



# CARD KING INSTALLATION AND SERVICE MANUAL

---

## Card King Installation and Service Manual

**Version 1.0.6**

**Model:** Card King

**Date:** 26<sup>th</sup> February 2020

## 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.
- Compac Industries Limited accepts no liability for direct, indirect, incidental, special, or consequential damages resulting from failure to follow any warnings, instructions, and procedures in this manual, or any other common sense procedures generally applicable to equipment of this type. The foregoing limitation extends to damages to person or property caused by the Compac C4000 processor, or damages resulting from the inability to use the Compac C4000 processor, including loss of profits, loss of products, loss of power supply, the cost of arranging an alternative power supply, and loss of time, whether incurred by the user or their employees, the installer, the commissioner, a service technician, or any third party.
- 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.
- 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.
- Information in this manual shall not be deemed a warranty, representation, or guarantee. For warranty provisions applicable to the Compac C4000 processor, please refer to the warranty provided by the supplier.
- Unless otherwise noted, references to brand names, product names, or trademarks constitute the intellectual property of the owner thereof. Subject to your right to use the Compac C4000 processor, Compac does not convey any right, title, or interest in its intellectual property, including and without limitation, its patents, copyrights, and know-how.
- Every effort has been made to ensure the accuracy of this document. However, it may contain technical inaccuracies or typographical errors. Compac Industries Limited assumes no responsibility for and disclaims all liability of such inaccuracies, errors, or omissions in this publication.

## Product Identification

### Specifications

**Manual Title** Card King Installation and Service Manual

**Original Publication Date** 07/10/2011

**Models Covered** This manual applies to the Card King  
***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:

The Compac Card King dispenser is designed and manufactured by  
Compac Industries Limited  
52 Walls Road, Penrose, Auckland 1061, New Zealand  
P.O. Box 12-417, Penrose, Auckland 1641, New Zealand  
Phone: + 64 9 579 2094  
Fax: + 64 9 579 0635  
Email: [techsupport@compac.co.nz](mailto:techsupport@compac.co.nz)  
[www.compac.biz](http://www.compac.biz)  
Copyright ©2015 Compac Industries Limited, All Rights Reserved

CONDITIONS



## Document Control

Document Information	
<b>Document Details</b>	Card King Installation and Service Manual
<b>Current Revision Author(s)</b>	R Liu
<b>Authorised By</b>	W Zheng

Revision History			
Version	Date	Author(s)	Revision Notes
1.0.0	07 Oct 2011	R Lacey	New manual
1.0.1	12 Nov 2011	R Lacey	Added L80S, L160P, L160S footprints and Service Schedule
1.0.2	01 May 2012	A Kingstone	Updated Config A options
1.0.3	29 May 2012	R Lacey	Updated Conditions of Use. Added Tank Gauging section
1.0.4	21 Jun 2018	S Laycock	Updated manual.
1.0.5	07 Dec 2018	R Liu	Updated contact information
1.0.6	26 Feb 2020	V Amarakoon	Updated Introduction, layout, 3G/4G aerial, C4000 Wiring, Modems, Parts location, Changing printer Receipt, Modem replacement, Spare parts and Electronic components. Added Lantronix board replacement.

## Contents

Safety .....	4
Introduction.....	6
Layout.....	7
Options .....	8
Pre-installation .....	9
Required Tools .....	10
Location Considerations .....	11
Electrical Preparation .....	11
Pipework Preparation .....	11
Check Valve.....	12
Footprints .....	13
L80P .....	13
L80S.....	14
L160P.....	15
L160S.....	16
Installation .....	17
Electrical Wiring.....	18
C4000 Wiring .....	19
Comms Wiring.....	21
Powering Up.....	23
Checking Communication.....	23
Checking Card Reader .....	23
Checking the Printer .....	24
Checking Transactions are Uploaded .....	24
USB Module.....	25
USB Memory Stick .....	26
Managing Files.....	27
1) Do All .....	28
2) Set Price .....	29
3) Send Cards.....	29
4) Get Buffer .....	30
5) Get Transactions .....	30
USB Module Files .....	31
1) Cards .....	32
2) Price .....	34
3) Transactions .....	34
Customising Your Transaction Reports .....	36
Set Up .....	38
System Setup .....	38
Software Identification .....	38
Main Menu Options.....	39
Option #1 REPORTS .....	40
Option #2 CARDS.....	40
Option #3 FUELS .....	40

Option #4 SYSTEM.....	43
Option #5 PUMPS .....	49
Comms Options .....	52
Option #6 TANKS .....	57
Option #7 PRODUCT GROUPS and GRADES .....	61
Tanks/Pumps/Groups .....	62
Setting Product Groups.....	64
Assign Pump Number .....	65
Pump Numbers for Each Model .....	65
Order of Pump Numbers .....	65
Assign Hoses.....	66
Cards .....	67
Expiry Date .....	67
Setting ISO and Access Codes.....	67
Oil Company ISO and Access Codes.....	67
Modems.....	68
ETIC -IPL- A -220 -ADSL Router, 4G Comset Modem .....	68
Diagnostic LEDs .....	69
Diagnostic LEDs in a System with Compac Comms Only.....	70
Troubleshooting .....	71
Error Messages .....	72
Service Procedures .....	73
Maintenance.....	73
Compac Dispenser and Pump Service Recommendations .....	74
Parts Location .....	75
Changing Receipt Printer.....	76
Printer Module Replacement .....	77
Lantronix Board Replacement .....	77
UPS Board Connections .....	78
COM FMS Board Replacement.....	79
C4000 Board Replacement .....	81
Keypad and Display Screen Replacement .....	82
Modem Replacement .....	83
Card Reader Replacement .....	84
Power Supply Replacement.....	85
Mains Power Loss .....	86
Backup Battery Replacement .....	87
UPS Board Replacement .....	88
Software Upgrading .....	89
Appendix .....	90
Comm FMS Board Connections .....	90
Plugs and Connectors.....	91
Membrane Keypad .....	92
Spare Parts List.....	93
Spare Parts.....	93
Electronic Components.....	94
Glossary of Terms .....	95
Installation Checklist.....	96

## Safety

You must adhere to the following safety precautions at all times when working on this unit. Failure to observe these safety precautions could result in electrical or mechanical damage to the unit or injury or death to yourself or bystanders.

Make sure that you read and understand all safety precautions before installing, servicing or operating this unit.

**NOTE:** Failure to follow safety instructions may invalidate any warranty.

### Mechanical Safety

Observe the following mechanical precautions:

**CAUTION:** During installation, take care that the unit is well supported and cannot fall over.

**CAUTION:** Take care with handling sharp edges, wear gloves where required.

**CAUTION:** Make sure that the service area is thoroughly clean when servicing. Dust and dirt entering the components may reduce the life span of the components and can affect operation.

### Electrical Safety

Observe the following electrical precautions:

**CAUTION:** Always turn off the power to the unit before commencing work on any wiring. Never touch wiring or components inside the high voltage area with the power on. Be aware that capacitors and back up batteries may power the unit even after mains power is removed.

**CAUTION:** Always turn off the power to the unit at the mains switch before removing or replacing software or memory ICs.

**CAUTION:** Always take basic anti-static precautions when working on the electronics, i.e., wearing a wristband with an earth strap.

### Environmental Safety

Observe the following environmental precautions:

Take care that you clean up after working on the unit.

Remove and carefully dispose of any waste.

Any spills must be cleaned up and disposed of in an approved manner.

**CAUTION:** Any spillage of fuel must be handled to minimise the risk of fire or explosion. Major spills must be reported to the local environmental authorities.

### Site Safety

Observe the following precautions when on site:

Personal safety is the responsibility of the site manager and technician. Personal protective equipment appropriate to the situation is to be worn and if required, the working area appropriately cordoned off with cones, tape and/or barriers.

**CAUTION:** When working in or near hazardous areas, take all precautions to avoid sources of ignition. Obtain a Hot Work Permit if required.

**NOTE:** *These instructions are intended as a guide only. It is the responsibility of the technician and the site manager to manage safety in accordance with local regulations and best safe site practice.*



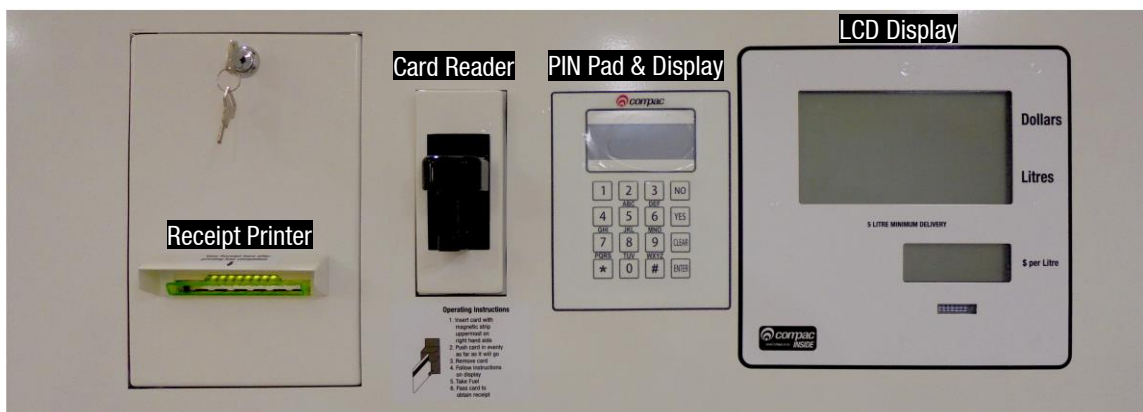
## Introduction

The Compac Card King unit is designed as a versatile, multi-purpose authorisation and fuel management station.

