Laser Dispenser - 40 to 160 l/min Installation Manual Version No 1.0.8

Model: Laser Dispenser - 40 to 160 l/min
Date: 14th November 2019

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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.
- 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: L40S L80S L160S (std and marine) L40SD L80SD L40-80SD L160-40SD L160-80SD 160-40SD1 Marine LL40S LL80S LL40-80S (std and marine) LL160-40S LL160-80S LL40SQ LL40-80SQ LL160SD LL160SQ *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.

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Document Control

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1.0.0	24 June 2015	R Lacey	New Manual - Combined previous installation sheets
1.0.1	15 November 2015	R Lacey	New LL160SQ footprint. Corrected position of ID plate.
1.0.2	09 August 2016	H Kleyer	Added submersible pump wiring for BP Quad.
1.0.3	09 November 2016	H Kleyer	Corrected COMS Protocol
1.0.4	07 December 2017	S Laycock	Reformatted manual
1.0.5	03 May 2018	S Laycock	Added L160-40SD1 Marine footprint
1.0.6	04 December 2018	R Liu	Updated website address, comms wiring diagram in Electrical Connections
1.0.7	05 March 2019	S Laycock	Corrected electrical connections
1.0.8	14 November 2019	V Amarakoon	Corrected Mounting rail footprints

SGS
ISO 9001
SYSTEM CERTIFICATION

Contents

Product Identification

Ensure you are using the correct installation instructions and footprint drawing before commencing site work or installation.

The identification plate is fastened to the bottom of the right-hand side panel when facing the front of the dispenser. The model number is on the first line of the identification plate.
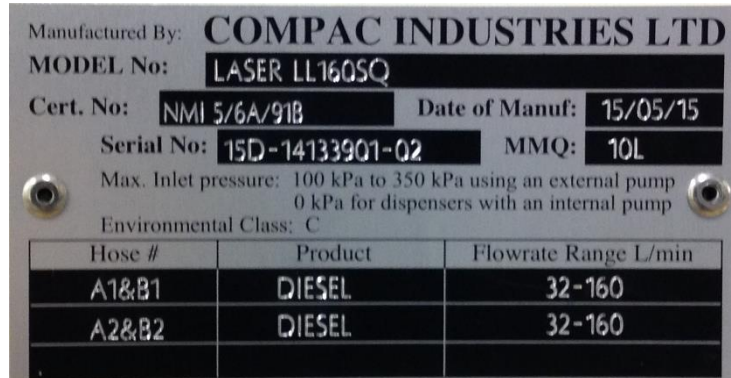
Understanding the Model Number:

The model number for Laser pumps is split into: Chassis style, hose configuration, pump or dispenser and specific application. Use the table below to help identify the unit.

Style	L/min per hose	Pump style	Options
L = single product	L40 = one hose @ 40 l/min	P = pump	Blank = 1 hose per pump
LL = two products	LL40 = two hoses @ 40 l/min	S = dispenser*	D=Dual - 2 hose 1 pump
	LL40-80 = side A 40 l/min, side B 80 l/min	*Dispensers have remote pumps	Q=Quad – 4 hose 2 pumps
			Marine = Marine

For example: LL40S has two products with an outlet on each end. L40SD has one product with two outlets on one end and nozzle holders on the front and rear. LL40-80S has two inlets and two hoses with 40 l/min on one side and 80 l/min on the other.

CAUTION: Ensure inlet pressure from pumps is within the parameters described on the identification plate.

NOTE: Make sure you use the footprint that relates exactly to your dispenser model and refer to sales order for variations from the standard layout.

Footprints

Read the sales order to make sure the footprint matches the model number. There may also be variations to outlet position noted. All Australian dispensers have external base rails (see below for details.)

Inlets may either be a three-bolt flange or a BSP socket. Inlet pipe size depends on the capacity of the dispenser:

- 40 and 80 l/min - triangular flange or 1" BSP socket
- 60 l/min - 1 ½" BSP socket

Outlets are approximately 680mm above the base. Check your sales order for possible variations.

Outlet size:

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

Australian Users

All Australian dispenser models have their base rails mounted **externally**. This affects the placement of the mounting holes as shown in the diagrams below.

Mounting holes are **380mm** apart on external rails.

New Zealand Users

Internal Rail

830
650
400

℄

Internal Base Rails

Laser
Door

340
280

℄

(10x) Mounting
Holes 20 Ø

448

602
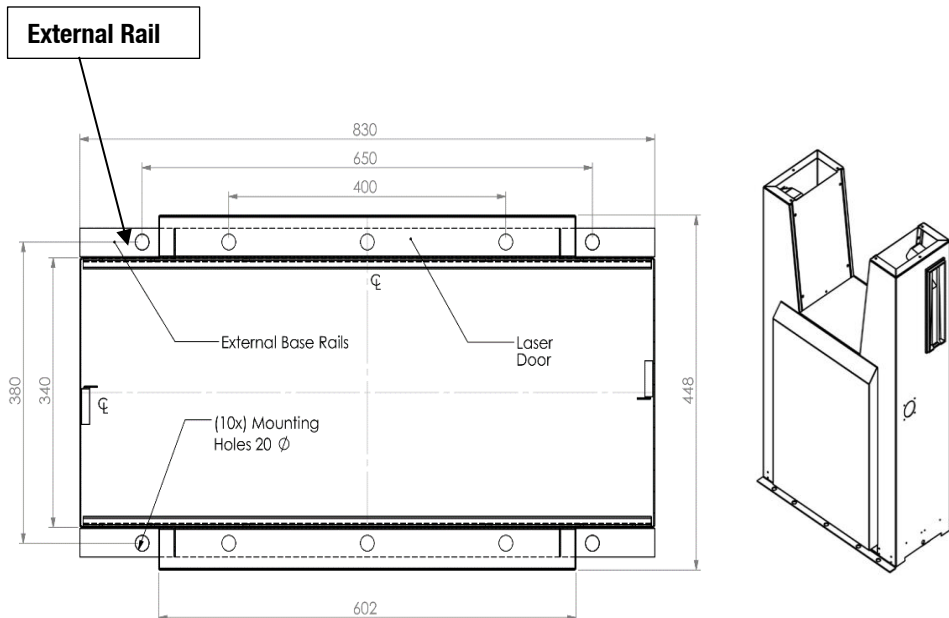
All New Zealand dispenser models have their base rails mounted **internally**. This affects the placement of the mounting holes as shown in the diagrams below.

