



compac

INTEGRATED REFUELLING SOLUTIONS

AdBlue Laser V50 Installation Manual

Version No: 1.1.4

Model: AdBlue Laser V50
Date: 24th February 2021



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- 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.
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- Only parts supplied by or approved by Compac may be used and no unauthorised modifications to the hardware or software may be made. The use of non-approved parts or modifications will void all warranties and approvals. The use of non-approved parts or modifications may also constitute a safety hazard.
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Product Identification

Specifications

This manual applies to AdBlue Laser V50

Models Covered

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.

Document Control

Manufactured By:

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Revision History

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1.1.3	29 July 2020	V Amarakoon	Updated the power supply diagram Updated Installation tests
1.1.4	24 Feb 2021	V Amarakoon	Added LLA30-160/80SQA Footprint

Document Control

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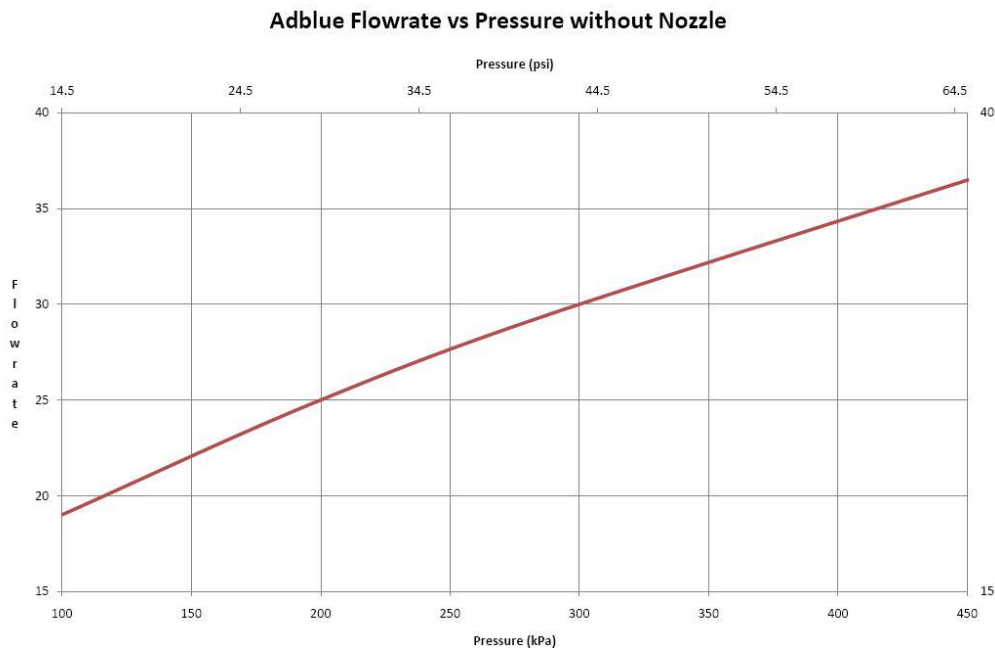
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AdBlue Specifications

The AdBlue supply pump must be AdBlue compatible. It must either have flooded suction or be fitted with an air separation device to eliminate air prior to the dispenser.

Ensure the supply pump pressure does not exceed the rated pressure of the nozzle.

Refer to the diagram below:



Electrical Requirements

Power cable: 3 Core Steel Wire Armour Cable 2.5mm²

Core 1: 230 Volt Supply (Active). Core 2: Neutral. Core 3: Earth.

Dispenser power requirements: 220 - 240 Volts. 50 Hz, +/-10%

Current draw: 25W Idle, 200W with all solenoids active.

Communications cable: 2 Core Steel Wire Armour Cable 1.5 mm². Maximum cable length 100 m. 12 V current loop. For connecting to controller or other dispensers (option).

Submersible pump(s): Suitable cable for 230V solenoid switching current. 300mA maximum load. Do not wire submersible pumps directly to C4000 power supply.

Prior to pump installation, ensure that there is at least a two-metre tail on all cables.

Installation

Installation should be in accordance with local regulations.

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

Dispensers should be mounted on a solid, level surface and secured using the fastening holes as shown in the footprint drawings. It is up to the installer to select appropriate fastenings for the application.

Where local regulations for flammable substances require a sump to be fitted:

- Sumps must be provided at all dispenser installations with secondary containment pipework and at all new installations; and
- 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.

Care must be taken when installing pipework to make sure no oil or other contaminants enter the AdBlue lines. Do not use lubricant or thread sealing compounds on AdBlue fittings unless approved for use with AdBlue.

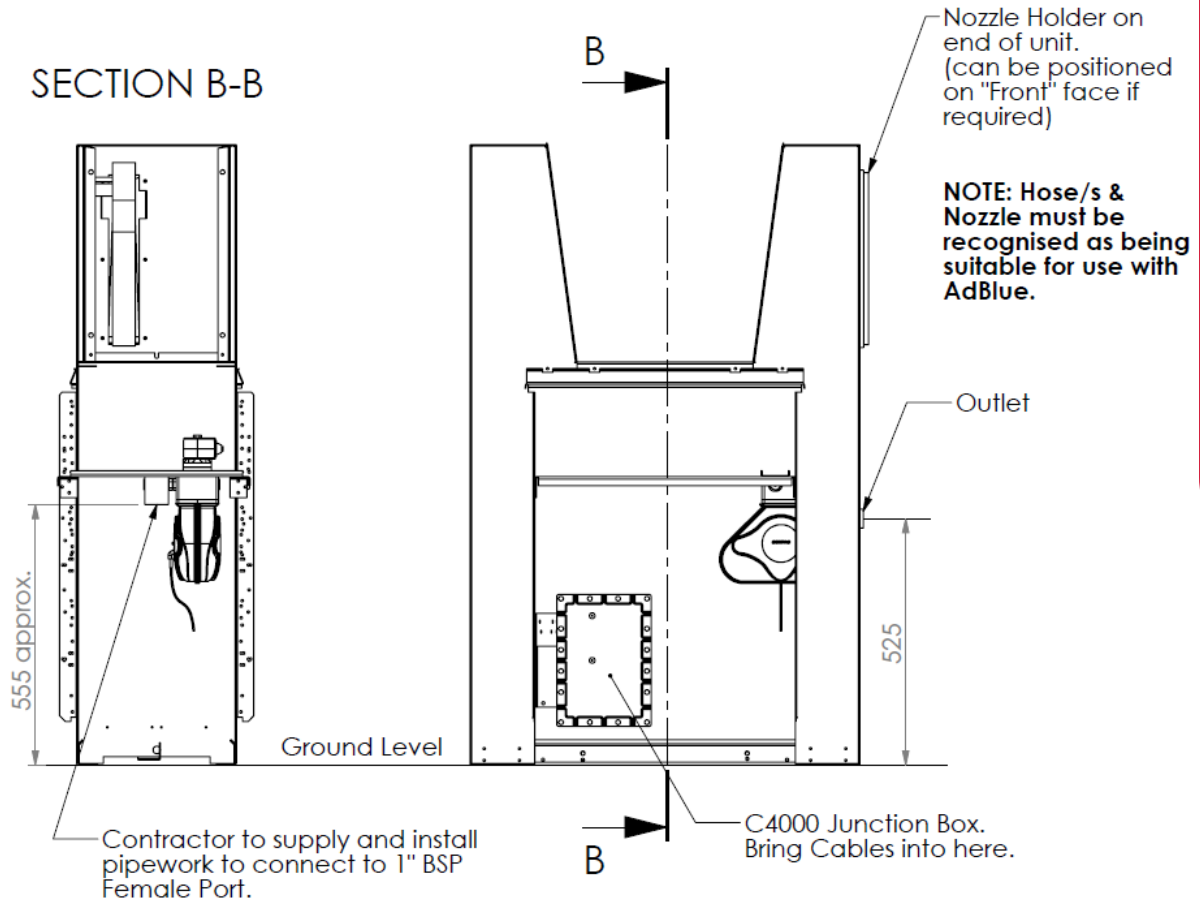
AdBlue is corrosive to aluminium and mild steel. All pipework and fittings that carry AdBlue must be approved for use with it.

While AdBlue is considered non-toxic, it is slightly alkaline. Protect skin and eyes from contact. Flush with water if exposed. Refer to the AdBlue MSDS for further information.

