INSTALLATION & COMMISSIONING MANUAL
(ALL GVR FUEL DISPENSER MODELS)

DQ98014-001 • Issue A

GILBARCO VEEDER-ROOT

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Release Information

Date	EAA	Description	Issue
22/05/24	14497	Production Release	A

1 Read Me First ……

Please read this manual completely prior to working on or operating the dispenser, including the additional annexes for dispensers of special products such as AdBlue and LPG. Follow all safety instructions.

This manual contains all the information required for the installation and safe operation of Gilbarco dispensers. For maintenance and repair, additional information is required, which is provided and explained through corresponding product training. Also observe the national laws, provisions and regulations for the installation and operation of dispensing systems.

The dispenser is only intended for use within the operating limits specified in the "Technical data" section of this manual.

Only service technicians who have received valid Gilbarco product training and are additionally trained to work on devices and systems in potentially explosive areas should carry out installation or maintenance work on Gilbarco dispensers.

Ensure explosion protection

An explosive atmosphere within the hydraulic housing and in the immediate vicinity of the dispenser must be expected in normal operation and particularly during servicing work.

Take into account the hazardous area (Ex zoning) diagram supplied with the dispenser. Note that the zoning diagram only takes into account the hazardous area created by a dispenser when not delivering fuel.

Avoid hot work (e.g. drilling, grinding). If the work is necessary, special regulations and approvals must be observed.

The Ethanol content of the fuel must not exceed 85%. E85 components are available.

Gilbarco also manufactures dispensers not intended for hazardous area use. These may only be used for liquids that do not generate an explosive atmosphere and are not to be installed in an existing hazardous area (Ex zone).

Note the material compatibility requirements in the technical data section.

- Avoid electrostatic charge:

  Clean non-conductive surfaces (plastic parts) only with a damp, soft cloth.

  Ensure that there is no potential difference between the vehicle tank (or canister) and the nozzle. This is usually guaranteed by the forecourt of the petrol filling station having a conductive surface.

  If potential differences cannot be avoided, e.g. when refueling boats, establish the equipotential bonding manually via suitable cables.

- Selection of installation site:

  Have the installation site checked by a specialist company before installation.

  Only install dispensers outside of buildings.

  When placing the dispenser below a roof construction, make sure that there is sufficient cross ventilation. Ensure ventilation is maintained when installing side protection walls.

  Gilbarco dispensers are not suitable for use in underground locations.

  As the display housing is not completely explosion protected, under no circumstances place the entire dispenser in the area of an existing hazardous area (Ex zone). The dispenser display housing must be located in a non-hazardous area.

Danger from…

…electric voltage

- Fluctuations in the supply voltage outside the tolerance ranges can lead to dangerous situations. If the power supply network does not guarantee sufficient stability, take additional measures.
- Only qualified personnel may install or repair electrical components within the dispenser and must ensure compliance with all applicable safety regulations.
- Electrical cables for installation must be petrol and oil resistant.
- The breaking capacity of the fuse or the circuit breaker must not be less than 4000A. Ensure a current protection limit of a maximum of 16A for single-phase circuits and a maximum of 10A for three-phase circuits.
- Before opening the display housing or the hydraulic covers of the dispenser, switch off the power supply of the dispenser in the electrical distribution panel and secure the corresponding isolator against being switched on again.
- Before switching on the power supply of the dispenser, make sure that all junction boxes and housing parts are properly closed.

…moving parts

- Some components, e.g. V-belts and V-belt pulleys represent a considerable risk of injury during maintenance and service work.
- Attention! In certain dispenser versions, the motor can start independently even when the nozzle is not activated!
- In general, do not operate the dispenser without panels.
- The electrical power to this equipment must be removed prior to any installation or maintenance work being carried out. All installation and maintenance work on

Gilbarco equipment must be carried out by competent technicians who have received the required training.

…fuel/fluid used

- Observe the applicable safety instructions for the fuel/fluid used (examples on the right) and attach the warnings in the area of the dispenser in such a way that they catch the customer's eye immediately upon arrival at the dispenser. Observe local requirements.
- If equipment is to be used to dispense Petrol, then the words 'PETROL' (or PETROLEUM SPIRIT), LPG, HIGHLY FLAMMABLE, NO SMOKING and SWITCH OFF ENGINE should be positioned so that the warnings and instructions are brought to the attention of customers immediately on their arrival at the dispensing equipment.

- For dispensers without integrated drip tray, take suitable measures to prevent the fuel from penetrating into the ground in case of leakage.
- In case of leakage, isolate the dispenser from electrical power supply, restrict public access to the dispenser and inform a service technician. Recommissioning of the dispenser must be performed after repair by the service technician.
- Immediately clean up fuel/fluid drops or spills. In addition to the dangers already mentioned, there is also a risk of slipping.
- Dispose of cleaning rags or other absorbent materials properly.

…hot surfaces

- Under certain circumstances, some components, especially the vapour pumps and motors, can reach very high temperatures. These can cause burns when touched.

…hoses

- Hoses must not lie on the ground!
- Do not let the hose recoil in an uncontrolled manner. Do not overstretch the hose or any hose mast to avoid kinking of the hose and to avoid the risk of the nozzle being pulled out of the filler neck during fuel delivery. There is a danger of injury from slipping.

…cord retraction

- Special care should be taken with dispensers with hose retraction (CR). The cord retraction is under tension.
- Do not touch the cord retraction mechanism. There is a risk of injury.

Personal protective equipment (PPE)
Wear PPE in accordance with the locally applicable regulations. Gilbarco recommends at least the following PPE for all work on the dispenser:

- Safety glasses
- Protective gloves
- Safety shoes

Emergency stop
Install an emergency stop switch as required by local requirements / codes of practice / regulations.
Instruct the personnel how to use the switch in the event of danger.

Intended use
The dispensers are designed for the refueling of road vehicles.
Only fill approved tanks or containers.

Systems for the refueling of boats require to consider the applicable regulations.

Suitable fuels
The dispenser is only suitable for the delivery of fuels according to the following standards:

- EN 228 (Gasoline)
- EN 590 (Diesel)
- EN 14214 (Biodiesel)
- EN 15293 (Ethanol Fuel E85)

For LPG or AdBlue dispensers please refer to the relevant annex.

Illumination
Ensure adequate illumination in the refueling area over the entire operating time.
Illuminance at ground level and at the reading height of the displays: at least 100 lux

Malfunctions
In the event of malfunctions, isolate the dispenser from electrical power supply, restrict public access to the dispenser and inform a service technician. The repair must be carried out by a suitably trained service technician.

Certification and modifications of the dispenser
Dispensers for public sale (subject to local requirements)

- may require to be registered with the metrological monitoring body and checked at regular intervals.
- must not be operated if the calibration seals have been destroyed. Inform the metrological monitoring body.

Any modification of the dispenser can invalidate the certificates. Observe the certification documents and the manufacturer's instructions if any modification of the dispenser is intended.
When replacing individual parts or assemblies, and for retrofitting, use only original parts from Gilbarco.

Nozzles and hoses must comply with the requirements of the standards EN13012, EN13483 and EN1360. This applies to the replacement as well as to new dispensers which were supplied without hoses / nozzles.

2 Site Preparation Check

- Prior to the installation of any Gilbarco dispensing equipment, it is recommended that a subframe or a prefabricated island be installed according to the information contained in the appropriate Site Preparation Data Pack. It is the responsibility of the installation engineer to ensure that the installation complies with the following specifications…

- The subframe must be installed so that the top face of the frame is level with or above the finished surface of the island.

- The subframe must not be more than 2mm above the finished level of the island.

- The subframe must be set square and level within the island.

- The subframe must be sealed to the island surface using a water and fuel resistant compound.

- There must be a fall of at least 5º, on the surface of the island between the dispenser and the outer edge.

- Ensure the foundation bolt sockets are clear of cement, grit or any other blockage.

- Sufficient time must be allowed for the cement to set fully before attempting to install the dispensing equipment.

- Ensure that all the necessary electrical cables are installed, and they comply to the National standards. It is recommended that you implement a 1 x 1.5sq.mm Belden screened twisted pair Data cable dedicated to the pumps and separate the Power and Data Cables within two Conduits, in keeping with AS/NZS Electrical and Cabling rules, AS/NZS 3000:2018.

- Ensure that all the equipment, including installation kits and equipment needed to carry out the installation, have been delivered and are correct and suitable for the installation.

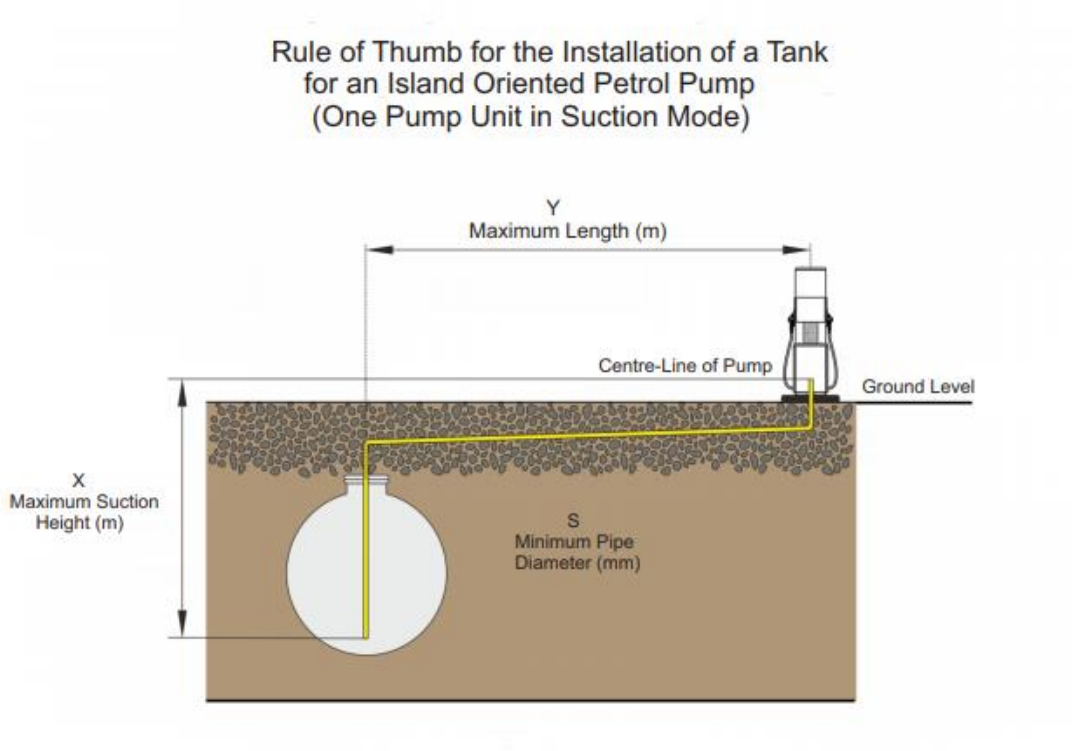
- Ensure that the documentation for all the equipment is available and is fully understood.

- Ensure that the mains supply of electricity is isolated from all the forecourt equipment other than that which is to be used for the installation itself.

- Heavy duty lifting equipment is available where necessary.

- All the lower module (hydraulic) panels are removed and stored in a safe place to avoid damage.

3 Hydraulic Static Lift – General Diagram for Petrol Pumps



Tank Diameter For Oriented Petrol Pump (m)	Maximum Suction Height X (m)	Maximum Length Y (m)	Minimum Pipe Diameter S (mm)	Flow Rate (L/min)
2.5	3.5	25	40	40
2.6	3.6	25	40	40

Anything outside of the Rule of thumb needs a Hydraulic Engineer to calculate the Lift requirements, (includes height above sea level, precision measurements, pipe size and fittings and specific gravity of each fuel type).

4 Warranty

The following can be found at: https://www.gilbarco/au/service-and-maintenance

Congratulations on the purchase of your brand new Gilbarco pump. Gilbarco offers the following warranty:

1 GILBARCO WARRANTY

The benefits conferred by the warranty described in this clause are in addition to and not in derogation of all other rights and remedies in respect of the goods or services which the Customer has under the CCA. To the fullest extent permitted by law, and subject to the foregoing:

a Gilbarco equipment (other than exported equipment), installation work/service work and spare parts are warranted for the respective periods and terms as detailed in the written warranty terms provided with such Gilbarco goods and services; and

b Gilbarco equipment which is exported is warranted for three (3) months from the date of installation (provided installation is within nine (9) months of invoice date) against defects adjudged by Gilbarco to be faulty materials and/or workmanship during manufacture (Export Warranty). Defective goods are to be immediately returned within one month from the date the relevant defect occurs or is discovered (provided such occurrence or discovery of such defect occurs within the relevant warranty period) to PO Box 6804, Silverwater NSW 2128 or such other address as Gilbarco may advise, freight paid and at the risk of the Customer. To the fullest extent permitted by law, Gilbarco is not liable under the Export Warranty unless:

i the installation and commissioning of the goods is carried out strictly in accordance with instructions and recommendations issued by Gilbarco;

ii if required, the defective parts are returned immediately to Gilbarco in accordance with this clause 21b freight paid and at the risk of the Customer together with all evidence available to the Customer as to the cause of the alleged defect;

iii the goods are used solely for the purpose specified by Gilbarco and are not modified or repaired in any way except as previously authorised by Gilbarco in writing;

iv the goods are serviced only by authorised and suitably qualified Gilbarco personnel;

v the Customer has paid all monies due under this Contract; and

vi the Customer furnishes Gilbarco with full written details of the claim under the Export Warranty no later than one month after the expiration of the Export Warranty period.

Gilbarco Australia warranty shall not apply to Products that have been subject to misuse, fraud, neglect, accident or modification.

To activate your warranty, please have your serial number and installation details and scan the QR Code.

Scan Me To Activate

5 Product overview and module allocation

The SK700-2 series is an efficient dispenser system available in various designs and offers numerous options for almost all applications. In the following, please find a selection of the options:

- modular design in single- or double-sided operation
- integrated suction pump or prepared for central pressure pump supply
- flexible computer system with numerous communication interfaces for the connection to a wide range of forecourt controllers
- temperature compensation to standard temperature of 15°C
- cord retract to increase the radius of nozzle reach
- high flow dispensers with a flow rate of up to 120l/min
- vapour recovery with automatic monitoring
- VGA displays with customer-specific multimedia interfaces
- suitable for dispensing Petrol, Diesel and fuel with Ethanol content (observe safety instructions in chapter 1)
- versions for dispensing AdBlue and alternative fuels are available (see below)

The typical characteristics of the different dispenser types are listed below.

Note: The drawings show the connection between the individual pumping units and the associated hose columns or nozzles.

5.1 SK700-2

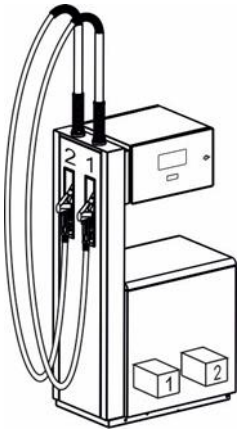
- up to 6 products
- Definition of dispenser sides:

  - „Left Hand Side “(LHS) / Side 1 of the dispenser: hose column on the left of the display housing (As illustrated)

  - „Right Hand Side “(RHS) / Side 2 of the dispenser: hose column on the right of the display housing
- Versions for dispensing AdBlue and alternative fuels as LPG and CNG are available as 1 product dispenser (standalone) or in combination with fuel modules. Observe for AdBlue or LPG the corresponding annex.

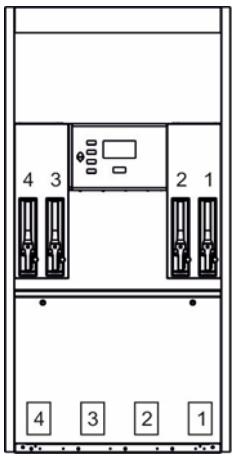
5.2 IOD

- up to 2 products, accessible from both sides
- Definition of dispenser sides: same as SK700-2
- Versions for dispensing LPG are available. Observe the corresponding annex.
- available with or without hose mast



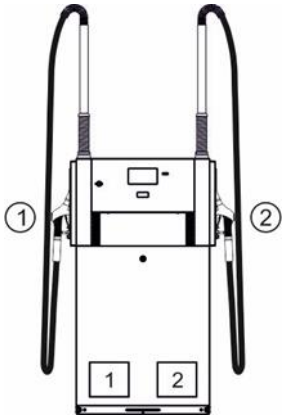
5.3 Horizon-2

- up to 4 products
- Definition of dispenser sides:
  Remove the panels of the hydraulics for orientation.
  Dispenser side 1: the side where the filters are located



5.4 Frontier

- up to 2 products, accessible from both sides
- Definition of dispenser sides: same as Horizon
- Versions for dispensing AdBlue are available as 1 product dispenser or in combination with fuel modules. Observe the corresponding annex.
- available with or without hose mast



5.5 Endura

- 1 product (Diesel), accessible from both sides
- Definition of dispenser sides: same as Horizon
- available with or without hose mast

6 Installation of the Dispenser

Before installation always consult the foundation dimensions of the respective dispenser type as this has details of sumps, dimensions, and power requirements.

Installation instructions for all additional devices must be available and followed.

Before installing the dispenser, properly lay all necessary cables and pipes.

If necessary, hoists must be used for heavy loads.

6.1 Foundation

The surface of the dispenser island must be designed in such a way that there is a slope of at least 5° from the dispenser to the outer edges of the island.
Let the concrete foundation harden for sufficient time before installing the dispenser.