Mounting holes are **280mm** apart on internal rails.

3.

L40S L80S LL40S LL80S LL40-80S (Std and Marine)
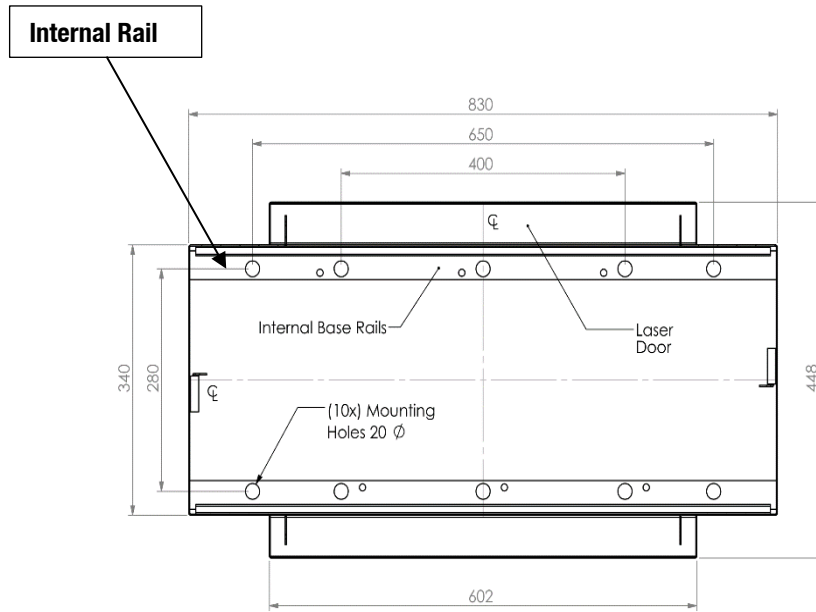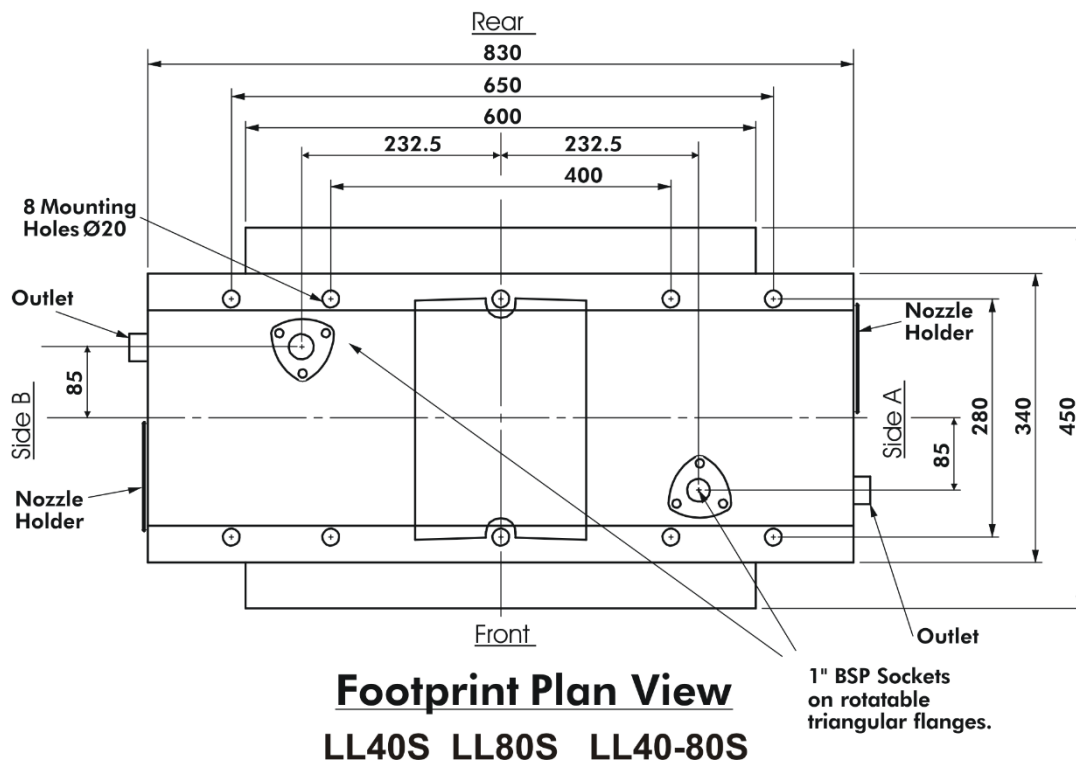
Triangular slip flanges that can be rotated to any orientation.

Triangular flanges tapped 1"BSP. (Removeable)

approx 415

Ground Level

C4000 Junction Box. Bring cables into here.

Contractor to supply And install Pipework to connect to this point.

Front View

Rear

830

650

600

232.5   232.5

400

8 Mounting Holes Ø20

Outlet

Nozzle Holder

85

Side B

Side A

85   280   340   450

Nozzle Holder

Front

Outlet

Footprint Plan View
LL40S LL80S LL40-80S

1" BSP Sockets on rotatable triangular flanges.

L40 and L80 single hose models do not have the inlet or outlet on the left hand side. Marine versions use stainless steel pipework and are connected to a 1" BSP socket around 380mm above the base.

L40SD L80SD L40-80SD

Front View

C4000 Junction Box.
Bring cables into here.

approx 375

Ground
Level

Contractor to supply
And install Pipework
to connect to
this point.

Footprint Plan View

Rear

830

650

600

232.5

400

8 Mounting
Holes Ø20

Nozzle
Holder

Side A

280

340

450

Outlets

Nozzle
Holder

Front

1" BSP Socket
on rotatable/removable
triangular flange.