Footprints

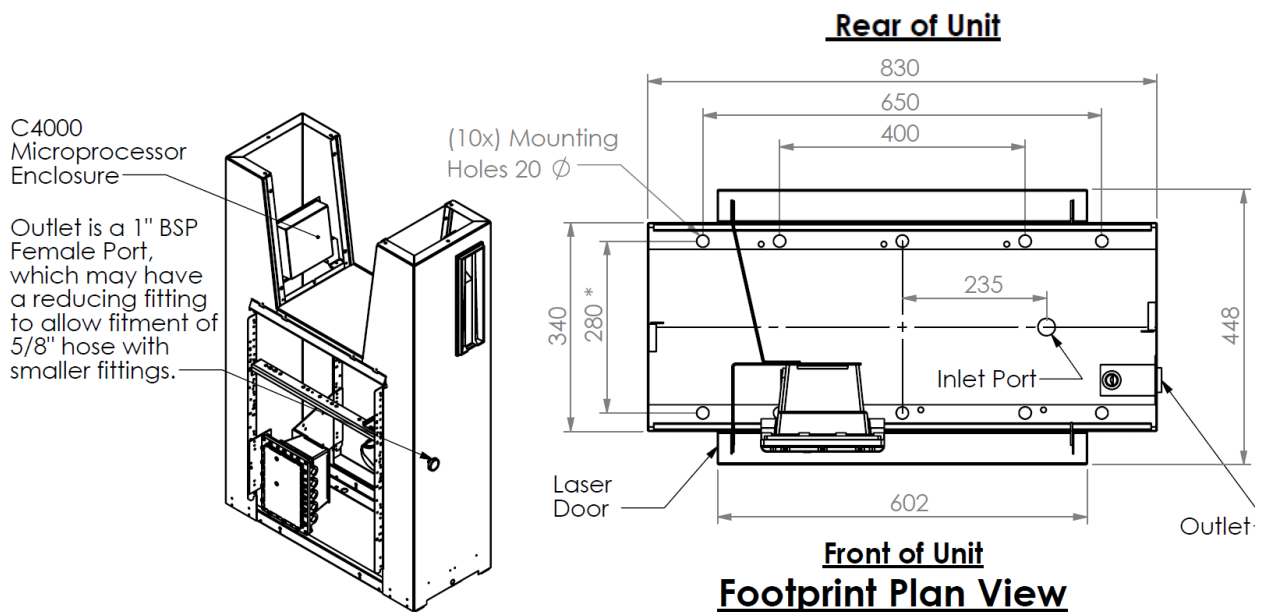
LA 30S

* NOTE: This dimension will change to **380mm** when a Dispenser is fitted with "External" Base Rails



NOTE: Pipework material must be recognised as being suitable for use with Adblue

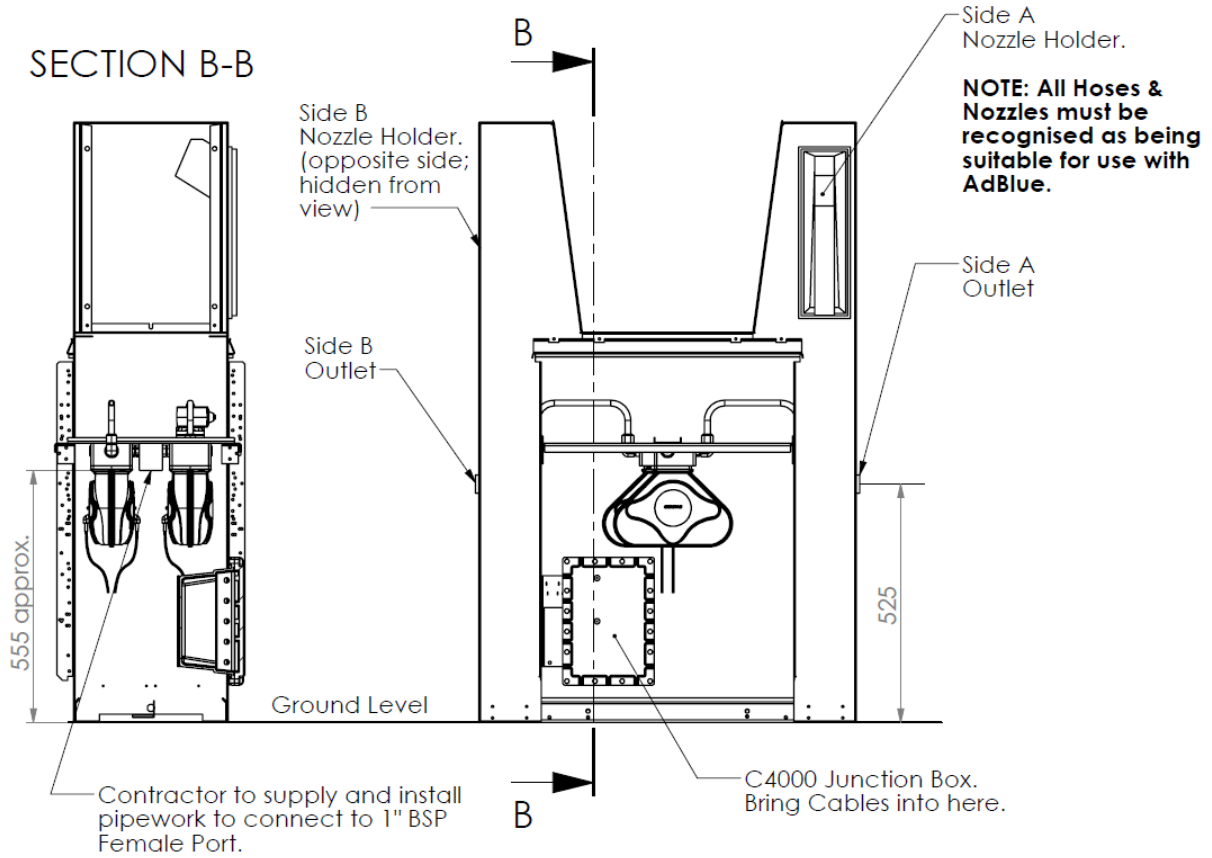
Front & Section View



Footprints

LLA 30S Standard Duo (two hose with nozzles on opposite ends)

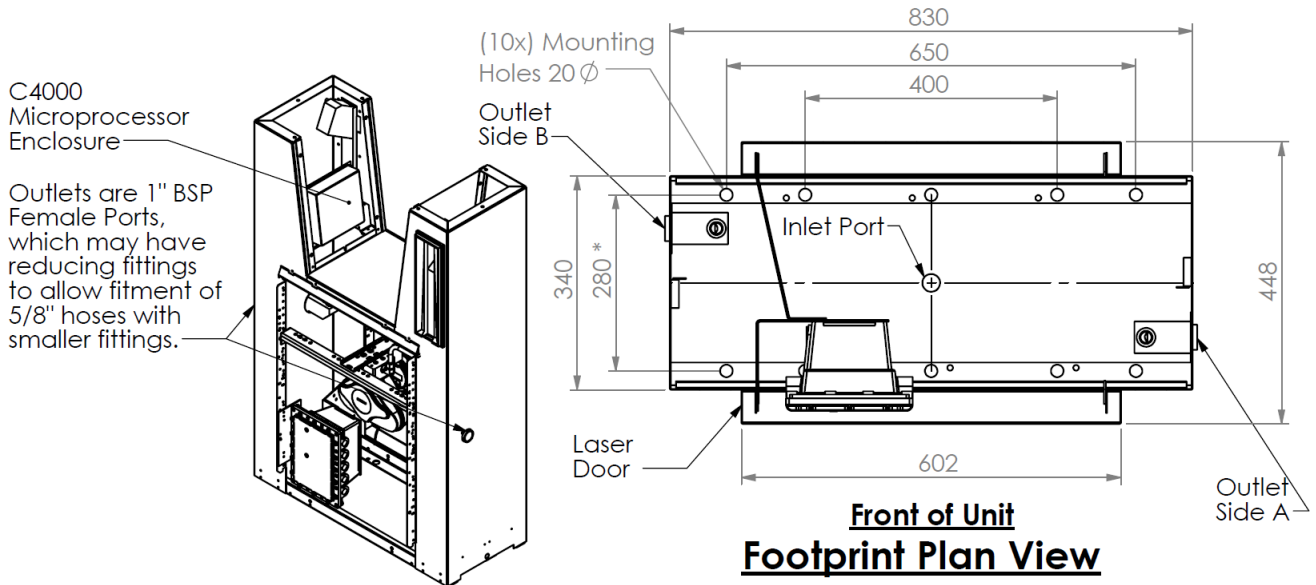
* NOTE: This dimension will change to **380mm** when a Dispenser is fitted with "External" Base Rails