6.2 Under Pump Sump

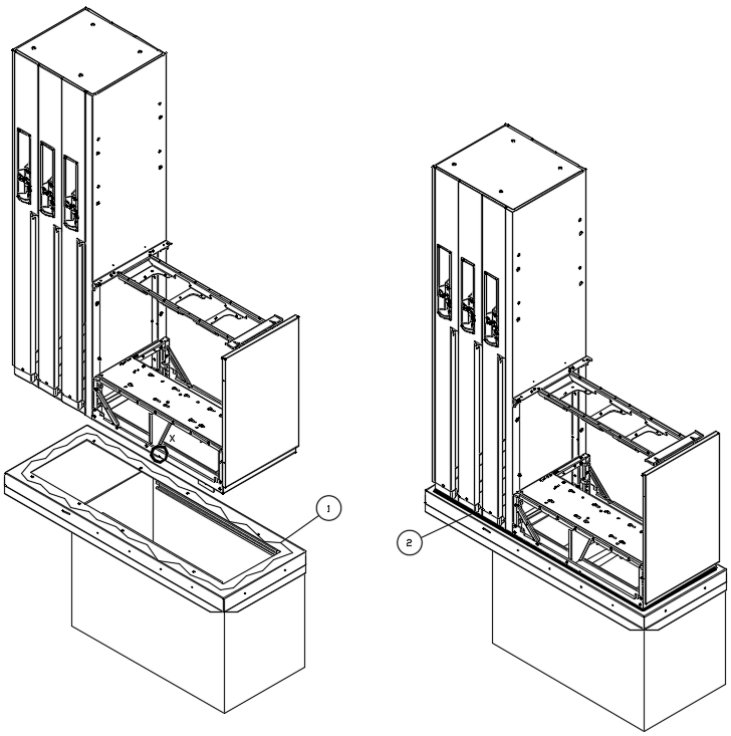
Gilbarco recommends installing the dispenser on a Sump. The holes for the foundation bolts must be free of contamination.

- Mount the Sump in such a way that the upper edge of the Sump fits flush with the surface of the dispenser island.
- Mount the Sump within the dispenser island at right angles and horizontally.
- Seal the Pump and Sump to the ground with a suitable permanently water and fuel resistant sealant.

6.3 Leakage protection

If you install a dispenser with a Sump tray (1), seal the tray with a fuel resistant sealant (2).
There are two ways to do so:

Either **before** dispenser installation…	…or **after** dispenser installation
Apply the sealant all around the surface of the foundation frame.	Apply the sealant around the entire dispenser between the dispenser and the foundation.



Important! Do **NOT** seal the outlet holes (3), they must stay clear of any sealant!

6.4 Requirements for pressure pump operation

- device for the automatic interruption of the fuel flow to the dispenser in the case of a vehicle collision (e.g. Shear Valve)
- check valve in the pressure line directly after the pump
- submersible pumps, which are located within the respective storage tank and mounted such that the pump is below the liquid level
- tank level monitoring, which ensures that no air is drawn in
- the maximum permissible dispenser operating pressure of 3,5 bar must not be exceeded

6.5 Shear valves (option)

Install shear valves according to the manufacturer's specifications in such a way that forces that may occur during vehicle impact are transferred to the predetermined breaking point in the shear valve.

Pressure pump connection

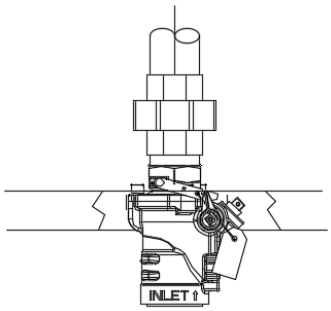
Gilbarco recommends the use of the OPW 10 Plus shear valve.

Shear valves in the pressure line must be attached to the subframe or drip tray below the dispenser and should comply with EN 13617-3.

If a shear valve is used, flexible / corrugated pipe must not be used.

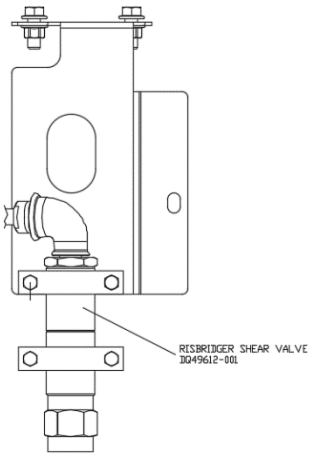
1) Union 1½"

2) Shear valve



Vapour recovery

Gilbarco recommends the use of shear valves from Risbridger for dispensers with vapour recovery, provided that this does not conflict with national requirements.
It is especially important that the upper part of the valve is secured to the dispenser frame and the lower part to the subframe so that the necessary shear forces can be transferred to the predetermined breaking point of the valve.
Note that in some countries an insulating piece must be inserted below the shear valve to galvanically separate the dispenser from the pipework.



6.6 Opening the dispenser housing

Set the packed dispenser down at an appropriate place. Remove the packaging materials. Then remove the side panels as described below.

Attention:

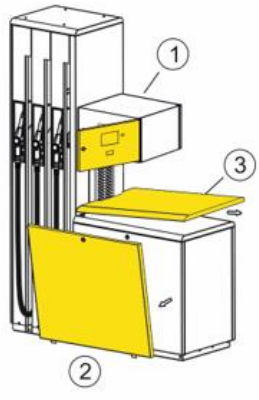
Only open the dispenser with no electrical power connected!

The panels are connected to the internal earthing system. Before removing the panels, disconnect the corresponding earth bonding conductors.

Store the removed panels in a safe place to avoid damage to the panels.

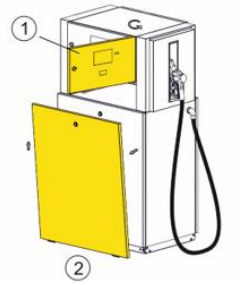
SK700-2 & IOD

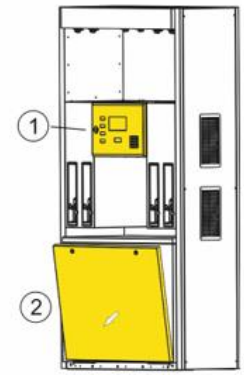
1) Unlock and open the display housing using the key provided.
2) Unlock the locks and lift the panels up to remove them from their locking mechanism.
3) Remove the upper cover by loosening the screws below the cover on the side of the hose column. Now pull the cover forwards and lift it off.



Frontier & Horizon-2

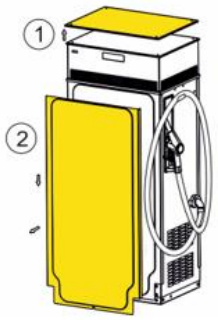
1) Unlock and open the display housing using the key provided.
2) Unlock the locks and lift the panels up to remove them from their locking mechanism.





Endura

1) Loosen the upper screws and remove the cover.
2) Remove the screw underneath the panel. Push the panel upwards and tilt it forwards.



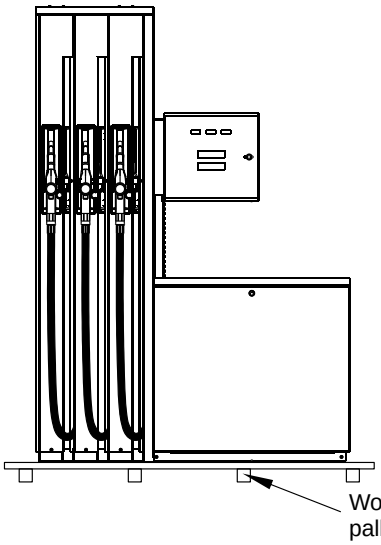
6.7 Placing the Dispenser on the foundation

SK700-2

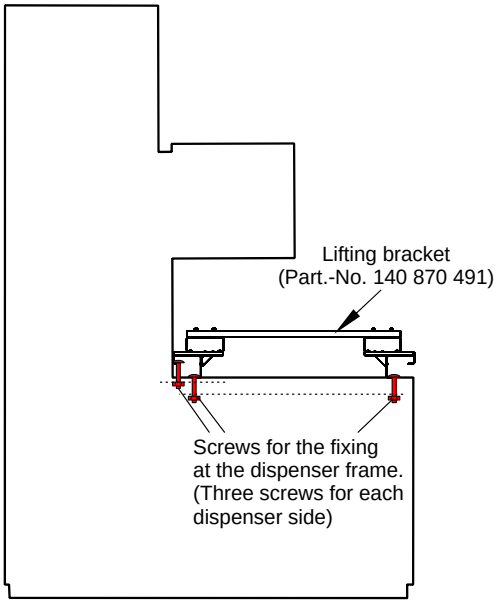
Lifting, with Forklift

Lifting Bracket for use with Forklift is part number 140 870 491.

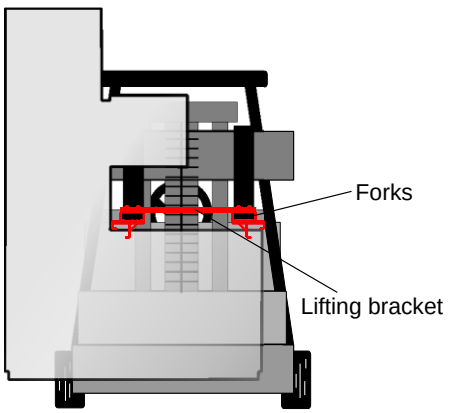
Move the packaged dispenser using a forklift truck to the island and set it down. Remove the packaging and the side panels from the pump, and then remove the bolts securing the dispenser to the wooden pallet.



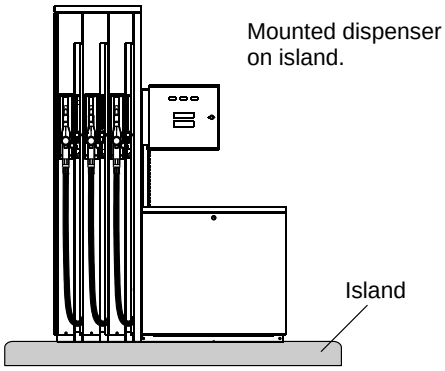
Mount the lifting bracket to the pump frame. The pump frame has specific holes for the screws. These are then fixed with the hex nuts from below.



Place the forks of the fork lift truck within the fork channels.

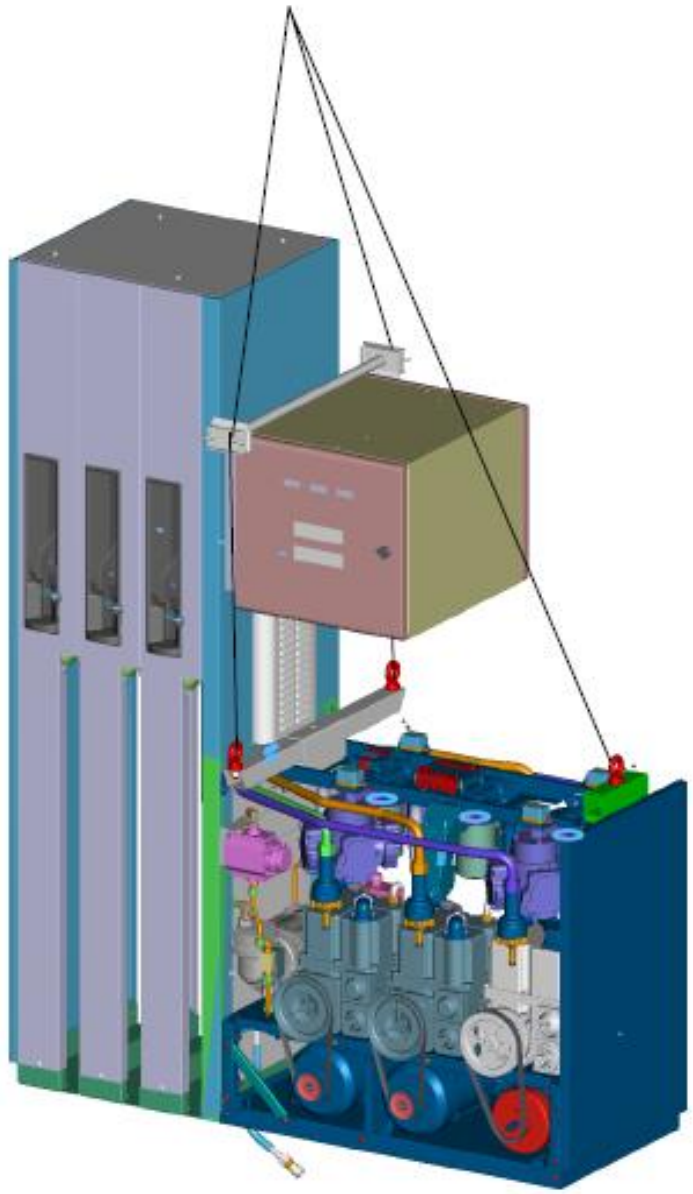


Now the dispenser can lift with the fork lift truck. Remove the wooden palett and U-profiles if existing. Place the dispenser over the connections on the island. Take care to route the electrical cables up from the electrical duct and into the base of the pump. Ensuring that they do not become trapped under the dispenser. The dispenser should now be sitting level on the island and in approximately the correct position to continue with the further installation. Disconnect the screws and remove the lifting bracket.



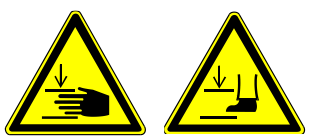
Lifting with High point and straps

Lifting Bracket Kit for use with High point.



Note:

- Lifting bracket, including spreader bar, is DN07630-450.
- Suitable straps must be used, not part of lifting bracket kit.
- Spreader bar must be positioned to not rub on CDM (use soft cloth) and only attached during lifting.



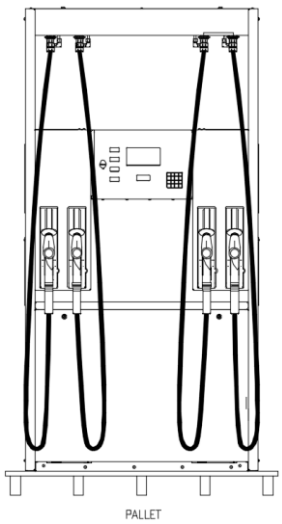
Attention! When transporting the dispenser and placing it on the foundation there is a risk of injury from trapping.

HORIZON MK2

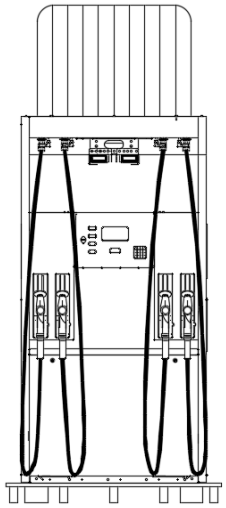
Lifting Procedure

Lifting Bracket for use with Forklift is part number 140-993-422

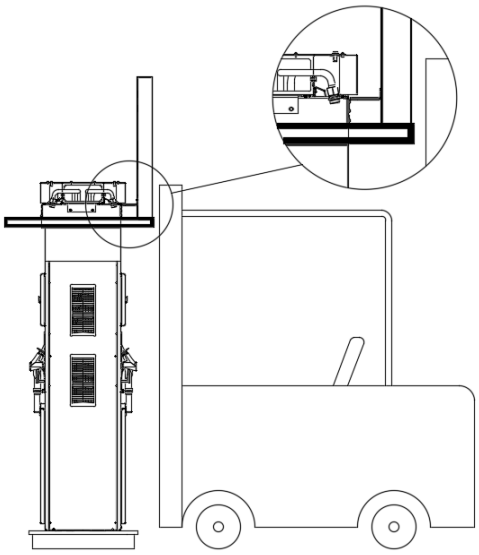
Move the packaged dispenser using a folk-lift truck to the island and set down. Remove the packaging and front and rear panels from the pump, and then remove the bolts securing the pump to the wooden pallet.



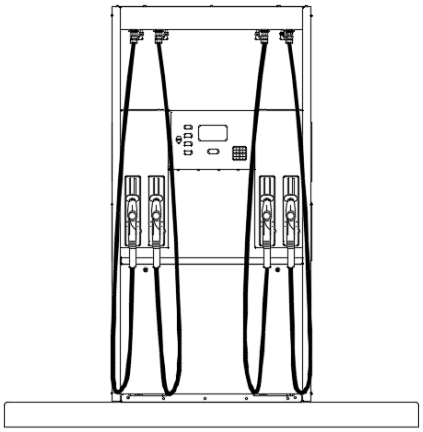
Fit the lifting bracket to the forklift tines and position them centrally inside the pump



Adjust lifting bracket so it is centrally located, and the rear stop is in line with the rear vertical tines.

