COMPAC
PREMIUM DISPENSER TECHNOLOGY

L400S, L400S Marine Installation Manual
Version No 1.0.6

Model: L400S, L400S Marine
Date: 7th December 2018

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.
- Failure to comply with any warnings, instructions, procedures, or any other common sense procedures may result in injury, equipment damage, property damage, or poor performance of the Compac equipment.
- The major hazard involved with operating the Compac C4000 processor is electrical shock. This hazard can be avoided if you adhere to the procedures in this manual and exercise all due care.
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- Compac Industries Limited reserves the right to change the specifications of its products or the information in this manual without necessarily notifying its users.

- Variations in installation and operating conditions may affect the Compac C4000 processor's performance. Compac Industries Limited has no control over each installation's unique operating environment. Hence, Compac Industries Limited makes no representations or warranties concerning the performance of the Compac C4000 processor under the actual operating conditions prevailing at the installation. A technical expert of your choosing should validate all operating parameters for each application.
- Compac Industries Limited has made every effort to explain all servicing procedures, warnings, and safety precautions as clearly and completely as possible. However, due to the range of operating environments, it is not possible to anticipate every issue that may arise. This manual is intended to provide general guidance. For specific guidance and technical support, contact your authorised Compac supplier, using the contact details in the Product Identification section.
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Product Identification

Specifications

Models Covered	This manual applies to L400S, L400S Marine.
	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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1.0.1	29 Aug 2014	R Lacey	Added new front page footer
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1.0.5	11 Dec 2017	S Laycock	Reformatted manual
1.0.6	07 Dec 2018	R Liu	Updated contact information

SGS

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.
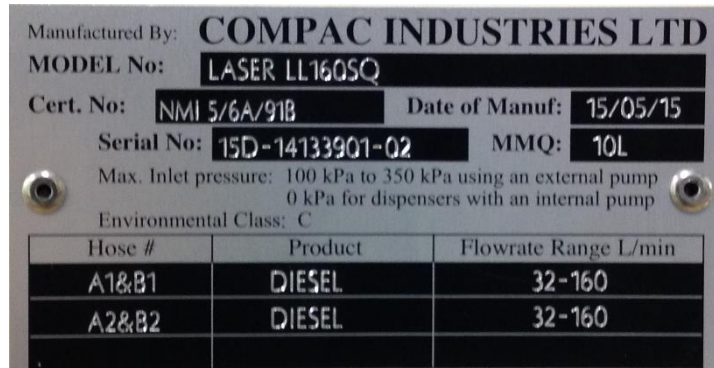
Understanding the model number:

The model number for Master dispensers 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. Marine models use stainless steel pipework.

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._
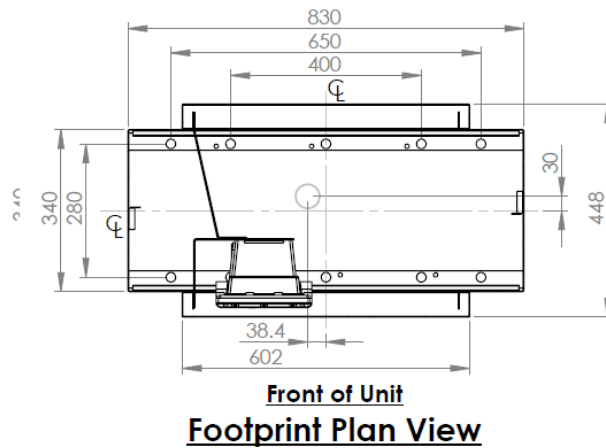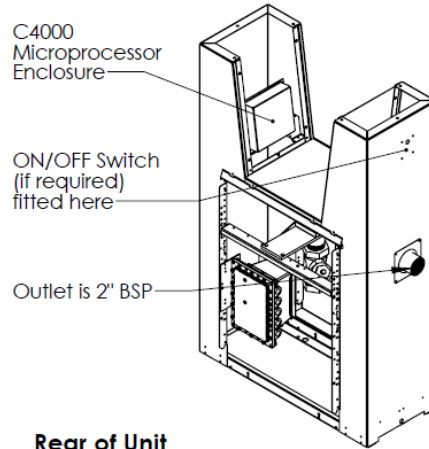
Footprints

C4000 Junction Box. Bring cables into here.

