

# Pumps and Dispensers

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## Site Preparation

**For Use With:**

All Gilbarco pumps and dispensers

## Computer Programs and Documentation

All Gilbarco computer programs (including software on diskettes and within memory chips) and documentation are copyrighted by, and shall remain the property of, Gilbarco Inc. Such computer programs and documents may also contain trade secret information. The duplication, disclosure, modification, or unauthorized use of computer programs or documentation is strictly prohibited, unless otherwise licensed by Gilbarco.

## FCC Warning

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

## Approvals

### Underwriters Laboratories:

U.L. File#	Products listed with U. L.
MH1941	All Gilbarco pumps and dispensers that bear the U.L. listing mark.

### National Quality Assurance:

Certificate #	Gilbarco's registration
5119	Gilbarco is an ISO9001/BS5750 Part 1/EN29001 registered company.

### California Air Resources Board (CARB):

Executive Order #	Product
G-70-52	Balance Vapor Recovery
G-70-150-AB	VaporVac

### New York City:

NYFD C of A. #	Product
4805	The Advantage Series
4879	Legacy Series

### Patents

Gilbarco products are manufactured or sold under one or more of the following U.S. patents.:

RE.35,238	4,728,788	4,939,730	5,099,403	5,269,353	5,417,256	5,514,933	5,561,715	5,782,275
D.262,971	4,799,940	4,986,445	5,110,010	5,325,706	5,448,638	5,535,130	5,571,310	
D.265,092	4,876,653	5,013,434	5,134,548	5,345,979	5,450,883	5,542,458	5,592,979	
D.316,471	4,890,210	5,029,100	5,156,199	5,355,915	5,452,750	5,543,849	5,602,745	
4,566,504	4,913,813	5,083,846	5,195,564	5,384,850	5,464,466	5,546,981	5,626,649	
4,687,033	4,938,251	5,098,179	5,228,084	5,407,115	5,493,315	5,557,084	5,782,275	

Additional U.S. and foreign patents pending.

## Trademarks

### Non-registered trademarks

C-PAM™	G-SKAN™	Surge Management System™
ECR™	Highline™	Tank Monitor™
EMC™	MultiLine™	TCR™
G-CAT™	Optimum™ Series	TRIND™
Gilbert™	PAM™ 1000	Ultra-Hi™
G-Poll™ Interface	PAM™	ValueLine™
SmartPad™		

Additional U.S. and foreign trademarks pending.

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E-mail: literature@gilbarco.com  
Internet: http://www.gilbarco.com

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### N.I.S.T. - Certificate of Compliance:

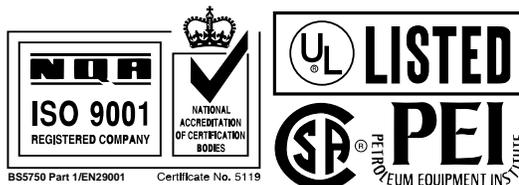
Gilbarco pumps and dispensers are evaluated by the National Institute of Standards and Technology (NIST) under the National Type Evaluation Program (NTEP).

NIST has issued the following Certificates of Compliance (COC):

COC#	Product	Model #
	ProBlender	AU
	Precision Blender	AE
87-077A2	Dispenser - Standard	AK
	Dispenser - Low Profile	AL
	Fixed Blender	AP
87-099	Salesmaker ProBlender	AB
88-129	Salesmaker Series 2/2H/4/4A	AM
88-226.A4	H111B Series	AC
	MPD-1 Series	AN
89-019A1	Fixed Blender	AF, AG
	Dispenser - Low Profile	AR
89-066A1	Card Reader/Infoscreen	
89-068A1	TS-1000 Console	PA0240
	TS-1000 Controller	PA0241
90-021	VaporVac Kits	CV
90-115.A6	The Advantage Series	Bxx
91-088	Trimline Series	AA
92-056A1	Meter - C Series	PA024
92-197	Rebuilt Pumps/Dispensers	
92-211	MPD-A3 Series	AD
93-035.A1	External Mount CRIND	CEC
93-081A1	Dimension Series	Dxx
94-027.A1	Legacy Series	Jxxx

### Registered trademarks

Dimension® Series	The Advantage® Series
Gilbarco®	Transac®
InfoScreen®	Trimline®
Legacy®	VaporVac®
Making Things Better®	G-SITE®
MPD®	Transac® System 1000
Performer®	InfoScreen®
CRIND®	



BS5750 Part 1/EN29001 Certificate No. 5119

# Table of Contents

MDE-2833D Pump and Dispenser Site Preparation

## Read This First

Purpose Of This Manual . . . . .	2
Who Should Use This Manual . . . . .	2
Who To Contact At Gilbarco . . . . .	2
Reference Documents . . . . .	2

## Safety Information

OSHA Lock-Out and Tag-Out Requirements . . . . .	5
First Aid . . . . .	6
Contacting Emergency Personnel . . . . .	6
Informing Emergency Personnel . . . . .	6
Safety Statements to Remind Installers . . . . .	7

