



AdBlue®

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# Technical Manual

MDE-5643B

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# 1 – Introduction

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## Purpose

This manual provides technical information about the AdBlue® dispensers.

## Intended Users

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

## Support Information

For technical assistance, contact Gilbarco Help desk at [customer.support@gilbarco.com](mailto:customer.support@gilbarco.com).

## Required Reading

Manufacturer's instructions - equipment manufacturers must provide instructions for other equipment, such as Submersible Turbine Pumps (STPs), leak detectors, underground tanks, product lines, and shear valves. Gilbarco does not intend to provide complete or up-to-date installation instructions for other manufacturers' equipment.

## Special Conditions for Safe Use [Full Atmosphere Explosibles (ATEX) Compliance]

Correct Installation shall be ensured to make the Dispenser comply with the ATEX Directive.

*Note: Any receipt of ATEX certificate in future will modify the requirement.*

## Abbreviations and Acronyms

Term	Description
ATEX	Explosive Atmospheres
DEF	Diesel Exhaust Fluid
DU	Dispenser Unit
SCR	Selective Catalytic Reduction
EC	Error Code
EDL	Electronic Door Lock
EOL	End of Life
ERA	Electronic Register Assembly
GOLD	Gilbarco Online Documentation
GPU	Global Pumping Unit
J-box	Junction Box
LCD	Liquid Crystal Display
NRCS	National Regulator for Compulsory Specification
STP	Submersible Turbine Pump

## Diesel Exhaust Fluid (DEF)

*Note: DEF is a product with three names – DEF, AdBlue, and AUS32.*

DEF (Typically Aqueous solution comprised of 32.5% high purity urea and 67.5% de-ionized water complying with ISO: 22241).

Some of the key points of using DEF are as follows:

- Helps in reducing NO<sub>x</sub> emissions by >90% in Selective Catalytic Reduction (SCR) catalytic converter.
- Required in vehicles (trucks & buses) having SCR.
- DEF is safe to handle, non-toxic, non-flammable, and non-hazardous.
- It is not a fuel additive, so not to be added with diesel.
- DEF is not supplied to engine; it is sprayed into the exhaust pipe prior to SCR.

## General Recommendation to Avoid Impairment of DEF

- In order to prevent decomposition of the urea, as well as the evaporation of water in case of vented containers, prolonged transportation or storing above 30 °C should be avoided.
- In order to prevent solidification of DEF, storage below -5 °C should be avoided.
- In order to avoid excessive temperature rise, DEF should be protected from sunlight.
- In order to protect DEF from any contamination by the air, well-closed containers or vented containers with filters must be used.

## Cleanliness of Surfaces in Contact with DEF

All surfaces of handling, transportation, and storage equipment in direct contact with DEF must be free of foreign matter (for example, fuel, oil, grease, detergent, dust, and any other substance).

To avoid any contamination of DEF with trace elements, particles, and foreign matter, surfaces of equipment not exclusively used with DEF shall be cleaned with distilled or de-ionized water, and DEF in the last cleaning step immediately before the use with the DEF to be handled with the equipment.

The use of tap water should especially be avoided due to the high concentrations of alkali and alkali earth metal ions therein. However, if distilled water or de-ionized water is not readily available, the material may be cleaned with tap water, provided the last rinse is done using the DEF to be handled with the equipment.

To avoid contamination of DEF and to resist corrosion of the devices used (containers, tubes, valves, fittings, gaskets, hoses, etc.), all materials in direct contact with DEF during handling, transportation and storage, including sampling, must be compatible with DEF.

## Storage Instructions

- Store DEF in containers made up of composite plastic (Polyethylene or PVC) or stainless steel.  
*Note: Aluminium, Bronze, Carbon Steel, Copper, Iron, Nickel, and Zinc are not recommended for storing DEF.*
- DEF freezes at -11° C.
- It must be protected from extreme cold conditions during storage.
- DEF is relatively stable at storage temperature up to 30° C.

Constant Ambient Storage Temperature	DEF Shelf Life in Months
≤50° F (10° C)	36
<77° F (25° C)	18
≤86° F (30° C)	12
≤95° F (35° C)	6
≤104° F (40° C)	2

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## 2 – Important Safety Information

**Note:** *Save this Important Safety Information section in a readily accessible location.*

This section introduces the hazards and safety precautions associated with installing, inspecting, maintaining or servicing this product. Before performing any task on this product, read this safety information and the applicable sections in this manual, where additional hazards and safety precautions for your task will be found. Fire, explosion, electrical shock or pressure release could occur and cause death or serious injury, if these safe service procedures are not followed.

### Preliminary Precautions

You are working in a potentially dangerous environment of flammable fuels, vapors, and high voltage or pressures. Only trained or authorized individuals knowledgeable in the related procedures should install, inspect, maintain or service this equipment.

### Emergency Total Electrical Shut-Off

The first and most important information you must know is how to stop all fuel flow to the pump/dispenser and island. Locate the switch or circuit breakers that shut off all power to all fueling equipment, dispensing devices, and Submerged Turbine Pumps (STPs).

#### **WARNING**



The EMERGENCY STOP, ALL STOP, and PUMP STOP buttons at the cashier's station WILL NOT shut off electrical power to the pump/dispenser. This means that even if you activate these stops, fuel may continue to flow uncontrolled.



You must use the TOTAL ELECTRICAL SHUT-OFF in the case of an emergency and not the console's ALL STOP and PUMP STOP or similar keys.

### Total Electrical Shut-Off Before Access

Any procedure that requires access to electrical components or the electronics of the dispenser requires total electrical shut off of that unit. Understand the function and location of this switch or circuit breaker before inspecting, installing, maintaining, or servicing Gilbarco equipment.

### Evacuating, Barricading and Shutting Off

Any procedure that requires access to the pump/dispenser or STPs requires the following actions:



- An evacuation of all unauthorized persons and vehicles from the work area
- Use of safety tape, cones or barricades at the affected unit(s)
- A total electrical shut-off of the affected unit(s)

### Read the Manual

Read, understand, and follow this manual and any other labels or related materials supplied with this equipment. If you do not understand a procedure, call a Gilbarco Authorized Service Contractor. It is imperative to your safety and the safety of others to understand the procedures before beginning work.

### Follow the Regulations

All national regulations related to installation, commissioning, maintenance, and repair must be observed.

### Replacement Parts

Use only genuine Gilbarco replacement parts and retrofit kits on your pump/dispenser. Using parts other than genuine Gilbarco replacement parts could create a safety hazard and violate local regulations.

## Safety Symbols and Warning Words

This section provides important information about warning symbols and boxes.

### Alert Symbol



This safety alert symbol is used in this manual and on warning labels to alert you to a precaution which must be followed to prevent potential personal safety hazards. Obey safety directives that follow this symbol to avoid possible injury or death.

### Signal Words

These signal words used in this manual and on warning labels tell you the seriousness of particular safety hazards. The precautions below must be followed to prevent death, injury or damage to the equipment:



**DANGER:** Alerts you to a hazard or unsafe practice which will result in death or serious injury.



**WARNING:** Alerts you to a hazard or unsafe practice that could result in death or serious injury.



**CAUTION** with Alert symbol: Designates a hazard or unsafe practice which may result in minor injury.

**CAUTION** without Alert symbol: Designates a hazard or unsafe practice which may result in property or equipment damage.

## Working With Fuels and Electrical Energy

### Prevent Explosions and Fires

Fuels and their vapors will explode or burn, if ignited. Spilled or leaking fuels cause vapors. Even filling customer tanks will cause potentially dangerous vapors in the vicinity of the dispenser or island.



Gilbarco Veeder-Root encourages the recycling of our products. Some products contain electronics, batteries, or other materials that may require special management practices depending on your location. Please refer to your local, state, or country regulations for these requirements.

## Important Safety Information

### No Open Fire



Open flames from matches, lighters, welding torches or other sources can ignite fuels and their vapors.

### No Sparks - No Smoking



Sparks from starting vehicles, starting or using power tools, burning cigarettes, cigars or pipes can also ignite fuels and their vapors. Static electricity, including an electrostatic charge on your body, can cause a spark sufficient to ignite fuel vapors. Every time you get out of a vehicle, touch the metal of your vehicle, to discharge any electrostatic charge before you approach the dispenser island.

### Working Alone

It is highly recommended that someone who is capable of rendering first aid be present during servicing. Familiarize yourself with Cardiopulmonary Resuscitation (CPR) methods, if you work with or around high voltages. This information is available from the American Red Cross. Always advise the station personnel about where you will be working, and caution them not to activate power while you are working on the equipment. Use the Lockout/Tagout procedures. If you are not familiar with this requirement, refer to this information in the service manual.

### Working With Electricity Safely

Ensure that you use safe and established practices in working with electrical devices. Poorly wired devices may cause a fire, explosion or electrical shock. Ensure that grounding connections are properly made. Take care that sealing devices and compounds are in place. Ensure that you do not pinch wires when replacing covers. Follow Lockout/Tagout requirements. Station employees and service contractors need to understand and comply with this program completely to ensure safety while the equipment is down.

### Hazardous Materials

Some materials present inside electronic enclosures may present a health hazard if not handled correctly. Ensure that you clean hands after handling equipment. Do not place any equipment in the mouth.

## In an Emergency

### Inform Emergency Personnel

Compile the following information and inform emergency personnel:

- Location of accident (for example, address, front/back of building, and so on)
- Nature of accident (for example, possible heart attack, run over by car, burns, and so on)
- Age of victim (for example, baby, teenager, middle-age, elderly)
- Whether or not victim has received first aid (for example, stopped bleeding by pressure, and so on)
- Whether or not a victim has vomited (for example, if swallowed or inhaled something, and so on)

### ⚠ WARNING



AdBlue ingested may cause discomfort. Get medical attention if any discomfort continues. Do not induce vomiting. Ingestion of large quantities may cause nausea and diarrhoea.

### ⚠ WARNING



AdBlue inhaled may cause a health hazard. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Get medical attention if any discomfort continues. Overexposure to the inhalation of airborne droplets or aerosols may cause irritation of the respiratory tract.

### ⚠ WARNING



Direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

### ⚠ WARNING



AdBlue spilled on skin may cause irritation. Remove contaminated clothing immediately and wash skin with soap and water.




**IMPORTANT:** Use of non-Gilbarco replacement parts, defects caused by the unauthorized addition of non-Gilbarco items to Gilbarco equipment or by the unauthorized alteration of Gilbarco equipment voids this warranty.

**IMPORTANT:** Oxygen may be needed at scene if AdBlue has been ingested or inhaled. Seek medical advice immediately.

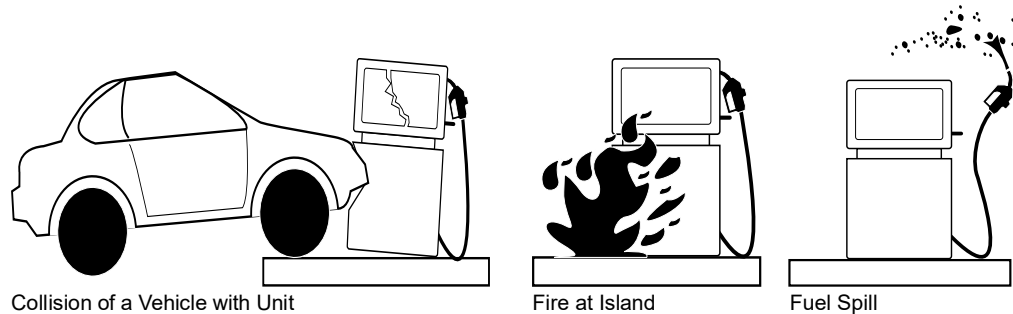
### Lockout/Tagout

Lockout/Tagout covers servicing and maintenance of machines and equipment in which the unexpected energization or start-up of the machine(s) or equipment or release of stored energy could cause injury to employees or personnel. Lockout/Tagout applies to all mechanical, hydraulic, chemical, or other energy, but does not cover electrical hazards.


# Hazards and Actions

 <b>WARNING</b>	
	Spilled fuels, accidents involving pumps/dispensers, or uncontrolled fuel flow create a serious hazard.
	Fire or explosion may result, causing serious injury or death. Follow established emergency procedures.

The following actions are recommended regarding these hazards:



- Do not go near a fuel spill or allow anyone else in the area.
- Use station EMERGENCY CUTOFF immediately. Turn off all system circuit breakers to the island(s).
- Do not use console E-STOP, ALL STOP, and PUMP STOP to shut off power. These keys do not remove AC power and do not always stop product flow.
- Do not expose yourself to hazardous conditions such as fire, spilled fuel or exposed wiring.
- Call emergency numbers.

 <b>WARNING</b>	
Any modification to this equipment may invalidate the equipment certification. Consult certification documents and manufacturer's instructions if any modification to the electrical installation and/or the equipment is contemplated.	

## Emergency Switch Operation

A prominent push switch is provided on the Pump/Dispenser for an emergency stop.

Emergency switch should be used in case of any emergency that requires stopping the complete operation of the DU (Dispenser Unit). If anyone presses emergency switch, the DU will stop operations completely.

Once pressed, the emergency switch will have to be manually reset by turning the knob in the direction indicated on the emergency switch. After resetting the emergency switch, the DU will reboot and park in idle state for normal operation.

**Figure 2-1: Emergency Switch**



Along with the emergency switch, power mains must also be switched off before operating the electrical section. Use Lockout Tagout (LOTO) at mains switch/MCB.