Front View

Contractor to supply and install pipework to connect to this 2" BSP female thread on the Inlet "Y" Strainer.

703

Approx. 370

Ground Level

C4000 Microprocessor Enclosure

ON/OFF Switch (if required) fitted here

Outlet is 2" BSP

Rear of Unit

830
650
400

30
448
340
280
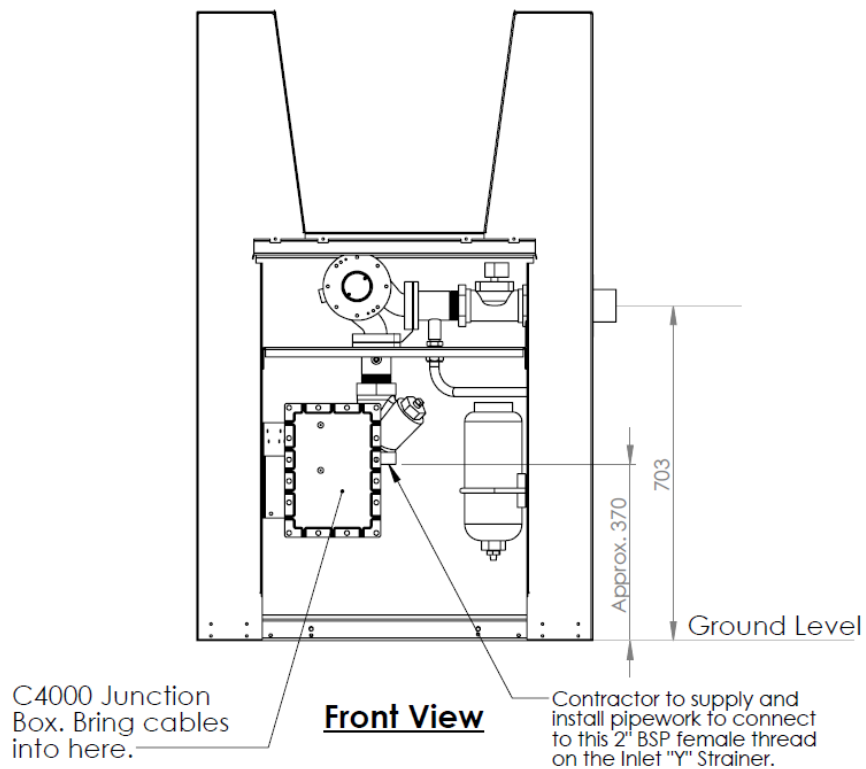38.4
602

Front of Unit
Footprint Plan View

Figure 1: Footprints for L400S, L400S Marine

Installation

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.

Procedures

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.

Stainless steel pipe and fittings should be used for marine installations.

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.

NOTE: *Compac M400 high flow dispensers do not have an internal filtering system fitted at the factory. It is the customer and/or installers responsibility to ensure the fuel supplied to the dispenser is clean and free from any dirt, debris or metal particles that could damage the meter or hydraulic components. A 10-micron filter is recommended. Compac does not warranty the meter or hydraulic components for damage caused by contaminated fuel supply.*

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

__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 Master / Premier Dispenser 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).

