compac
INTEGRATED REFUELLING SOLUTIONS

Fillmaster Installation Manual
Version 1.0.8

Model: C5000 Fillmaster
Date: 13th August 2020

SYSTEM CERTIFICATION
ISO 9001
SGS

Conditions of Use

- Read this manual completely before working on, or making adjustments to, the Compac equipment
- Compac Industries Limited accepts no liability for personal injury or property damage resulting from working on or adjusting the equipment incorrectly or without authorization.
- Along with any warnings, instructions, and procedures in this manual, you should also observe any other common sense procedures that are generally applicable to equipment of this type.
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Product Identification

Specifications	
Models Covered	This manual applies to the Fillmaster **NOTE:** *Do not use this manual for earlier models. Contact Compac for archived manuals if required.*

Validity
Compac Industries Limited reserves the right to revise or change product specifications at any time. This publication describes the state of the product at the time of publication and may not reflect the product at all times in the past or in the future.

Manufactured By:

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Document Control

Document Information

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Revision History

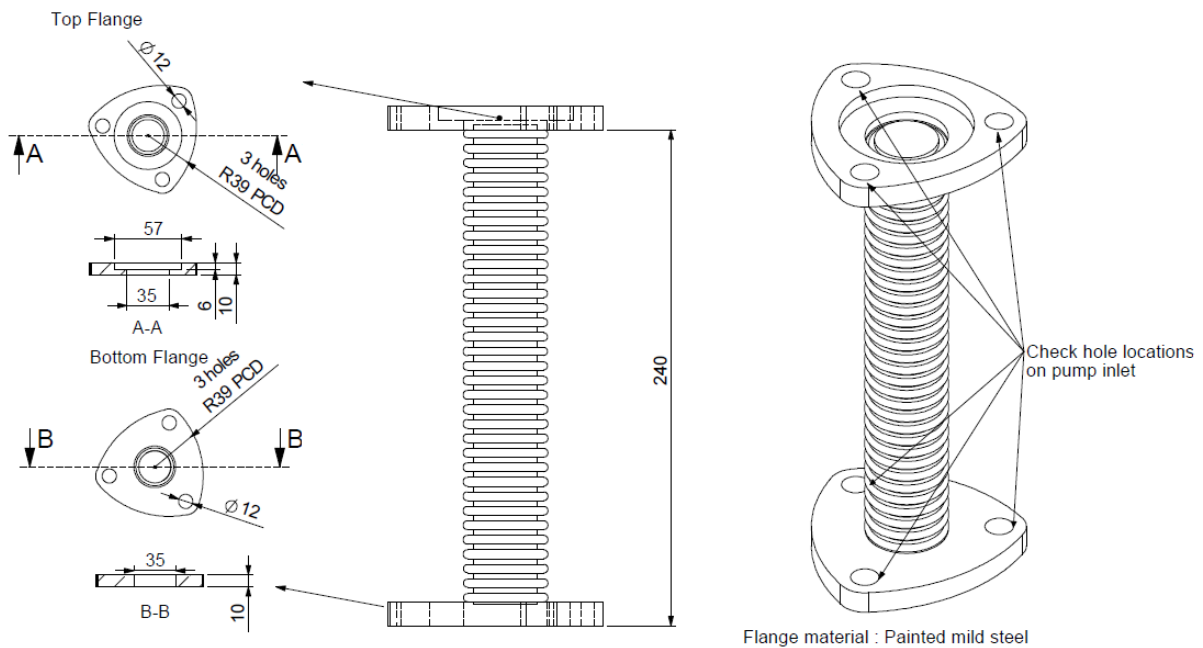| Version	Date	Author(s)	Revision Notes
Lite	17/05/18	S Laycock	Initial draft
1.0.0	22/06/2018	S Laycock	Added mechanical installation instructions and footprints.
1.0.1	09/07/2018	S Laycock	Added relay wiring, revised software section, added sim card installation instructions. Added additional footprints.
1.0.2	25/07/2018	S Laycock	Updated CompacOnsite section
1.0.3	24/08/2018	S Laycock	Updated CompacOnsite and external pump wiring
1.0.4	07/12/2018	R Liu	Updated contact information
1.0.5	20/01/2020	V Amarakoon	Updated footprints
1.0.6	17/07/2020	V Amarakoon	Updated Software setup (new menu layout) Updated Installation Added above ground tank installation
1.0.7	04/08/2020	V Amarakoon	Added MMR400-160S Footprint
1.0.8	13/08/2020	V Amarakoon	Added MR400S Footprints

Contents

Footprints

All outlets are approximately 680mm above the base:

- 40 l/min - ¾" female BSP socket
- 80 l/min - 1" female BSP socket
- 160 l/min - 1 ¼" female BSP socket

Inlet pipework can be connected to the pump flange(s). An optional flexible coupling is offered by Compac. There must be no fuel pressure in the pump line when pump is not operating.

NOTE: For some of the following footprints, the C5000 junction box may be mounted in a different position. This does not affect the dimensions or inlets but is important when bringing cables in.

Optional Flexi Coupling

Flange material : Painted mild steel

1.

MMR40P MMR80P MMR80-40P

C5000 K-Factor Board is located in the "Front-left" Display Enclosure

Side B Nozzle Holder

Side A Nozzle Holder

Side B Outlet: 1" BSP Female thread *

Side A Outlet: 1" BSP Female thread *

680

250 680

Ground Level

C5000 Junction Box. Bring incoming Mains & Comms cables into here.

Front View

Contractor to supply & install pipework to connect to these two flanges.

Rear of Unit

Side B Pump Inlet Flange

(6x) Mounting Holes Ø 20

Side A Pump Inlet Flange

Side A Outlet

390 340

50

375

400

600

Side B Outlet

Front of Unit

Footprint Plan View

3 holes at Ø 78 PCD

M10

"3 bolt" Triangular Pump Flange
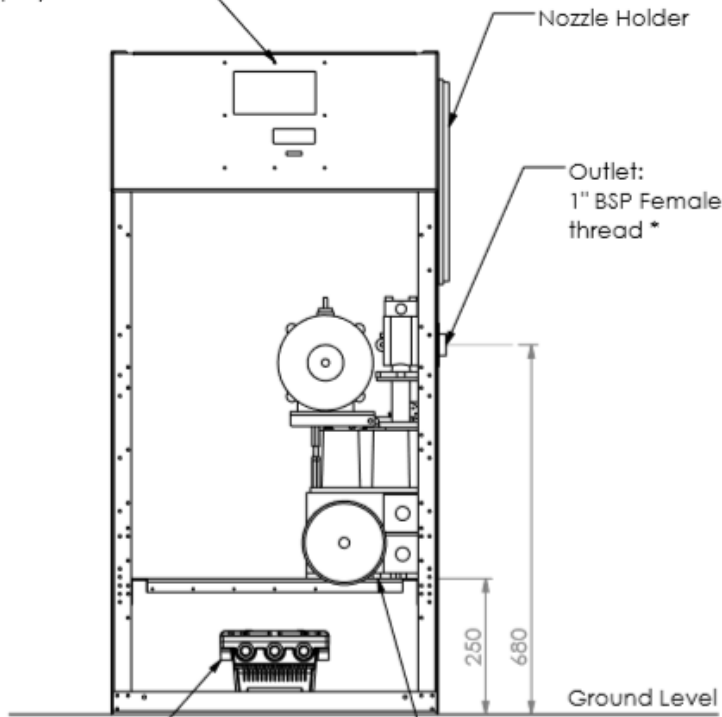
* **NOTE:** For a "MMR40P" unit a 1"BSP Male to ¾"BSP Female Reducer is fitted to both outlets.
* **NOTE:** For a "MMR80-40P" unit a 1"BSP Male to ¾"BSP Female Reducer is fitted to one outlet.
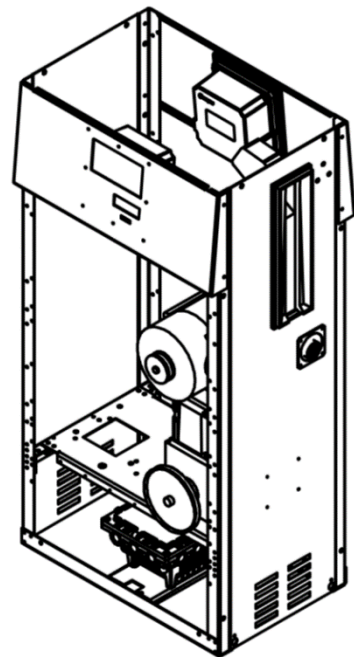
MR40P MR80P

C5000 K-Factor Board is located in the "Front" Display Enclosure

Nozzle Holder

Outlet:
1" BSP Female thread *

250

680

Ground Level

C5000 Junction Box. Bring incoming Mains & Comms cables into here.

Front View

Rear of Unit

Contractor to supply & install pipework to connect to this flange.

(6x) Mounting Holes ⌀20

Pump Inlet Flange

25

Outlet

390

340

187.5

3 holes at ⌀78 PCD

400

600

M10

Front of Unit

Footprint Plan View

"3 bolt" Triangular Pump Flange

NOTE: For a "MR40P" unit a 1"BSP Male to ¾"BSP Female Reducer is fitted to the outlet.

MR160P

C5000 K-Factor Board is
located in the "Front"
Display Enclosure

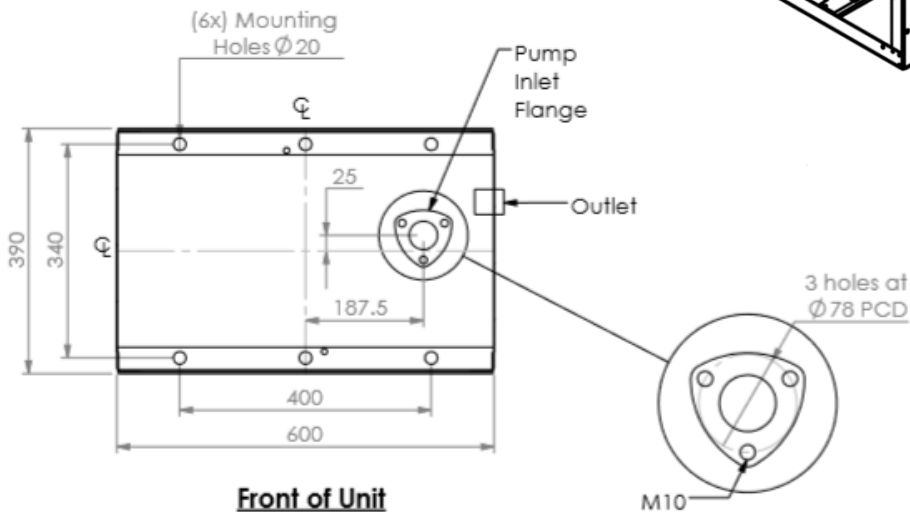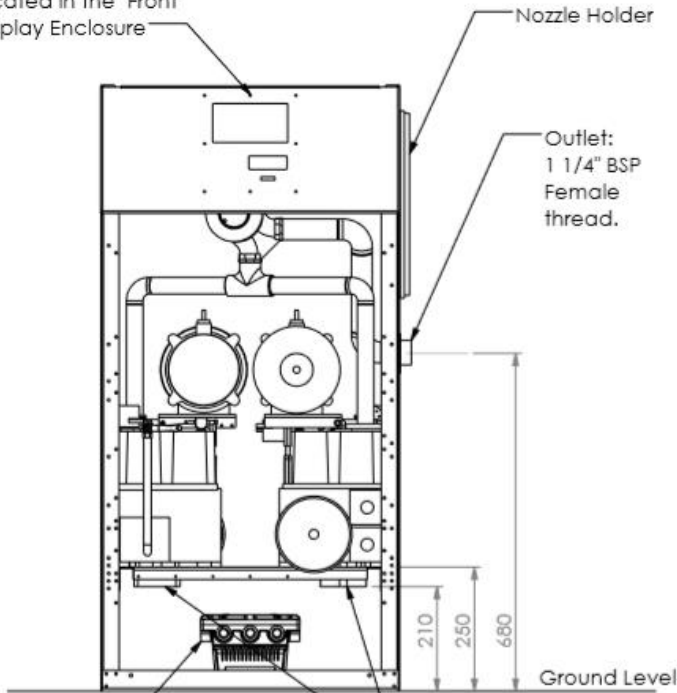Nozzle Holder

Outlet:
1 1/4" BSP
Female
thread.

210
250
680

Ground Level

Front View

C5000 Junction
Box. Bring incoming
Mains & Comms
cables into here.

Contractor to supply
& install pipework to
connect to the two
"supplied" "Non-return" Valves.

Rear of Unit

(6x) Mounting
Holes Ø 20

Dual Inlets
(both Pumps
feed the one
Outlet)

Outlet

390
340
50

375

400

600

3 holes at
Ø78 PCD

M10
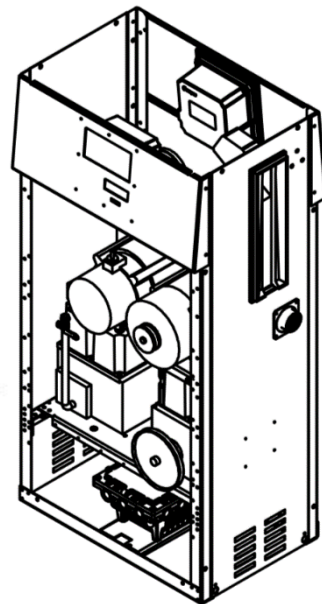
Front of Unit

Footprint Plan View

"3 bolt" Non-return
Valve (to be fitted
to each Pump Inlet Flange)

4.