5.
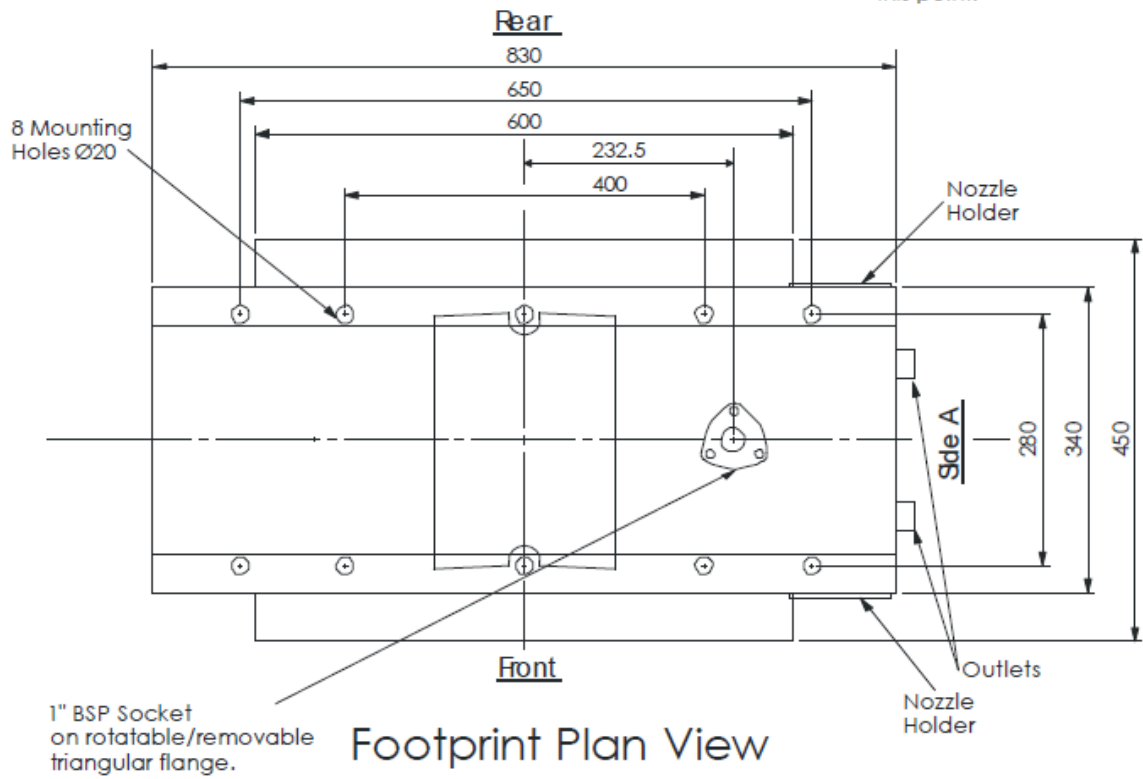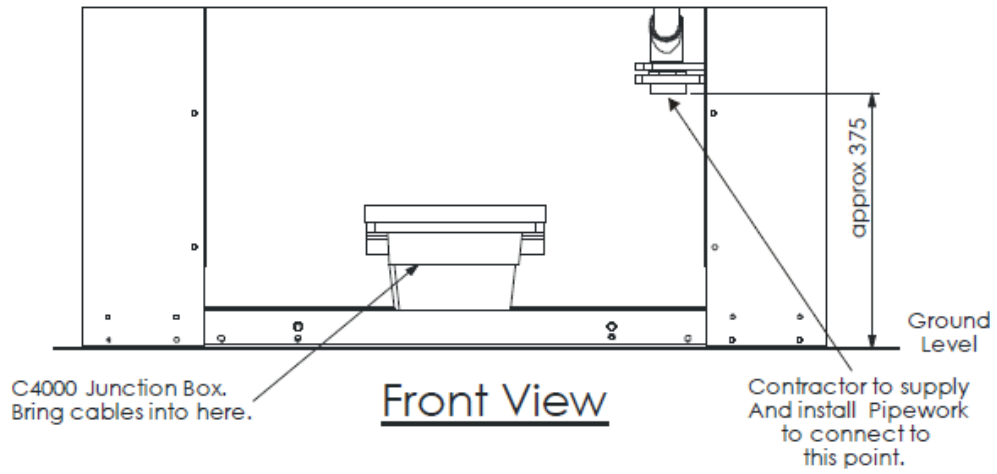
L160-40SD L160-80SD

Triangular slip flange that can be rotated to any orientation.

Triangular flange tapped 1"BSP. (Removeable) 40 or 80 lpm

Approx 415

1½" BSP Socket. 160 lpm

Approx 370

Ground Level

Contractor to supply and install pipework to connect to these points.

C4000 Junction Box. Bring cables into here.

Front View

Rear

830

650

600

400

232.5

Nozzle Holder Side B

40 or 80 lpm Outlet Side B

Side B

85

85

8 Mounting Holes Ø20

1" BSP Socket on rotatable triangular flange.

