

# MERIDIAN

## OPERATOR'S MANUAL



# FOR VERTICAL DOUBLE WALL FUEL TANKS

[www.MeridianMFG.com](http://www.MeridianMFG.com)





# PRODUCT WARRANTY REGISTRATION FORM



www.meridianmfg.com

## WARRANTY REGISTRATION

*This form must be filled out by the dealer and signed by both the dealer and the customer at the time of delivery. Please mail or fax the completed form for validation of the equipment registration.*

Customer's Name \_\_\_\_\_

Address \_\_\_\_\_

City, State, Postal Code \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

Phone Number (\_\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

## PRODUCT INFORMATION

Fuel Tank Model # \_\_\_\_\_

Serial Number # \_\_\_\_\_

*I have thoroughly instructed the buyer on the above-described equipment, including review of the Operator's Manual content, equipment care, adjustments, operational use, safety procedures, and applicable warranty policy.*

Dealer/Company Name \_\_\_\_\_

City, State, Postal Code \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

Dealer's Signature \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_

*The above equipment and Operator's Manual have been received by me, and I have been thoroughly instructed as to care, adjustments, safe operation, and applicable warranty policy.*

Owner's Signature \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_

2902 Expansion Blvd. Storm Lake, Iowa 50588 Phone: 800-437-2334 Fax: 712-732-1028 Email: iowa\_warranty@meridianmfg.com

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**PRODUCT WARRANTY**  
REGISTRATION FORM



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**DEALER INSPECTION REPORT**

- \_\_\_ Make sure the cap of the emergency vent will raise off of the base.
- \_\_\_ Make sure the "Tank Vent" warning label is attached to the fill cap.
- \_\_\_ If installed, make sure the fuel pump is working properly.
- \_\_\_ Make sure the owner is instructed to hire a professional electrician to install wiring for the fuel pump.



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2902 Expansion Blvd.  
Storm Lake, IA 50588  
Phone: 712-732-1780  
Fax: 712-732-1028

## CERTIFICATE OF ORIGIN

### LICENSING INFORMATION

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

DEALER:

\_\_\_\_\_  
Business  
\_\_\_\_\_  
Contact  
\_\_\_\_\_  
Address  
\_\_\_\_\_  
City, State, Zip

SOLD TO:

\_\_\_\_\_  
Business  
\_\_\_\_\_  
Contact  
\_\_\_\_\_  
Address  
\_\_\_\_\_  
City, State, Zip

FUEL TANK MODEL # \_\_\_\_\_

4000 gal. Fuel Tank Bone White	64056
5000 gal. Fuel Tank Bone White	64068
8500 gal. Fuel Tank Bone White	64045
10000 gal. Fuel Tank Bone White	64044
12000 gal. Fuel Tank Bone White	64040
15000 gal. Fuel Tank Bone White	64080

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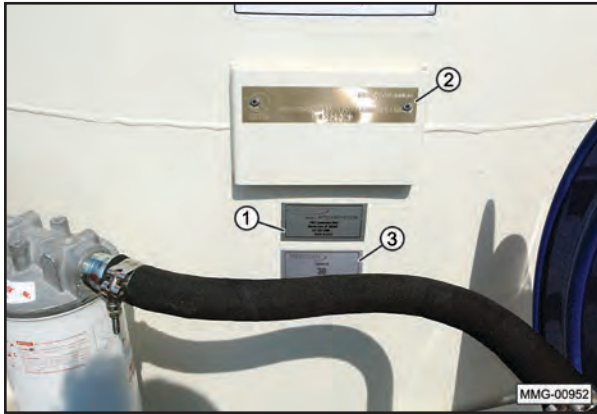


# IMPORTANT INFORMATION

## SERIAL NUMBER LOCATION

Please provide the serial number of your Meridian Fuel Tank when ordering parts or requesting service or other information.

The serial number plates are located where indicated. Please record the numbers in the space provided below for easy reference.



Tank Capacity: \_\_\_\_\_

(1) Meridian Serial Number: \_\_\_\_\_

(2) UL Listing Serial Number: \_\_\_\_\_

(3) Factory ID Number: \_\_\_\_\_

## PATENT INFORMATION



Meridian continuously enhances its product offering through product improvements and new product innovations. Marketplace feedback, technological innovation, new materials and manufacturing methods, and a philosophy of continuous improvement constantly challenge the company to develop new and better ways of addressing market needs. Meridian is committed to innovation and reinvestment and as a result, the company maintains a portfolio of patents and intellectual property. For more information on our patents please see our website: [www.meridianmfg.com/patents](http://www.meridianmfg.com/patents)

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# 1. INTRODUCTION

## 1.1 CONGRATULATIONS

Congratulations on your choice of a Meridian Manufacturing Inc. Fuel Tank to complement your farming operation. This equipment has been designed and manufactured to meet the exacting standards for such equipment in the agricultural industry and will keep your operation running at optimum efficiency.




The Fuel Tank is designed to store gasoline or diesel fuel for agricultural applications.

This above-ground, steel fuel storage tank complies with local, state, and federal regulations for bulk fuel storage of gasoline or diesel fuel. The tank uses a double wall system which is in use worldwide.

Safe, efficient, and trouble-free operation of your Fuel Tank requires that you, and anyone else who will be using the tank, read and understand the Safety, Operation, Maintenance, and Troubleshooting information contained within this Operator's Manual.

This manual covers the 4000, 8500, 10000, 12000, and 15000 gallon Vertical Double Wall tanks manufactured by Meridian Manufacturing Inc. Use the Table of Contents as a guide to locate required information.

### **WARNING**

 **Do not install or fill the tank until you read and understand the information contained in this manual.**

## 1.2 OWNER/USER

**It is the responsibility of the owner/user to read this manual and to train all other users before they start using the tank. Follow all safety instructions exactly. Safety is everyone's business. By following recommended procedures, a safe working environment is provided for the user, bystanders, and the area around the work site. Untrained users are not qualified and must not use this tank.**

**In addition to the design and configuration of the tank, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the installing, filling, and using this tank. It is the responsibility of the owner or user to read this manual and to train all users before using the tank. Follow all safety instructions as provided in this manual.**

Keep this manual available for easy reference and to pass on to new owners. Call your Meridian Manufacturing Inc. dealer if you need assistance, information, or additional copies of the manuals.

The information, specifications, and illustrations in this manual are those in effect at the time of printing. We reserve the right to change specifications or design at any time without notice.

## 1.3 DISPOSAL OF EQUIPMENT AT END OF USEFUL LIFE

The Fuel Tank has been designed for the specific purpose of storing gasoline or diesel fuel. When this tank is no longer capable of performing its designed purpose, it should be removed from service in compliance with applicable regulations, then dismantled and scrapped. Do not use any materials or components from this tank for any other purpose.

## 2. SAFETY

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### SAFETY ALERT SYMBOL

This Safety Alert symbol means  
**ATTENTION! BECOME ALERT!**  
**YOUR SAFETY IS INVOLVED!**



The Safety Alert symbol identifies important safety messages on the Meridian Fuel Tank Models and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

### WHY IS SAFETY IMPORTANT TO YOU?

#### 3 Big Reasons

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

### SIGNAL WORDS:

Note the use of the signal words **DANGER**, **WARNING**, and **CAUTION** with the safety messages. The appropriate signal word for each message has been selected using the following guidelines:

#### **CAUTION**

**CAUTION** - Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

#### **WARNING**

**WARNING** - Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

#### **DANGER**

**DANGER** - Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations typically for equipment components which, for functional purposes, cannot be guarded.

If you have any questions not answered in this manual, require additional copies of the manual, or the manual is damaged, please contact your dealer or Meridian Manufacturing Group, 2902 Expansion Blvd., Storm Lake, Iowa, 50588, toll free 1-800-437-2334, phone (712) 732-1780, or fax (712) 732-1028.

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## 2.1 ADDITIONAL SAFETY WORDS

### NOTICE

*Indicates that equipment or property damage can result if instructions are not followed.*

---

### SAFETY INSTRUCTIONS

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

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**Note:** Contains additional information important to a procedure.

## 2.2 SAFETY TRAINING

1. Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator or bystander.
2. Know your controls and how to immediately stop the fuel pump in an emergency. Read this manual and the one provided with all auxiliary equipment.

**YOU** are responsible for the **SAFE** operation and maintenance of your Meridian Manufacturing Inc. Fuel Tank. **YOU** must ensure that you and anyone else who is going to operate, maintain, or work around the Fuel Tank be familiar with the operating and maintenance procedures and related **SAFETY** information contained in this manual. This manual will take you step-by-step through your working day and alert you to all good safety practices that should be adhered to while using the Fuel Tank.

Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this equipment is familiar with the recommended operating and maintenance procedures and follow all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

- Fuel Tank owners must give operating instructions to users before allowing them to operate the equipment, and then annually thereafter per OSHA (Occupational Safety and Health Administration) regulation 1928.57.
- The most important safety feature on this equipment is a **SAFE** operator. It is the operator's responsibility to read and follow **ALL** safety and operating instructions in the manual. Most accidents can be avoided.
- A person who has not read and understood all operating and safety instructions is not qualified to operate the equipment. An untrained operator exposes themselves and bystanders to possible serious injury or death. Always be and stay alert to any possible unsafe operating or maintenance procedures or conditions.
- Do not modify the fuel tank in any way. Unauthorized modification may impair the function and/or safety of the components and could affect the life of the equipment, possibly invalidating the warranty coverage.
- Think SAFETY! Work SAFELY!

## 2.3 SAFETY ICON NOMENCLATURE

Pictorial icons signal a type of hazard and warn of personal protection issues, prohibited actions, and hazard avoidance.










### 2.3.1 Personal Protection/Important Information

-  Read the manual
-  Damaged safety signs
-  Eye protection
-  Fire extinguisher
-  First aid kit
-  Hand protection
-  Inspect equipment
-  OEM parts only
-  Think safety
-  Use proper tools
-  Use respirator
-  Fill before use.


### 2.3.2 Prohibited Actions

-  Do not alter or modify
-  Do not weld
-  No alcohol
-  No drugs
-  No young children
-  No open flame
-  No smoking

### 2.3.3 Hazard Avoidance



-  Fall hazard
-  Safety alert symbol
-  Slipping hazard
-  Tripping injury
-  Shock hazard
-  Fire hazard
-  Dangerous fumes
-  Poison material hazard
-  Provide proper ventilation
-  Avoid skin contact
-  Safety shields

## 2.4 GENERAL SAFETY

-  Read and understand the Operator's Manual and all safety signs before installing, filling, or using the Fuel Tank.

The Fuel Tank has been designed for the specific purpose of storing gasoline or diesel fuel. DO NOT modify or use this tank for any application other than that for which it was designed.

Tanks that are filled or operated improperly or by untrained personnel can be dangerous, exposing themselves and/or bystanders to possible serious injury or death.

-  Have a first aid kit available for use should the need arise and know how to use it.
-  Have a fire extinguisher available for use should the need arise and know how to use it.

When working around or operating this tank, wear appropriate personal protective equipment. This list includes but is not limited to:



- Protective goggles or glasses.
- Gloves and protective clothing.



Clear the area of people, especially small children, before filling the tank or refueling machinery.



Review safety related items annually with all personnel who will be operating, using, or maintaining the Fuel Tank.



Provide the end user with the owner/operator literature. Fuel Tank owners must provide operating instructions to anyone using the tank.



Under no circumstances should young children be allowed to work with or around the Fuel Tank.



Do not attempt to fill or use this tank under the influence of drugs or alcohol. Consult your doctor before using this tank while taking prescription medications.

## 2.5 SAFETY SIGNS

Refer to the Safety Signs Locations section for safety information.

## 2.6 INSTALLATION

Refer to the Installation section for safety information.

## 2.7 OPERATING SAFETY

Refer to the Operation section for safety information.

## 2.8 MAINTENANCE SAFETY

Refer to the Maintenance section for safety information.

## 2.9 DIESEL FUEL SAFETY

### 2.9.1 Inhalation Hazard

**⚠ DANGER**



Always avoid breathing fuel vapors or mists which may cause dizziness, drowsiness, moderate eye irritation, and/or skin irritation (rash). Excessive exposure may cause irritations to the nose, throat, lungs, and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

In case of inhalation, move the person to fresh air. If the person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

### 2.9.2 Fire and Explosion Hazards

**⚠ WARNING**



Diesel fuel presents a moderate fire hazard. Vapors may be ignited rapidly when exposed to heat, spark, open flame, or other source of ignition. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

### 2.9.3 Eye Protection

**⚠ WARNING**



Safety glasses or goggles are recommended where there is a possibility of splashing or spraying. Contact with liquid or vapor may cause mild irritation.

In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 minutes. Hold eyelids open to ensure adequate flushing. Seek medical attention.

## 2.9.4 Ingestion

### **WARNING**



The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure, and even death. Ingestion will cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

In case of ingestion DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Monitor for breathing difficulties.

Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

## 2.9.5 Skin Protection

### **CAUTION**



Contact with diesel fuel may cause skin irritation with prolonged or repeated contact. Chemical protective clothing, including gloves constructed of nitrile, neoprene, or PVC, is recommended when in close contact with diesel fuel. Long-term, repeated exposure to diesel fuel may cause skin cancer.

In case of contact with skin, remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops.

## 2.9.6 Storage Precautions

### **CAUTION**



Keep away from flame, sparks, excessive temperatures, and open flame. Keep tank fill port closed because an empty tank may contain explosive vapors. Do not pressurize, cut, heat, weld, or expose tanks to sources of ignition.



Store the tank in a well-ventilated area. Avoid storage near incompatible materials.

## 2.10 GASOLINE SAFETY

### 2.10.1 Inhalation Hazard

### **DANGER**



Always avoid breathing fuel vapors or mists which may cause headache, nausea, dizziness, drowsiness, confusion, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death. Excessive exposure may cause irritations to the nose, throat, lungs, and respiratory tract. Central nervous system (brain) effects may include convulsions and seizures.

In case of inhalation, move the person to fresh air. If the person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

### 2.10.2 Fire and Explosion Hazards

### **WARNING**



Gasoline is a Class IB Flammable Liquid. Vapors may be ignited rapidly when exposed to heat, spark, open flame, or other source of ignition. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

---

### 2.10.3 Eye Protection

#### **WARNING**



Safety glasses or goggles are recommended where there is a possibility of splashing or spraying. Contact with liquid or vapor may cause mild irritation.

In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 minutes. Hold eyelids open to ensure adequate flushing. Seek medical attention.

---

### 2.10.4 Ingestion

#### **WARNING**



The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure, and even death. Ingestion will cause gastrointestinal disturbances, including irritation, nausea, and vomiting and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

In case of ingestion **DO NOT INDUCE VOMITING**. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Monitor for breathing difficulties.

Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

---

### 2.10.5 Skin Protection

#### **CAUTION**



Contact with gasoline may cause skin irritation with prolonged or repeated contact. Wearing gloves constructed of nitrile, neoprene, or PVC are recommended when in close contact with gasoline. Chemical protective clothing should also be worn. Long-term, repeated exposure to gasoline may cause skin cancer.

In case of contact with skin, remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops.

---

### 2.10.6 Storage Precautions

#### **CAUTION**



Keep away from flame, sparks, excessive temperatures, and open flame. Keep tank fill port closed because an empty tank may contain explosive vapors. Do not pressurize, cut, heat, weld, or expose tanks to sources of ignition.



Store the tank in a well-ventilated area. Avoid storage near incompatible materials.

---



## 2.11 BIODIESEL

Biodiesel is a fuel made from vegetable oil or animal fat that has been processed to meet the requirements of ASTM D6751 standard. Unprocessed or recycled vegetable oils are not biodiesel.

Biodiesel is often blended with petroleum diesel fuel. When blended, the resulting fuel is known by the percentage of biodiesel in the blend; ie. a 20% biodiesel blend with 80% petroleum diesel is known as B20. Pure biodiesel is B100. Blends with 20% biodiesel or less (B1-B20) are generally treated like petroleum diesel fuel.

B100 (100% biodiesel) that meets ASTM D6751 has a "gel" point of 38°F (3.3°C). In some situations, tank and pipeline heaters may be needed to keep the temperature of the B100 above 40°F.

Biodiesel has scrubbing and cleaning properties that tend to loosen rust, varnish, and dirt in storage tanks, piping, and equipment. The resulting debris can clog filters and screens, or damage equipment. It is important to take precautions to prevent problems when first using biodiesel.

The shelf life of biodiesel is six months for best performance. Microbial growth may occur if biodiesel is stored for longer periods.