MR80S & MR40S

C5000 K-Factor Board is located in the "Front" Display Enclosure
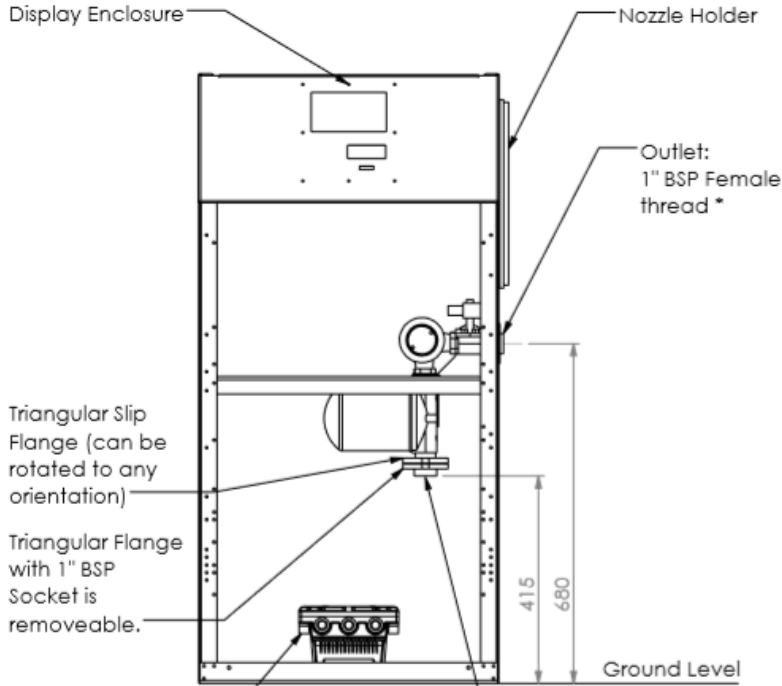
Nozzle Holder

Outlet: 1" BSP Female thread *

Triangular Slip Flange (can be rotated to any orientation)

Triangular Flange with 1" BSP Socket is removeable.

415

680

Ground Level

C5000 Junction Box. Bring incoming Mains & Comms cables into here.

Front View

Contractor to supply & install pipework to connect to this 1" BSP Female Inlet Socket.

Rear of Unit

(6x) Mounting Holes ⌀20

Outlet

390

340

85

155.5

1" BSP Female Inlet Socket on rotatable triangular flange.

400

600

Front of Unit

Footprint Plan View

*** NOTE:** For a "MR40S" unit a 1"BSP Male to ¾"BSP Female Reducer is fitted to the Outlet.*

MR160S

C5000 K-Factor Board is
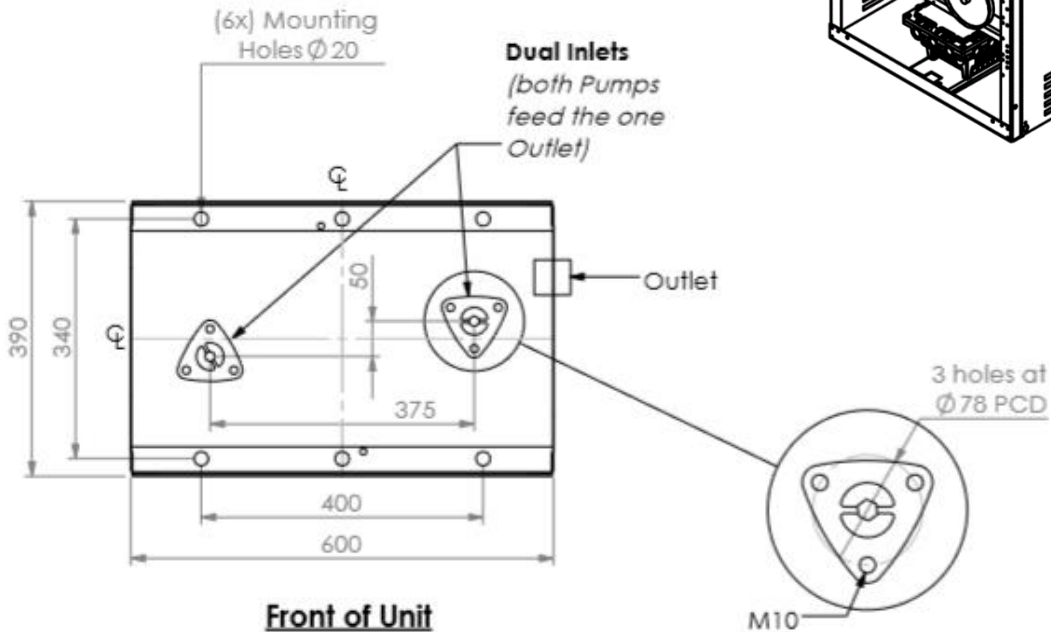located in the "Front"
Display Enclosure

Nozzle Holder

Outlet:
1 1/4" BSP Female
thread.

375 approx.

680

Ground Level

Front View

C5000 Junction
Box. Bring incoming
Mains & Comms
cables into here.

Contractor to supply
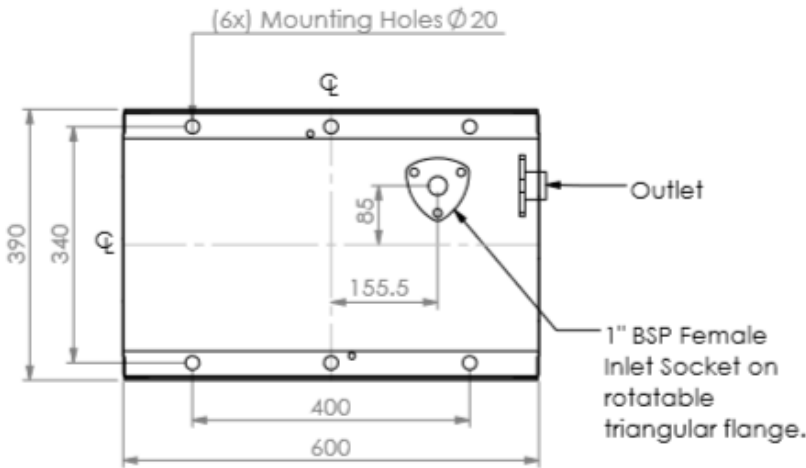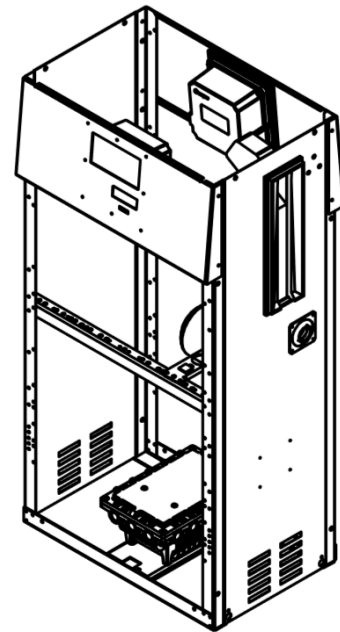& install pipework to
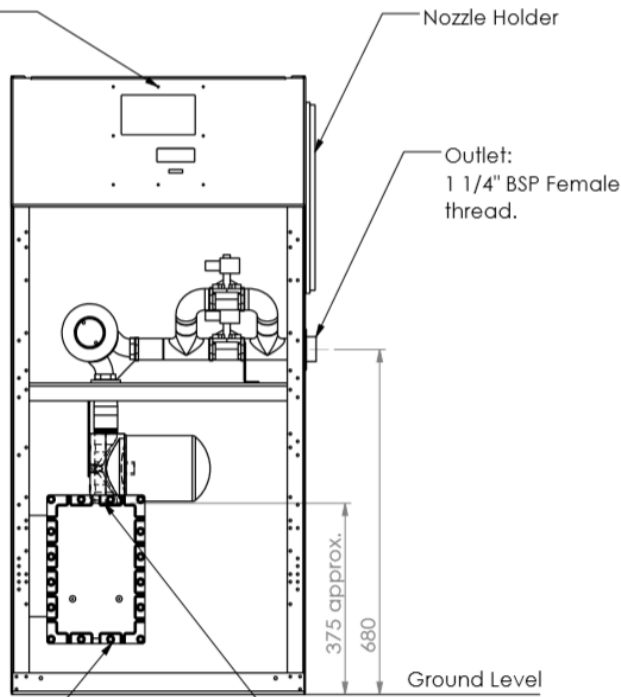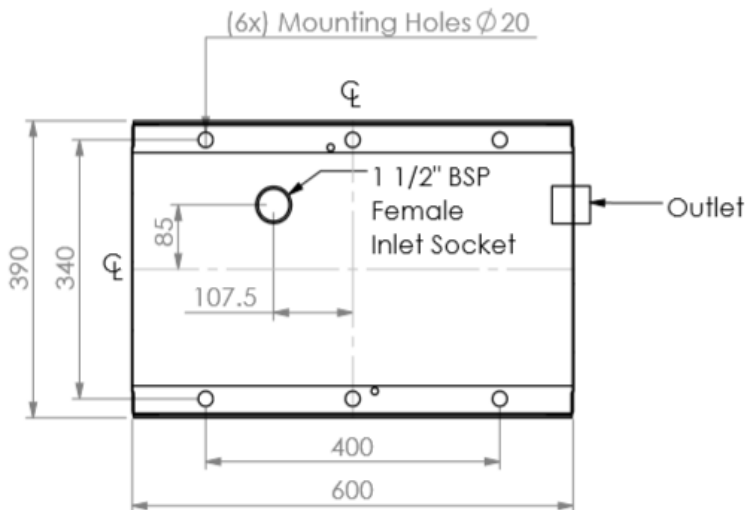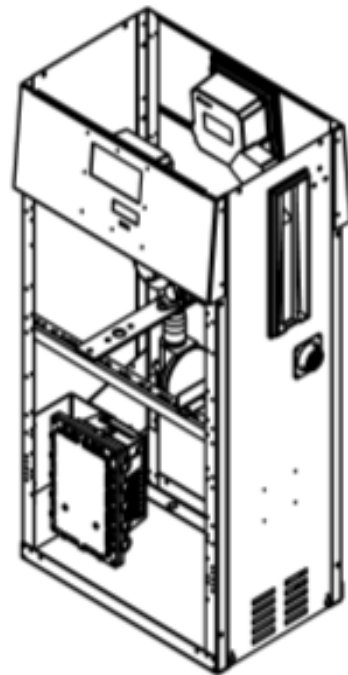connect to this 1 1/2"
BSP Female Inlet Socket.
*(Behind Junction Box
in this view)*

Rear of Unit

(6x) Mounting Holes Ø 20

1 1/2" BSP
Female
Inlet Socket

Outlet

390

340

85

107.5

400

600

Front of Unit

Footprint Plan View

6.

MR400S (Includes "Marine" variants)

** NOTE: *Contractor to supply and install pipework to suit one of the two available "Inlet Option" types, depending on which of the two options applies to an Installation.*

IMPORTANT: The "Y-Strainer" fitted to the Inlet of the Dispenser does not protect the Meter & Solenoid Valve/s from "fine" particles.

C5000 K-Factor Board is located in the "Front" Display Enclosure

Outlet:
2" BSP Female thread.

Y-Strainer Inlet**
with 2" BSP Female thread
or

Dual Inlet **
Manifold, with two Inlet Manifolds with 1 1/2" BSP Male threads *(optional)*

700

Ground Level

370 approx.

50 approx.

Front View

C5000 Junction Box. Bring incoming Mains & Comms cables into here. *(Box is mounted "vertically" in the "bottom" of "Marine" Dispensers)*

Accumulator *(default location shown)*

Inlet:
2" BSP Female thread on the Y-Strainer *(without Dual Inlet Manifold)* **or** 1 1/2" BSP Male thread *(with Dual Inlet Manifold)*

Rear of Unit

(6x) Mounting Holes ⌀ 20

175

150

85

390

340

400

600

Outlet

1 1/2" BSP Male thread *(NOTE: This connection only applies to a Dual Inlet Manifold Arrangement)*