Front

1½" BSP Socket

Nozzle Holder Side A

Side A

280

340

450

160 lpm Outlet Side A
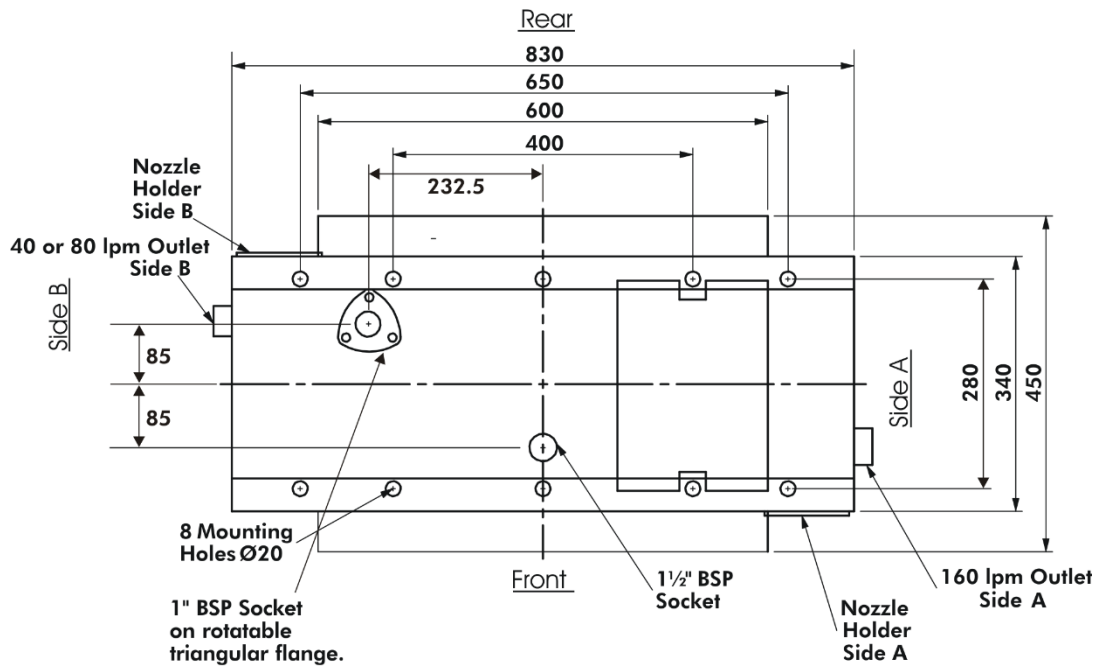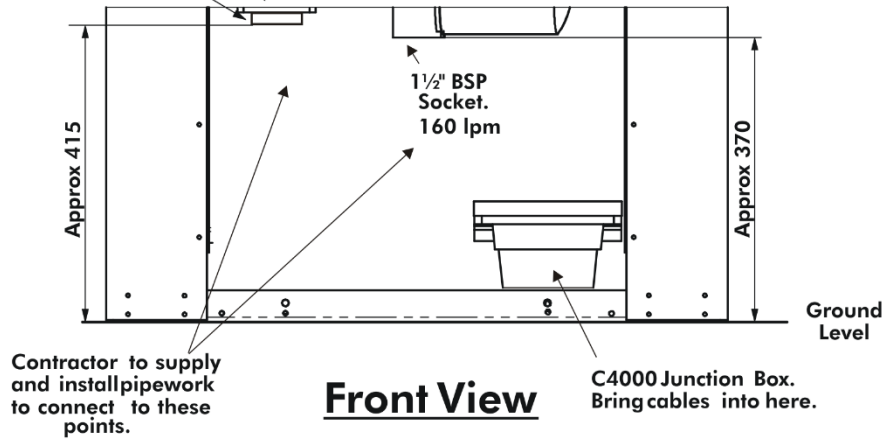
Footprint Plan View
L160-80SD   L160-40SD

6.

L160-40SD1 Marine

Side B
Nozzle Holder

Side A
Nozzle Holder

Side B Outlet
(40lpm)

Side A Outlet
(160lpm)

685 approx.

382 approx.

382 approx.

685 approx.

Ground Level *

Front View

40lpm Inlet:
Contractor to supply
and install pipework
to connect to the
1" BSP female
thread on the Filter
Housing.

C4000 Junction
Box. Bring cables
into here.

160lpm Inlet:
Contractor to supply
and install pipework
to connect to the
1 1/2" BSP female
thread on the Filter
Housing.

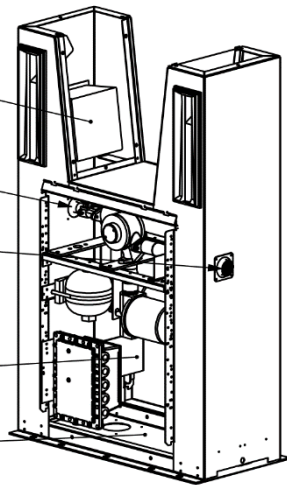*Dimensions include the 2mm thickness of the Splash
Guard when fitted.*

C4000
Microprocessor
Enclosure

40lpm Outlet:
3/4" BSP Female
Socket
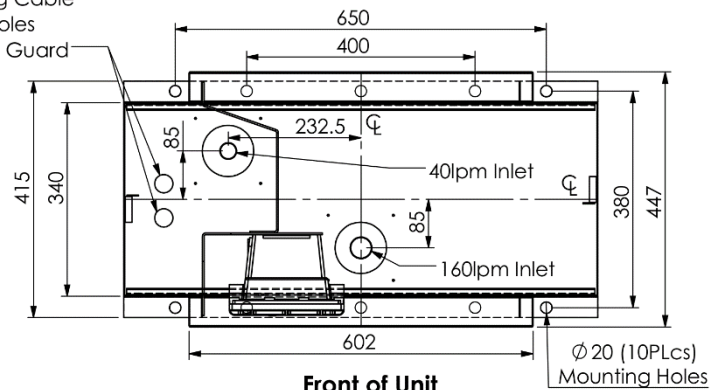
160lpm Outlet:
1 1/4" BSP Female
Socket