NOTE: Pipework material must be recognised as being suitable for use with Adblue

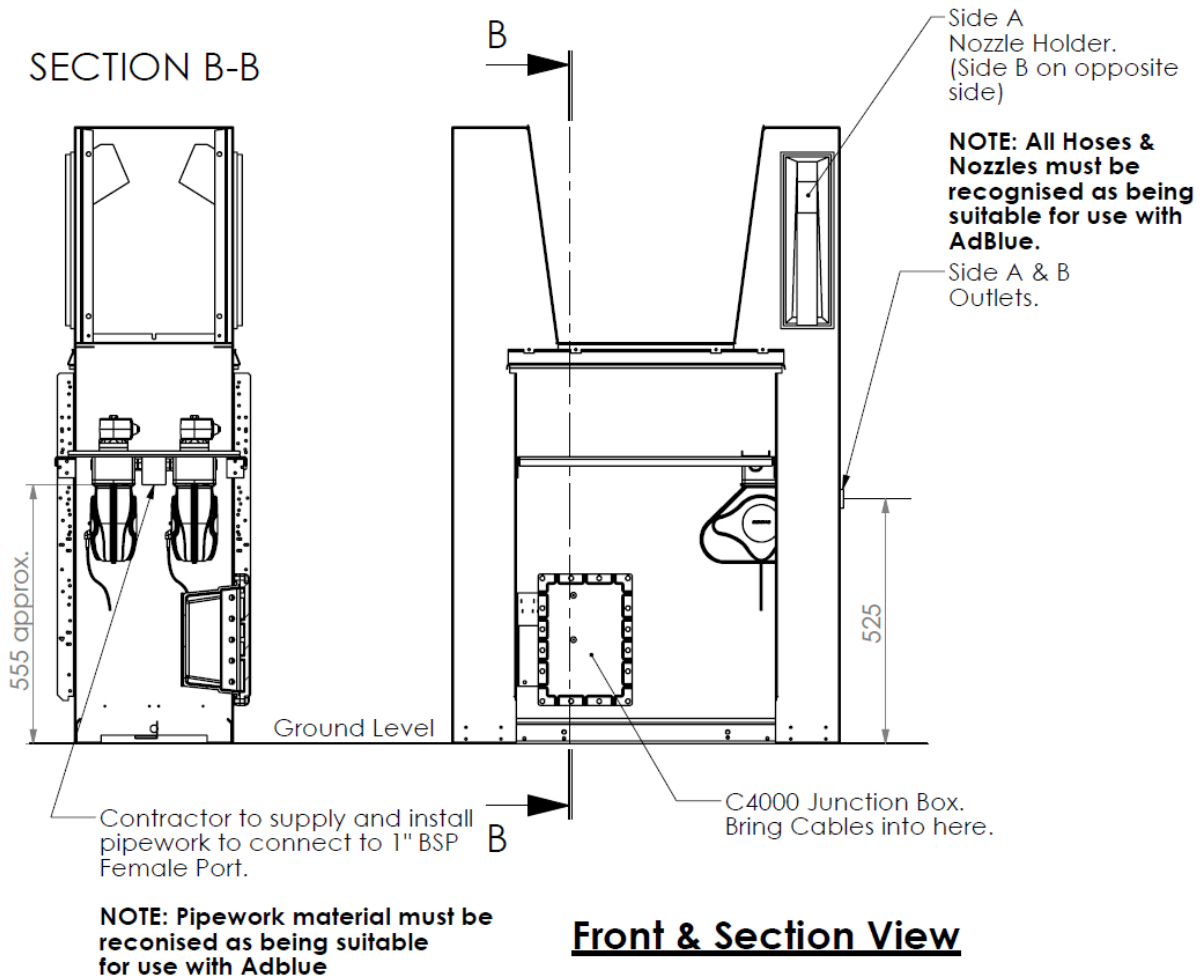
Front & Section View

Rear of Unit

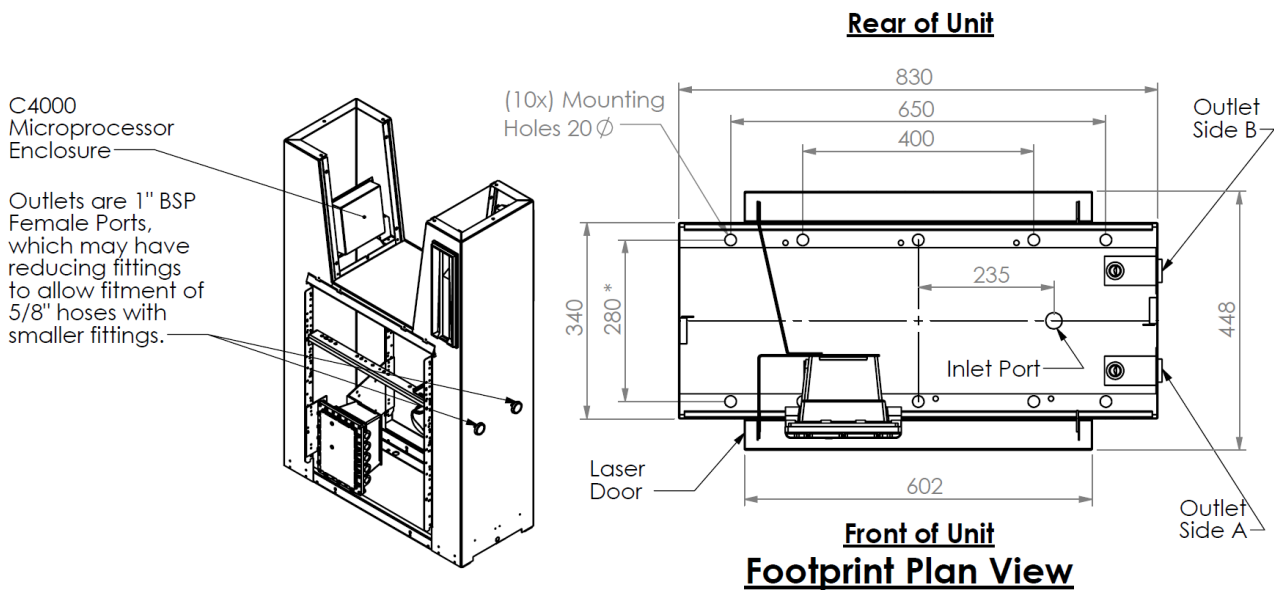


LLA 30S Duo (two hose with nozzles on same end)

* NOTE: This dimension will change to **380mm** when a Dispenser is fitted with "External" Base Rails



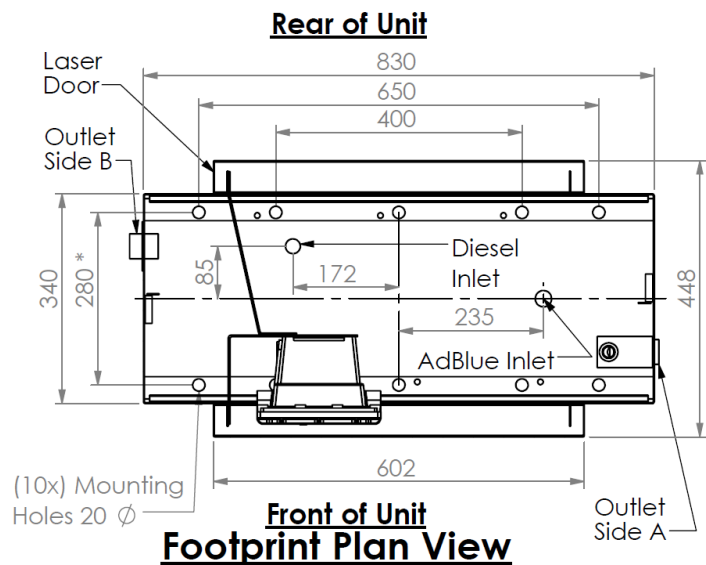
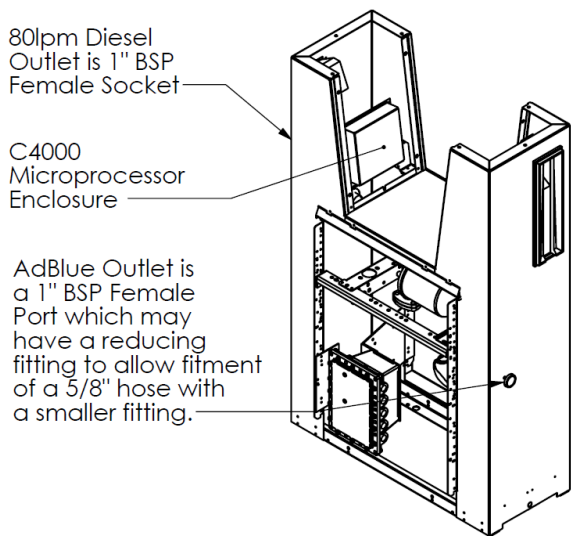
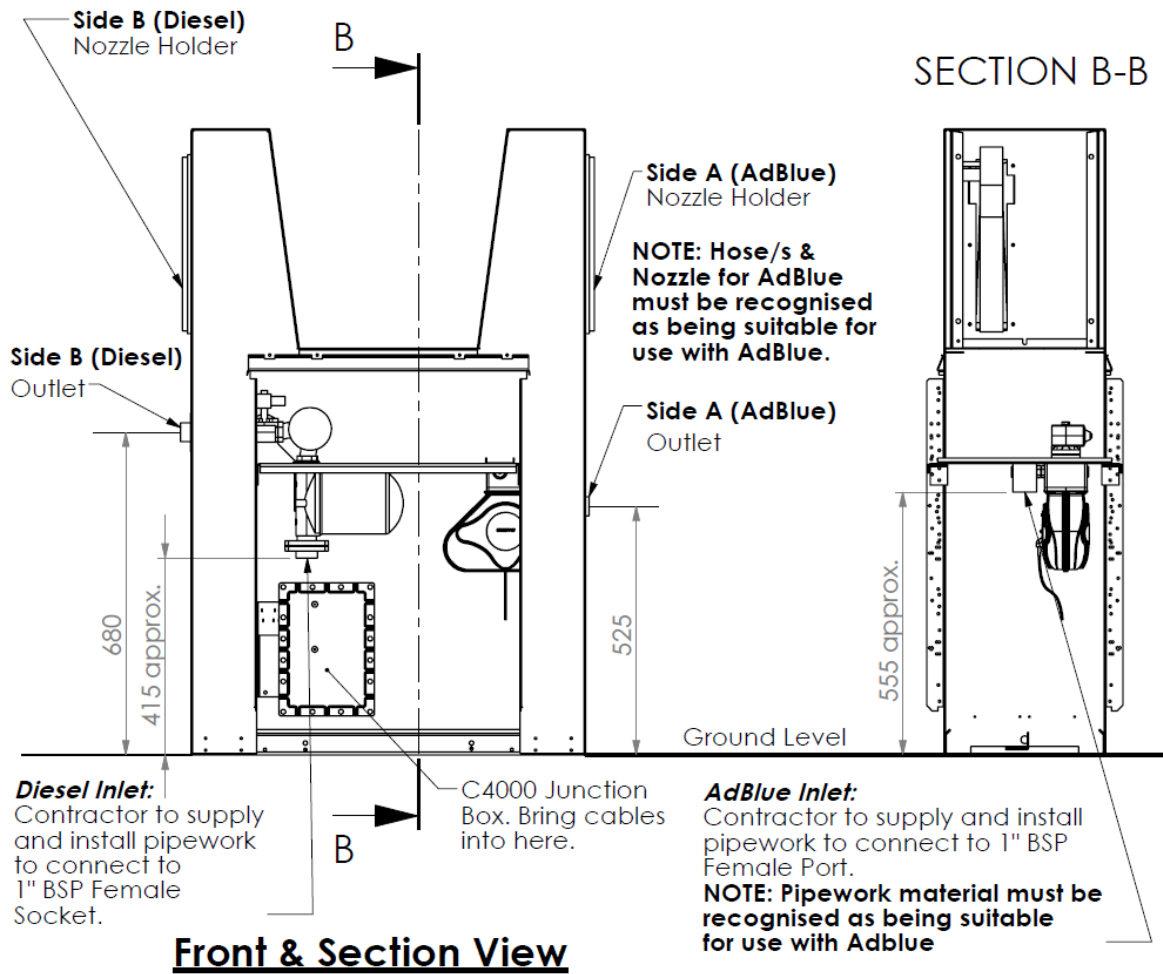
Footprints



LLA30-80S

NOTE: Nozzle Holders can be positioned on the "Front" of the Dispenser if required.

