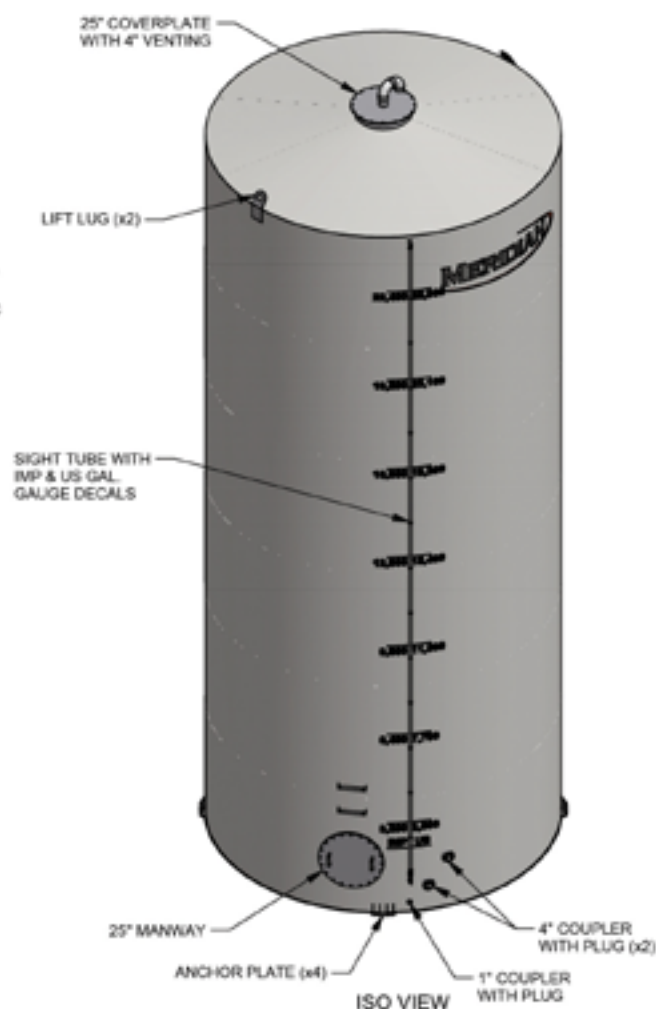
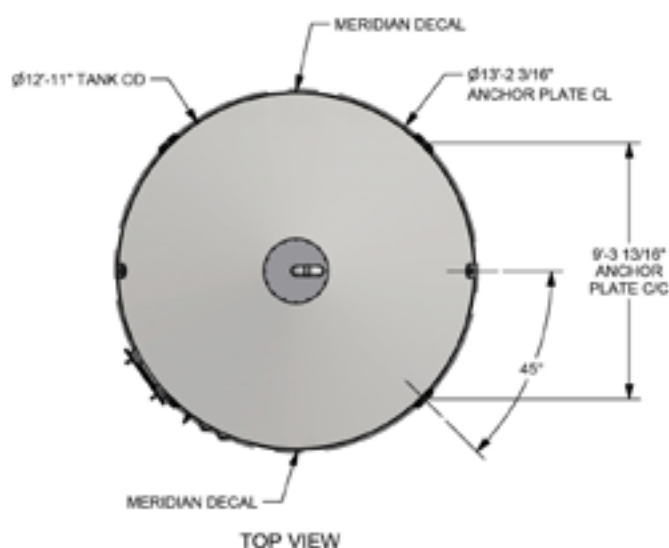
DESIGN NOTES

MAX. PRODUCT DENSITY: 90 p.c.f.
(FREE FLOWING MATERIAL ONLY)
DESIGN PRESSURES: +8.0psi / -0.402 PRESS/VAC
SEISMIC: $S_s = 0.1$ (U.S.), $S_s (2) = 0.12$ (CAN)
WIND: 90 mph (U.S.), 0.7 kPa (CAN)