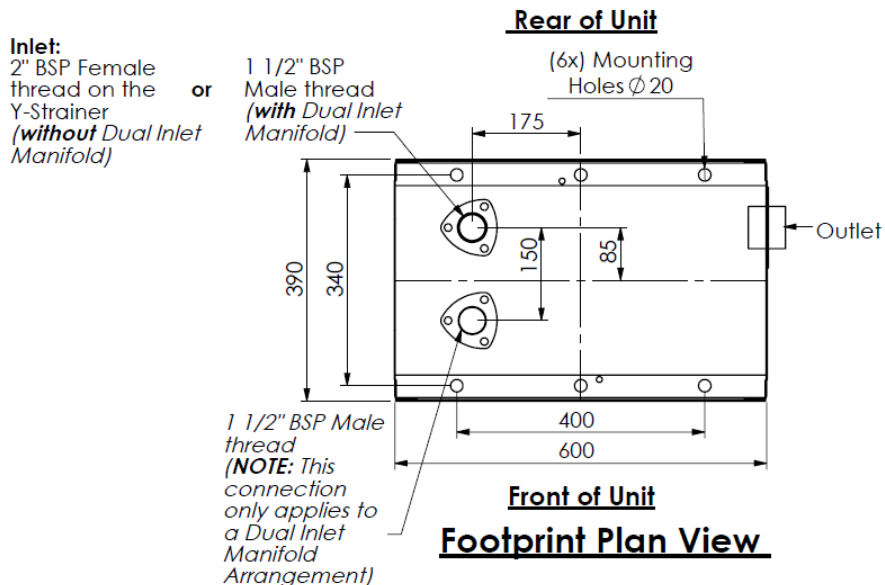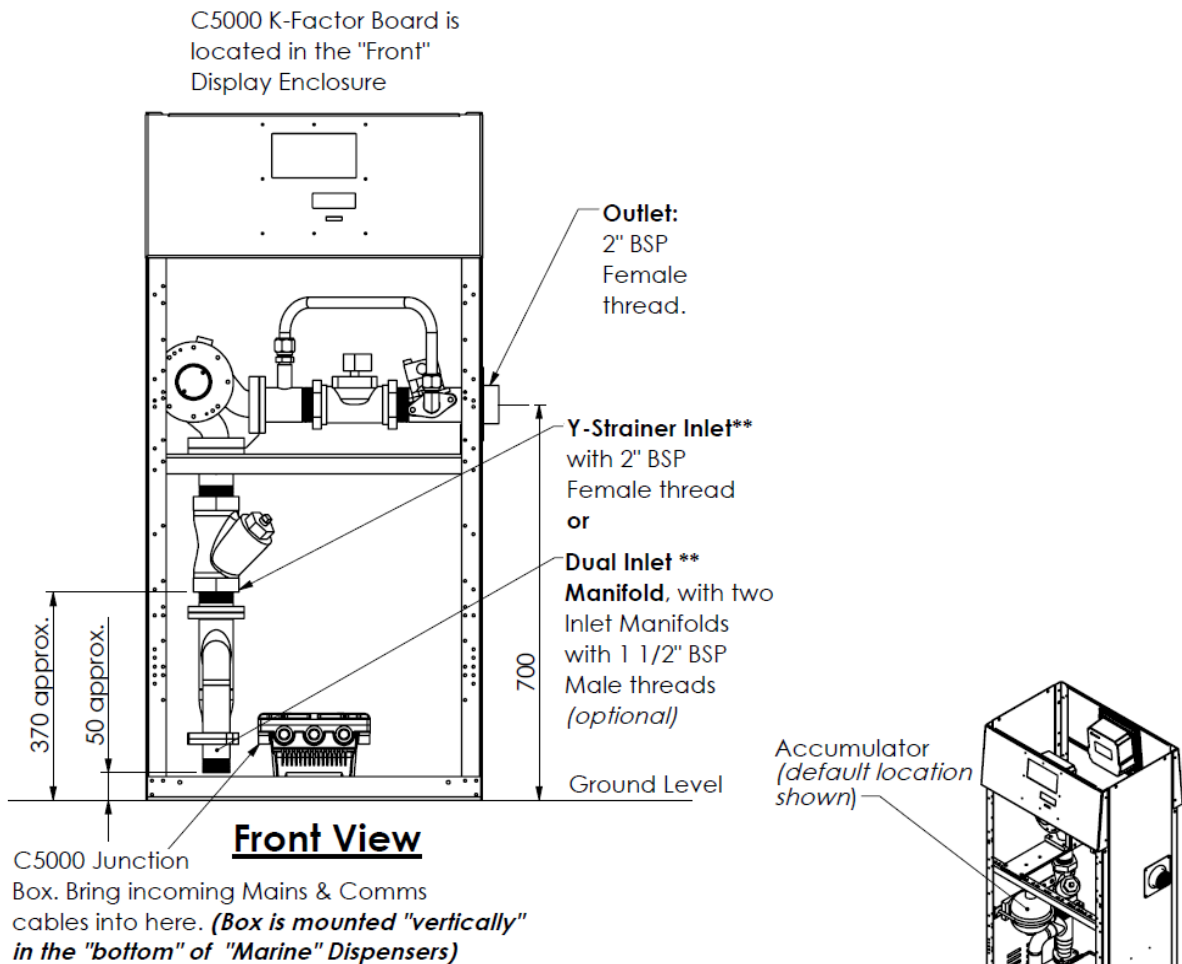**Front of Unit**
Footprint Plan View

MR400S Aviation

*** NOTE:** Contractor to supply and install pipework to suit one of the two available "Inlet Option" types, depending on which of the two options applies to an Installation.*
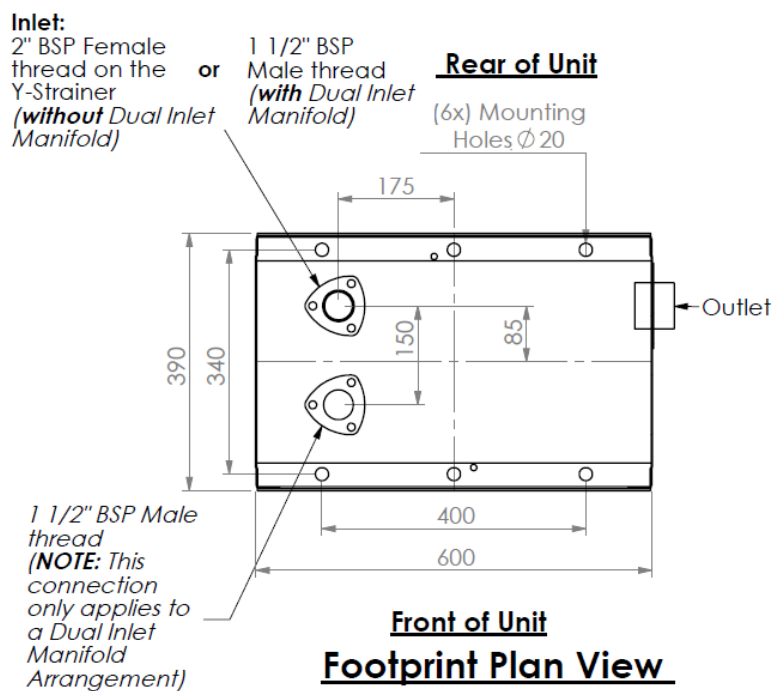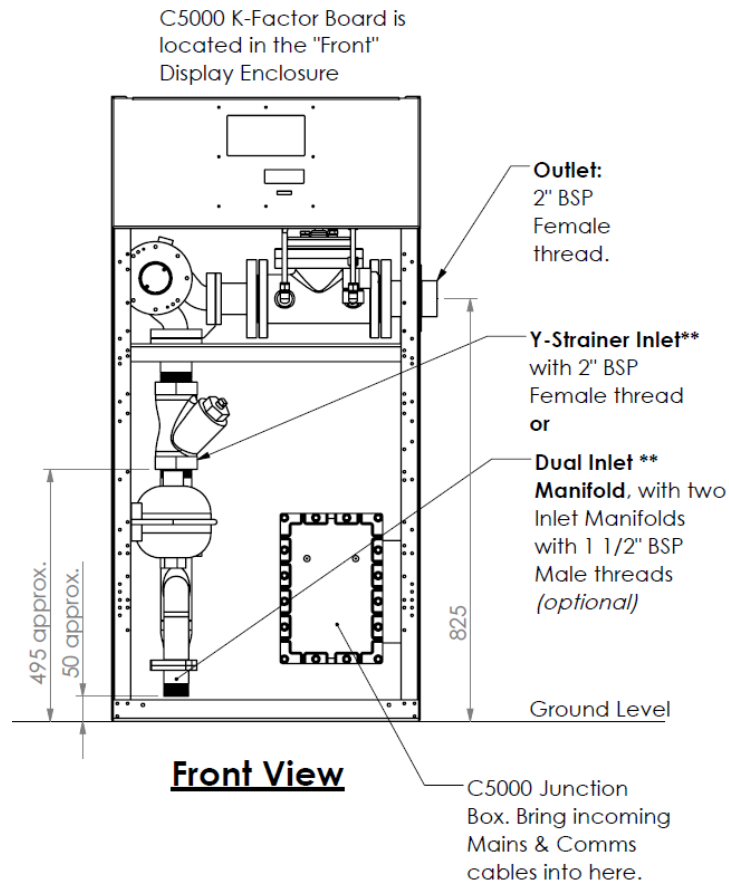
IMPORTANT: The "Y-Strainer" fitted to the Inlet of the Dispenser does not protect the Meter & Solenoid Valve/s f

C5000 K-Factor Board is located in the "Front" Display Enclosure

Outlet:
2" BSP Female thread.

Y-Strainer Inlet**
with 2" BSP Female thread

or

Dual Inlet **
Manifold, with two Inlet Manifolds with 1 1/2" BSP Male threads *(optional)*

495 approx.

50 approx.

825

Ground Level

Front View

C5000 Junction Box. Bring incoming Mains & Comms cables into here.

Inlet:
2" BSP Female thread on the Y-Strainer *(without Dual Inlet Manifold)*

or

1 1/2" BSP Male thread *(with Dual Inlet Manifold)*

Rear of Unit

(6x) Mounting Holes Ø 20

175

Outlet

390

340

150

85

1 1/2" BSP Male thread *(**NOTE:** This connection only applies to a Dual Inlet Manifold Arrangement)*

400

600

Front of Unit
Footprint Plan View

MMR160S

C5000 K-Factor Board is located in the "Front-left" Display Enclosure

Side B Nozzle Holder

Side B Outlet: 1 1/4" BSP Female thread.

Side A Nozzle Holder

Side A Outlet: 1 1/4" BSP Female thread.

680

375 approx.

375 approx.

680

Ground Level
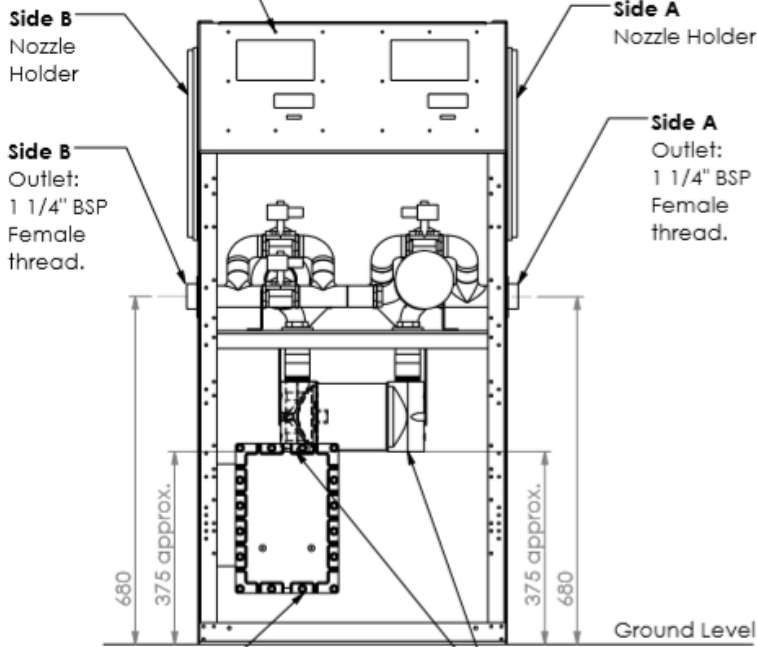
C5000 Junction Box. Bring incoming Mains & Comms cables into here.

Contractor to supply & install pipework to connect to these two 1 1/2" BSP Female Inlet Sockets. *("Side A" Behind Junction Box in this view)*

Front View

Rear of Unit

(6x) Mounting Holes Ø 20

Side A 1 1/2" BSP Female Inlet Socket

215

170

390

340

400

600

Side A Outlet

Side B 1 1/2" BSP Female Inlet Socket

Side B Outlet

Front of Unit

Footprint Plan View

MMR40S MMR80S MMR80-40S

C5000 K-Factor Board is located in the "Front-left" Display Enclosure

Side B Nozzle Holder

Side A Nozzle Holder

Side B Outlet: 1" BSP Female thread *

Side A Outlet: 1" BSP Female thread *

Triangular Slip Flanges (can be rotated to any orientation)

Triangular Flanges with 1" BSP Sockets are removeable.
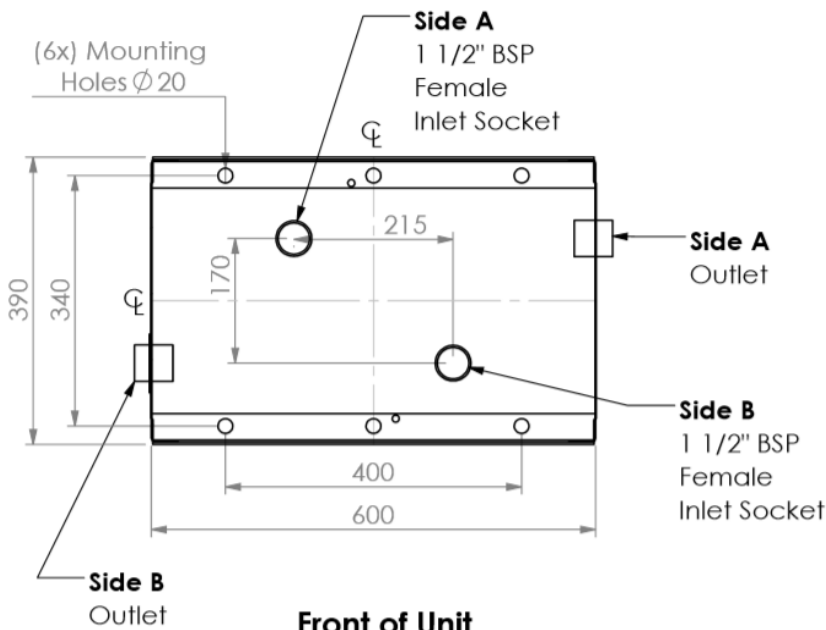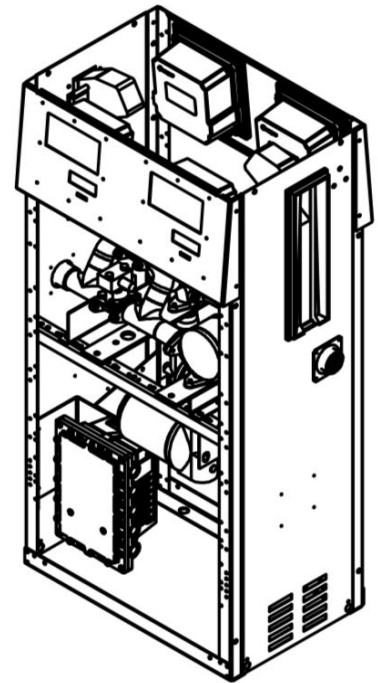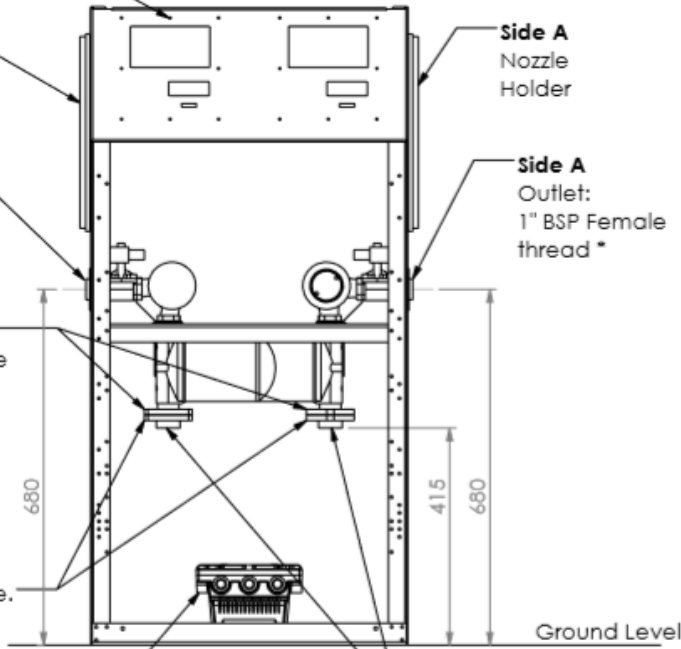
680

415

680

Ground Level

Front View

C5000 Junction Box. Bring incoming Mains & Comms cables into here.