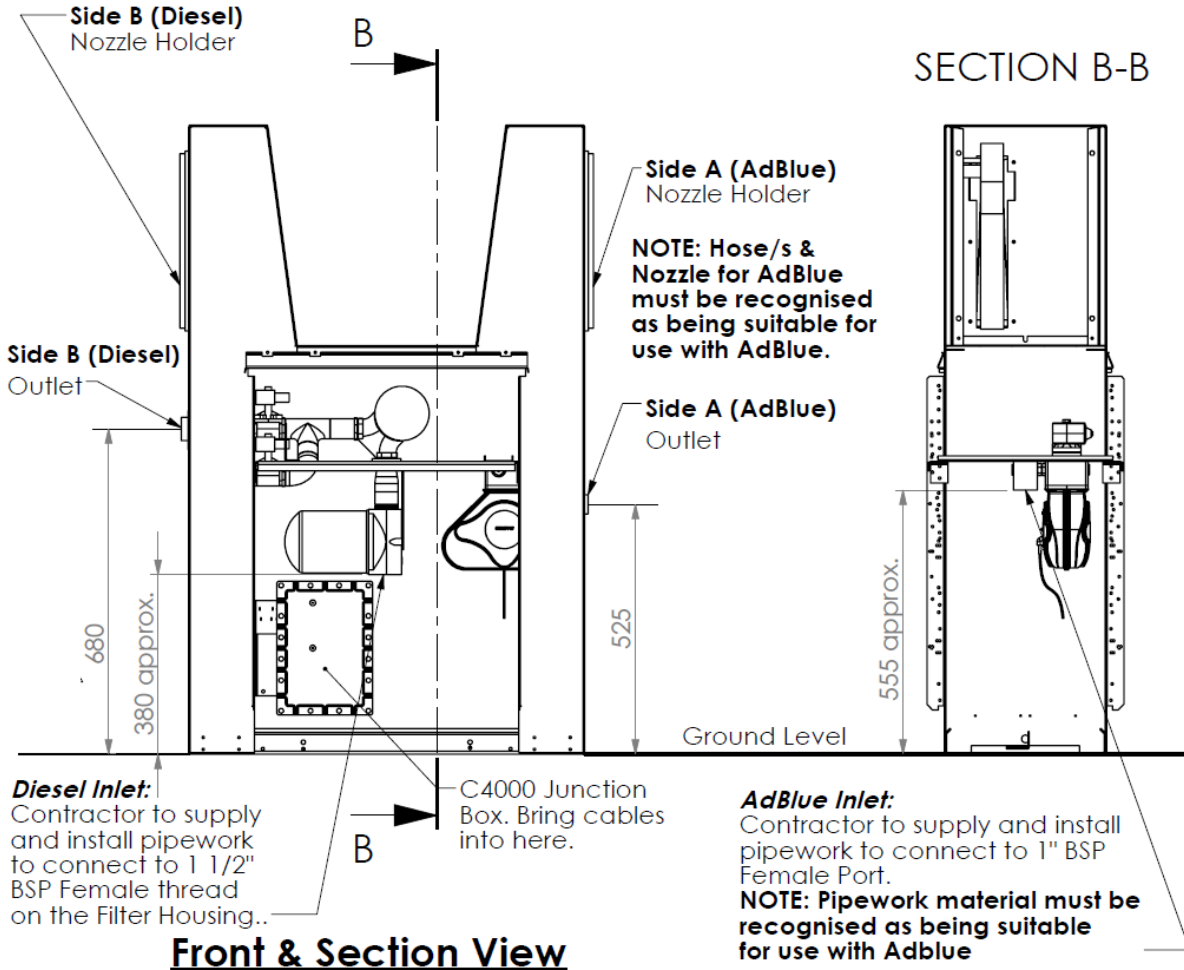
*** NOTE: This dimension will change to 380mm when a Dispenser is fitted with "External" Base Rails**



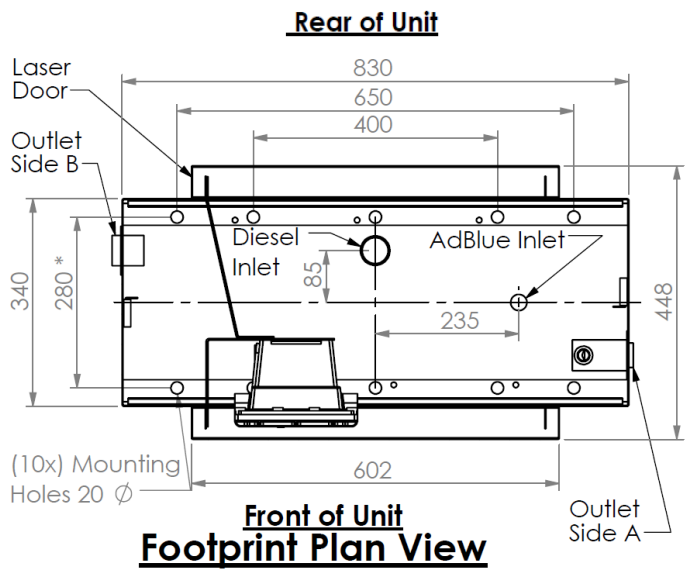
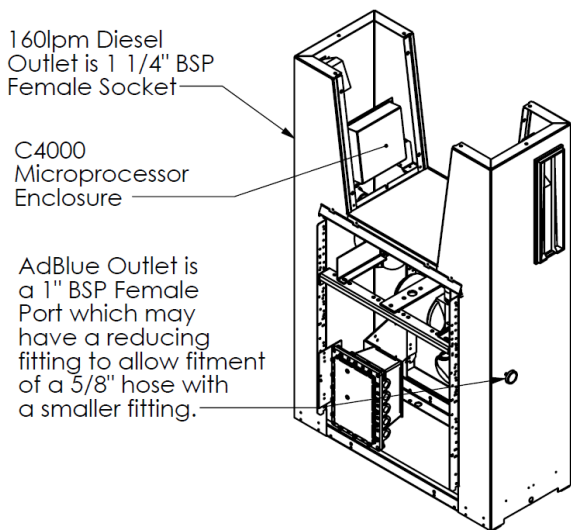
LLA30-160S

NOTE: Nozzle Holders can be positioned on the "Front" of the Dispenser if required.