COATING SPECIFICATIONS

EXTERIOR COATING: NONE
INTERIOR COATING: NONE
ACCESSORY COLOUR: N/A

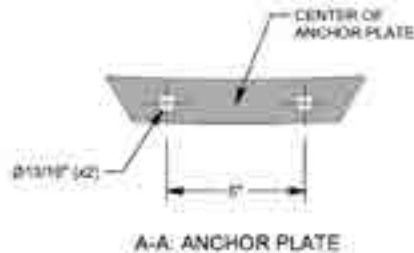
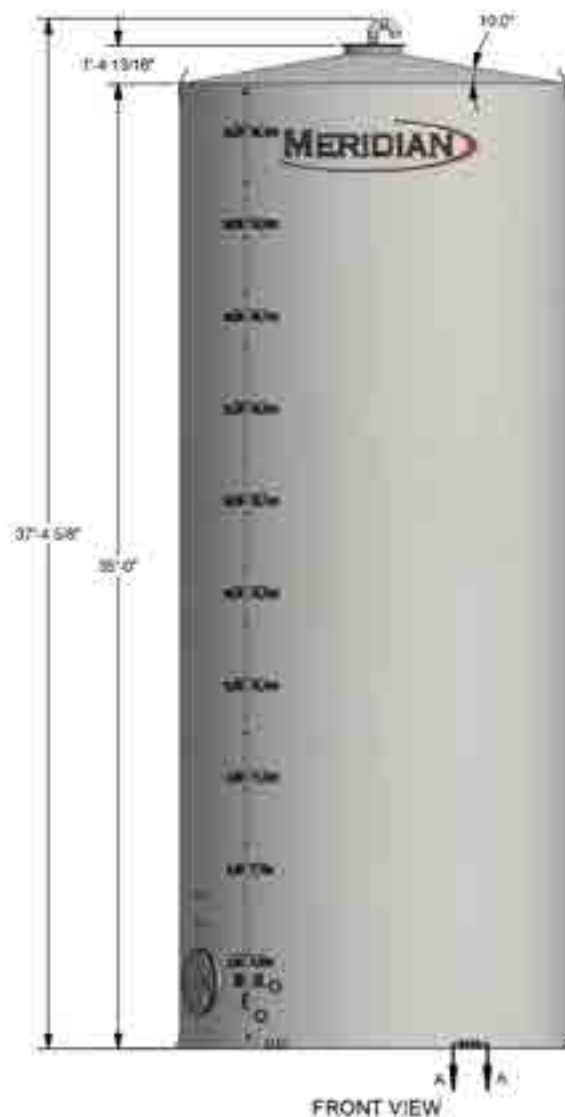
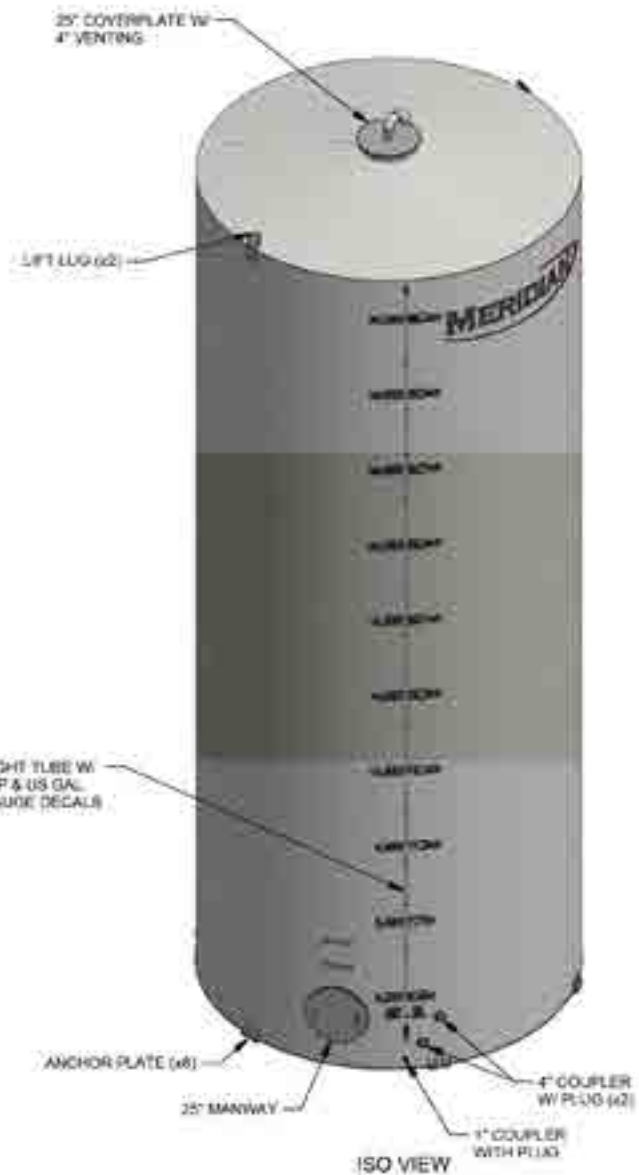
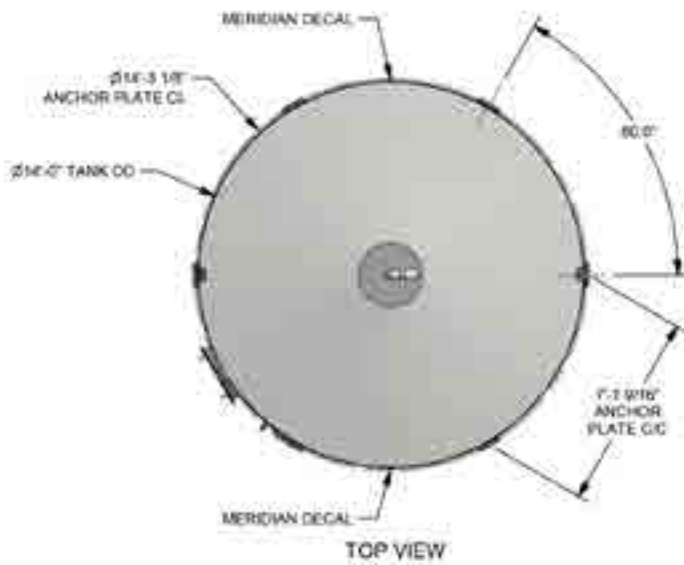
BIN MODEL	ITEM #	DIMENSION A	DIMENSION B	WEIGHT	VOLUME
SS1235	67235	35'-0"	37'-2 7/16"	9242 lb	3981 ft ³