## Site Preparation

Station Layout . . . . .	8
Equipment and Materials Needed At Site . . . . .	8

## Electrical Requirements

Emergency Power Cutoff Switch . . . . .	9
Circuit Breakers . . . . .	9
STP Control Relay Boxes for Dispensers . . . . .	9
STP Isolation Relays for Electronic Dispensers . . . . .	9
Conduit . . . . .	10
Wiring . . . . .	10
Data Wire Lengths . . . . .	10
Grounding . . . . .	11

## Plumbing Requirements

Fuel Tanks . . . . .	12
Leak Detectors . . . . .	12
STPs . . . . .	12
Pipe Installation . . . . .	12
Check Valves . . . . .	14
Shear Valves . . . . .	14
Pit Box Mounting . . . . .	15
Safety Signs . . . . .	15
Glossary Terms . . . . .	15

# Read This First

## Purpose Of This Manual

This manual gives you information to prepare a site for Gilbarco pumps or dispensers. It provides the following:

- Safety information
- Equipment needed for installation
- Station layout information
- Electrical requirements
- Plumbing requirements

Perform all site prep in accordance with NFPA 30A, NFPA 70, and applicable national, state and local codes/regulations. Plan your site ahead of time. Use experienced, licensed personnel that practice accurate, safe construction techniques. Time, expense, and extra effort in the early stages of preparing a site can eliminate problems in later stages. Careful site preparation provides a sound troubleshooting framework for field repairs.

## Who Should Use This Manual

This manual is intended for individuals who are trained in the construction of gasoline stations. If you do not have experience with this type of construction (gasoline stations) please contact licensed, trained engineer or contractor or Gilbarco Authorized Service Contractor (ASC).

## Who To Contact At Gilbarco

<b>For this type of information</b>	<b>Call the following phone numbers.</b>
To schedule training on Gilbarco products	Contact your local Gilbarco distributor for assistance.
For technical assistance	Gilbarco Technical Support at 1-800-743-7501
For warranty service and information	Gilbarco Tele-Support at 1-800-800-7498
For explanation of Gilbarco's warranty policy	Contact your local Gilbarco distributor for assistance.
For additional technical literature, i.e. installation, parts manuals, and other documents	Gilbarco Literature Department at 1-336-547-5661

## Reference Documents

### Read Manufacturer's Instructions

Equipment manufacturers must provide instructions for other equipment, such as submerged turbine pumps (STPs), leak detectors, underground tanks, product lines, and shear valves. Gilbarco does not provide installation instructions for other manufacturer's equipment.

Continued 

**Read Gilbarco Technical Manuals**

MDE-3019 Handbook 44 (referenced by Department of Weights and Measures)

MDE-2540 Pump and Dispenser Owner's Manual

MDE-2183 Warranty Form

MDE-2755 Gilbarco STP Control and Dispenser Isolation Relay Box PA0287 Installation

MDE-3116 Gilbarco Distribution Box Installation Manual

MDE-2530 Pump and Dispenser Installation Manual (see the following installation addenda):

- MDE-2530-01 The Advantage® MPD® Dispensers
- MDE-2530-03 The Advantage MPD Pumps
- MDE-2530-05 The Advantage Dual, Super-Hi Dual and Quad Dispensers
- MDE-2530-06 The Advantage Dual and Quad Comparison to Tokhiem<sup>1</sup>
- MDE-2530-07 The Advantage Dual, Super-Hi Dual and Quad Pumps
- MDE-2530-09 The Advantage Fixed Blender Six-Hose Dispenser
- MDE-2530-13 The Advantage Selectable Blender Dispensers
- MDE-2530-15 The Advantage Selectable Blender Pumps
  
- MDE-2530-21 Highline™ Standard Gallonage Dispensers
- MDE-2530-23 Highline Conventional High Gallonage Dispensers
- MDE-2530-25 Highline Super-Hi Dispensers
- MDE-2530-27 Highline Ultra-Hi Dispensers
- MDE-2530-29 Highline Satellite Dispensers
- MDE-2530-71 Highline Standard Gallonage Pumps
- MDE-2530-73 Highline High Gallonage Pumps
  
- MDE-2530-31 Trimline® and Commercial 625/650 Dispensers
- MDE-2530-35 Commercial 684 Dispensers and Pumps
- MDE-2530-37 Trimline and Commercial 625/650 Pumps
- MDE-2530-39 Commercial 625 Ultra-Hi Dispensers
  
- MDE-2530-41 Salesmaker™-2H and 4A Dispensers and Pumps
- MDE-2530-43 Salesmaker Pro Blender™ Dispensers
  
- MDE-2530-51 MPD®-1 and MPD-3 Dispensers
- MDE-2530-53 MPD Pro Blender Dispensers
- MDE-2530-55 MPD Precision Blender Dispensers
  
- MDE-2530-61 Pre-Modular MPD-2/C Dispensers
- MDE-2530-62 Pre-Modular Highline Dispensers and Pumps
- MDE-2530-63 Pre-Modular MPD-1 Dispensers
- MDE-2530-64 Pre-Modular MPD-A3 Dispensers
- MDE-2530-65 Pre-Modular Salesmaker-4 Dispensers and Pumps
  
- MDE-2530-80 Legacy® Commercial Pumps and Dispensers
- MDE-2530-81 Legacy Electronic Pumps and Dispensers
- MDE-2530-82 Hi, Ultra-Hi, Master/Satellite/Combo Pumps and Dispensers
- MDE-2530-83 Legacy Mechanical Series Pumps and Dispensers

1. Tokhiem is a registered trademark of Tokhiem

# Safety Information



### Alert Symbol

This is a standard alert symbol.