**Figure 2-2: Lockout Tagout**



## 3 – Product Overview

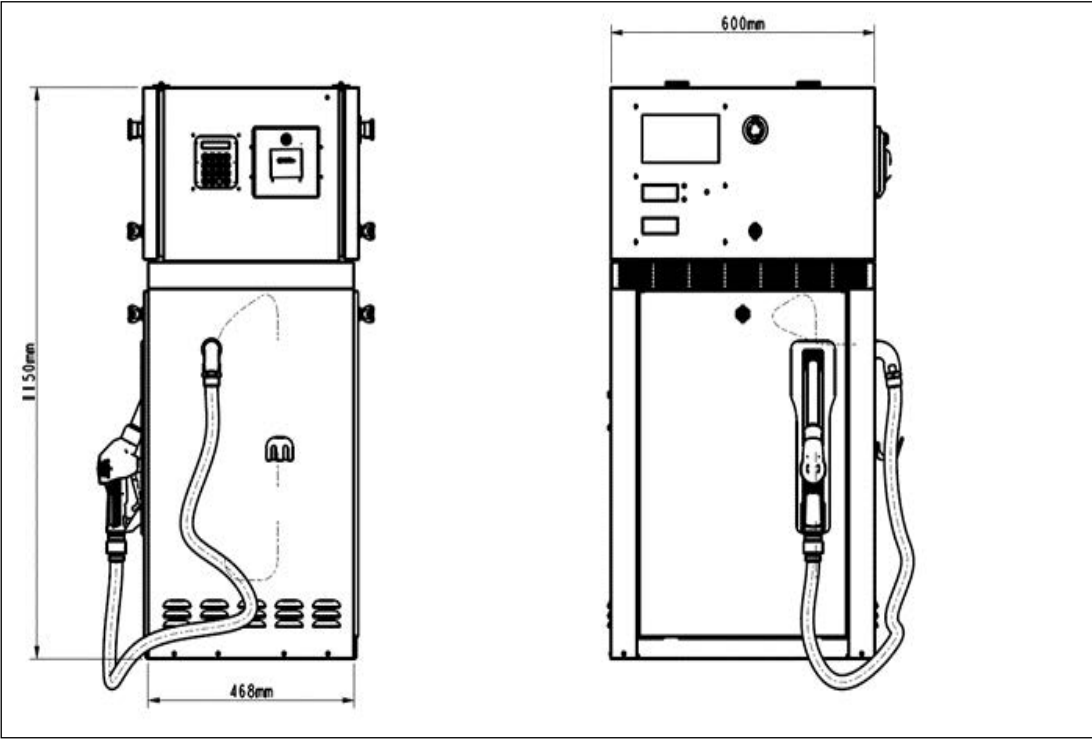
### AdBlue Dispenser and Tank

Figure 3-1: AdBlue Dispenser and Tank



# Specification

Figure 3-2: AdBlue Dispenser Configuration



Sr. No.	Specification of Dispensing Unit	Description
1	Basic Model	Pressure type
2	Operating Environment	Humidity maximum 95% (non-Condensing) -10 °C to +50 ° C. Entire system including tank/ DU/ pipeline etc. is always maintained in the temperature range of 5 °C to 35 ° C to maintain the quality of the product.
3	Recommended liquids	DEF (Typically Aqueous solution comprised of 32.5% high purity urea and of 67.5% de-ionized water complying with ISO: 22241).
4	Electric Supply	220 Volts, 50 Hz; Single Phase
5	Rated discharge (Litres per minute) per hose/nozzle	2 LPM to 40 LPM*
6	Meter Type	Contactless DEF Metering Unit
	Meter Accuracy	As per OIML R117 standard.
	Volume Calibration	Electronic Calibration only
	MMQ	2 Litre
7	Electronic Register Assembly (ERA)	
	ERA	ERA cabinet door access is secured with Lock. Optional an Electronic Door Lock (EDL).
	Least Count	10 ml
	Displays	Back-lit LCD (static display type)

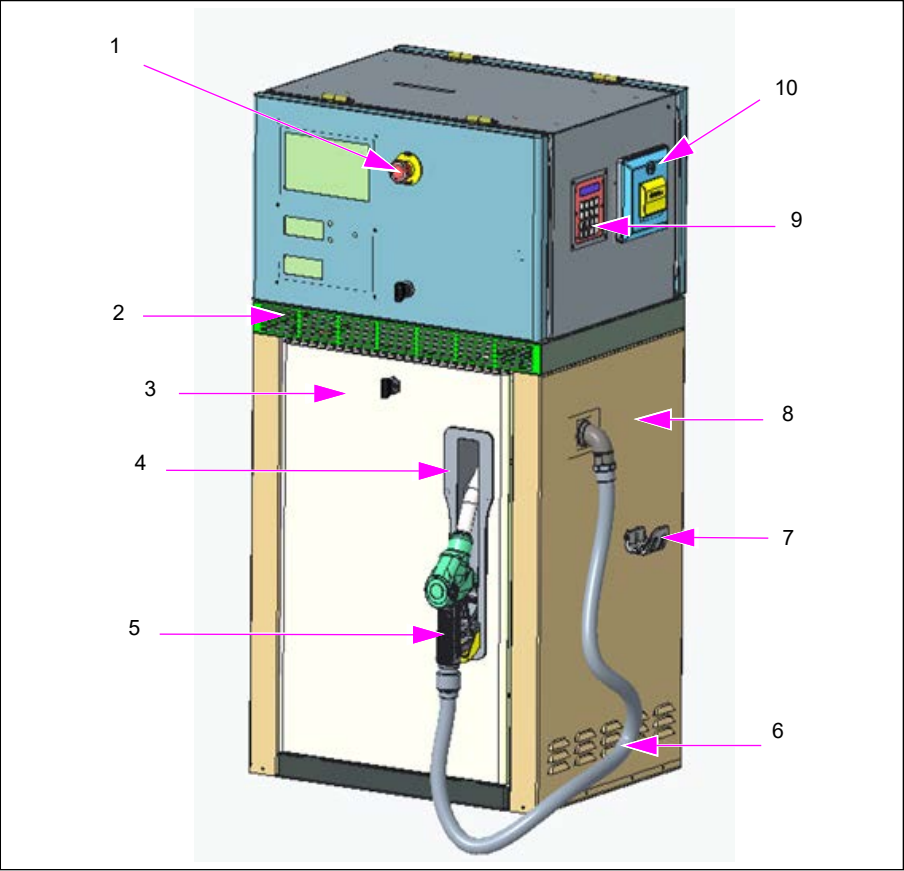
\* Performance obtained with Gilbarco Veeder-Root tank system with 0.75 HP STP or equivalent system.

Sr. No.	Specification of Dispensing Unit	Description
8	Character Height	Volume & Sale Value: 40 mm Nominal Rate per Litre: - 25 mm Nominal Density Display: - 25 mm Nominal
	Number of Digits	Volume: 7 Digits to read up to 999999.9 Litres Sale Value: 7 Digits to read up to 9999999 units Rate per litre: 5 Digit to read up to 9999.9 units Density (Optional): 5 Digits to read up to 9999.9 kg/m <sup>3</sup>
	Quality of LCD	Industrial Grade type to withstand temperature up to 85°C.
	Display retention for last transaction	Display value will retain for 15 minutes after power failure.
	No Pulse Timeout	Pump Motor to switch off if no fuel is dispensed for duration up to 120 seconds for both HD & SD nozzles.
9	Totaliser	Totaliser provided is nozzle wise. (Keypad Display) Electronic Totaliser is 15 digits i.e. (999999999999.999)
10	Preset Facility	To enable the customer to choose litre or rupee mode and to select the required value. Suitable valves are provided to ensure cut-off at the exact point. (In case of decimals, the amount is rounded to the nearest integer as per the related settings.)
11	Operating Mechanism	Dual stage Solenoid Valve to ensure precise delivery as per preset volume or amount.
12	Communication Port	RS 485 ports available on board to connect to FCC.
13	Data retention	Non-volatile memory
14	Power Consumption of ERA	~ 60W max
15	Hose	Single braid, Hard wall, (High Tensile Steel wire braided) DEF resistant hose, 4 meters, fitted with 360° single-pane swivel arrangement at nozzle end.
16	Breakaway	Reusable Nozzle Breakaway suitable for DEF.
17	Nozzle	Automatic cut-off Nozzle, pressure sensitive type suitable for DEF.
18	Approvals	Accuracy: Legal Metrology (India) and OIML

# Functionality

This section provides a description of the AdBlue unit and its components.

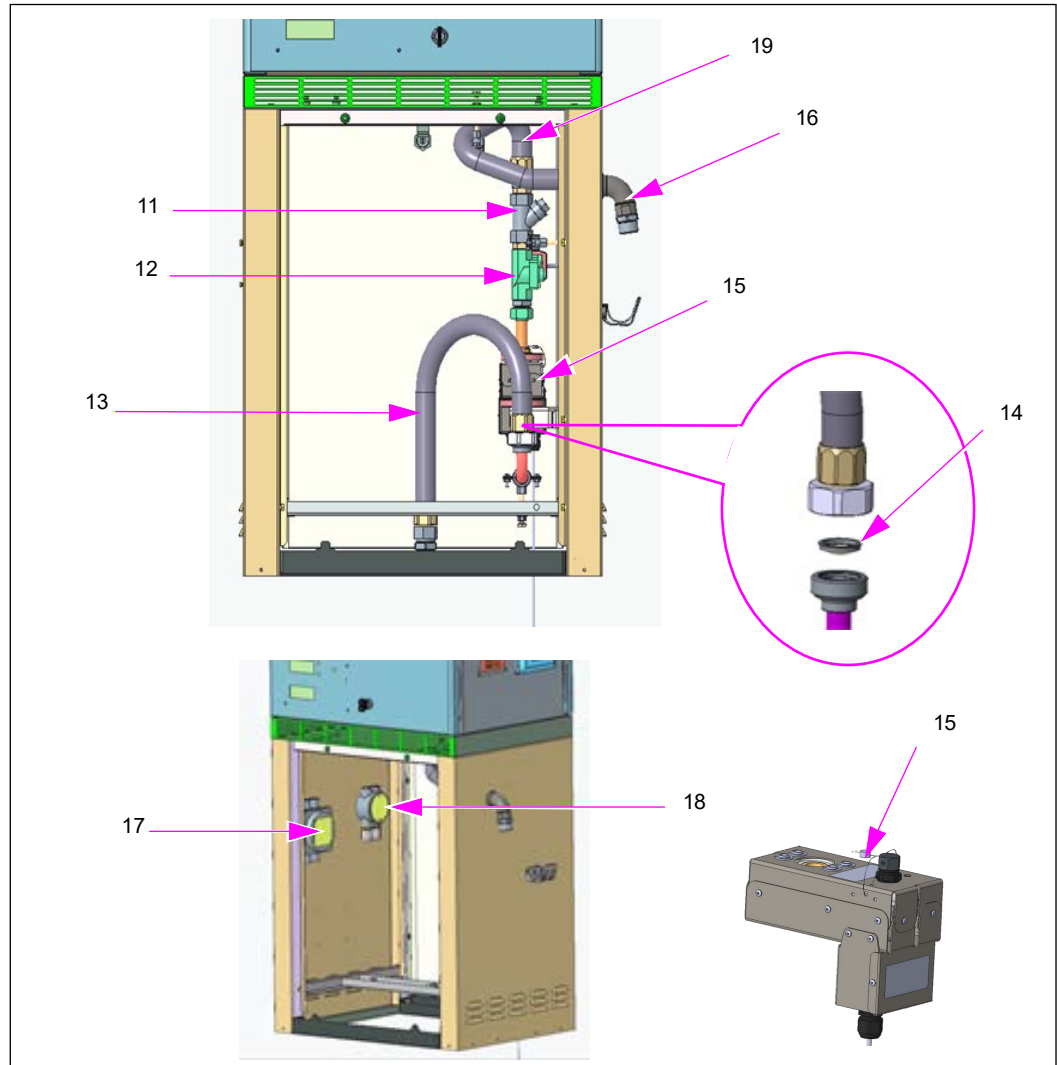
Figure 3-3: AdBlue Dispenser



Sr. No.	Description
1	Emergency Switch
2	Vapour Barrier
3	Hydraulic Door (Front) Hydraulic Door (Rear)
4	Nozzle Boot Assembly GVRI Boot Switch Assembly (1.60M) W GROM ELAFLEX Nozzle
5	ELAFLEX 40 Misfuelling Adaptor AdBlue ELAFLEX SSB 16 SS with BS 16 Breakaway AdBlue
6	ELAFLEX Slimline16 AdBlue x 4,10m M 16-1" AdBlue
7	Hose Hook
8	Side Frame, LH Side Frame, RH
9	Keypad
10	Printer



Figure 3-4: AdBlue Dispenser



Sr.No.	Description
11	Y - Type Strainer
12	Solenoid Valve Solenoid Valve coil
13	Inlet Tube Assembly (Flexible Inlet Hose)
14	Strainer
15	Contactless DEF Flowmeter O-Ring for Contactless DEF Flowmeter
16	Outlet Elbow Ss Machined - AdBlue Hexagon Reducer 1" TO 3/4" AdBlue O-Ring for Swivel JT-HD
17	Power Junction Box
18	Communication Junction Box
19	Flexible Hose Assembly Outlet AdBlue

## Keypad

The AdBlue dispenser keypad has a total of 20 keys that include alphanumeric, functional, and hot preset keys.

**Figure 3-5: Alphanumeric Keypad**



## Using Keypad

The following functions can be performed using the keypad:

- Customer Preset
- Preset Delivery - Sale/Volume
- Configuration Parameters
- View Electronic Totals - Sale/Volume
- Perform Electronic Calibration (activated through secure switch)

## Keypad LCD

The dispenser uses a 16 x 2 Liquid Crystal Display (LCD) that displays all pump parameters and fault information.

## PIN of Each Level Command

Parameters are set using the keypad. Enter a four-digit PIN code to use all programming functions and levels. The PIN can be changed from the respective menu or from menus with higher rights.

The users must define their own rule on how to manage different levels of PIN.

The following table lists the different command levels and their respective PIN:

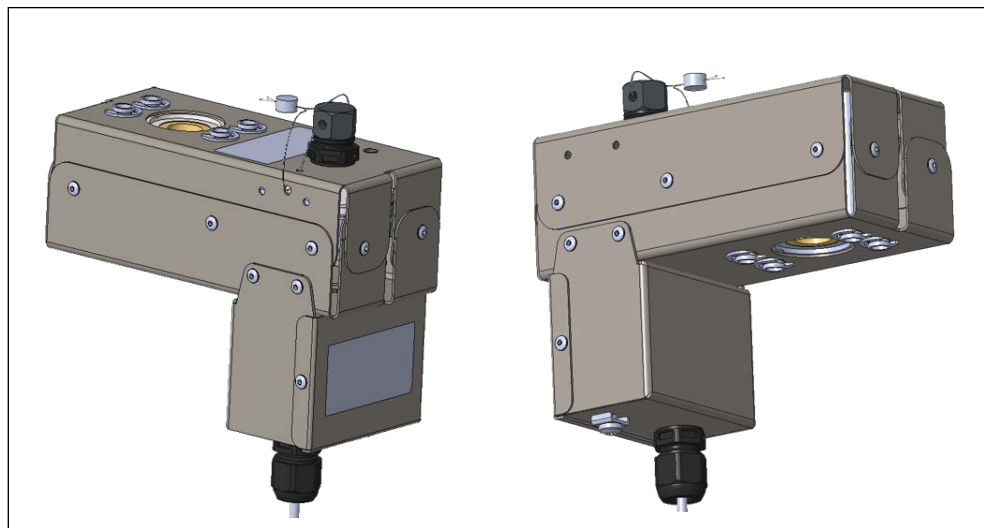
Level Command	PIN
Level 0 Command PIN	0000
Level 1 Command PIN	XXXX
Level 2 Command PIN	XXXX

\*For PIN numbers, contact Gilbarco ASC.