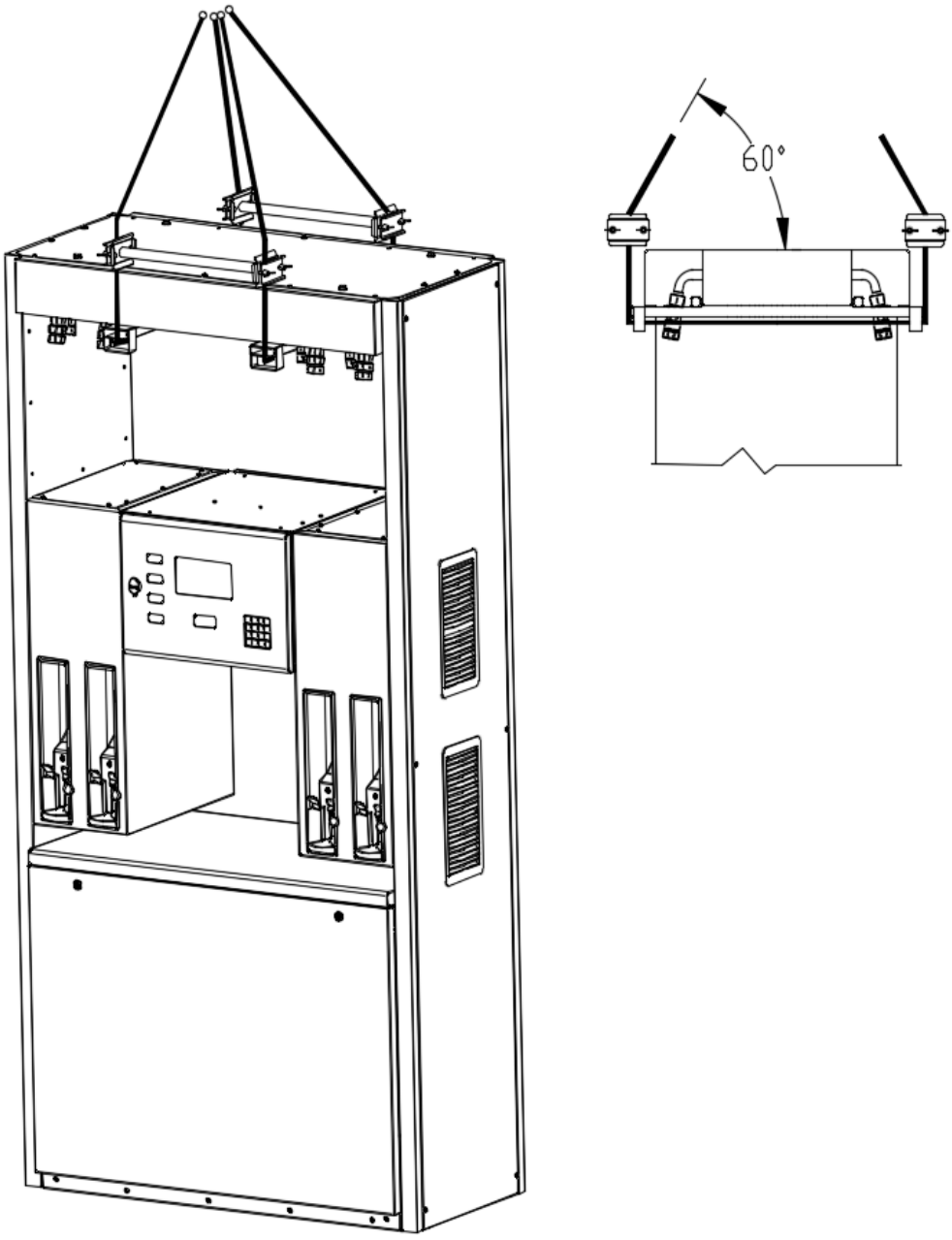


Now the dispenser can be lifted with the forklift. Remove the wooden pallet. Place the pump over the connections on the island. Take care to route the electrical cables up from the electrical duct, and into the base of the pump. Ensuring that they don't not become trapped under the pump. The pump should now be sitting level on the island and in approximately the correct position to continue with further installation.



Lifting, with Forklift

Lifting Bracket Kit for use with High point.



High Point Lift with straps

Note:

- Lifting bracket kit, including spreader bar, is DN07630-350.
- Suitable straps must be used, not part of lifting bracket kit.
- Spreader bar must be positioned above the top, as shown.

6.8 Mounting the dispenser on the island (part 1)

Use the supplied bolts. The quantities given in the table below are the respective minimum number of bolts. More bolts can be used, but the function of the shear valves must be maintained.

Attention: The mounting for LPG dispensers differs significantly. Detail is provided in the corresponding annex.

Dispenser type	Version	Quantity bolts for hose column	Quantity bolts hydraulics frame
SK700-2	1 product	2	4
SK700-2	2 - 5 products	4	4
IOD, Frontier, Horizon MK2 Endura	All versions	-	4

Attention: Always use the outer fastening points in the hose column and in the hydraulic frame for mounting the dispenser.

Align the bolt holes in the base plate of the dispenser in such a way that they are positioned over the corresponding holes in the subframe.

Place one washer for one foundation bolt on each bolt hole and screw in the foundation bolts only partially. Do not tighten the foundation bolts until the fuel delivery and vapour recovery lines (if relevant) are connected.

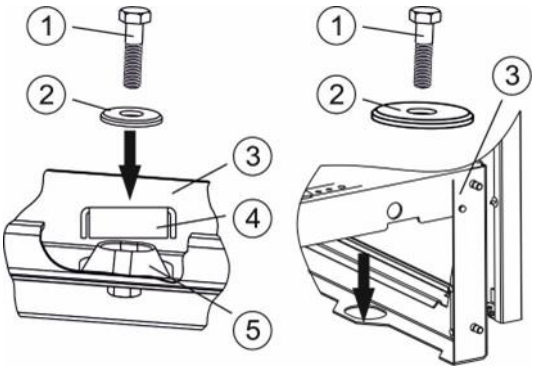
1) Foundation bolts (steel) min. Ø 10 mm

2) Washer

3) Frame

4) Mounting bracket

5) Drip tray (option)

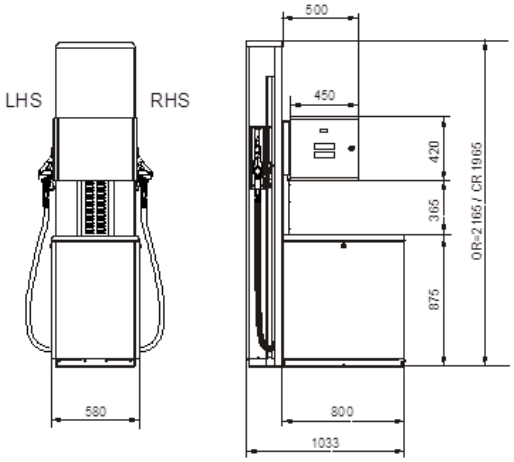


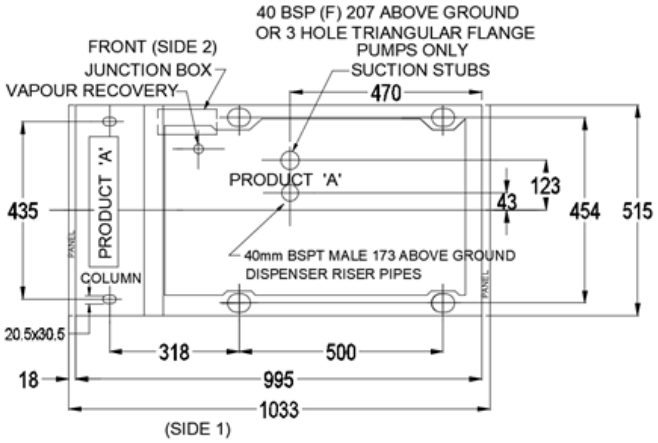
6.9 Dispenser Overall Dimensions & Hydraulic Foot Prints

SK700-2

Overall Dimensions

1 Product, 40 l/min, Suction or STP,
with Vap. Rec. & Preset





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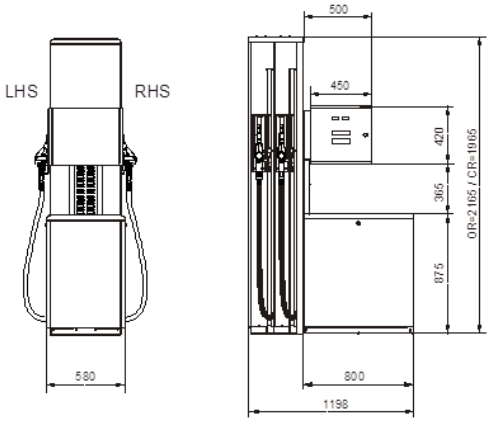
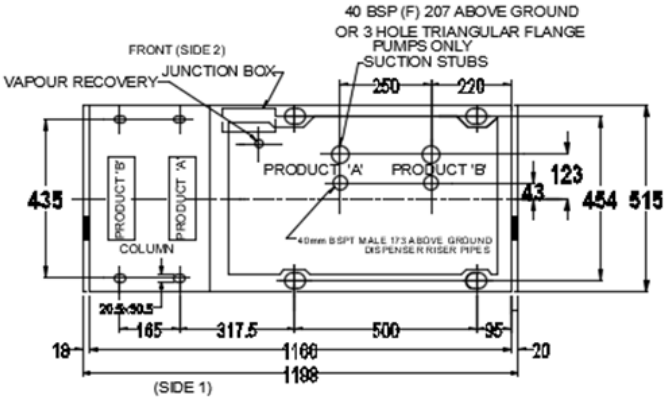
Overall Dimensions

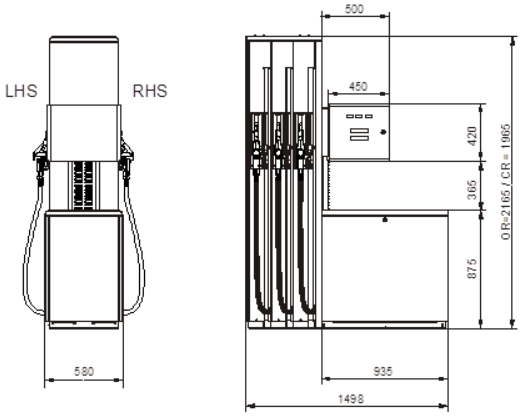
2 Products, 40 l/min, Suction or STP,
with Vap. Rec. & Preset

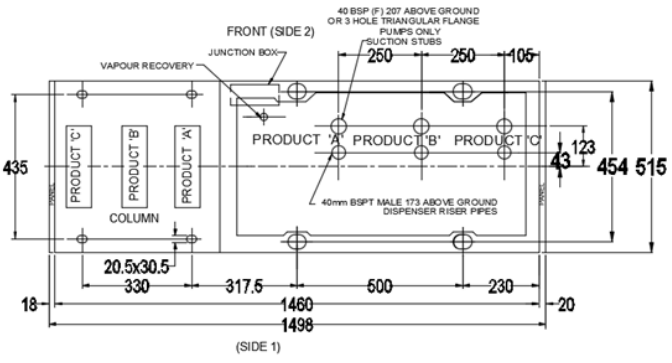




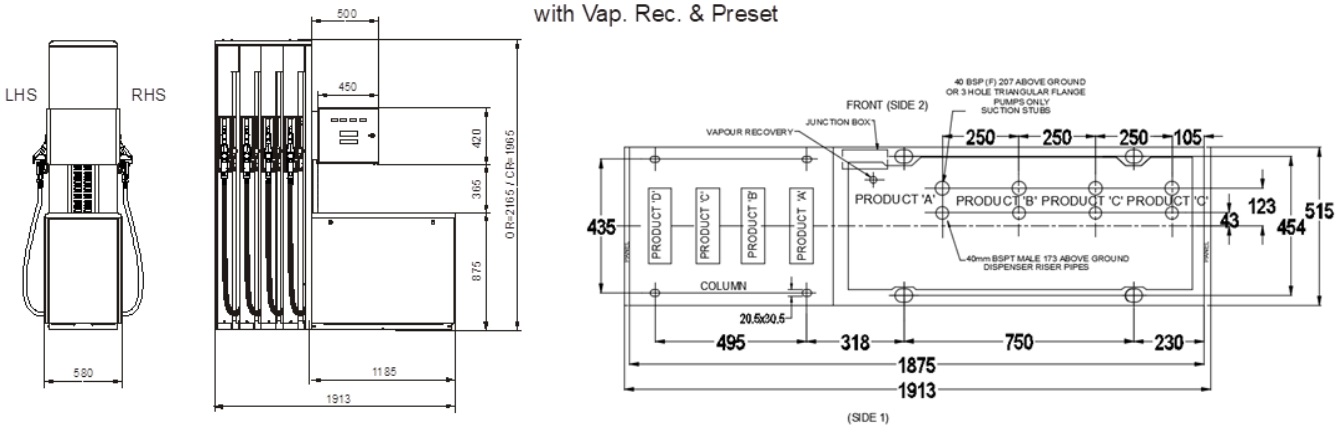
Overall Dimensions

3 Products, 40 l/min, Suction or STP,
with Vap. Rec. & Preset

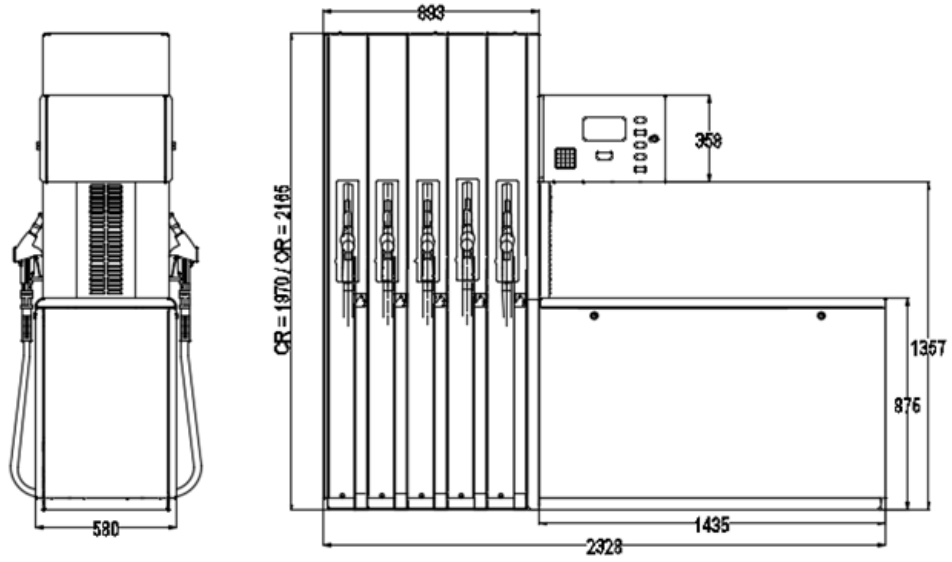


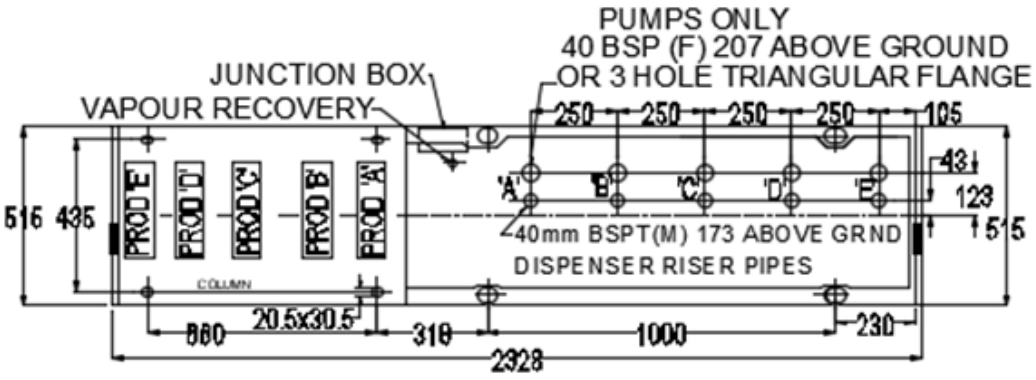


Overall Dimensions 4 Products, 40 l/min, Suction or STP, with Vap. Rec. & Preset



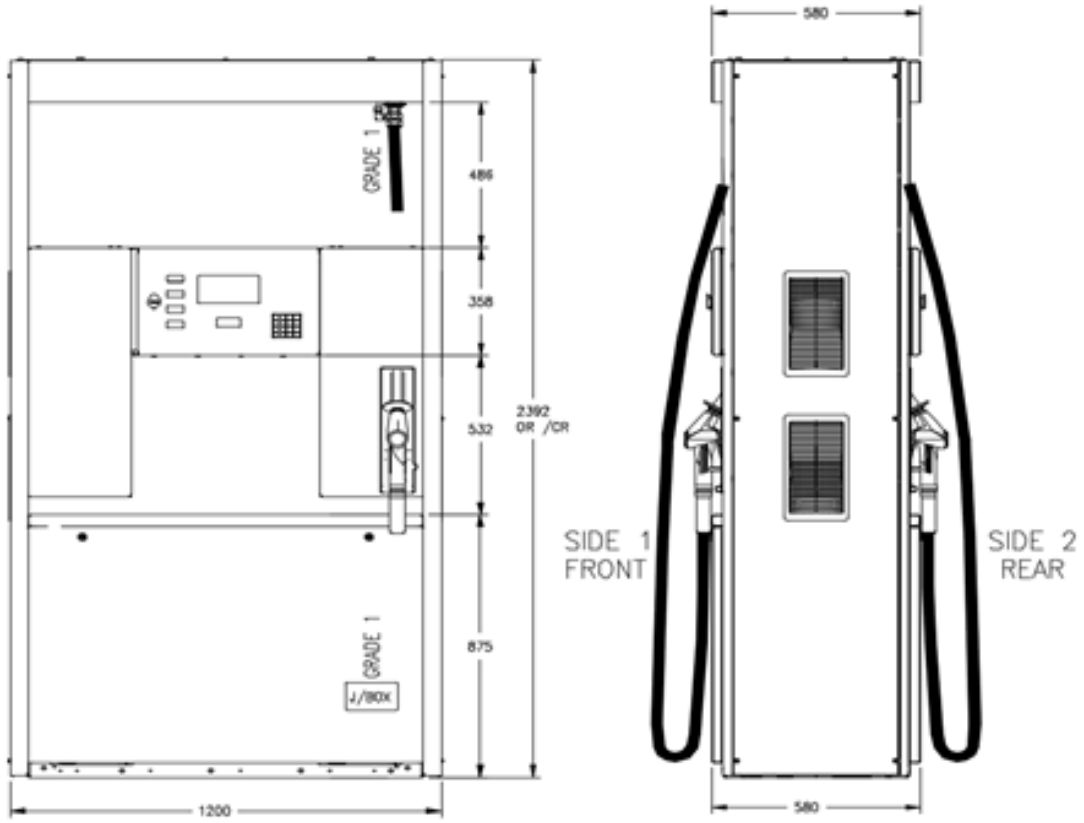
Overall Dimensions 5 Products, 10 Hose Suction or STP