When you see this symbol, be alert to the potential for personal injury.

### Signal Words

The following signal words are used to alert you of important safety hazards and precautions.

<b>DANGER</b>
The hazard or unsafe practice <b>will</b> result in severe injury or death.

<b>WARNING</b>
The hazard or unsafe practice <b>could</b> result in severe injury or death.

<b>CAUTION</b>
The hazard or unsafe practice could result in <b>minor injury</b> .

### Safety Symbols

The following safety symbols are used throughout this manual to alert you to important safety hazards and precautions.



#### Explosive

Fuels and their vapors are extremely explosive if ignited.



#### Flammable

Fuels and their vapors are extremely flammable.



#### Electricity

High voltage exists in, and is supplied to, the dispensing device. A potential shock hazard exists.



#### No Smoking

Sparks and embers from burning cigarettes, cigars or pipes can ignite fuels and their vapors.



#### No Open Flames

Open flames from matches, lighters, welding torches, etc. can ignite fuels and their vapors.



#### No Power Tools

Sparks from power tools (such as drills) can ignite fuels and their vapors.



#### No Vehicles In The Area

Moving vehicles in the area during construction can create a potential for personal injury to you or others. Sparks from starting vehicles can ignite fuels and their vapors.



#### No People In The Area

Unauthorized people in the area during construction can create a potential for personal injury to you and them.



#### Use Safety Barricades

Unauthorized people or vehicles in the work area are dangerous. Always use safety cones or barricades, safety tape and your vehicle to block the work area.



#### Collect Fuel In Approved Containers

NFPA-30A, Section 2, requires use of approved containers to collect, transport and dispose of fuel.



#### Clean Up Spills

Fuel spills in the work area are extremely dangerous. Clean up all spills promptly. Use a "fuel or gasoline absorbent" material approved by your local regulatory agencies.

Continued



**Wear Eye Protection**

Spraying fuel from residual pressure in the lines can cause serious eye injuries. Always wear eye protection.



**Turn Power Off**

Live power to a dispensing device creates a potential shock hazard. Always turn power off to the dispensing device and associated STPs when servicing the unit. See “OSHA Lock-Out and Tag-Out Requirements” below.



**Determine Location of Emergency Power Cutoff**

NFPA-30A, Section 4-1.2, requires the installation of an easily accessible switch to shut off the power to all dispensing devices in the event of an emergency. Clearly identify this switch for installers so that the required location and it’s important function is understood.



**Read All Related Manuals**

Knowledge of all related procedures before you begin work is important. Read and understand all manuals thoroughly. If you do not understand a procedure, ask someone who does.

**WARNING**




Dangerous environment. Failure to install this equipment in accordance with NFPA 30A and NFPA 70 could result in serious injury or death. Read, understand, and follow NFPA 30A and NFPA 70.

**Read NFPA 30A and NFPA 70**

Before preparing the equipment, read, understand and follow:

- The National Electric Code (NFPA 70)
- The Automotive and Marine Service Code (NFPA 30A)
- Any national, state and local codes that apply

The failure to install the equipment in accordance with these codes may adversely affect the safe use and operation of the system.

**Read PEI/RP100-97**

Before preparing the equipment, read, understand and follow “Recommended Practices for Installation of Underground Liquid Storage Systems.” The failure to install the equipment in accordance with these practices may adversely affect the safe use and operation of the system.



**OSHA Lock-Out and Tag-Out Requirements**



Read OSHA Standard 29 CFR 1910-147 Control of Hazardous Energy Sources (Lock-Out/Tag-Out). Station employees and service contractors need to understand and comply with this program completely to ensure safety while the equipment is down.

OSHA Standard 29 CFR 1910-147 Control of Hazardous Energy Sources (Lock-Out/Tag-Out) covers ways to avoid personal injury if power is turned on or fuel pressure is applied unexpectedly while servicing equipment. The rule requires that equipment power and fuel under pressure be turned off and the device (breaker, valve, etc.) locked or labeled with a warning tag.

**Tag-Out and Lock-Out Procedure**

Use plastic warning tags with signature/date blanks for Tag-Out. Sign and date them at shut down. Attach tags with plastic connectors.

Use metal screw-down lock clamps or plastic single or multi-pole devices for Lock-Out of breakers and switches. Always use a lock-out device whenever possible.