## Contactless DEF Flowmeter

The Contactless DEF Flowmeter is built with approved materials in ISO 22241-3, which are completely DEF compatible to prevent corrosion and increase uptime. The Contactless DEF Flowmeter does not have any moving parts, the meter and pulser are non-separable and part of a single assembly, which provides overall meter security and resilience against tampering.

**Figure 3-6: Contactless DEF Flowmeter**



## Working Principle

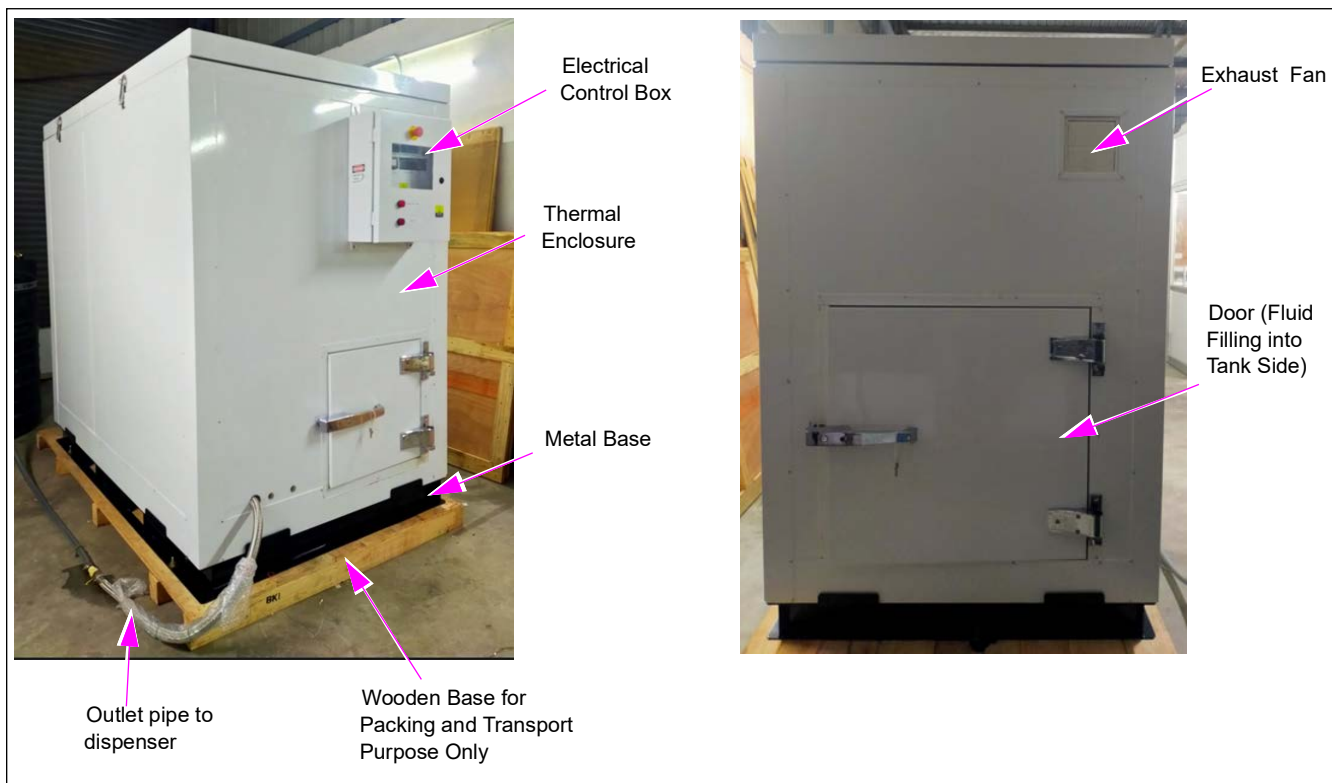
An electromagnetic coil generates a magnetic field, AdBlue liquid moves within this field during dispensing and electrodes capture electromotive force (voltage). It has the following advantages:

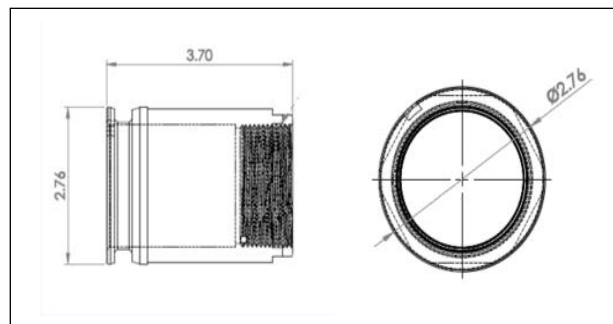
- The contactless meter with no moving parts remains unaffected by crystals while standard piston meters with moving parts get clogged.
- No moving parts reduces wear and tear.
- No leakages are possible inside the meter.
- Dependency on filter to protect meter eliminated.
- Very accurate with high repeatability.

The meter and pulser are non-separable and part of a single assembly, which provides overall meter security and resilience against tampering.

## Tank Enclosure

Figure 3-7: Outside Tank (1000 L)



**Figure 3-8: Tank Couplings****Figure 3-9: Dry disconnect Coupling (Male - Optional) Dimensions****Outside 1000 L Tank Technical Specification**

Outside Tank Assembly Dimension	2.02 (L) X 1.32 (W) X 2 (H) meters
Tank Fluid Volume	1000 Litres
Main Power Supply	230VAC/50Hz
Submersible Turbine Pump	Power supply: 230VAC/50Hz Power: 0.75HP With dry run protection
Refilling motor	Power supply: 230VAC/50Hz With overfill protection
Exhaust Fan	Power supply: 230VAC/50Hz With automation & manual on/off
Level Indicator	Power supply: 230VAC/50Hz Measurement Accuracy: $\pm 2\%$
Temperature Indicator	Power supply: 230VAC/50Hz
Alarm	Power supply: 230VAC/50Hz
Emergency Button	Power supply: 230VAC/50Hz
LED Indicator	Power supply: 230VAC/50Hz Low and High/Overfill level indication
Electrical Protection	MCB/RCCB Power supply: 230VAC/50Hz
Dry Disconnect Coupling (Male-Optional)	SS304/SS316

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## 4 – Installation

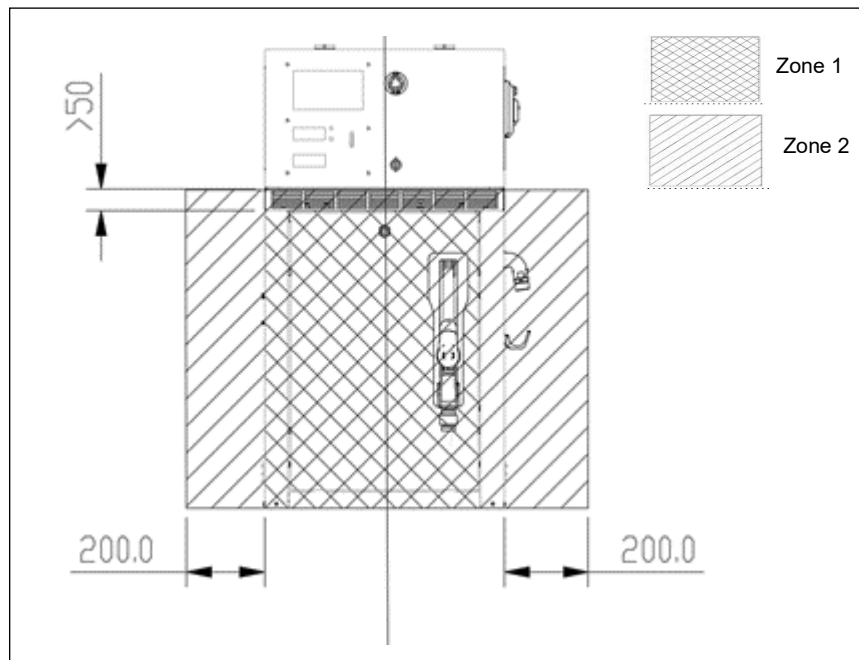
### Zoning Diagram

The dispenser must be installed to not compromise the zones illustrated in [Figure 4-1](#).

The zones 1 and 2 indicated in the zoning diagrams define the probability of the hazard actually being present in flammable concentrations.

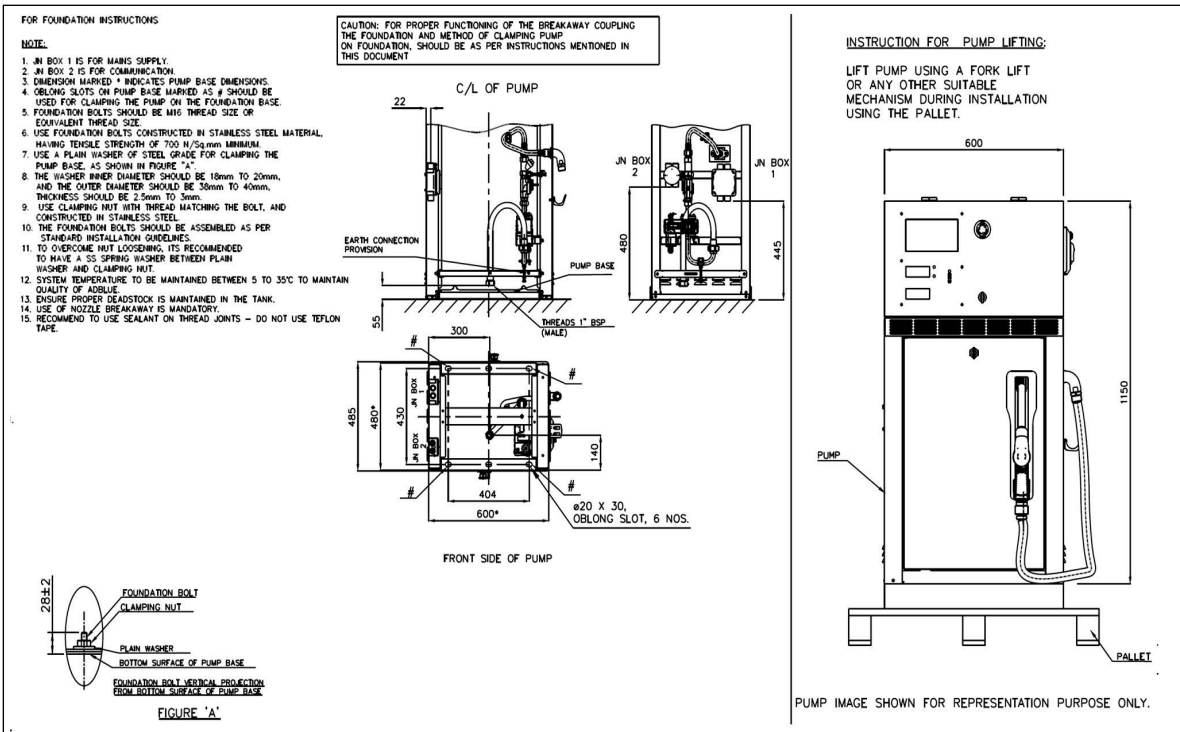
- **Zone 1:** A place in which an explosive atmosphere is likely to occur in normal operation occasionally.
- **Zone 2:** A place in which an explosive atmosphere is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

**Figure 4-1: Zoning Diagram**



# Foundation Layout

Figure 4-2: Foundation Layout



## Foundation Preparation

### Site Identification

Sites on highways with high movement of heavy vehicles are preferred, as AdBlue is filled mostly in heavy vehicles.

### Location at Site

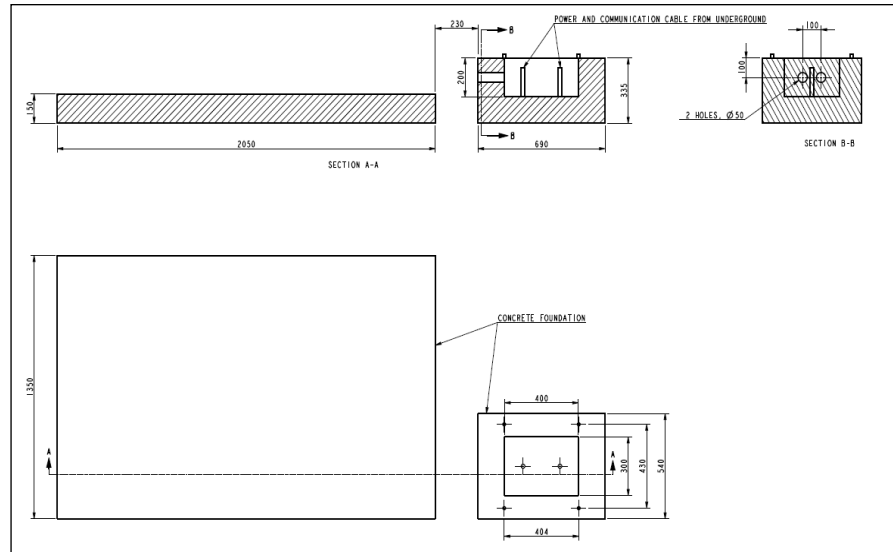
The AdBlue dispenser should be located near the fuel station exit area and at least 6 meters away from existing fuel dispensers/hazardous zone. Avoid high temperature areas or direct sunlight as AdBlue is sensitive to high temperature.

### Preparing the Foundation Base

AdBlue dispenser needs a tank foundation base to install the AdBlue tank and a dispenser foundation base to install the dispenser. Both the foundation base must be built up from strong concrete and dimension as given in Figure 4-3 and layout as seen in Figure 4-2 on page 4-2.