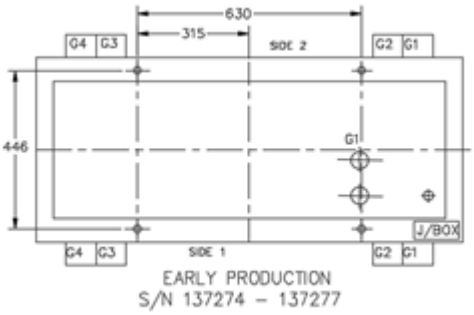




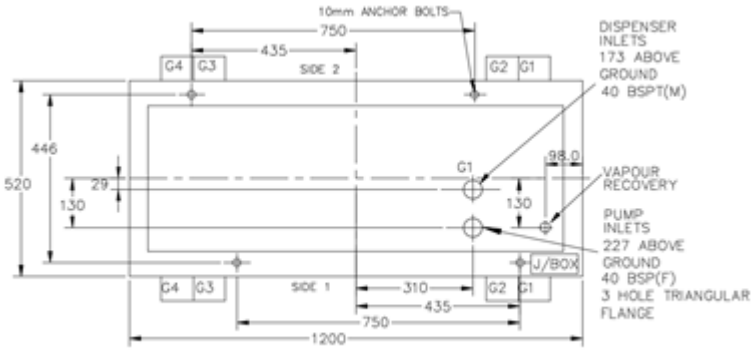
HORIZON MK2

Overall Dimensions 1 Product, 2 Hose, Suction or STP

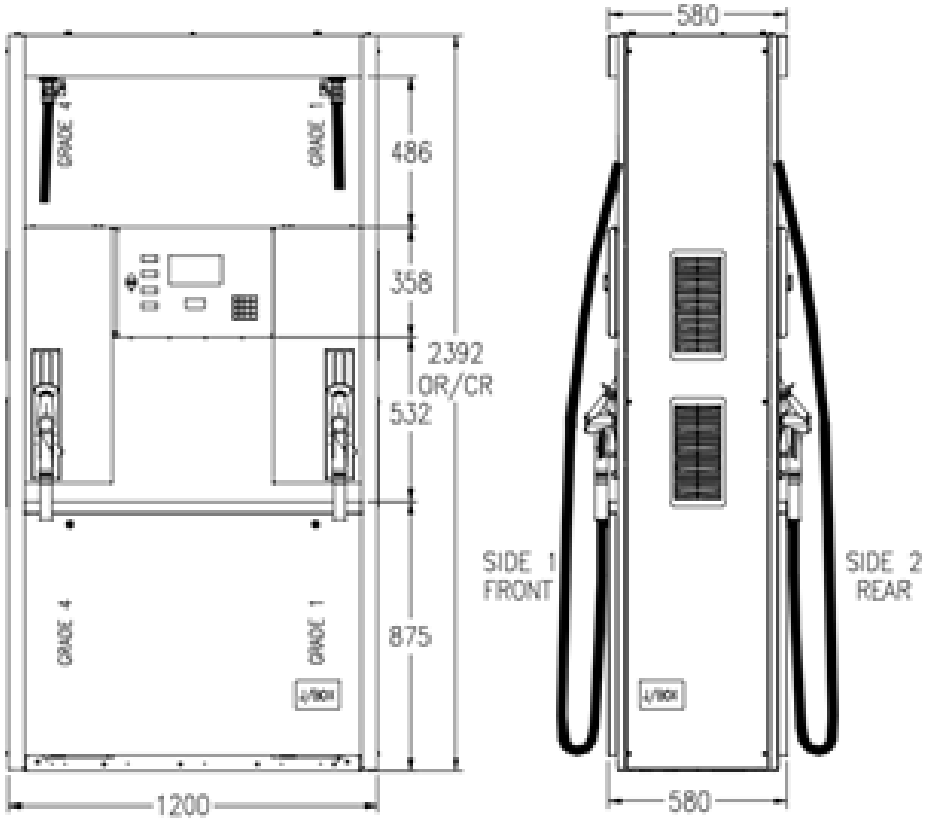


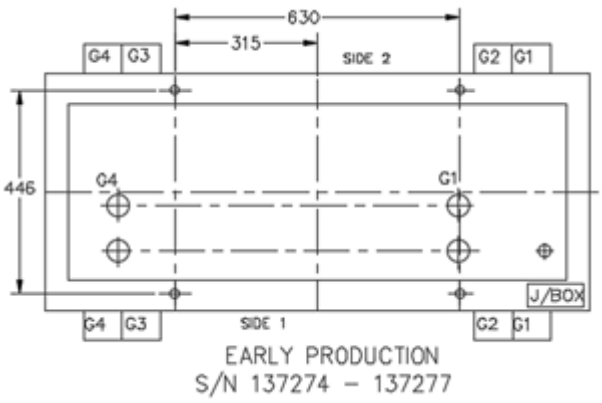


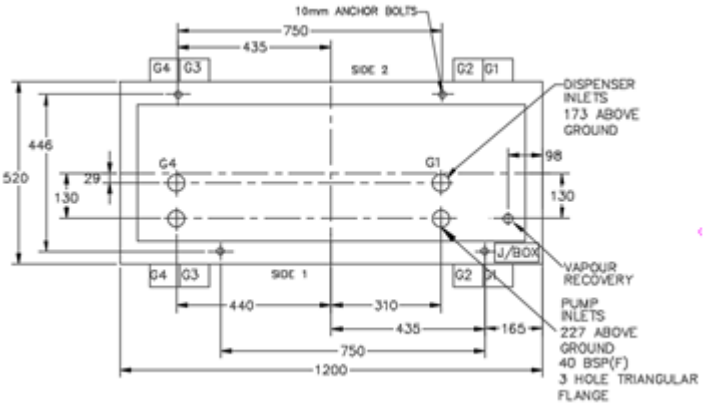
EARLY PRODUCTION
S/N 137274 – 137277



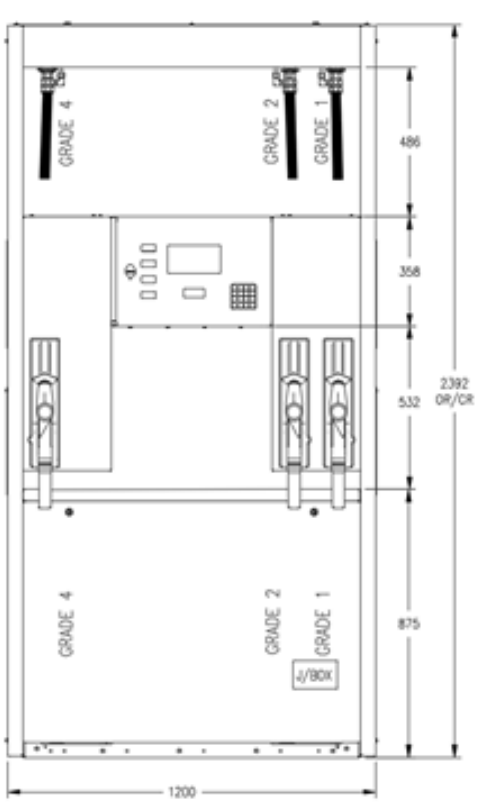
Overall Dimensions 2 Products, 4 Hose, Suction or STP