## First Aid



Refer to phone book for emergency phone numbers. If needed, follow first aid instructions as outlined in American Red Cross Standard First Aid manuals.

## Contacting Emergency Personnel

Keep the following emergency phone numbers at hand.



Ambulance: \_\_\_\_\_



Fire: \_\_\_\_\_



Police: \_\_\_\_\_

Poison Control Center: \_\_\_\_\_

## Informing Emergency Personnel

- Know your location (e.g. street address, front/back of building, etc.).
- Nature of accident (e.g. possible heart attack, run over by car, burns, etc.).
- Age of victim (e.g. baby, teenager, middle-age, elderly).
- Whether or not the victim has received first aid (e.g. stopped bleeding by pressure, etc.).
- Whether or not the victim has vomited (e.g. if swallowed or inhaled something, etc.).

*Note: Oxygen may be needed at scene if gasoline has been ingested or inhaled.*

### Gasoline Ingestion

### Gasoline Vapor Inhalation

### Gasoline In Eyes

### Gasoline On Skin

 **WARNING**



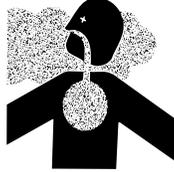
Gasoline ingested may cause unconsciousness and burns to internal organs.

Do not induce vomiting.  
Keep airway open.

Oxygen may be needed at scene.

Seek medical advice immediately.

 **WARNING**



Gasoline inhaled may cause unconsciousness and burns to lips, mouth and lungs.

Keep airway open.

Seek medical advise immediately.

 **WARNING**



Gasoline spilled in eyes may cause burns to eye tissue.

Irrigate eyes with water for approximately 15 minutes.

Seek medical advise immediately

 **WARNING**



Gasoline spilled on skin may cause burns.

Wash area thoroughly with clear/ water.

Seek medical advise immediately.

## Safety Statements to Remind Installers

These are important safety statements to remind installers of pumps and dispensers.

### Field Wiring

**WARNING**



Poorly wired pumps/dispensers can create hazards.

Serious fires, explosions, electrical shocks, and injuries or deaths could result.

Place all power and lighting wires in threaded, rigid metal conduits. Plug all unused junction box holes. Never use knockout boxes or flexible conduit. Tighten all threaded connections and covers. Do not use gaskets with junction box covers. Do not disturb sealing compound around wires at junction box entrances.

Follow wiring recommendations in installation/service manuals and applicable NEC, NFPA and local electrical codes.

### Electrical Service

**WARNING**



Servicing live power wiring or improperly closing junction boxes can be hazardous. High voltage is present.

Serious fires, explosions, electrical shocks, and injuries or deaths could result.

Remove power to unit and associated STPs when servicing or making electrical wiring connections. Multiple disconnects may be required. Replace all bolts and tighten junction box cover before turning on AC power.

### Junction Box Wiring

**WARNING**



Spilled or leaking fuels in the vicinity of electrical junction boxes can be hazardous if boxes are not properly closed.

Serious fire/explosion and injury/death could result.

Replace all bolts and tighten junction box cover before turning on unit AC power. Do not use gaskets on junction box covers.

### Pinched Wires

**CAUTION**



Pinched or cut wires (cables) may damage components. Exposed wires could result in sparks and electrical shorts when applying power. Explosive vapors may be present.

Electrical shock, fires, explosions could occur resulting in serious injuries or death.

Use factory method of routing wires. Use tie wraps to keep unruly wires away from pinch point and hinges. Tuck wires into enclosure before closing doors, bezels, junction boxes, covers, and breaker panels.

### Grounding

**WARNING**



High voltage is present. Improper grounds are hazardous.

Electrical shock could occur resulting in serious injury or death.

Proper grounding is required for safe operation. See installation manual and applicable NEC, NFPA and local electrical codes for requirements.

### Clean-Up Spills

**WARNING**



Petroleum soaked absorbents can create a safety hazard.

Vapors may collect causing a serious fire/explosion and injury/death could result.

Follow manufacture of absorbent instructions for safe clean-up and disposal. Dispose of contaminate materials as specified by your local or state regulators.

Keep environment free from petroleum contamination.

# Site Preparation

## Station Layout



Gilbarco recommends that you:

- Consider traffic flow, kiosk, and store location when planning location of pumps/dispensers.
- Plan islands for efficient routing of plumbing and wiring. Arrange product lines by hose and foundation layouts (see specific installation addendum). Follow local codes.

*Note: Actual flow rates will depend on your specific installation and accessories used.*

*Remember pipe size and number of fittings can affect flow rate.*

- Place pump/dispenser so customers can dispense fuel safely and conveniently.
- Install pumps/dispensers at least eight feet apart on island.
- Consider the service person. They must have easy access to the entire pump/dispenser (top, rear, front and sides). Gilbarco recommends at least 60 inches of clearance from any structure (i.e., wall, fence).

*Note: The Advantage® Self-contained Pump must have a minimum clearance of 20" on each side for side sheathing removal.*

- Install protective posts at ends of island to protect pumps/dispensers against collision. Posts must not interfere with customer fueling.