*Note: The dispenser foundation base will have a centre cavity.*

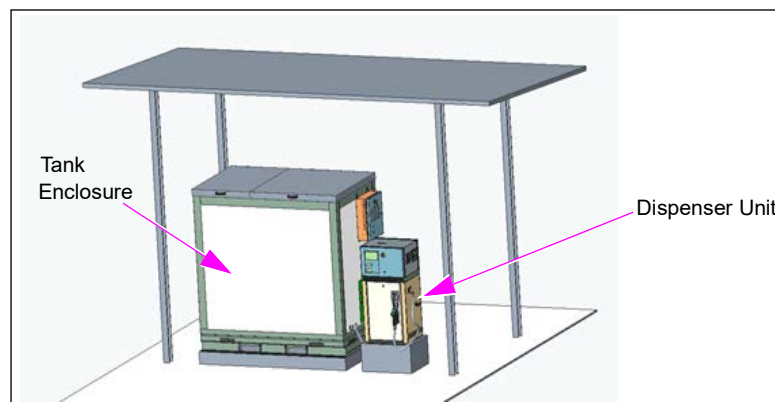


**Figure 4-3: Foundation Base Dimension**

To install the tank and the dispenser, proceed as follows:

- 1 Assemble the tank and dispenser on the respective foundation base carefully with the help of a suitable crane.
- 2 Ensure that the nozzle boot is on the opposite side of the tank enclosure.
- 3 Ensure that there is a roof over the tank enclosure and dispenser.
- 4 Install the roof only after the installation of the tank enclosure and dispenser is completed.

*Note: The roof is provided to cover the tank enclosure and dispenser from direct sunlight and prevent the entry of water into the tank enclosure.*

**Figure 4-4: Tank Enclosure and Dispenser**

# Wiring Diagram and Connections

Figure 4-5: Schematic Wiring Diagram AdBlue Mono Dispenser

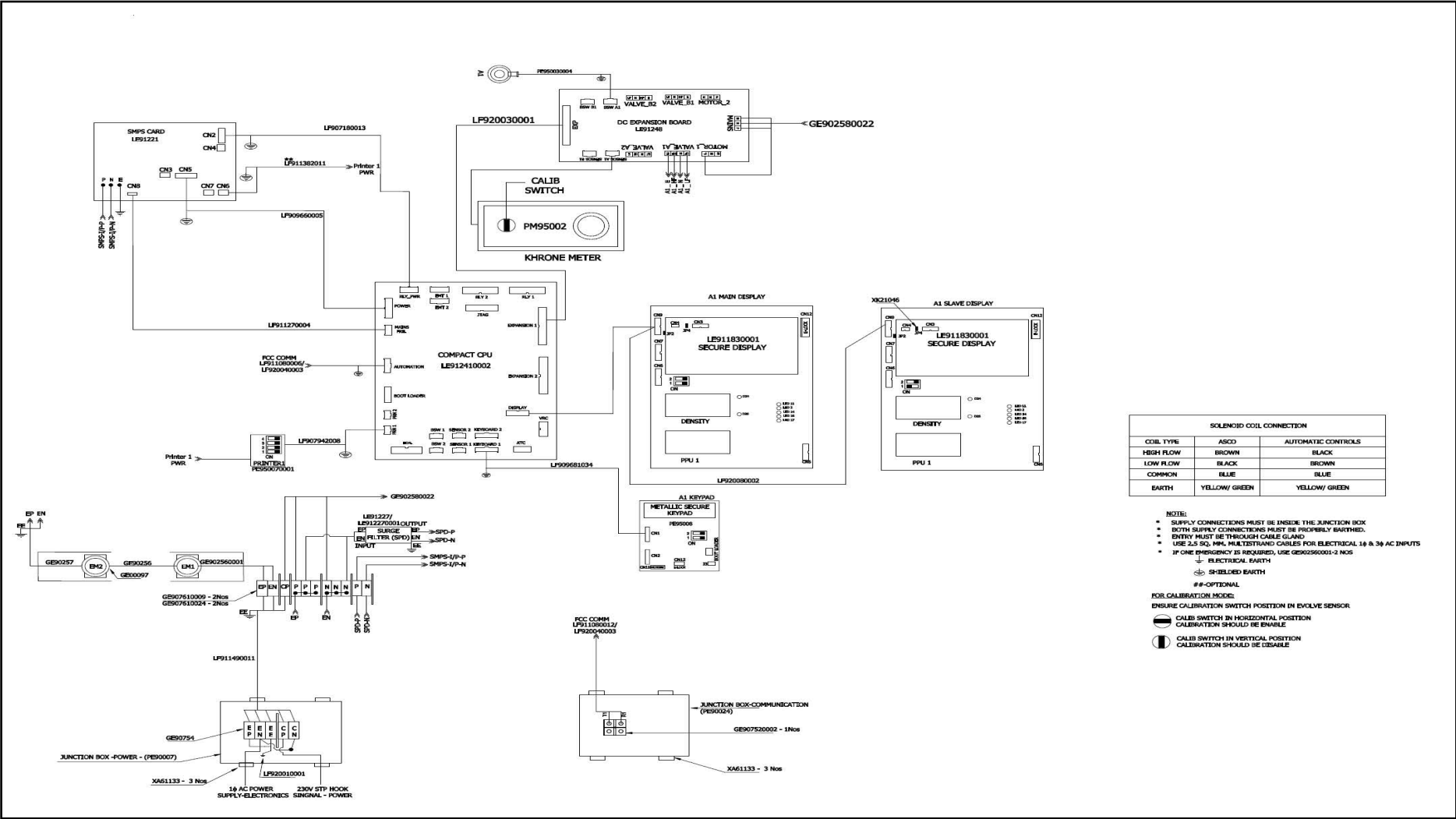
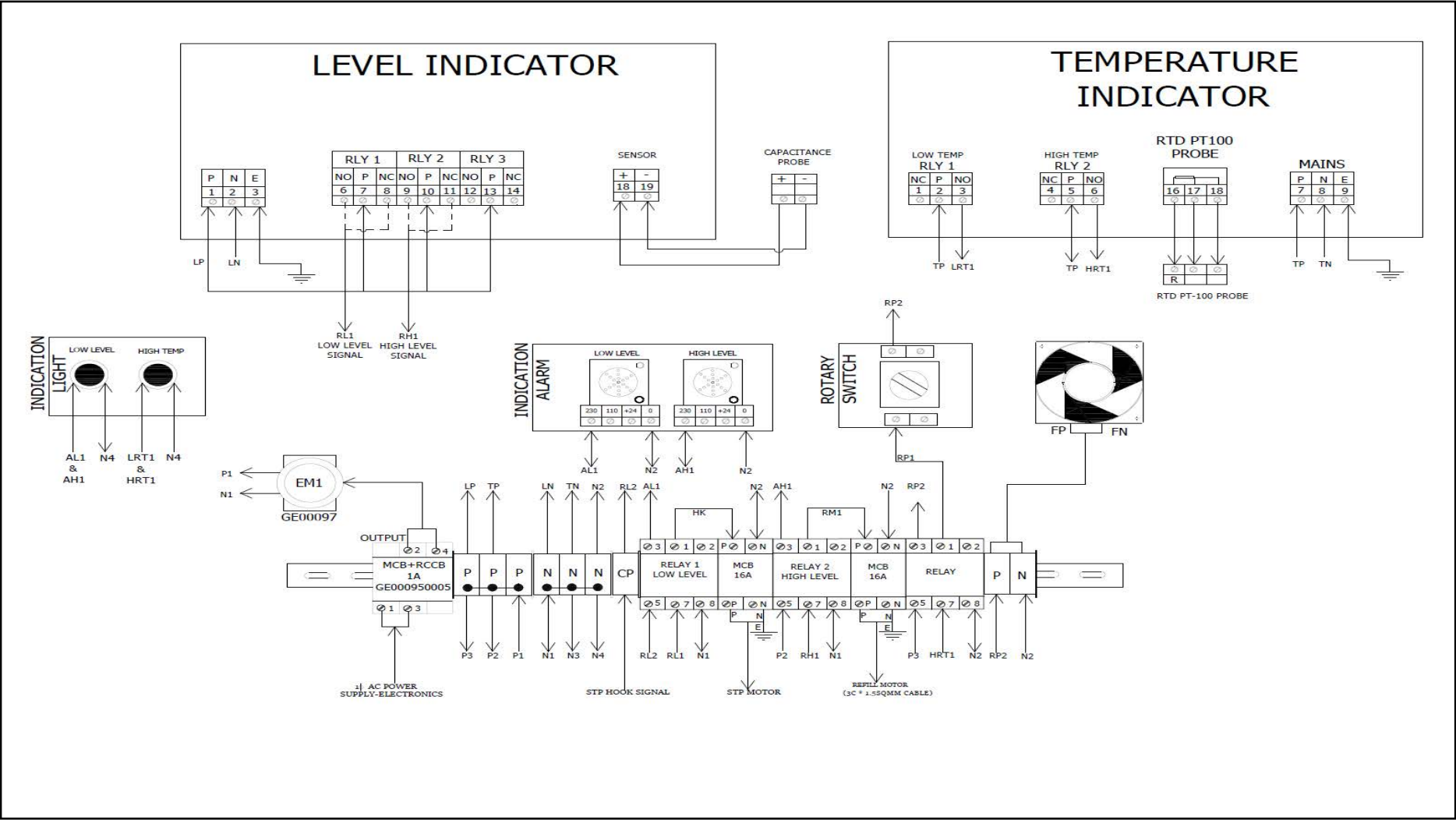


Figure 4-6: Schematic Wiring Diagram AdBlue Mono Dispenser - (Outside Tank)



## Electrical Connection

- All the electrical connections must be as per IS/IEC 60079-1 and IS: 2206.
- The input supply required is 230V single phase and 50 Hz.
- All the electrical connections should be through rigid metal conduits/armoured cables.
- Separate cable of recommended rating should be used for each pump.
- Make connections to the terminal block in the junction box with suitable crimp type lugs.
- Recommended torque for connecting wire in terminal block is 0.5 Nm.
- All cable entry to junction box through suitable ATEX-approved cable gland.
- Cables should be colour-coded or with suitable markers at both ends for proper identification.
- Clearly identified switches and circuit breakers should be provided at easily accessible location to Cut-off power supply in event of fire and accident or another emergency.
- Make connections to the terminal block in the junction box with suitable crimp-type lugs.
- Ensure that all the cables are passed through appropriate size flameproof cable glands only.
- Ensure any unused Junction box entries are plugged with flameproof stopping plugs.

## Cable Specifications

### Main cable specifications

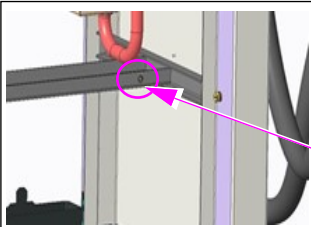

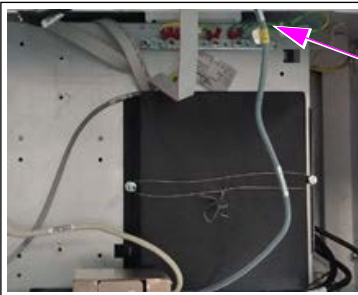

- 2.5-mm<sup>2</sup> insulated stranded copper wire is recommended for mains supply from main.
- Electrical panel: In case of a dual pump, use a 4-mm<sup>2</sup> cable. The cable used must be shielded.
- The minimum temperature withstand of cable should be 70° C.
- All the cables and connections made should be continuous. Avoid using splices.
- The cable used must be stranded. Avoid using single-strand wire.
- A pressure wire connector intended for connection of field-installed equipment grounding conductor must be green-coloured or plainly identified.

## Grounding Requirements

The earthing arrangement must be as per IS: 3043.

- Earth ground is necessary for safe and correct operation. It provides a single reference point for all the pumps.
  - The main body of the Dispensing Unit is to be earthed through a thick conductor of 10 mm to the Earth Pit. The resistance of the Earth Pit should be less than 3  $\Omega$ .
- One earth connection is required per pump.
- The colour code used for earthing cable from pump junction box to main electrical panel must be green or yellow and green for easy identification.
- The electrical ground should have a separate terminal. All the earth signals within the pump should be connected to this terminal including the body of the pump.
- The earthing terminal of all pumps should be connected to the electrical panel ground.
- After installing the pump and making all the connections, it is recommended to check the proper grounding at the junction box end of the pump.
  - This can be done by checking the voltage between neutral and ground; it should be less than 4V.
  - Also, the voltage between ground and earth should be 230V.
  - The resistance between door earth point and junction box earth terminal should be in the range of 0.1 to 0.5  $\Omega$ .

Do not connect the pump body or frame to a separate grounded rod under each pump. Ground reference must be same for all the pumps.

Image	Description
 <p>Earth connection provision on Dispensing Unit chassis</p>	Earth connection provision to DU chassis.
 <p>Earthing</p>	Secured earth connection to door panel from main frame. The resistance between two parts connected by a bonding conductor must not be more than 0.1 Ω. The resistance is to be determined by a resistance measuring instrument.
 <p>Earthing Strip</p>	Mains supply cable earthing termination on ERA chassis.
 <p>Earthing</p>	Mains supply cable earthing termination in junction box.

# Handling Of Dispenser

**WARNING**

Lifting heavy equipment can be hazardous.  
Equipment could fall and cause severe injury or death.  
Use lifting equipment of proper capacity and factor of safety when moving or positioning the unit. Stand clear from pump/dispenser when lifting and lowering.  
Ensure load is balanced and fully secure to prevent tipping over.

For lifting the units, proceed as follows:

- 1 Move the packaged unit using forklift truck to the island and set it down.
- 2 Remove the packing from the pump and then remove the bolts securing the dispenser to the wooden pallet.
- 3 Remove lower Panel (Hydraulic Door) and remove foundation nuts at the bottom.
- 4 Remove the wooden pallet.
- 5 Ensure that the pedestal is ready as per the foundation diagram.
- 6 Move the dispenser to the island with the help of forklift.
- 7 Place the dispenser over the connections on the island. Take care to route the electrical cables from the electrical duct and into the base of the pump. Ensure that they do not get trapped under the dispenser.
- 8 Ensure that the dispenser is sitting level on the island and at the correct position.
- 9 Proceed the further installation procedure (Follow the [Important Safety Information](#) on [page 2-1](#)).

# Handling of Tank Enclosure (1000 L)

- 1 Use a forklift/crane to load and unload the outside 1000L tank on the vehicle.