### NOTICE

*The standard pump and meter are not compatible with biodiesel fuel blends greater than 20% (B20). Damage to the seals will occur. For fuel with more than 20% biodiesel, use a pump and meter specifically designed for biodiesel fuel blends.*

## 2.12 U.S. FEDERAL, STATE, AND LOCAL REGULATORY INFORMATION

### SAFETY INSTRUCTIONS



**Diesel fuel is on the EPA TSCA Inventory. Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product may also be subject to other regulations at the state and/or local level. Always consult the regulations applicable to your area prior to operation.**

### 2.12.1 SPCC Program

The goal of the Spill Prevention, Control, and Countermeasure (SPCC) program is to prevent oil spills into navigable waters and adjoining shorelines. The program requires farms with oil storage to have a spill prevention plan in place.

SPCC applies to farms which store, transfer, use, or consume oil or oil products, including diesel fuel or gasoline, and store more than 1,320 U.S. gallons in aboveground containers.


There are multiple options for SPCC Plans, depending on the type of farming operation. For specific information, visit:  
[http://www.epa.gov/emergencies/content/spcc/spcc\\_ag.htm](http://www.epa.gov/emergencies/content/spcc/spcc_ag.htm).



# 3. SAFETY SIGNS

## 3.1 GENERAL INFORMATION

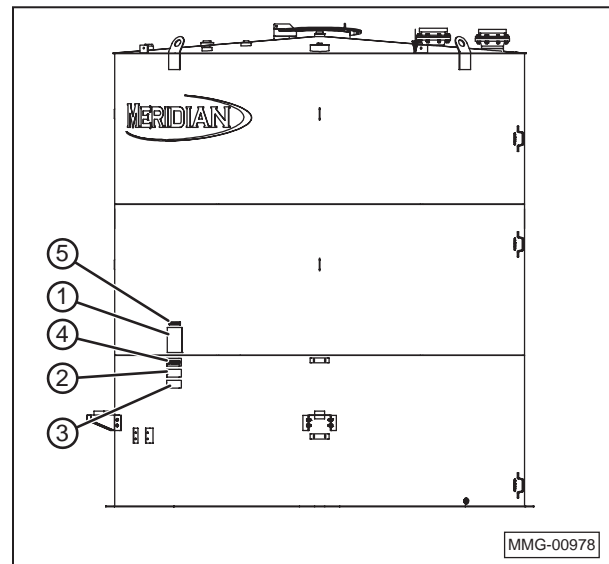
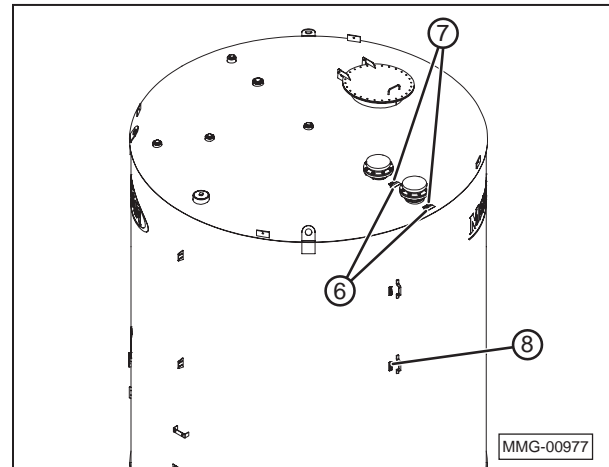
The types of safety signs and locations on the fuel tank are shown in the following pages. Good SAFETY AWARENESS requires that you familiarize yourself with the various safety signs, the type of warning and the area, or a particular function related to that area.

1.  If safety signs have been damaged, removed, become illegible, or parts replaced without signs, new signs must be applied.
2. Replacement parts that displayed a safety sign should also display the current sign.
3. Replacement safety signs (labels) are available from your authorized Dealer Parts Department or the factory at no cost.

## 3.2 HOW TO INSTALL SAFETY SIGNS

1. Be sure that the installation area is clean and dry.
2. Be sure the temperature is above 50°F (10°C).
3. Determine the exact position before you remove the backing paper.
4. Remove the smallest portion of the split backing paper.
5. Align the sign over the specified area and carefully press the small portion with the exposed sticky backing in place.
6. Slowly peel back the remaining paper and carefully smooth the remaining portion of the sign in place.
7. Small air pockets can be pierced with a pin and smoothed out using a piece of sign backing paper.

## 3.3 DECAL LOCATIONS



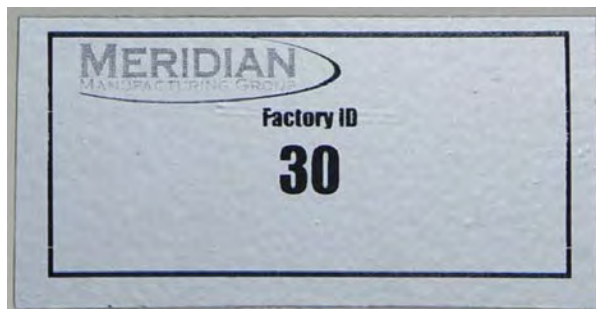
1. Danger - Fire Hazard. (#20048)



2. Serial Number Decal. (#19984)



3. Manufacturing Location.



4. UL Approval Plate, Secondary Containment (#18438).



5. Information Sign. (#19056)



6. Information Sign. (#20105)



7. Information Sign. (#17747)

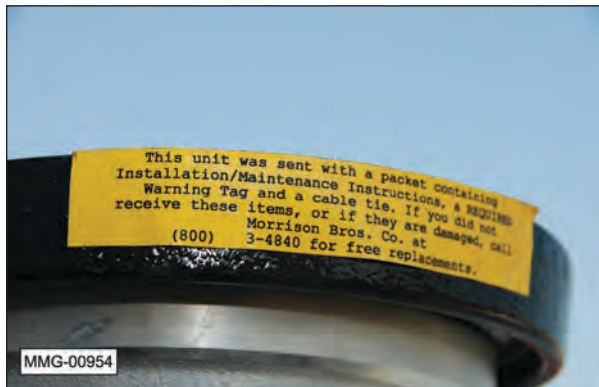


8. Information Sign. (#12844)

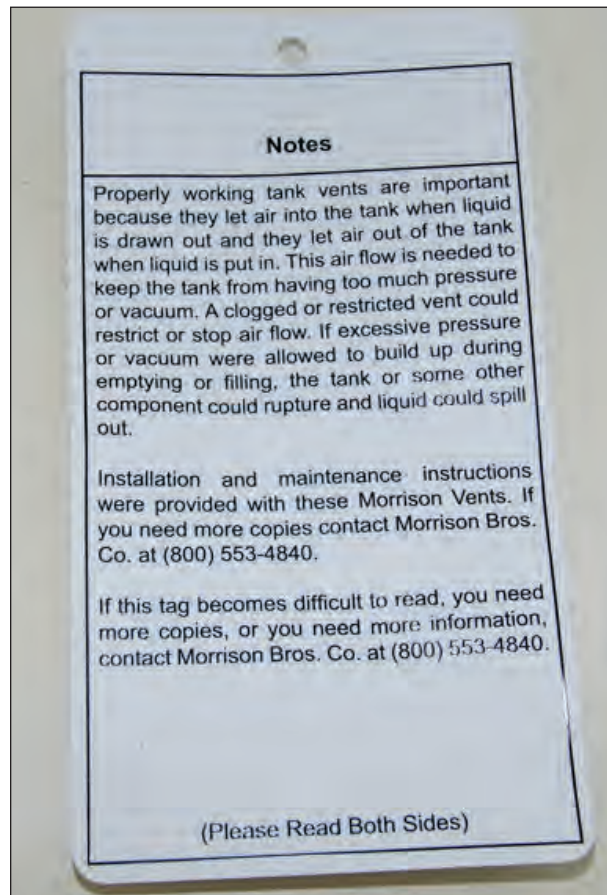


### 3.4 EMERGENCY VENT SAFETY SIGN

Each fuel tank is equipped with emergency tank vents. These emergency vent(s) are designed for use on above ground storage tanks, as a code requirement that helps prevent tanks from becoming over-pressurized or rupturing if exposed to fire.



Attach the warning tag to the fill cap with the supplied tie cable.



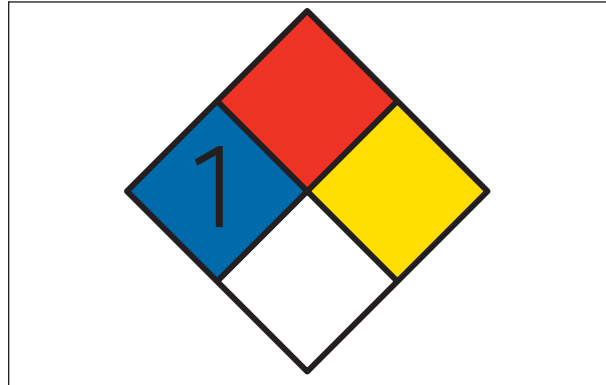
## 4. TANK LABELING

### 4.1 GENERAL INFORMATION

In addition to the safety signs that are supplied on the tank, states generally require permanent tank markings indicating the product stored and system specifications. Check with your local permitting authority for the requirements that apply to your installation. Markings that are commonly required include:

1. The petroleum product stored in the tank (diesel, gasoline, No. 2 fuel oil, used oil for recycling, etc.)
2. The safe fill volume or fill height. This level corresponds to the product level that will activate the high level alarm installed on the tank.
3. Lettering such as "FLAMMABLE - KEEP FIRE AND FLAME AWAY".
4. The appropriate national fire rating system symbol as established by NFPA-704, Identification of Fire Hazards and Materials (known as the NFPA 4-color hazard identification symbol).

The NFPA decal, also known as the hazard identification system, consists of a diamond shape symbol that provides emergency response personnel with information concerning the health hazard, fire hazard, reactivity hazard and any specific hazard the contents of the tank may exhibit. These hazards are represented using a standard rating system to ensure consistency. Therefore, a tank storing diesel fuel will always display the same hazard codes. The appropriate symbols for diesel fuel and gasoline are shown below.



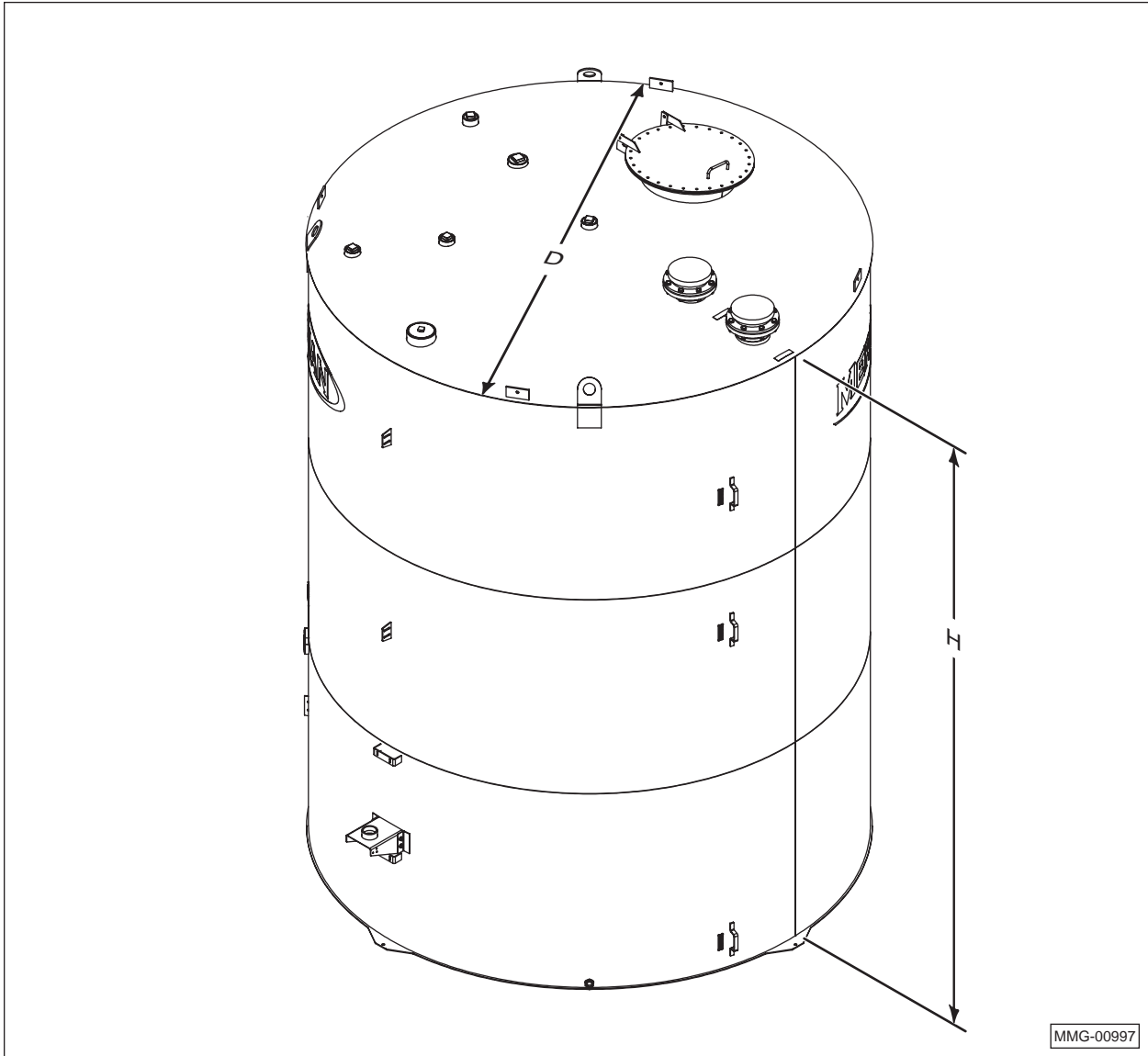
NFPA Gasoline Symbol.



NFPA Diesel Fuel Symbol.

# 5. SPECIFICATIONS

## 5.1 OVERALL DIMENSIONS



## 5.2 SPECIFICATIONS

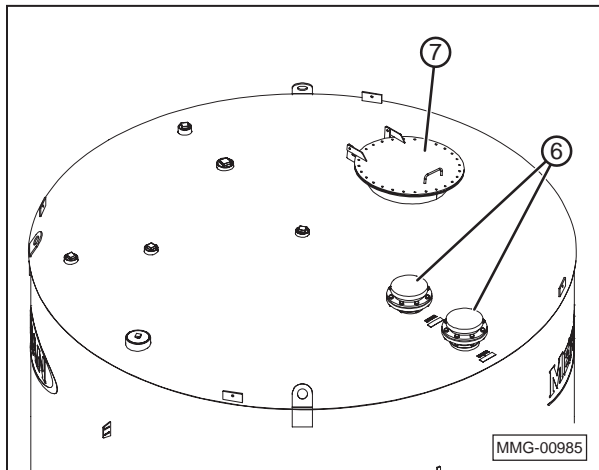
Volume (gal)	(liters)	Diameter (D)	Height (H)	Part No.
4000	15140	8'	12'	64056
5000	18930	8'	15"	64068
8500	32180	12'	12'	64045
10000	37850	12'	14'	64044
12000	45420	12'	16'	64040
15000	56780	13'	15'	64080

# 6. TANK COMPONENTS

The Fuel Tank is designed to store gasoline or diesel fuel for agricultural applications.



(1) Fuel Tank. (2) Tank Vent. (3) Tank Level Gauge. (4) Fuel Shutoff Valve. (5) Top Mounted fuel pump.



(6) Emergency Vent. (7) Manway.



(8) Remote Fill Box.



(9) Fuel Tank Anchor Points.



(10) Top Mounted Fuel Pump.



(11) Fuel Dispenser and Meter.





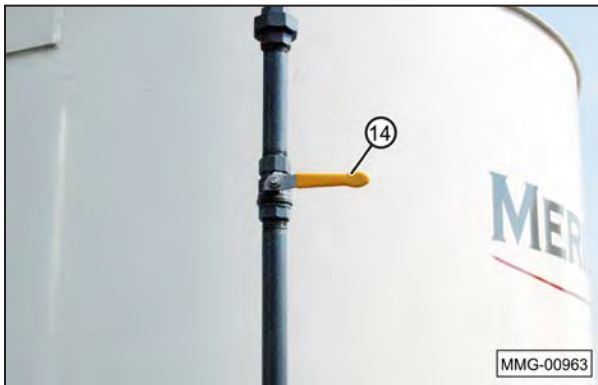
(12) Tank Level Gauge.



(16) Interstitial Space Sight Glass.



(13) Hose Reel.



(14) Fuel Shutoff Valve



(15) Lifting Lug.

# 7. INSTALLATION

## 7.1 SITE SELECTION

The tank must be sited such that it is accessible to employees, fuel delivery drivers, and emergency responders, but not near traffic patterns. It should be located a minimum of 50 feet away from buildings, creeks, roads, wells, power lines, grain bins, and property lines; 100 feet from residences. Do not place the tank where welding and cutting torches are likely to be used. Flat ground is required so that a spill or leak will not run downhill toward creeks, ditches, tiles, or drains. The area under and around the tank should be sufficiently impermeable to retain a discharge until cleanup can occur.