## Equipment and Materials Needed At Site

- Fuel storage tanks
- STPs and leak detectors for dispensers
- Piping and fittings
- Pit boxes
- Shear valves for dispensers
- Conduit and gas/oil resistant wiring
- STP control relay boxes for dispensers
- Circuit breakers
- Isolation relays for electronic dispensers
- Emergency power cutoff switch
- Safety warning signs

Place warning signs (i.e., No Smoking, Turn Off Engine, etc.) where fuel customers will notice and read them. Contact your local distributor for warning signs.

# Electrical Requirements



- Prepare sites according to NFPA 30A, NFPA 70, and applicable national, state and local codes/regulations.
- Use licensed electricians to make all electrical connections.
- Use a dedicated circuit phase system. Wire all electronic units to the same power leg.
- Use an earth ground for circuits.
- Mount all circuit breaker panels and relay boxes securely to the wall.
- Use UL recognized/approved components and/or systems.

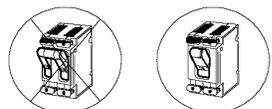
## Emergency Power Cutoff Switch



- NFPA 30A and Gilbarco require that you install one or more emergency power cutoff switches.
- An emergency power cutoff switch is a single control that removes AC power to all island equipment (pumps/dispensers, STPs, canopies, lights, etc.).
- Make the emergency power cutoff switch accessible, label it clearly and install it away from any hazard that may occur at the pumps/dispensers. Do not install cutoff switches more than 100 feet away from the pumps/dispensers.
- Show all employees where the emergency power cutoff switch is located and how to use it. Remind them often.

*Note: Do not use E-STOP, ALL-STOP, or PUMP STOP keys on Gilbarco console/cash registers to shut off pump/dispenser power. These keys do not remove AC power and do not always stop product flow.*

## Circuit Breakers

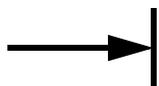


Do not use

Use

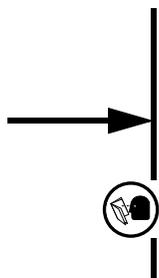
- Install UL listed switched neutral breakers to each circuit leading to a pump/dispenser or group of dispensers and STPs. They must be able to disconnect hot and neutral conductors simultaneously. Do not use single-pole breakers with handle ties.
- Use only UL listed circuit breaker panel.
- Install circuit breakers away from the pumps/dispensers. They must be readily accessible and clearly marked.
- Install a separate circuit breaker for each STP (dispenser models) or each pump motor (self-contained models).
- Install one circuit breaker for each pump/dispenser or pump/dispenser grouping to allow isolation of pump/dispenser or grouping.

## STP Control Relay Boxes for Dispensers



- Install a separate control relay for each STP.
- Do not use the dispenser relay to power the STP.
- Combined STP Control Relay/Isolation Relay boxes are recommended.

## STP Isolation Relays for Electronic Dispensers



STP isolation relays provide electrical isolation between dispensers and prevent damage from cross phasing.

*Note: For 3 phase STP, use isolation relay at the input of the 3 phase STP control box.*

- Gilbarco requires installation of STP isolation relays in addition to STP control relays.
- Use isolation relays for each STP control line at each dispenser or dispenser grouping on a single circuit breaker.
- Route neutral wire to the control relays from the dispenser circuit breaker (see field wiring diagrams in specific addendum).
- Combined STP Control Relay/Isolation Relay boxes are recommended.

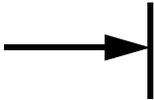
## Conduit

- Use minimum 1 inch conduit for The Advantage® Series and 3/4 inch conduit for all other pumps/dispensers to connect wires to the pump/dispenser junction box. Infoscreen™ and two-wire data wires can share this conduit (See model-specific wiring diagrams).
- Run all power and light wires in threaded, rigid metal conduit or in a rigid non-metallic conduit. Conduit must conform to national and local electrical codes. If you use nonmetallic conduit, it must be at least two feet underground. The last two feet of the underground run to the junction box must be rigid metal conduit or threaded steel intermediate metal conduit. Tighten all threaded conduits.
- Never share conduit or wire troughs with other manufacturers' equipment (i.e., speaker wires, etc.).
- Use separate conduit for speaker wiring. Speaker wire connection uses optional conduit outlet box (see Elevation/Footprint diagrams in specific addendum).  
*Note: You can use the same conduit for routing power to the pump/dispenser and the two-wire data loop (Class 1 circuit). The two-wire data loop is a Class 1 circuit.*
- Never rely on metal conduit to provide an equipment ground. Run a separate ground wire.
- Never use knock-out boxes or flexible conduit for installation.  
*Note: Extra junction boxes added to the pump/dispenser must be listed Class 1, Div. 1, Group C and D explosion-proof.*
- Use electrical fittings that are listed for Class 1, Group C and D hazardous locations as required by NFPA 30A and NFPA 70.