*This Support Bracket
can be removed
if required during
installation.*

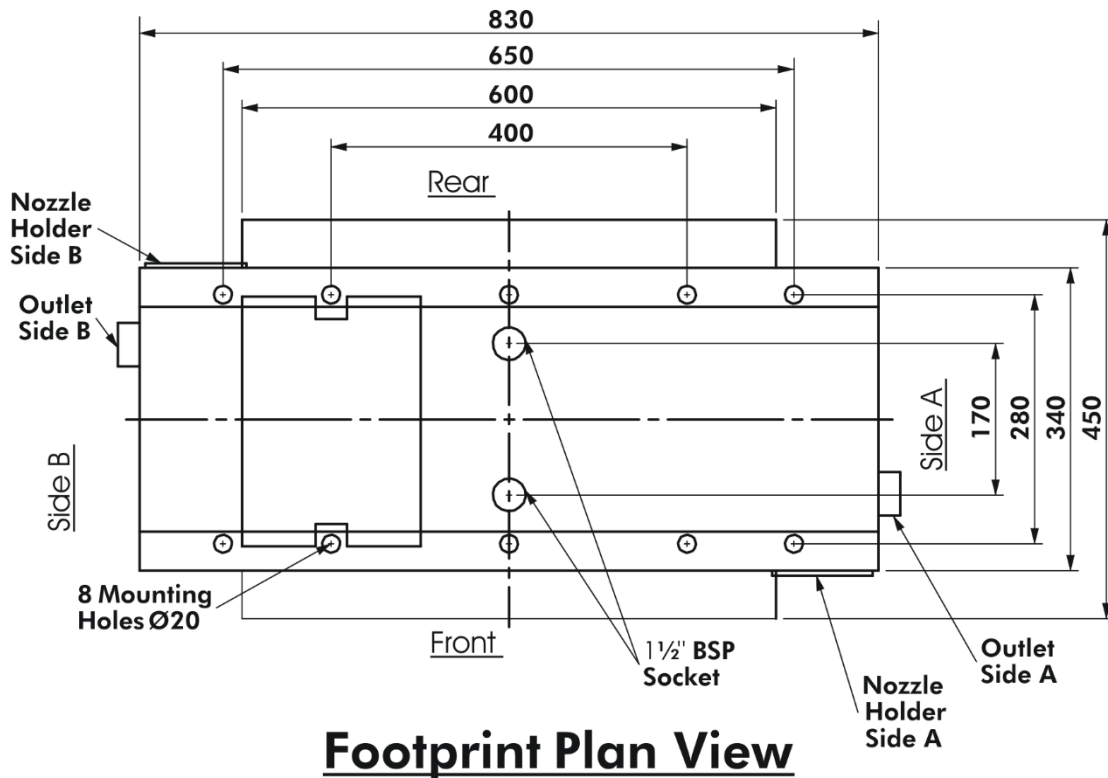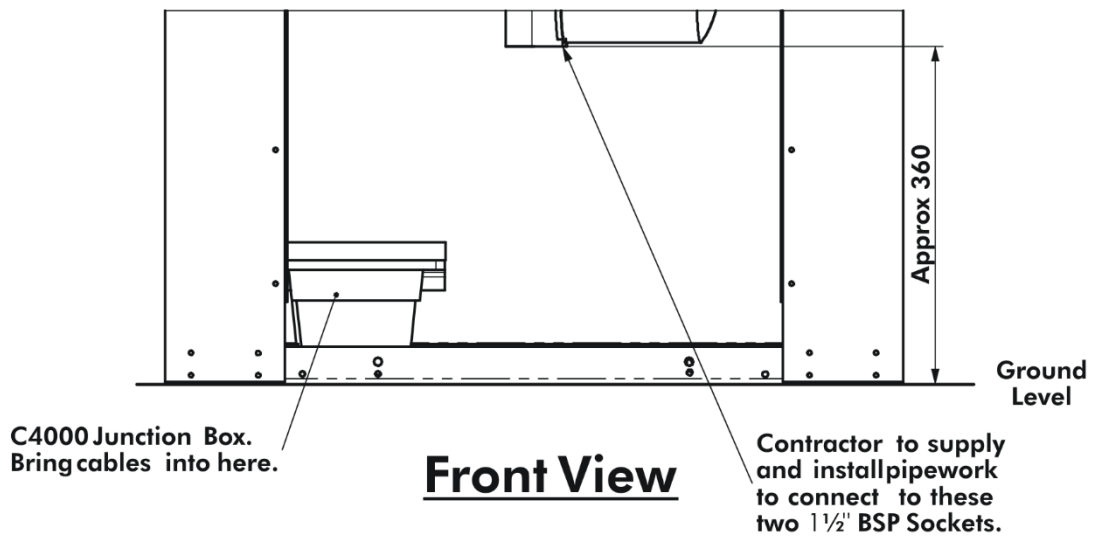Splash Guard
(fits under Base Rails)

Rear of Unit

Incoming Cable
Gland Holes
in Splash Guard

650

400

232.5

85

415

340

40lpm Inlet

85

160lpm Inlet

380

447

602

Ø20 (10PLcs)
Mounting Holes

Front of Unit

Footprint Plan View

L160SD L160S LL160S

C4000 Junction Box.
Bring cables into here.

Contractor to supply
and install pipework
to connect to these
two 1½" BSP Sockets.