## 7.2 PERMITTING

To install an aboveground fuel storage tank, a permit is usually required by local authorities, which may include the local Fire Department and/or Building Department. The following information is typically required to be submitted:

- Size and type of tank
- UL listing of the tank
- What the tank will be used for
- Location of the tank
- Containment being provided
- Pump and monitoring equipment being used
- Location of the fill/vent piping and containment being provided

## 7.3 MOUNTING FUEL TANK TO CONCRETE PAD

The fuel tank should be securely anchored to a reinforced concrete pad at least six inches thick using four 1/2" anchor bolts to prevent shifting or tipping when full or empty.



## 7.4 ELECTRICAL WIRING PROCEDURE FOR FUEL PUMP

### **⚠ WARNING**



The fuel pump is designed to be installed in association with volatile hydrocarbon liquids such as gasoline and diesel fuel. Installing or working on this equipment means working in an environment in which these highly flammable liquids and vapors may be present. Working in such a hazardous environment presents a risk of severe injury or death if OEM instructions and standard industry practices are not followed. Read and follow all instructions thoroughly before installing or working on this, or any other related equipment.



Electrical wiring should be performed **ONLY** by a licensed electrician in compliance with local, state, and national electrical code NEC/ANSI/NFPA 70, NFPA30, and NFPA 30A, as appropriate to the intended use of the pump.

The fuel tank may be equipped with a top mounted or submersible fuel pump. The pump should be wired according to the appropriate OEM installation procedure. The wiring should be performed by a licensed electrician in compliance with local, state, and national electrical codes.

## 8. OPERATION

### 8.1 OPERATING SAFETY

#### **DANGER**



The Fuel Tank is only intended for use with gasoline or diesel fuel. **DO NOT** use this tank with any other flammable liquid. Storing any other flammable or combustible liquid could result in a fire and explosion, causing serious injury or death.





#### **WARNING**







To prevent personal injury or even death, be sure you read and understand all of the instructions in this manual and other related OEM equipment manuals! The Fuel Tank, if not used and maintained properly, can be dangerous to users unfamiliar with its operation. Do not allow filling, refueling, or maintaining of this tank until the user has read this manual and has developed a thorough understanding of the safety precautions and functions of the tank.

**DO NOT** modify or use this tank for any application other than which it was designed.

Tanks that are filled or used improperly or by untrained personnel can be dangerous; exposing the operators and/or bystanders to possible serious injury or death.

-  Make sure that anyone who will be using the Fuel Tank or working on or around the tank reads and understands all the operating, maintenance, and safety information in the operator's manual.
-  Keep all bystanders, especially children, away from the equipment when filling the tank or refueling machinery.
-  Keep working area clean and free of debris to prevent slipping or tripping.
-  Know and follow applicable national, state, and local safety codes concerning safe handling of gasoline or diesel fuel.

-  The improper use, handling, or storage of gasoline or diesel fuel can be dangerous. Never fill a hot engine. **DO NOT** fill the engine's fuel tank near an open flame, while smoking, or while the engine is running. Clean up any fuel spills immediately.
- Manually control the nozzle valve throughout the filling process. Keep your face away from the nozzle or fuel tank opening.
-  Avoid prolonged breathing of fuel vapors.
-  Keep fuel away from your eyes and skin because it may cause irritation.
-  Fill fuel tanks no more than 95 percent full to allow for expansion. Replace and tighten the tank's fill port cap.

### 8.2 FIRE EXTINGUISHER

A user-supplied fire extinguisher is required by OSHA regulation. The fire extinguisher must be located not less than 25 feet, nor more than 75 feet from the fuel tank.

Follow the manufacturer's instructions to periodically check and maintain the fire extinguisher.

### 8.3 PRE-OPERATION CHECKS

- Review the OEM instructions provided with all equipment used on the fuel tank for operating and safety precautions.
- Check the operation of the Normal and Emergency vents.
- Make sure that a fire extinguisher is available.

## 8.4 FILLING THE FUEL TANK WITH FUEL



1. Before filling or using the fuel tank, follow all the safety recommendations. Inspect the emergency vent prior to filling the tank or fueling equipment for the following:
  - a. Clogged or restricted vents that could cause damage to the tank.
  - b. Dust, debris, ice, snow, or other contaminants that could clog or restrict the vent.
  - c. In freezing weather conditions, inspect the vents immediately before filling the tank or fueling equipment.
  - d. Do not fill or use fuel from the tank unless you are certain that the tank vents will operate correctly.



### SAFETY INSTRUCTIONS

*Never obstruct the emergency vent by placing an object on top of the cap.*

2. Connect the ground cable to the tank.
3. Check the tank liquid level and confirm that the planned delivery load will fit into the tank. Verify the product in the tank matches the product being delivered.
4. Connect the delivery hose to the hose coupling.
5. Open the valve on delivery truck.
6. Open the valve on the tank fill coupling.
7. Start the delivery pump.
8. Stop the delivery pump when tank has reached the predetermined fill level.
9. Close the valve on delivery truck.
10. Close the valve on the tank fill coupling.
11. Disconnect the delivery hose from the tank fill coupling.
12. Disconnect the ground cable.

### 8.4.1 Filling the Fuel Tank Using the Optional Remote Fill Box

1. Connect the ground cable to the tank.
2. Check tank liquid level and confirm that the planned delivery load will fit into tank. Verify the product in the tank matches the product being delivered.
3. Unlock and open the door of the remote fill box.



4. Verify that the drain plug is sealed and properly tightened.
5. Connect the delivery hose to the hose coupling inside the remote fill box.
6. Open the valve on delivery truck.
7. Open the large ball valve inside the remote fill box.
8. Start the delivery pump.
9. Stop the delivery pump when tank has reached the predetermined fill level.
10. Close the valve on delivery truck.
11. Close the large ball valve inside the remote fill box.
12. Disconnect the delivery hose from the fill connection inside the remote fill box.
13. Remove any liquid spilled inside the remote fill box by using the hand pump, bailing, and/or mopping with absorbent pads.

**Note:** Liquid spilled inside the remote fill box should not be drained to the ground or atmosphere. All hazardous materials need to be properly disposed of according to local, state, or federal regulations.

14. If using the hand pump, open the small ball valve in the hand pump line and actuate the pump. When finished hand pumping the spilled liquid, close the small ball valve. Use absorbent pads to mop up any residual liquid.



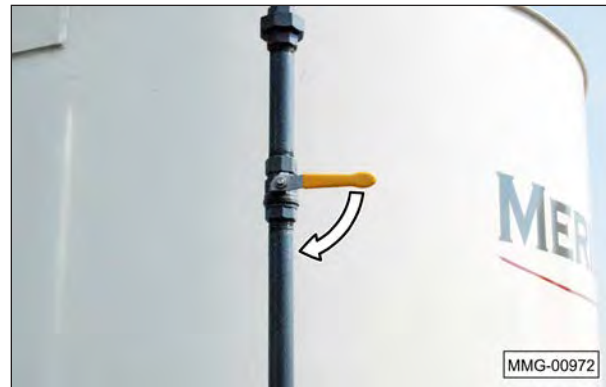
15. Close and lock the door.
16. Disconnect the ground cable.

## 8.5 FILLING MACHINERY FROM THE FUEL TANK

1. Position the equipment near the fuel tank.
2. Reset the fuel meter to "0".



3. Open the fuel shutoff valve.



4. Remove the nozzle.



### **CAUTION**

Once the pump is turned ON, the fuel hose is pressurized and will pump fuel. Do not squeeze the handle on the fuel nozzle until it is inside the fuel tank of the machinery being refueled.

5. Move the ON/OFF lever to the "ON" position to apply power to the pump.



10. Pad lock the pump nozzle for added security. With the pump turned off, and the nozzle in the stored position, a pad lock can be inserted through the locking link and the nozzle handle opening. This configuration prevents the nozzle from being removed from the pump.

## NOTICE

*The pump motor is equipped with thermal overload protection. If the motor overheats, it will automatically shut off to prevent internal damage. If this happens, TURN THE PUMP OFF! When the motor cools, it will restart without warning if the power is on.*

6. Fuel the equipment. Release the nozzle when the desired amount of fuel has been dispensed.

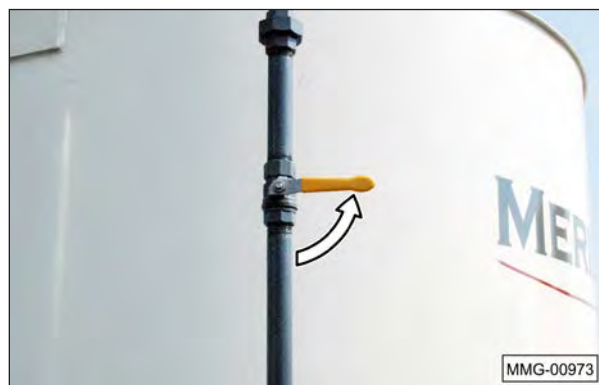
**Note:** To minimize static electricity build up, keep the fill nozzle in contact with the equipment being filled during the filling process.

7. Move the ON/OFF lever to the "OFF" position to turn off the pump.



8. Remove the dispensing nozzle from the equipment being fueled and store it on the dispenser.

9. Close the fuel shutoff valve.



# 9. MAINTENANCE

## 9.1 GENERAL SAFETY

### **WARNING**



**Fire Hazard – Death or serious injury could result from a fire or explosion due to spilled fuel.**



**Fall Hazard – Death or serious injury could result from a fall. Always use proper safety equipment when working at the top of the tank.**





**Dangerous Fumes Hazard – There may not be breathable air inside the tank. Death or serious injury could result from asphyxiation. Do not enter the tank for any reason.**


1. Good maintenance is your responsibility. Poor maintenance is an invitation for trouble.



Always use personal protection devices, such as eye, hand, and hearing protectors, when performing any service or maintenance.

3.  Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to the original specifications. The manufacturer will not be responsible for injuries or damages caused by use of unapproved parts and/or accessories.

4.  A fire extinguisher and first aid kit should be readily accessible while performing maintenance.

5.  When completing a maintenance or service function, make sure all safety shields and devices are installed before placing the unit in service.

## 9.2 GENERAL MAINTENANCE

Inspect and touch up the paint finish on the tank as needed. Damage to the paint promotes rust, which weakens the tank. Remove vegetation growing around and beneath the tank. Vegetation promotes rust, can disguise a spill, and can cause fire and safety issues.

## 9.3 EMERGENCY VENT

### 9.3.1 Safety

#### **SAFETY INSTRUCTIONS**

*The following safety instructions are provided to help prevent injury or limit equipment damage.*

The emergency vent should only be installed on fuel tanks built and tested in accordance to industry standards such as UL142, NFPA 30 & 30A, and API 650.

The emergency vent must be installed in accordance with all applicable local, state, and federal laws.

The emergency vents only provide emergency pressure relief and must be used in conjunction with a normal vent or pressure vacuum vent.

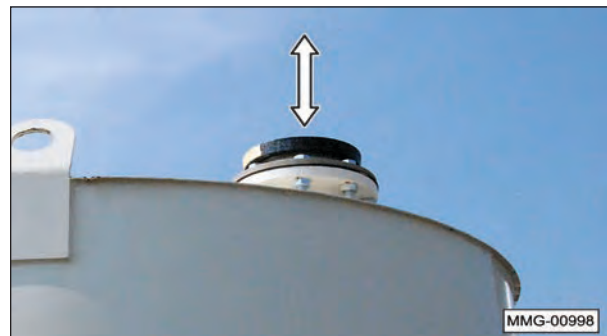
For your safety, it is important to follow local, state, federal, and/or OSHA rules that apply to working around the storage tank and fueling area. Use all personal protective equipment required for working in the specific environment.

When installing an emergency vent, the tank could be under pressure. Vapors may be expelled from tank vents while performing maintenance. Vapors could catch fire or cause an explosion. Avoid sparks, open flame, or hot tools when working on vents.

### 9.3.2 Inspection

Annual inspection, and immediate inspection during freezing conditions, by someone familiar with the proper operation of the storage tank vents, is required to insure venting devices are functioning properly before filling or unloading a tank.

1. Lift the cover of the vent all the way up and lower it back down onto the body several times. The cover must move freely for the vent to work properly. Replace the vent if sticking or binding occurs.



2. Inspect the vent, including the seal area, for dust, debris, snow, or ice. Remove any obstruction that would prevent movement of the cap.
3. Inspect all vent components and surfaces for damage, corrosion, or excessive wear. If any is found, replace the vent.
4. Inspect the vent warning tag located near the tank fill port. If the tag is damaged or difficult to read, contact Morrison Bros. Co. at (800) 553-4840 for a free replacement tag.



### 9.3.3 Replacement of Emergency Vent

1. Inspect the replacement unit for shipping damage. Do not install the unit if damage is found.
2. Check the vent openings for foreign matter such as packaging material. Remove any debris or obstructions.
3. Inspect the sealing surfaces between cover and body. Remove any dust or debris.
4. Verify the vent cover is moving freely before and after installation into the tank.
5. Do not paint the vent unless necessary. If painting, extreme caution must be used to make sure the paint does not inhibit proper operation of the vent.
6. Apply a fuel resistant, non-hardening, anti-seize sealant to the threads on the riser pipe.

#### SAFETY INSTRUCTIONS

*Do not use Teflon® tape to seal the threads.*

7. Thread the vent onto the pipe avoiding excessive torque, which may damage the vent.

**Note:** There should be no reduction of pipe size between the storage tank and the emergency vent.

8. Attach the included warning tag where it will be visible to the operator filling the tank or fueling equipment.

## 9.4 ELECTRIC FUEL PUMP

### ⚠ WARNING

⚠ **DO NOT** open or attempt to repair the motor on the fuel pump. If the pump is damaged or not working, refer to the Warranty procedures for repair or replacement of the pump.

Disassembling the motor case can compromise the integrity of the explosion-proof construction and will void any existing warranty and certification (UL listing).

⚠ **Make sure all power to the pump is turned OFF** prior to performing any service or maintenance.

## 9.5 HOSE REPLACEMENT

When replacing the fuel hose, use only OEM hose. Using other vendors of fuel hose may allow static electricity build up. Use only static wire conductive hose when pumping flammable fluids.

## 9.6 FUEL METER

### 9.6.1 Calibration

For accurate measurement and to prevent meter damage, the meter and piping must always be filled with liquid and be free of air.

Typically, fuel meters can be calibrated for either U.S. gallons or liters. Calibration is normally required before installation, after disassembly, after wear due to normal operation, or when changing from gallons to liters.

1. If equipped, verify whether the meter installed on the tank is factory calibrated for U.S. gallons or liters.
2. Select a container of known volume; a five gallon container or larger should be used.
3. Fill a container to a known volume.



- 
4. Check the reading on the meter. If the meter is incorrect, adjust the calibration screw to obtain either more or less fuel. Follow the OEM instructions for the specific meter being used.
  5. Repeat Steps 3 and 4 until the calibration is complete.

### 9.6.2 Maintenance

The fuel meter should operate maintenance free. However, certain liquids can dry out while in the meter housing, causing the meter to stop functioning. If this occurs, the meter should be thoroughly cleaned, as per instructions below.

1. Remove the meter from the pump.
2. Pour a flushing fluid into the meter and allow it to penetrate the internal components.
3. If possible, pump the flushing fluid through the meter.
4. If the flushing procedure does not fix the problem, the meter should be repaired by an authorized dealer or replaced. Disassembly of the meter is not recommended.
5. Calibrate the meter following the calibration instructions in this section.

### 9.6.3 Storage

If the meter is to be stored for an extended period of time, clean it thoroughly to help protect the meter from internal damage.

## 9.7 TANK INSPECTION

The tank should be thoroughly inspected regularly, and whenever a repair is made. Documentation of the inspections should be retained for two or three years (federal regulations). Deficiencies noted during the inspection should be corrected as soon as possible.

The inspection should include at least the following:

- A visual examination of the tank system for deterioration, including but not limited to the tank and its coating, hoses and fittings, pipes, foundation, and drainage mechanism.
- A dipstick inspection of tank contents, at the lowest point, for the presence of water.

- A check of the interstitial space (i.e., the space between the walls) of a double-walled a tank for accumulation of fuel or water.
- Confirmation that all drain valves are securely closed when not in use.
- An inspection for accumulation of water or fuel in the containment area.
- A check of the spill bucket to make sure it is clean and functional.
- A check of normal and emergency vents for obstructions or restrictions that could interfere with proper operation.
- A check of auxiliary equipment for operational malfunctions.
- An investigation of conditions that may pose a fire, safety hazard, or environmental hazard.
- A search for evidence of a release from the tank system.
- Confirmation that spill kits are immediately accessible.

## 9.8 REMOVAL FROM SERVICE

Removing a tank from service may be subject to regulation.