## Wiring

- Wire all pumps/dispensers according to NFPA 30A, NFPA 70 and applicable national, state, and local codes/ regulations.
- Wire all circuits N.E.C. Class 1 except speaker (intercom) circuit which must be N.E.C. Class 2. Install speaker (intercom) circuit in separate conduit.
- Use stranded gas and oil resistant copper wire rated for 300 volts (up to 240VAC source) and 80°C.
- Leave two to three feet of wire out of conduit for junction box connection.
- Place dispensers on the same phase.  
*Note: If Gilbarco isolation box is installed, dispensers are not required to be on the same phase.*
- Use listed wire nuts for all connections. Do not use tape.
- Pull spare wires for future use.
- Protect conduit ends and wire from water or damage.



## Data Wire Lengths

Use the following table to determine maximum data wire lengths.

For This Distribution Box	The Distance Between the Distribution Box and Dispenser	The Distance Between the Distribution Box and Console/Controller
PA0133, PA0187 G-SITE™	"Total" data wire system run no more than 2600 ft. with 14 AWG.	
PA0242 Transac System 1000™	No more than 2600 ft. with 14AWG.	No more than 2600 ft. with 14AWG.
PA0261 Universal D-Box	No more than 2600 ft. with 14AWG.	No more than 2600 ft. with 14AWG.
PA0306 Distribution Box	No more than 2600 ft. with 14AWG.	No more than 2600 ft. with 14AWG.

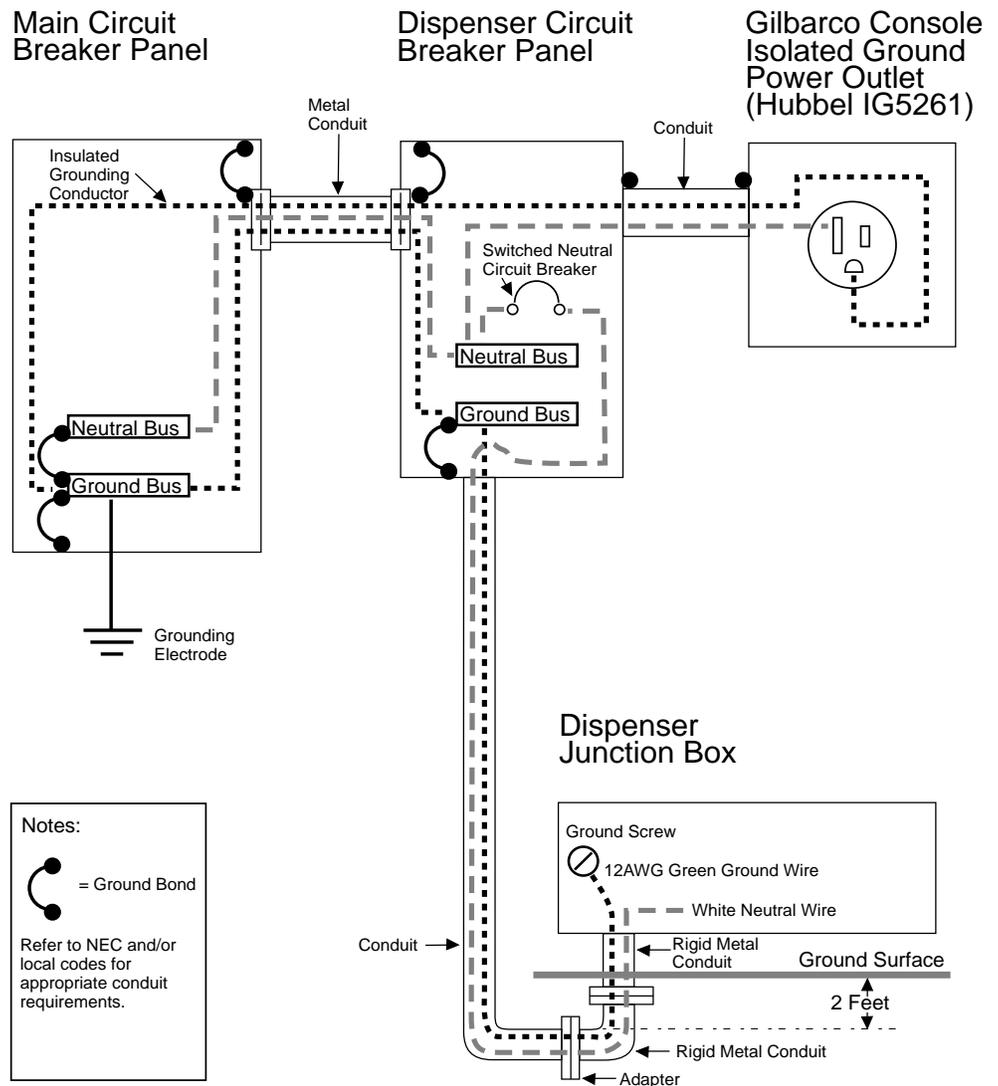


## Grounding



- NFPA 70 requires that you connect the following to system ground:
  - Consoles
  - Pumps and dispensers
  - Submerged turbine pumps
  - Relay control boxes
  - Circuit breaker panel
  - Electronic leak detectors
- Gilbarco requires that you connect each pump/dispenser to an equipment grounding conductor located in the conduit per NFPA 70, Article 250. The following applies to ground conductor:
  - Use wire no smaller than 12AWG.
  - Use wire with green or green and yellow striped insulation.
  - Connect to green grounding screw in junction box.
  - Ground the providing power under NFPA 70, Article 250.
  - Bond the neutral bus to an approved grounding electrode.