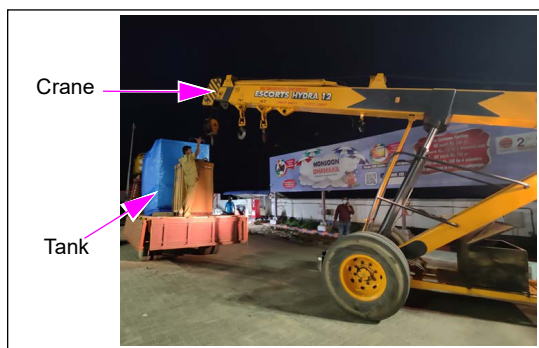
**Figure 4-7: Loading/ Unloading of Tank using Forklift**



**Figure 4-8: Loading/ Unloading of Tank using Forklift**

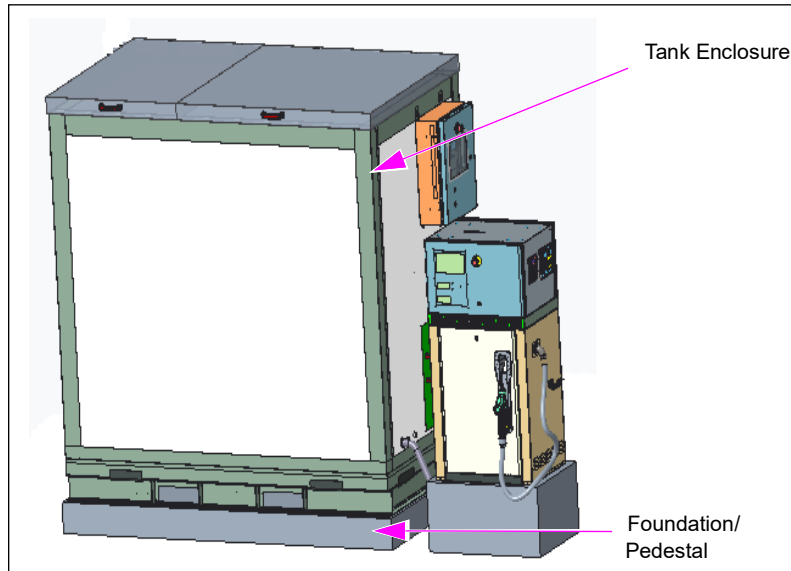


**Figure 4-9: Loading/ Unloading of Tank using Crane**



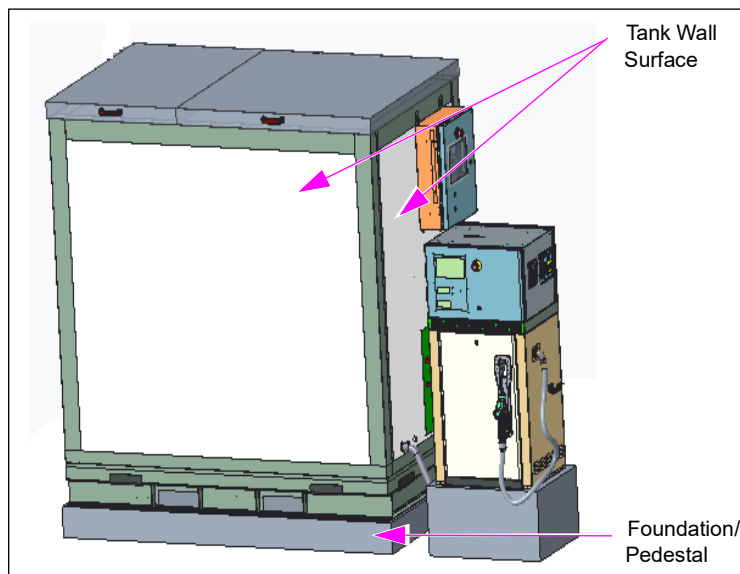
- 2 Install the 1000 L Tank into the foundation/pedestal.
  - a Use a forklift to install the tank into the foundation/pedestal.

**Figure 4-10: Installing the Tank into the Foundation/Pedestal**

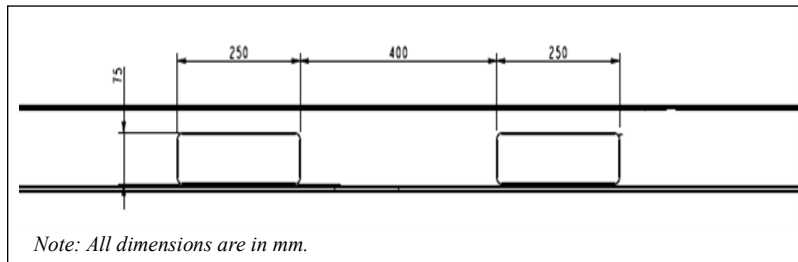


- b Use a crane with spreader bar to mount the outside 1000L tank into the foundation/pedestal. The rope must not fall on the outside tank wall surface.

**Figure 4-11: Installing the Tank into the Foundation/Pedestal**





**Figure 4-12: Spreader Bar****Figure 4-13: Metal Base Assembly (for Forklift/Crane) Dimensions**

## Do's and Don'ts

- Ensure that the tank enclosure is lifted using Forklifts only. Use a spreader bar to lift the tank enclosure using crane. Refer [Figure 4-11](#) on [page 4-10](#), [Figure 4-12](#), and [Figure 4-13](#).
- Avoid spillage during refilling or servicing. If spillage occurs, clean the surface with plenty of water immediately as DEF is a highly corrosive liquid.
- Always keep all doors/lids in closed condition.
- Side door can be kept open during tank refilling.
- Avoid storing heat source near the tank enclosure.
- Avoid refilling hot DEF in the tank.
- Avoid refilling contaminated DEF in the tank.
- Use warm water to clean the tank and other hydraulic components.
- Avoid tank enclosure/dispenser installation under direct sunlight.
- Maintenance to be done by authorised person only.
- Do not keep the tank lid open.

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## 5 – Maintenance and Service Instructions

The Gilbarco Veeder-Root (GVR) fuel dispensing unit is a precision volume metering and delivery device. This section provides basic information on maintenance and routine inspections that need to be carried out.

### Maintenance and Checking

Fuel dispensing units (DUs) are manufactured and installed to operate under flammable and hazardous environments, and it is mandatory that a trained technician is engaged to perform regular preventive maintenance checks. The wear and tear, deterioration or damage to parts in such an operating environment could result in fire and pollution.

Please contact our authorized service provider in your region for the availability of genuine spare parts and services. Safe storage and handling of the components during maintenance is essential. Maintenance carried out by untrained personnel may lead to trouble or accidents.



#### CAUTION

Do not modify the dispensing unit.

The DUs handling hazardous products are designed in conformity with fire regulations, and they are manufactured and installed in compliance to the Indian and International Petroleum management rules and explosives norms. All parts and components are required to be replaced in the DUs, and must be in accordance with these regulations. Any modification or alteration to the design without GVRI's written consent is unauthorized, illegal and contrary to these rules and norms stated above. Gilbarco Veeder-Root will not be responsible or held liable for deterioration in quality, performance, and safe operation of the DUs in such event.



#### WARNING

Do not undertake maintenance yourself without essential training. Performing those tasks incorrectly could result in severe injury or death.

Fire, explosion, or electrical shock could result in severe injury or death if safe procedures are not followed.

Read and adhere to all safety precautions in this manual.




#### CAUTION


When not in use, hose to be placed on Hose Hook / Hanger to avoid hose lie on the ground.

# Periodic Inspection and Maintenance

Refer to the inspection and maintenance chart for information on recommended preventive maintenance.

Follow all safety precautions to prevent injury when inspecting a pump/dispenser at the islands.

**WARNING**



You are performing inspections and maintenance in a potentially dangerous environment of flammable fuels/vapors and high voltage. Fire, explosion, or electrical shock could result in severe injury or death if you do not follow safe procedures. Read and follow all safety precautions given in [Important Safety Information](#) on [page 2-1](#).

## On-Off Switch

On-Off switch must be set to off before routine inspection of the pump/dispenser unit.

## Inspecting for External Leaks

Perform inspection for external leaks at least once a week, or if you are advised that a leak or problem may exist.

- 1 Check all the hoses, nozzles, swivels, breakaway couplings, hose outlet castings, etc. for any signs of damage or leaks (cracks, cuts, wear, flattening, etc.). Refer to component manufacturer's instructions.
- 2 Stop using the pump/dispenser, if you find leaks or damage. Call your ASC immediately.

## Inspecting for Internal Leaks

Perform inspection for internal leaks at least once a month, after a drive-off, or if you are advised that a leak may exist.

- 1 Remove the lower panels slowly and carefully. Do not allow customers to operate pump/dispenser during inspection.
- 2 Look for wetness or dripping fuel at all hydraulic connections, including meters, valves, etc. If leaks are significant, perform the emergency steps for fuel spills listed in [Important Safety Information](#) on [page 2-1](#).
- 3 Stains may appear on some components with seals and gaskets. Normally, this does not indicate a leak or hazard. To verify that an intermittent leak is not occurring, inspect more frequently or call your ASC for assistance.

## Inspecting for Damage

Perform inspection for damage at least once a week, or if you are advised that a condition exists.

- 1 Check all areas of the unit for signs of damaged components, sharp edges, or anything that could potentially injure an operator or customer using the equipment.
- 2 Call your ASC to perform repairs as required.
- 3 Replace any missing or damaged warning labels/signs.




## Changing Filter and Cleaning Strainers

- Clean strainers regularly to maintain efficient operation of pump/dispenser.
- A noticeably slower flow rate may indicate a dirty filter or clogged strainer.
- It is recommended to schedule a clean/replacement one month after the installation.

### Before Removing the Filter

- 1 Turn off the pump at the station circuit breaker.
- 2 For dispensers, turn off all the associated STPs/Pumps with circuit breakers.
- 3 Lift operating handle/nozzle boot switch and authorize the unit.
- 4 Place the nozzle in an approved container.
- 5 Press the nozzle lever to reduce system pressure. Some residual pressure and fuel may remain in the system.
- 6 Close the nozzle lever.
- 7 Turn off the operating handle/nozzle boot switch.
- 8 To reduce the residual pressure, drain the product from pumping unit or strainer body through associated drain plugs.

### Cleaning Filter Strainer (only Dispensers)

	<b>WARNING</b>
 	Residual pressure and entrapped fuel may be present and may spray when removing filters. Fire and explosion could result in severe injury or death.

- 1 Remove the strainer from the filter assembly.
- 2 Clean the strainer with a soft brush. Dispose off the strainer if clogged or damaged.
- 3 Install a cleaned or new strainer back in bore of the filter.

## Hoses

### Inspecting Hoses

Check the hoses regularly (at least once a week) for leaks and damage. Inspect the hoses and contact the ASC to repair/replace hose assemblies when required.

The following defects can cause problems in the hoses:

- Twisting and curling puts an unusual stress on the hose parts.
- Repeated flexing of the hose in the same spot can cut, tear, or split the hose cover.
- Flattened hoses cause restricted flow and reinforcement damage.
- A soft spot is a sign of internal damage to hose reinforcement. Reinforcement may appear through the cover.
- Loose or cracked hose couplings can cause a fuel spill.
- Hose bulges are a sign of fuel pressurizing the cover. A full rupture could occur at any time.

### Inspecting Nozzles

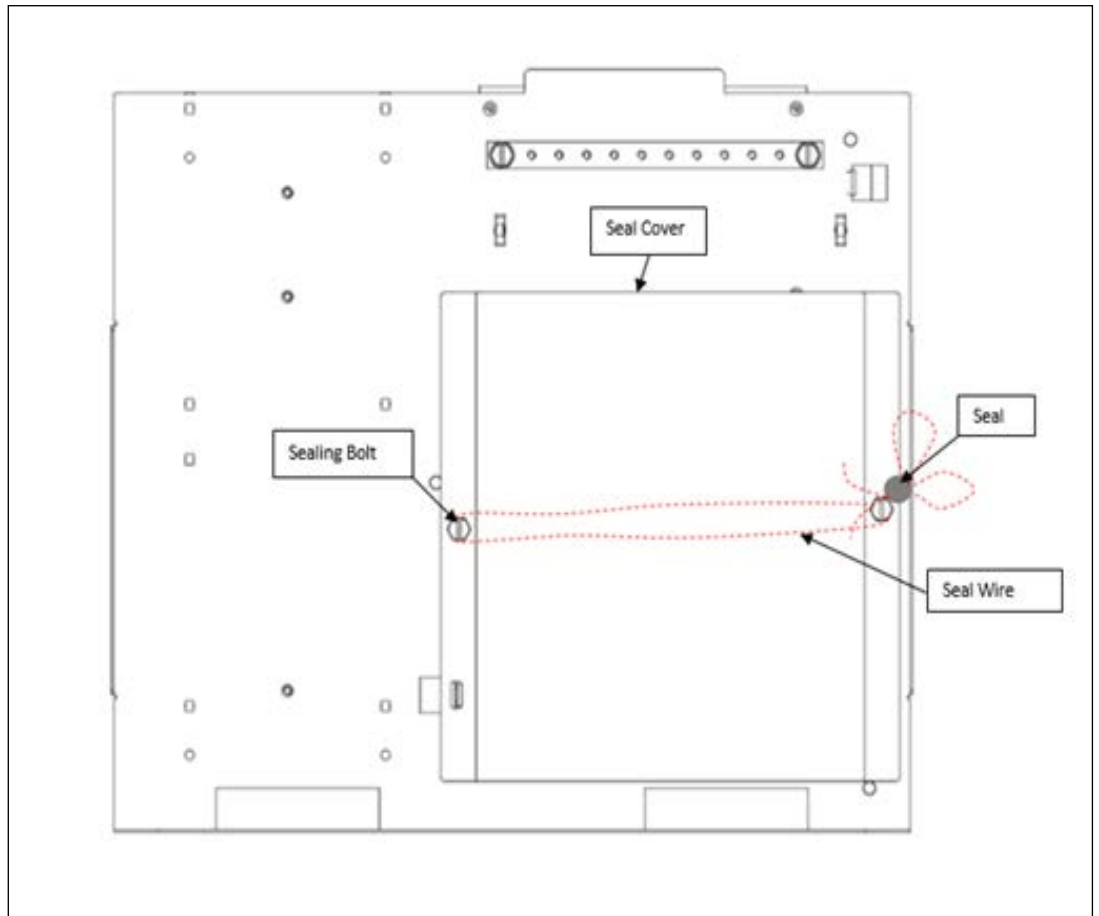
Check nozzles regularly (at least once a week) for leaks, damage or missed parts. Inspect the nozzles and contact the ASC to repair/replace nozzle assemblies when required.