__NOTE:__ Comms cable is not intrinsically safe.
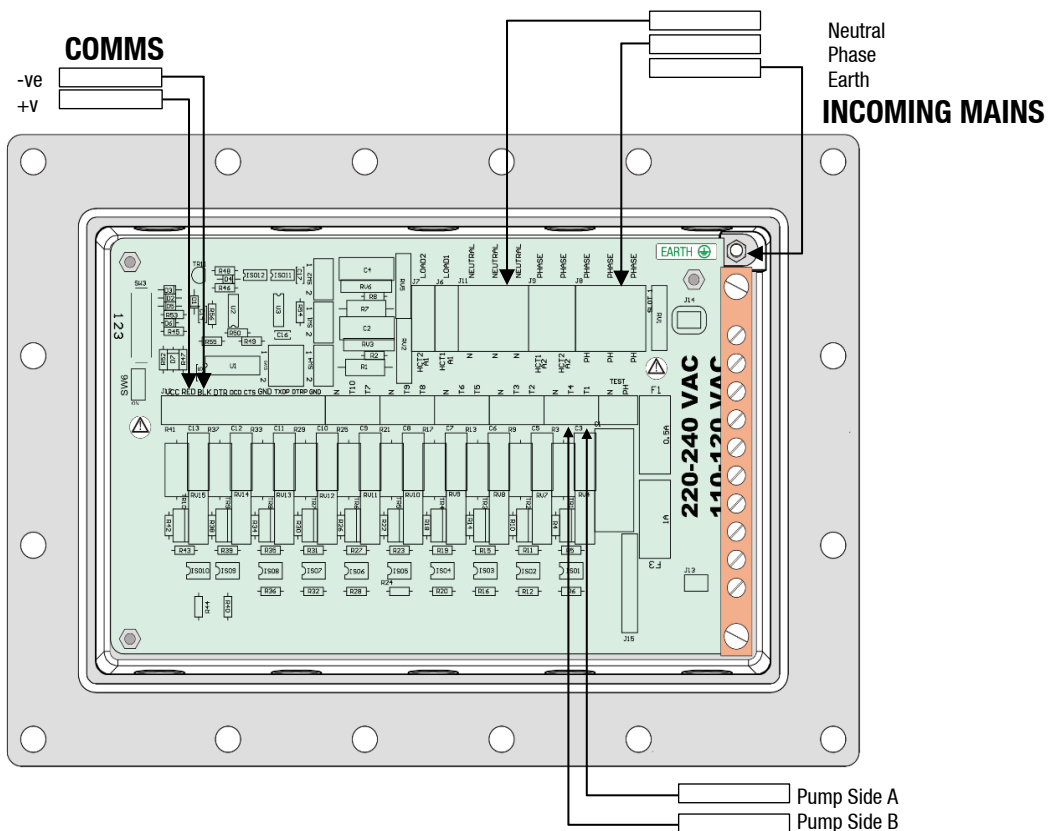
Submersible Pump connections

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

- Pump supplying side A to terminal marked T1
- Pump supplying side B to terminal marked T4

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 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.

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 on the left front of the unit below the display panel.

Configuration Codes

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 ⬛⬛5 (five seconds).

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

1. Press and release the K factor switch repeatedly until ⬛d 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.

Preset cutoff (P-cut)

Some models with a preset function may be fitted with dual high/low solenoid valves to slow the fuel delivery rate before the preset amount is reached. The C4000 shuts down the high flow 400 l/min solenoid before the preset total is reached, leaving the low flow solenoid to complete the fill. If the setting is too small, the dispenser may overshoot the preset amount, if it is too large, the dispenser may take a long time to complete a fill. The P-cut setting is adjusted using the parameter switch.

A general setting is entered at the factory but if the dispenser is overshooting the preset or it is taking a long time to complete a fill, you may want to change it.

The formula for working out the new P-cut figure for overruns is:

$$(Price\ per\ litre * Dollar\ amount\ of\ overrun) + Existing\ P\ cut\ figure$$

The figure should be rounded to two decimal places.

Example:

- Price per litre = $ 2.50
- Overrun = $ 0.15
- Existing P-cut = 0.32

$$(2.5 * 0.15) + 0.32 = 0.695$$

The final figure would be 0.70.

For slow final delivery, experiment by reducing the P-cut until an overrun is achieved then using the above formula for a final adjustment.

NOTE: *When doing P-cut tests make sure that you are dispensing enough fuel to reach full flow rate.*

NOTE: *Not all 400 l/min dispensers are equipped with dual solenoids, check the sales order to confirm before attempting to adjust.*

To adjust the P-cut, use the K-Factor switch. Scroll through the settings until the price display shows ⊓⊏⊔⊏ and the volume display shows ⊓⊏***. Select the digits you wish to change and hold down the switch to scroll through until the required change is made. The range is from 0.01 to 9.99 litres.