DESIGN NOTES
 MAX. PRODUCT DENSITY: 90 p.c.f.
 (FREE FLOWING MATERIAL ONLY)
 DESIGN PRESSURES: +8oz/-0.4oz PRESS/VAC
 SEISMIC: $S_s = 0.1$ (U.S.), $S_a (2) = 0.12$ (CAN)
 WIND: 90 mph (U.S.), 0.7 kPa (CAN)

COATING SPECIFICATIONS
 EXTERIOR COATING: NONE
 INTERIOR COATING: NONE
 ACCESSORY COLOUR: N/A

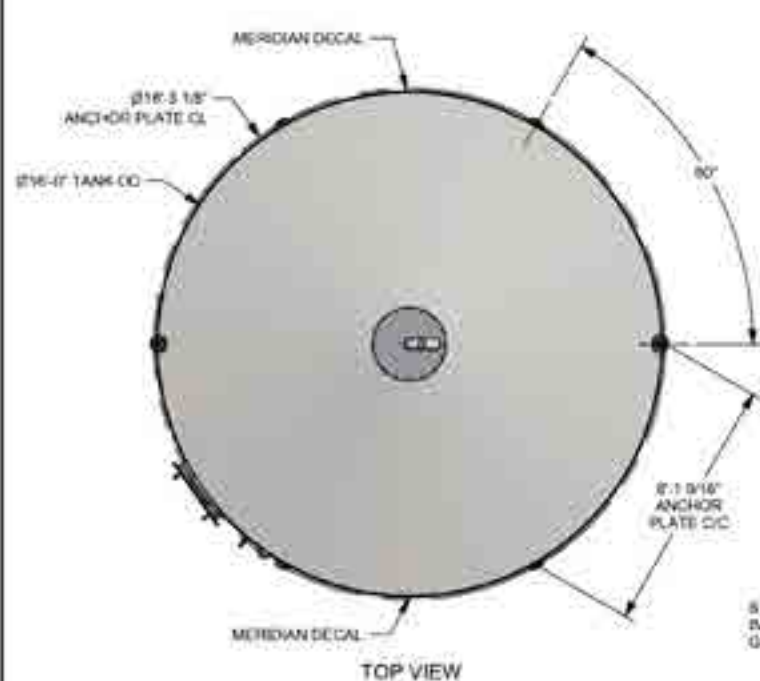
BIN MODEL	ITEM #	DIMENSION A	DIMENSION B	WEIGHT	VOLUME
SS1330	67330	30'-0"	32'-3 3/8"	8784 lb	3910 ft ³
SS1340	67340	40'-0"	42'-3 3/8"	11565 lb	5220 ft ³