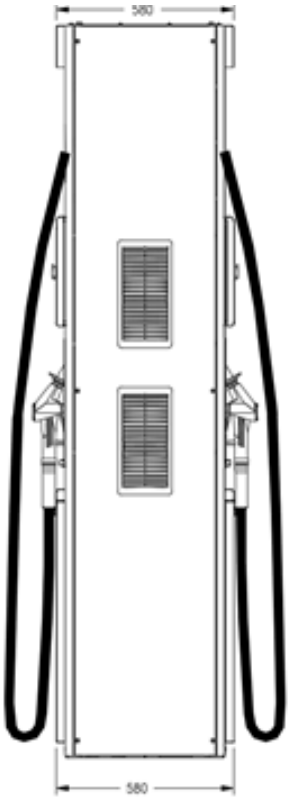


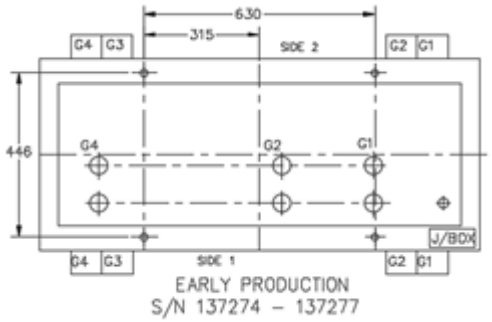


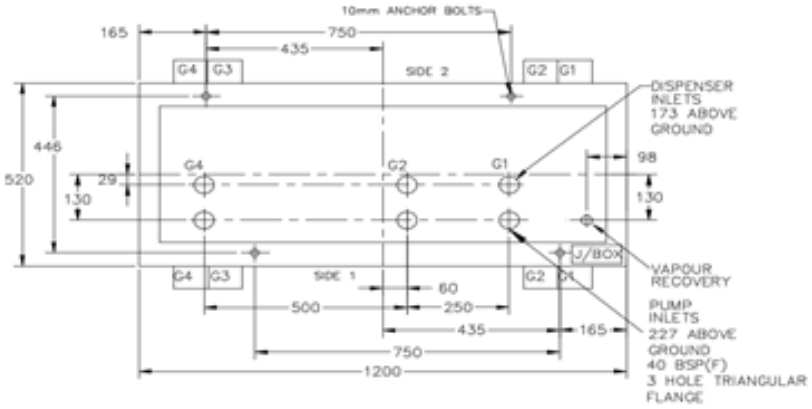


Overall Dimensions 3 Products, 6 Hose, Suction or STP

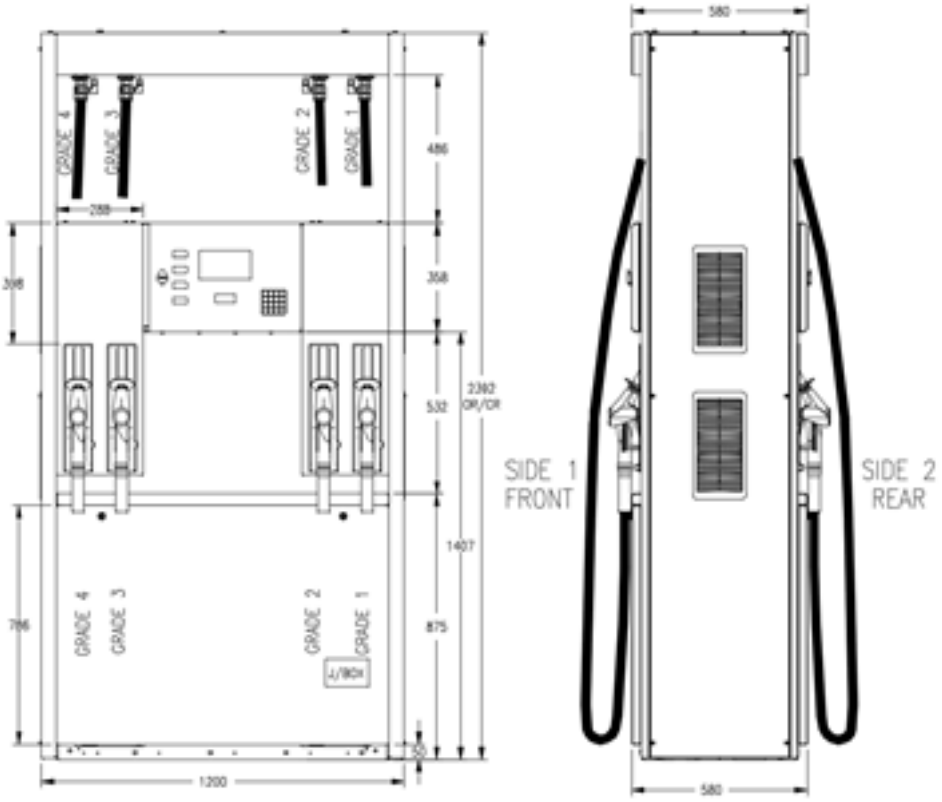


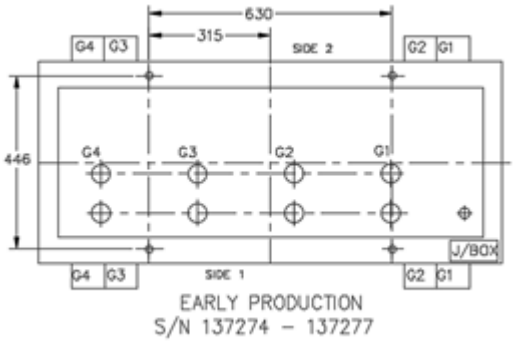


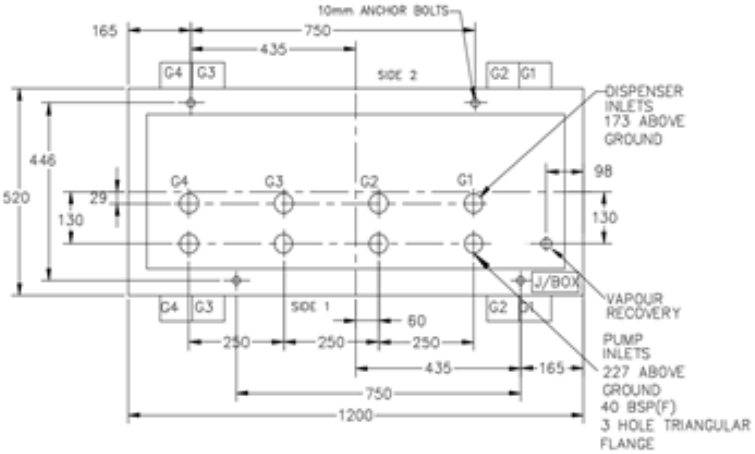




Overall Dimensions 3 Products, 6 Hose, Suction or STP

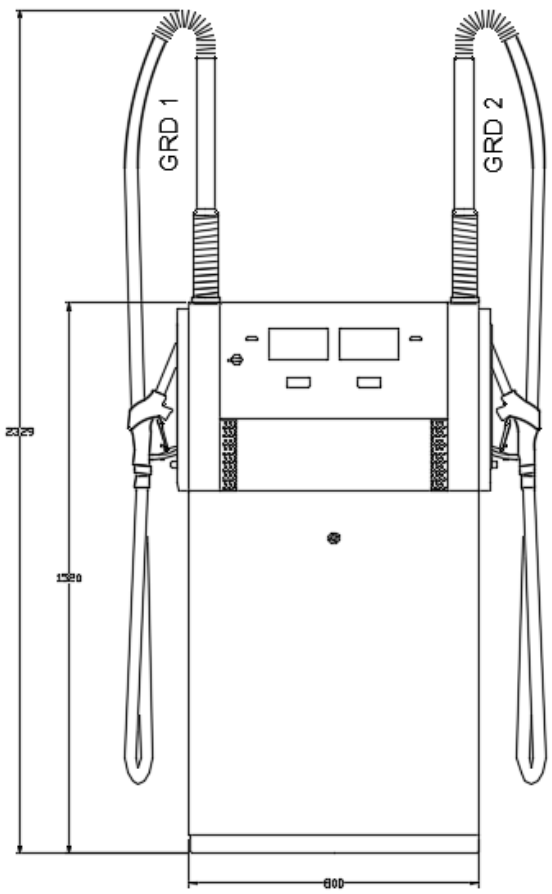


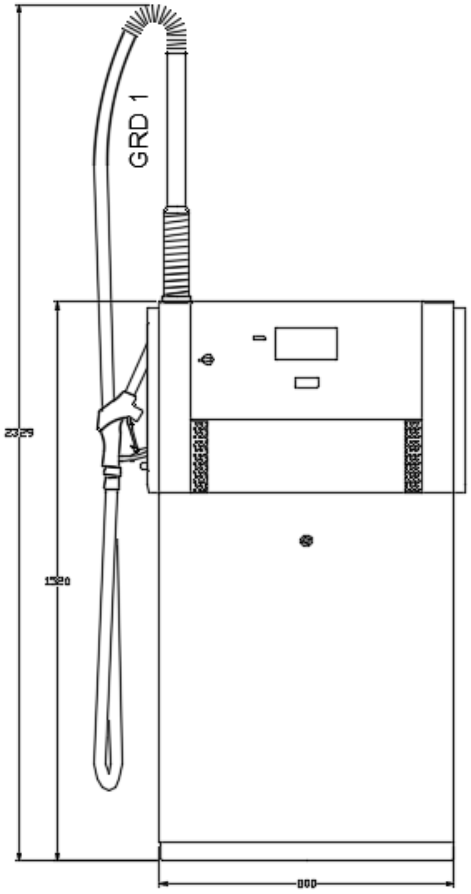


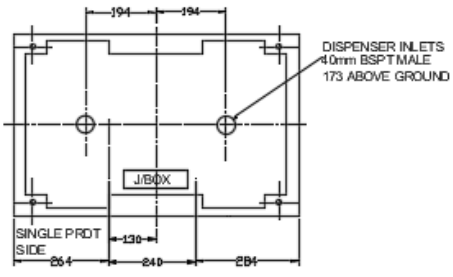


FRONTIER

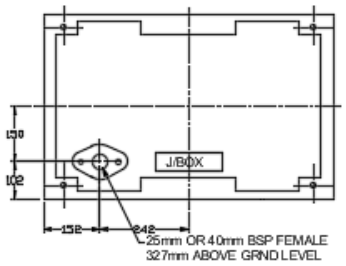
Overall Dimensions





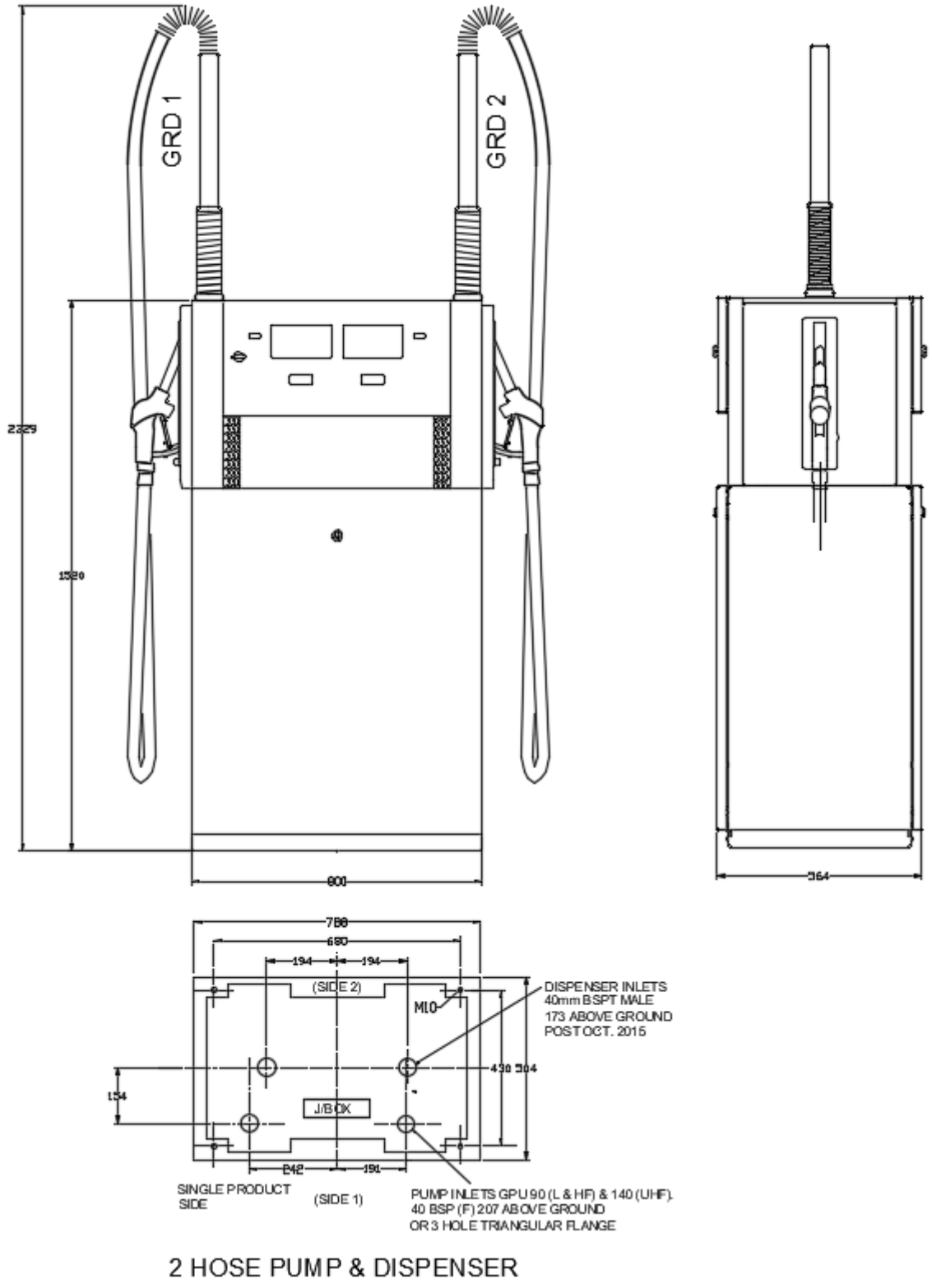


ULTRA HIGH FLOW



ADBLUE 1 HOSE

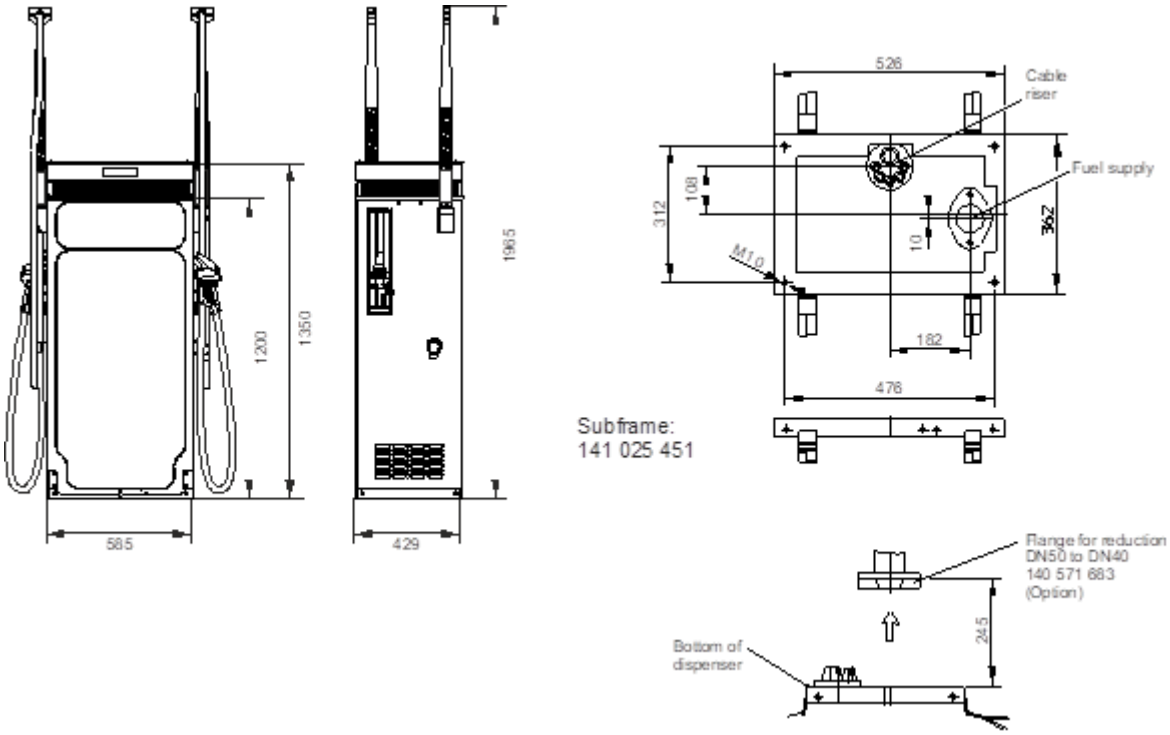
Overall Dimensions



2 HOSE PUMP & DISPENSER

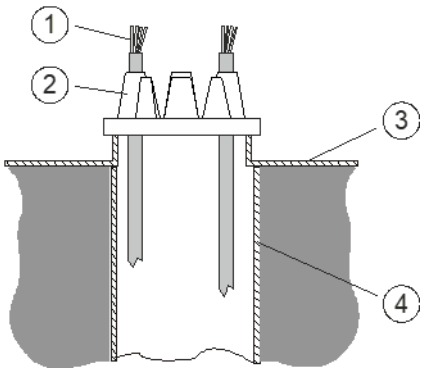
ENDURA

Overall Dimensions 1 Product, 2 Hose, Suction or STP

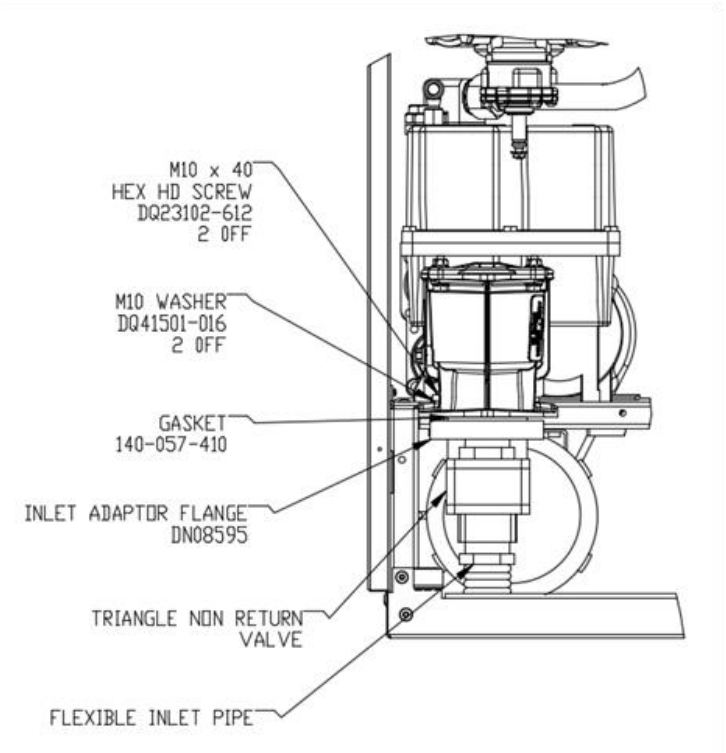


6.10 Installation cable routing

1) Cable
2) Cable feedthrough
3) Dispenser drip tray (Optional)
4) Cable duct

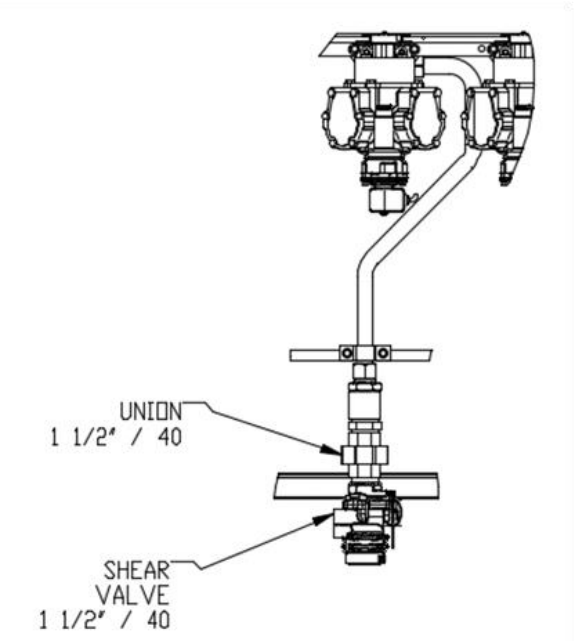


6.11 Typical Pipe connection for a Pump



Pipe to suit the site. Modification may be required such as unique fitting in order to meet Pump installation.

6.12 Typical Pipe connection for a STP



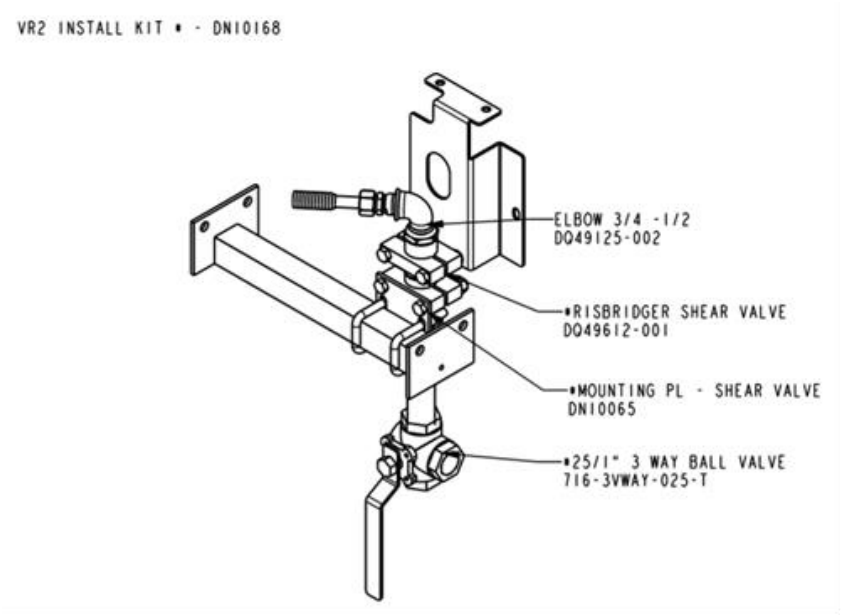
Pipe to suit the site. Modification may be required such as unique fitting in order to meet the STP installation.

6.13 Vapour Recovery Installation

VR2 Installation Kit is provided for piping. Refer to the following diagram for the contents of the kit.

A three-way ball valve is fitted under the dispenser so that during maintenance a Service Technician is protected from expelled vapours from other in-service dispensers when VR pipe works may be disconnected.

A Risbridger shear-valve that automatically closes the tank vapour connection in the event of the dispenser being struck by a vehicle – thus preventing vapour from being forced into a potential ignition source.



Risbridger VR Shear Valve

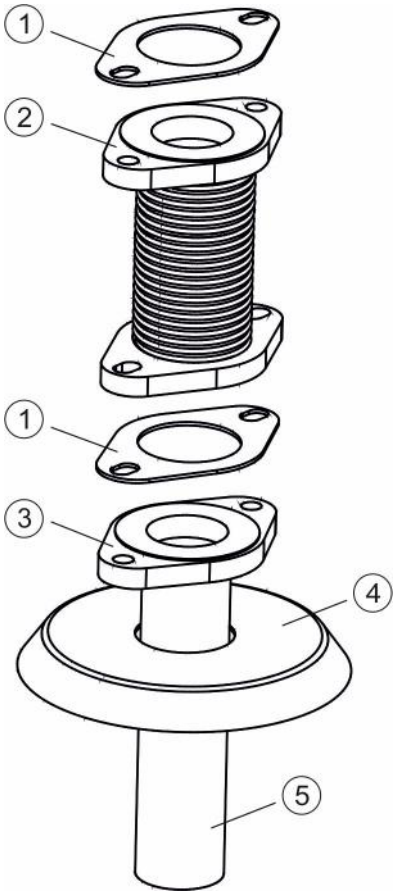
6.14 Suction line installation

Attention:
For delivery, the pump unit suction line connection is sealed with a plug. Remove it.

To ensure the maximum flow rate, a separate 2" suction line must be used for each pump unit to connect to the supply tank.

All dispensers are designed for the connection to 2” fuel lines.

1) Flange seal
2) Flexible fuel line connection (corrugated pipe with two flanges)
3) Flange with internal thread
4) Drip guard (for drip tray option)
5) Fuel line



- For drip tray option: Attach the drip guard as described previously.
- Apply a suitable thread sealant to the thread of the suction line (5) and screw on the flange (3) in such a way that the holes align with the holes of the filter bowl.
- Clean the sealing surfaces of the flanges (2,3).
- Place one flange seal (1) on the flange (3) and one on the upper flange of the corrugated pipe (2)
- Then carefully place the corrugated pipe (2) between the pipe flange (3) and the filter bowl of the dispenser. Make sure that the flange seals (1) are not moved.
- Screw the upper flange of the flexible corrugated pipe (2) to the filter bowl using M10 screws. Initially tighten the flange screws only hand tight.
- Screw the lower flange of the corrugated pipe (2) onto the flange (3) of the suction line using M10 screws.
- Tighten the M10 screws of the lower and upper flange connection (maximum torque: 20Nm).

6.15 Mounting the dispenser on the island (part 2)

- After the hydraulics have been connected and the dispenser is correctly positioned, tighten the foundation bolts to securely anchor the dispenser frame on the dispenser island.
- Remove the lifting device.

6.16 Electrical connection

Attention!
Before opening the display housing or the hydraulic covers of the dispenser, switch off the power supply of the dispenser in the electrical distribution panel and secure the corresponding isolator against being switched on again.

Before switching on the power supply of the dispenser, make sure that all junction boxes and housing parts are properly closed.

The breaking capacity of the fuse or the circuit breaker must not be less than 4000A. Ensure a current protection limit of a maximum of 16A for single-phase circuits and a maximum of 10A for three-phase circuits.

Electrical cables for installation must be petrol and oil resistant.

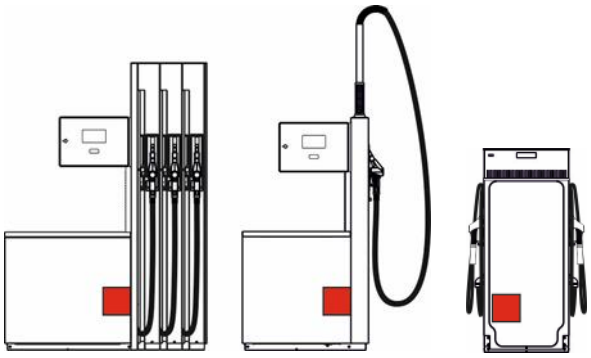
Observe the local and national provisions for cables and electrical installations.

The torque for the cable gland ring is 2.0 Nm. The cable diameter is 7 – 17 mm. For cables larger than 11 mm, the inner reducing ring in the cable gland must be removed.

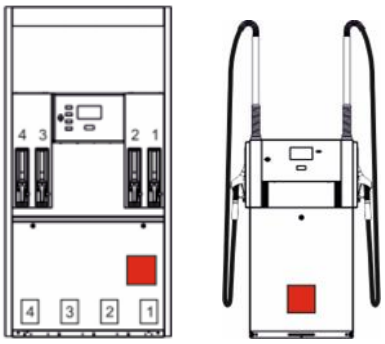
Connect the power supply line and if applicable the data line for the forecourt controller with the junction box X1 in the dispenser.