If an Aboveground Storage Tank has remained out of service for a year or more, many states require owners to maintain and monitor the tank, declare the tank inactive, or remove it. If the tank is declared inactive, remove all substances from the AST system (including pipes) and completely clean the inside to a vapor-free condition. Secure the tank by bolting and locking all valves, as well as capping all gauge openings and fill lines. Clearly label tanks with the date and the words "Out of Service."

Samples may be required when removing tanks to determine if any contamination has occurred. Most States require out-of-service tanks to be inspected and meet leak detection requirements before they are put back into service.

### 9.8.1 Tank Inspection Checklist

This chart should be copied and filled out as inspections and maintenance operations are performed on the tank. Refer to the Maintenance section for additional instructions.

Date		Inspected by		
<b>Location</b>				
Is there any deterioration of the tank, tank coating, pipes, valves, foundation, drainage mechanism, or safety equipment? If yes, specify below or on the back of this document.		Yes	No	
Does the hose show evidence of deterioration?		Yes	No	
Is the fire extinguisher fully operational?		Yes	No	
Is there any water at the lowest possible point inside the primary tank? <i>State below if water was discovered and removed.</i>		Yes	No	
Is there any evidence of liquid (fuel or water) in the interstitial space of a double-walled tank?		Yes	No	N/A
Are all drain valves secured in the closed position?		Yes	No	N/A
Is there any accumulation of water or fuel in the containment area? <i>State details of remedial action (absorption and disposal of fuel, or removal of water) below or on a separate sheet of paper.</i>		Yes	No	N/A
Is the spill bucket clean and functional?		Yes	No	N/A
Are there any obstructions or restrictions that prevent proper function of the normal and emergency vents? <i>If yes, specify below or on a separate sheet of paper. Ensure that the emergency vent moves freely.</i>		Yes	No	
Are there any operational malfunctions of auxiliary equipment?		Yes	No	
Is there any evidence of a fuel release?		Yes	No	
Is a complete spill kit easily accessible?		Yes	No	
Are there any conditions that may pose fire, safety, or environmental hazards? <i>If yes, specify below or on a separate sheet of paper.</i>		Yes	No	
<b>Comments</b>				
<i>(Continue comments on separate sheet of paper if necessary.)</i>				
<b>Correct any deficiencies immediately. Keep this checklist on file.</b>				

# 10. OEM LITERATURE



## 10.1 EMERGENCY VENT CAP

For any questions concerning the emergency vent cap, refer to the OEM literature that was provided with the fuel tank.

Morrison Bros. Co.  
Dubuque, IA  
Phone: 800-553-48402

### 244 Emergency Vents Installation & Maintenance Instructions

The 244 Series Emergency Vent is designed for use on aboveground storage tanks, as a code requirement that helps prevent tanks from becoming over-pressurized or rupturing if exposed to fire.

**Failure to follow any or all of the warnings or instructions in this document could result in a hazardous product spill, which could result in property damage, environmental contamination, fire explosion, serious injury or death.**

#### Installation

#### Warnings

- **Fire Hazard** – Death or serious injury could result from spilled liquids.
- Install only on shop fabricated atmospheric tanks built and tested in accordance to industry standards such as UL142, NFPA 30 & 30A, and API 650.
- Install in accordance with all applicable local, state, and federal laws.
- 244 Series vents only provide emergency pressure relief and must be used in conjunction with a normal vent or pressure vacuum vent.
- 244 Series vents as well as normal vents and pressure vacuum vents must be properly sized and selected for each specific tank application.
- For your safety, it is important to follow local, state, federal and/or OSHA rules that apply to working inside, above, or around the storage tank and piping area. Use all personal protective equipment required for working in the specific environment.
- Tanks could be under pressure. Vapors could be expelled from tank vents, piping, valves or fittings while performing installation. Vapors could catch fire or cause an explosion. Avoid sparks, open flame, or hot tools when working on vents.

#### Steps

1. Inspect unit for shipping damage. Replace unit if damage is found.
2. Check vent openings for foreign matter such as packaging material. Remove any that is found.
3. Inspect brass to brass or Viton o-ring sealing surfaces. Remove any dust or debris.
4. Insure mounting pipe/connection is in the vertical (plumb) position.
4. Inspect sealing surfaces between cover and body. Remove any dust or debris.
5. Verify vent cover is moving freely before and after installation into the system.
6. Do not paint vent unless necessary. If painting, extreme caution must be exercised to make sure that the paint does not inhibit proper vent operation.
7. Follow appropriate mounting instructions below.

#### Threaded Connection

1. Apply a fuel resistant, non-hardening, anti-seize sealant to the male threads on the riser pipe or vent body. Do not use Teflon® tape.
2. Thread vent onto pipe avoiding excessive torque, which may damage vent.

#### Flange Connection

1. Place a gasket between the flange faces.
2. Gradually tighten flange bolts in a crisscross pattern.
3. Bolting should be tightened sufficiently to prevent leakage and loosening of the joint.

**Note:** There should be no reduction of pipe size between the storage tank and the Fig. 244 Series Emergency Vent.

**Important:** Install the included warning tag where it will be visible to the operator filling or unloading the tank that is fitted with this vent.

Morrison Bros. Co. - Dubuque, IA - 800-553-4840  
244-2110 PP

**Failure to follow any or all of the warnings and instructions in this document could result in a hazardous liquid spill, which could result in property damage, environmental contamination, fire, explosion, serious injury or death.**

#### Maintenance

Monthly inspection, and immediate inspection during freezing conditions, by someone familiar with the proper operation of the storage tank vents, is required to insure venting devices are functioning properly before filling or unloading a tank.

#### WARNINGS

- **Fire Hazard** – Death or serious injury could result from spilled liquids.
- Clogged or restricted vents could cause damage to tanks and piping releasing liquids which could catch fire.
- Dust, debris, freezing rain, freezing condensation or other contaminants could clog or restrict the vents.
- In freezing conditions, inspect the vents immediately before filling or unloading a tank.
- Follow your employer's instructions for making sure vents are not clogged or restricted.
- You must be trained to inspect the vents. Stop now if you have not been trained.
- Do not fill or unload from a tank unless you are certain that the tank vents will operate correctly.
- For your safety, it is important to follow local, state, federal and/or OSHA rules that apply to working inside, above, or around the storage tank and piping area. Use all personal protective equipment required for working in the specific environment.
- Tanks could be under pressure. Vapors could be expelled from tank vents, piping, valves or fittings while performing maintenance. Vapors could catch fire or cause an explosion. Avoid sparks, open flame, or hot tools when working on vents.

#### Steps

1. Lift the cover of the vent all the way up and lower back down onto the body several times. The cover must move freely for the vent to work properly.
2. Replace the unit if sticking or binding occurs during step 1 above.
3. Inspect the vent, including the seal area, for dust, debris, snow or ice. Remove any that is found.
4. Inspect all vent components and surfaces for damage, corrosion or excessive wear. If any is found replace the vent.
5. Inspect the vent warning tag located near the tank fill and offloading area. If the tag is damaged or difficult to read, contact Morrison Bros. Co. at (800) 553-4840 for a free replacement tag.

**Failure to follow any or all of the warnings or instructions in this document could result in a hazardous product spill, which could result in property damage, environmental contamination, fire explosion, serious injury or death.**

Morrison Bros. Co. - Dubuque, IA - 800-553-4840  
244-2110 PP

## 10.2 SUBMERSIBLE FUEL PUMP

Franklin Fueling Systems  
3760 Marsh Rd.  
Madison, WI 53718  
Tel: (608) 838-8786  
Fax: (608) 838-6433



### STP/IST Fixed & Variable Length Installation and Owner's Manual

42013 420042001 Rev. 1F


Franklin Fueling Systems • 3760 Marsh Rd. • Madison, WI 53718 USA  
Tel: +1 608 838 8786 • 800 225 9787 • Fax: +1 608 838 6433 • www.franklinfueling.com

## 10.3 FUEL PUMP AND METER

Fill-Rite Electric Fuel Pumps  
Tuthill Corporation  
8825 Aviation Drive  
Ft. Wayne, IN 46809

Toll Free: 800-634-2695

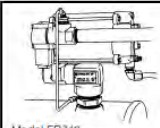
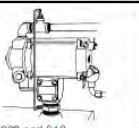
**Pump System Technology**



Owner's Operation & Safety Manual

### REMOTE PUMPS

Models FR713, 303, 313

 Model FR713	 Model 303 and 313
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<p><b>OUTSTANDING FEATURES</b></p> <ul style="list-style-type: none"> <li>• Up to 18 GPM / 60 LPM</li> <li>• UL &amp; C-UL Listed</li> <li>• 1/3 HP 115 VAC-60Hz motor, optional 220/240 VAC-50/60Hz.</li> <li>• Thermal overload protector</li> <li>• Integral check valve</li> <li>• Built-in bypass valve</li> <li>• Anti-siphon device</li> </ul>	<p><b>OUTSTANDING FEATURES</b></p> <ul style="list-style-type: none"> <li>• Up to 30 GPM / 114 LPM</li> <li>• UL &amp; C-UL Listed</li> <li>• 3/4 HP 115/230 VAC-60Hz motor (313). For diesel applications. Not recommended for gasoline.</li> <li>• 1/2 HP 115/230 VAC-60Hz motor (303). For gasoline and diesel applications.</li> <li>• Thermal overload protector</li> <li>• Integral check valve</li> <li>• Built-in bypass valve</li> <li>• Anti-siphon device</li> </ul>
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### Owners Installation, Operation, and Safety Manual



### Mechanical Liquid Meter Series 900 – High Flow

901CL1.5, 901C, 901C1.5, 901CL, 901CL1.5X418 901CN1.5, 901CMK4200, 901CLMK4200, 901CLX418 901CLMK300, 901CIMP, 901CMK300, 901CMK300V, 901CIMP1.5, 901CNL1.5X418, 901CLMK300V, 901CLN1.5

## 10.4 TANK LEVEL GAUGE

OPW Corporate Headquarters  
9393 Princeton-Glendale Road  
Hamilton, Ohio, USA 45011  
Tel: (800) 422-2525  
Fax: (800) 421-3297

### Owners Installation, Operation, and Safety Manual



### Remote Dispensing Cabinet 902V Series Cabinet Dispenser

Models  
FR902R, non-UL, gallon  
FR902LR, non-UL, liter  
FR902RU, UL, cUL listed, gallon  
FR902LRU, UL, cUL listed, liter



### OPW Installation and Maintenance Instructions OPW 200TG Mechanical AST Liquid Level Gauge

**IMPORTANT:** Please read these warnings and use the assembly instructions completely and carefully before starting. Failure to do so may cause product failure, or result in environmental contamination due to liquid leakage into the soil, creating hazardous spill conditions.

**IMPORTANT:** The OPW 200TG Tank Gauge are pre-assembled to your convenience and ease of use. Check to make sure the unit is intact and undamaged and all parts have been supplied. Never substitute parts for those supplied. Doing so may cause product failure.

**WARNING-DANGER:** Using electricity operated equipment near gasoline or gasoline vapors may result in a fire or explosion, causing personal injury and property damage. Be sure that the working area is free from such hazards, and always use proper precautions.

**NOTE:** At all times when product is in the storage tank keep the rear pipe capped, so the vapors cannot escape into the environment.

**Notice:** OPW products must be used in compliance with applicable federal, state, and local laws and regulations. Product selection should be based on previous specifications and limitations and compatibility with the environment and material to be handled. All illustrations and specifications in this literature are based on the latest production information available at the time of publication. Prices, materials, and specifications are subject to change at any time, and models may be discontinued at any time, in either case, without notice or obligation.

**Standard Product Warranty**  
OPW warrants that products sold by it are free from defects in materials and workmanship for a period of one year from the date of manufacture. (Proof of purchase two years from date of manufacture.) Proof of purchase may be required. As the exclusive remedy under this limited warranty, OPW, at its sole discretion, repair, replace, or issue credit for future orders for any product that may prove defective within the one year date of manufacture period (repairs, replacements, or credits may be subject to prorated warranty for remainder of the original warranty period, complete proper warranty claim documentation required.) This warranty shall not apply to any product that has been altered in any way, which has been repaired by any party other than a service representative authorized by OPW, or when failure is due to misuse, or improper installation or maintenance. OPW shall have no liability whatsoever for special, incidental or consequential damages to any party, and shall have no liability for the cost of labor, freight, excise, taxes, clean up, downtime, removal, reinstallation, loss of profit, or any other cost or charges.

For any product certified to California 2001 standards, OPW warrants that products sold by it are free from defects in material and workmanship for a period of one year from date of manufacture or one year from date of registration of installation not to exceed 15 months from date of manufacture by OPW.

THIS WARRANTY IS IN LIEU OF ALL OTHER

**WARRANTIES, EXPRESS OR IMPLIED, AND SPECIFICALLY THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.**

**200TG Specifications:**  
Accuracy: ±2 inches  
Specific Gravity of Fluid: 0.86 to 1.025  
Temperature Range: -30°F to 120°F (-40°C to 50°C)  
Materials: Enclosure/Base – Powder-Coated Aluminum.  
Post – Stainless Steel, Lens – Tempered Borosilicate, Gears – Acetal, Gaskets/O-Rings – Nitrile, Hardware – Stainless Steel

**Torque Specifications:**  
Screw/Ess: 60 lbs maximum. (As a general rule, hand tight plus 1 1/2 turns is adequate.)  
Cover Bolt: 15-20 Ft-Lbs.  
Lens Screws: Tighten evenly; be careful not to over-tighten.

**Replacement Parts:**  
Lid Gasket: P/N H140599  
Lens: P/N H14355M  
Float: P/N CD3165M  
Cover Bolt: P/N: H14911M

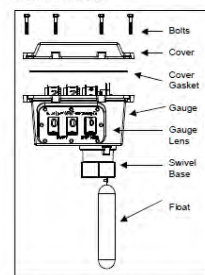


Figure 1  
200TG Installation Instructions  
1. For maximum accuracy, calibration should be undertaken when the tank is half full. Using a

# 11. FR-313 FUEL PUMP TROUBLESHOOTING CHART

PROBLEM	CAUSE	SOLUTION
Fuel pump will not prime.	Suction line is damaged.	Check for leaks in the suction line.
	Fuel level in tank is below the pump inlet.	Maintain the fuel level above the height of the fuel pump inlet.
	Bypass valve open.	Valve must move freely and be free of debris. Contact OEM for cleaning and/or repair options.
	Vanes sticking.	Vanes and slots may have nicks, burrs, or wear. Contact OEM for repair options.
	Excessive rotor or vane wear.	Rotor and vane wear or damage. Contact OEM for repair options.
	Outlet blocked.	Check pump outlet, hose, nozzle, and filter for blockage.
	Vapor lock.	Check breather on top of tank for obstruction.
Fuel pump low capacity.	Excessive dirt in screen.	Remove and clean screen.
	Suction line problem.	Check suction line for leaks or restrictions or air leaks (not airtight).
	Bypass valve sticking.	Valve must move freely and be free of debris. Contact OEM for cleaning and/or repair options.
	Vanes sticking.	Vanes and slots may have nicks, burrs, or wear. Contact OEM for repair options.
	Excessive rotor or vane wear.	Rotor and vane wear or damage. Contact OEM for repair options.
	Hose or nozzle damage.	Replace hose or nozzle.
	Plugged filter.	Replace filter.
	Low fluid level.	Fill tank.
Fuel pump runs slowly.	Incorrect Voltage.	Check incoming line Voltage while pump is running.
	Vanes sticking.	Vanes and slots may have nicks, burrs, or wear. Contact OEM for repair options.
	Wiring problem.	Check for loose connections.
	Motor problem.	Contact OEM for replacement options.
Fuel pump stalls, fuse blows, or circuit breaker trips repeatedly.	Bypass valve sticking.	Valve must move freely and be free of debris. Contact OEM for cleaning and/or repair options.
	Low Voltage.	Check incoming line Voltage while pump is running.
	Excessive rotor or vane wear.	Rotor and vane wear or damage. Contact OEM for repair options.
	Debris in pump cavity.	Clean debris from pump cavity.
Fuel pump motor overheats.	Fuel may be too viscous (too thick).	Viscous fluids can only be pumped for short periods of time (less than 30 minutes).
	Clogged screen.	Remove and clean screen.
	Restricted suction pipe.	Remove restriction.
	Motor failure.	Contact OEM for replacement options.
	Pump rotor lock-up.	Contact OEM for cleaning and/or repair options.