The main features include:

- Stand alone unit for unattended refuelling
- Integrated receipt printer
- Backup battery to enable receipt printing after power failure
- Transaction, price and card management via:
  - USB key
  - Dial up modem
  - ADSL broadband
  - 3G broadband

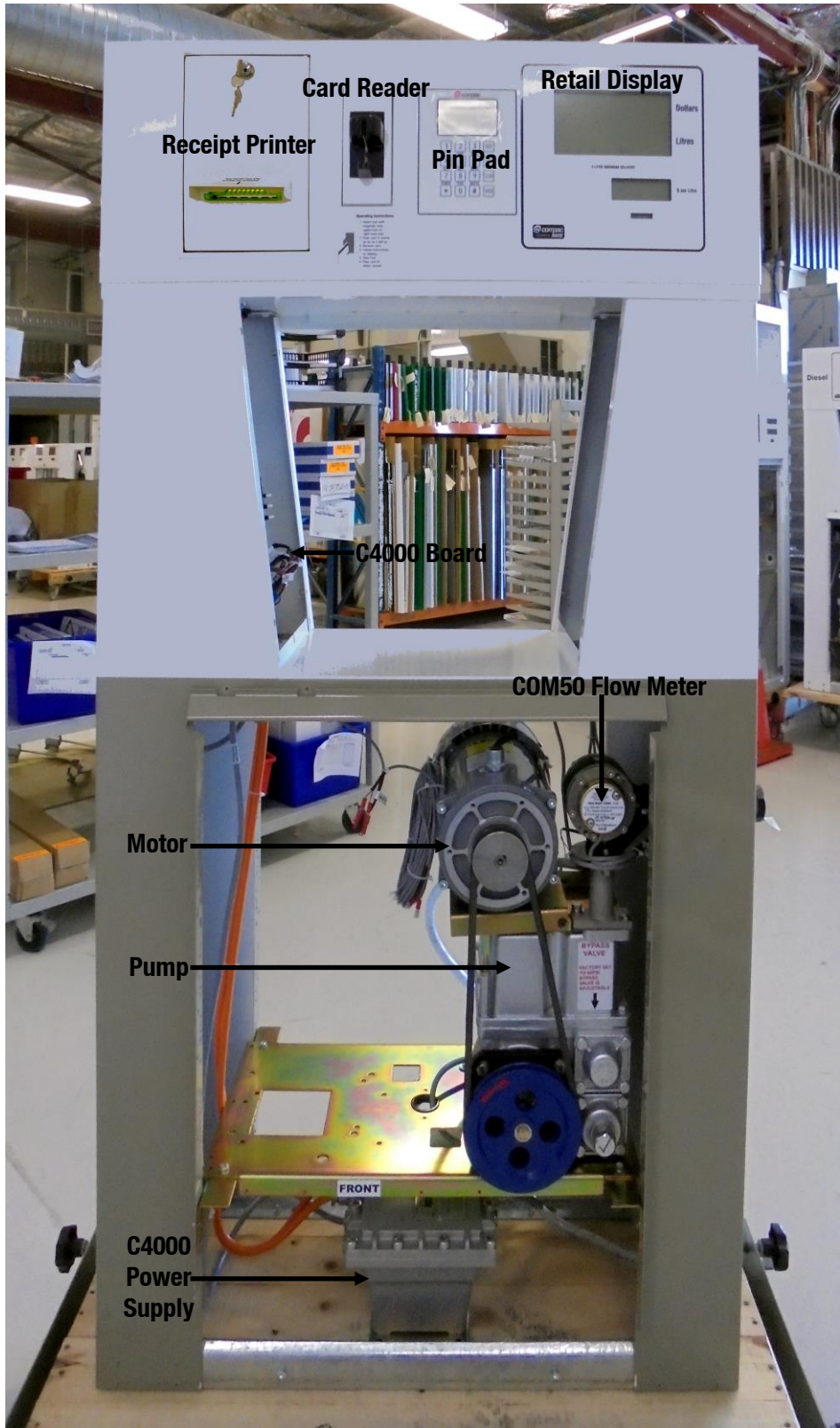
The Card King is designed to be used on unattended sites where the fuel pumps are authorised and controlled totally by the unit.



This manual covers all models and variants of the Card King.

**NOTE:** The control systems of the Card King are shared by other Compac terminals. Some text or illustrations may refer to these models where they share common components.

Layout



## Options

The Card King is a versatile unit and can be equipped for many different functions depending on the customer's requirements.

### Reporting Options

- CompacOnline unit for remote reporting and administration via ADSL or cellular network connection.
- Netbase unit for remote reporting and administration (legacy option). Dial-up communication.

### Tank Gauging Option

Reporting of tank gauge information via CompacOnline.

### Authorisation Options

- Card based authorisation (white card).
- PIN (Personal Identification Number) authorisation.

### Memory Options

The Card King can accept multiple card bases simultaneously.

The unit has the ability to change the partition on the memory to make more space for card numbers (while reducing the transaction memory).

DS1250Y memory	5,500 Transactions	5,000 Cards
DS1250Y memory	4,000 Transactions	22,000 Cards

**NOTE:** These figures are approximate depending on the fields required.

Card numbers can be stored in two different ways: In limited validation mode, only the card numbers stored in the Card King can be used. In extended validation mode all valid ISO or mapped cards will be accepted apart from the "Hot Card" numbers that are stored in the memory.

## Pre-installation

### Transit Damage

Once the unit is received on site, inspect the cabinet for the following:

- Shipping damage to cabinet, display or any other equipment.
- Water damage to components

Report any damage to the transport company and to the help desk. Take photographs if required.

### Tampering

Inspect for:

- Evidence of tampering with the unit especially card reader or unauthorised wiring.

Report any concerns to the help desk. Take photographs if required.

### Vibration

Inspect terminals, plugs and IC chips to check they are securely in place and have not loosened due to vibration.

### Site Issues

Check that all wiring and pipework has been installed correctly and is undamaged. Report issues to site manager.

***NOTE:*** *Inappropriate installation may void the warranty. If uncertain, contact your Compac agent for advice.*

## Required Tools

It is expected that installers will carry a comprehensive tool kit including:

- Metric and imperial spanners
- Metric and imperial socket set
- Metric and imperial allen keys
- Torx and security torx keys
- Phillips, pozidriv and flat blade screwdrivers

## Power Tools

- Electric impact drill with conventional and masonry drill bits

**NOTE:** All local and site specific regulations must be followed when working with power tools. Do not use any power tools on site unless permitted.

## Electrical Tools

- Wire cutters
- Wire stripper
- Crimping tool
- EPROM extractor
- Multimeter
- Earthing wrist strap

## Diagnostic Equipment

- Laptop with fully charged battery and wireless modem
- LAN cable
- Fully charged cell phone
- Test cards and/or authorisation keys

## Safety Equipment

- High visibility vest or jacket
- Personal protective equipment (PPE) Boots, gloves, goggles, hearing protection, hard hat etc.
- Cones, barriers, tape to secure your working area

## Other Equipment

- Step ladder
- Torch
- Cable ties
- Dynabolts or suitable fasteners to suit the base material
- Cleaning spray and clean cloths

The above list is a suggested kit. Some tools may not be required for all installations and additional tools may be required for other sites.

## Location Considerations

To ensure maximum operating life, care should be taken when siting the dispenser. Considerations should include:

- The unit is not designed to be constantly exposed to the elements. A canopy or shelter should be installed to protect it.
- The card reader and PIN pad should face away from the prevailing wind especially in dusty or wet areas.
- In areas experiencing extremes of weather (heat, cold, wind, rain, salt spray etc.) consideration should be given to installing additional shelter.
- On heavy vehicle sites, mounting the unit on a raised pad and/or installing bollards to help protect from damage.
- If mounting on a post, the base needs to be attached to a smooth, level surface of sufficient strength to securely hold the retaining bolts or fasteners.

## Electrical Preparation

Power and communication cables must meet or exceed local regulation requirements. If no local regulations exist, we recommend as a minimum:

- Power: 3 core 2.5 mm<sup>2</sup> Steel Wire Armour (SWA) cable
- Comms: 2 core 1.5 mm<sup>2</sup> Steel Wire Armour (SWA) cable

There should be a minimum of a 2 metre tail for all wiring

**NOTE:** *The length of the communications cable must not exceed 100 metres.*

## Pipework Preparation

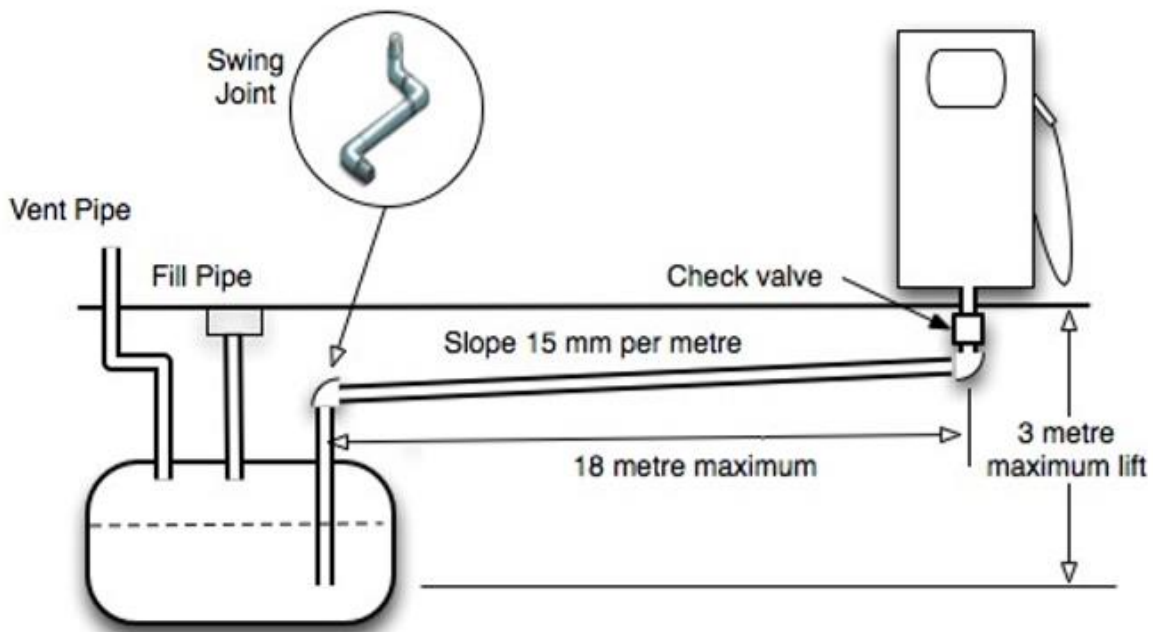
Pipework should be laid in accordance with local regulations. To obtain maximum flow on a self contained pump, observe the following guidelines:

- Total length of horizontal piping between tank and pump should be no longer than 18 metres.
- Piping specifications: For 40 l/min pumps, use 1½" galvanized or approved non-metallic pipe. For 80 l/min pumps use 2" galvanized or approved non-metallic pipe.
- Only one pumping unit is permitted for each underground pipe. Do not use tee joints to connect two pumps into one pipe.
- Pipe must slope up from the tank to the pump (approximately 15 mm per metre). Pipe should be straight and supported along its length.
- All horizontal piping must be buried at least 450mm below ground level.
- 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.
- Avoid asphalt drive surfaces covering the piping. Asphalt increases heat absorption causing vapour lock.
- Static lift must not exceed 3 metres (vertical distance from the product level in the tank to the centre of the pump unit).

- 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.
- Piping must hold a 3.4 Bar (50PSI) pressure test for a minimum of 10 minutes.
- It is recommended that a vertical, in-line check valve be installed underneath the pump.
- The dispensing equipment shall be installed to prevent the delivery hose from contacting the ground when not in use.

## Check Valve

A Check Valve must be installed at the tank end of the suction pipe on the top of the tank 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.