Contractor to supply & install pipework to connect to these two 1" BSP Female Inlet Sockets.

Rear of Unit

Side B 1" BSP Female Inlet Socket on rotatable triangular flange.

(6x) Mounting Holes Ø 20

390

340

170

311

400

600

Side A Outlet

Side A 1" BSP Female Inlet Socket on rotatable triangular flange.

Side B Outlet

Front of Unit

Footprint Plan View
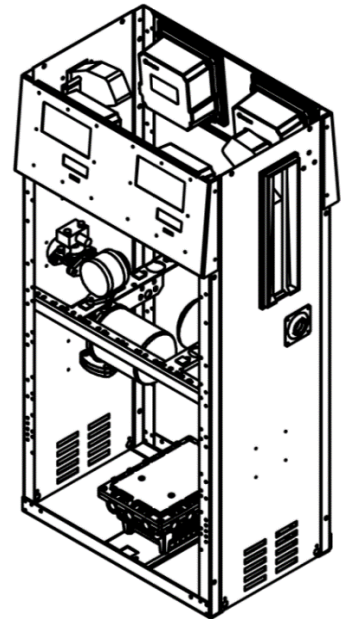
*__NOTE:__ For a "MMR40P" unit a 1"BSP Male to ¾"BSP Female Reducer is fitted to both Outlets.
*__NOTE:__ For a "MMR80-40P" unit a 1"BSP Male to ¾"BSP Female Reducer is fitted to one Outlet.

MMR160-80S & MMR160-40S (Includes "Marine" variants)

C5000 K-Factor Board is located in the "Front-left" Display Enclosure

Side B Nozzle Holder

Side B Outlet: 1" BSP Female thread *

Side A Nozzle Holder

Side A Outlet: 1 1/4" BSP Female thread.

Triangular Slip Flange (can be rotated to any orientation)

Triangular Flange with 1" BSP Sockets is removeable.

Ground Level

680 415 375 approx. 680

C5000 Junction Box. Bring incoming Mains & Comms cables into here.

Front View

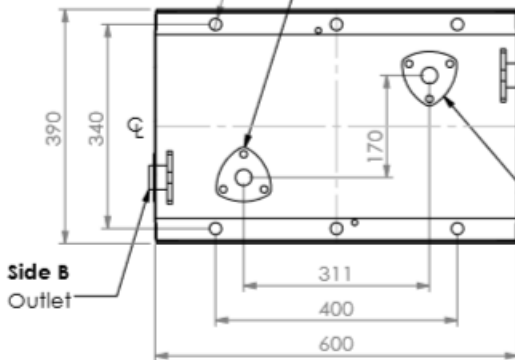Contractor to supply & install pipework to connect to this 1 1/2" BSP Female Inlet Socket & this 1" Female Inlet Socket.

Rear of Unit

(6x) Mounting Holes Ø 20

Side A 1 1/2" BSP Female Inlet Socket

Side A Outlet

56

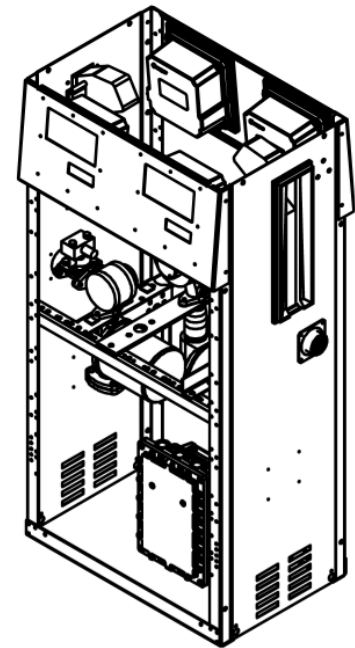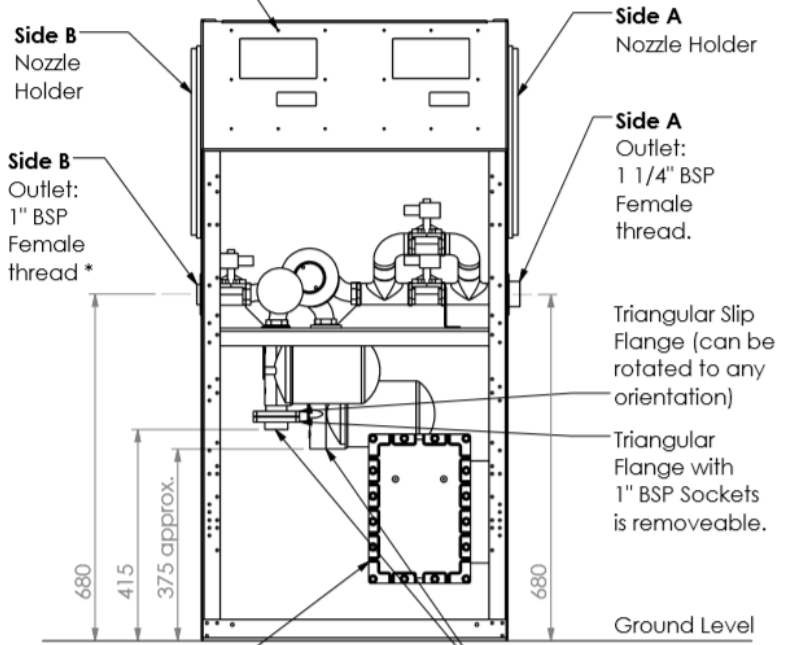170

390 340

155 400 600

Side B 1" BSP Female Inlet Socket on rotatable triangular flange.

Side B Outlet

Front of Unit
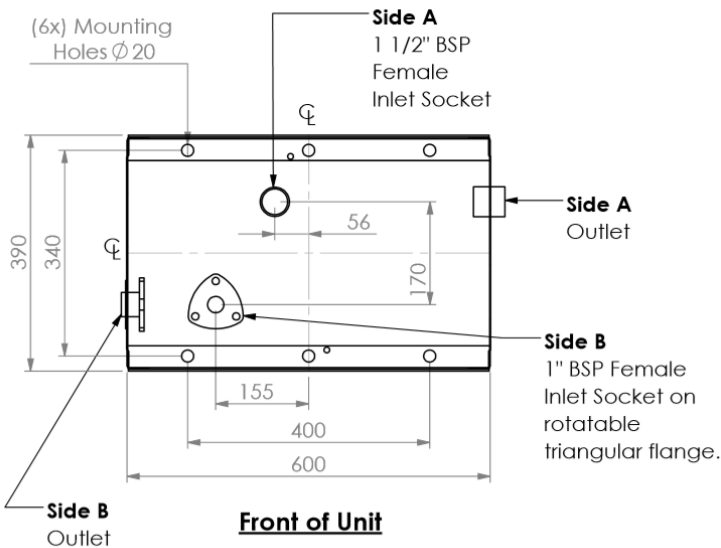
Footprint Plan View *

__NOTE:__ For a "MMR160-40S" unit a 1"BSP Male to ¾"BSP Female Reducer is fitted to this Outlet.
** **NOTE:** The footprint will be rotated 180° on a unit that has the Hoses "reversed".

11.

MMR400-160S (Includes Marine & Aviation variants)

** NOTE: *Contractor to supply and install pipework to suit one of the two available "Inlet Option" types, depending on which of the two options applies to an Installation.*

IMPORTANT: The "Y-Strainer" fitted to the "400lpm Inlet" of the Dispenser does not protect the Meter & Solenoid Valve/s from "fine" particles.

C5000 K-Factor Board is located in one of the "Front" Display Enclosures

Side B Nozzle Holder

Side B 160lpm Outlet: 1 1/4" BSP Female thread.

Side A 400lpm Outlet: 2" BSP Female thread.

Accumulator *(default location shown)*

Side A (400lpm) Y-Strainer Inlet** with 2" BSP Female thread **or**

Dual Inlet ** Manifold, with two Inlet Manifolds with 1 1/2" BSP Male threads *(optional)*

Ground Level

805

490 approx.
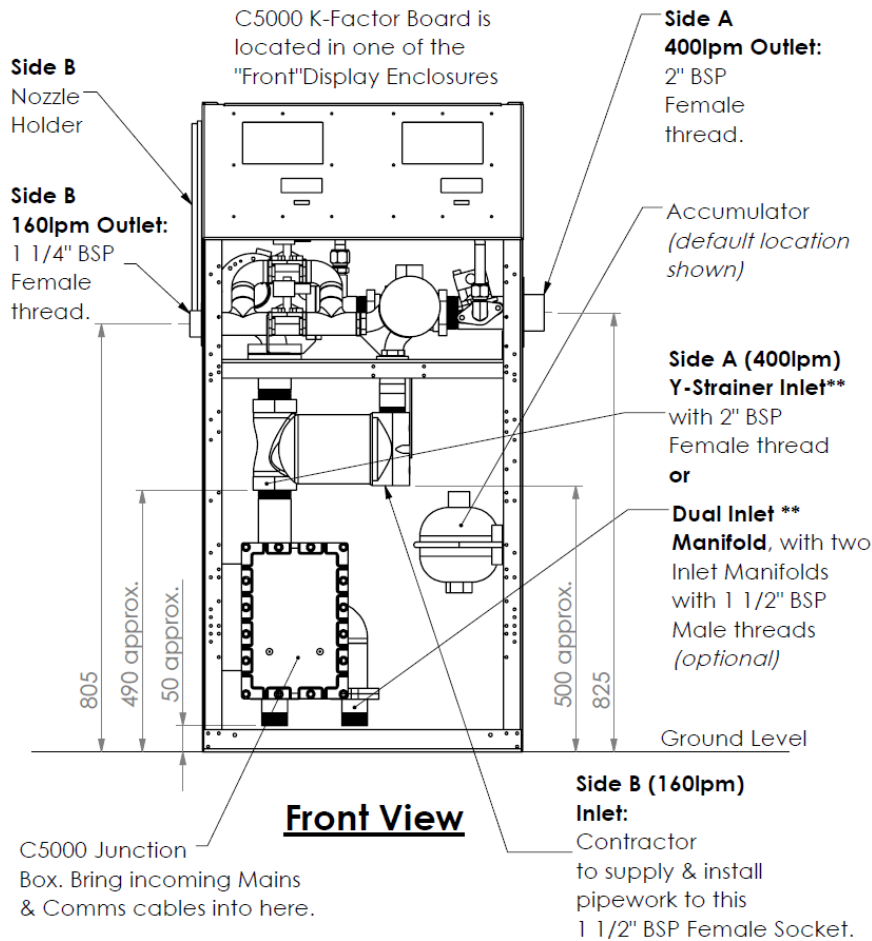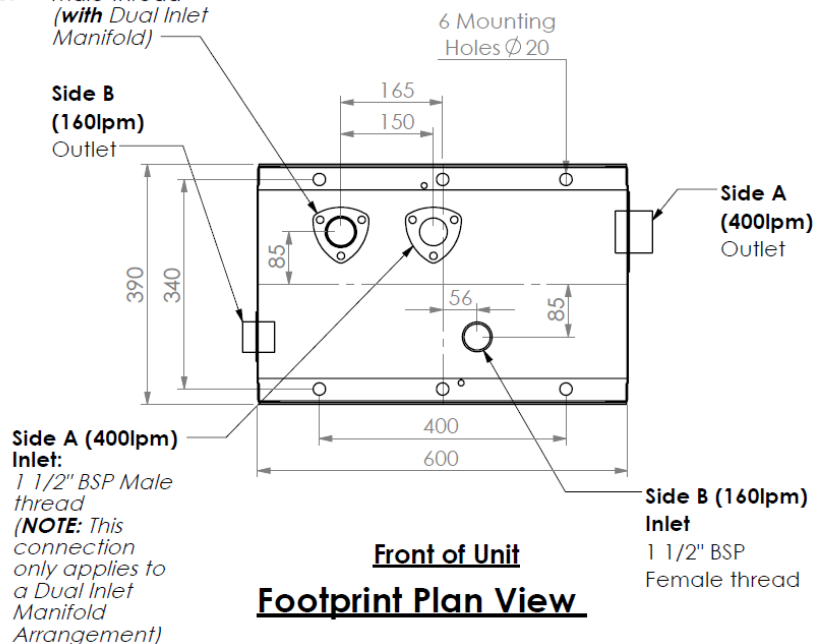
50 approx.

500 approx.

825

Front View

C5000 Junction Box. Bring incoming Mains & Comms cables into here.

Side B (160lpm) Inlet: Contractor to supply & install pipework to this 1 1/2" BSP Female Socket.

Side A (400lpm) Inlet: 2" BSP Female thread on the Y-Strainer *(without Dual Inlet Manifold)* **or** 1 1/2" BSP Male thread *(with Dual Inlet Manifold)*

Rear of Unit

Side B (160lpm) Outlet

6 Mounting Holes Ø 20

165

150

85

Side A (400lpm) Outlet

390

340

56

85

Side A (400lpm) Inlet: *1 1/2" BSP Male thread* (**NOTE:** *This connection only applies to a Dual Inlet Manifold Arrangement)*

400

600

Front of Unit

Footprint Plan View

Side B (160lpm) Inlet 1 1/2" BSP Female thread

12.

Installation

Static Electricity Precautions

Electronic components used are sensitive to static electricity. Please take anti-static precautions.