<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
Fuel pump does not operate.	No power.	Check incoming power source.
	Switch failure.	Replace switch with OEM parts.
	Motor failure.	Contact OEM for replacement options.
	Thermal protector failure.	Contact OEM for replacement options.
	Incorrect or loose wiring.	Repair wiring.
Fuel pump leaks.	Bad O-ring gasket.	Replace all O-ring gaskets.
	Dirty shaft seal.	Clean seal and seal cavity.
	Bad shaft seal.	Replace seal.
	Incompatible fluid.	Do not pump any fluid other than gasoline or diesel fuel.
	Loose fasteners.	Tighten fasteners.
Fuel meter counter is reading high or low.	Calibration incorrectly set.	Check calibration and recalibrate if necessary.
	Air in product.	Check for and repair air leaks.
	Measuring chamber or gears could be sticking.	Clean or replace the internal metering components.
Fuel meter shaft seal leakage.	Dirty or damaged seals.	Clean O-ring and seat area or replace seal.
Fuel meter gasket leakage.	Loose gasket.	Tightening joints.
	Damaged gaskets.	Replace damaged gaskets. If caused by high-pressure, install pressure relief valve to allow high-pressure to bleed back to tank.
Fuel meter low flow capacity.	Meter chamber obstructed.	Clean clogged meter chamber, clean or replace screens and filters in piping.

# 12. WARRANTY STATEMENT

## Limited Materials and Workmanship Warranty For Fuel Tanks

Meridian Manufacturing Inc. (hereinafter referred to as the Manufacturer) hereby warrants the Fuel Tank(s) sold by it to be free from any defect in material or workmanship under normal use and service for a period of one (1) year from the date of shipment. The Manufacturer's obligation under this warranty shall be limited to the repair or replacement only, FOB the original point of shipment, of any defective parts or portions of the fuel tank or accessories manufactured by Meridian. Any warranty claim must be reported to the Manufacturer within one (1) year from the date of shipment.

### **THIS WARRANTY IS SUBJECT TO THE FOLLOWING LIMITATIONS, PROVISIONS AND CONDITIONS:**

1. This warranty does not apply:
  - a) To any product sold by the Manufacturer where it is used in areas exposed to corrosive or aggressive conditions including salt water, acids, alkaloid, ash, cement dust, animal waste or other corrosive chemicals from either inside or outside the bin.
  - b) For failures or defects arising out of damage during shipment or during storage on site.
  - c) To materials replaced or repaired under this warranty except to the extent of the remainder of the applicable warranty.
  - d) To damage resulting from misuse, negligence, accident or improper site preparation by others.
  - e) If the product has been altered or modified by others.
  - f) If in the case of coating failures the failure is the result of damage, lack of proper maintenance or failure to remove road salt or other contaminants that may have come in contact with the bin surface.
  - g) To loss of time, inconvenience, loss of material, down time or any other consequential damage.
  - h) For a function that is different than original designed intent.
2. The obligation of the Manufacturer under this warranty shall not arise unless the Manufacturer is notified and this warranty is presented together with a written statement specifying the claim or defect within thirty (30) days after the failure is first detected or made known to the owner and within one (1) year from the shipment date. The Manufacturer in its sole discretion shall determine if the claim is valid and whether correction of the defect or failure shall be made by repair or replacement of the materials.
3. The coating warranty is based on the manufacturer's performance specification for Polyester Powder finishes and does not include repair of minor blemishes or rusting that is normally part of the general maintenance of the fuel tank. This warranty does not cover excessive wear on interior coatings. See attachment for full Performance Specification details on Polyester Powder Finishes.
4. The obligation of the Manufacturer hereunder extends only to the original owner and to the Meridian dealer to whom the materials may have been initially sold. This warranty shall not be subject to any assignment or transfer without the written consent of the Manufacturer.
5. The customer shall acknowledge that it has made its own independent decision to approve the use of the supplied materials and also the specific fabrication and construction procedures utilized to complete the fuel tank, and has satisfied itself as to the suitability of these products for this particular application.
6. The foregoing sets forth the only warranties applicable to said materials and said warranties are given expressly and in lieu of all other warranties, expressed or implied, statutory or otherwise, of merchantability or fitness for a particular purpose and all warranties which exceed or differ from said warranties herein are disclaimed by the Manufacturer.
7. The owners sole and exclusive remedy against the Manufacturer shall be limited to the applicable warranty set forth herein and the endorsements, if any, issued together with this document and no other remedy (including but not limited to the recovery of assembly or disassembly costs, shipping costs, direct, incidental, special, indirect or consequential damages for lost profits, lost sales, injury to person or property or any other loss, whether arising from breach of contract, breach of warranty, tort, including negligence, strict liability or otherwise) shall be available to the owner or Meridian Dealer or any other person or entitles whether by direct action or for contribution or indemnity or otherwise.
8. The financial obligation of the Manufacturer under this warranty shall be limited to the repair or replacement of the product as originally supplied and in no event shall exceed the original cost of the product supplied.
9. The Manufacturer shall not have any obligation under any warranty herein until all accounts for materials, installation and erection of the said product thereof and for labor and other work performed by the Manufacturer or its dealers have been paid in full by the owner.

### **Warranty Claim Procedure**

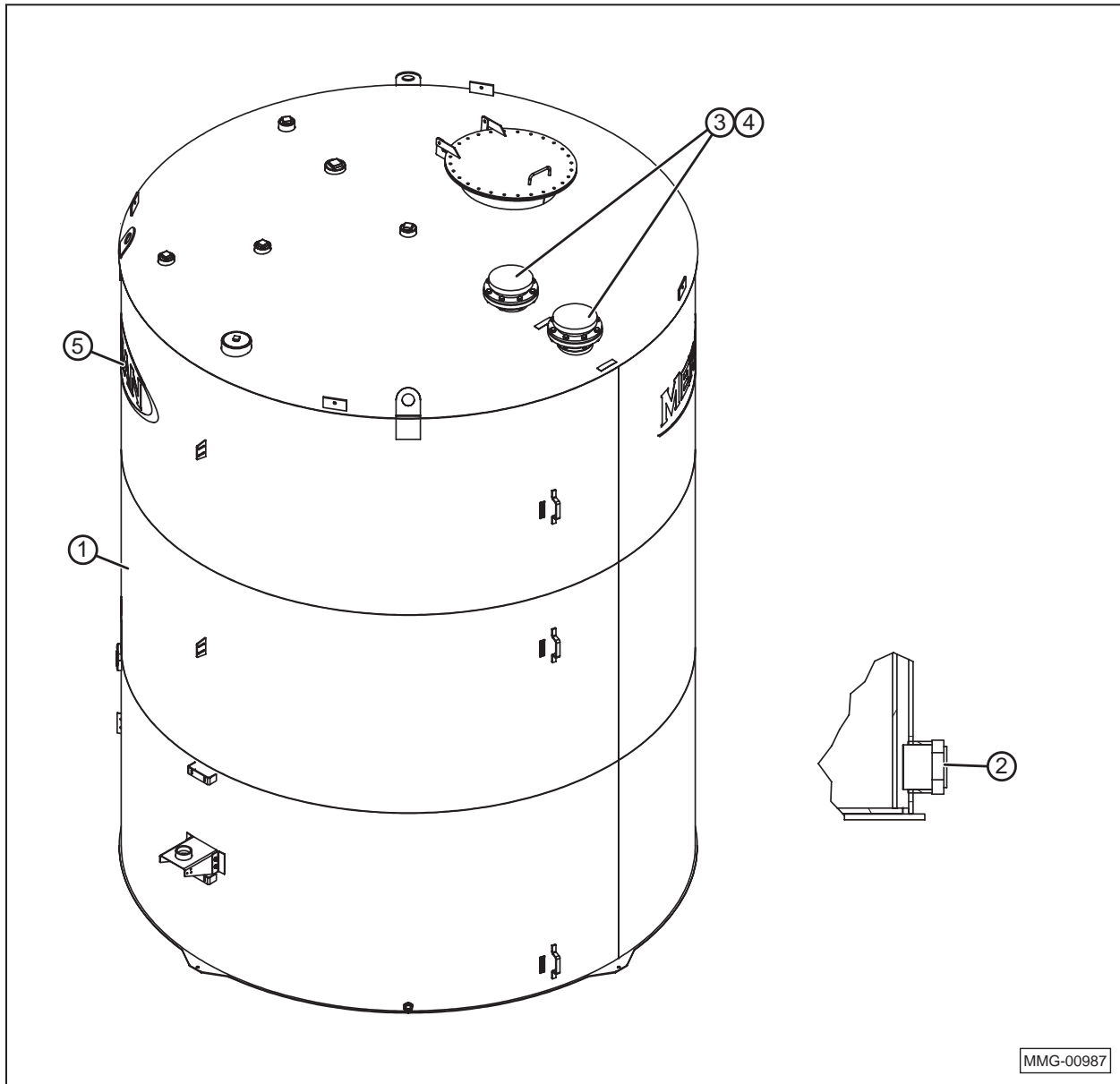
1. Registering product with Meridian Manufacturing.
2. Contact the dealer unit was purchased from upon discovery of any defects.
3. A completed warranty claim form submitted by dealer to Meridian warranty representative for review and course of action.
4. Warranty repair work will only be performed by Meridian, the dealer or an approved representative. No warranty work completed prior to approval. Failure to follow procedure may affect any or all reimbursement.
5. Claims will be adjudicated at the sole discretion of the manufacturer and in accordance with the terms and conditions of the applicable limited warranty.
6. A complete list of warranty procedures can be procured from the Warranty Department or found in your owner's manual.

Effective July 1, 2009

# 13. PARTS

The following pages contain a list of serviceable parts and optional equipment for the Fuel Tank.

Parts are available from your authorized Dealer Parts Department.



MMG-00987

Item	Qty.	Part No.	Description
1	1	64056	Tank, Double Wall, 4,000 gal.
		64068	Tank, Double Wall, 5,000 gal.
		64045	Tank, Double Wall, 8,500 gal.
		64044	Tank, Double Wall, 10,000 gal.
		64040	Tank, Double Wall, 12,000 gal.
		64080	Tank, Double Wall, 15,000 gal.
2	1	18794	Sight Glass, 1-1/2" NPT, Brass
3	2	18313	Vent, Emergency
4	2	18005	8" ANSI Gasket, Flexitallic
5	2	20029	Decal, MMG Bin Decal 70" LG



## 13.1 OPTIONAL EQUIPMENT

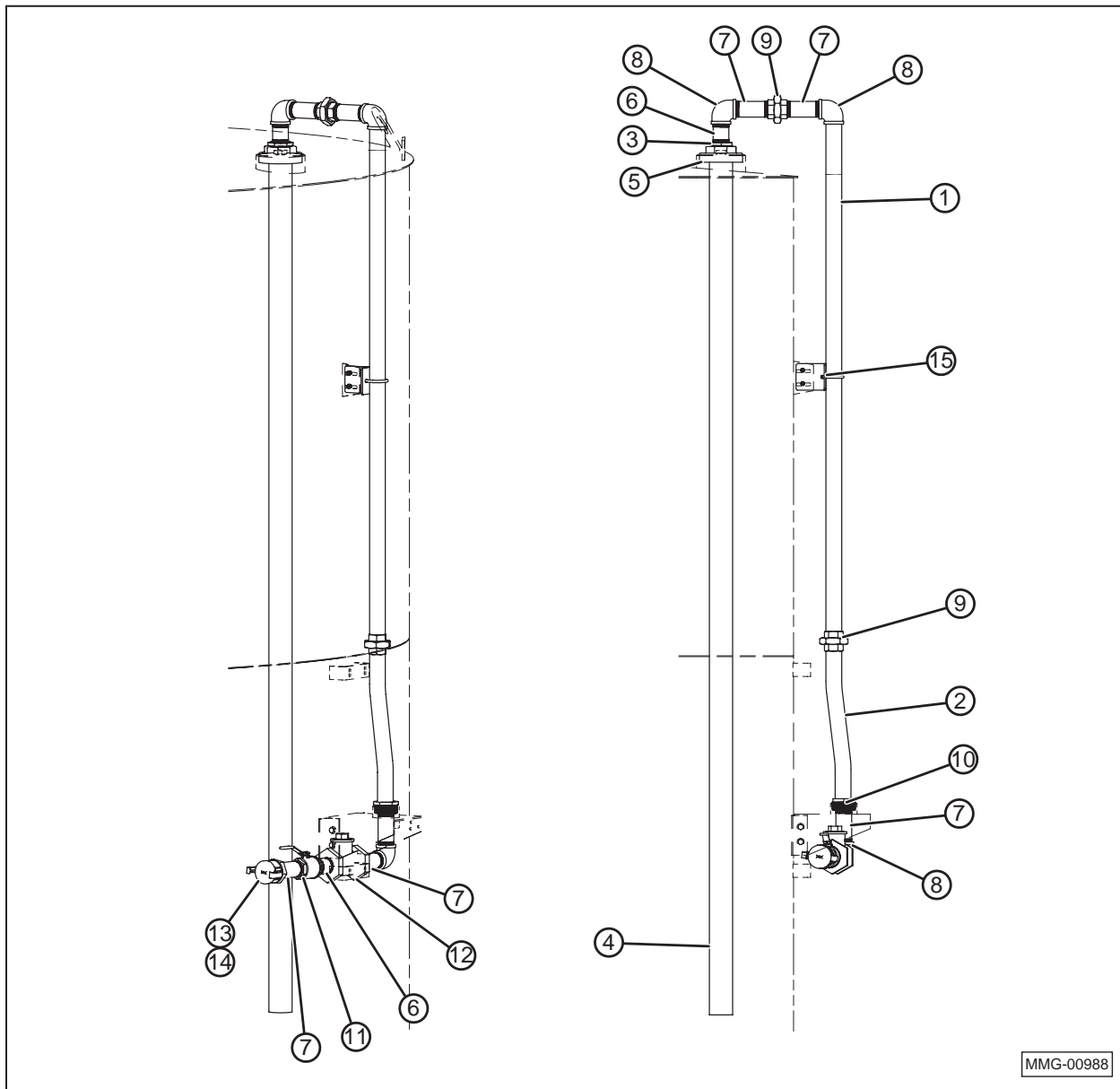
Tank Size	Fill Systems.		Dispensing Systems.	
Double Wall Vertical Tanks	2" Fill System without overfill protection Valve & 10 gal. FS Box	3" Fill System with Overfill Protection Valve & 10 gal. FS Box	Dispensing System with 901 Meter, 3/4 HP 35-40 GPM Submersible Pump w/ Anti Siphon, filter, Nozzle, 20' Hose	Dispensing System with 902 Meter, 30-35 GPM 313 Pump w/ Anti Siphon, Suction Stub/Foot Valve, filter, Nozzle, 20' Hose
4,000	60864	60846	60852	60858
5,000	60865	60847	60853	60859
8,500	60866	60848	60854	60860
10,000	60867	60849	60855	60861
12,000	60865	60847	60856	60862
15,000	60865	60847	60857	60863

Updraft Vent*	Press/Vac. Vent*	Gauge	Hose Reel Upgrade	Flameshield
3" Updraft Vent with 24" Elevation Pipe	3" Pressure/Vac. Vent Alarm with 24" Elevation Pipe	OPW Gauge with Tank Chart	Hose Reel Upgrade, 1" x 35' with Mounting Bracket	Flameshield Upgrade
61547**	61548**	61536**	21496**	61549**

\*One or the other must be selected. The tank must have one normal vent in order to function. The pressure/vacuum vent also acts as a source of overfill protection.

\*\*All tanks.