**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.

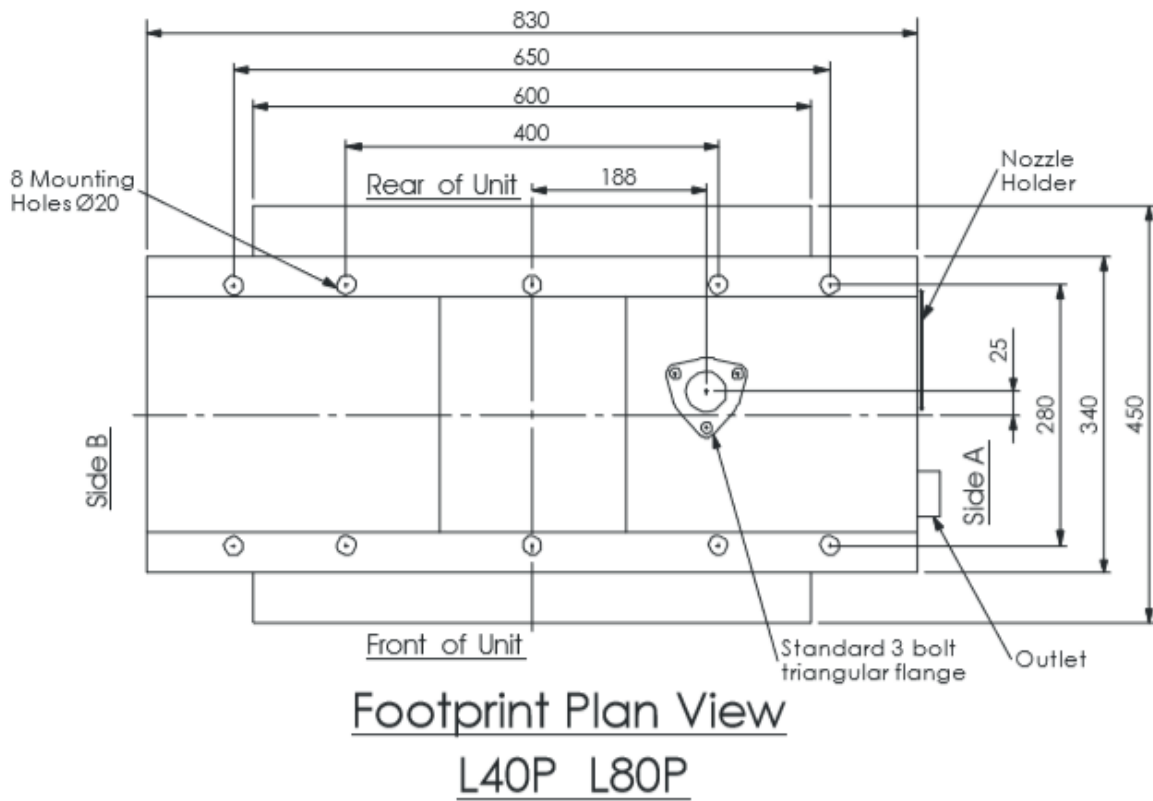
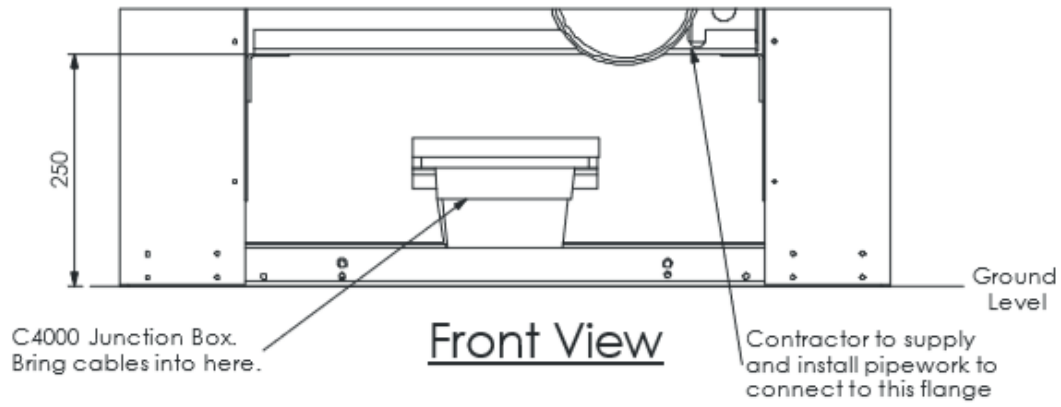
**DANGER:** For above ground tanks a regulator valve such as a Tokheim valve or similar device **MUST** be used so that the inlet of the pump cannot become pressurised at any time.

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

**CAUTION:** The air eliminator chamber is not to be piped back to the tank. This will prevent it from working and may damage the pump.

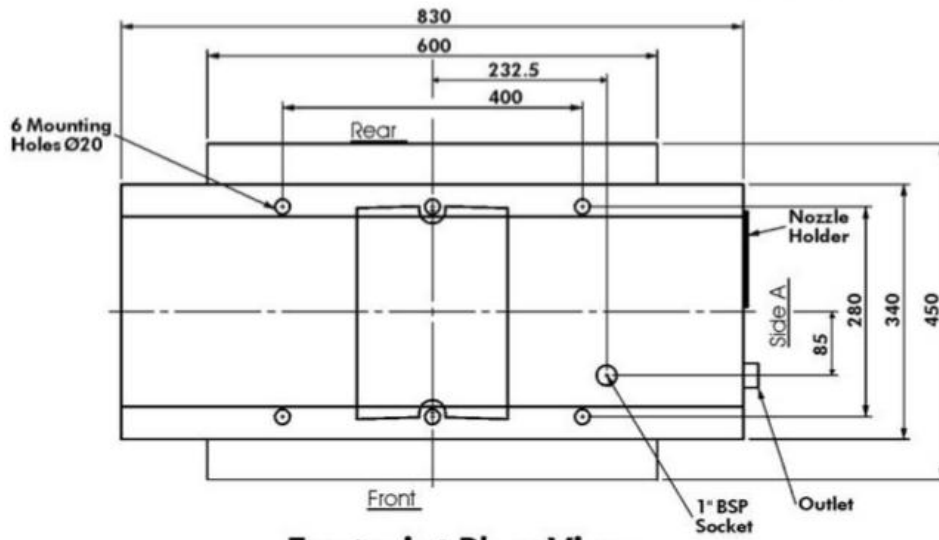
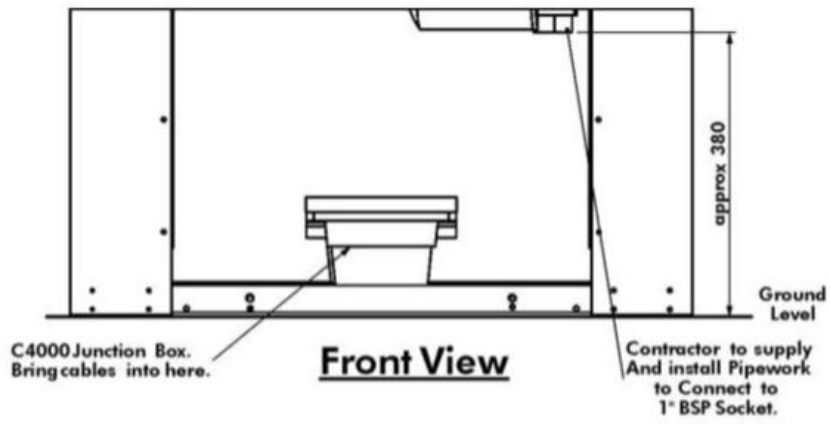
## Footprints

### L80P





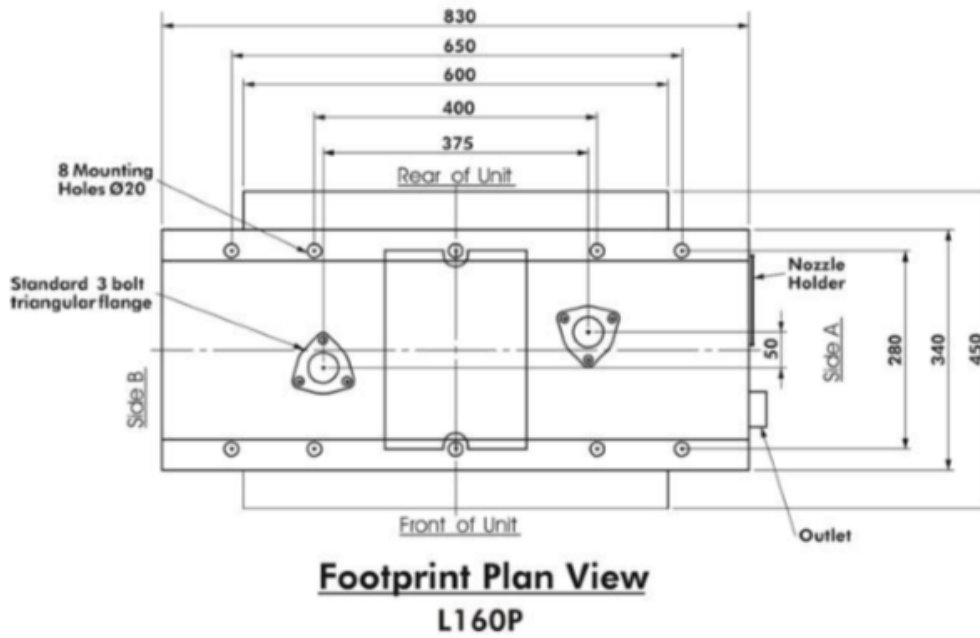
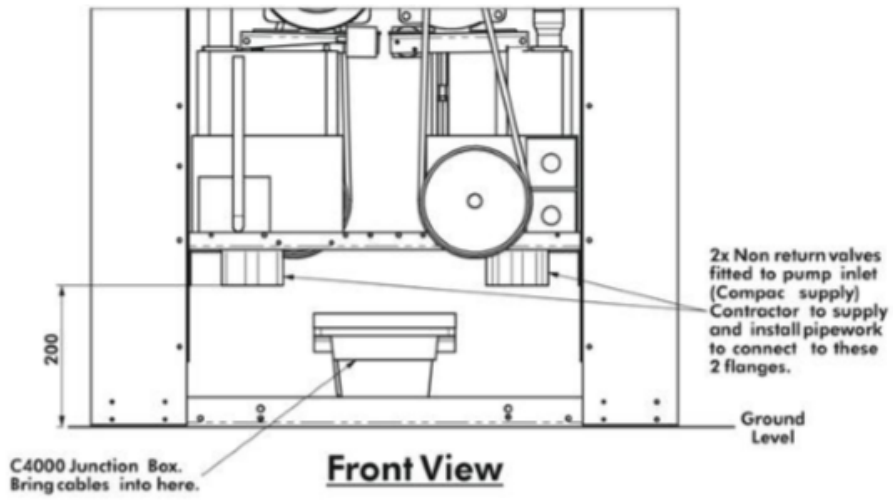
L80S