DESIGN NOTES
 MAX. PRODUCT DENSITY: 20 pcf
 (FREE FLOWING MATERIAL ONLY)
 DESIGN PRESSURES: +60psi/-0.4atm PRESS/VAC
 SEISMIC: Ss = 0.1 (U.S.), Ss (2) = 0.12 (CAN)
 WIND: 50 mph (U.S.), 0.7 kPa (CAN)

COATING SPECIFICATIONS
 EXTERIOR COATING: NONE
 INTERIOR COATING: NONE
 ACCESSORY COLOUR: N/A

R/N MODEL	ITEM #	WEIGHT	VOLUME
SS1435	67435	10 885 lb	5270 ft ³



A-A ANCHOR PLATE
(ON TANKS #67620, 67625, 67630)



A-A: ANCHOR PLATE
(ON TANKS #67635 & 67640)

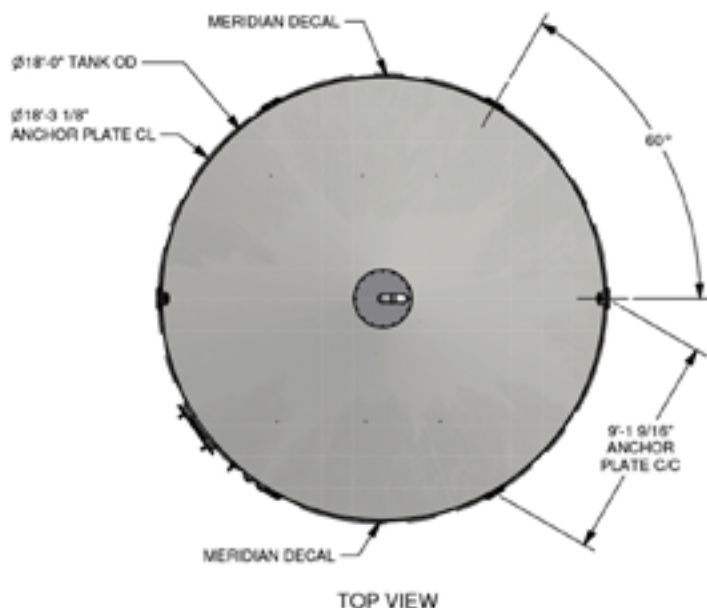
BIN MODEL	ITEM #	DIMENSION A	DIMENSION B	WEIGHT	VOLUME
SS1620	67620	30" 0"	22" 6 5/8"	9744 lb	4070 ft ³
SS1625	67625	30" 0"	27" 6 5/8"	9896 lb	5070 ft ³
SS1630	67630	30" 0"	32" 6 1/2"	11370 lb	6010 ft ³
SS1635	67635	35" 0"	37" 6 1/2"	15336 lb	7010 ft ³
SS1640	67640	40" 0"	42" 6 1/2"	15006 lb	8010 ft ³

DESIGN NOTES

DESIGN NOTES
MAX. PRODUCT DENSITY: 90 pcf
(FREE FLOWING MATERIAL ONLY)
DESIGN PRESSURES: +60/-0.4oz PRESS/VAC
SEISMIC: Ss = 0.1 (U.S.), Ss(2) = 0.12 (CAN)
WIND: 90 mph (U.S.), 0.7 kPa (CAN)