An anti-static wrist strap should be worn and connected correctly when working on any electronic equipment. If an anti-static wrist strap is unavailable, or in an emergency, hold onto an earthed part of the pump/dispenser frame whilst working on the equipment. This is not a recommended alternative to wearing an anti-static wrist strap.

NOTE: *Compac Industries Limited reserves the right to refuse to accept any circuit boards returned, if proper anti-static precautions have not been taken.*

Pre-installation Check

Once the pump is received on site, check that no damage has occurred while in transit – in particular, damage to electronics due to vibration or jarring. All terminals and plugs should be checked, including IC chips, to ensure they are securely in place.

Procedures

Installation should be in accordance with local regulations.

To obtain maximum flow on a self-contained pump, observe the following guidelines:
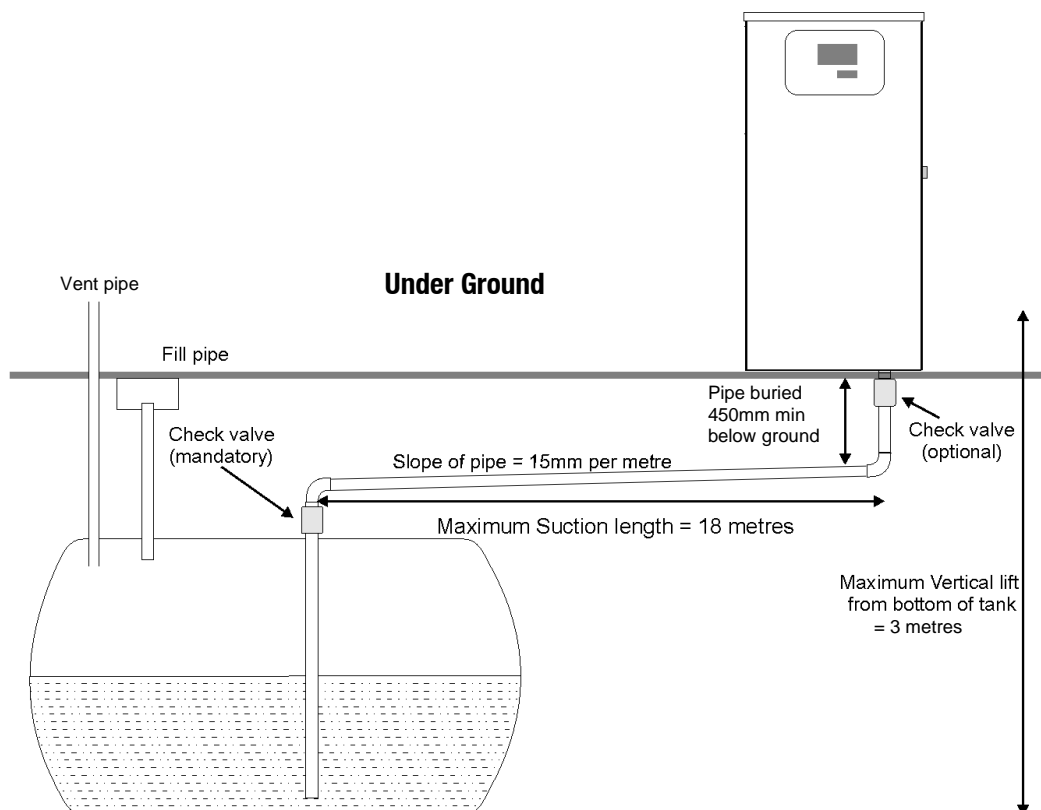
Below Ground Tank Installations

1. Pumps must not be subject to any head pressure. Design your installation to eliminate any possibility of this occurring.
2. Total length of horizontal piping between tank and pump should be no longer than 18 metres. Use galvanised steel or approved non-metallic pipe and fittings.
3. If the unit contains two pumps. It is recommended that each pump is supplied by a separate pipe. The common sizes used are.
   - 40 l/min pumps, use 1½" pipe
   - 80 l/min- 160l/min pumps, use 2" pipe.
   - 400l/min pump use 3" pipe.
4. Check valves must also be installed below each pump inlet.
5. On 160lpm units, if a single 3" Suction line is used, Check valves must be fitted to the inlets of both pumps to prevent one pump drawing product back through the other.

NOTE: *Ensure you remove the bung from the pump inlet before connecting the pipe.*

6. Pipe must slope up from the tank to the pump (approximately 15 mm per metre). Pipe should be straight and supported along its length.
7. All horizontal piping must be buried at least 450mm below ground level.

8. The area under the pumping unit(s) must be filled with sand or dirt as far up the suction line as possible. Use water to pack the sand or dirt when put in place.

9. Avoid asphalt drive surfaces covering the piping. Asphalt increases heat absorption causing vapour lock.

10. Static lift must not exceed 3 metres (vertical distance from the product level in the tank to the centre of the pump unit).

11. To absorb ground movement from settling of the tank, frost heaving of the ground or pump island settling, a swing joint must be used in the supply line at the tank and directly underneath the dispenser. Three additional directional changes using elbows are permitted.

12. Piping must hold a 3.4 Bar (50PSI) pressure test for a minimum of 10 minutes.

13. It is recommended that a vertical, in-line check valve be installed underneath the pump.

14. The dispensing equipment shall be installed to prevent the delivery hose from contacting the ground when not in use.

15. A check valve must be installed at the tank end connection of the suction pipe in a serviceable location. Many clients install an extra check valve at the inlet to the pump. It is important neither of the check valves interfere with the flow of fuel. They must be adequately sized.

Refer to the footprint drawings for pump installation details.

Under Ground

Vent pipe

Fill pipe

Pipe buried 450mm min below ground

Check valve (mandatory)

Check valve (optional)

Slope of pipe = 15mm per metre

Maximum Suction length = 18 metres

Maximum Vertical lift from bottom of tank = 3 metres

Above Ground Tank Installations

If a regulator valve is not installed correctly product will pour out of the pump breather. If this happens, do not plug the breather. Review the installation and ensure that all the following requirements have been met.

The regulator valve must be mounted in the vertical position and directly underneath the pump. Do not mount alongside the pump as no pipework between the regulator valve and the pump is allowed to be below the regulator valve itself.

Do not plug the vent on the regulator valve. Pipe the vent back to the top of the tank or vent to atmosphere.

Maximum working pressure of fuel system = 50 psi / 3.4 bar

The installation must include a thermal expansion relief valve. Thermal expansion can cause pressures in the system greater than 50 psi / 3.4 bar and can result in failure of the valve and loss of product to the environment.

The installation must also include a solenoid valve positioned adjacent to the shut off valve at the tank. Its purpose is to prevent loss due to failure of the downstream piping or the system. The recommended solenoid is the Parker 2" type E321G4010 (available from Compac)

The Shear section of the regulator valve should be located level with the bottom of the cabinet base.

The installation must include a shutoff or gate valve to close the system and prevent loss when the equipment utilized in the fuelling system downstream from the above ground storage tank is being serviced or replaced.
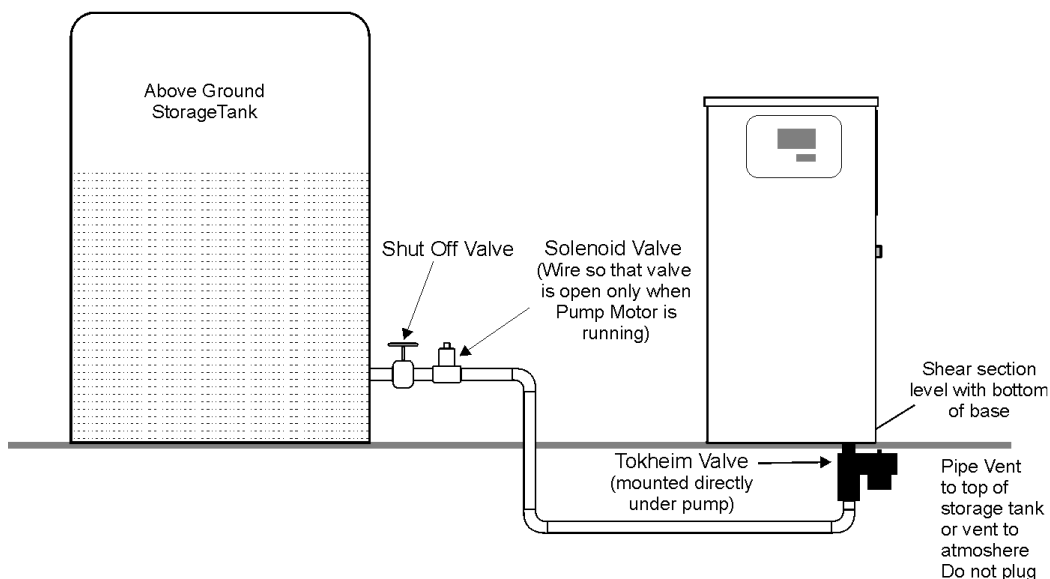
Above Ground

Where local regulations require a sump to be fitted:

    a. Sumps must be provided at all dispenser installations with secondary containment pipework and at all new installations.
    b. At all sites with sumps, dispensers should be installed with a liquid level detection device fitted in the sump that will raise an alarm if liquid is detected in the base of the sump.

DANGER: The pump inlet must not be pressurised at any time. This will cause fuel to flow from the air eliminator. Unregulated connection to an above ground tank will cause pressurisation.

DANGER: For above ground tanks a regulator valve such as a Tokheim valve or similar device MUST be used so that the inlet of the pump cannot become pressurised at any time.

CAUTION: The air switch is not to be disconnected. Disconnection will void NMI and TMU approvals.

CAUTION*:* When a 52a valve is installed at the pump, never install a vacuum anti-syphon valve at the top of the tank. An electric solenoid valve is required

Dispensing Hoses and Nozzles

The unit may or may not be supplied with dispensing hose and nozzle assemblies.

If customer supplied hose assemblies, pylons, reels, safe breaks and nozzles are used they must comply with the requirements outlined in AS/NZS 2229.

Breakaways

For all dispensers fitted with breakaways, ensure the breakaway is installed between the nozzle and the high-mast or pylon (if fitted). Any breakaways that have been subject to a break-away situation should be inspected and refitted or replaced in accordance with the original manufacturer's instructions.

Glanding

All gland holes into the flameproof box are standard M20 x 1.5 gland threads.
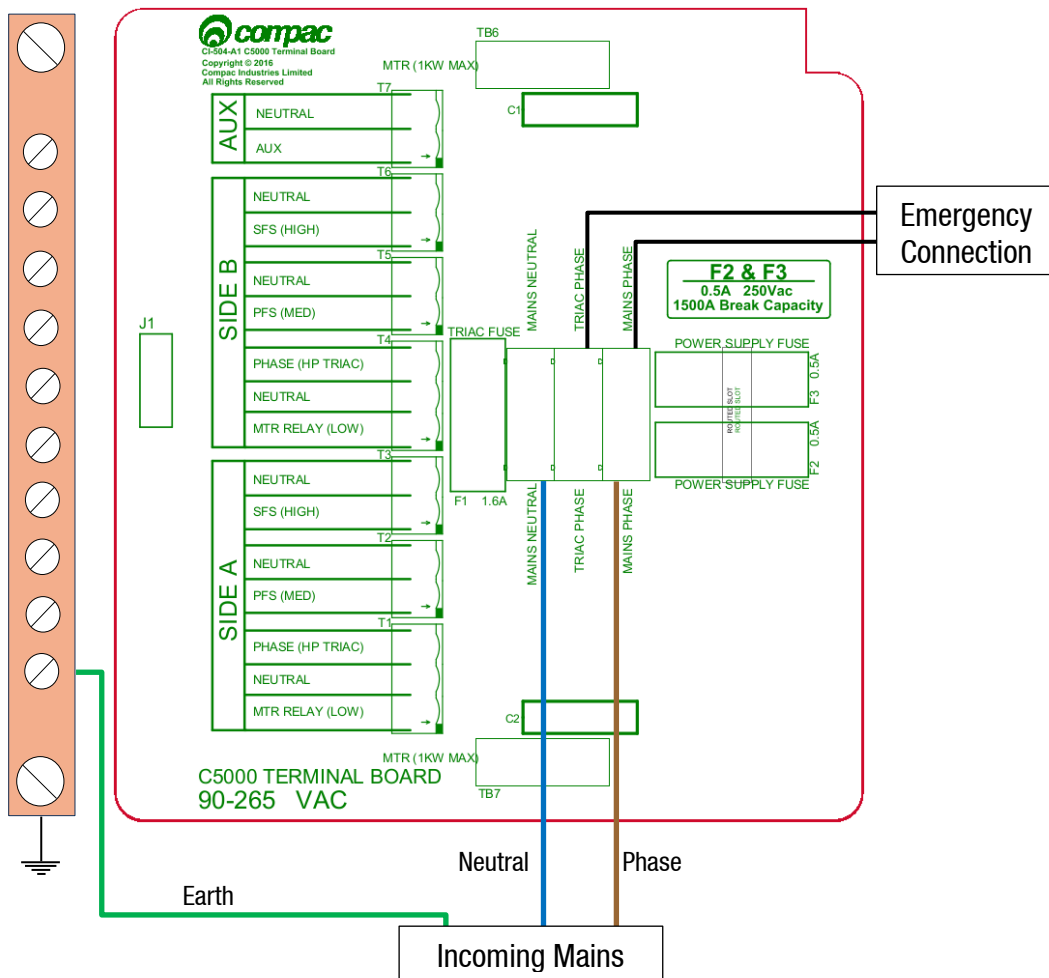
Electrical

When installing the Fillmaster, internal wiring will be pre-connected. External wiring will need to be connected to the K-Factor board and the Terminal Board.

Terminal Board

The terminal board can be located inside the flame-proof box of the C5000, on the top layer of the power supply. The incoming mains will be wired into the terminal board. The incoming mains wiring is as follows. An emergency stop connection, if desired, can be wired into the terminal board wiring, shown below. This will be in place of the normal loop between the triac and main phases. Wires have standard colours which are shown. In case these are unclear, the colours are as follows:

- Incoming mains phase: Brown
- Incoming mains neutral: Blue
- Incoming mains earth: Green/Yellow

17.

The external pump connections are as shown. Wire in the required side(s).