*** NOTE: This dimension will change to 380mm when a Dispenser is fitted with "External" Base Rails**



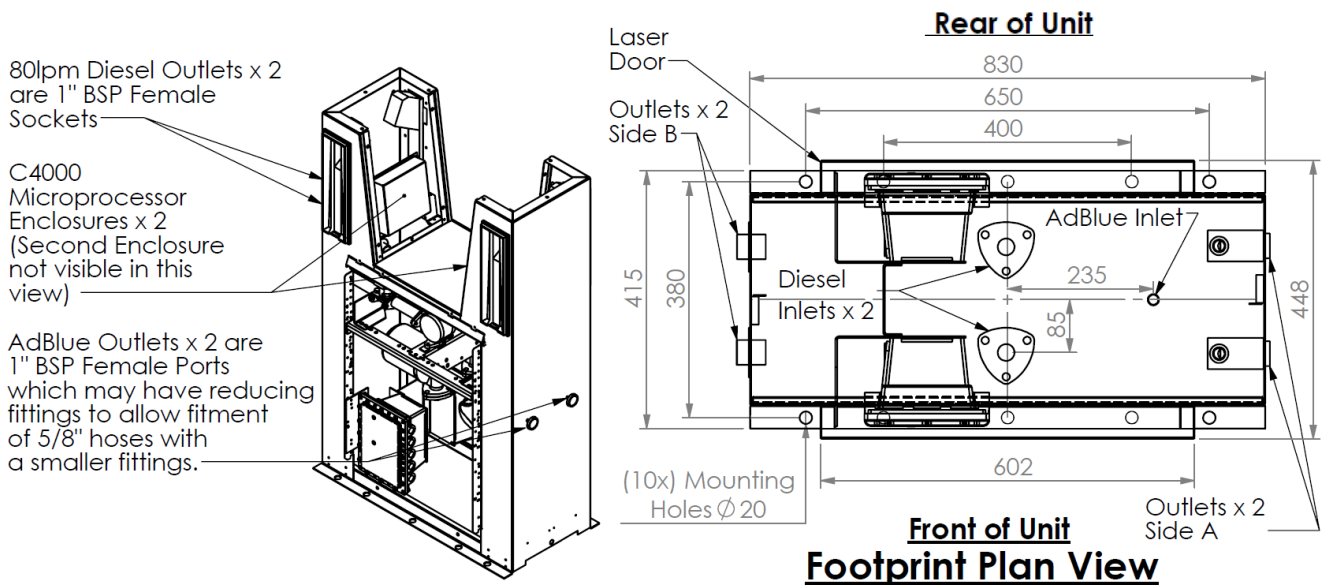
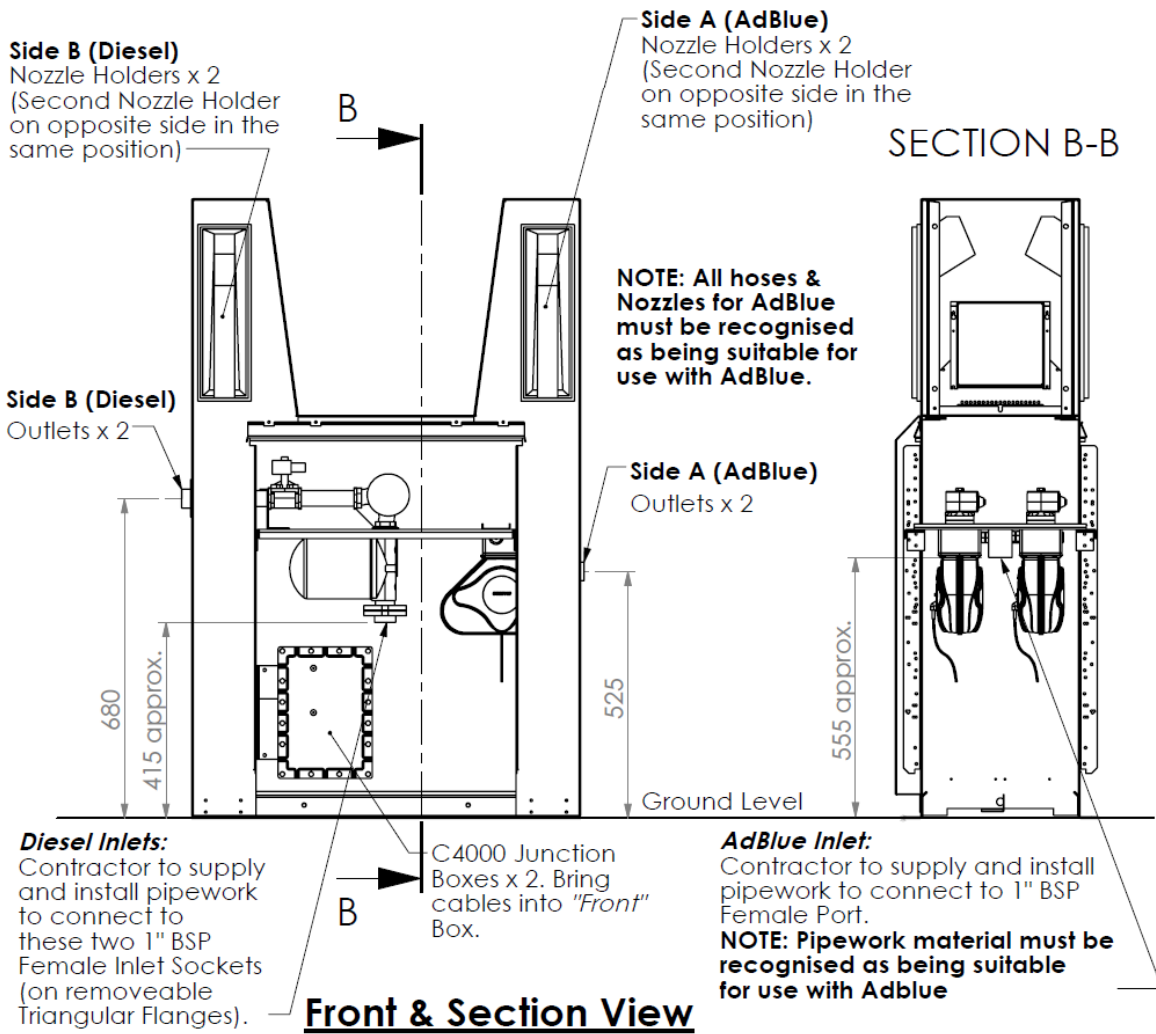
Front & Section View



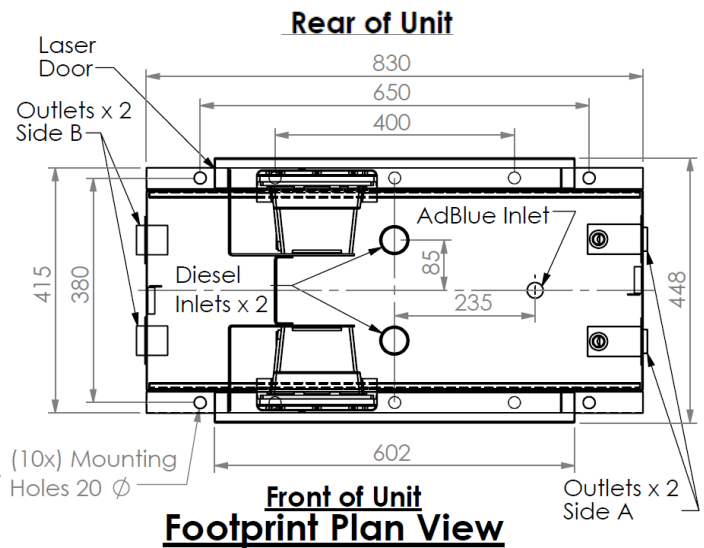
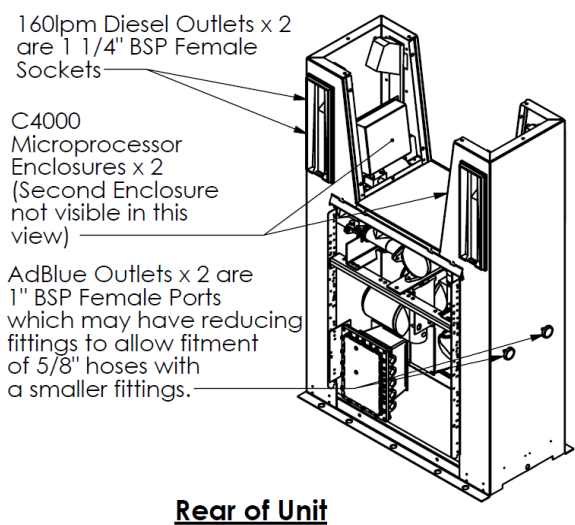
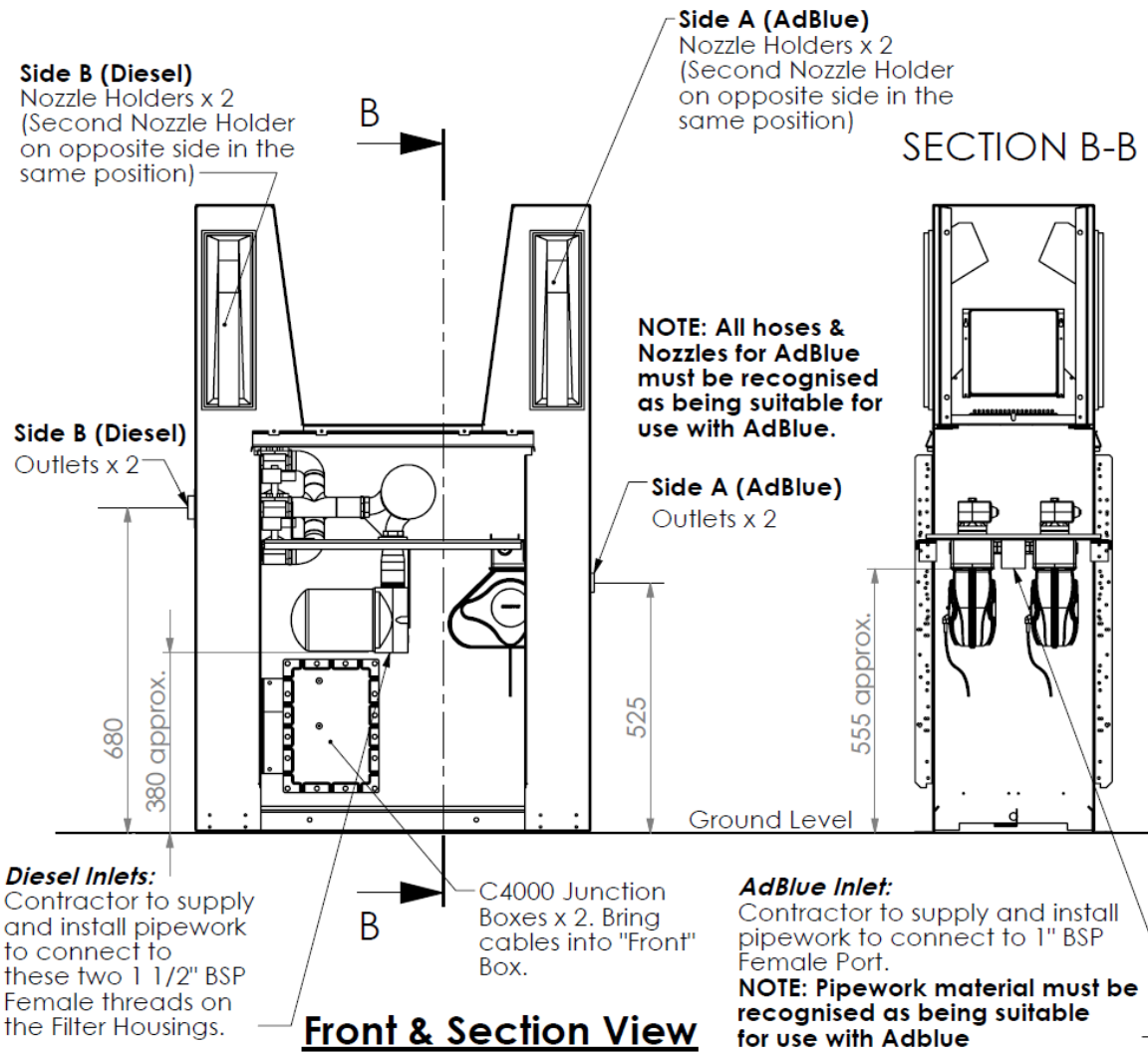
Front of Unit Footprint Plan View