Approx 360

Ground
Level

Front View

Nozzle
Holder
Side B

Outlet
Side B

Side B

8 Mounting
Holes Ø20

Rear

Front

1½" BSP
Socket

Nozzle
Holder
Side A

Outlet
Side A

Side A

830
650
600
400

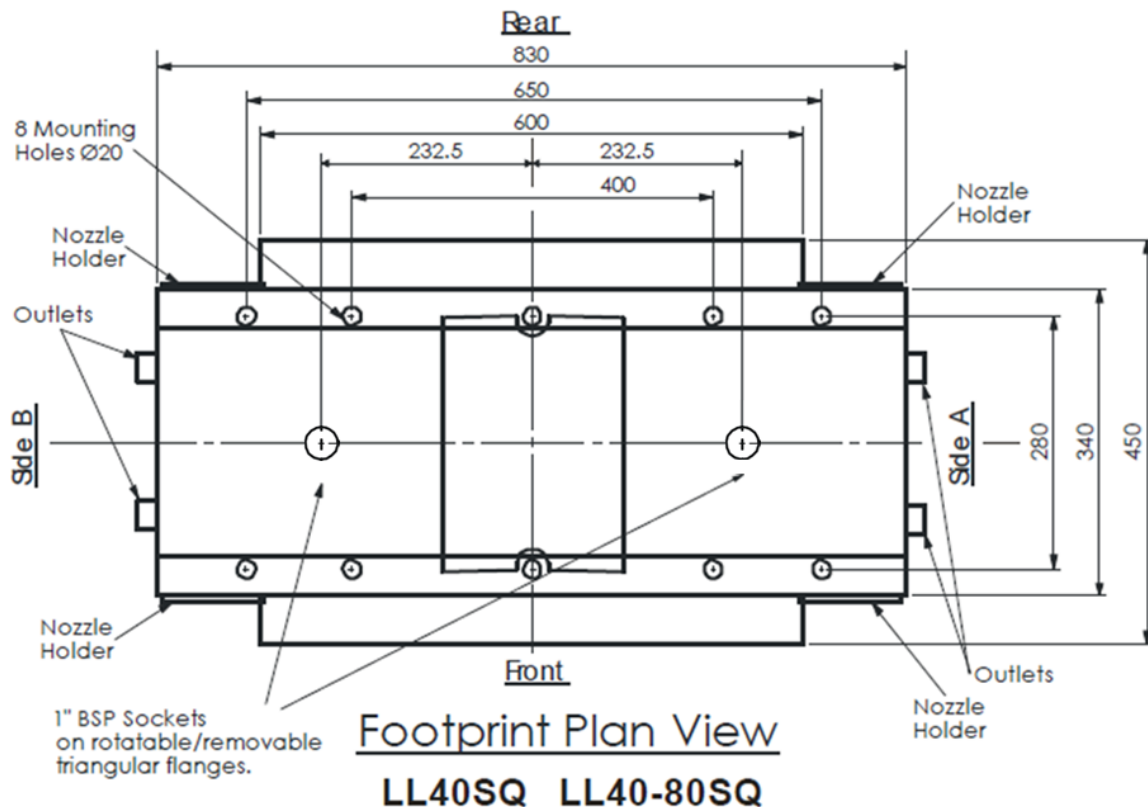170 280 340 450

Footprint Plan View

L160SD

L160S footprint is the same apart from the upper inlet socket and left hand outlet,
which are removed.
LL160S footprint has the nozzle holders on the ends of the unit.

LL40SQ LL40-80SQ

C4000 Junction Box.
Bring cables into here.

Front View

Ground
Level

Rear

830
650
600
232.5 232.5
400

8 Mounting
Holes Ø20

Nozzle
Holder

Nozzle
Holder

Outlets

Side B

Side A

280
340
450

Nozzle
Holder

Outlets

1" BSP Sockets
on rotatable/removable
triangular flanges.

Front

Nozzle
Holder

Footprint Plan View

LL40SQ   LL40-80SQ
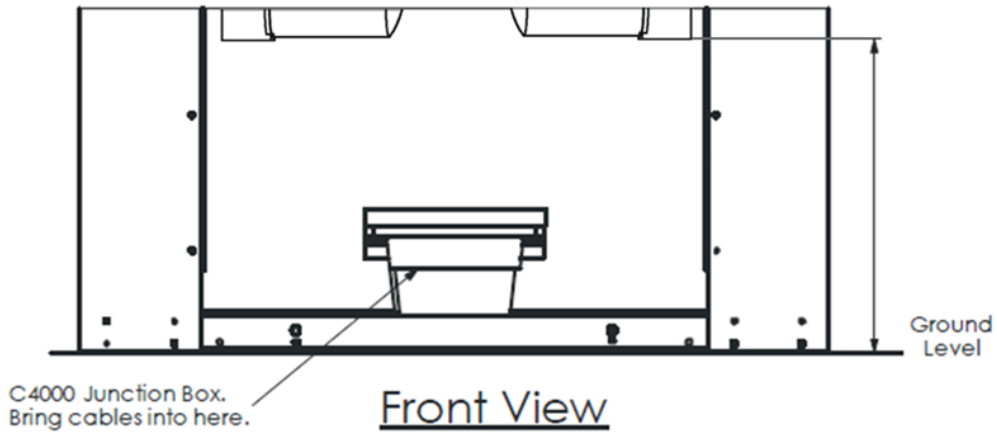
LL160-40S LL160-80S

Triangular slip flange that can be rotated to any orientation.
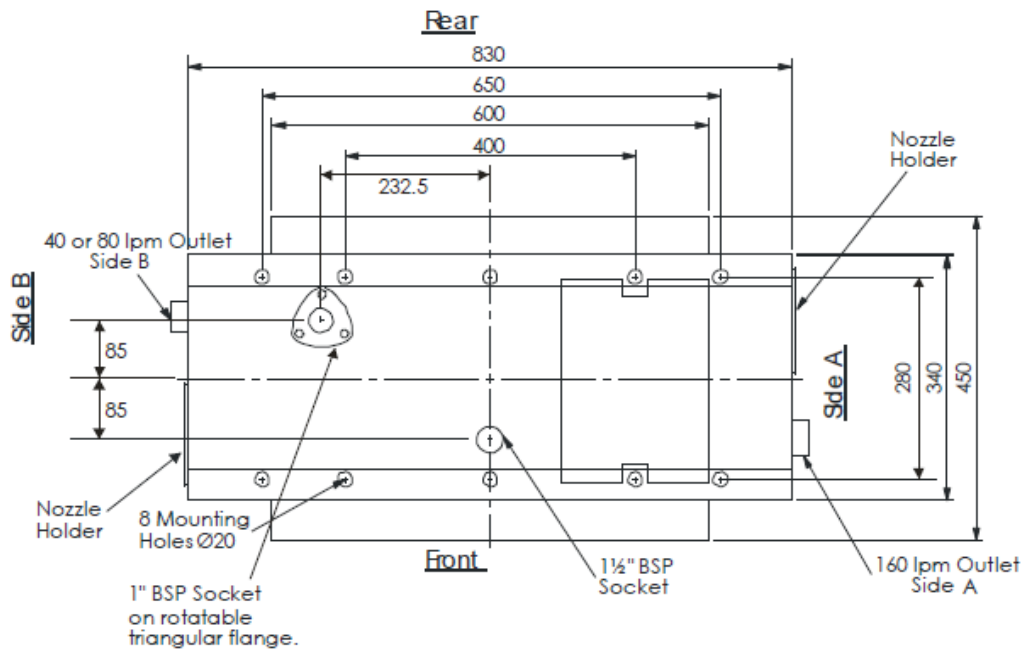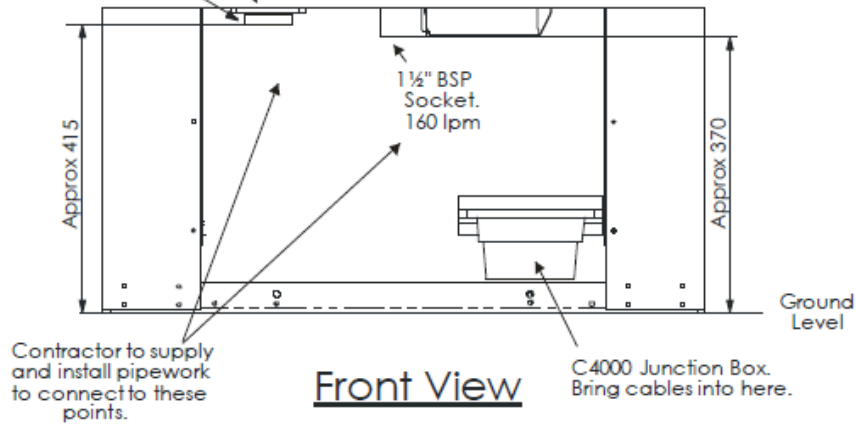
Triangular flange tapped 1"BSP. (Removeable) 40 or 80 lpm