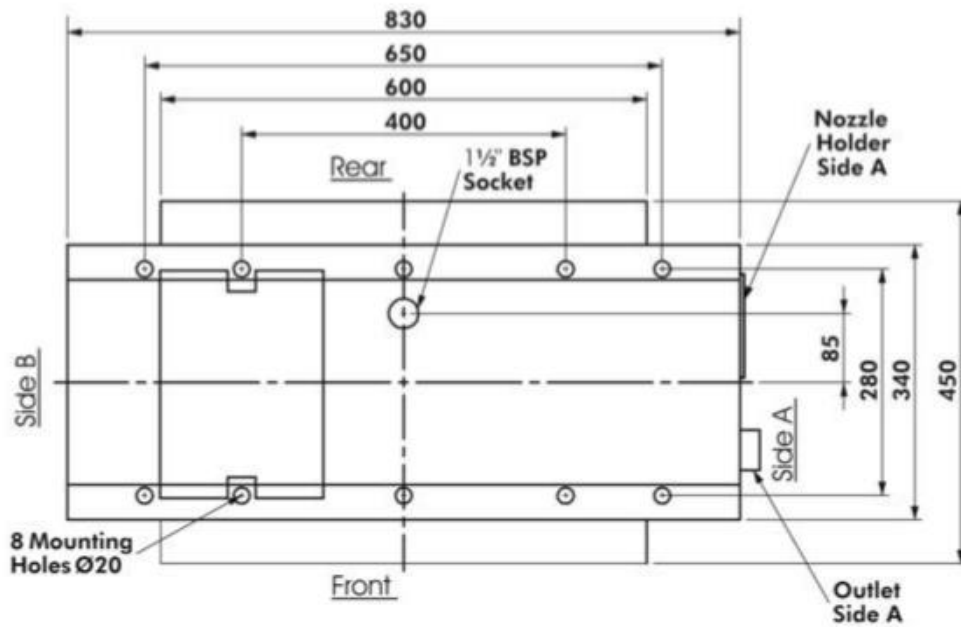
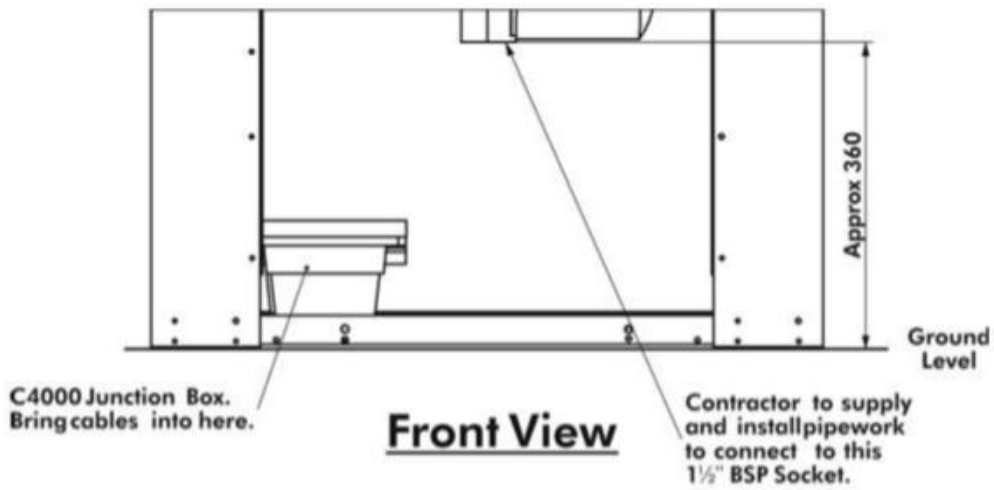
L40S L80S

Footprints

L160P



# L160S



## Footprint Plan View

### L160S

## Installation

The Card King authorisation unit is integrated with the dispenser. Power is connected into the C4000 flameproof box. The phone line is connected into the junction box inside the main cabinet. Make sure that all wires are properly sealed with appropriate glands.

### Dispensing Hose and Nozzles

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

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

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

## Electrical Wiring

Prior to pump installation ensure that there is at least a two-metre tail on both the incoming underground 230 volt cable and any comms cables.

The power cable is terminated at the C4000 Power Supply, which is housed in the C4000 flameproof box located in the bottom of the pump, behind the front panel. Ensure the cable is properly glanded into the box.

The phone cable is terminated in the flameproof junction box located behind the front panel. Ensure the cable is properly glanded into the box.

Refer to AS/NZS 2381.1 for appropriate cabling.

### Pump Comms

2 Core Steel Wire Armour Cable 1.5mm<sup>2</sup>. Total cable length in the comms circuit should not exceed 100 metres.

Terminals will be labelled depending on the brand of pump on site. Correct polarity must be observed.

**NOTE:** For pump comms, tank gauging and ADSL connections it is suggested that the wires are crimped to a ferrule to provide a greater contact area for the screw fastener.

**NOTE:** Make sure the clamping screw contacts the terminal and not the insulation.

### Tank Gauging (option)

Depending on the electrical approvals, the tank gauging wiring will either connect to the terminals on the DIN rail or into a flameproof box inside the cabinet similar to the phone line wiring. Refer Comms Wiring.

Connect the wires from the tank gauging unit to the terminals marked Tx Rx and G. The Tx wire from the tank gauging unit connects to the Rx terminal.

Cable length should be less than 3 metres. Cable length can be extended up to 10 metres if an opto-isolator is used. Part number FO-TEST-0001

**NOTE:** Site electrical and magnetic interference can reduce transmission distance.

## 3G/4G Aerial

For wireless connected units where the aerial is mounted remotely from the cabinet, the aerial cable should be run through ducting that provides suitable protection and flexibility. The aerial plugs into the wireless router. Neatly cable-tie the aerial cable to existing wiring and feed any excess into the base where it can be coiled and cable tied out of the way. Make sure the aerial cable does not interfere with the paper roll when the door is closed.

## Glanding

Gland all cables with appropriate glands to suit the application and electrical approvals.

Certain configurations will use wireless communication to the internet and therefore require no phone line or network cable.

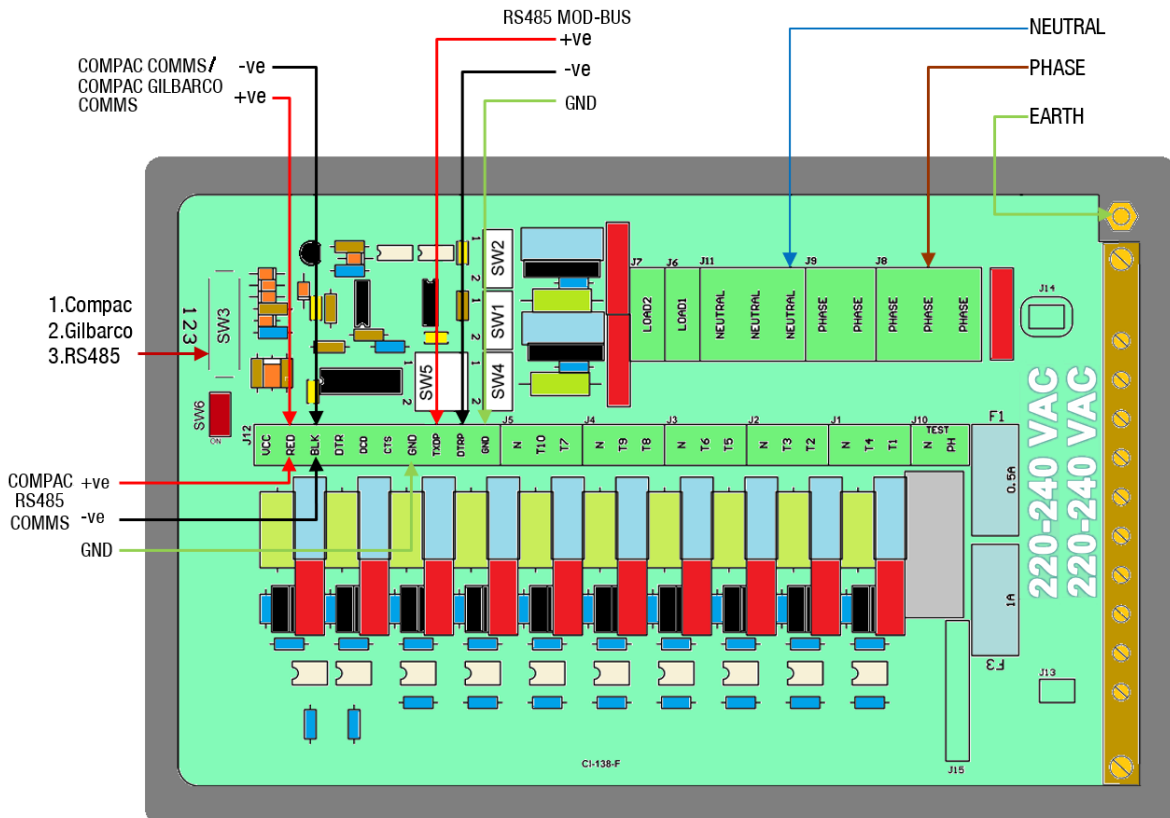
Ensure the Perspex terminal cover is refitted after the cables are connected.

**NOTE:** Check that all cables are securely fastened by pulling each one in turn to make sure they are properly attached.

**CAUTION:** Ensure Perspex terminal cover is refitted after all cables are connected.

**CAUTION:** Due to varying customer requirements, connections may change from what is shown above.

## C4000 Wiring



## Fuses

In the event of a fuse blowing on the C4000 Power supply, a bag of 3 is included in the 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.

## Triac Dip-switches

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 / Laser / Card King pump applications.

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

## Submersible Pump Wiring

Single Dispensers: Connect the feed to the Submersible Pump Relay / Contactor to the terminal marked T1 on the C4000 Power Supply.

Dual Dispensers: Connect the feeds to the Submersible Pump Relays / Contactors to the C4000 Power Supply as follows:

- Side A to terminal marked T1
- Side B to terminal marked T4

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

**NOTE:** Ensure cables are properly glanded and the lid replaced and fastened before powering up.

**NOTE:** Comms wiring is only required for dispensers with remote pumps or if controlling other dispensers.

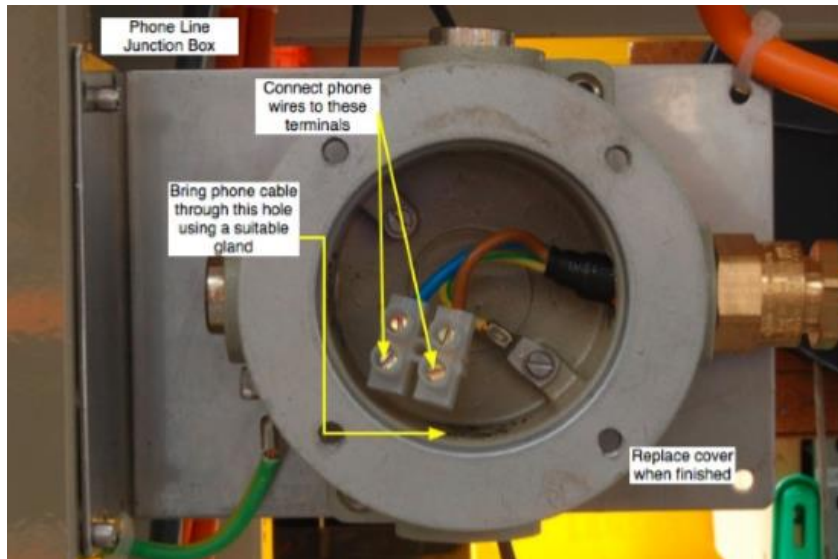
## Comms Wiring

Comms wiring may vary depending on whether the dispenser has an integrated or remote pump and whether dial-up / ADSL or wireless communication is used.