LLA30-80SQA (4 Hose Dispenser)

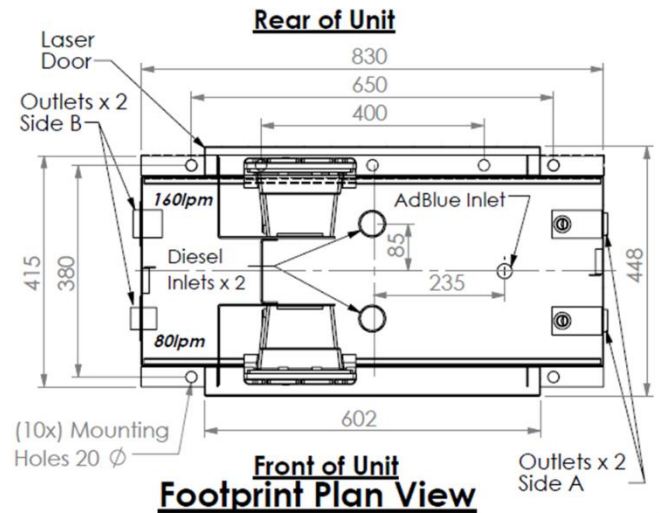
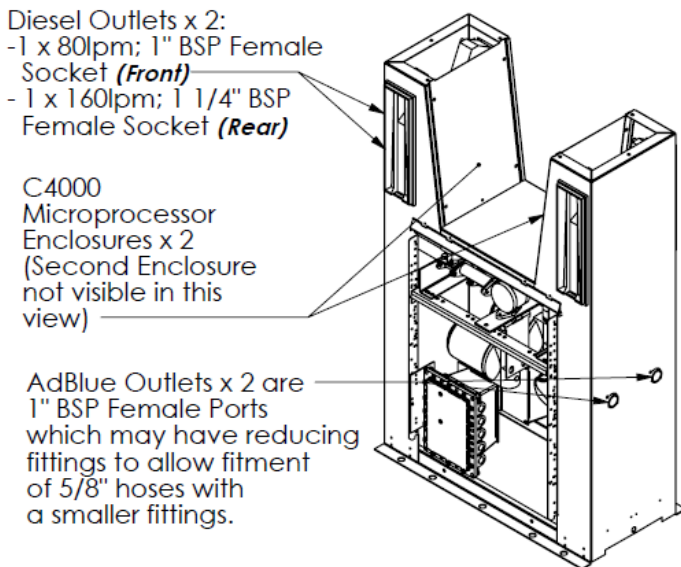
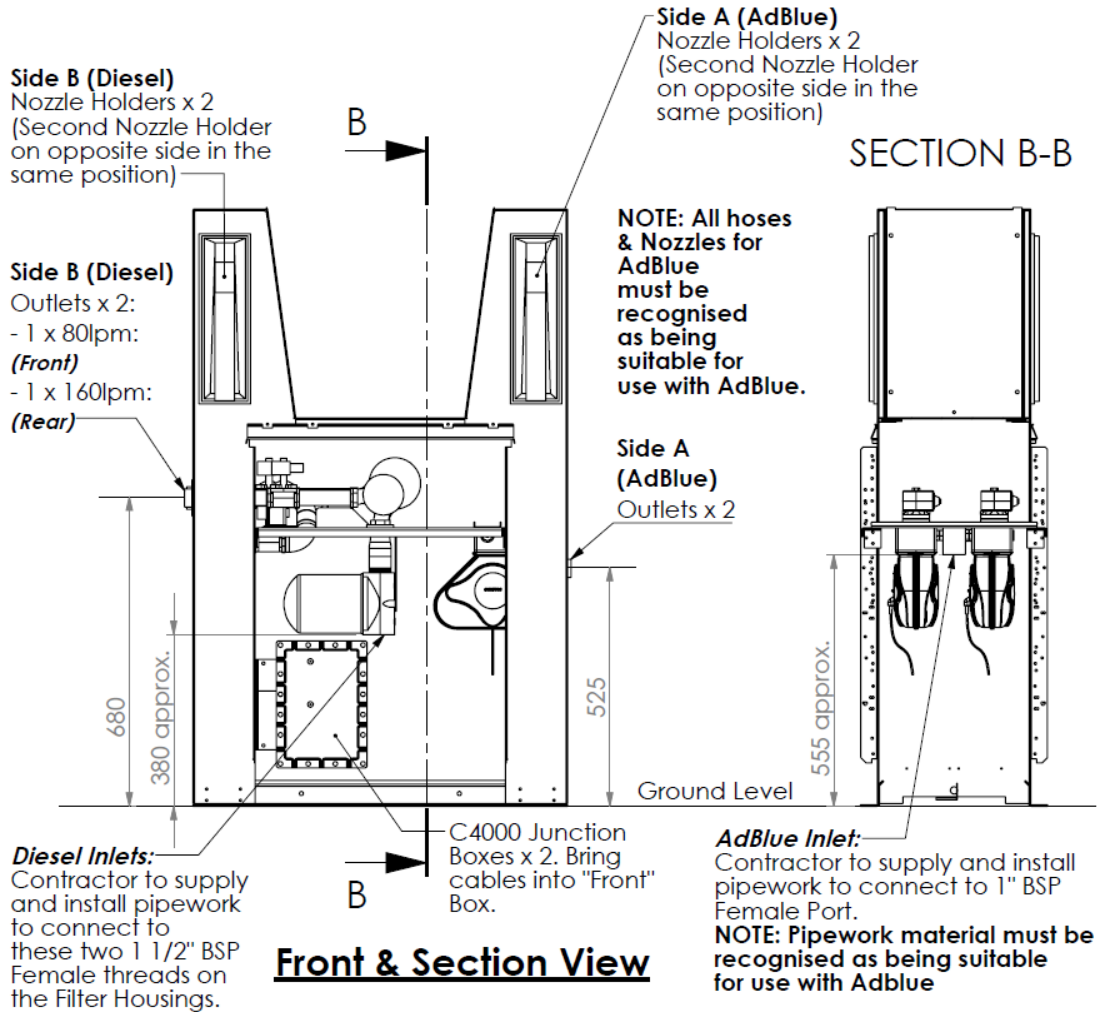


LLA30-160SQA (4 Hose Dispenser)



LLA30-160/80SQA (4 Hose Dispenser)

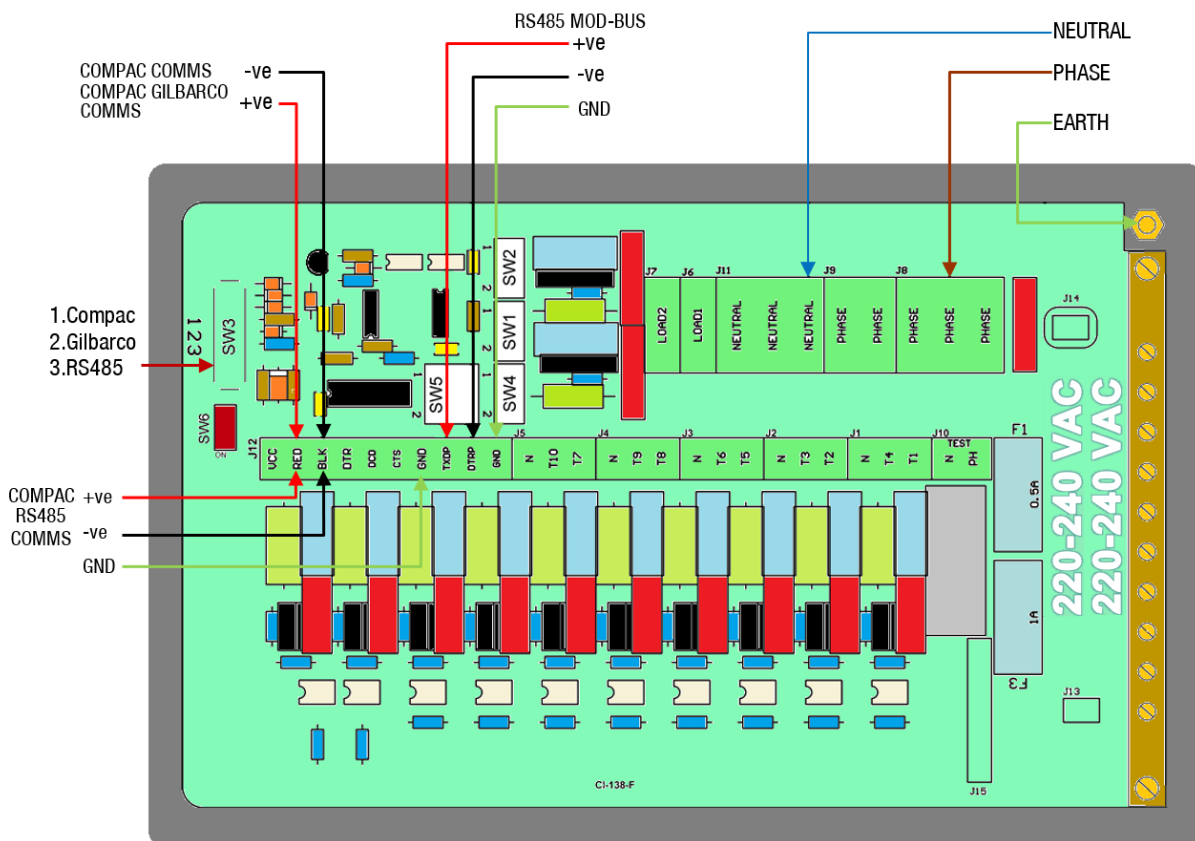
NOTE: Pipework material must be recognised as being suitable for use with AdBlue