### Grounding Plan (Typical)



S0000702

# Plumbing Requirements

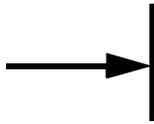
 <b>WARNING</b>	<p>Highly flammable and explosive fuels are present. Failure to observe all safety precautions could result in severe injury or death. Observe all safety precautions in this and other manuals.</p>
	

## Fuel Tanks

Follow tank manufacturer instructions, national, state and local regulations for storage tank installation.

On self-contained pumping units, do not exceed a vertical lift of more than 10 feet. The EPA and API regulates the vapor pressure of gasoline. A lift greater than 10 feet may result in vapor suction rather than gasoline suction.

*Note: Install vacuum actuated valve (per NFPA 30A) directly beneath a self-contained pump, when above-ground storage tanks are used. Without vacuum actuated valve sump may overflow. See the manufacturer's installation instructions, Gilbarco Product Service Bulletin 26-91 and "Check Valves" on page 14 for more information.*



## Leak Detectors

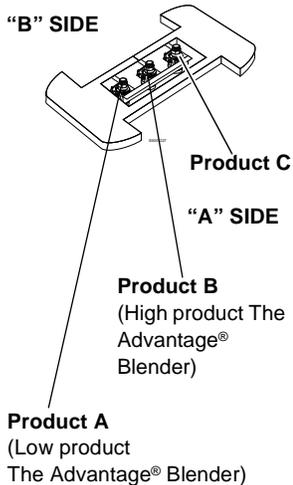
Use only listed leak detectors. Follow manufacturer instructions for leak detector installation.

## STPs

Use only listed STPs. Follow manufacturer instructions for installation of STPs.

## Pipe Installation

Mark the name of the fuel grade (i.e., unleaded, super, etc.) on the product lines coming out of the ground.



See PEI Publication RP100-97 Recommended Practices For Installation Of Underground Liquid Storage Systems (Chapter 9). Product inlet pipes and vapor pipes for Gilbarco pumps/dispensers vary in location between models. See model-specific footprint before installing pipes.

- Check national, state and local regulations for installation of pipe system.
- Use containment system as required by national, state and local regulations.
- Use new pipe constructed of U.L. approved pipe material and U.L. approved fittings.
- Use 1-1/2 inch pipe for riser-to-pump or dispenser.
- Use 2 inch risers on Ultra-Hi units which use a 2 inch shear valve.

### Pipe Size

The required pipe size depends on the number of units sharing lines, size of the STPs (dispensers only), and length of the run. Use the following guidelines.

### Pumps (Standard Flow)

Use new 2 inch, 2-1/2 inch or 3 inch pipe. Use 2 inch pipe for runs up to 50 feet to a single pump. Increase to 2-1/2 inch or 3 inch pipe for longer runs up to 75 feet to a single pump. Do not use the same main supply line to supply more than one pump.

### Pumps (High Flow)

Use new 3 inch, 3-1/2 inch or 4 inch pipe. Use 3 inch pipe for runs up to 50 feet to a single pump. Increase to 3-1/2 inch or 4 inch pipe for longer runs up to 75 feet to a single pump. Do not use the same main supply line to supply more than one pump.

Continued 

**Dispensers (Standard Flow)**

Use new 2 inch or 2-1/2 inch or 3 inch pipe. If distance from STP to farthest dispenser is 200 feet or less, use 2 inch pipe. If distance exceeds 200 feet, use 2-1/2 inch or 3inch pipe to the first dispenser and 2 inch pipe the rest of the way.

**Dispensers (High Flow)**

Use new 3inch or 3-1/2 inch or 4 inch pipe. If distance from STP to farthest dispenser is 200 feet or less, use 3 inch pipe. If distance exceeds 200 feet, use 3-1/2 inch or 4 inch pipe to the first dispenser and 3 inch pipe the rest of the way.

**Dispensers (Ultra-Hi High Gallon)**

Use new 3 inch or 4 inch pipe. If distance from STP to farthest dispenser is 75 feet or less, use 3 inch pipe. If distance exceeds 75 feet, use 4 inch pipe to the first dispenser and 3 inch pipe the rest of the way.

## Check Valves

### (Used on Pumps Only)

See PEI publication RP100-97 and manufacturer's installation instructions for information on installing check valve. Install check valve as close as practical to the suction unit. It should be gravity activated with minimal, or no spring load. Check valves for use internal to the pumping unit are available from Gilbarco as an order entry item.