Position junction box X1

Junction box on side 2
SK700-2 & IOD & Endura



Junction box on filter side / side 1
Horizon-2 & Frontier



Please find detailed information concerning the electrical connection in the “Technical data” section of this document as well as in the wiring diagram of the dispenser.

Attention! Never switch on the power supply when the junction box is open!

6.17 Separate Power and Data Cable Connections

Ensure that all the necessary electrical cables installed comply to the National standards. It is recommended that for any new installations that Steel Wire Armoured (SWA) Cables are used and that the Power (2.5mm²) and Data (1.5mm²) Cables are separated within two Conduits, in keeping with AS/NZS Electrical and Cabling rules, AS/NZS 3000:2018.

JUNCTION BOX (ROSE) - PUMP

3 PHASE SUPPLY

400V-415V, 50Hz ± 2Hz
220V-240V, 50Hz ± 2Hz

POWER SUPPLY

PE - Main Earth
N - Neutral
L - Active
L1 - Phase 1 for Motor
L2 - Phase 2 for Motor
L3 - Phase 3 for Motor

1 & 2 - Pump Comms
5 & 6 - VR2 Comms

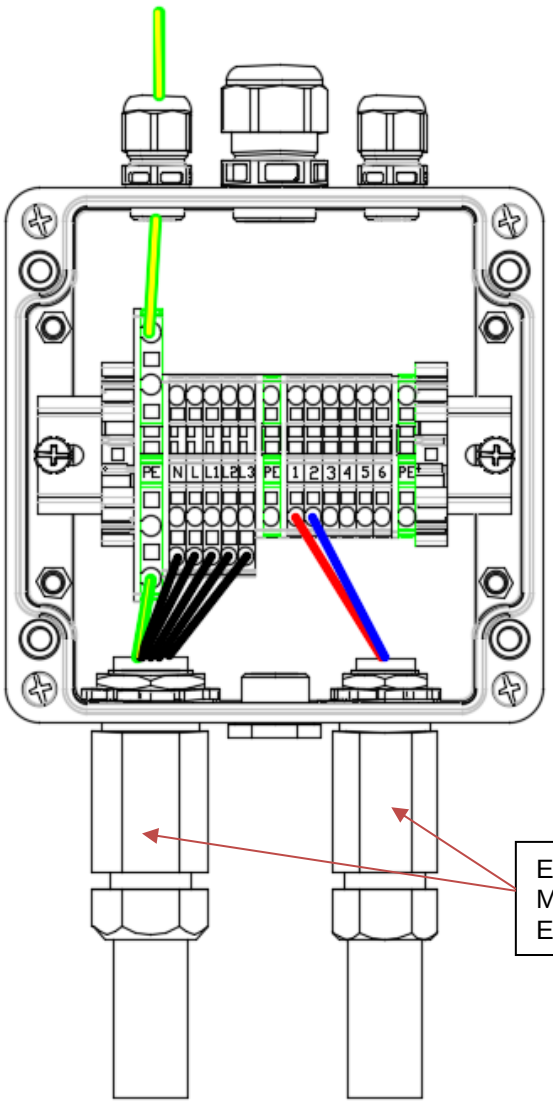
SINGLE PHASE SUPPLY

220V-240V, 50Hz ± 2Hz

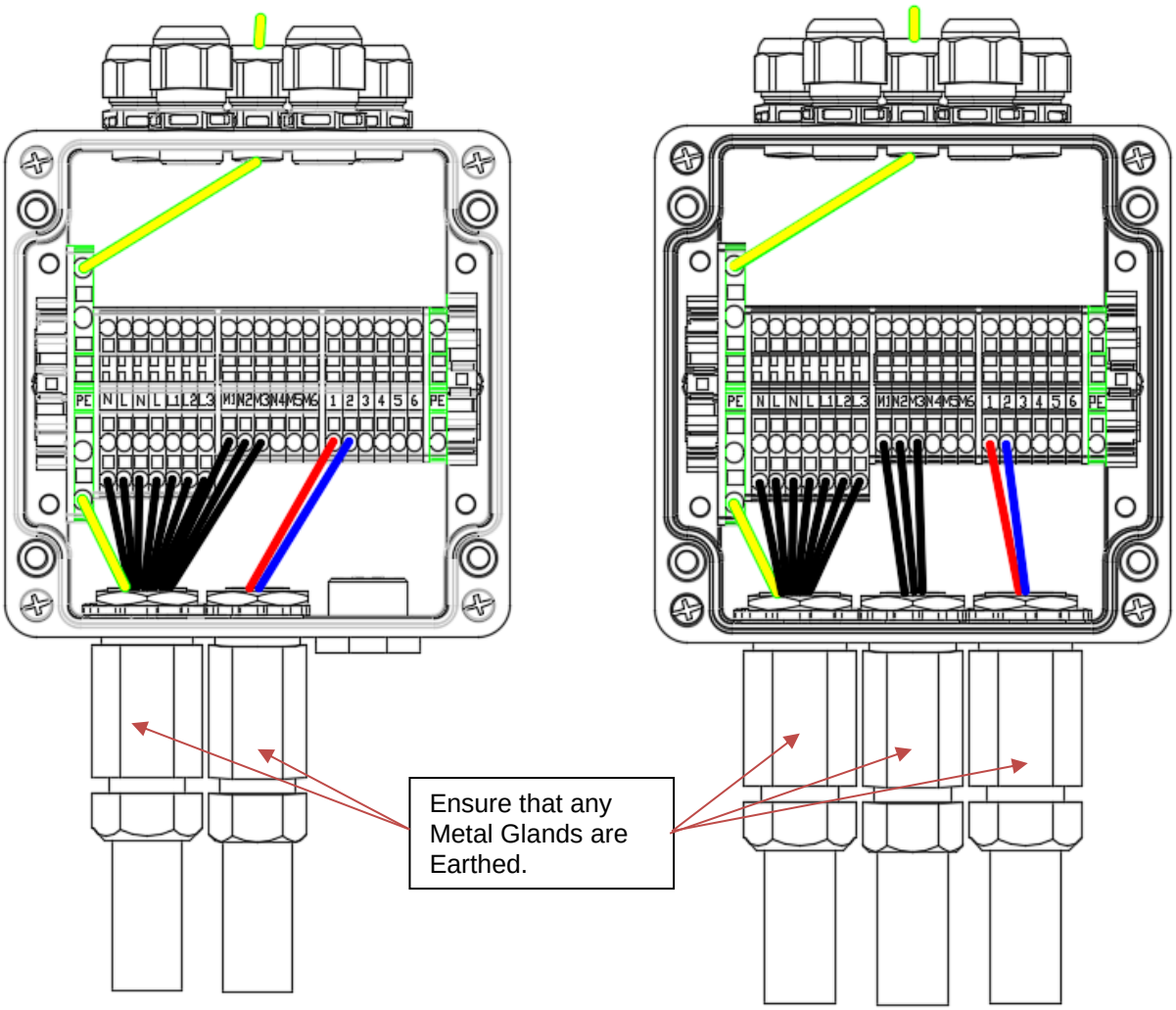
POWER SUPPLY

PE - Main Earth
N - Neutral
L - Active
L1 - Active 1 for Motor

1 & 2 - Pump Comms
5 & 6 - VR2 Comms



JUNCTION BOX (ROSE) – 2 GLAND AND 3 GLAND DISPENSER



<u>3 PHASE SUPPLY FOR STP & CRIND</u>

400V-415V, 50Hz ± 2Hz
220V-240V, 50Hz ± 2Hz

POWER SUPPLY

PE - Main Earth
N - Neutral
L - Active
L1 - Phase 1 for Motor
L2 - Phase 2 for Motor
L3 - Phase 3 for Motor
M1 - STP Grade 1
M2 - STP Grade 2
M3 - STP Grade 3
M4 - STP Grade 4
M5 - STP Grade 5

<u>SINGLE PHASE SUPPLY FOR STP AND CRIND</u>

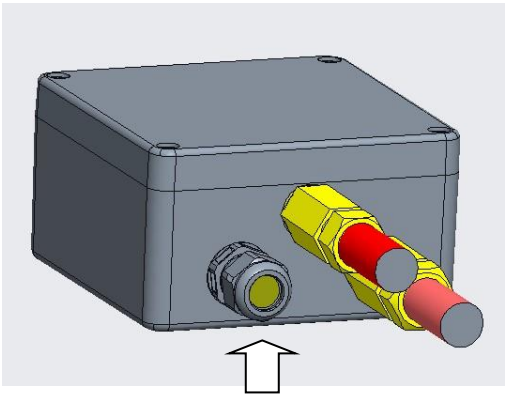
220V-240V, 50Hz ± 2Hz

POWER SUPPLY

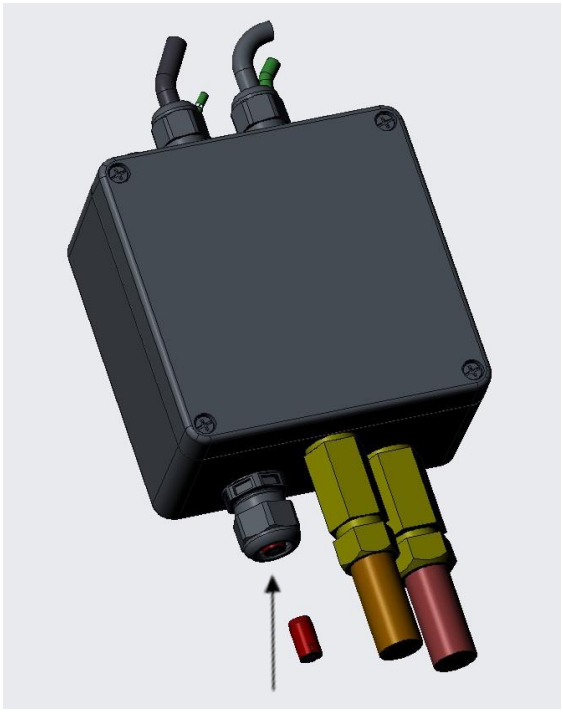
PE - Main Earth
N - Neutral
L - Active
L1 - Active 1 for VRC-Motor
M1 - STP Grade 1
M2 - STP Grade 2
M3 - STP Grade 3
M4 - STP Grade 4
M5 - STP Grade 5

Ensure unused plastic cable glands are plugged with approved 12mm plug.

Gilbarco 12mm plug.
Part # 140-762-796



Gland with YELLOW DUST SEAL.
This is not a Gas Seal.



Remove existing Dust Seal & fit 12mm Plug & tighten securely.

6.18 Final work and tests

- ✓ Drip guard must be attached as described previously.
- ✓ Hydraulic lines must be leak-free.
- ✓ Ensure all Hose and Nozzle connections are tight before energising the Pump and testing with Fuel. Safe breaks (optional) must be fully connected.

Junction box:

- ✓ All unused cable glands must be sealed with a suitable blanking plug (Ex e and protection class IP54).
- ✓ All cable glands must be secured tightly.
- ✓ Attach the cover to the junction box.

7 Commissioning

7.1 Preparing work for commissioning

Attention!
Before opening the display housing or the hydraulic covers of the dispenser, switch off the power supply of the dispenser in the electrical distribution panel and secure the corresponding isolator against being switched on again.

Before switching on the power supply of the dispenser, make sure that all junction boxes and the display housing are properly closed.

Attention!
Risk of injury during work with V-belts!

Checking direction of rotation of the motors (when operating with three-phase current)

1) Before switching on the dispenser, first remove the V-belts from the motors in order to avoid damage to the pumps if the motors rotate in the wrong direction.
2) Switch on the power supply of the dispenser and check the direction of rotation of the motors. The V-belt pulleys of the motors must turn clockwise!
3) If the motors rotate in the wrong direction, switch off the power supply of the dispenser in the electrical distribution panel and secure the corresponding disconnector against being switched on again.
4) Swap phases 2 and 3 in the junction box.
5) Switch on the power supply of the dispenser and check the direction rotation of the motors again before remounting the V-belts.
6) Remount the V-belts.

Checking the V-belt tension
The V-belt tension is correct when the V-belt can be pushed inwards by hand through 10-15 mm.

Mounting the dispenser housing
Finally, mount all removed panels on the dispenser.

Attention!
When mounting the panels, also reattach the earth bonding conductors!

7.2 Filling dispenser hydraulics

After a function check and a test run, the dispenser leaves the factory ready for operation, so that commissioning can start after installation at the place of operation and after inspection by the expert.

1) Take the manager keypad out of the display housing and close the display housing carefully so as not to damage the keypad flat cable.
2) Make sure that all junction boxes and hydraulic panels are closed.
3) Switch on the power supply in the power distribution.
4) Provide suitable test containers for collecting the fuel.

5) Fill the dispenser hydraulics with fuel as follows (Note the refuelling instruction)

Attention! First open the lid of the filter bowl and fill the filter bowl and the suction line with fuel. Close the lid of the filter bowl.
Note: The fuel dispensed when filling the hydraulics may contain test liquid residues and preservatives and is therefore not suitable for vehicles.

- Lift the nozzle and insert the spout into the opening of the fuel testing containers.
- Wait prior to opening the nozzle. The air drawn in is separated by the gas separator and is audible as it is extracted via the vent pipe in the pumping unit. The pumping unit is now gradually filling with fuel.
- Now partially open the nozzle carefully, and gradually continue to open and dispense until the fuel flows out of the nozzle in a smooth, gas-free jet.
- Dispense at least 20 litres (each hydraulic module).
- Close the nozzle and remount it in the nozzle boot.
- Carry out the described steps for each nozzle.

6) Dispose of the dispensed fuel properly.

7) 

Attention!

Perform the following tests:

- Check the hydraulic modules for leaks.
- Check all the nozzles for correct automatic cut-off operation.
- For dispensers with forecourt controller, after activating the calculator parameter for the online control, check the correct transfer of refuelling data.
- Check that all Weights and Measures seals are intact by reference to the sealing plan.

7.3 Changing the filter elements

Dirty filter elements reduce the pumping performance. Arrange for the pressure filter elements to be changed one month after dispenser installation by a service technician.

7.4 Above-ground storage tank connection

Gilbarco dispensers are designed for connection to underground storage tanks. If you intend to operate the dispenser on an above-ground storage tank, specially modified pumps must be used. In addition, measures are required to ensure that fuel cannot spill out in the event of a leak.
The requirements of refuelling systems with above-ground storage tanks vary from country to country and each must be checked and implemented by a specialist company.

7.5 Measuring accuracy check and vapour recovery adjustment

- Check the measuring accuracy by means of a prover can at maximum flow on each hose.
  In case of a measurement error of greater than 0,5%, adjustment by a service technician and checking by an appointed authority or verification body will be necessary.
- Check the hydraulic lines again: There must not be any leaks!
- Vapour recovery (if fitted) must be tested and adjusted to operate correctly under site conditions when the dispenser is installed. Please find further information in the chapter “Vapour Recovery“.

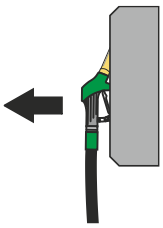
8 Refuelling instruction Petrol & Diesel

Attention! Observe the safety instructions at the beginning of this manual!

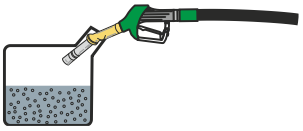
1) Switch off the engine and any auxiliary heating. Apply the hand brake.

2) Refuel only approved tanks/containers!

3) Lift the nozzle for the desired fuel out of the nozzle boot. The price per unit (PPU) is shown on the display.

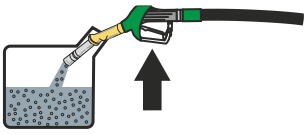


4) Insert the nozzle spout deep into the filler neck so that the nozzle is secured against slipping out. The nozzle spout must be inclined downwards to make possible the refuelling process.



5) Dispensers can optionally be equipped with flowrate selection or a preset amount keypad.

6) Pull the lever of the nozzle. The flow can be regulated by adjusting the position of the lever.

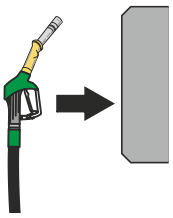


Note:

- Vehicle tanks with an unfavourable design of filler neck or poor ventilation can cause the nozzle to switch off prematurely or fuel to spray out. In such cases, adjust the filling speed accordingly.
- Nozzle hold-open device option
  Nozzle hold-open devices must be equipped with a release mechanism and may only be used under supervision. Observe the respective national requirements as some countries do not allow hold open devices on typical self-service petrol stations. The release mechanism is not necessary for DSA nozzles (DSA = pressure-controlled safety shut-off).

7) End the refuelling process by releasing the lever.
Note: The nozzle closes automatically when the maximum filling level of the tank is reached. When refuelling with preset, however, the refuelling process is ended when the preset fuel volume or money amount is reached.

8) Take the nozzle out of the filler neck and remount it into the nozzle boot of the dispenser.



9) The refuelling data is transmitted to the forecourt controller.

9 Meter calibration

The dispenser is calibrated in the factory prior to delivery. Check on site the measuring accuracy of all meters and recalibrate if necessary. Only one calibration switch may be opened at any one time for calibration. The calibration switch assignment can be called up via parameter 76.3 (see description later in this document). To calibrate the dispenser, the sealing (e.g. GVR mark) must be broken to open the calibration switch.