1½" BSP Socket. 160 lpm

Approx 415

Approx 370

Ground Level

Contractor to supply and install pipework to connect to these points.

C4000 Junction Box. Bring cables into here.

Front View

Rear

830

650

600

400

232.5

Nozzle Holder

40 or 80 lpm Outlet Side B

Side B

85

85

Side A

280

340

450

Nozzle Holder

8 Mounting Holes Ø20

1" BSP Socket on rotatable triangular flange.

Front

1½" BSP Socket

160 lpm Outlet Side A

Footprint Plan View

10.

LL160SQ

Side B
Nozzle Holders
(Second Nozzle Holder
on opposite side in the
same position)

Side A
Nozzle Holders
(Second Nozzle Holder
on opposite side in the
same position)

Side A Outlets

Side B Outlets

C4000
Microprocessor
Enclosure

4 x 160lpm
Outlets are 1 1/4"
BSP Female Sockets

C4000 Power Supply
monted on bracket
in Side Tower here.
*(Bracket is secured
with bolts to allow
removal)*

568 approx.

266 approx.

380 approx.

685 approx.

Ground Level

Rear of Unit

Inlets:
Contractor to supply
and install pipework
to connect to
these four 1 1/2" BSP
female threads on
the Filter Housings.

Front View

C4000 Junction
Box. Bring cables
into here.

Rear of Unit

830

650

400

415

340

170

380

447

147

602

Ø 20 (10PLcs)

Front of Unit
Footprint Plan View

11.

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.

Where local regulations require a sump to be fitted:

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

Static Electricity Precautions

Electronic components used are sensitive to static. 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.

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 Laser Pump applications.

NOTE: They are 3 position switches.

	Pump (Motor triac fitted)
SW1	1
SW2	1
SW4	Centre

Electrical Connections

The instructions below refer to basic installation wiring. For full wiring specifications refer to drawing AP375 available on the Resources section of the Compac website.

Prior to pump installation ensure that there is at least a two-metre tail on the incoming underground mains supply / pump contactor cable and comms cable (if comms enabled). These cables are terminated at the C4000 power supply, which is housed in the flameproof enclosure located in the bottom of the pump, behind the door.

Mains power wiring should be rated for a maximum current draw of 10 A rms at 220-240 V ac.

Refer to AS/NZS 60079.14 for appropriate cabling.

When replacing the lid of the flameproof enclosure, ensure the sealing O ring is in place.

NOTE: All cables entering the power supply must be glanded with approved 20mm flameproof glands.

NOTE: Output to submersible pump(s) is 230 V ac, 300 mA max. It is wired to the pump contactor/relay at the switchboard and not directly to the pump.

NOTE: Pump comm's connect to pump controller such as DCA, CommunicatorController etc. (option). Comms cable is not intrinsically safe.

NOTE: Different software is required for each protocol
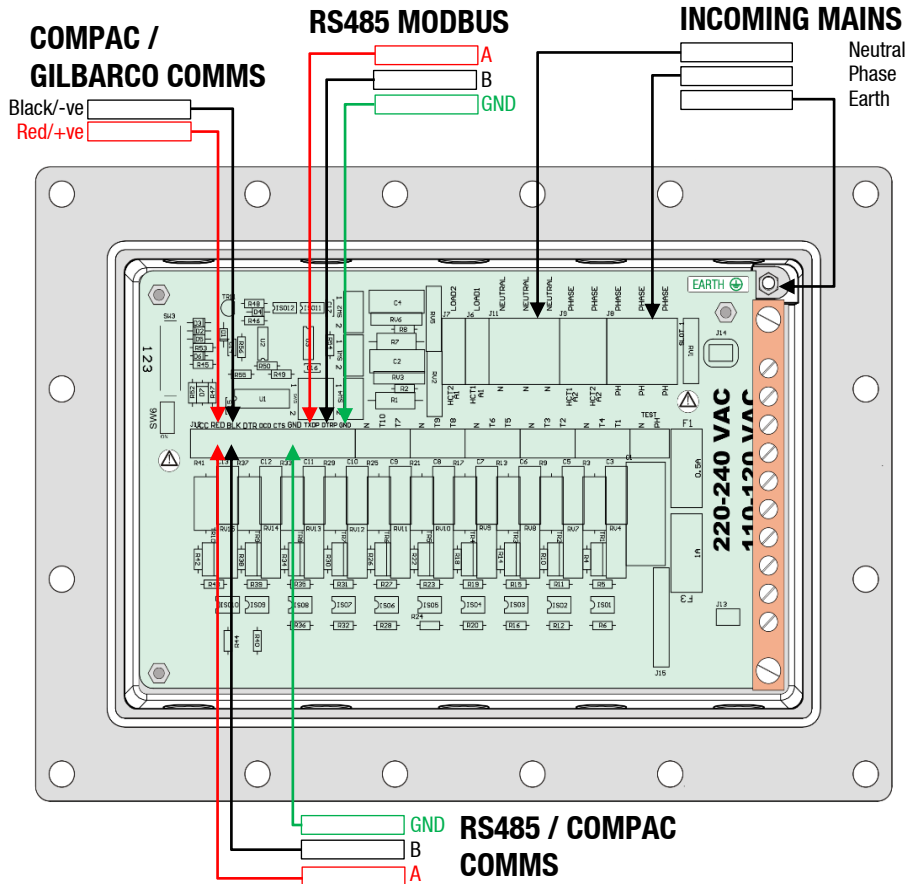
Submersible Pump Connections

Connect the feeds to the submersible pump relays / contactors to the C4000 Power Supply as follows:

Single/Dual Software	Quad Software
Pump supplying side A to terminal marked T1	Pump supplying hose A1 to terminal marked T1
Pump supplying side B to terminal marked T4	Pump supplying hose A2 to terminal marked T3
	Pump supplying hose B1 to terminal marked T5
	Pump supplying hose B2 to terminal marked T7

If both sides are required to switch the same submersible pump, then T1 and T4 should be linked together.