Electric Connections

Electrical cables are terminated at the C4000 Power Supply, which is housed in the Flameproof Enclosure located in the bottom of the dispenser, behind the door. The incoming cables are terminated as shown in the following picture.

NOTE: Output to pump(s) goes to the pump contactor, not directly to the pump wiring.



Electric Connections

Dispensers

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.

All hoses, nozzles and fittings that come in contact with AdBlue must be compatible with it.

Comms Dip switch settings

The actual Comms I/O is controlled by the position of SW3.

SW3	Comms Protocol
Position 1	Compac Standard
Position 2	Gilbarco
Position 3	RS485

Triac Dip Switches

Important Note:

Great care should be taken not to accidentally change the setting of these switches while working in the Flame-proof box. Operating the unit with these incorrectly set can result in damage to the C4000 Power Supply or incorrect operation of the triacs.

These switches are set in the factory and should not be changed. If they are accidentally changed these are the correct settings for AdBlue Laser Dispenser applications.

NOTE: They are 3 position switches

	Pump (Motor triac fitted)
SW1	1
SW2	1
SW3	Centre

Installation Tests

Electrical Operation Test

For dispensers with a diesel hose as well as an AdBlue hose, refer to the C4000 manual for testing the diesel side of the dispenser. The instructions below refer to the AdBlue side of the dispenser.

Make sure that the inlet valves are closed (these are the valves in the inlet lines at the base of the dispenser, but not part of the dispenser).

Turn on the power supply to the dispenser.

With the dispenser in a **ready state**, check that the C4000 Microprocessor Power LED (D1) is turned on.

NOTE: *If the dispenser is receiving information from a controller, Comms RXD LED (D6) will poll. If the dispenser responds to polls for its respective pump number/s, Comms TXD LED (D7) will also poll.*

Check that Diagnostic LED (D18) slowly flashing. (If the dispenser is connected to an operational Controller, it flashes slowly but erratically. If the dispenser is not connected to a Controller, it flashes slowly and consistently.)

Check that Watchdog LED (D5) is turned off.

Once the display has gone through its test sequence, use the K-Factor switch to check that the fourth digit of the C setting is 4 (AdBlue). 0004 1 is for a single hose dispenser, 00042 is for a two hose dispenser.

Using the Parameter button put the dispenser into **PURGE** mode by changing the b setting to ***2. Retail dispensers will display **PURGE** in the Dollars display. Commercial dispensers will display a dot on the left hand side of the litres display. The temperature and measured density will toggle in the S/L display. Wait for the C4000 to time out and return to the normal display.

Lift the nozzle.

The display will show "Purge" and the solenoids will energise, starting the pump motor. Check that Diodes D8, D10 and D11 turn on, indicating a signal is being sent to the triacs to open the solenoid valves.

The diagnostic LED (D18) flashes quickly when the start button is pushed or the nozzle removed from the holster to initiate a fill. When the button is released or nozzle returned to the holster it will return to the normal state and flash slowly.

Verify solenoid operation by listening for a click, or by using a screwdriver tip or some other metallic tool to check for a magnetic field present on the solenoid coils.

The solenoids will switch off after 60 seconds. This is a default time-out for the **PURGE** setting.

Hang the nozzle, and using the Parameter button, put the dispenser into standard mode by changing the b setting to *****0**.

For two hose AdBlue dispensers, repeat the procedure for side B. For AdBlue / Diesel dispensers the diesel hose test procedure is the same as the Electrical Operation Test in the C4000 manual.

Re-power the dispenser and then move on to the Mechanical commissioning of the Dispenser.

Mechanical Operation Test and Hose Purge

Make sure that the electrical commissioning tests have been carried out and the solenoid operation has been verified before carrying out the following tests.

Slowly open the supply valves to the dispenser, checking for any leaks.

Turn on the power supply to the dispenser.

Using the Parameter button put the dispenser into **PURGE** mode by changing the b setting to *****2**. Retail dispensers will display **PURGE** in the Dollars display. Commercial dispensers will display a dot on the left-hand side of the litres display. The temperature and measured density will toggle in the \$/L display. Wait for the C4000 to time out and return to the normal display.

Lift the nozzle.

The display will show **PURGE** and the solenoids will energise, starting the pump motor. Check that Diodes D8, D10 and D11 turn on, indicating a signal is being sent to the triacs to open the solenoid valves.

In **PURGE** mode the dispenser will only operate for 60 seconds at a time before shutting down. If the dispenser shuts down, hang up the nozzle and start again.

Check all the dispenser fittings, solenoids and pipework for leaks.

Slowly dispense AdBlue from the dispenser, being careful to shield yourself from splashes as there may be air in the fuel causing it to spray from the nozzle. If the dispenser stops, hang up the nozzle then remove it start dispensing again.

Continue until the AdBlue flows without any air being present, then hang up the nozzle.

Put the dispenser back into normal mode by changing the b setting back to *****0**. On commercial displays check that the dot is no longer on the litres display.

Lift the nozzle and slowly dispense AdBlue from the dispenser. The display and tote should increment when fuel is flowing. If the dispenser stops and the error message AIR displays, go back and purge the hose again.

For two hose AdBlue dispensers, repeat the procedure for side B.

For AdBlue / Diesel dispensers follow the instructions in the C4000 manual for mechanical commissioning of the diesel hose.

The dispenser can now be calibrated. Refer to the C4000 Master Manual for calibration instructions. Setting up the C4000.

Once the pump is connected on site, the final setup check and calibration to complete the installation must be carried out, using the Parameter Switch and Calibration (K-Factor) Switches on the C4000 processor board.

Setting up the C4000

Once the pump is connected on site, the final setup check and calibration to complete the installation must be carried out, using the Parameter Switch and Calibration (K-Factor) Switch.

These switches are found on the C4000 Microprocessor Board which is housed in a metal enclosure located behind one of the inner column panels.

Configuration Code

The configuration code has been set at Compac and should not be changed. In the event of it being lost and having to be re-entered the configuration is written on the yellow label on the C4000 processor board cover.

Submersible Delay (Sd)

This is the time delay from when the Submersible pump starts to when the solenoids in the dispenser open to allow time for the leak detector to reset. This is factory set by Compac at 005 (five seconds).

If problems are experienced with the leak detector tripping, firstly check that 'Sd' is still set and then, if necessary, make it longer as follows.

- Press and release the K factor switch repeatedly until **sd** appears on the Dollar display
 - **dHHH** will appear in the litres display.
- Continue to press the K factor switch until the number to be changed flashes. Hold the switch down and this number will then increment.
- Release the switch when the required number is displayed. The value of the displayed number will then be stored in the C4000 memory as the Submersible Delay.

Parameter Switch Settings

Setting the Pump Number

This must be set at the pump for each hose, so that communications with a controller can take place. The location of this switch is shown in the diagram below.

Depress the Parameter Switch nine (9) or more times until the message **PnA**** appears in the litres display window. When the switch is pressed again **Pnb**** will appear on the display. These two options will toggle each time the switch is pressed. To alter either of the pump numbers, press and hold the Parameter Switch when the pump number to be altered appears on the display. This number will then increment. The switch should be released when the desired pump number is displayed. The value of the displayed number will then be stored in the C4000 memory as the pump number for that hose.

NOTE: For a single hose only **Pn** will appear.