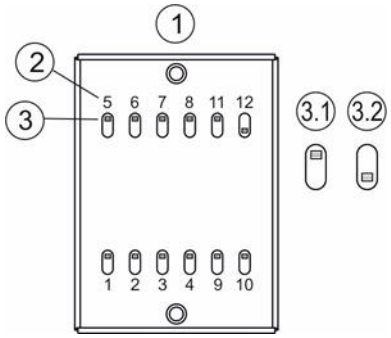
Notes on high-flow dispensers:
In dispensers with a high-flow module, two (at 120l/min) or four (at 200l/min) meters are operated in parallel. Calibrate each meter individually by opening the calibration switch of only one of the two measuring units for calibration at a time.
For dispensers with truck and car hoses, calibrate only at the truck nozzle (120 litres/min.).
After calibration, however, check the dispensing accuracy of both nozzles (truck and car) separately.

9.1 E-Cal Board

1) E-Cal Board with housing

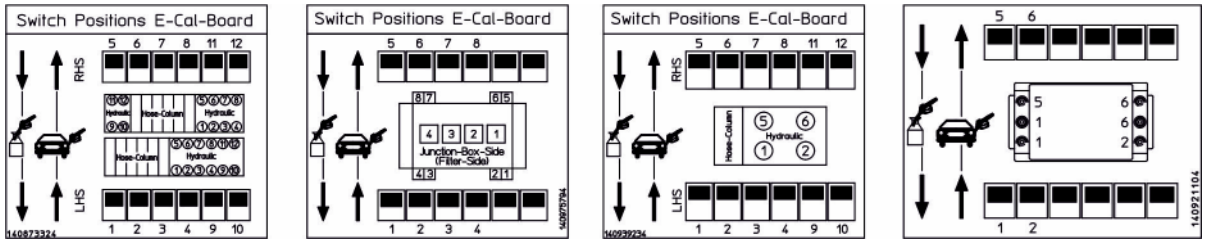
2) Meter numbers

3) Calibration switch
3.1) closed
3.2) open



Calibration switch assignment for the following dispenser types:

SK700-2 Horizon-2 IOD Frontier



Dispenser side	120 litre dispenser	120 litre module (separate hydraulic module)	200 litre dispenser
1	Switches 1 and 5	Switches 9 and 11	Switches 1, 2, 5, and 6
2	Switches 2 and 6	Switches 10 and 12	/

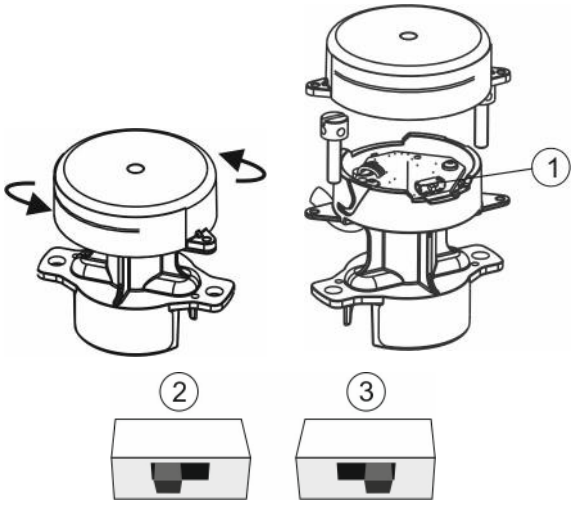
9.2 SIP II Pulser

In dispensers whose meters are equipped with SIP, there is no E-Cal Board. The calibration switch is located on the SIP. All functions, such as calibration or test refuelling, work in the same way as described for the E-Cal Board.

1) Calibration switch

2) Calibration switch, normal operation

3) Calibration switch, calibration mode



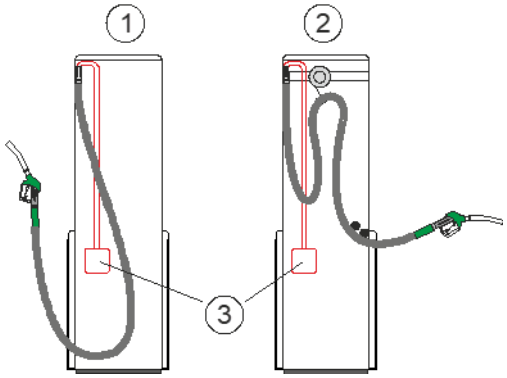
9.3 Meter - hose assignment

In dispensers with cord retract, the meter is located on the opposite side of the dispenser to the corresponding nozzle.

1) Dispenser without cord retract (OR)

2) Dispenser with cord retract (CR)

3) Meter



9.4 Parameter 76.1: Calibration refuelling

The Manager Keypad is on the inside of the display housing. The table below shows information for the key definitions and use.

Keys	DEFINITION / USE
0 - 9	Numeric values
F1	Function 1 - Used to start dispenser programming and sequence among-programming and function codes.
F2	Function 2 - Used to exit programming mode.
$ TOTAL	Money Totals - Used to display money totals by side and grade.
VOL. TOTAL	Volume Totals - Used to display volume totals by side and grade.
ENTER	Value entry keys - Sends the entered value to the pump.
CLEAR	Clear key - Used to clear the last key pad entry, and exit money and volume total mode.

1) Set calibration switch on E-Cal Board or SIP to calibration mode.

2) Enter the parameters CC 76 and FC 1 (For more information on parameter entry, see the annex "Calculator configuration manual"). Then six dashes start flashing on the volume display.

Amount						
Volume	-	-	-	-	-	-

PPU				

3) Lift the corresponding nozzle and fill the prover can. On the display appears the following (example):

Amount	E	C	A	L			
Volume	0	0	1	2	3	4	**Pulser**

PPU				

4) After the delivery process, remount the nozzle into the nozzle boot. Then zeroes start flashing in the volume display.

Amount						
Volume	0	0	0	0	0	0
PPU						

5) Read off the actual delivered volume from the prover can and enter the value with three decimal places (example 20.000 litres actual delivered volume)

Amount						
Volume		2	0	0	0	0
PPU						

6) Confirm with ENTER. Now the “76“ and the “1“ appear again in the amount display and you can continue the calibration at the next nozzle.

7) To quit, deactivate the switch on the E-Cal Board or SIP and press “F2“.

Note: The volume delivered during a calibration is not included in the volume totalizers.

9.5 Parameter 76.2: Read and/or write calibration factor

Amount	7	6		2	meter no.	meter no.
Volume	calibration factor	calibration factor	calibration factor	calibration factor	calibration factor	calibration factor
PPU						

1) Calibration switch: closed

2) Enter the parameters (CC 76 and FC 2). Then select the meter number “1” – “12”.

Amount	7	6		2		1
Volume						
PPU						

3) Now you can read the calibration factor in the volume display (in example 1,54).

Amount	7	6		2		1
Volume	1	5	4	0	0	0
PPU						

9.6 Parameter 76.3: Calibration switch assignment

Amount	7	6		3		
Volume			state display E-Cal Board			meter number
PPU						

1) Enter the parameters (CC 76 and FC 3). Lift any nozzle.

   Now you can see, which meter numbers are assigned to the hoses and if the corresponding calibration switches are open or closed (state display E-Cal Board - Switch: 0 = closed, 1= open).

   Example: switch closed, meter number 1

Amount	7	6		3		
Volume			0			1
PPU		0			5	

Attention! The state only changes, when the nozzle is remounted and lifted again.

9.7 Parameter 76.6: Read out the SIP serial number

Amount	serial no.	serial no.	serial no.	serial no.	serial no.	serial no.
Volume	serial no.	serial no.	serial no.	serial no.	serial no.	serial no.
PPU						

1) Calibration switch: closed
2) Enter the parameters (CC 76 and FC 6). Select a meter number “1” – “12”.

Amount	7	6		6		**1**
Volume						
PPU						

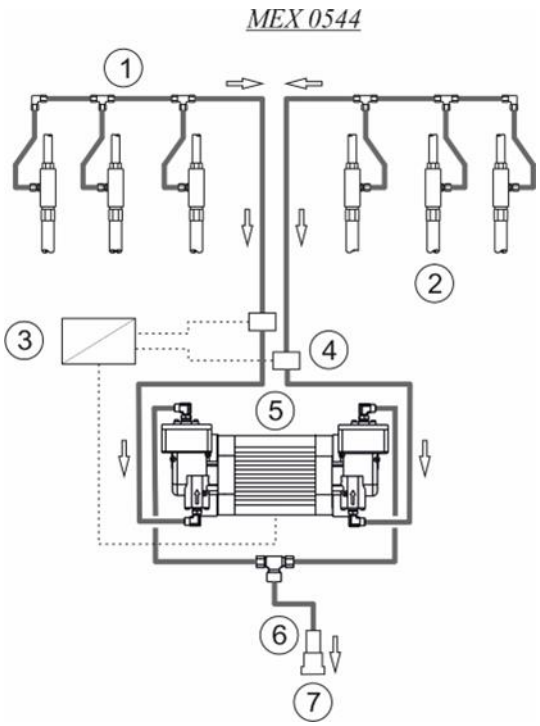
3) Now you can read out the SIP serial number (12-digit serial number, devided onto amount and volume display)

10 Vapour recovery

10.1 Overview vapour recovery systems

MEX 0544 pump:

- constant speed pump
- recovery rate control by solenoid valves



1) Vapour recovery lines to the individual hoses. The arrows indicate the vapour flow direction.

2) Coax hose

3) Vapour recovery controller

4) Solenoid valves

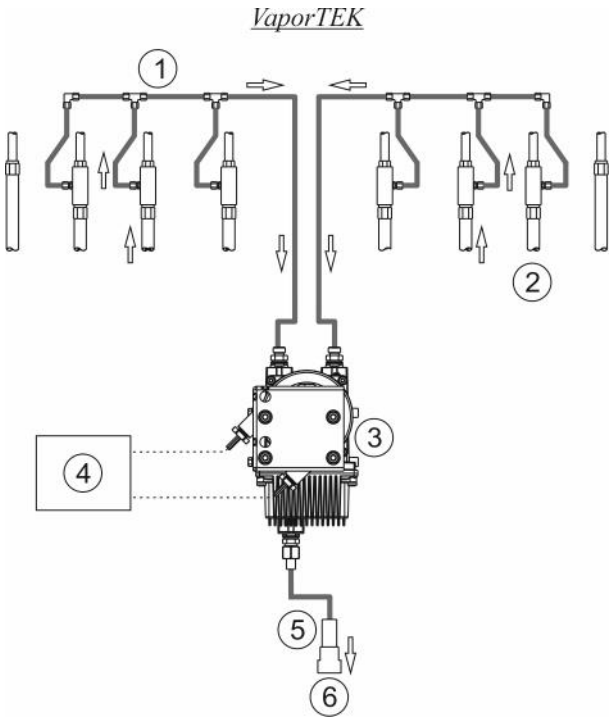
5) Motor with vapour recovery pumps

6) Insulating piece

7) Sleeve for connection to the vapour recovery tank (option)

VaporTEK pump:

- Speed-controlled vapour pump for 2-side operation



1) Vapour recovery lines to the individual hoses. The arrows indicate the vapour flow direction.

2) Coax hose

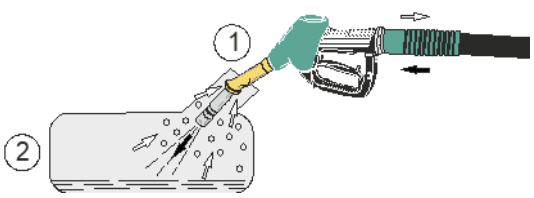
3) Vapour recovery pump

4) VTEK controller

5) Insulating piece

6) Sleeve for connection to the vapour recovery tank (option)

10.2 Vapour recovery nozzle function



1) Vapour nozzle spout

2) Vehicle fuel tank

The white arrows symbolize the gas flow direction, the black ones the fuel.

10.3 Vapour recovery adjustment

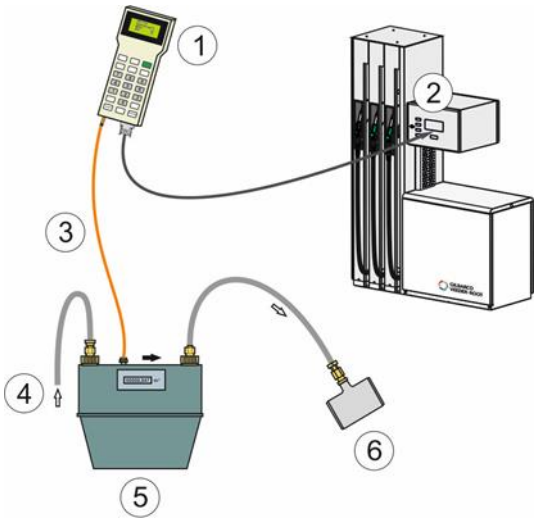
The vapour recovery system is tested prior to delivery and must be adjusted once the dispenser is installed on site.

Unless local regulations specifically require a “wet test”, carry out an auto adjustment with the FB1 service terminal using the dry test method (without fuel delivery) according to EN 16321-2. This is necessary to adapt the vapour recovery system to the specific site conditions. The purpose of the adjustment is to ensure that the minimum amount of vapour escapes to the environment when refuelling.

Attention! Ensure that the FB1 service terminal and gas meter are not operated within an explosion hazardous zone!

Vapour measuring circuit installation

Connect the service terminal (1) to the service plug (2) and connect the service terminal (1) to the dry gas meter (5) (Impulse line (3)).



1) FB1 service terminal

2) Service plug in display housing

3) Impulse line

4) Air inlet

5) Dry gas meter (take into account the flow direction and the calibration factor)

6) Vapour flow nozzle adapter with air hose DN10

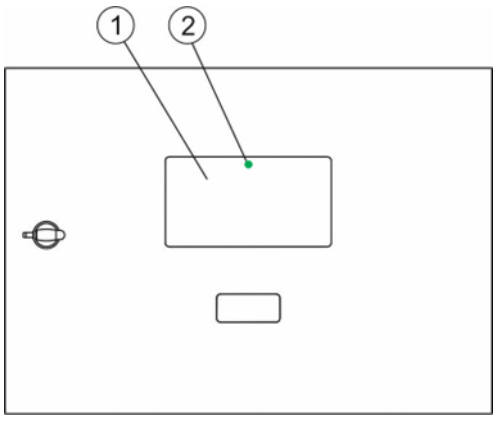
Please find further information about the operation of the FB1 service terminal in the corresponding instructions, delivered with the service terminal.

10.4 Vapour Recovery Monitoring System (Option)

If the vapour pump is equipped with an automatic vapour recovery monitoring system, the recovery rate of the vapour recovery is evaluated after each refuelling.

If the recovery rate is outside the performance requirements, the vapour recovery monitoring system will record an error. If an error is registered in ten consecutive refuellings, the nozzles with vapour recovery on the affected dispenser side will be automatically deactivated after 3 to 7 days (subject to national requirements).
The status of the vapour recovery monitoring is either signaled by an LED behind the amount display of the dispenser or on the associated POS system. If a fault is signalled, inform a service technician to check the vapour recovery system and to reset the error signal.

LED behind amount display



1) Dispenser display
2) LED

The following states are possible:
Green = Vapour recovery system works properly
Yellow = An error is registred in ten consecutive refuellings and the affected nozzles will be automatically deactivated after 3 or 7 days.
Red = The affected nozzles have been deactivated by the vapour recovery monitoring system.

LED on POS system

For information on how the status of the vapour recovery monitoring system is displayed on the POS system, please refer to the operating manual of the POS system.

11 Programming Codes and Modes of Operation

Set Pump Numbers

Level 2 – Command Code 40

Security Code: 1503 (for level 2 programming)
Command code 40 is entered in level two programming to access 2-Wire parameters.

The layout and digit position meaning for this programming feature is shown below.

PPU ☐ ☐ ☐ ☐

$	4	0				Func-tion Code
Volume						

The table below shows the function codes available for this command code.

FUNCTION CODE	2-Wire parameters
1 – DEFAULT	Pump ID number

Set 2-Wire ID – Function Code 1

Function Code 1 is entered to set the pump ID number. The address range is 1 to 16. The pump side ID values are currently A = 7 and B = 11.

The layout and digit position meaning for this programming feature is shown below.

PPU ☐ ☐ ☐ ☐

$	4	0				1
Volume				Pump Side	Pump ID	Pump ID

The table below shows the available options for this command code.

PUMP SIDE	SIDE CODE	ID
A	1	XX
B	2	XX

The example below assigns pump side B address 8.

Keypad: 40– set 2-Wire command

PPU						
$	4	0				
Volume						

Keypad: ENTER

PPU						
$	4	0				1
Volume						

Keypad: ENTER– set Pump ID number

PPU						
$	4	0				1
Volume				1	0	7

Keypad: 2 – select side B

PPU						
$	4	0				1
Volume				2	0	7

Keypad: ENTER

PPU						
$	4	0				1
Volume				2	1	1

Keypad: 8 – enter address 8

PPU						
$	4	0				1
Volume				2	0	8

Keypad: ENTER

PPU						
$	4	0				1
Volume				2	0	8

The F1 key will allow additional programming or the F2 key may be used to exit programming.

Set Mode of Operation

Level 1 – Command Code 24

Security Code: 2222 (for level 1 programming)

Command code 24 is entered in level one programming to set the dispenser operating mode.

The operation mode setting determines how the dispenser is controlled remotely or if it operates in Stand Alone mode.

The available choices for operation mode setting are shown below. The DEFAULT is corporate 2-Wire mode.

The layout and digit position meaning for this programming feature is shown below.

PPU						
$	2	4				**Operation Mode**
Volume						

The table below shows the available options for this command code.