External Pump | **Side B**

External Pump | **Side A**

Compac
CI-504-A1 C5000 Terminal Board
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TB6
MTR (1KW MAX)
T7
C1

AUX
NEUTRAL
AUX

T6
NEUTRAL
SFS (HIGH)

SIDE B
T5
NEUTRAL
PFS (MED)

J1
T4
PHASE (HP TRIAC)
NEUTRAL
MTR RELAY (LOW)

TRIAC FUSE

MAINS NEUTRAL
TRIAC PHASE
MAINS PHASE

F2 & F3
0.5A   250Vac
1500A Break Capacity

POWER SUPPLY FUSE
F3 0.5A

POWER SUPPLY FUSE
F2 0.5A

T3
NEUTRAL
SFS (HIGH)

SIDE A
T2
NEUTRAL
PFS (MED)

T1
PHASE (HP TRIAC)
NEUTRAL
MTR RELAY (LOW)

F1 1.6A

MAINS NEUTRAL
TRIAC PHASE
MAINS PHASE

C2
MTR (1KW MAX)
TB7

C5000 TERMINAL BOARD
90-265   VAC

18.

K-Factor Board

The K-Factor board is located behind the display under the black cover. The nozzle switch, sump, air switch, and meter should be connected to the K-Factor board. These connections are as shown. The K-Factor board has connections for both side A and side B. Current Fillmaster are operable with side A only. The K-Factor switch should be sealed for security. Optional mechanical totes can also be connected to the K-Factor board, which increment mechanically with each litre of fuel dispensed.
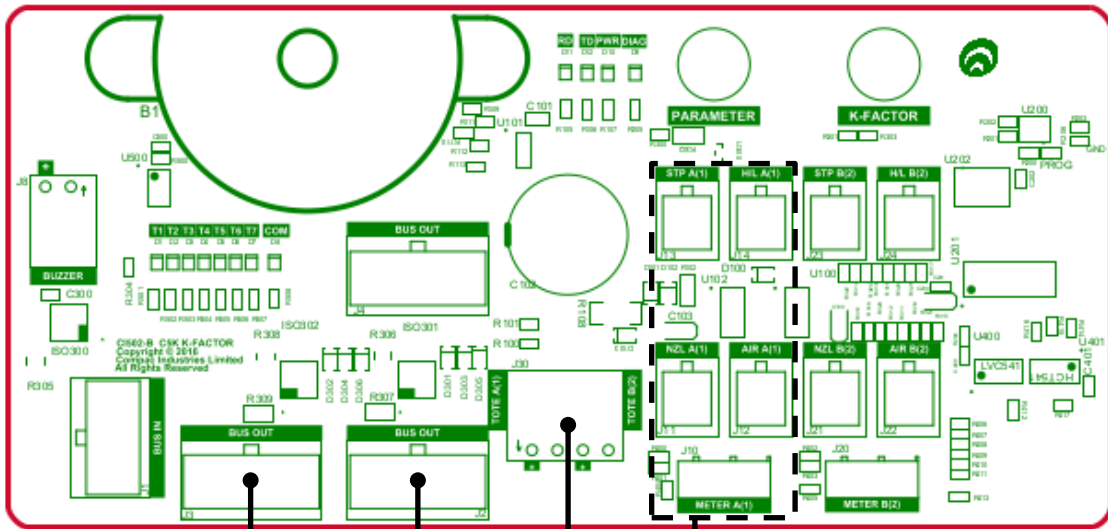
Bus out system cables - can connect slave display to here
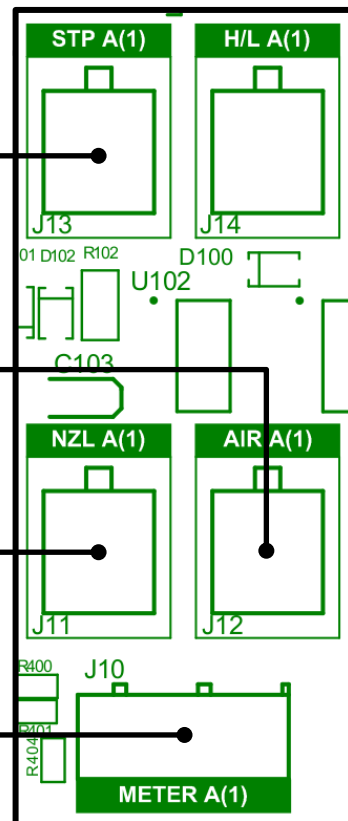
Connect optional mechanical totes to here

Side A Connections

Connect Sump Switch to here

Connect Air Switch to here

Connect Nozzle Switch to here

Connect Meter to here

19.

Installing the Sim Card

To install the sim card, the modem needs to be removed. The location of the modem is as shown:

Main Display

PIN Pad

HID Reader

AC/DC Converter is also housed here

Modem

Slave Display
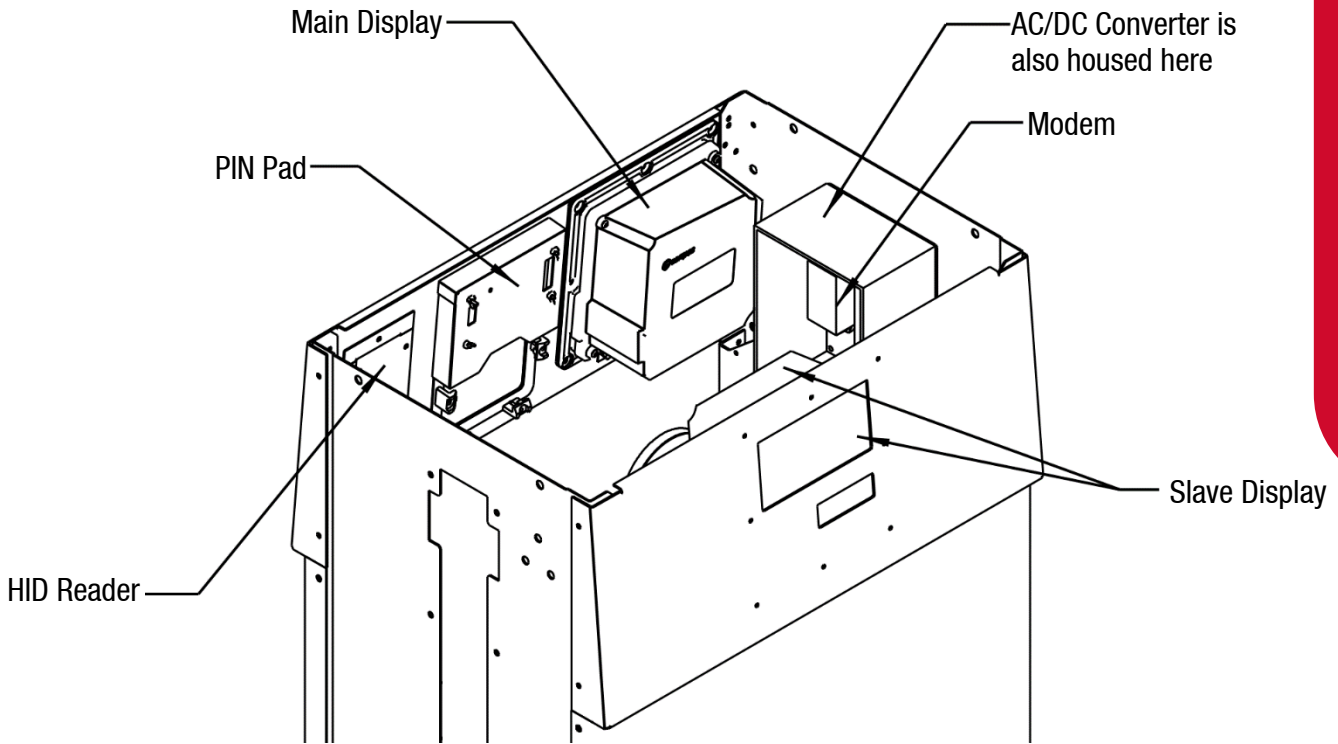
As shown, there is a small plastic panel on the back of the modem. This can be removed. The supplied sim card should be installed under this panel. The panel and modem should then be replaced.

Back of modem

Remove this panel
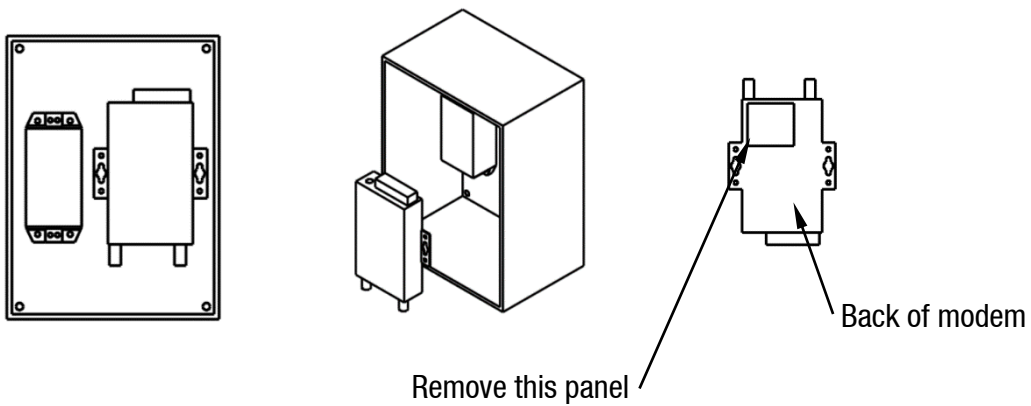
Software

This section details what options are available for the unit and what each setting means. Some settings may not be available for each specific unit.

System

Card Records

Before cards can be added, card records need to be set up from the unit. When setting up card records, a PAN length, BIN range, and access number can be specified. These are encoded onto the card and can be used to restrict access to the pumps. PAN length is the number of digits that make up the BIN number and card number. The BIN range gives access to a range of cards that have similar BIN numbers. BIN numbers are always 6 digits long. To make this into a BIN range, two numbers must be added. For example, if a card had the following card number:

7824331000132017

The card is 16 digits long, therefore the PAN length is 16.

The BIN number is 782433. To allow all cards with the same BIN number access:

BIN low should be set to 78243300.
BIN high should be set to 78243399.

This would allow all cards with a BIN number of 782433 access. The Access number is used to further restrict cards. This is a 5-digit number and will be encoded onto the cards. 0 should be entered into the Access field if the card does not have an access number. Once the card records are set up, specific cards can be entered into the system using PAN numbers.

If a card is hotlisted, it will be accepted even if the card PAN number has not been entered. Otherwise, the card's individual PAN number will have to be entered as a card. Prompts are an optional setting which may be chosen when setting card records. The prompts that are selected when entering a card will appear when that card is swiped; for example, if odometer is selected, the card holder will have to enter an odometer number to access the fuel pump. Cards can be enabled or disabled.

Passcode

For security, the unit has a passcode. This can be used to access settings from the unit. For extra security, if the settings are accessed with the passcode, some options are not able to be changed, such as the K-Factor setting. These must be accessed by pressing the K-Factor switch.

The unit supports three different authorisation modes: PIN, HID or Cardreader. The system can be set up from either CompacOnsite or from the unit itself.

Pumps

The Fillmaster supports two configurations, single and dual, enabling two pumps to be used simultaneously if one card is used. These pumps are assigned a side so that they may be individually customised. Each side must be numbered between 1-99.

NOTE: Entering a pump number 0 will disable the pump.

Individual settings for each pump include the fuel product used, which has a name and product code, and the meter used at each pump. The unit supports encoder meters (max frequency 3.5Khz) or V50 meters. The K-Factor, used to calibrate fuel flow, can also be set for each pump. The state of the pumps can be either operational or locked, which may be desired if the pump is not operating normally. Pumps have two solenoids for product flow. If the solenoids are unavailable, the pump preset should also be unavailable. Solenoid delay, the amount of time it takes the solenoids to turn on after lifting the nozzle, can be customised for each side. Auto authorisation can be enabled for a pump, allowing the pump to be authorised without lifting up the nozzle.

Preset Cut-off and Rounding

Preset cut off is used to deliver an accurate amount of fuel. When dispensing fuel, two solenoids are used for fuel flow. When the dispensed amount of product reaches the preset cut off, one solenoid is turned off to slow delivery rate and dispense an accurate volume of product.

A two-digit number can be assigned to determine the preset rounding in litres. The first digit determines how the preset is rounded down, and the second digit determines how the preset is rounded up. For example, if Preset Rounding is set to 89 and the preset is 40;

40.08 is within .08 of 40 and would therefore be rounded down to 40.

39.91 is within .09 of 40 and would therefore be rounded up to 40.

Flow Range

A flow range is needed for each pump to dispense an accurate amount of product. If too much or too little fuel is dispensed, the meter cannot accurately measure the dispensed fuel and therefore should cut off and display an end of sale message. The flow range will vary for different products. Flow low should be the lower value of the flow range, while Flow high is the highest possible flow.

NOTE: Flow range is optional. The default value is 0.

A flow timeout can be set, which cuts off the motor after the set amount of time. The default is 000, which is 20 seconds.

Unit Price and End of Sale

The unit price is the price per litre of fuel dispensed. For this unit, it is displayed in the Card Totals window.

End of sale indicators show why the motor stopped during the last sale.

Cards and Card Users

Card numbers must be added for a card to be valid. Card or HID numbers can be added. These numbers should correlate to the earlier card setup done in the system section.

Cards can also have User IDs, which are optional prompts for cards. If a User ID is asked for the customer dispensing fuel will have to enter a valid User ID. If a user ID is not required, and instead the retailer wants a different prompt (such as Fleet number) user ID can be configured to ask for different prompts.

Meters

The unit supports encoder or V50 Modbus meters. The encoder meters can be single, dual or triple channel. Single channel encoders measure the fuel dispensed. Dual channel encoders do this as well as determine the rotation of the meter (and therefore the direction of fuel flow). Triple channel meters can determine if the meter is correctly connected and functioning.