NOTE: *Dispensers do not use the terminals marked LOAD 1 & 2.*

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 222.

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.

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.

Parameter

K-Factor
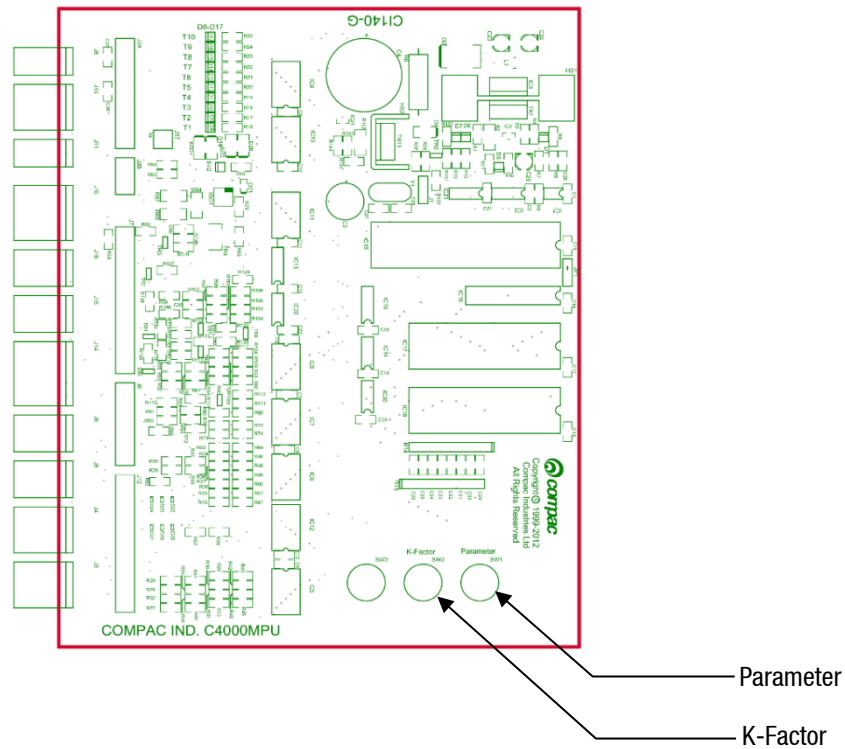
J1: Comms Test	J7: Displays	J13: Not used
J2: To Power Supply	J8: Temperature (for Temperature compensation only)	J14: Not used
J3: Input from KG Meter Side A	J9: Power for KG Meters	J15: Not used
J4: Input from KG Meter Side B	J10: Totes	J16: Not used
J5: Not Used	J11: Buzzer	J17: Backlighting
J6: Not used	J12: Nozzle Switches	

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.

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.

Depress the Parameter Switch nine (9) or more times until the message ⊓A ** appears in the litres display window. When the switch is pressed again ⊓b ** 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 ⊓ 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 ⊓**** on the litres display and ⊓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.*

	Continue for Dual hose units	
6	Press and release the Parameter switch 8 or more times in quick succession	The price for side ᑕ is shown as P**** on the litres display and Prᑕ 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.

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.

1) Press and release the K factor switch repeatedly until **Sd** appears on the Dollar display. **d***** will appear in the litres display.
2) Continue to press the K factor switch until the number to be changed flashes. Hold the switch down and this number will then increment.
3) 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.

Calibration (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.

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

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

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

To change the existing 'K' Factor to this new value, depress the K-Factor switch repeatedly until ⊢ ┃ is shown on the dollars display. The existing K-Factor will be shown in the litres display. Press and hold the K-Factor switch to increment digits. To change the K-Factor for side B, repeatedly press the K-Factor switch until ⊢ ┛ is shown in the dollars display.

Sealing the K-Factor Switch

After calibration the K-factor switch should be sealed as shown:
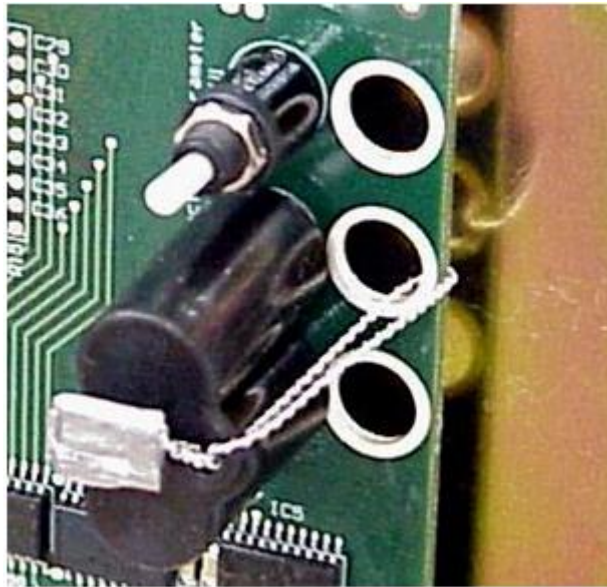
Standalone Operation

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 **ONLINE** 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 ᑕ code on the K factor switch.

The ᑕ code to run Standalone without Dispenser Controller is ☐☐☐☐.

The ᑕ code to inhibit Standalone is ☐☐☐☐.

Notes

Precautions if Using 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:

1) 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.
2) 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.
3) 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.
4) Isolate the unit before shutting down the generator.

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.

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 Abd	Display error	Check display cable for loose wires/crimps Replace display PCB