Type of pump	Pump comms wiring	External comms wiring
Internal pump - standalone	No	No
Internal pump - dial up	No	Yes
Internal pump - ADSL	No	Yes
Internal pump - wireless	No	No
Remote pump standalone	Yes	No
Remote pump - dial up	Yes	Yes
Remote pump - ADSL	Yes	Yes
Remote pump - wireless	Yes	No

Card King pumps using dial-up or ADSL are connected to the phone line via the flameproof junction box inside the main cabinet.

**NOTE:** The lid of the junction box is secured with 4 x 3/16" in-hex cap screws. Ensure you have a set of Imperial allen keys with you.





## Tank Gauging Setup

Tank gauging is wired into the terminals marked T, R and G.

The tank gauging unit will have to be set up with the correct outputs to communicate with the FMS board. Settings depend on the unit.

Type	Mode	Baud Rate	Parity	Bit	1 Stop Bit	Handshake
Veeder Root	Serial	1200	Odd	7 Bit	Yes	Off
Franklin	Veeder Root	9600	No	8 Bit	Yes	Off
Colibri	Veeder Root	9600	No	8 Bit	Yes	Off

The Compac settings for each model of tank gauge are usually either set at the factory or sent via CompacOnline.

## Powering Up

When all wiring and fuel connections have been made and checked, the power can be switched on to the unit.

**NOTE:** Where regulations require, a registered electrician must check and approve connections.

### Start Up Check

The retail displays should illuminate and the quantity and price displays should read zero. The \$ per litre display will display the factory setting.

Remove the lid of the Card King and turn on the UPS switch. The keypad display will illuminate and after boot-up should display the message: Pass Card.

If the back-up battery has discharged during transit, the UPS board will beep and the keypad screen will display the message: Pass Card - Low Battery. You will need to wait until the battery has charged before the unit can be used.

## Checking Communication

### External Comms

When the pump is on, contact your CompacOnline or Netbase administrator and check that they can communicate with the pump.

### Pump Comms

Use the diagnostic LEDs on the C4000 board to determine if the pump comm's are working correctly.

## Checking Card Reader

Check the card reader to see if it reads configured cards.

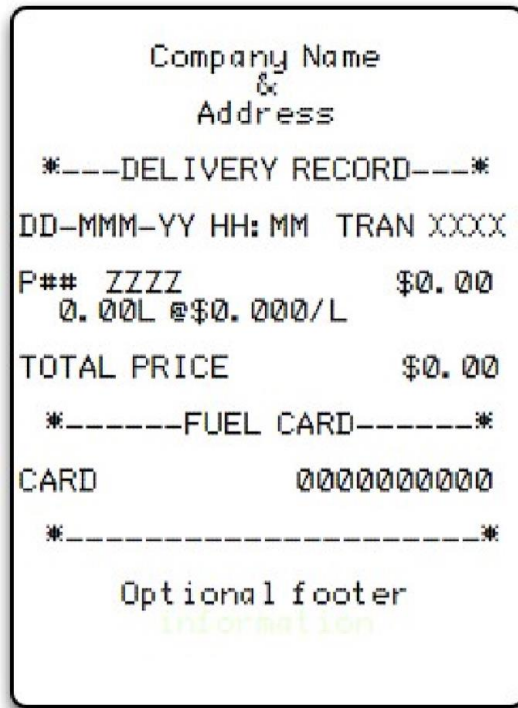
Swipe a test card and check that a transaction can be made. The card is inserted with the stripe to the top and on the right hand side.

Do this for all types of configured cards.

## Checking the Printer

Perform a test transaction and print a receipt. Check the receipt for the following:

- Does the header contain the correct information about the site?
- Are the date and time correct?
- Is the fuel type correct?
- Does the transaction on the receipt match the transaction on the pump?



TRAN XXXX is the transaction number

P## is the pump (hose) number. P01 for single hose units

ZZZZ is the fuel grade eg. Diesel, JET A1 etc.

\$0.00 is the dollar amount of fuel dispensed

0.00L @\$0.000/L is number of litres dispensed and price per litre

CARD 0000000000 is the fuel card number

If any of the information is not correct, contact the help desk.

## Checking Transactions are Uploaded

Contact the your Netbase or CompacOnline administrator and check that your test transactions and any customer transactions that have taken place have been recorded correctly on Netbase or CompacOnline.

For USB equipped units, download your test transactions and check that the information recorded matches the information on the receipts.

## USB Module

The USB Module is mounted in a plastic enclosure with a sealed lid. Under the lid is a slot for a USB stick, an LCD display and four buttons:

↑ and ↓ arrows toggle between the screens

✓ accepts the Yes/No option displayed

✗ rejects the Yes/No option displayed and returns to the "press any key" screen

The screens available for uploading and downloading are:

- Set Price - Upload new price schedule from USB stick
- Send Cards - Uploads new card authorisation files from USB stick
- Get Trans - Downloads all untagged transaction details to the USB stick
- Get Buffer - Downloads all transactions in the memory to the USB stick including previously downloaded transactions. (This could be up to several thousand transactions.)
- Get All - Uploads and downloads all the above files

The USB module and key can be used while the unit is in operation.

While not recommended, if the USB key is removed while in use, no transaction data will be lost. If the USB key is removed, the operation will need to be repeated to ensure all the data stored on the unit is retrieved.



## USB Memory Stick

The Compac USB Module comes with a USB stick that has already been programmed for the customer with a unique file number. The number is located in the Compac folder and will allow the USB module to recognise the USB stick.

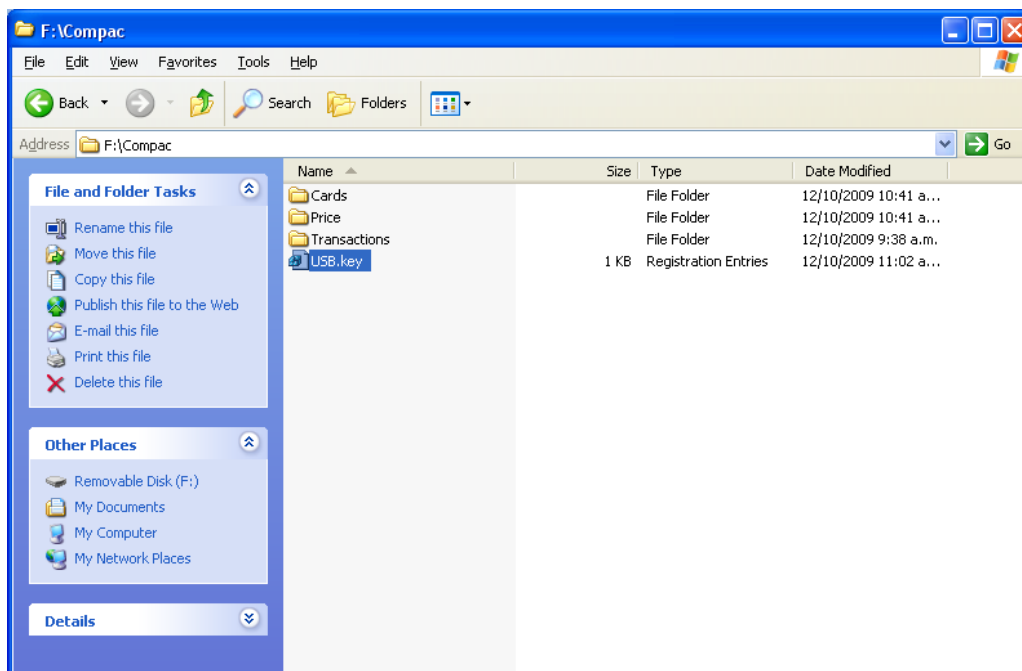
**NOTE:** Each module must have its own key. You cannot have one USB key that covers multiple units.

You should always keep a secure copy of this file as if you lose your Compac USB stick the USB Module will not recognise any other USB stick unless it contains the unique “USB.key” file in the Compac folder.

It is also good practice to keep a secure copy of the Cards folder and Price folder if you are setting up the price through the USB.

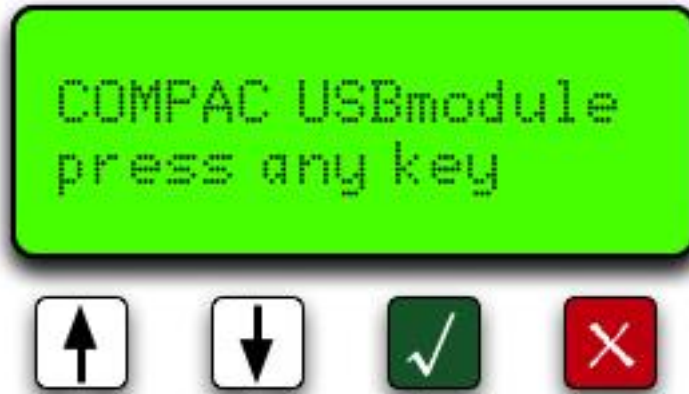
The USB Module will display a “Non-Secure USB” error message if the USB Stick does not have the “USB.key” file or the file is not under the Compac folder.

For instructions on handling these files refer to: USB Module Files.



## Managing Files

To use the USB Module lift the plastic cover of the module. The screen should display: “COMPAC USB module press any key”.



Plug your USB stick into the USB slot and push any of the keys. It will then display “Searching USB...”.



If the USB stick does not contain the Compac USB security code the display will read "Non Secure USB". You will have to load the "USB Key" file onto the key before it will work.

If the USB stick has the security code and it has found the data on the USB stick, it will display “Select [UP/DN] Do All? [OK]” Refer to the screen Do All. Use the up ↑ and down ↓ buttons to go through the menu on the USB Module.

**NOTE:** If the USB Module can't find the USB stick, pull it out and push it in again.



### 1) Do All

“Do All” uploads the cards files and price files from the USB stick to the module and downloads transactions and buffers from the module to the USB stick. Push the green ✓ button to start the operation. The unit will read “Please wait...” while it’s uploading transaction and buffer files and downloading cards and price files. Be patient.