### 13.2 2" FILL SYSTEM WITHOUT REMOTE FILL BOX

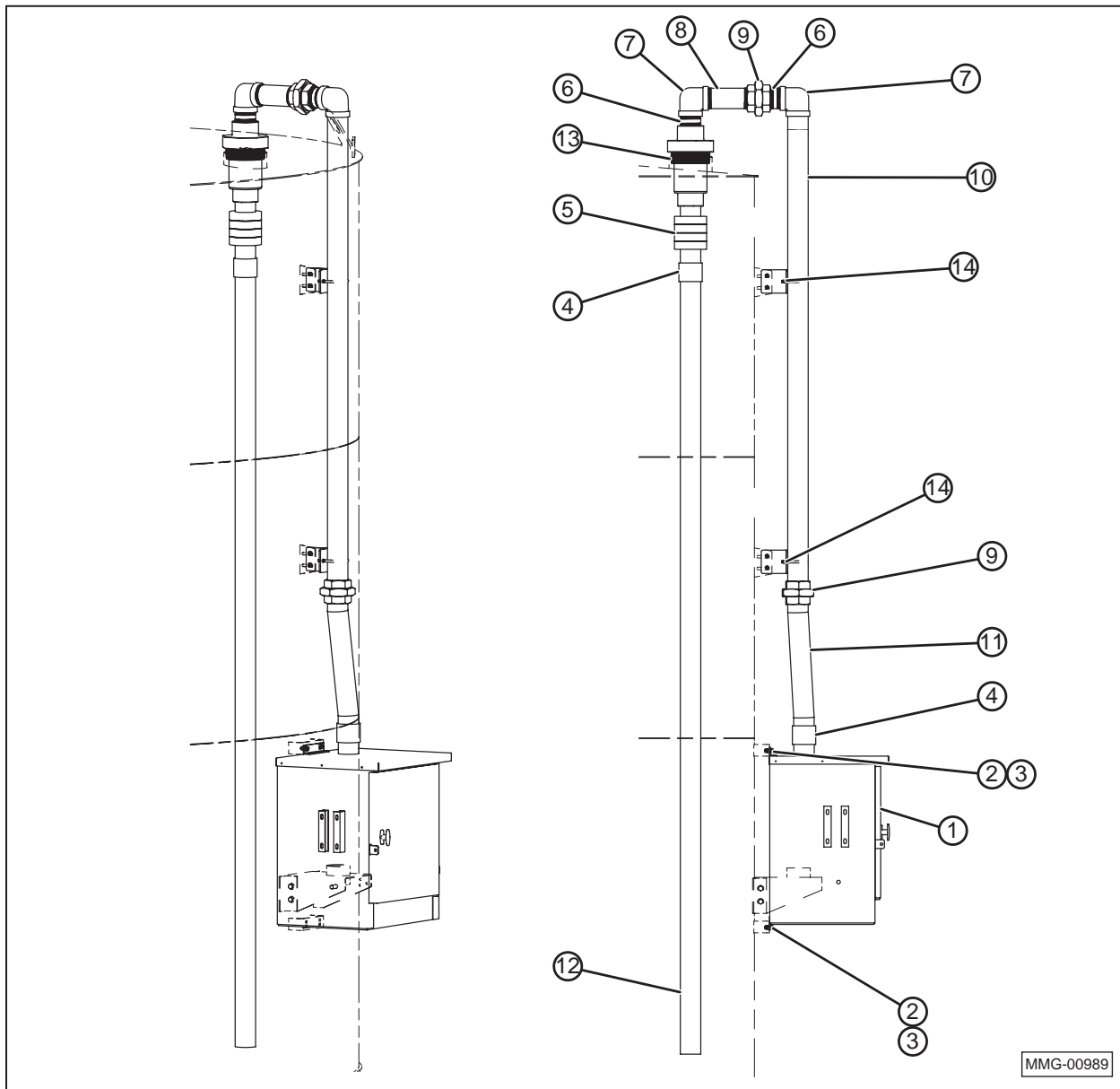


MMG-00988

Item	Qty.	Part No.	Description
1	1	50121	Pipe, 2" Sch 40, 125-5/8" LG (5000, 12000, 15000)
		50122	Pipe, 2" Sch 40, 101-5/8" LG (10000)
		50123	Pipe, 2" Sch 40, 89-5/8" LG (4000)
		50124	Pipe, 2" Sch 40, 77-5/8" LG (8500)
2	1	10055	Hose, Flex, Braided Fuel, 2" x 24' LG
3	1	17039	Hex Reducing Bushing, 3" M to 2" F
4	1	10049	Drop Tube, 3" x 129-9/16", (8500)
		10050	Drop Tube, 3" x 141-9/16", (4000)
		10051	Drop Tube, 3" x 153-9/16", (10000)
		10054	Drop Tube, 3" x 177-9/16", (5000, 12000, 15000)
5	1	17908	DBL Tapped Reducer, 6" to 3", Sch 40
6	2	18724	Nipple, 2" x 4" LG, Sch 40

Item	Qty.	Part No.	Description
7	5	18868	Nipple, 1" NPT, 6" Long
8	3	18871	Nipple, 2" x 6" LG, Sch 40, Mild Stl
9	2	21024	Union, 2" NPT
10	1	20053	Bushing, 3 x 2 DBL Tapped Reducer
11	1	11224	Ball Valve, 2" Brass
12	1	10052	Valve, Swing Check, 2"
13	1	18725	Coupler, 2" Camlock, Female NPT - Male Camlock
14	1	18726	Camlock Dust Cap, Female Alum.
15	1	40024	Pump, Submersible, FE Petro STP75-VL3-7

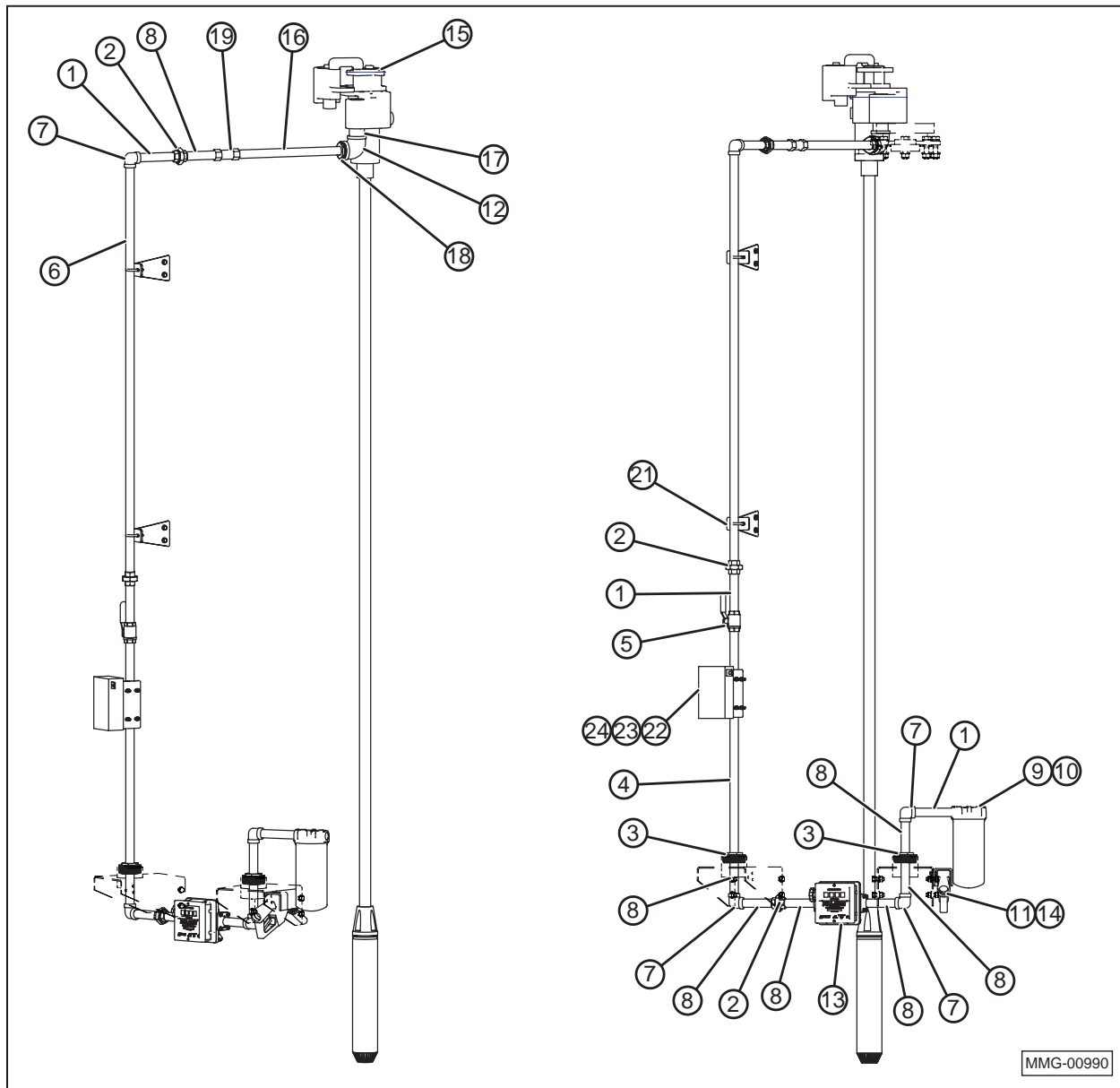
### 13.3 3" FILL SYSTEM WITH REMOTE FILL BOX



Item	Qty.	Part No.	Description
1	1	23386	Remote Fill Box, 3", Plumbed
2	4	19569	Bolt, Hex, Flanged, 3/8-16 x 1 UNC
3	4	19564	Nut, Hex, Flanged, 3/8-16 UNC
4	2	18145	Coupler, 3" NPT, Mild Stl
5	1	20633	Valve, Overfill Protection, 3"
6	2	17297	Nipple, 3" x 4" LG, Sch 40
7	2	17296	Elbow, 3" x 90° Sch 40
8	1	17299	Nipple, 3" x 9" LG, Sch 40
9	2	17298	Union, 3"

Item	Qty.	Part No.	Description
10	1	50116	Pipe, 3" Sch 40, 69-9/16" LG (4000)
		50117	Pipe, 3" Sch 40, 105-15/16" LG (5000, 12000, 15000)
		50118	Pipe, 3" Sch 40, 57-9/16" LG (8500)
		50119	Pipe, 3" Sch 40, 69-9/16" LG (10000)
11	1	10110	Hose, Flex, Braided Fuel, 3" x 24' LG
12	1	10111	Drop Tube, 3" x 120-15/16" (4000)
		10112	Drop Tube, 3" x 156-15/16" (5000, 12000, 15000)
		10113	Drop Tube, 3" x 109-1/16" (8500)
		10114	Drop Tube, 3" x 133-7/16" (10000)
13	1	18001	Nipple, 6" x 3-1/8" LG, Sch 40
14	2	40023	Bracket, 3" T-Bracket Assembly

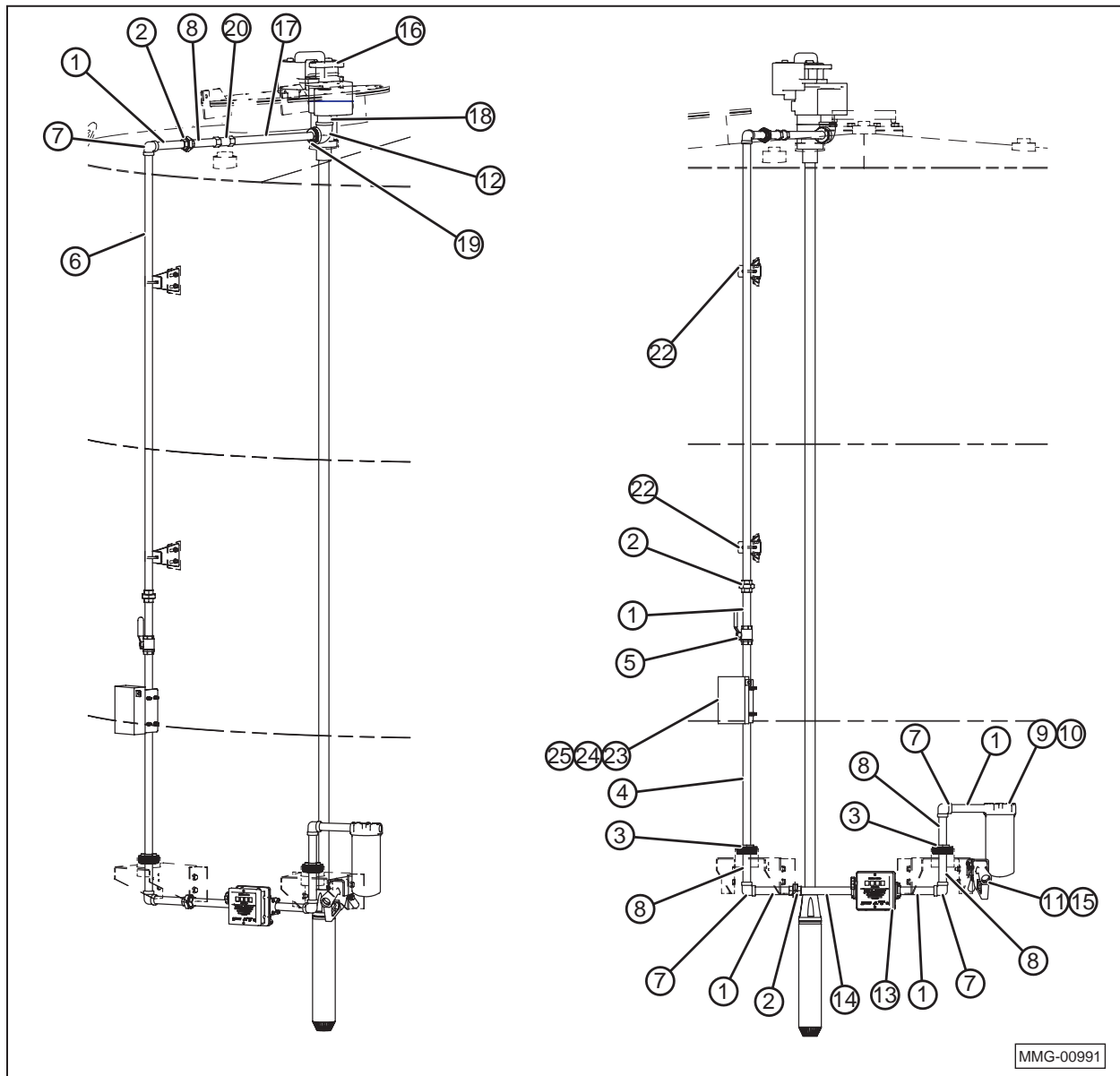
### 13.4 DISPENSING SYSTEM WITH SUBMERSIBLE PUMP (4000 - 5000)



Item	Qty.	Part No.	Description
1	3	17295	Hex Reducing Bushing, 3" M to 2" F
2	3	17198	Union, 1" Sch 40
3	2	10056	Bushing, 3M x 1F x 1F DBL Tapped Reducer
4	1	50125	Pipe, 1" Sch 40, 36" LG
5	1	17199	Ball Valve, 1" NPT
6	1	50160 50126	Pipe, 1" Sch 40, 65-1/16" LG (4000) Pipe, 1" Sch 40, 101-1/16" LG (5000)
7	4	17749	90° - 1" NPT SS Elbow (4464K16)
8	7	18065	Nipple, 1" NPT, 6" Long
9	1	25173	Filter Head, 1" NPT For F40 Filter (700ACCF7017)
10	1	25174	Diesel Filter, - 40 GPM-50 PSI 30 Micron
11	1	21021	Diesel Nozzle, 1" Ultra Hi-Flow, Green
12	1	18871	Elbow, 2" NPT x 90°

Item	Qty.	Part No.	Description
13	1	10057	Meter, Fuel, FR901C
14	1	10058	Nozzle Kit, Fill-Rite 120NB
15	1	10059	Pump, Submersible, FE Petro STP75-VL3-7
16	1	50129	Pipe, 1" Sch 40, 18-1/2" LG
17	1	10062	Nipple, 2" NPT, 2-1/2" LG
18	1	10060	Bushing, 2M x 1F Reducer
19	1	10070	Valve, Anti-Siphon, 1", Morrison 912 101500
20	1	21023	Hose, 1" x 20' Fuel Dispensing (Not Shown)
21	1	40025	Bracket, 1" T-Bracket Assembly
22	1	30705	Mount Assembly, Control Box
23	1	10061	Control Box, STP-CBS
24	2	19682	Screw, Hex, 5/16-18 x 1", Self-Drilling