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 ⌐∩Ḥ ** 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 Ḥ is shown as ⌐**** on the litres display and ⌐⌐Ḥ 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 b is shown as ⌐**** on the litres display and ⌐⌐b is displayed on the money display.
7	Repeat steps 3 to 5 above.	

K-Factor Switch Settings

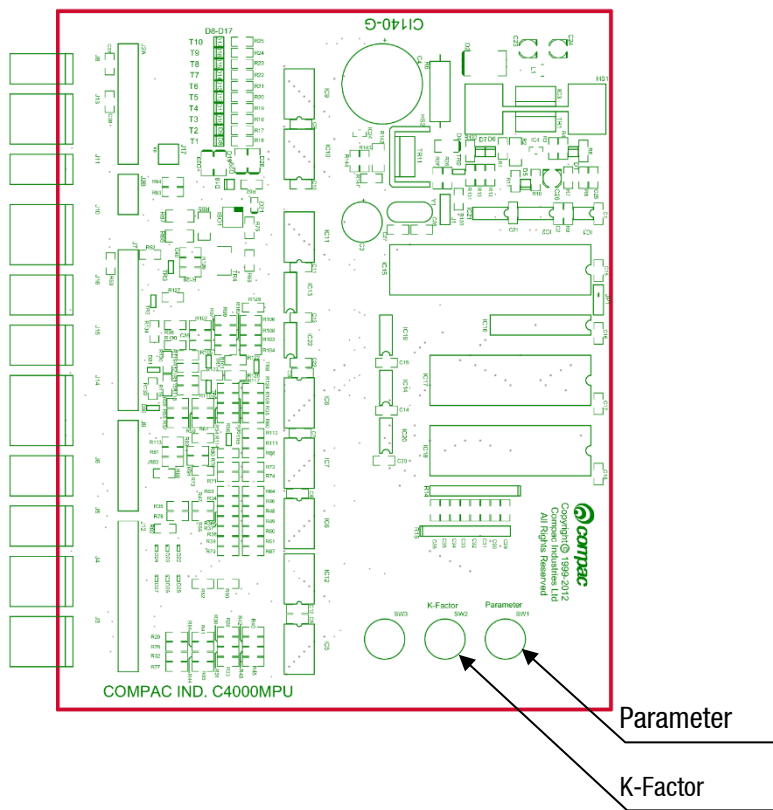COMPAC IND. C4000MPU

Parameter

K-Factor

Figure 3: Location of K-Factor Switch

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

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.

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

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

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

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

Sealing the K-Factor switch

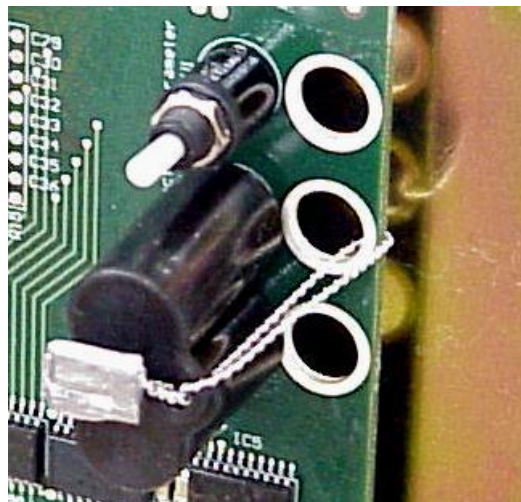After calibration the K-factor switch should be sealed as shown:

Figure 4: Sealed K-Factor Switch

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 ᑭ code on the K factor switch.

The ᑭ code to run Standalone without Dispenser Controller is ⧠⧠⧠⧠.

The ᑭ code to inhibit Standalone is Ⅰ⧠⧠⧠.

14.

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.	1. Check that encoder is plugged in. 2. 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.	1. Check display cable for loose wires/crimps. 2. Replace display PCB.