K-Factor

The K-Factor is used to calibrate product flow. It is a ratio of litres dispensed per revolution of the meter. The K-Factor may need to be calibrated after periods of time. To calibrate the pump, dispense fuel into a certified measuring container and compare the display value with the one dispensed.

Example:

Display shows 10.00   True volume 20.00

To calculate the correct K-Factor from the information above; firstly record the existing K-Factor.

$$New\ K\ Factor = Existing\ K\ Factor * \frac{Dispensed\ Amount}{Displayed\ Amount}$$

$$= Existing\ K\ Factor * \frac{20}{10}$$

$$= Existing\ K\ Factor * 2$$

Unique ID is for a V50 meter only.

Once the K-Factor has been determined, refer to Setup Instructions (see page 25) for instructions on how the change the K-Factor,

Tanks

Tanks can be set up with their corresponding product, number and capacity.

Tank Gauging

Tank gauging is used to determine how much fuel is left in a tank. The Fillmaster supports four tank gauges; Veeder-Root, Fafnir, Vega and Virtual. To accurately gauge the volume of fuel, the tank number, safe fill level and capacity are required. These depend on the tanks onsite. If a Vega electronic dipstick is used, please note that more information will be required; the position of the probe in the tank is needed. A Tank Strapping table ID will be required to calculate volume. A Vega electronic dipstick may also be connected differently; the gauge channel may change depending on the connection to the Comms board.

Software Setup

To change settings from the unit you must either have access to the K-Factor switch, which is located on the inside of the unit on the K-Factor board, or have the passcode to the unit.
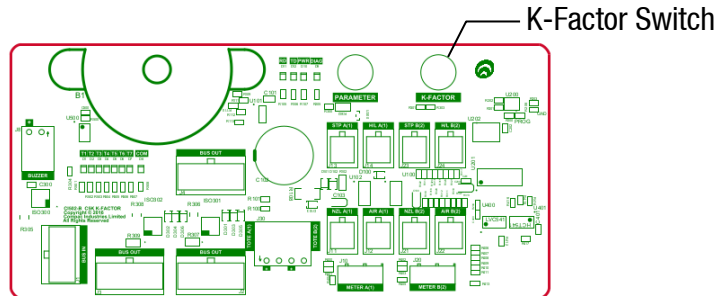
K-Factor Switch

Pressing the K-Factor switch will bring up a menu displaying set up options on the Keypad display. The available options are shown below. The same menu can be accessed by pressing Cancel on the standard display and entering the passcode.

```
             MENU
1.SYSTEM        6.TANKS
2.HARDWARE
3.PUMPS
4.AUTH
5.PRODUCTS
```
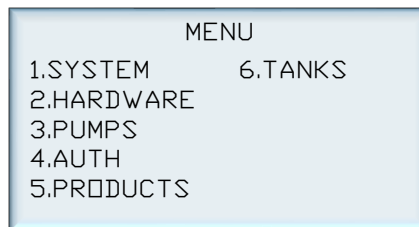
IMPORTANT NOTE: The settings shown on each individual unit will depend on the current software version. Not all the options shown here may be displayed on every unit.

NOTE: *If the menu is accessed by entering the passcode, not all the settings will be available. K-Factor and meter setup can only be accessed by pressing the K-Factor switch.*

The K-Factor switch must be sealed after servicing.

NOTE: *The system has a timeout of 15 seconds.*

Some software setup options are not shown here. Instead, only options which are required to set up the unit are explained. Refer to the Fillmaster Service Manual for a full list of software set up instructions.

Setup Instructions

To set up the site, first set up the available products.
1. Go to Products
2. Select a product number and enter an available product

```
            MENU
1.PRD #01         NOT SET
2.PRD #02         NOT SET
3.PRD #03         NOT SET
4.PRD #04         NOT SET
5.PRD #05         NOT SET
                  Next(#)
```

Once products have been set, the site tanks can be set up. Select `TANKS` from the main menu and select `TANK A` or `TANK B`.

```
         TANK A
1.TYPE       NONE
2.ENABLED    DISABLED
3.TANK #     00
4.PRODUCT
5.CAPACITY   00000000
                Next(#)
```

```
         TANK A 2
1.SFL             00000000




(*)PREV
```

1. The tank gauge type can be changed by selecting 1. The options are VDR, Vega, Virtual, Fafnir.
2. Tank gauging can be enabled or disabled by pressing 2.
3. The tank number and capacity can be set by selecting the desired functionality and entering the new value.
4. The product can be set by pressing 4 and selecting an established product.

Safe fill level can be changed by pressing 1 and entering the new value in litres.

Now the site tanks have been set up. Next, the pumps should be configured for the unit. To do this:
1. Go to Pumps > Select the relevant pump
2. To allow the pump to be used, first set a pump number between 00 and 99
3. Select the product that will be used at the pump
4. Enable the pump
5. Used the (#) key to scroll for more options. Ensure the unit price is correct

```
     SIDE A CONFIG 1
1.NUMBER       05
2.PRODUCT    UNLEADED
3.ENABLED    ENABLED
4.INFO       IDLE
5.METER

             Next(#)
```

```
     SIDE A CONFIG 2
1.FLOW
2.PRESET
3.MODE
4.COMMS
5.ADVANCED
(*)PREV
```

All other options for pumps are optional or have default values. If these optional settings are desired, the pump can be customised. Refer to Software for information on these options. To change these settings, simply scroll between options using the (#) and (*) keys. Select the desired setting and enter the desired value. The Fillmaster Service Manual gives full instructions on changing each setting.

Next, the meter should be set up. To set up the meter:
1. Select PUMPS from the main menu, select pump number and then select METER will bring up the following menu.

```
    SIDE A METER CONFIG
1.TYPE          3CH ENC
2.K FACTOR      005.0000
3.UNIQ ID       N/A
4.CALIB         DISABLED
```

2. Ensure the correct meter is selected. Fillmaster currently only has 3 channel encoder, so this should be selected
3. Ensure the K-Factor is correct. Refer to software for instructions on how to calibrate the K-Factor

The unit is now operational. For further settings and customisation of the unit refer to the service manual supplied with the unit.

Finding the Device ID

The device ID is required to log on to CompacOnsite. If this is not known, it can be found by selecting SYSTEM from the main menu and then select DEVICE.

```
        DEVICE ID


       CFM000000

     .compaconsite.com
```

26.

CompacOnsite

The unit can be set up online via CompacOnsite. To access CompacOnsite, the device ID is needed. The following should be entered into an internet browser, replacing device ID with the specific ID of the unit. Refer to Software Setup for instructions on finding the Device ID.

https://deviceID.compaconsite.com

The standard passwords are shown below.

IMPORTANT NOTES:

For the security of the site, ensure the passwords are changed once the unit is installed.

Access to online data is heavily dependant on the unit being powered on and connected to the internet. Ensure the unit is online in order to have full access to all site data.

Username	Password
user	c0mpac5KUser
admin	c0mpac5KAdmin
tech	c0mpac5KTech

After log in, the CompacOnsite home screen will appear.

NOTE: *The side bar will look different depending on the access level of the user.*
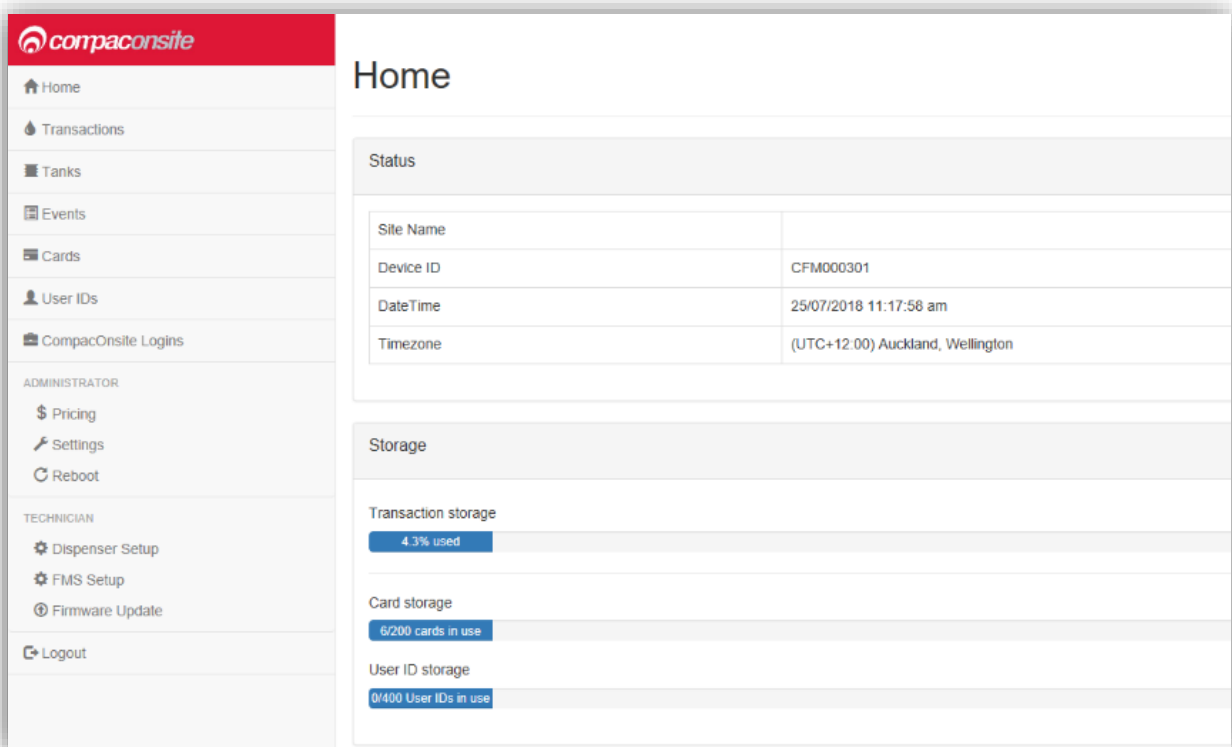
Users

There are three different user options when logging into Compac Onsite; standard, technician and administrator. Each user can access different functionalities. Standard users can access all basic functionalities, such as tanks, cards and transactions. Admin users can also access these, as well as being able to access the system settings and reboot. The technician can access all these options, as well as being able to access set up options which are needed when setting up the site.

Technician Options

Technician users can access both administrator and standard user options. As well as this, they can access site setup options.

Dispenser Setup

Dispenser Setup will bring up a setup menu with four options; Products, Pumps, Tank Gauging and Tank Strapping.
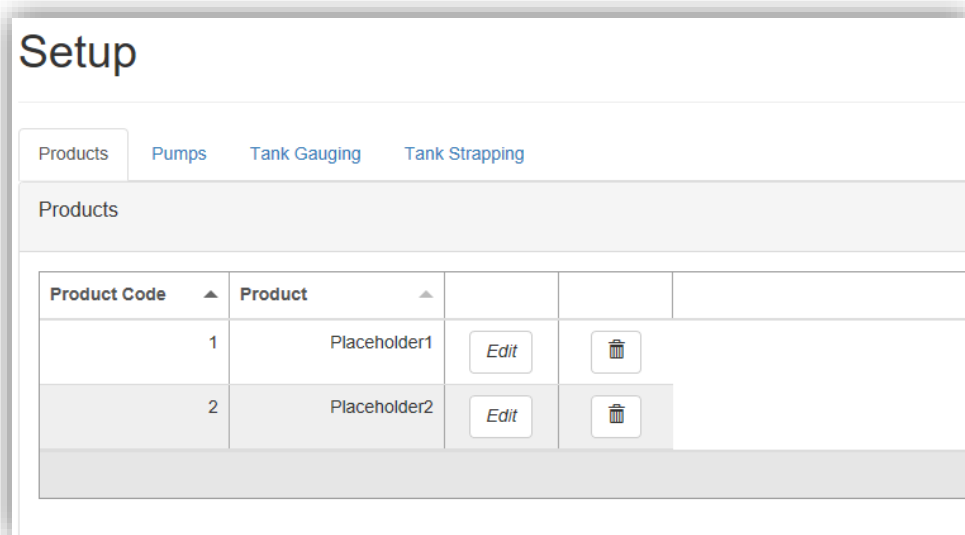
In the Products tab, the current products can be viewed.

To create a product, Add Product can be selected. The product must be named and numbered before it can be saved. The following menu will appear.

Create Product

Product Code:

Select product code...

Product Name:

Submit

Pressing Submit will add the product. When a product is edited the same menu will appear, and the product's name and number can be changed before resubmitting.

To delete a product, select the recycle bin icon in the products table, and click OK on the pop-up.

The next tab is the Pumps tab. From this tab, the configuration of the unit (single or dual) can be chosen, as well as the settings for each pump.

Setup

Products | Pumps | Tank Gauging | Tank Strapping

Pumps

Side A

Pump number (1-98)	0
Product	
Meter type	
State	Disabled

Update

Depending on the chosen configuration, only one side may be displayed.

To change the Pump number simply enter the new value and press Update.

To change the product, meter type or state, select the relevant option from the drop down menus and press update.

The Tank Gauging tab shows which tank gauge is selected for each tank.

Setup

Products   Pumps   **Tank Gauging**   Tank Strapping

Tank Gauging

Enabled	Gauge Type ▼	Product ▲	Capacity (L) ▲	Safe Fill Lev... ▲	Gauge C... ▲	Tank Num... ▲	
✖			0	0	0	0	Edit
✖			0	0	0	0	Edit

The current settings can be viewed. To edit a row, select Edit.

Edit Tank Gauge Settings

Gauge Type

Veeder-Root

Product

Placeholder

Tank Number

1

Tank Capacity (L)

0

Safe Fill Level (L)

0

☐ Enabled

Submit

CompacOnsite

30.

To change a setting, enter the new setting and Submit the new values.

If a Vega tank gauge is being used, more information is required. The required fields will automatically appear if a Vega meter is selected.