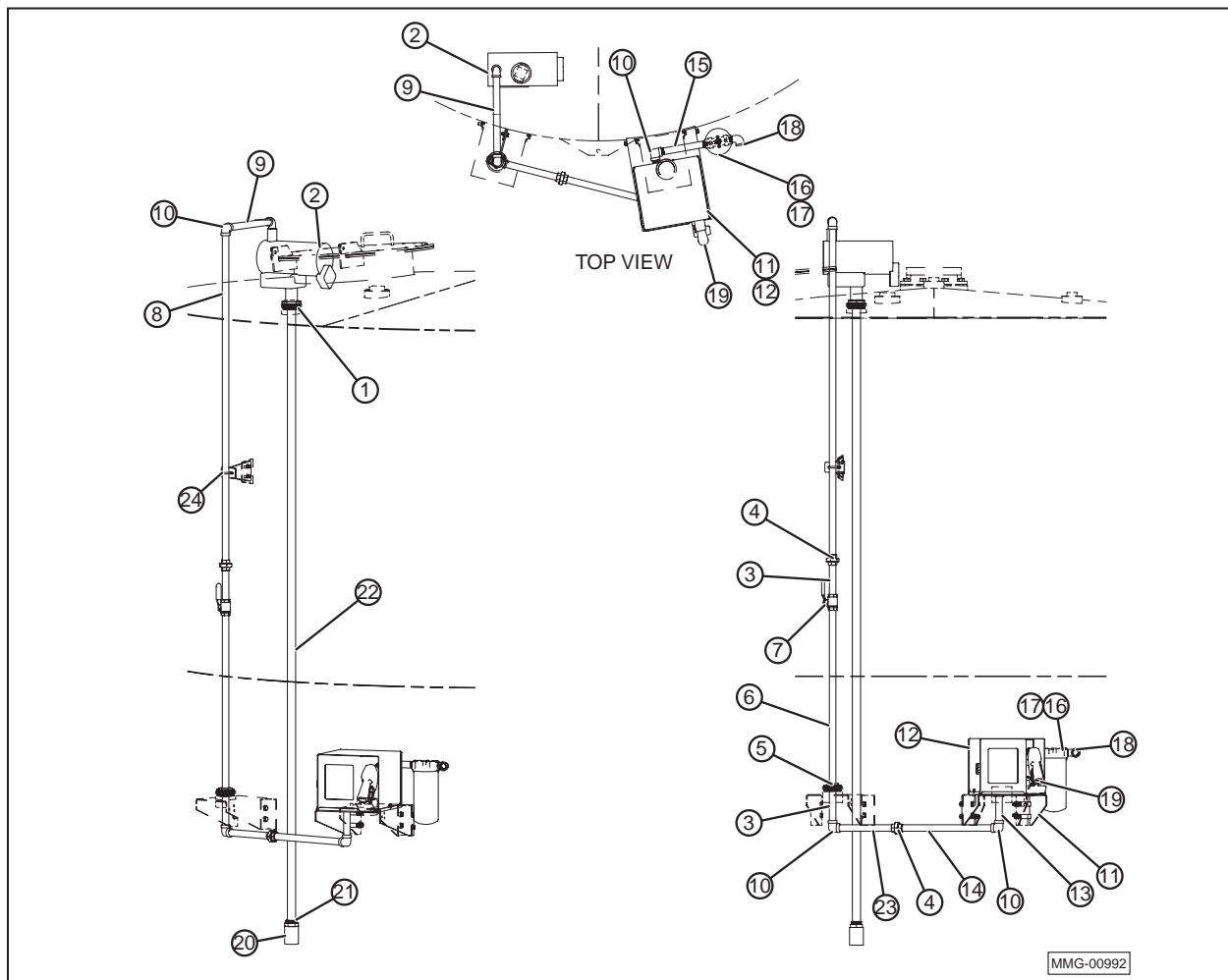
### 13.5 DISPENSING SYSTEM WITH SUBMERSIBLE PUMP (8500 - 15000)



Item	Qty.	Part No.	Description
1	5	17295	Hex Reducing Bushing, 3" M to 2" F
2	3	17198	Union, 1" Sch 40
3	2	10056	Bushing, 3M x 1F x 1F DBL Tapped Reducer
4	1	50125	Pipe, 1" Sch 40, 36" LG
5	1	17199	Ball Valve, 1" NPT
6	1	50126 50145 50144	Pipe, 1" Sch 40, 101-1/16" LG (12000, 15000) Pipe, 1" Sch 40, 53-1/16" LG (8500) Pipe, 1" Sch 40, 77-1/16" LG (10000)
7	4	17749	90° - 1" NPT SS Elbow (4464K16)
8	4	18065	Nipple, 1" NPT, 6" Long
9	1	25173	Filter Head, 1" NPT For F40 Filter (700ACCF7017)
10	1	25174	Diesel Filter, - 40 GPM-50 PSI 30 Micron
11	1	21021	Diesel Nozzle, 1" Ultra Hi-Flow, Green
12	1	18871	Elbow, 2" NPT x 90°

Item	Qty.	Part No.	Description
13	1	10057	Meter, Fuel, FR901C
14	1	50128	Pipe, 1" Sch 40 x 9-15/16" LG ( )
15	1	10058	Nozzle Kit, Fill-Rite 120NB
16	1	10059	Pump, Submersible, FE Petro STP75-VL3-7
17	1	50129	Pipe, 1" Sch 40, 18-1/2" LG
18	1	10062	Nipple, 2" NPT, 2-1/2" LG
19	1	10060	Bushing, 2M x 1F Reducer
20	1	10070	Valve, Anti-Siphon, 1", Morrison 912 101500
21	1	21023	Hose, 1" x 20' Fuel Dispensing (Not Shown)
22	1	40025	Bracket, 1" T-Bracket Assembly
23	1	30705	Mount Assembly, Control Box
24	1	10061	Control Box, STP-CBS
25	2	19682	Screw, Hex, 5/16-18 x 1", Self-Drilling

### 13.6 DISPENSING SYSTEM WITH 313 PUMP

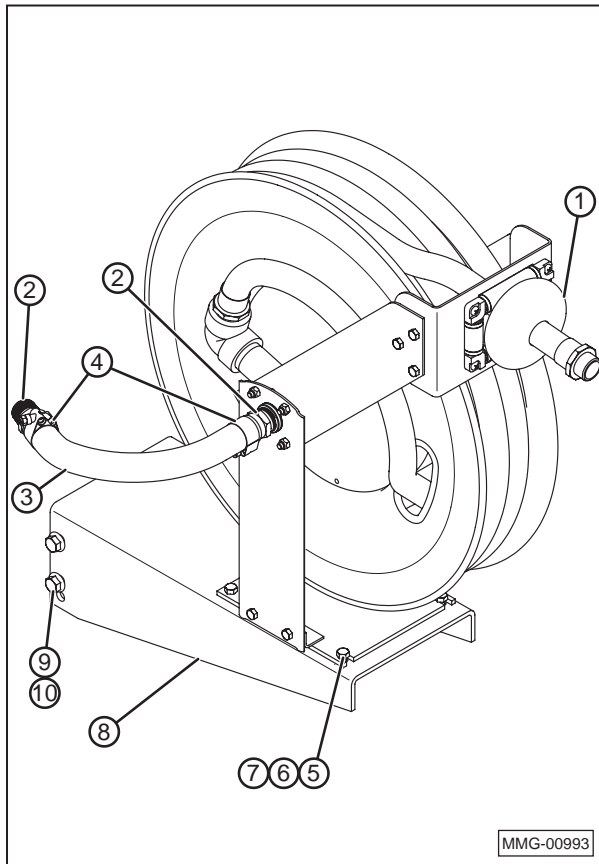


Item	Qty.	Part No.	Description
1	1	17039	Hex Reducing Bushing 3" M to 2" F
2	1	21271	Pump, Fuel FR313 Split 35 GPM Diesel
3	2	17295	Nipple, 1" NPT, 7" Long, Poly
4	2	17198	Union, 1" Sch 40
5	1	10056	Bushing, 3M x 1F x 1F DBL Tapped Reducer
6	1	50125	Pipe, 1" Sch 40, 36" Long
7	1	17199	Ball Valve, 1" NPT
8	1	50133	Pipe, 1" Sch 40 x 78-11/16" LG (4000)
		50154	Pipe, 1" Sch 40 x 66-11/16" LG (8500)
		50153	Pipe, 1" Sch 40 x 90-11/16" LG (10000)
		50152	Pipe, 1" Sch 40 x 114-11/16" LG (5000, 12000, 15000)
9	1	50150	Pipe, 1" Sch 40 X 16-3/4" LG
10	4	17749	90° - 1" NPT SS Elbow (4464K16)
11	1	30509	FR902R Mount Assembly
12	1	21273	Meter, Fuel, FR902R 4 Digit Mech Gal.
13	1	18065	Nipple, 1" NPT, 6" Long
14	1	50151	Pipe, 1" Sch 40 x 19-11/16" LG (4000, 8500, 10000, 12000)
		50134	Pipe, 1" Sch 40 x 23-7/8" LG (15000)
		50132	Pipe, 1" Sch 40 x 14" LG (5000)

Item	Qty.	Part No.	Description
15	1	17593	Nipple, Galvanized, SCH 40, 1" x 10" LG
16	1	25173	Filter Head, 1" NPT For F40 Filter (700ACCF7017)
17	1	25174	Diesel Filter, - 40 GPM-50 PSI 30 Micron
18	1	18196	Elbow, 1" 90° Street Galv.
19	1	21021	Diesel Nozzle, 1" Ultra Hi-Flow, Green
20	1	10065	Valve, 334 Series Single Foot
21	1	17134	Reducer Bushing, 1-1/2" To 1-1/4"
22	1	50135	Pipe, 1" Sch 40 Suction 139-1/4" LG (4000)
		50156	Pipe, 1" Sch 40 Suction 127-1/4" LG (8500)
		50155	Pipe, 1" Sch 40 Suction 151-1/4" LG (10000)
		50157	Pipe, 1" Sch 40 Suction 175-1/4" LG (5000, 12000, 15000)
23	1	50127	Pipe, 1" Sch 40 x 12"
24*	1	40025	Bracket, 1" T-Bracket Assembly
25	1	21023	Hose, 1" x 20' Fuel Dispensing (Not Shown)

\*Item 24 qty. 2 on 8500 gal. tank.

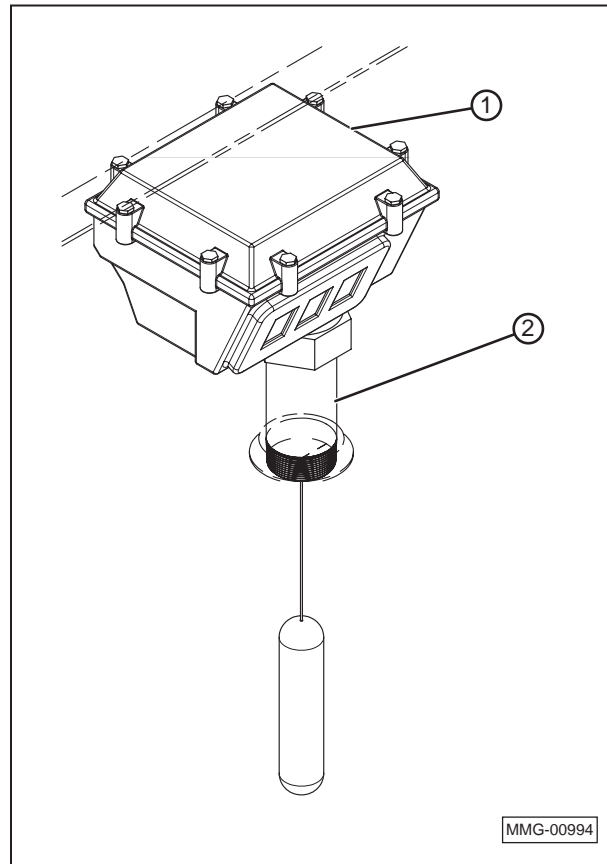
### 13.7 21496 HOSE REEL UPGRADE



MMG-00993

Item	Qty.	Part No.	Description
1	1	11205	Hose Reel, Diesel, 35' (Cox Reel)
2	2	11506	1" Hose Nipple, 1" M NPT 304 SS
3	1	50164	Hose, Fuel, 1" x 20" LG
4	2	11513	Clamp, T-Bolt, 1.344" to 1.562"
5	4	19348	Washer, Flat, 3/8"
6	4	19326	Bolt, Hex, 3/8-16 UNC x 1.25
7	4	19347	3/8-16 UNC Nylon Lock Nut
8	1	20775	Mount, Cox Reel
9	4	19595	Nut, Hex, Flanged, 1/2-13 UNC
10	4	18943	Bolt, Hex, Flanged, Steel, Mild 1/2-13 UNC x 1.25

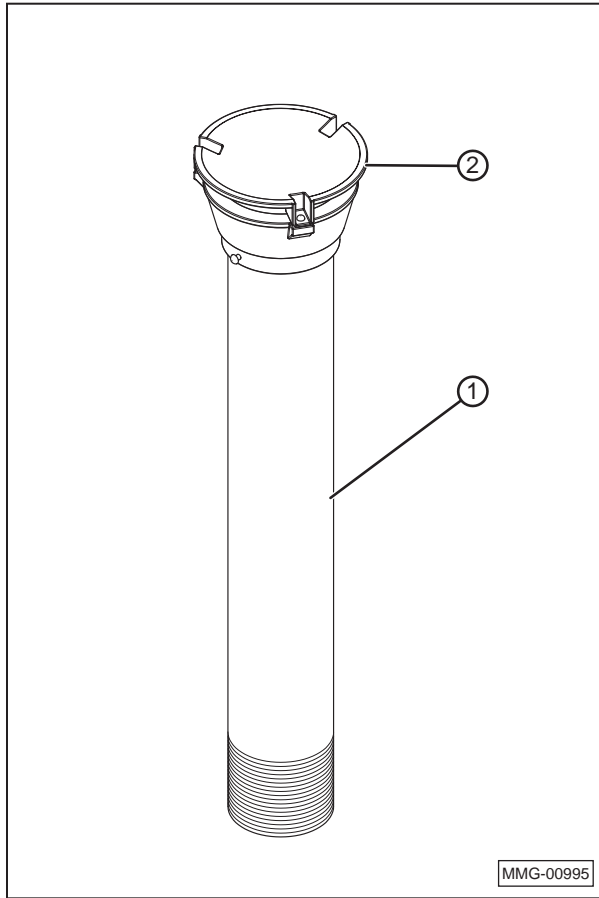
### 13.8 61536 OPW TANK LEVEL GAUGE



MMG-00994

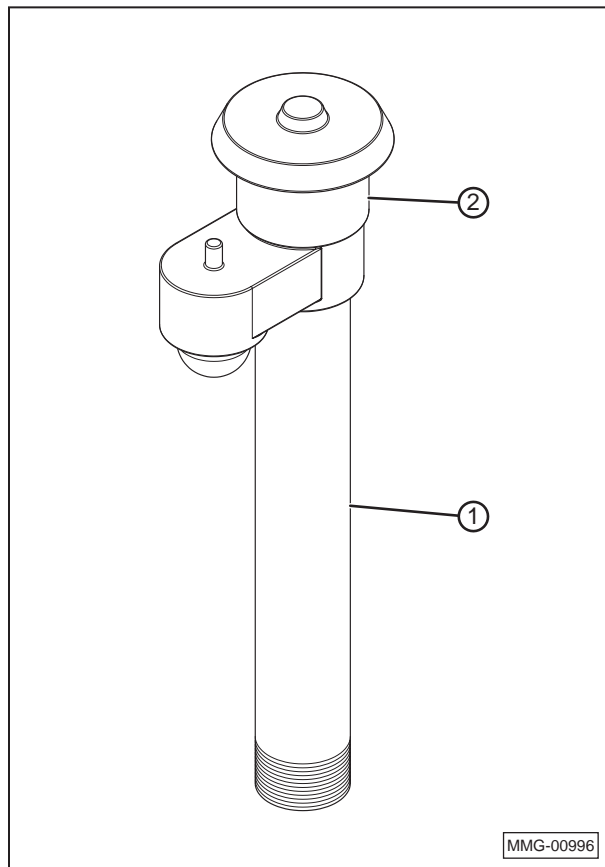
Item	Qty.	Part No.	Description
1	1	25843	Gauge, OPW Tank Level 200TG-ENG
2	1	18868	Nipple, 1" NPT, 6" Long

**13.9 61547 3" UPDRAFT VENT WITH 24" ELEVATION PIPE**



Item	Qty.	Part No.	Description
1	1	50163	Pipe, 3", Sch 40 x 24" LG, One End Threaded
2	1	20634	Vent, Updraft, 3" Slip On

**13.10 61548 3" PRESSURE/VAC. VENT ALARM WITH 24" ELEVATION PIPE**



Item	Qty.	Part No.	Description
1	1	50163	Pipe, 3", Sch 40 x 24" LG
2	1	20663	Vent/Overfill Alarm, 3"



# 14. CAPACITY CHARTS (GALLONS PER VERTICAL INCH)

## 14.1 4,000 GALLON VERTICAL DOUBLE WALL FUEL TANK (64056)

Height	Gallons	Height	Gallons	Height	Gallons	Height	Gallons
1	29.2	37	1079.3	73	2129.5	109	3179.6
2	58.3	38	1108.5	74	2158.6	110	3208.8
3	87.5	39	1137.7	75	2187.8	111	3237.9
4	116.7	40	1166.8	76	2217.0	112	3267.1
5	145.9	41	1196.0	77	2246.1	113	3296.3
6	204.2	42	1225.2	78	2275.3	114	3325.4
7	175.0	43	1254.3	79	2304.5	115	3354.6
8	233.4	44	1283.5	80	2333.6	116	3383.8
9	262.5	45	1312.7	81	2362.8	117	3413.0
10	291.7	46	1341.8	82	2392.0	118	3442.1
11	320.9	47	1371.0	83	2421.2	119	3471.3
12	350.0	48	1400.2	84	2450.3	120	3500.5
13	379.2	49	1429.4	85	2479.5	121	3529.6
14	408.4	50	1458.5	86	2508.7	122	3558.8
15	437.6	51	1487.7	87	2537.8	123	3588.0
16	466.7	52	1516.9	88	2567.0	124	3617.1
17	495.9	53	1546.0	89	2596.2	125	3646.3
18	525.1	54	1575.2	90	2625.4	126	3675.5
19	554.2	55	1604.4	91	2654.5	127	3704.7
20	583.4	56	1633.6	92	2683.7	128	3733.8
21	612.6	57	1662.7	93	2712.9	129	3763.0
22	641.8	58	1691.9	94	2742.0	130	3792.2
23	670.9	59	1721.1	95	2771.2	131	3821.3
24	700.1	60	1750.2	96	2800.4	132	3850.5
25	729.3	61	1779.4	97	2829.5	133	3879.7
26	758.4	62	1808.6	98	2858.7	134	3908.9
27	787.6	63	1837.7	99	2887.9	135	3938.0
28	816.8	64	1866.9	100	2917.1	136	3967.2
29	845.9	65	1896.1	101	2946.2	137	3996.4
30	875.1	66	1925.3	102	2975.4	138	4025.5
31	904.3	67	1954.4	103	3004.6	139	4054.7
32	933.5	68	1983.6	104	3033.7	140	4083.9
33	962.6	69	2012.8	105	3062.9	141	4113.0
34	991.8	70	2041.9	106	3092.1	142	4142.2
35	1021.0	71	2071.1	107	3121.2	143	4171.4
36	1050.1	72	2100.3	108	3150.4	144	4200.6