Be sure there is only one check valve in each dedicated line. Use of multiple check valves can restrict flow and cause cavitation resulting in significant flow rate reductions. If multiple units are to be used on a single line, check valves are required at each pumping unit.

## Shear Valves



### (Used On Dispensers Only)

See PEI Publication RP100-97 Recommended Practices For Installation Of Underground Liquid Storage Systems (Chapter 9). A shear valve is a NFPA 30A required safety device. It closes automatically to stop product flow during a fire or if the dispenser gets knocked off the island. It also provides a means of manually closing inlet pipes.

Follow shear valve manufacturer's instructions for installation procedures, testing, etc.

- Install shear valve on each product inlet pipe.  
*Note: 1. The Advantage® dispensers use 1-1/2 inch male top double poppet shear valves (OPW #10BHMP or Exxon - OPW # 10RMSP).  
 2. Ultra-Hi™ dispensers use 2-inch single poppet shear valves (Morrison 2" #636M or OPW 2" #10RU-5920), or use 2-inch double poppet shear valves (OPW 2" #10RUP-5921). Note that OPW 2" valves require removal of the unit inlet union.*

- Install a shear valve on master dispenser satellite outlet and at satellite inlet.

- Connect vapor return lines. This can be done two ways:

Install a flexible connector or shear section on vapor return pipes as required by NFPA 30A so the product shear valves operate correctly. Use 1 inch pipe to connect vapor return pipes located inside pump/dispenser.

or

Install 1inch shear valve listed for use with vapor recovery lines. See MDE-3187, Shear Valve Installation for Vapor Recovery Lines, for vapor recovery shear valve installation for The Advantage units.

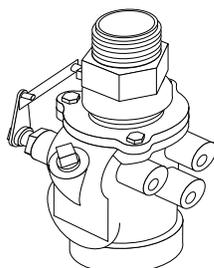
- Do not mount the shear valve upside down.
- Be sure that the valve linkage is accessible and has no interference to open or close from other piping, structure or components.
- Do not anchor shear valves at this time. See MDE-2530, Gilbarco Pump and Dispenser Installation Manual, for anchoring procedures.

*Note: The dispenser product inlet pipes need to be aligned with the shear valve.*

*Do not restrict shear valve linkage with pipes, braces, etc.*

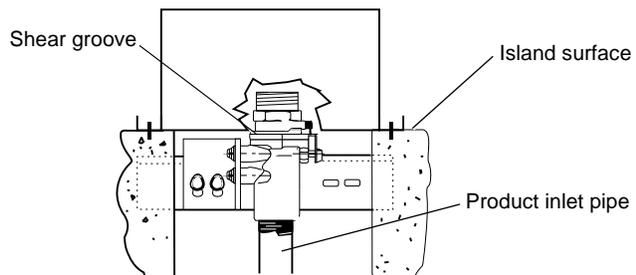
- Test shear valve operation.
- Close shear valve until equipment start-up. Cap inlet pipe. This prevents dirt and other particles from getting in product line. It also prevents fuel spillage.

OPW male top  
Double poppet shear valve



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Shear valve groove location  
must be flush to island surface.



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## Pit Box Mounting

- Use strongly designed pit boxes that will not twist, bend or dislocate the shear valve during a collision.
- Use a pit box which will allow proper access to components during service, does not expose the pit after unit mounting and properly fastens and supports the unit.
- Anchor pit boxes per pit box manufacturer's recommendations. Use recommended fasteners and tighten to manufacturer's instructions.

## Safety Signs

- Safety signs, warning of potential hazards, may be required, depending on state and local codes, and NFPA regulations.
- Gilbarco requires installing applicable signs in locations likely to be noticed and read by users of the equipment.
- Signs should be easily read, bilingual, durable, fade resistant. Unless local regulations dictate otherwise, nationally recognized safety symbols with brief text are recommended.
- Signs should include, but are not limited to the following:
  - Use approved containers
  - No smoking/match warnings
  - Turn vehicles off during fueling
  - Emergency procedures
  - Static electricity hazards during fueling
  - Health related warnings (involving fuels), advisement of fuel flammability/explosiveness, and others as required or desirable.

## Glossary Terms

**C.O.C.** - Certificate Of Conformance (see back of front cover for listing of numbers).

**Dispenser** - Uses STP in storage tank to move fuel from storage tank

**High Hose** - Pumps/Dispensers with hoses that connect overhead

**Listed** - Products that bear the authorized Listing Mark of U.L. (Underwriters Laboratories). This is the manufacturer's declaration that the product complies with U.L.'s requirements in accordance with the terms of U.L.'s Listing and Follow-Up Service agreement.

**Low Hose** - Pumps/Dispensers with hoses that connect at hydraulics level

**Master/Satellite** - Master dispensers are teamed with satellites for rapid fueling of trucks with saddle tanks. The master unit meters and computes product flow for both units. The satellite is a dispenser without the electronics module.

**Pump** - Uses self-contained pumping unit and motor to move fuel from storage tank

**STP** - Submerged turbine pump