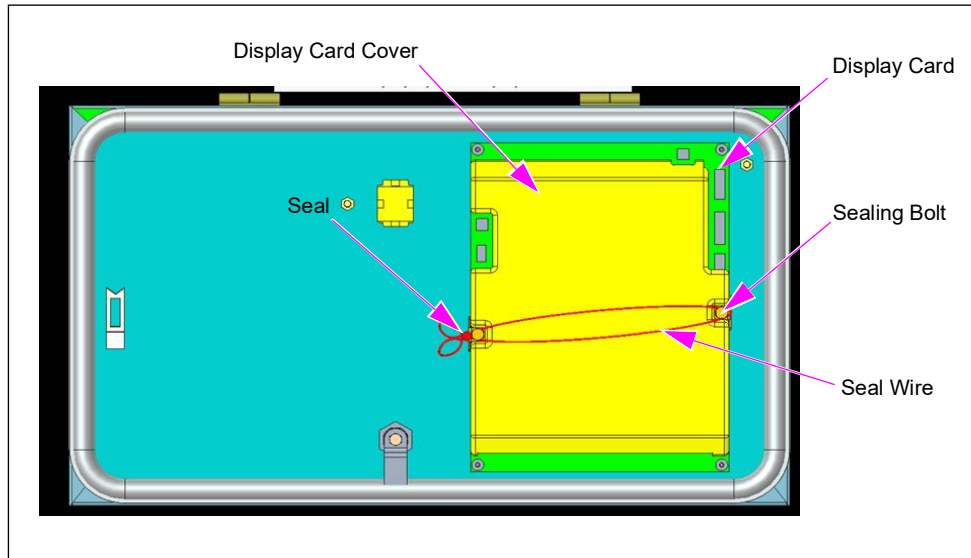
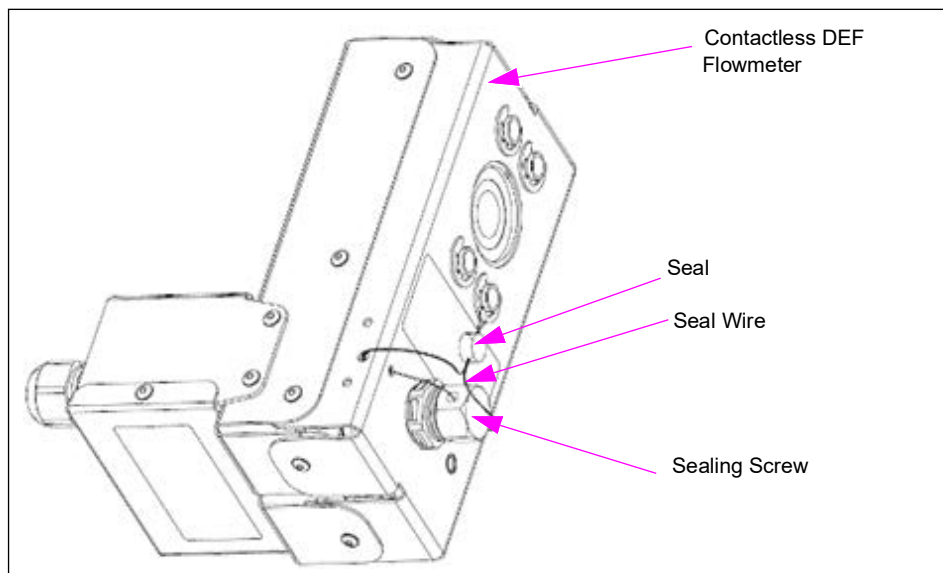
### Electrical Test

Resistance between the nozzle spout to earth -The resistance must be less  $< 1 \text{ M}\Omega$  (once in a month).

# Sealing Details

Figure 5-1: Controller Card Sealing



**Figure 5-2: Display Card Sealing Diagram****Figure 5-3: Meter Sealing**



## Warnings



### WARNING



After Installation & Commissioning of Dispensing unit, hand over the hydraulic & electronic door lock-keys to the concern responsible person of retail outlet, normally Dealer of the retail outlet. The retail outlet authorized person is responsible for proper key management (Open and Close) of Dispensing unit.



### WARNING

#### **DO NOT MODIFY THE DISPENSING UNIT**

Changes or any modifications to this equipment may invalidate the equipment certification. Consult certification documents and manufacturer's instructions, if any modification to the electrical installation and/or the equipment is contemplated.



### WARNING

The DUs handling hazardous products are designed in conformity with fire regulations, and they are manufactured and installed in compliance to the Indian and International Petroleum management rules and explosives norms. All parts and components are required to be replaced in the DUs, and must be in accordance with these regulations. Any modification or alteration to the design without Gilbarco Veeder-Root (Manufacturer) written consent is unauthorized, illegal and contrary to these rules and norms stated above. Gilbarco Veeder-Root will not be responsible or held liable for deterioration in quality, performance, and safe operation of the DUs in such event.



### WARNING

Relevant national regulations related to installation, inspection, maintenance, and service must be observed. Where a regulation may conflict with information with this manual, the regulation must be followed.



### WARNING



If e-waste is not disposed off in a proper manner, then it may cause health risks and damage to the environment.  
Disposal: Give e-waste to an authorized recycler for disposing as per Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2015.

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## 6 – Calibration and Settings

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### Procedure for Master Reset

- 1 Turn **ON** the pump.
- 2 Press **F1** key and **F2** key simultaneously. The Keypad LCD will display **SELECT LEVEL**.
- 3 Press the **3** key, the keypad LCD will display **LEVEL 3**.
- 4 Enter password **\*\*\*\*** and the **REAL TIME CLOCK** will be displayed on the keypad LCD.
- 5 Now, the pump options enter into programming mode.
- 6 Press the **DOWN** key until the **UNIT PARAMS** Menu is displayed on the keypad LCD.
- 7 Press **SEL** key and the **RETURN MODE 1** will be displayed on the keypad LCD.
- 8 Again, the pump options enter into programming mode.
- 9 Press **DOWN** key and the **FOR MASTER RESET PRESS ENTER** Menu is displayed on the keypad LCD.
- 10 Press **ENTER** key to restart the pump.

Master reset is now completed.

### Procedure for Flash Reset

- 1 Turn **ON** the pump.
- 2 Press **F1** key and **F2** key simultaneously. The keypad LCD will display **SELECT LEVEL**.
- 3 Press the **3** key, the keypad LCD will display **LEVEL 3**.
- 4 Enter password **\*\*\*\*** and the **REAL TIME CLOCK** will be displayed on the keypad LCD.
- 5 Now, the pump options enter into programming mode.
- 6 Press the **DOWN** key until the **UNIT PARAMS** Menu is displayed on the keypad LCD.
- 7 Press **SEL** key and the **RETURN MODE 1** will be displayed on the keypad LCD.
- 8 Again, the pump options enter into programming mode.
- 9 Press the **DOWN** key until the **FOR FLASH RESET PRESS ENTER** Menu is displayed on the keypad LCD.

- 10 Press **ENTER** key to restart the pump.

Flash reset is now completed.

*Notes: 1) When the flash reset is completed, the menu will disappear from the keypad LCD.*

*2) Flash Reset menu is visible only when **E103 FLASH MEM ERR** is present.*

## Procedure for Shift Time Setting

- 1 Press **F1** key and **F2** key simultaneously. The keypad LCD will display **SELECT LEVEL**.
- 2 Press the **2** key; the keypad LCD will display **LEVEL 2**.
- 3 Enter password **\*\*\*\*** and the **REAL TIME CLOCK** will be displayed on the keypad LCD.
- 4 Now, the pump options enters into the programming mode.
- 5 Press the **DOWN** key until the **SET SHIFT TIME** Menu is displayed on the keypad LCD.
- 6 Press **SEL** key and the **SHIFT NUM 3** will be displayed on the keypad LCD.
- 7 Press the **DOWN** key and select an option from the shift menu that is displayed on the keypad LCD. The options displayed are as follows:
  - **Shift Number**
  - **Shift Start Hour**
  - **Shift Start Min**
  - **Shift End Hour**
- 8 Change the shift time (as per users preference).
- 9 Press **ESC** key twice.

# Calibration Sequence for AdBlue Dispenser (A1 Nozzle)

To calibrate the AdBlue dispenser, proceed as follows:

- 1 Open and remove the plastic screw (calibration switch) from the A1 related meter, for which calibration is to be performed. Keypad mapped to A1 is to be used.

- 2 Turn on the DU and wait until DU comes into an operational state.

- 3 Press **Esc** and **Sel** key simultaneously. The keypad LCD will display **SELECT LEVEL**.

S	E	L	E	C	T		L	E	V	E	L
---	---	---	---	---	---	--	---	---	---	---	---

- 4 Press the **5** key and the keypad LCD will display **CALIBRATION** menu.

C	A	L	I	B	R	A	T	I	O	N
---	---	---	---	---	---	---	---	---	---	---

- 5 Enter the 4-digit calibration level password. Keypad LCD will display the following:

C	A	L	I	B	R	A	T	E
---	---	---	---	---	---	---	---	---

- 6 Press **Sel** key. The keypad LCD will display the following:

C	A	L		N	O	Z	Z	L	E
---	---	---	--	---	---	---	---	---	---

- 7 Press **Sel** key again. The keypad LCD will display the following:

N	O	Z	Z	L	E	I	D	:		
---	---	---	---	---	---	---	---	---	--	--

- 8 Press the **1** key to calibrate the nozzle A1. The keypad LCD will display the following:

N	O	Z	Z	L	E	I	D	:	A	1
---	---	---	---	---	---	---	---	---	---	---

- 9 Press **Sel** key. The keypad LCD will display the following:

R	E	A	S	O	N	I	D	:		
---	---	---	---	---	---	---	---	---	--	--

- 10 Press the **1** key to select the calibration reason code. The keypad LCD will display the following:

R	E	A	S	O	N	I	D	:	0	1	
R	O	U	T	I	N	E	C	H	E	C	K

- 11 Press **Sel** key and the 24-characters Challenge keys will be generated. The keypad LCD will display the following:

C	K	1	:	X	X		X	X	X	X	X	X	X	X	X
C	K	2	:	X	X		X	X	X	X	X	X	X	X	X

- 12 Send the challenge keys to OTP server through SMS on Mobile number. (Mobile number should be registered in OTP server).

*Note: A 12-characters OTP will be received on Mobile. This is Calibration Entry OTP.*

- 13** Press **Sel** key. The keypad LCD will display the following:

O	T	P	:																
---	---	---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

- 14** Enter the 12-characters OTP and press **Enter** key to confirm. The keypad LCD will display the following:

G	A	I	N	D	E	L	I	V	E	R	Y	1							
---	---	---	---	---	---	---	---	---	---	---	---	---	--	--	--	--	--	--	--

Here, preset or non-preset delivery can be given. For preset delivery, enter the numeric Litre value, and for non-preset delivery, directly lift the nozzle.

- 15** To start a 20-Litre preset delivery, press **2** key and then **0** key. The keypad LCD will display the following:

L	I	T	R	E	:	2	0												
---	---	---	---	---	---	---	---	--	--	--	--	--	--	--	--	--	--	--	--

*Note: This litre preset value can be set based on the quantity of measuring Can that is available.*

- 16** Lift the nozzle and deliver with a high flow rate of around 30-40 LPM.

- 17** During dispensing, the volume value will be updated on Volume LCD section on the main display, and LPM will be displayed on Rate LCD section on the main display.

- 18** After dispensing, put the nozzle back into the boot. The keypad LCD will display the following:

G	A	I	N	D	E	L	I	V	E	R	Y	1	0						
---	---	---	---	---	---	---	---	---	---	---	---	---	---	--	--	--	--	--	--

- 19** Measure the Can reading. Enter the reading shown on the Measuring Can using keypad associated with the nozzle undergoing E-Calibration.

G	A	I	N	D	E	L	I	V	E	R	Y	1	X	X	.	X	X		
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--	--

- 20** Press the **Enter** key. The keypad LCD will display the following:

C	O	N	F	I	R	M													
---	---	---	---	---	---	---	--	--	--	--	--	--	--	--	--	--	--	--	--

- 21** Again, press the **Enter** key. The keypad LCD will display the following:

C	O	N	F	I	R	M	E	D											
---	---	---	---	---	---	---	---	---	--	--	--	--	--	--	--	--	--	--	--

- 22** Press **Esc** key. The keypad LCD will display the following:

G	A	I	N	D	E	L	I	V	E	R	Y	2							
---	---	---	---	---	---	---	---	---	---	---	---	---	--	--	--	--	--	--	--

- 23** Press the **Down** key. The keypad LCD will display the following:

G	A	I	N	D	E	L	I	V	E	R	Y	3							
---	---	---	---	---	---	---	---	---	---	---	---	---	--	--	--	--	--	--	--

- 24** Press the **Down** key. The keypad LCD will display the following:

O	F	F	S	E	T	D	E	L	I	V	E	R	Y	1
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Here preset or non-preset delivery can be given. For preset delivery, enter the numeric Litre value, and for non-preset delivery, directly lift the nozzle.

- 25** To start a 10-Litre preset delivery, press **1** key and then **0** key. The keypad LCD will display the following:

L	I	T	R	E	:	1	0	
---	---	---	---	---	---	---	---	--

*Note: This litre preset value can be set based on the quantity of measurement Can is available.*

- 26** Lift the nozzle and deliver with a low flow rate of around 2-8 LPM.
- 27** During dispensing, the volume value will be updated in Volume LCD section on the main display, and LPM will be displayed on Rate LCD section on the main display.
- 28** After dispensing, put the nozzle back into the boot. The keypad LCD will display the following:

O	F	F	S	E	T	D	E	L	I	V	E	R	Y	1	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

- 29** Measure the CAN reading. Enter the reading measured on the CAN using keypad associated with the nozzle undergoing E-Calibration.

O	F	F	S	E	T	D	E	L	I	V	E	R	Y	1	X	X	.	X	X
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

- 30** Press **Enter** key. The keypad LCD will display the following:

C	O	N	F	I	R	M
---	---	---	---	---	---	---

- 31** Again, press the **Enter** key. The keypad LCD will display the following:

C	O	N	F	I	R	M	E	D
---	---	---	---	---	---	---	---	---

- 32** Press **Esc** key. The keypad LCD will display the following:

O	F	F	S	E	T	D	E	L	I	V	E	R	Y	2
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

- 33** Press the **Down** key. The keypad LCD will display the following:

O	F	F	S	E	T	D	E	L	I	V	E	R	Y	3
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

- 34** Press the **Down** key. The keypad LCD will display the following:

G	A	I	N			:	X	.	X	X	X	X	X
O	F	F	S	E	T	:	X	.	X	X	X	X	X

- 35** Press the **Down** key. The keypad LCD will display the following:

C	O	N	F	I	R	M
---	---	---	---	---	---	---

- 36** Press the **Enter** key. The keypad LCD will display the following:

C	O	N	F	I	R	M	E	D
---	---	---	---	---	---	---	---	---

- 37** Press **Sel** key and the 24-characters Challenge keys will be generated. The keypad LCD will display the following:

C	K	1	:	X	X		X	X	X	X	X	X	X	X	X
C	K	2	:	X	X		X	X	X	X	X	X	X	X	X

- 38** Press **Sel** key. The keypad LCD will display the following:

O	T	P	:												
---	---	---	---	--	--	--	--	--	--	--	--	--	--	--	--

- 39** Enter the 12-characters OTP and press the **Enter** key to confirm. The keypad LCD will display the following:

O	P	E	R	A	T	I	O	N			
S	U	C	E	S	S	F	U	L	L	!	!