## 14.2 5,000 GALLON VERTICAL DOUBLE WALL FUEL TANK (64068)

Height	Gallons	Height	Gallons	Height	Gallons	Height	Gallons	Height	Gallons
1	28.3	37	1047.2	73	2066.1	109	3084.9	145	4103.8
2	56.6	38	1075.5	74	2094.4	110	3113.2	146	4132.1
3	84.9	39	1103.8	75	2122.7	111	3141.5	147	4160.4
4	113.2	40	1132.1	76	2151.0	112	3169.9	148	4188.7
5	141.5	41	1160.4	77	2179.3	113	3198.2	149	4217.0
6	169.8	42	1188.7	78	2207.6	114	3226.5	150	4245.3
7	198.1	43	1217.0	79	2235.9	115	3254.8	151	4273.6
8	226.4	44	1245.3	80	2264.2	116	3283.1	152	4301.9
9	254.7	45	1273.6	81	2292.5	117	3311.4	153	4330.2
10	283.0	46	1301.9	82	2320.8	118	3339.7	154	4358.5
11	311.3	47	1330.2	83	2349.1	119	3368.0	155	4386.8
12	339.6	48	1358.5	84	2377.4	120	3396.3	156	4415.2
13	367.9	49	1386.8	85	2405.7	121	3424.6	157	4443.5
14	396.2	50	1415.1	86	2434.0	122	3452.9	158	4471.8
15	424.5	51	1443.4	87	2462.3	123	3481.2	159	4500.1
16	452.8	52	1471.7	88	2490.6	124	3509.5	160	4528.4
17	481.1	53	1500.0	89	2518.9	125	3537.8	161	4556.7
18	509.4	54	1528.3	90	2547.2	126	3566.1	162	4585.0
19	537.7	55	1556.6	91	2575.5	127	3594.4	163	4613.3
20	566.0	56	1584.9	92	2603.8	128	3622.7	164	4641.6
21	594.3	57	1613.2	93	2632.1	129	3651.0	165	4669.9
22	622.6	58	1641.5	94	2660.4	130	3679.3	166	4698.2
23	651.0	59	1669.8	95	2688.7	131	3707.6	167	4726.5
24	679.3	60	1698.1	96	2717.0	132	3735.9	168	4754.8
25	707.6	61	1726.4	97	2745.3	133	3764.2	169	4783.1
26	735.9	62	1754.7	98	2773.6	134	3792.5	170	4811.4
27	764.2	63	1783.0	99	2801.9	135	3820.8	171	4839.7
28	792.5	64	1811.3	100	2830.2	136	3849.1	172	4868.0
29	820.8	65	1839.6	101	2858.5	137	3877.4	173	4896.3
30	849.1	66	1867.9	102	2886.8	138	3905.7	174	4924.6
31	877.4	67	1896.3	103	2915.1	139	3934.0	175	4952.9
32	905.7	68	1924.6	104	2943.4	140	3962.3	176	4981.2
33	934.0	69	1952.9	105	2971.7	141	3990.6	177	5009.5
34	962.3	70	1981.2	106	3000.0	142	4018.9	178	5037.8
35	990.6	71	2009.5	107	3028.3	143	4047.2	179	5066.1
36	1018.9	72	2037.8	108	3056.6	144	4075.5	180	5094.4

### 14.3 8,500 GALLON VERTICAL DOUBLE WALL FUEL TANK (64045)

Height	Gallons	Height	Gallons	Height	Gallons	Height	Gallons
1	67.2	34	2286.1	67	4504.9	100	6723.7
2	134.5	35	2353.3	68	4572.1	101	6791.0
3	201.7	36	2420.5	69	4639.4	102	6858.2
4	268.9	37	2487.8	70	4706.6	103	6925.4
5	336.2	38	2555.0	71	4773.8	104	6992.7
6	403.4	39	2622.3	72	4841.1	105	7059.9
7	470.7	40	2689.5	73	4908.3	106	7127.2
8	537.9	41	2756.7	74	4975.6	107	7194.4
9	605.1	42	2824.0	75	5042.8	108	7261.6
10	672.4	43	2891.2	76	5110.0	109	7328.9
11	739.6	44	2958.4	77	5177.3	110	7396.1
12	806.8	45	3025.7	78	5244.5	111	7463.3
13	874.1	46	3092.9	79	5311.7	112	7530.6
14	941.3	47	3160.2	80	5379.0	113	7597.8
15	1008.6	48	3227.4	81	5446.2	114	7665.1
16	1075.8	49	3294.6	82	5513.5	115	7732.3
17	1143.0	50	3361.9	83	5580.7	116	7799.5
18	1210.3	51	3429.1	84	5647.9	117	7866.8
19	1277.5	52	3496.3	85	5715.2	118	7934.0
20	1344.7	53	3563.6	86	5782.4	119	8001.2
21	1412.0	54	3630.8	87	5849.6	120	8068.5
22	1479.2	55	3698.1	88	5916.9	121	8135.7
23	1546.5	56	3765.3	89	5984.1	122	8202.9
24	1613.7	57	3832.5	90	6051.4	123	8270.2
25	1680.9	58	3899.8	91	6118.6	124	8337.4
26	1748.2	59	3967.0	92	6185.8	125	8404.7
27	1815.4	60	4034.2	93	6253.1	126	8471.9
28	1882.6	61	4101.5	94	6320.3	127	8539.1
29	1949.9	62	4168.7	95	6387.5	128	8606.4
30	2017.1	63	4235.9	96	6454.8	129	8673.6
31	2084.4	64	4303.2	97	6522.0	130	8740.8
32	2151.6	65	4370.4	98	6589.3	131	8808.1
33	2218.8	66	4437.7	99	6656.5	132	8875.3

#### 14.4 10,000 GALLON VERTICAL DOUBLE WALL FUEL TANK (64044)

Height	Gallons	Height	Gallons	Height	Gallons	Height	Gallons	Height	Gallons
1	67.2	32	2151.6	63	4235.9	94	6320.3	125	8404.7
2	134.5	33	2218.8	64	4303.2	95	6387.5	126	8471.9
3	201.7	34	2286.1	65	4370.4	96	6454.8	127	8539.1
4	268.9	35	2353.3	66	4437.7	97	6522.0	128	8606.4
5	336.2	36	2420.5	67	4504.9	98	6589.3	129	8673.6
6	403.4	37	2487.8	68	4572.1	99	6656.5	130	8740.8
7	470.7	38	2555.0	69	4639.4	100	6723.7	131	8808.1
8	537.9	39	2622.3	70	4706.6	101	6791.0	132	8875.3
9	605.1	40	2689.5	71	4773.8	102	6858.2	133	8942.6
10	672.4	41	2756.7	72	4841.1	103	6925.4	134	9009.8
11	739.6	42	2824.0	73	4908.3	104	6992.7	135	9077.0
12	806.8	43	2891.2	74	4975.6	105	7059.9	136	9144.3
13	874.1	44	2958.4	75	5042.8	106	7127.2	137	9211.5
14	941.3	45	3025.7	76	5110.0	107	7194.4	138	9278.7
15	1008.6	46	3092.9	77	5177.3	108	7261.6	139	9346.0
16	1075.8	47	3160.2	78	5244.5	109	7328.9	140	9413.2
17	1143.0	48	3227.4	79	5311.7	110	7396.1	141	9480.5
18	1210.3	49	3294.6	80	5379.0	111	7463.3	142	9547.7
19	1277.5	50	3361.9	81	5446.2	112	7530.6	143	9614.9
20	1344.7	51	3429.1	82	5513.5	113	7597.8	144	9682.2
21	1412.0	52	3496.3	83	5580.7	114	7665.1	145	9749.4
22	1479.2	53	3563.6	84	5647.9	115	7732.3	146	9816.6
23	1546.5	54	3630.8	85	5715.2	116	7799.5	147	9883.9
24	1613.7	55	3698.1	86	5782.4	117	7866.8	148	9951.1
25	1680.9	56	3765.3	87	5849.6	118	7934.0	149	10018.4
26	1748.2	57	3832.5	88	5916.9	119	8001.2	150	10085.6
27	1815.4	58	3899.8	89	5984.1	120	8068.5	151	10152.8
28	1882.6	59	3967.0	90	6051.4	121	8135.7	152	10220.1
29	1949.9	60	4034.2	91	6118.6	122	8202.9	153	10287.3
30	2017.1	61	4101.5	92	6185.8	123	8270.2	154	10354.5
31	2084.4	62	4168.7	93	6253.1	124	8337.4	155	10421.8
								156	10489.0

## 14.5 12,000 GALLON VERTICAL DOUBLE WALL FUEL TANK (64040)

Height	Gallons	Height	Gallons	Height	Gallons	Height	Gallons	Height	Gallons
1	67.2	37	2487.8	73	4908.3	109	7328.9	145	9749.4
2	134.5	38	2555.0	74	4975.6	110	7396.1	146	9816.6
3	201.7	39	2622.3	75	5042.8	111	7463.3	147	9883.9
4	268.9	40	2689.5	76	5110.0	112	7530.6	148	9951.1
5	336.2	41	2756.7	77	5177.3	113	7597.8	149	10018.4
6	403.4	42	2824.0	78	5244.5	114	7665.1	150	10085.6
7	470.7	43	2891.2	79	5311.7	115	7732.3	151	10152.8
8	537.9	44	2958.4	80	5379.0	116	7799.5	152	10220.1
9	605.1	45	3025.7	81	5446.2	117	7866.8	153	10287.3
10	672.4	46	3092.9	82	5513.5	118	7934.0	154	10354.5
11	739.6	47	3160.2	83	5580.7	119	8001.2	155	10421.8
12	806.8	48	3227.4	84	5647.9	120	8068.5	156	10489.0
13	874.1	49	3294.6	85	5715.2	121	8135.7	157	10556.3
14	941.3	50	3361.9	86	5782.4	122	8202.9	158	10623.5
15	1008.6	51	3429.1	87	5849.6	123	8270.2	159	10690.7
16	1075.8	52	3496.3	88	5916.9	124	8337.4	160	10758.0
17	1143.0	53	3563.6	89	5984.1	125	8404.7	161	10825.2
18	1210.3	54	3630.8	90	6051.4	126	8471.9	162	10892.4
19	1277.5	55	3698.1	91	6118.6	127	8539.1	163	10959.7
20	1344.7	56	3765.3	92	6185.8	128	8606.4	164	11026.9
21	1412.0	57	3832.5	93	6253.1	129	8673.6	165	11094.2
22	1479.2	58	3899.8	94	6320.3	130	8740.8	166	11161.4
23	1546.5	59	3967.0	95	6387.5	131	8808.1	167	11228.6
24	1613.7	60	4034.2	96	6454.8	132	8875.3	168	11295.9
25	1680.9	61	4101.5	97	6522.0	133	8942.6	169	11363.1
26	1748.2	62	4168.7	98	6589.3	134	9009.8	170	11430.3
27	1815.4	63	4235.9	99	6656.5	135	9077.0	171	11497.6
28	1882.6	64	4303.2	100	6723.7	136	9144.3	172	11564.8
29	1949.9	65	4370.4	101	6791.0	137	9211.5	173	11632.1
30	2017.1	66	4437.7	102	6858.2	138	9278.7	174	11699.3
31	2084.4	67	4504.9	103	6925.4	139	9346.0	175	11766.5
32	2151.6	68	4572.1	104	6992.7	140	9413.2	176	11833.8
33	2218.8	69	4639.4	105	7059.9	141	9480.5	177	11901.0
34	2286.1	70	4706.6	106	7127.2	142	9547.7	178	11968.2
35	2353.3	71	4773.8	107	7194.4	143	9614.9	179	12035.5
36	2420.5	72	4841.1	108	7261.6	144	9682.2	180	12102.7

## 14.6 15,000 GALLON VERTICAL DOUBLE WALL FUEL TANK (64080)

Height	Gallons	Height	Gallons	Height	Gallons	Height	Gallons	Height	Gallons
1	87.3	37	3230.6	73	6373.8	109	9517.0	145	12660.3
2	174.6	38	3317.9	74	6461.1	110	9604.3	146	12747.6
3	261.9	39	3405.2	75	6548.4	111	9691.7	147	12834.9
4	349.2	40	3492.5	76	6635.7	112	9779.0	148	12922.2
5	436.6	41	3579.8	77	6723.0	113	9866.3	149	13009.5
6	523.9	42	3667.1	78	6810.4	114	9953.6	150	13096.8
7	611.2	43	3754.4	79	6897.7	115	10040.9	151	13184.1
8	698.5	44	3841.7	80	6985.0	116	10128.2	152	13271.5
9	785.8	45	3929.0	81	7072.3	117	10215.5	153	13358.8
10	873.1	46	4016.4	82	7159.6	118	10302.8	154	13446.1
11	960.4	47	4103.7	83	7246.9	119	10390.2	155	13533.4
12	1047.7	48	4191.0	84	7334.2	120	10477.5	156	13620.7
13	1135.1	49	4278.3	85	7421.5	121	10564.8	157	13708.0
14	1222.4	50	4365.6	86	7508.9	122	10652.1	158	13795.3
15	1309.7	51	4452.9	87	7596.2	123	10739.4	159	13882.6
16	1397.0	52	4540.2	88	7683.5	124	10826.7	160	13970.0
17	1484.3	53	4627.5	89	7770.8	125	10914.0	161	14057.3
18	1571.6	54	4714.9	90	7858.1	126	11001.3	162	14144.6
19	1658.9	55	4802.2	91	7945.4	127	11088.7	163	14231.9
20	1746.2	56	4889.5	92	8032.7	128	11176.0	164	14319.2
21	1833.6	57	4976.8	93	8120.0	129	11263.3	165	14406.5
22	1920.9	58	5064.1	94	8207.3	130	11350.6	166	14493.8
23	2008.2	59	5151.4	95	8294.7	131	11437.9	167	14581.1
24	2095.5	60	5238.7	96	8382.0	132	11525.2	168	14668.5
25	2182.8	61	5326.0	97	8469.3	133	11612.5	169	14755.8
26	2270.1	62	5413.4	98	8556.6	134	11699.8	170	14843.1
27	2357.4	63	5500.7	99	8643.9	135	11787.1	171	14930.4
28	2444.7	64	5588.0	100	8731.2	136	11874.5	172	15017.7
29	2532.1	65	5675.3	101	8818.5	137	11961.8	173	15105.0
30	2619.4	66	5762.6	102	8905.8	138	12049.1	174	15192.3
31	2706.7	67	5849.9	103	8993.2	139	12136.4	175	15279.6
32	2794.0	68	5937.2	104	9080.5	140	12223.7	176	15366.9
33	2881.3	69	6024.5	105	9167.8	141	12311.0	177	15454.3
34	2968.6	70	6111.9	106	9255.1	142	12398.3	178	15541.6
35	3055.9	71	6199.2	107	9342.4	143	12485.6	179	15628.9
36	3143.2	72	6286.5	108	9429.7	144	12573.0	180	15716.2



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## INDUSTRIAL



## OIL & GAS

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Cambridge, ON N1T 2K1  
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TF: 855.346.3712  
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### Camrose Office

4232 - 38 St.  
Camrose, AB T4V 4B2  
PH: 780.672.4516  
TF: 800.830.2467  
FX: 780.672.4759

### Lethbridge Office

3125 - 24 Ave. N.  
Lethbridge, AB T1H 5G2  
PH: 403.320.7070  
TF: 800.661.1436  
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### Regina Office

PO Box 1996  
Regina, SK S4P 3E1  
PH: 306.545.4044  
TF: 800.667.5904  
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### Storm Lake Office

2902 Expansion Blvd.  
Storm Lake, IA 50588  
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TF: 800.437.2334  
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### Winkler Office

Box 760, 275 Hespler Ave.  
Winkler, MB R6W 4A8  
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