If you do not want to use this function, use the up or down keys to scroll through the other options.

**NOTE:** Getting the buffer itself could take up to 5 minutes depend on how many transactions are in the unit.

**NOTE:** It is very important that you DO NOT unplug the USB stick before the USB module says “Complete Remove USB”.



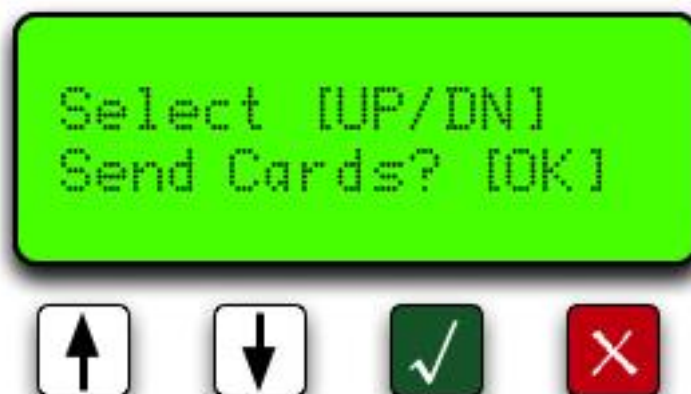
## 2) Set Price

Push down the button to move to the next option “Set Price”. Push the green ✓ button to send the price file to the module. The unit will read “Please wait...” Once the file has been uploaded to the unit it will say “Complete Remove USB”. You can now either unplug the USB stick or wait a few seconds for the screen to return to the menu to continue uploading or downloading more files.



## 3) Send Cards

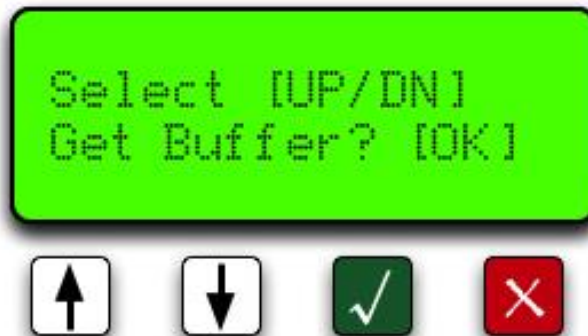
The next option is “Send Cards”. Push the green ✓ button to upload the card files to the module. The unit will read “Please wait...” Wait for the USB Module to say “Complete Remove USB”. You can now either unplug the USB stick or wait a few seconds for the screen to return to the menu to continue uploading or downloading more files.





#### 4) Get Buffer

Move down to the next option "Get Buffer". Use this option if you want to download all the transactions from the module. This would include the old transactions that have been downloaded from the module before. This operation could take up to 5 minutes depending on how long the unit has been trading and how many transactions are held in the memory of the equipment. Push the ✓ button. The unit will read "Please wait..." Wait for the USB Module to say, "Complete Remove USB". You can now either unplug the USB stick or wait a few seconds for the screen to return to the menu to continue uploading or downloading more files.



#### 5) Get Transactions

The last option is "Get Trans"(actions). Push the green ✓ button to download transaction file from the module to the USB stick. The unit will read "Please wait..." Wait for the USB Module to say, "Complete Remove USB". You can now either unplug the USB stick or wait a few seconds for the screen to return to the menu to continue uploading or downloading more files.

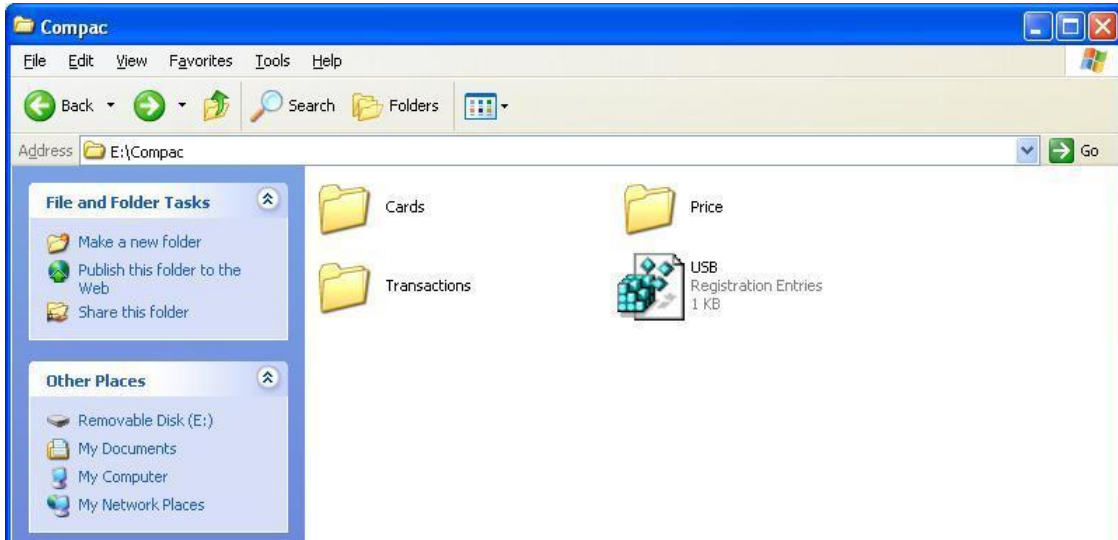
**NOTE:** Every time you download transactions from the equipment, it tags them so they will not be downloaded again using this function. It also marks them as re-writable so as the transactions fill up the memory, it will overwrite the old transactions. Depending on functions, the equipment can store up to 5,000 transactions.



## USB Module Files

You can access the files on your USB key by plugging it into the USB port of your computer and clicking on the Compac file.

You will see the following folders:



Click on the Cards, Price or Transactions files to view, change or retrieve information.

**NOTE:** Only transaction information is uploaded from the module. Card and pricing information is stored on the key and downloaded to the module when requested.

## 1) Cards

Opening the Cards folder will show the Excel spreadsheet file for the cards called cards.csv.

	A	B	C	D	E	F	G	H
1	CARD_NUM	VALID						
2	1000	TRUE						
3	1001	TRUE						
4	1003	TRUE						
5	1004	TRUE						
6	6001316	TRUE						
7	6001317	TRUE						
8	6001318	TRUE						
9	6001319	TRUE						

### Adding a Card

To add a card, enter the new card number in column A and the word TRUE in column B. Save the changes. Next time the USB key is inserted in the module and the Send Cards function selected, the new card number(s) will be installed.

### Deleting a Card

Change the appropriate field in column B to FALSE. Save the changes. Next time the USB key is inserted in the module and the Send Cards function selected, the card(s) will be deleted.

**NOTE:** The module will upload card information from the USB key and overwrite card information stored in the USB Module. The module cannot download card information to the USB key.

**NOTE:** It is not recommended to delete cards by deleting the card information.

### PIN Numbers

If you wish to use PIN numbers for added card security, you can add a new column titled SELECT\_PIN. (Depending on the set-up you ordered, this may already be entered.) When a PIN number is added in this column, the user will be prompted to enter their PIN number. If a cell in this column is left blank, a PIN will not be asked for.

PIN numbers are 4 digits as standard.

	A	B	C	D	E	F	G	H
1	CARD_NUM	VALID	SELECT_PIN					
2	2900001	TRUE	1234					
3	2900002	TRUE	5678					
4	2900003	TRUE	3456					
5	2900004	TRUE	6543					
6	2900005	TRUE						
7	2900006	TRUE	7890					
8	2900007	TRUE						

## User ID

The unit can be set up to manage user ID numbers. It requires a change to the configuration code of the unit and a new file called cardusers.csv added to the Cards folder of the USB key.

When set up, the unit will prompt for a user ID number and then a PIN number (if the card is set-up with a PIN). Users are not linked to a particular card. As PIN numbers are assigned to the card, all users will have to enter the same PIN number.

To assist with administration, you can set up a column linking names to ID numbers but this information will not be transferred to any reports.

**NOTE:** It is not recommended to delete user IDs by deleting the information. Use the word *FALSE* in the *VALID* column to remove the user ID from the unit.

	A	B	C	D	E	F	G	H
1	USER_ID	VALID						
2	1234	TRUE						
3	1235	TRUE						
4	1236	TRUE						
5	1237	TRUE						
6	1238	FALSE						
7	1239	TRUE						

## File Format

If any of the above files are lost then a new file can be recreated by duplicating the headers in row 1 (case sensitive). Enter the card fields and save as a .csv file.

## 2) Price

Clicking on the Price file will show the pricing spreadsheet. Click on the icon to display the pricing information.

	A	B	C	D	E	F	G
1	PRODUCT_CODE	PRODUCT_PRICE	PRODUCT_NAME				
2	3	0.999	DIESEL				
3							
4							

### Changing Price

To change pricing, change the figure(s) in column B to the new value. (\$ per litre) Next time the USB key is inserted in the module and the Set Price function selected, the new price(s) will be installed.

**NOTE:** The module will upload pricing information from the USB key and overwrite the information stored in the USB Module. The module cannot download pricing information to the USB key.

### File Format

If the price file is lost then a new file can be recreated by duplicating the headers in row 1 (case sensitive). Enter the pricing information and save as a .csv file.

## 3) Transactions

The Transactions folder has the downloaded transactions from the USB module. Click on the file you wish to view.

To help you find the correct file the transaction files are named using the following format:  
Transactions\_Day (DD) Month (MM) Year (YYYY) Time (Hours Minutes Seconds).TRA

Example: Transactions\_30112009140653.TRA was created on the 30th November 2009 at 2.06 and 53 seconds PM.