- 40** Press **Esc** key. The keypad LCD will display the following:

C	A	L	N	O	Z	Z	L	E
---	---	---	---	---	---	---	---	---

- 41** Press **Esc** key. The keypad LCD will display the following:

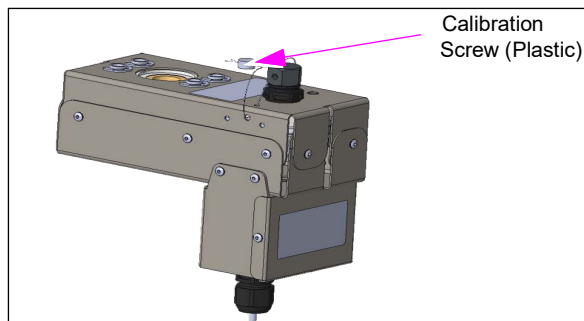
C	A	L	I	B	R	A	T	E
---	---	---	---	---	---	---	---	---

- 42** Again, press **Esc** key. The keypad LCD will display Cumulative Volume Totalizer.

N	O	Z	Z	L	E	A	1	C	U	.	V	1
						X	X	X	.	X	X	X

- 43** Reconnect the plastic screw to the meter and screw it until tightened.

**Figure 6-1: Calibration Screw**



- 44** Perform sale delivery to check the accuracy after calibration.
- 45** Restart the dispenser and perform sale delivery to check the accuracy. Ensure that no error is observed and accuracy is achieved.

The calibration for the Nozzle A1 is now completed.



## Procedure for View Logs

- 1 Ensure that the Pump is in Idle condition.
- 2 Press **F1** key and **F2** key simultaneously. The Keypad LCD will display **SELECT LEVEL**.
- 3 Press **1** key; the keypad LCD will display **LEVEL 1**.
- 4 Enter the password **\*\*\*\*** and the **REAL TIME CLOCK** will be displayed on the keypad LCD.
- 5 Press the **DOWN** key until the **VIEW LOGS** menu is displayed on the keypad LCD.
- 6 Press **SEL** key and the **DENSITY LOGS** will be displayed on the keypad LCD.
- 7 Press the **DOWN** or **UP** key to scroll the menu, and respective logs will be displayed on the keypad LCD.
- 8 Press **SELECT** key to enter a menu.
  - If the Logs are as per Nozzle/Product, then enter the Nozzle/Product number in the logs.
  - If there are more than 20 logs, then enter the log number that you want to view. The highest number shows the latest logs.
- 9 Press **ENTER** key to enter into the menu and press **UP** key to see another field.

## Procedure for Print Logs

- 1 Ensure that the Pump is in Idle condition.
- 2 Press **F1** key and **F2** key simultaneously. The Keypad LCD will display **SELECT LEVEL**.
- 3 Press **1** key, the keypad LCD will display **LEVEL 1**.
- 4 Enter the password **\*\*\*\*** and the **REAL TIME CLOCK** will be displayed on the keypad LCD.
- 5 Press the **DOWN** key until the **PRINT LOGS** menu is displayed on the keypad LCD.
- 6 Press **SEL** key and the **DENSITY LOGS** will be displayed on the keypad LCD.
- 7 Press the **DOWN** or **UP** key to scroll the menu, and respective logs will be displayed on the keypad LCD.
- 8 Press **SELECT** key to enter a menu.
  - If the Logs are as per Nozzle/Product, then enter the Nozzle/Product number in the logs.
- 9 Enter the last number to print the latest 20 logs.
- 10 Press **ENTER** key to print the 20 logs.

# Error Codes

Sr.No.	Error Code	Error Message	Description	Log Type
1	E01	E01 SENSOR COMM ERR	Sensor Connectivity Error	Critical error history log
2	E02	E02 NO PULSE TMOUT	Error will be displayed & logged if no fuel is delivered up to the no pulse timeout set.	Critical error history log
3	E07	E07 TOTALISER ERR	This error will be displayed if the totaliser slot has become corrupted or there is a mismatch in the totaliser dual copy stored.	Critical error history log
4	E09	E09 MAINS VOLT ERR	This error will be displayed if the input supply to the SMPS goes outside the defined range (130V - 270V).	Error history log
5	E11	E11 DISPLAY COM ERR	Display Connectivity Error will be displayed on nozzle lift as well as in Idle condition, disallowing the transaction to commence.	Critical error history log
6	E13	E13 VERSION ERR	This error will be displayed in case a lower version, or a different customer or different configuration software version is loaded compared to the first CPU software version.	Critical error history log
7	E14	E14 IRREGULAR PRESET	This error will not be displayed but will be logged. This error will be logged when 50 sale preset of non-multiple of 5 values carried out.	Critical error history log
8	E15	E15 ODD PRESET EVENT	This error will not be displayed, but will be logged. This error will be logged when 150 sale preset of non-multiple of 5 values are carried out or 3 events of E14 error happened.	Irregular sale preset log
9	E16	E16 CARD FAULT ERR	Display or Keypad card fault error will be displayed in Idle condition and will not allow the delivery to commence.	Critical error history log
10	E17	E17 SENSOR CRC ERR	Sensor/Pulsar FRAM data CRC error will be displayed in Idle condition and Dispensing condition, whenever there is a CRC mismatch of parameters stored in NV memory of pulsar.	Critical error history log
11	E18	E18 UDK MEM CON ERR	This error will be displayed on nozzle lift as well as in Idle condition, disallowing the transaction to commence in case of external memory IC disconnectivity on the display side.	Critical error history log
12	E19	E19 KBD MEM CON ERR	This error will be displayed on nozzle lift as well as in Idle condition, disallowing the transaction to commence in case of external memory IC disconnectivity on the keypad side.	Critical error history log
13	E20	E20 ECAL PARAM ERR	Calibration Parameter Corruption error will be displayed in Idle condition and delivery will not commence.	Critical error history log

Sr.No.	Error Code	Error Message	Description	Log Type
14	E21	E21 CPU FRAM1 ERR	CPU FRAM1 Parameter Corruption error will only be displayed in idle condition without being logged.	Not applicable
15	E22	E22 RELAY CONN ERR	Relay Card Connectivity error will be displayed on nozzle lift as well as in Idle condition, disallowing the transaction to commence.	Critical error history log
16	E25	E25 FCC COMM ERR	Automation Connectivity error will be displayed on nozzle lift, and delivery will not commence.	Critical error history log
17	E40	E40 CPU FRAM2 ERR	CPU FRAM2 Parameter Corruption error will only be displayed in idle condition without being logged.	Not applicable
18	E67	E67 NO PRN NO DELV	Printer/NPND error will be displayed in Idle condition if printer is not connected/not communicating and a print command is given.	Error history log
19	E68	E68 PRN COMM ERR	Printer connectivity will be displayed when printer is disconnected during or before printing.	Error history log
20	E69	E69 PRN PAPER OUT	Printer paper misplacement error will be displayed during printing if print paper slips out.	Error history log
21	E70	E70 TEST DELV ERR	Test Delivery will be a prompt on the keypad LCD if test delivery not performed for respective nozzles after every 24 hours when nozzle lifted.	Not applicable
22	E100	E100 SYS RC OSC ERR	System On RC Oscillator error will be displayed in Idle condition, if the main oscillator goes bad and the micro-controller shifts to the internal oscillator. Error will be displayed as well as logged.	Critical error history log
23	E101	E101 WATCHDOG RESET	This error will only be logged in the error history once the pump has restarted due to a watchdog reset.	Critical error history log
24	E102	E102 IN CALIB MODE	This error will be displayed in Idle condition if the Calibration switch of the Pulsar is in OFF position (removed) and a normal delivery will not commence.	Critical error history log
25	E103	E103 FLASH MEM ERR	FLASH Memory Corruption error will be displayed in Idle condition and delivery will not commence.	Critical error history log
26	E104	E104 RAM MEM ERR	RAM Memory Corruption error will be displayed in Idle condition and delivery will not commence. This checks the integrity of Legal Metrology parameters.	Critical error history log
27	E106	E106 TOT SRC ERR	Totaliser source if not selected, Error will be a prompted on the keypad LCD to select the source of the totaliser on change of either CPU or pulsar.	Critical error history log
28	E107	E107 PRESET ABORT	This error will not be prompted but logged as separate preset error log.	Preset abort log

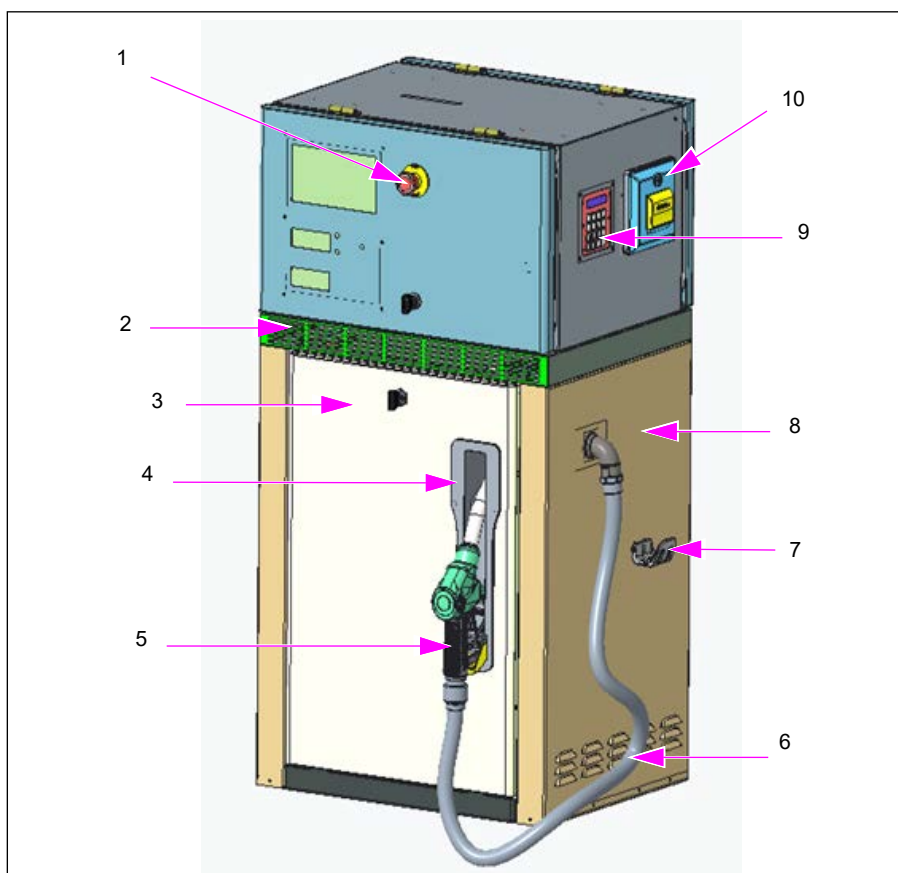
Error		Error Message	Description	Log Type
Sr.No.	Code			
29	E108	E108 REV ROTATE ERR	Sensor Reverse Rotation error will be displayed and logged, if the fuel flows in reverse direction.	Critical error history log
30	E109	E109 ENTER OTP	OTP Entry error will be prompted on the keypad LCD, when user needs to enter OTP sent from server upon user's request for OTP for calibration, card change, or firmware change.	Not applicable
31	E110	E110 PUMP LOCKED!!	Pump Lock upon entering wrong OTP/ CPU card swap. This will be a prompt on the keypad LCD when user enters wrong OTP 3 times consecutively, and the dispenser becomes locked. Also, during CPU software or hardware change this error is generated.	Not applicable
32	E111	E111 PUMP SR NO ERR	This error will be prompted on the keypad LCD, when Pump Serial No does not match between CPU and ECAL/Pulsar or the Pump Serial No is default.	Not applicable
33	E114	E114 DATA INVALID	This error will be displayed and logged, if the pulsar encounters an invalid data reading for fuel measurement.	Critical error history log
34	E115	E115 MOTOR VOLT ERR	Motor UV/OV error will be displayed during dispensing, if the input supply is beyond the defined range; this error will be displayed and logged.	Critical error history log
35	E117	E117 EVOLV MEM CONN	This error will be displayed and logged when pulsar's external memory is not mounted or not communicating.	Critical error history log
36	E119	E119 MEM CONN ERR	This error will be displayed and logged, when CPU external NV memory is not mounted or not communicating.	Critical error history log
37	E120	E120 IMPR SENSR CFG	Improper Sensor configuration error will be displayed and logged, when different types of pulsars are connected in the system.	Critical error history log
38	E121	E121 RTC CORUPT ERR	RTC halted error will be displayed and logged, when the RTC stops ticking due to its crystal or battery related issues.	Not applicable
39	E128	E128 LOW LPM ERR	This error will be prompted on the keypad LCD, when Peak LPM rate of the previous day is less than 10.	Critical error history log

Error		Error Message	Description	Log Type
Sr.No.	Code			
40	E129	E129 IMP MODE ERR	Imprint Mode for change of Card or Software. This error will be prompted on the main LCD, when there is software version/hardware mismatch in any peripheral of the system. When software version mismatch is there, then it will appear on Density LCD peripheral name initial (for example, SS indicates that the sensor software version has changed). When hardware mismatch occurs, then it will appear on Density LCD peripheral name initial (for example, SA indicates a sensor Asset Id mismatch). This error is shown mainly during installation or upgrade actions.	Critical error history log
41	E140	E140 MTR COMM ERR	This error will be displayed and logged when there is no communication with Contactless DEF Flowmeter.	Critical error history log
42	E141	E141 MTR INVALID ERR	This error will be displayed and logged when there is Contactless DEF Flowmeter family integrity mismatch.	Critical error history log
43	E142	E142 MTR FAULT ER	This error will be displayed and logged when there is Device failure status received from Contactless DEF Flowmeter.	Critical error history log
44	E143	E143 MTR EXT MAG ERR	This error will be displayed and logged when there is external magnetic field error status received from Contactless DEF Flowmeter.	Critical error history log
45	E144	E144 MTR PWR RST ERR	This error will be displayed and logged when there is power on reset error status received from Contactless DEF Flowmeter during dispensing, and dispensing will stop.	Critical error history log
46	E145	E145 MTR WDG ERR	This error will be displayed and logged when there is watchdog reset error status received from Contactless DEF Flowmeter during dispensing, and dispensing will stop.	Critical error history log
47	E146	E146 MTR SW RST ERR	This error will be displayed and logged when there is software reset error status received from Contactless DEF Flowmeter during dispensing, and dispensing will stop.	Critical error history log