OPTION	OPERATION MODE
1- DEFAULT	2-WIRE Corporate (USA) protocol
2	STAND ALONE
9	2-WIRE AUST protocol 1
10	2-WIRE AUST protocol 2

The example below shows the sequence and displayed values for setting the dispenser for standalone operation.

Keypad: **24** – set mode of operation

PPU						
$	2	4				**Operation Mode**
Volume						

Keypad: **ENTER**

PPU						
$	2	4				1
Volume						

Keypad: **2** – select Standalone mode

PPU					

$	2	4				2
Volume						

Keypad: **ENTER** – Accept

PPU					

$	2	4				2
Volume						

The F1 key will allow additional programming or the F2 key may be used to exit programming.

Note:

1. To set to operate in Self-Serve mode with 2-Wire communications using either Corporate (USA), Australian Protocol 1 or Australian Protocol 2, the above action step that selected “2” are replaced with selection of 1, 9 or 10 respectively.
2. Initial software supplied with SK700-2 pumps do not support options to select 9 or 10.

12 Maintenance instructions

12.1 Before starting work

For certain maintenance work it is required to restrict public access to the dispenser and/or isolate the dispenser from the electrical power supply. In the maintenance tables below these respective necessary safety measures are marked with following symbols:

 Isolate dispenser from electrical power supply

 Restrict public access to the dispenser

12.2 Checks and actions to be carried out by the station operator

X = required

Equipment			Checks and actions	Interval				
				every			every…months	
				day	week	month	3	6
Forecourt illumination			Check function, if necessary replace lamp	X				
Complete dispenser from the outside			Tightness (fuel leaked on the forecourt)	X				
			Intactness (mechanical damage)	X				
			Clean (see reference 1)		X			
Nozzles			In the morning, lift the rarely used nozzles to fill unused hoses (see reference 2)	X				
			Tightness, intactness, function		X			
Hoses			Tightness, intactness		X			
Safe breaks			Tightness, intactness		X			
Marking, labelling			Presence, readability		X			
Pumping unit			Flush to avoid locking of internal hydraulics, if dispenser has not been in operation for a longer period				X	
Hose Retract			Check function					X
Outlet openings in dispenser frame	X	X	Free, clean outlet openings, if necessary clean the outlet openings in order that liquid can drain off outwards			X		
Hydraulics	X	X	Check complete hydraulics (pumps, meters and pipelines) for leakages			X		

Reference 1 - Cleaning

Clean your dispenser at regular intervals (recommended: weekly), but immediately in case of considerable contamination by fuel or other aggressive media to ensure the qualitative appearance and corrosion protection.

Attention:

Never use fuel, thinners or strong alkaline cleaning agents, but only cleaners approved by GVR.

Never use abrasive cleaning aids such as steel wool or wire brushes, but only damp cotton or leather cloths.

Do not use the direct jet of a water hose or high-pressure cleaner, but only damp/soaked cloths.

Observe safety instructions of any special cleaner.

Nameplate/Adhesive foils:

- Only wipe adhesive foils with lukewarm water.
- Be careful when cleaning the nameplate with CEM or verification marks! Always clean them from the inside out so that the corners and edges do not become detached.
- As a precaution, cover the name plates when using special cleaners.

Powder-coated and painted surfaces:

- Clean coated surfaces with mild soapy water or a special cleaner (recommendation: PUDOL). Use this special cleaner only up to a maximum surface temperature of 25°C and make sure that the contact time does not exceed 15 minutes. Then wash the treated surfaces with clean water and wipe off with a damp, soft cloth as soon as possible to avoid stains.

Stainless steel surfaces:

- Clean and preserve stainless steel surfaces with WD40 or a comparable multi-purpose spray.
  To do this, apply the multi-purpose spray to a cotton cloth and rub it in extensively. The protective film left behind does not need any after-treatment.

Cleaning of the inside of the dispenser

- Only service technicians should carry out the cleaning of the inside of the dispenser (See maintenance instructions).

Reference 2 – "Clocking-up" on Dispensers caused by permeation

The idle time of rarely used nozzles can lead to "clocking-up" on the display before fuel/fluid is actually dispensed when the nozzle is lifted for the first time in days. The standards EN13617, EN1360 and EN13483 indicate a maximum hose permeation of 12ml per meter per day. Based upon this, the maximum possible fuel/liquid loss in the hose within 4 days is 225,6ml (see calculation example in table):

Fuel loss caused by permeation (12ml/meter/day)		
Day	Hose length 3,3m	Hose length 4,7m
1	39,6ml	56,4ml
2	79,2ml	112,8ml
3	118,8ml	169,2ml
4	158,4ml	225,6ml

If any more than this occurs on a Suction pump, check the Dispenser for "drain-back". Where a Foot Valve is not sealing correctly, fuel can drain back to the tank. Check the valve for foreign matter and correct alignment.

Recommendation: Every 24 hours, start a delivery of the rarely used grades. To do this, lift each nozzle in the morning (without opening the lever), authorize from the forecourt controller, and allow a few seconds to refill the unused hose before replacing the nozzle in its boot. This should avoid customer complaints.

12.3 Checks and actions by service technicians

X = required

Equipment			Checks and actions	Interval (in years)			
				1	2	3	10
Hoses incl. nozzles	X	X	Check electrical resistance between nozzle outlet pipes and equipotential bonding (R<1MOhm)	X			
Nozzles		X	Check minimum switch off and ball-tilt safety device	X			
Meter		X	Check measuring accuracy, calibrate the meter if necessary	X			
Heating			Check function	X			
Pumping unit		X	Measure feed pressure (max. 3,5 bar), set circulation pressure if necessary	X			
Residual Current Protective Device (RCD)		X	Check function	X			
Vapour recovery pumps	X	X	Check for external contamination, if necessary clean the cooling fins with a damp cloth	X			
			Check flame arresters for contamination and corrosion	X			
			Check rubber element of the couplings for damage and abrasion	X			
Vapour recovery system	X	X	Check tightness of vapour recovery system inside the dispenser and pipe connection	X			
Suction filter		X	Check flow rate	X			
	X	X	Recommended: Replace suction filter, not only in case of failure	X			
Pressure filter		X	Check flow rate	X			
	X	X	Replace pressure filter, not only in case of failure Recommended: yearly; necessary: every 2 years	X	X		
Gas separator	X	X	Check function of gas separator, replace the pump if necessary		X		
Electric lines / cables, cable glands, motors, devices	X	X	Check intactness, correct fit of cable glands		X		
V-belt fuel pump	X	X	Check for abrasion	X			
			Check sufficient V-belt tension, retension V-belt if necessary	X			
			Check the electrical conductivity of the V-belts (R<1MOhm)			X	
Complete dispenser	X	X	Check continuity of the protective earth system (according to EN 13617-1:2012 6.1.9.1)			X	
			Insulation resistance test (according to EN 13617-1:2012 6.1.9.2)			X	
			Voltage test (according to EN 13617-1:2012 6.1.9.3)			X	
			Check for conformity (manufacturer authorization required)				X

12.4 Service life

When used as intended, the service life of the dispensers is at least 10 years.
After this time, have the dispenser completely checked by a service technician who is authorized by Gilbarco for this special work.

13 Troubleshooting

If the refuelling process is interrupted or if the dispenser does not start, proceed as follows:

- Check the power supply.
- Check, if the dispenser is connected and authorised by the forecourt controller.
- If an error code is shown on the dispenser display, note the code and consult a service technician (The error code list can be requested from Gilbarco).
- If the vapour recovery monitoring system reports an error (see corresponding chapter), inform a service technician.

In case of all other failures of the dispenser, observe the following safety instruction:

Isolate the dispenser from the electrical power supply, restrict public access to the dispenser and inform a service technician. The repair (e.g. the replacement of damaged / defective components) must be carried out by a service technician!

13.1 Further instructions for the service technician

Take appropriate measures to repair the dispenser (e.g. replacement of damaged / defective components).

- When replacing individual parts or assemblies and for retrofitting, use only original parts from Gilbarco. Nozzles and hoses must comply with the requirements of the standards EN13012, EN13483 and EN1360. This applies to the replacement as well as to new dispensers which were supplied without hoses / nozzles.
- Always perform a control measurement in a prover can after replacing the hose, nozzle or safe breaks, to exclude the possibility of leakage and to ensure measuring accuracy. Also check the equipotential bonding to the nozzle spout.
- Under certain conditions, e.g. for failure diagnosis, operation whilst energised and panels removed may become necessary. However, this is reserved for qualified personnel and after independent risk assessment. In particular, the extension of the possible explosion hazard zone should be considered.

Please find further information about maintenance and repair work in the corresponding separate documents.

14 Transport, storage, disposal

14.1 Transport

You can request from Gilbarco transport recommendations for the delivery of dispensers. These recommendations serve to avoid damage when transporting the dispensers and gives for example instructions for correct packaging and load securing during transport.

14.2 Storage conditions

Gilbarco recommends the following storage conditions for dispensers:

	Min. temperature	Max. temperature
Standard dispensers	-20°C	+40°C
Standard dispensers for cold climate	-40°C	+55°C
Multimedia dispensers	-30°C	+55°C

- Only store dispensers in a vertical upright position and under a roof.
- Make sure that the area under the dispenser housing is constructed in a way that any leaks from the hydraulic circuit will not penetrate the ground below.
- The storage period should not exceed 2 years.
- Improper storage of the dispenser and weather-related influences can lead to considerable damage to the dispenser:
  - defective seals, hoses, cables, screw connections etc.
  - corrosion-induced internal damage to pumping units, meters and valves, which causes them to block, making replacement necessary
  - damage to the electrics/electronics of the dispenser due to moisture and in consequence possible impairment of the existing safety equipment

14.3 Recommissioning

Before recommissioning, check all parts subject to wear within the dispenser, carry out the necessary electrical tests and check the measuring accuracy.

14.4 Disposal at end-of-life

Commission a service technician for the decommissioning of dispensers / filling stations. Observe the local and national regulations.

Dispensers and fuels must not be disposed of with household waste but must be disposed of properly by an authorized specialist company.

15 Technical data

15.1 Operation conditions

Maximum flow rate	40; 70; 120*	l/min
Minimum flow rate	4; 4; 8	l/min
Minimum measured quantity	5; 5; 10	liter
Maximum permissible measurement error	±0,5	%
Accuracy class	0,5	
Viscosity	0,4–17	mPa.s
Maximum system pressure	3,5	bar
Minimum system pressure	1,4	bar
Ambient temperature range	-40 to +55**	ºC
Liquid temperature range	-40 to +50 ***	ºC
Suction height for diesel	≈ 5	m
Suction height for petrol	≈ 4	m
Maximum sound pressure level	L_{pA}≤70	dB(A)
Mechanical environment class	M1	-
Electromagnetic environment class	E1	-
Digits	6/6/4 ; 7/7/5 ; -/6/-	-
Voltage	230/400 +10%/-15% (50 Hz)	volt
Maximum power consumption	4000	watt

* The flow rate depends on the pressure.
** Depending on the used ex-tested components.
*** Depending on the temperature range of the meter.

The specifications on the name plate of the dispenser are decisive!

15.2 Material compatibility with constituents of the potentially explosive atmosphere

GVR dispensers are suitable for temporary external and internal exposure to:

petrol and associated vapours, ethanol blended fuels, diesel, biodiesels, LPG and associated vapours, water with minimal salt content, mild cleaning agents, AdBlue, anticipated vehicle exhaust emissions and small traces of engine oil, lubricants or vehicle screen wash which could be transferred by hand contact.

The equipment is not suitable for use where external surfaces may come into contact with substances which are incompatible with any of the following materials:

Painted steel, Stainless steel, aluminium and alloys, brass, glass, nylon, acrylic, polycarbonates, Viton, nitrile, Fluorosilicone, neoprene, Lexan, polyacetal, hemp and Fermit.

The equipment is not suitable for use where internal surfaces and components may come into contact with substances which are incompatible with any of the following materials:

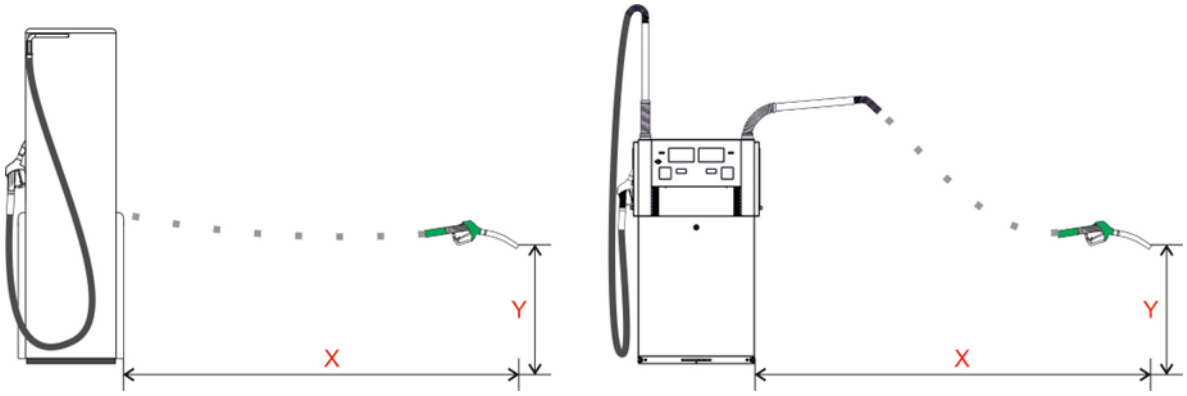
Painted steel, galvanized steel, stainless steel, aluminium and alloys, brass, zinc and alloys, iron, copper, nylon, acrylic, polycarbonates, polyamides, Viton, nitrile, Fluorosilicone, neoprene, cork, polyacetal, glass, Lexan, hemp and Fermit.

15.3 Dispenser dimensions

	Weight (kg)	Length (mm)	Width (mm)	Height (mm)
SK700-2	290 – 780	1033 - 3075	580	1970 – 2170
IOD	250	930	580	1715 – 2540
Horizon-2	430	1200	580	2390
Frontier	190 – 250	800	560	1520 – 2330
Endura	135 – 215	590	430	1400 – 1820

15.4 Hose reach

Measuring principle
Measurements are taken from the outer wall of the dispenser to the end of the nozzle. This is located at a height of one meter above the ground.
X: reach
Y: 1 meter



List of different dispenser types (with indication of the standard hose length)

Dispenser type	Hose length in m (standard version)*	Reach in m
SK700-2 OR	3,3	~3,3
SK700-2 CR	4,7	~4,1
Horizon-2 OR	3,0	~3,0
Horizon-2 CR	4,3	~3,7
IOD	4,0	~4,1
Frontier with hose mast	4,0	~4,1
Frontier without hose mast	4,0	~4,2
Endura with hose mast	4,0	~3,7
Endura without hose mast	3,3	~3,4

* If the hose length differ (e.g. in case of special customer requirements), there are correspondingly different values for the reach which must then be taken into account!

15.5 Power consumption

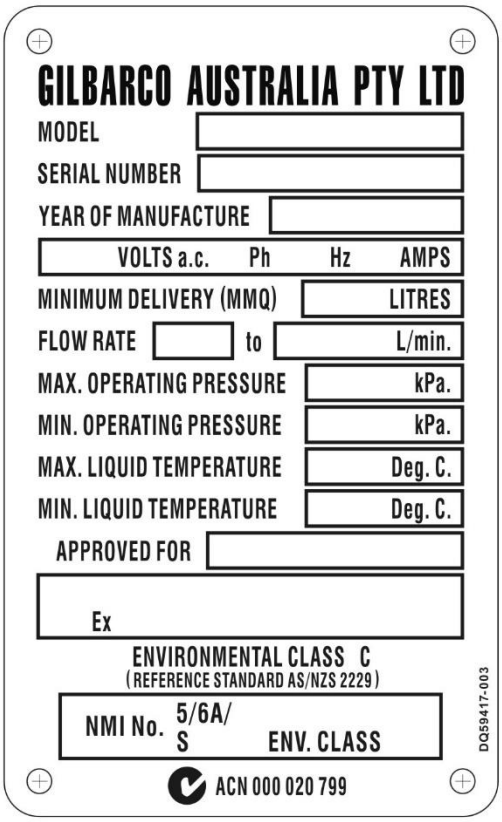
		Max. current (Amps)		
		1 fuel module	2 or more fuel modules	High flow module(s)
Suction Pump	1-Phase Motor 230 V	7,0	12,5	-
	3-Phase Motor 230 V	5,0	10,5	14,0
	3-Phase Motor 400 V	3,5	6,0	8,0
STP with Vapour Recovery	1-Phase Motor	3,0		
	3-Phase Motor	1,0		
All versions	Electronics (Calculator)	max. 1,0		
	+ Heating (Calculator)	max. 2,0		
	+ Multimedia	max. 3,0		
	CRIND	max. 5,0		

15.6 Cable overview

		Length over ground (m)	Cable diameter CU (mm²)	Type
Supply cables	Main	2	7 x 1,5	-
	STP	2	7 x 1,5	-
	CRIND	2	5 x 1,5	-
Data cables	POS	2	8 x 0,75	-
	CRIND / MM	4	8 x 0,75	CAT 5
Equipotential bonding		2	1 x 16	-

Ensure Compliance with Electrical and Cabling rules, AS/NZS 3000:2018

15.7 Dispenser Nameplate



16 Other

16.1 Disclaimer

These instructions describe the installation and operation of a dispenser. Further information is required for the service. Gilbarco is not responsible for accidents with personal injury or damage to the dispensers or system components resulting from failure to follow the instructions.

16.2 Copyright

The contents of these instructions must not be copied in whole or in part without the permission of Gilbarco. Gilbarco reserves the right to change textual or pictorial content without special notification.

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