# USB Module Files

	A	B	C	D	E	F	G	H	I	J	K
1	Reference	Amount	Quantity	Hose	Product	Pump	CardNumber	LocalDateTime	Odometer	Tag	UserID
2	0	0.5	0.5	1	3	1	1354272	12/09/2002 6:14			
3	1	0.48	0.48	1	3	1	1354272	12/09/2002 6:15			
4	2	9.23	9.23	1	3	1	1354272	12/09/2002 6:17			
5	3	8.93	8.93	1	3	1	1354272	12/09/2002 6:20			
6	4	4.88	4.88	1	3	1	15954272	12/09/2002 6:26			
7	5	16.34	16.34	1	3	1	1354455	12/09/2002 6:27			
8	6	17.62	17.62	1	3	1	1354455	12/09/2002 6:28			
9	7	18.22	18.22	1	3	1	1354455	12/09/2002 6:28			
10	8	19.23	19.23	1	3	1	1354455	12/09/2002 6:29			
11	9	3.21	3.21	1	3	1	1354272	12/09/2002 6:30			
12	10	2.09	2.09	1	3	1	1354272	12/09/2002 6:30			
13	11	1.23	1.23	1	3	1	1354272	12/09/2002 6:30			
14	12	0.84	0.84	1	3	1	1354272	12/09/2002 6:36			
15	13	4.22	4.22	1	3	1	1354272	12/09/2002 6:36			
16	14	1.27	1.27	1	3	1	1354272	12/09/2002 6:39	258963		
17	15	2.05	2.05	1	3	1	1354272	12/09/2002 6:39	258		
18	16	1.24	1.24	1	3	1	1354272	12/09/2002 6:40	6		
19	17	4.46	4.46	1	3	1	1354272	12/09/2002 6:40	9		
20	18	6.08	6.08	1	3	1	1354455	12/09/2002 6:40	25		
21	19	7.35	7.35	1	3	1	1354455	12/09/2002 6:41	8		
22	20	2.09	2.09	1	3	1	1354455	12/09/2002 6:41	25		
23	21	1.42	1.42	1	3	1	1354455	12/09/2002 6:42	2		
24	22	3.03	3.03	1	3	1	1354455	12/09/2002 6:43	2		

## File Format

The files shown are as follows:

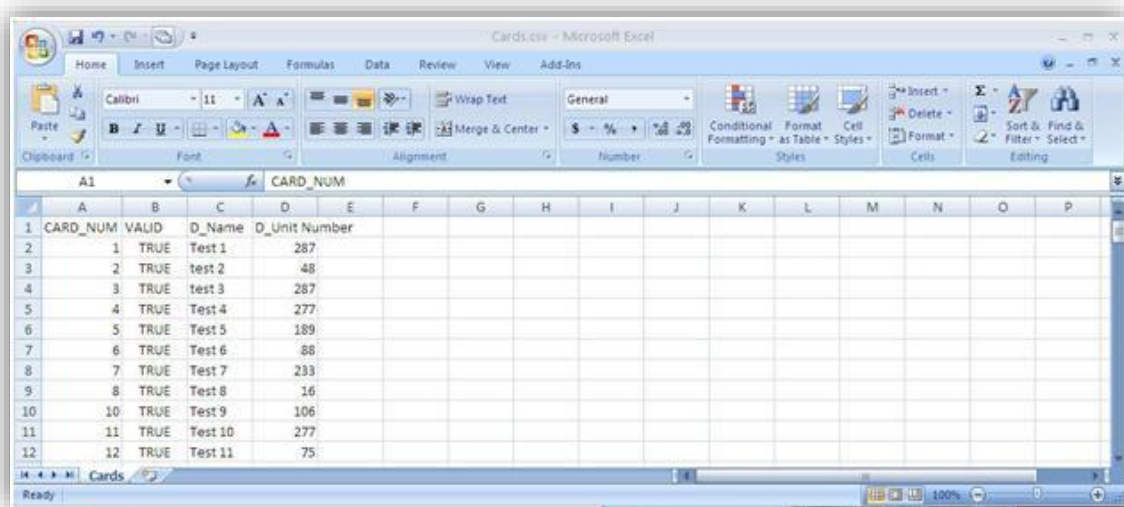
- Reference - Every transaction is given a consecutive number from initialisation of the USB module
- Amount - The value of the transaction in local currency
- Quantity - The amount of fuel dispensed in litres
- Hose - The hose number used
- Product - The product code number
- Pump - The pump number
- Card Number - The number of the card used for the transaction
- Local Date Time - The date (DD/MM/YYYY) and time (24 hour clock) of the transaction
- Odometer - The odometer reading if entered
- Tag - Information is shown here if the unit uses mapped cards
- User ID - The ID number of the user if the unit is set up to prompt for a number

## Customising Your Transaction Reports

If you want to include more card information on your transaction reports we have developed an automated process to include card information in your transaction file. This software requires an update to existing USB keys that do not have it. The new software is called USBTransJoin.exe and as its name suggests, it joins the card information on the USB key to the transaction records.

### Software Installation and Setup Instructions

1. Copy the USBTransJoin.exe file onto the Compac USB key and put it in the “Compac” Folder
2. In the “Cards” folder you will have a file called “cards.csv”. The two standard columns in this file are “CARD\_NUM” and “VALID”
3. To include information from this file into your transaction records you will need to create new columns that start with the prefix “D\_”. For example, if you wanted to include the name and unit number of the vehicle using cards you would add in two columns titles “D\_Name” and “D\_Unit Number”. See the screenshot below showing this example.
4. There is no limitation to the number of extra columns you add to the card file however the “CARD\_NUM” and “VALID” column must not have their column names altered or other columns added to the left-hand side of them.



### How to Use the Software

Run the USBTransJoin.exe software by double clicking on it. A dialog box will appear with the message “Card file found”.





Click on the “Process Transactions” button to merge the card information with the transaction information. A confirmation message will appear showing the file path of the file created.



Browse to the transactions folder on the USB key, a new folder will have been created titled “PostProcess”. Inside this folder will be a CSV file with the merged transaction and card information. Any of the card information fields with the “D\_” suffix will appear on the right side directly after all the normal fields that are in a transaction file. If you do not have any information allocated to that card the headers will be in this file but there will not be any information against that card. In this example below card number 51 had the name “Test 39” and Unit number “188” assigned against it.

 A screenshot of Microsoft Excel displaying a CSV file named "Transactions\_15102009152656.TRA.CSV". The spreadsheet shows a table with the following data:
 

Reference	Amount	Quantity	Hose	Product	Pump	CardNumber	LocalDateTime	UtcDateTime	Odometer	Tag	UserID	Name	Unit Number
1	3.29	3.3	1	3	1	51	15/10/2009 15:26	15/10/2009 4:26	158	4660	Test 39	188	



## Set Up

### System Setup

The unit uses the ComFMS circuit board. All set up is done using the four line dot matrix display on the PIN Pad.

Please contact your local Compac service agent if you have any problems.

The area where installers have the most difficulty is in setting up pumps and cards.

Where possible Compac will set up the Pumps and Cards in the unit during manufacture. However, as these details are not always available, some setting up may be required on site.

**NOTE:** Refer to tables later in this manual for detailed instructions on how to set up each parameter.

### Software Identification

To identify the software versions installed in the unit, the eeprom software version and then the downloaded software version are shown on the display during power-up. The downloaded software version is displayed in the screen below.



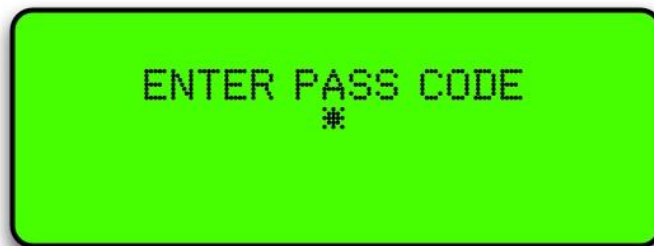
**NOTE:** Software versions may differ from example shown above. Check with help desk for the appropriate version for your unit.

## Main Menu Options

The following is usually displayed when the unit is not in use.



If setup is required, push <NO> and “ENTER PASS CODE” will be displayed. Enter the pass code to access the main menu. (Factory default 654321). If you lose your pass code, contact Compac to get it reset.



The following options are displayed:



### Option #1 REPORTS

The reports menu is not used on current models. For old systems running audit trail printers, contact Compac for setup advice.

### Option #2 CARDS

Selecting Cards will bring up this screen.

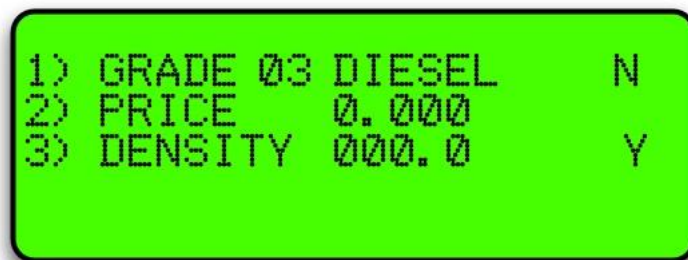


Choose 1 Identifier Validation to set up cards or 3 Network Setup to enter Access and ISO settings.

### Option #3 FUELS

Selecting Fuels will bring up the following screen:

**NOTE:** Depending on your software, the Density line may not show.



Use the Yes and No buttons to scroll through the fuel types.

To change the price for the fuel grade, press 2 and the price will start flashing.

Enter the new price in a four-digit format and press Enter.

The following table describes the process.

Keyboard Entry	Result on Display	Operation
Enter Passcode		
<ENTER>	Main Menu is displayed	
<3>	Fuel Menu is displayed	
	1) GRADE XX 2) PRICE 0.000	Change Price
<2>	1) GRADE XX 2) PRICE 0.000 (flashes)	Use the N and Y keys to scroll up and down the Grades
Type in new price	1) GRADE XX 2) PRICE 0.000 (still flashes)	
<ENTER>	1) GRADE XX 2) PRICE 0.000 (stops flashing)	
<N> or <Y> to change grade		Change another price
<CLEAR>	Returns to Main Menu	Escape

**NOTE:** Manual pricing is overridden by USB or internet pricing.

## Pump Grade Maps

Grade Number	Standard Setup	BP Fuelcard Setup (NZ)	Mobil Fuelcard Setup (NZ)
1	Super	Diesel	Super
2	Unleaded	Super	Unleaded
3	Diesel	Oil 1	Diesel
4	PULP	Oil 2	CNG
5	LPG	T/Wash	LPG
6	Oil	C/Park	Oil
7	Kerosene	LPG	Kerosene
8	Avgas	Unleaded	Avgas
9	Jet A1	W/Bridge	Jet A1
10	Water	Oil 3	Water
11	CNG	Avgas	(not used)
12	MPD (Multi-product)	Jet A1	Multi-product
13	Oil 1	Multi-product	Oil 1
14	Oil 2	Oil 4	Avgas
15	Oil 3	Oil 5	Jet A1
16	Oil 4	N/A	N/A
21	Receipt	Receipt	Receipt
22	Auth.	Auth.	Auth.

A **receipt station** (grade 21) has a cardreader with which the holder of a validated card may request a receipt for a transaction carried out on any pump.

An **authorisation station** (grade 22) has a cardreader that enables the holder of a validated card to select and use a pump. This is typically used when non-Compac pumps are installed. An optional receipt printer may be attached to the authorisation station.

### Option #4 SYSTEM

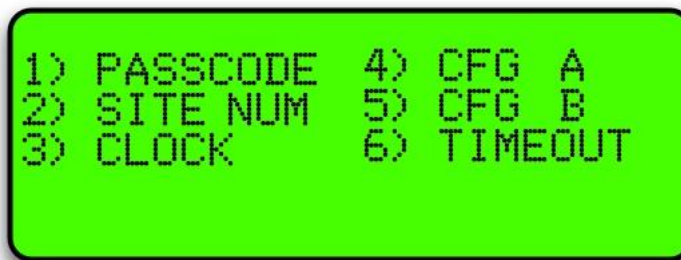
To set up a system the following parameters must be set:

**NOTE:** The Passcode and Site number must be set up to enable Netbase to dial into it.

The password and site number must be set on site as they cannot be changed remotely by Netbase.