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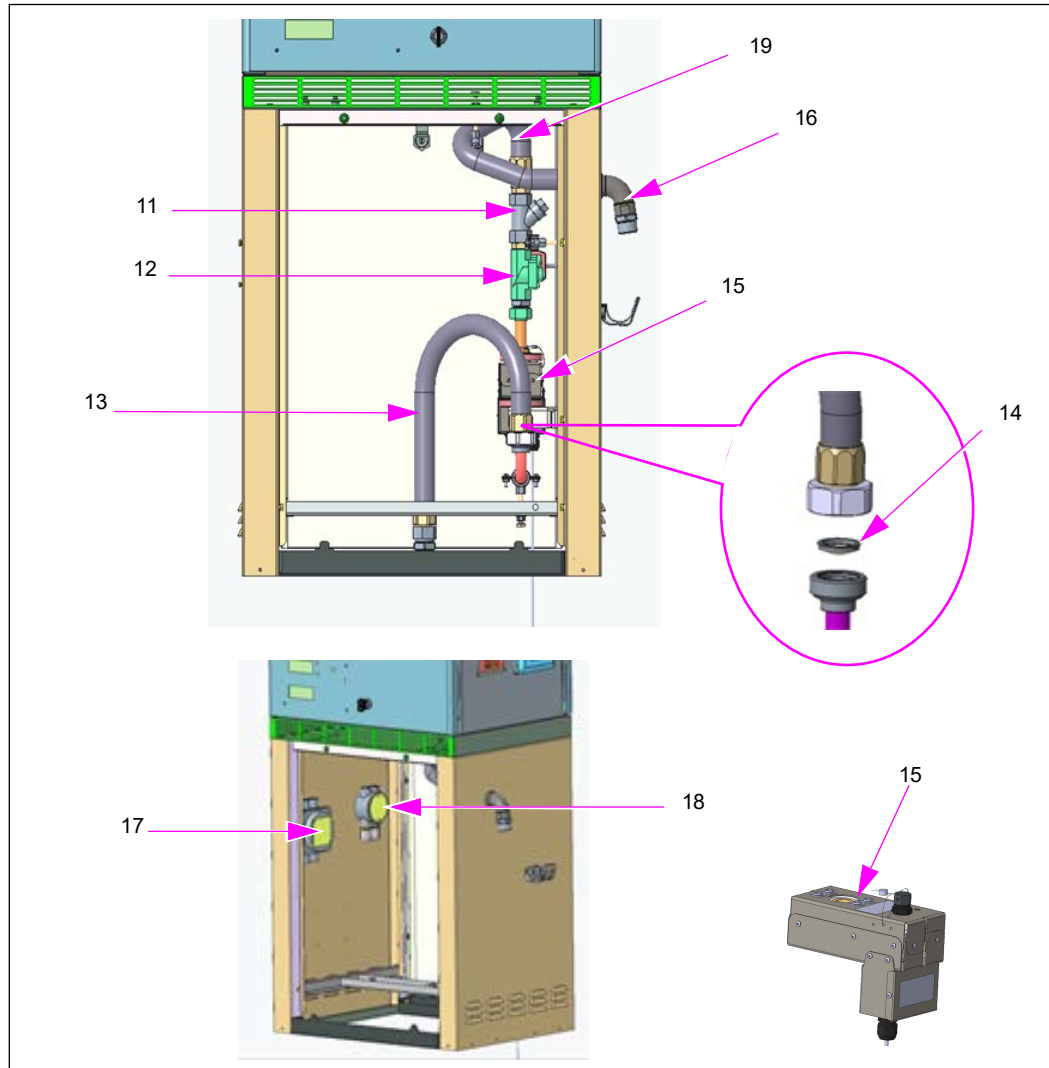
## 7 – Parts List

**Figure 7-1: AdBlue Dispenser**



Sr. No.	Description	Part Number
1	Emergency Switch	GE00097
2	Vapour Barrier	PB921580001
3	Hydraulic Door (Front)	PB921550001
	Hydraulic Door (Rear)	PB92155
4	Nozzle Boot Assembly	PL90974
	GVRI Boot Switch Assembly (1.60M) W GROM	PE950030004
	ELAFLEX Nozzle	PN95052
5	ELAFLEX 40 Misfuelling Adaptor AdBlue	PN90068
	ELAFLEX SSB 16 SS with BS 16 Breakaway AdBlue	PL91209
6	ELAFLEX Slimline16 AdBlue x 4,10m M 16-1" AdBlue	PL91208
7	Hose Hook	PL90325
8	Side Frame, LH	PB921570002
	Side Frame, RH	PB921570001
9	Keypad	PE95008
10	Printer	PE950070001

**Figure 7-2: AdBlue Dispenser- Hydraulics**

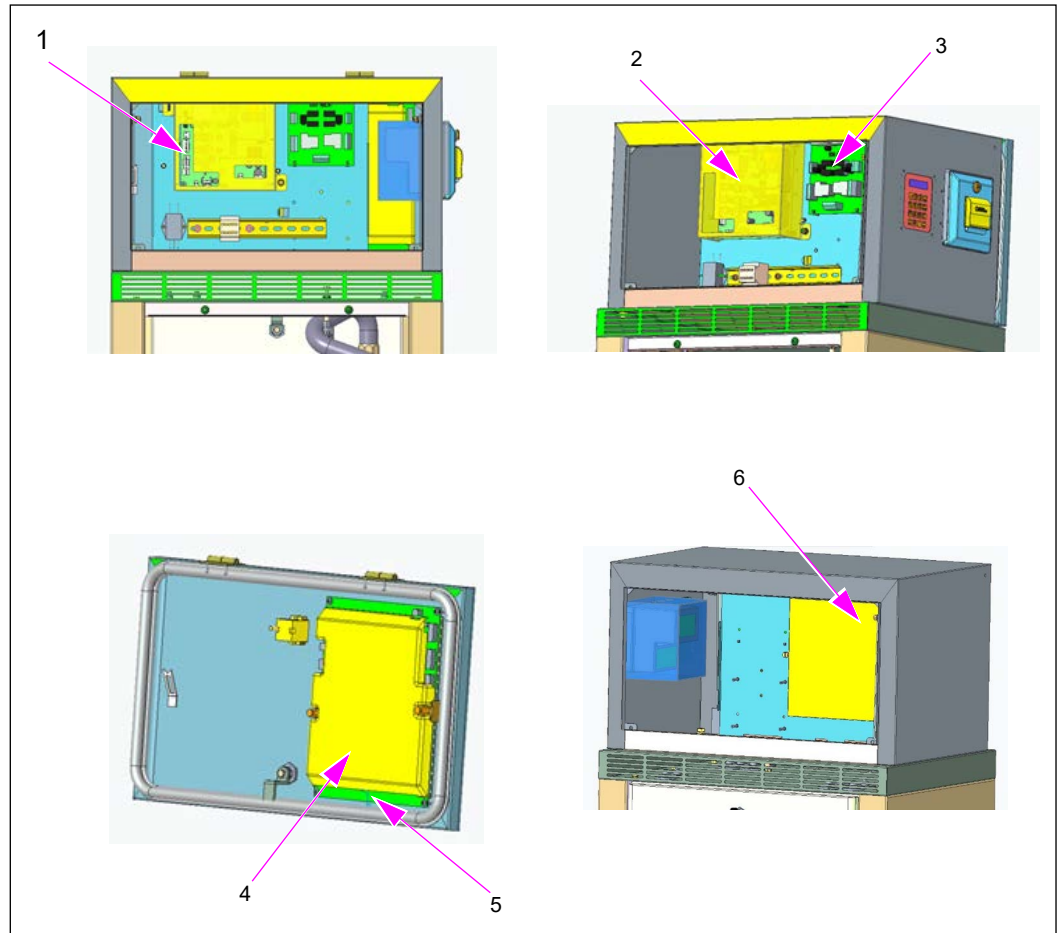


Sr. No.	Description	Part Number
11	Y - Type Strainer	PV00029
12	Solenoid Valve	PV00027
	Solenoid Valve coil	PV00028
13	Inlet Tube Assembly (Flexible Inlet Hose)	PL00192
14	Strainer	PN95053
15	Electromagnetic Flow meter (Contactless DEF Flowmeter)	PM95002
	O-Ring for Contactless DEF Flowmeter	PL50391
	Outlet Elbow Ss Machined - AdBlue	PL80161
16	Hexagon Reducer 1" TO 3/4" AdBlue	PL60310
	O-Ring for Swivel JT-HD	PL50349
17	Power Junction Box	PE90007
18	Communication Junction Box	PE90024
19	Flexible Hose Assembly Outlet AdBlue	PL00191



# Electronic Enclosure

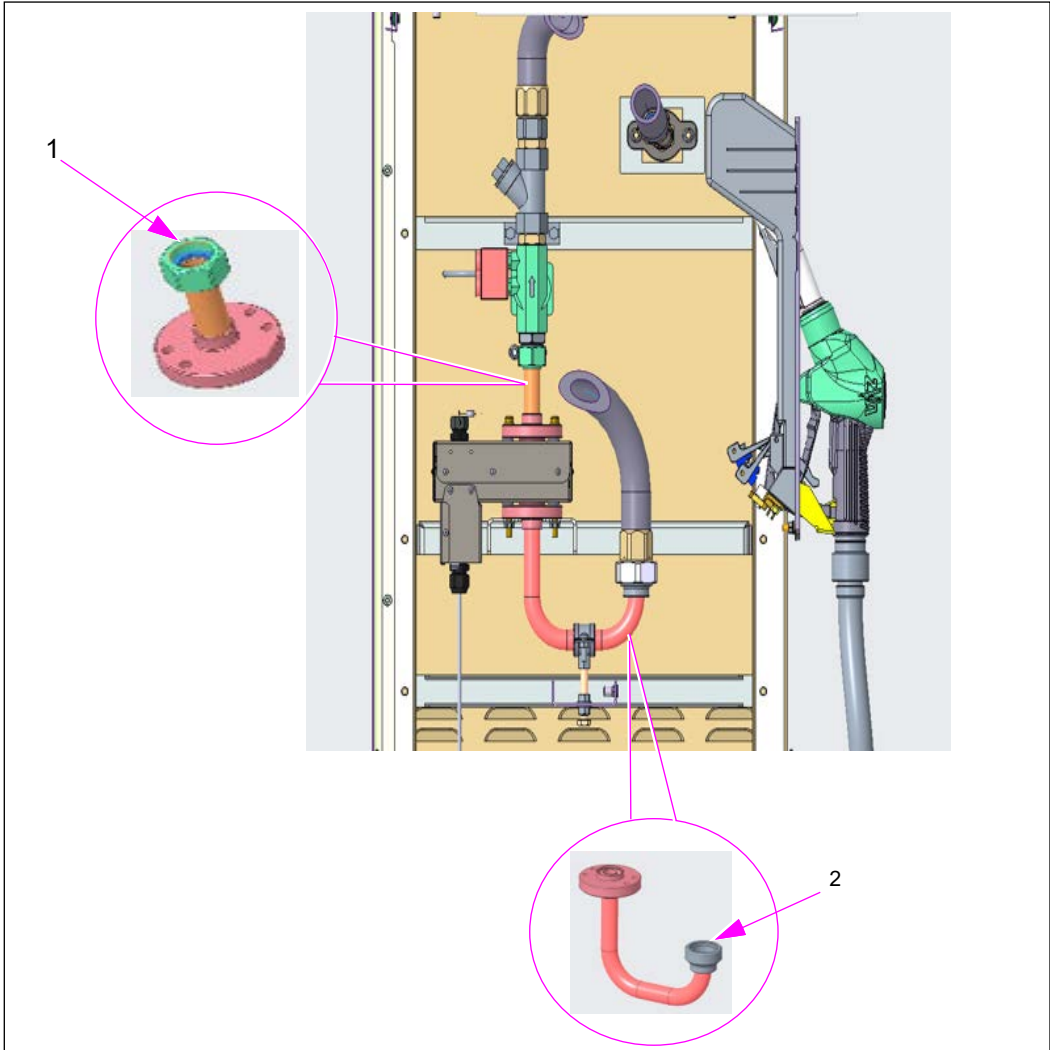
Figure 7-3: Top Box Assembly



Sr. No.	Description	Part Number
1	GVRI SMPS WITH CRIMP	LE912210001
	BOM GVRI SMPS for Tulip-II 60W	LE91221
2	SMPS Sealing Bracket	PB50003
3	Relay Card	LE91248
4	Display Card Sealing Cover	PL503330001
5	Display Card	LE911830001
6	Controller Card Cover	PL50363
	Controller Card	LE912410002

# Inlet and Outlet Pipe Assembly



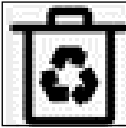


Figure 7-4: Top Box Assembly



Sr. No.	Description	Part Number
1	INLET PIPE ASSEMBLY - CONTACTLESS DEF FLOWMETER METER	PL91191
2	OUTLET PIPE ASSEMBLY - CONTACTLESS DEF FLOWMETER METER	PL91192

## 8 – End of Life (EOL)

### EOL Products and Customer Actions

WARNING	
	<p><b>E Waste: PCBA, Cables and Terminals, Potting Compounds, LCD's</b> <b>Disposal:</b> Give e-waste to an authorized recycler for disposal as per Hazardous and other Wastes (Management and Transboundary Movement) Rules, 2015.</p> <p><b>E-Waste (Management) Rules, 2016</b> If e-waste is not disposed off in a proper manner, then it may cause health risks and damage to the environment.</p>
	<p><b>Metal: Fabricated powder coated parts, Plated and Non-plated metallic parts, and Lead seals</b> <b>Disposal:</b> Metal parts to be disposed as per the "Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016".</p>
	<p><b>Thermo Plastics, Thermoset Plastic</b> <b>Disposal:</b> Thermoplastic and Thermoset plastic parts to be disposed as per the Plastic Waste Management Rules, 2016.</p>
	<p><b>Non-metals</b> <b>Disposal:</b> Nonmetals to be disposed as per the "Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016".</p>
	<p><b>Batteries</b> <b>Disposal:</b> Batteries to be disposed off as per "The batteries (Management and Handling) Rule, 2001".</p>

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**VEEDER-ROOT**

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