Setting the Price

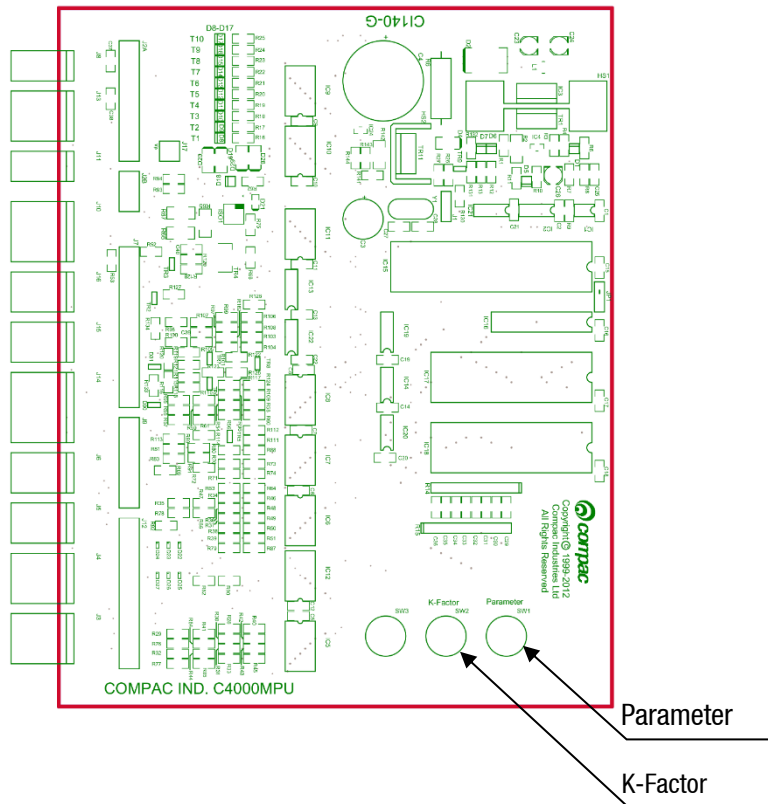
Using the Parameter Switch, follow the chart to set the price for the hose(s) in question.

Step	ACTION	RESULT
1	Ensure that the nozzle is hung up.	Dispenser in idle state.
2	Press and Hold the Parameter switch until the "Price per litre" is displayed.	The price for side A is shown as P**** on the litres display and P r A is displayed on the money display.
3	Press and hold the Parameter switch.	A digit, of the displayed 'Price per litre', will begin to increment.
4	When the digit is correct, release the Parameter switch.	
5	Repeat steps 3 and 4 for each digit of the 'Price per litre'.	NOTE: the C4000 will reset itself if the Parameter switch is left for more than 60 seconds.
<i>Continue for Dual hose units</i>		
6	Press and release the Parameter switch 8 or more times in quick succession.	The price for side b is shown as P**** on the litres display and P r b is displayed on the money display.
7	Repeat steps 3 to 5 above.	

K-Factor Switch Settings

K-Factor, and other various configuration settings, are set via this switch. The position of the K-Factor switch is shown in the diagram below:

K-Factor settings are adjusted by pressing the button to scroll through the available options to find the digit that requires changing, then holding down the switch to scroll through the digits 0-9. Releasing the switch on the required digit will lock it in place. The K-factor display will time-out after 10 seconds and will save the setting. For more details refer to the C4000 manual.



J1: Comms Test	J7: Displays	J13: Not used
J2: To Power Supply	J8: Temperature (for Temperature compensation only)	J14: Not used
J3 : Input from KG Meter Side A	J 9 Power for KG Meters	J15: Not used
J4: Input from KG Meter Side B	J10: Totes	J16: Not used
J5 : Not Used	J11: Buzzer	J17 Backlighting
J6 Not used	J12 Nozzle Switches	

Calibration (K-Factor)

Setting the K-Factor

K-Factor is a proportional calibration factor of litres dispensed per revolution of the meter.

To calibrate the dispenser/pump, dispense fuel into a certified measuring container, and compare the display value with the amount 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.

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

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

$$= \text{Existing K Factor} * 2$$

Change the existing 'K' Factor to this new value.

Standalone Operation

In standalone operation, the dispenser will continue working when not connected to a controller. '*Stand-alone*' mode being when no authorisation of fills is required and so fills are simply initiated by removing the refuelling assembly from its holder. If standalone operation is inhibited, the dispenser will not work in '*stand-alone*' mode, regardless of whether the dispenser is *ON LINE* to a controller or not.

The dispenser ceases to work in '*stand-alone*' mode if connected to a controller, regardless of the position of standalone setting.

Generally on retail forecourts the dispenser should be set-up for standalone operation. Hence, if the forecourt controller breaks down the dispensers can be set to work in '*stand-alone*' mode simply by turning them off then on again.

For unattended refuelling sites, the dispensers should not be able to work in '*stand-alone*' mode in the event of a controller failure. Therefore, the dispenser should be set-up to inhibit standalone operation.

This is set in the 'b' code on the K factor switch.

The 'b' code to run Standalone without Dispenser Controller is '0000'.

The 'b' code to inhibit Standalone is '1000'.

Generator Power

The power output from onsite generators can cause power spikes that may damage electrical components within the cabinet. When connecting to sites powered by generators, please take the following precautions:

- Install a power conditioner. Although generators are fitted with power regulators, most are not filtered sufficiently for powering sensitive electrical components. We recommend installing a commercial power conditioner and/or UPS between the generator and the unit
- Before starting a generator, make sure the power to the unit is turned off
- Start the generator, let the generator reach stable operating speed and wait 30 seconds before reconnecting the power to the unit
- For units where the generator starts and stops on demand, install a delay timer or PLC to automatically isolate the unit until the operating speed and consistent power output is achieved
- Isolate the unit before shutting down the generator

AdBlue Specific

Cleaning the AdBlue Nozzle

If AdBlue evaporates it may form crystals around the dispenser nozzle. A build-up of crystals can block the air passage causing the nozzle to continuously trip off.

If this occurs, rinsing the nozzle in a bucket of warm water will dissolve the crystals and unblock the air passage.

To avoid contamination of the AdBlue, thoroughly dry the nozzle after rinsing.

Spare Fuses

In the event of a fuse blowing on the C4000 Power supply a bag of 3 is included in each flameproof box. Any fuses used from this bag should be replaced.

NOTE: There are three different ratings used. If replacing a fuse, ensure that the correct value is used.

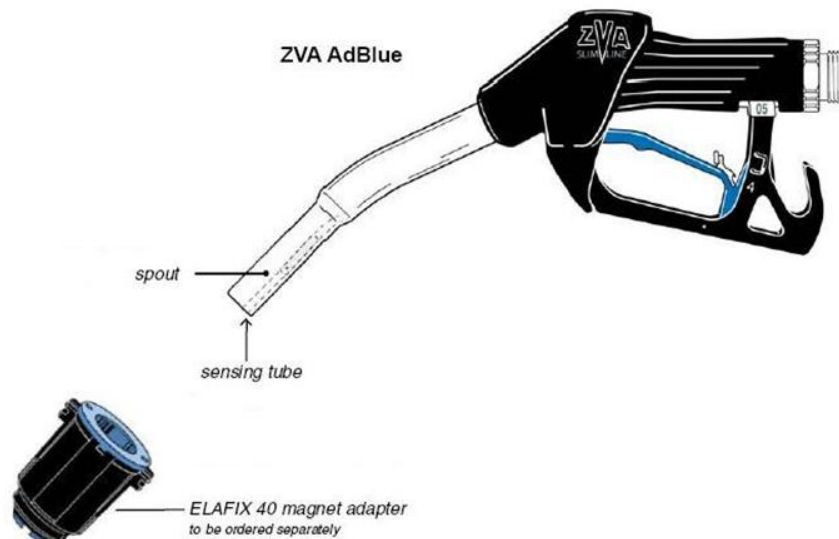
Spare Parts

This spare parts list only covers parts specific to AdBlue dispensers. For all other major parts please refer to the C4000 Master manual.

Part Number	Description
F-D-MTR-V50AB	V50 Mass flow meter
F-ABSVK-0101	Solenoid valve service kit
F-ABSVK-0102	Solenoid valve stem service kit
F-ABSK-0102	Solenoid valve stem seal kit
F-SOLND-3/4AB	3/4" solenoid with viton seals for AdBlue use

ZVA AdBlue Nozzle

The ZVA AdBlue nozzle with a magnetic safety catch is commonly used on AdBlue dispensers. The following image is included for reference. For further information refer to ZVA direct.



Automatic nozzle ZVA AdBlue for the refuelling of the “AdBlue” urea solution tanks.

Flow rate up to 40 l/min, working pressure 0,5 – 3,5 bar.

To avoid misfuelling, the standard type of ZVA AdBlue is equipped with a magnet opening in the spout. The nozzle will only open in combination with the magnet adapter ELAFIX 40 which must be installed in the AdBlue filler neck. For the refuelling of other containers or canisters please push an ELAFIX 40 over the spout.

AdBlue tends to crystallise. Due to the evaporation of water, white crystals will show. If these should block the air passage (a sign for this is that the ZVA AdBlue keeps tripping off continuously) this can be solved easily by moving the nozzle spout in a bucket with warm water. In order to avoid contamination, please rinse the nozzle spout with AdBlue previous to the next refuelling.

Error Messages

Error Code	Fault	Action
Err 3	No price or pump number set.	Set the pump number or: Set a price at the pump or at the controller.
Err 7	Excess flow.	Max Flowrate exceeded
Err 8	Excess reverse rotation of encoder.	Check product is not flowing back into the tank once the delivery has finished.
Err 9	Faulty or disconnected meter encoder.	Check that encoder is plugged in Replace encoder PCB on meter
Err 10	Configuration Lost	Reconfigure C4000 refer to C4000 manual
Err 12	C4000 memory failure.	Change memory IC. F-AD-DS1225 (not applicable to Futra)
PEd	Display error	Check display cable for loose wires/crimps
Abd		Replace display PCB