COATING SPECIFICATIONS

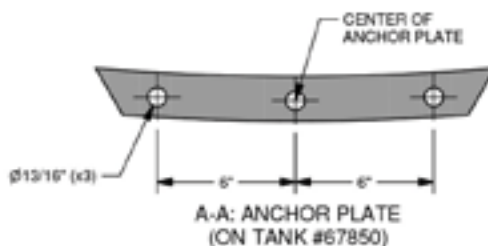
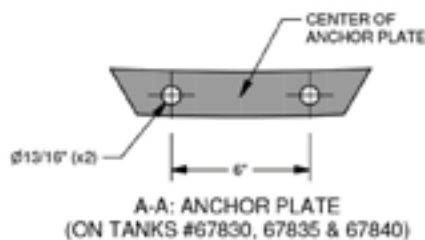
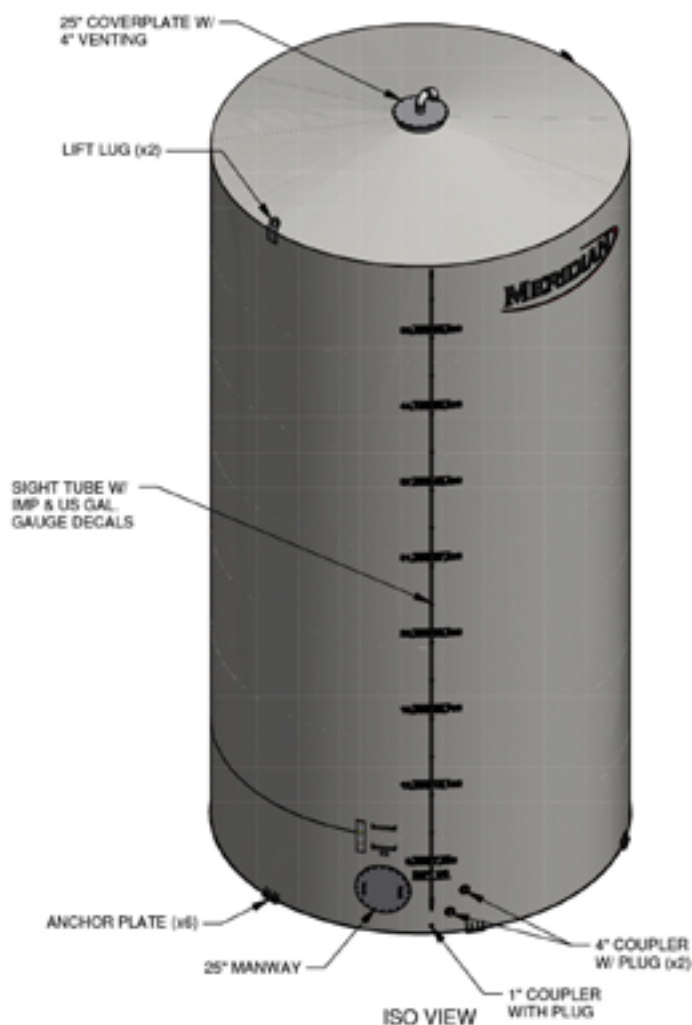
EXTERIOR COATING: NONE
INTERIOR COATING: NONE
ACCESSORY COLOUR: N/A



TOP VIEW



FRONT VIEW



BIN MODEL	ITEM #	DIMENSION A	DIMENSION B	WEIGHT	VOLUME
SS1830	67830	30'-0"	32'-8 13/16"	14 965 lb	7610 IP
SS1835	67835	35'-0"	37'-8 13/16"	16 250 lb	8880 IP
SS1840	67840	40'-0"	42'-8 13/16"	18 454 lb	10 150 IP
SS1850	67850	50'-0"	52'-8 13/16"	22 903 lb	12 680 IP

DESIGN NOTES
 MAX. PRODUCT DENSITY: 90 p.c.f
 (FREE FLOWING MATERIAL ONLY)
 DESIGN PRESSURES: +8oz/-0.4oz PRESS/VAC
 SEISMIC: $S_a = 0.1$ (U.S.), $S_a (2) = 0.12$ (CAN)
 WIND: 90 mph (U.S.), 0.7 kPa (CAN)

COATING SPECIFICATIONS
 EXTERIOR COATING: NONE
 INTERIOR COATING: NONE
 ACCESSORY COLOUR: N/A

This page intentionally left blank



(800) 437-2334, (800) 665-7259 | www.meridianmfg.com | stainless@meridianmfg.com