Edit Tank Gauge Settings

Gauge Type

Vega

Tank Strapping Table ID

Distance from probe to product for full tank (mm)

0

Distance from probe to tank bottom (mm)

0

Tank Gauge Channel

Product

AdBlue

Tank Number

1

Tank Capacity (L)

0

Safe Fill Level (L)

0

☐ Enabled

Submit

The final tab in Dispenser Setup is the Tank Strapping section. This section is only relevant if a Vega meter is fitted. Refer to Vega Tank Strapping for information.
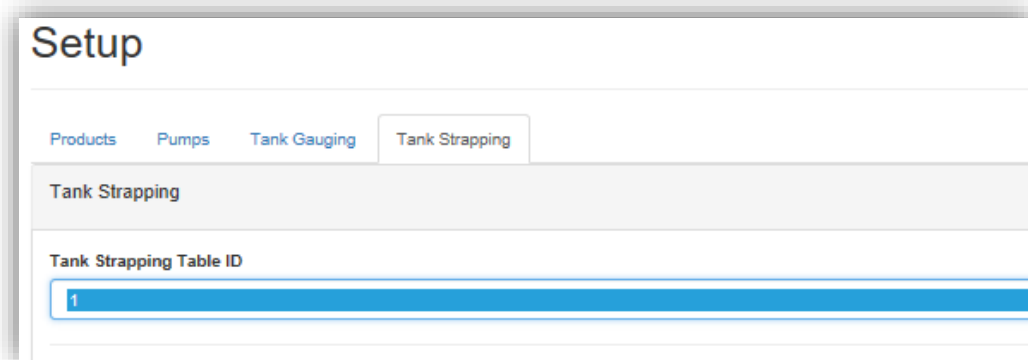
To download the tank strapping table, select download current strapping table. At the bottom of the page, tables can be uploaded and the table template can be downloaded. Use the table ID drop down menu to select the table ID.

FMS Setup

When setting up the unit, the FMS setup tab can be used to set up card records.

FMS Settings

Card Prefix Table

Name	Enabled	BIN high	BIN low			

Name:

BIN high:

BIN low:

Access:

PAN length:

☐ Hotlist
☐ Expiry check

Prompts

☐ Preset
☐ PIN
☐ Odometer
☐ User ID

☐ Enabled

Submit

Cards can be imported and exported as .csv files. This option can be found in this tab. To add a new card, fill in the required fields and check which prompts are desired. Checking Enabled will enable the card. When the card is finished, press Submit. Current cards can be viewed in the Card Prefix Table.

Vega Tank Strapping

If a Vega electronic dipstick is being used, a tank strapping table will need to be created to gauge the amount of liquid in a tank. To do this, the tank dipstick will need to be accessed. This is a ruler showing volume that is a component of tanks.

To make a tank strapping table:
1. Download the table template from the Tank Strapping section on CompacOnsite. The table is shown below
2. Take the dipstick from the tank
3. Using a measuring tape and the dipstick, record the readings on the dipstick (these will be a volume) and the corresponding length from the bottom of the dipstick (which rests on the bottom of the tank)
4. Fill the table template with a table relating length from the bottom of the tank and volume. This will be the Tank Strapping table
5. Upload this onto CompacOnsite

After making a table, reinsert the dipstick into the tank and then read the volume of fuel in the tank. This is also required on CompacOnsite.

NOTE: *The more readings done on the tank, the more accurate the tank gauging will be.*

Level (mm)	Volume (l)
65535	65535
65535	65535
65535	65535
65535	65535
65535	65535
65535	65535
65535	65535
65535	65535
65535	65535
65535	65535
65535	65535
65535	65535
65535	65535
65535	65535
65535	65535
65535	65535

Administrator Options

Administrators can access all the above options, as well as being able to access pricing, settings and reboot.

Pricing

From pricing, the pricing for different products can be viewed and changed.

The Active Price is the price being used currently for the pumps. To change this, select Set New Price.
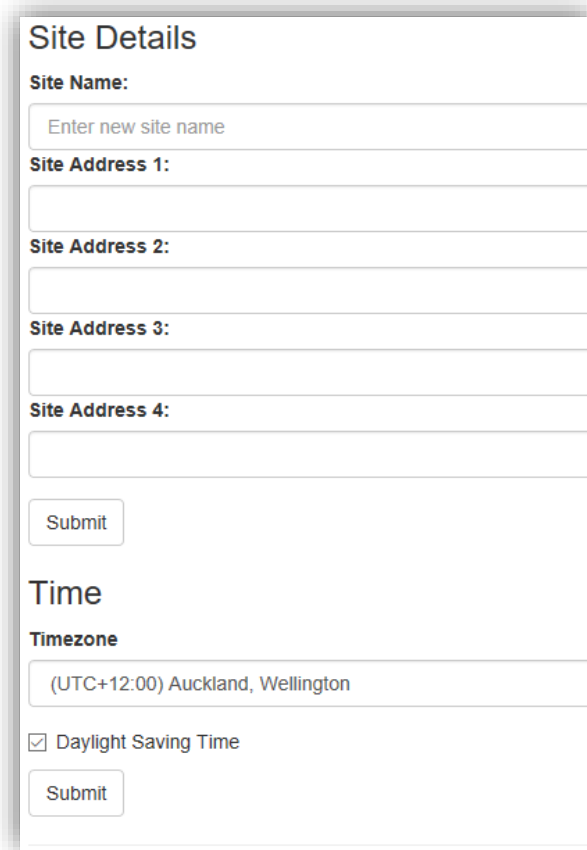
Enter the new price for any product and select Change Price. This will change the New Price. However, the unit will continue to use the Active Price until Use New Prices is selected, under Price Change. Clicking this will change the Active Price and update them to the New Price.

Settings

Settings can be used to set site details. Enter the site details and press submit.

Timezone can also be set. In some cases, timezone will be automatically synced. Enter the timezone and press submit.

Reboot

Reboot is used to restart the application. Some settings require rebooting to update recent actions. The page needs to be refreshed after the Reboot process has been completed.

NOTE: *The unit can only be rebooted when no transactions are taking place.*

When someone is refuelling the C5000 unit can not be rebooted. The pumps may stop fuelling as the transaction has been interrupted.

36.

Standard User Options

Users have access to all the following basic functionalities.

Transactions

Transactions

Transactions

Transaction storage

`0.1% used`

Reference	Card Number	Local Date Time	Product	Product Code	Pump	Hose	Amount	Quantity
23	7824331000132…	02/03/2018 11:46:0…	Diesel	3	1	1	4.38	4.3
22	7824331000132…	02/03/2018 11:45:5…	Diesel	3	2	1	1.60	1.6
21	7824331000132…	02/03/2018 11:45:2…	Diesel	3	1	1	3.26	3.2
20	7824331000132…	02/03/2018 11:45:0…	Diesel	3	2	1	1.71	1.7
19	7824331000132…	02/03/2018 11:44:1…	Diesel	3	1	1	0.66	0.6
64	7824331000132…	23/02/2018 15:04:4…			2	1	2.84	2.8
63	7824331000132…	23/02/2018 13:46:3…			1	1	0.00	0.0
62	7824331000132…	23/02/2018 13:45:2…			1	1	7.26	7.2
61	7824331000132…	23/02/2018 13:43:4…			1	1	0.00	0.0
60	7824331000132…	23/02/2018 13:32:5…			2	1	2.60	2.6
59	7824331000132…	23/02/2018 13:31:5…			2	1	29.00	29.0
58	7824331000132…	23/02/2018 13:29:4…			1	1	12.10	12.1
57	7824331000132…	23/02/2018 13:28:4…			1	1	0.00	0.0

NOTE: *Table columns shown on page can be expanded.*

The Transactions storage is limited. When Transaction storage is at 100%, the user will have to Export CSV. This will reset the Transaction storage bar and cause the data to be stored in a separate place in the system. This allows more transactions to be recorded.

NOTE: *Select Refresh before adding more transactions.*

Transactions that have not been exported will be viewed in the screen as default. To show exported transactions untick 'Only load new transactions'.

Tanks

The Tanks section indicates product details and volume of fuel in the tank.

Tanks

Tank No.	Product	Produc...	Gross Volum...	Net Volume (L)	Safe Fill Level	Ullage	Water Height	Temperature

Deliveries indicate when the last transaction occurred, including tank number and date time.

Deliveries (last 10)

| Tank No. | Date Time | Gross | | | Net | |
		Delivery (L)	Start (L)	End (L)	Delivery (L)	Start (L)

The data in this section can be downloaded by pressing Download. Select Refresh to view new data.

NOTE: A reboot is required for any changes to be applied.

Events

Events are notable events that occur with the pumps. The main event that should be examined is the Pump Snapshot event. This is an accumulative amount of fuel that has been pumped from the selected pump. Select Download to download the list of events on screen. Select Refresh to load the most recent events.

Events

Events									
Local D... ▲	Event ▲	Event... ▲	Text ▲	Pump ▲	Hose ▲	Unit Price ▲	Amount ▲	Quantity ▲	Tank ▲
2083-01-05...	Controller Pow...	80							
2083-01-05...	Pump Snapshot	46		1	1	1	0	0	
2018-01-24...	Time update	76	Old: 3566346011, N...						
2018-01-24...	Controller Pow...	80							
2018-01-24...	Pump Snapshot	46		1	1	1	0	0	
2018-01-24...	Time update	76	Old: 1516766478, N...						
2018-01-24...	Controller Pow...	80							
2018-01-24...	Time update	76	Old: 1516766508, N...						
2018-01-24...	Controller Pow...	80							
2018-01-24...	Time update	76	Old: 1516766532, N...						
2018-01-24...	Controller Pow...	80							
2018-01-24...	Time update	76	Old: 1516766551, N...						
2018-01-24...	Controller Pow...	80							
2018-01-24...	Time update	76	Old: 1516766579, N...						
2018-01-24...	Controller Pow...	80							
2018-01-24...	Time update	76	Old: 1516766710, N...						
2018-01-24...	Generic Event	70							
2018-01-24	Generic Event	70							

Cards

In this section, a new card can be created with Create New card. Decide on a card number, PIN and owner details, then select Submit.

NOTE: *Ensure Enabled box is ticked to validate card.*

If a mistake has been made, select Edit and edit card details. Select the trash can icon if a card is not needed. The maximum Card storage is limited at 200 cards.

Cards

Cards
Card storage
9/200 cards in use

Card Number	Enabled	PIN	Card Total (l)	Owner detail 1	Owner detail 2	
12345	✗		0.0	123	456	Edit
123213	✗		0.0			Edit
123456	✓		0.0	123	456	Edit
245687f	✗		0.0	123	456	Edit
24568789	✓		0.0	123	456	Edit
1234567890123456…	✗		0.0			Edit
1234567890123456…	✗		0.0			Edit
ABCD1234	✗	1234	0.0	K	John	Edit
ERCD1234	✗	3333	0.0	G	Q	Edit

User IDs

User IDs consist of any 6 numbers or less. Select Edit to Edit User IDs and owner details. Tick the enable box to make the User ID valid for use. The trash can icon can be selected to permanently delete the user.

NOTE: *A card can have multiple users.*

Different users will have different User IDs. The purpose of this is to know which user has made a transaction, and ensure they are only fuelling when required.

NOTE: *All files created **MUST** be a csv file not an excel file.*

Import User IDs is another way of inserting new users. It may be easier for bulk user adding.

User IDs

User IDs

User ID storage

`3/200 User IDs in use`

User ID	Enabled	Owner detail			
1235	✗	Test	Edit	🗑	
12356	✗	Test	Edit	🗑	
54321	✓	test	Edit	🗑	

CompacOnsite Logins

For the security of the site, the standard passwords should be changed during set up of the unit. In case the passwords were not changed during installation, the process is outlined here. To change the passwords, go to CompacOnsite Logins, shown in the left options tab.

User Management

Users		
Username ▲		
tech	Edit	
admin	Edit	
user	Edit	

Not all users may be shown depending on the access level of the user. To edit, select Edit.

Edit User

Username:

tech

Password

Password

Minimum of 8 characters

Submit

Enter the desired new password, confirm this and press Submit.

Error Codes

Error codes will show on the litres display when common faults occur. Use the following table to diagnose these faults.

Error Code	Fault	Action
Er FLo	Excess flow	Maximum flow rate exceeded
Err 8	Excess reverse flow	Check product is not flowing back into the tank once the delivery has finished
Err 9	Pulse Meter Error	If the problem persists, repower the unit. Replace the meter if necessary.
Er 50	Meter Modbus error	Check that the meter is plugged in correctly. Check correct configuration and correct software installed
Er 52	Meter error	If the problem persists, repower the unit. Replace the meter if necessary
Er 53	Meter stopped vibrating	Replace meter
Er 54	Temperature sensor failure	Replace meter
Er 55	Meter not ready	Wait for meter to calibrate. If the problem persists, repower the unit
Abd	Display error	Check display cable for loose wires/crimps. Replace display PCB if necessary

Installation Checklist

When a new unit is being installed use the following checklist to make sure the unit is fully operational. Check each box or write N/A where not applicable.

Mechanical Checklist	
Check that the unit is securely mounted and does not shake	
Check that unit will not be exposed to harsh weather conditions	
Ensure the unit is connected properly	
Check that the unit is not damaged and all signage is visible	
Check that the K-Factor switch is properly sealed	
Thoroughly check the unit for leaks	
Ensure the covers are attached and secured	
Check that flow is correct	
Ensure the K-Factor has been calibrated	

Transaction Checklist	
Perform a test transaction with a valid PIN, card or HID (whichever is applicable)	
Check price and ensure correct amount of fuel is being dispensed	
Try to take fuel with an invalid PIN, card or HID and ensure it declines	
Lift the nozzle without entering a transaction and ensure no fuel is dispensed	

Electrical Checklist	
Ensure the motor(s) are running correctly	
Check that the incoming mains has been properly connected as shown in Electrical Installation	
Check that the dispenser contactor connections have been made as shown in Electrical Installation	

Software Checklist	
Check that the set up menu can be accessed from the unit with the passcode (Refer to Software Setup)	
Check that transactions are being recorded on CompacOnsite	
Check that when settings are changed from the unit, they are also changed on CompacOnsite (and vice versa)	
Check that the retailer understands how to use CompacOnsite to get transactions **NOTE:** *It is recommended to give the retailer User rights to prevent them changing the settings of the software.*	
Ensure that the CompacOnsite standard passwords have been changed	

Installation Checklist