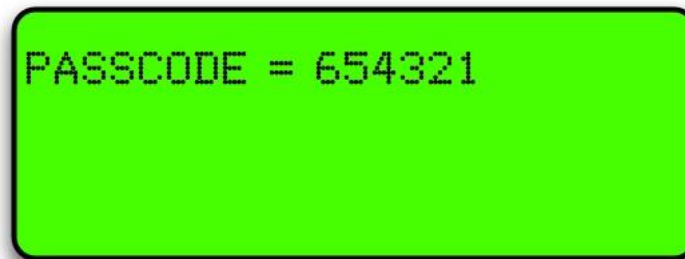
The Compac factory Passcode on new equipment is 654321.

The system screen looks like this:



### Passcode

The factory set passcode 654321 can be changed using the "PASSCODE" option in the Systems menu. Passcodes can be from 1 to 6 digits long.



If you want to change the passcode, enter it and press Enter.

Make sure you have recorded the new passcode as you will be locked out if you forget it and the memory will have to be erased to reset it.

The following table describes the process.

Keyboard Entry	Result on Display	Operation
Enter Passcode		
<ENTER>	Main Menu is displayed	
<4>	System menu is displayed	
<1>	PASSCODE = XXXXXX (flashes)	Change Passcode
Type in new passcode	PASSCODE = XXXXXX (still flashes)	
<ENTER>	Returns to System menu	

### Site Number

The site number is set by using the "SITE NUM" option in the Systems menu.



If you want to set the site number, enter it and press Enter.

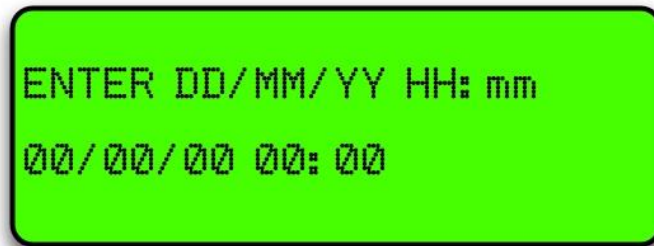
The following table describes the process.

Keyboard Entry	Result on Display	Operation
Enter Passcode		
<ENTER>	Main Menu is displayed	
<4>	System menu is displayed	
<2>	SITE = XXXXXX (flashes)	Change Site Number
Type in site number (Factory set Site number is #1 which can be left if unit is not part of a Network. If part of a Network, consult the Network Supervisor.)	SITE = XXXXXX (still flashes)	
<ENTER>	Returns to System menu	

### Setting the Clock

The setting of the clock is very important, as transactions are stored in chronological order. The clock will need to be changed to compensate for Daylight Saving time.

**NOTE:** If the clock setting is found to be wrong, upload transactions before setting the clock correctly to ensure that transactions are picked up in the correct order.



To set the clock follow this procedure carefully as changing the wrong numbers may disable the system. < > means push that key.

Keyboard Entry	Result on Display	Operation
Enter Passcode		
<ENTER>	Main menu is displayed	
<4>	System menu is displayed	
<3>	ENTER DD/MM/YY HH:mm DD = day MM = month YY = year (20YY) HH = hour (in 24hr time) mm = minutes	Set Date and Time
<ENTER>	Returns to system menu	

**NOTE:** The clock setting is not shown on the display. To check the clock setting is correct, do a zero dollar transaction and check the time/date data on the receipt.

### Configuration "A" Settings

The configuration "A" is a 12 digit code that configures the unit for each application. This is usually set at the factory. Only change the configuration settings if you are sure that all information is backed up and that you are aware of any consequences.



Digit	Operation	Options	Display
1	Controller Type	3 - Driveway Card Acceptor (DCA / ComFutra Default / Card King ) 4 - Enable HID reader (Clock&Data) 5 - Enable HID reader (26bit Wiegand)	
2	Unused	0- Default	
3	Unused	0- Default	
4	Receipt Option	0 - Default 5 - Does not display NO RECEIPT in DCA mode if no receipt printer fitted	PR2
5	Unused	0- Default	
6	Card File	0 - Default 5 - Big Hot Card file	
7	User ID option	0 - No PIN. Note: Encoding on the card can activate a prompt for PIN 1 - Prompts for Employee number 2 - Prompts for Fleet number 4 – Prompts to "Enter Pin" and then forced User ID. If the wrong pin is entered it will display "invalid Card" 6 - Prompts for Vehicle number	UIP
8	Odometer prompt	0 - No odometer. Note: Encoding on the card can prompt for odo 1 - Load Odo/Engine Hours	ODO
9	Card type	0 - Cards not requiring specific configuration 2 - Mobilcard 4 - Prompts for Employee Number (Card number used as Employee Number) 6 - Air BP card 7 - Shellcard 9 -Vehicle Number Authorisation (Prompts for vehicle number)	ABP
10	Validation option	2 - Limited Validation - Cards 3 - Extended validation - Cards	LVC EVC
11	Unused	0 - Default	
12	Track	2 - Track 2	T2

## Changing the "A" Settings

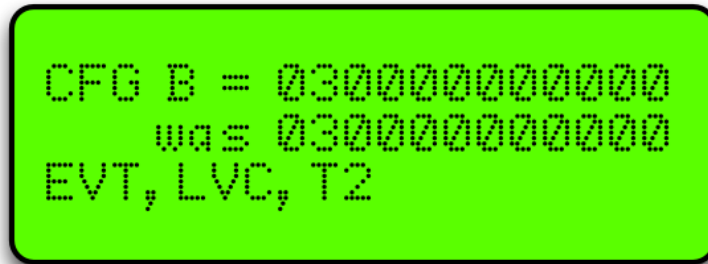
This is changed using the keypad and display. Follow this procedure carefully as changing the wrong numbers may disable the system. < > means push that key.

Keyboard Entry	Result on Display	Operation
Enter Passcode		
<ENTER>	Main Menu is displayed	
<4>	System menu is displayed	
<4>	CFG A = XXXXXXXXXXXX (flashes) was XXXXXXXXXXXX	Set Configuration A
Edit 12 digit number	CFG A = XXXXXXXXXXXX (still flashes) was XXXXXXXXXXXX	
<ENTER>	Returns to System menu	

## Configuration “B” Settings

The Configuration Code B options available may depend on the software version. Refer to the following charts for options.

**NOTE:** *Not all options shown may be available on your unit. If unsure, please refer to the Helpdesk for more information.*



Digit	Operation	Options
1	Price per litre format	0 - Printer with unit price as \$/litre 1 - Printer with unit price as c/litre
2	Printer	0 - Seiko drop box printer 2 - T2460 printer with cutter 3 - T2460 printer without cutter
3	Unused	0
4	Unused	0 - Default
5	Unused	0
6	Unused	0
7	Unused	0
8	Unused	0
9	SCA	0 - Normal (prompts for pump number) 1 - Single hose (automatically selects pump 1)
10	Unused	0 - Default
11	Override	0 - Default 1 - Ignore expiry date 2 - Ignore grade restriction 3 - Ignore both expiry date and grade restriction
12	UPS Monitoring	1 - Enable UPS monitoring

## To Change the "B" Settings

This is changed on the keypad and display on the unit. Follow this procedure carefully as changing the wrong numbers may disable the system < > means push that key.

Keyboard Entry	Result on Display	Operation
Enter Passcode		
<ENTER>	Main Menu is displayed	
<4>	System menu is displayed	
<5>	CFG B = XXXXXXXXXXXX (flashes) was XXXXXXXXXXXX	Set Configuration B
Type in 12 digit number	CFG B = XXXXXXXXXXXX (still flashes) was XXXXXXXXXXXX	
<ENTER>	Returns to System menu	

### Option #5 PUMPS

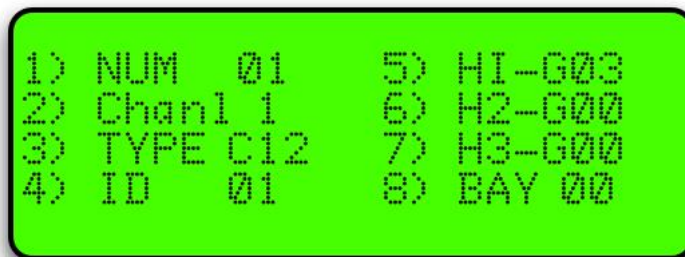
To set up a pump each of the following parameters have to be set:

(There is also an option for Bay Number which is only used in special applications.)

Use the YES and NO keys to select to the pump number.

If a Dual pump on Gilbarco comms the pump number on side B should be lower than the pump number on side A. e.g. A = 2, B = 1

For Compac comms the side A pump number is usually the larger number but will work either way round.



### Comms Channel

The comms channel will usually be set at the factory depending on the site setup. Channel 1 or Channel 2 are the available options.

Number	Operation
1	Channel 1 pump comms e.g. via 2 pin 'PUMP COMMS 1' on rear panel (for Compac pumps) Can also be setup for RS232 comms via Port #5
2	Channel 2 pump comms used for the following: (a) Gilbarco comms I/F via TTL Port #4 (b) Email comms I/F via TTL Port #4 (c) 2 <sup>nd</sup> Comms channel (pumps 17 to 32) 'PUMP COMMS 2' on rear panel via TTL Port #4 (d) Tankgauging I/F (e.g. VeederRoot, Diptronic, Franklin )
0	No comms -This will disable comms to a pump even if all the other parameters are set correctly

### Comms Type

For Compac pumps enter <2>

For Gilbarco pumps enter <6> (goes to sub-menu to select Gilbarco type.)

**NOTE:** *Electroline pumps may need to be setup as Hilines or vice-versa. If experiencing difficulties getting Gilbarco pumps to work on a Communicator, try changing the type. After changing the type, the Communicator MUST be re-powered.*

For Email pumps enter <7> or <8> (depending on type of pump.)

If in doubt, contact your Compac agent for the correct settings.

### Pump ID

For simplicity, this is usually set to the same number as the Pump number. The Controller looks for a pump with a pump number that matches the ID number.

Eg. Pump number 01 set up in controller but ID set to 05.

Controller looks for a pump with pump # 05.

## Product Group Number

**NOTE:** Options 1,4,5,6 & 7 require the <ENTER> key to be pressed to save the number you have entered (the cursor flashes.) Options 2 & 3 are saved as you type in the number (the cursor does not flash.)

Keyboard Entry	Result on Display	Operation
Enter Passcode *		
<ENTER>	Main Menu is displayed	
<5>	Pump Menu is displayed	
<1>	'Num xx' flashes	Set Pump Number
Type in pump number	'Num xx' still flashes	
<ENTER>	'Num xx' stops flashing (number saved)	
<2> **	Scrolls between 1,2 & 0 each time <2> pressed	Set pump channel number
<3> ***	Comms Type Menu is displayed	Set pump comms type
<4>	'ID' flashes	Set ID Number
Type in ID number	'ID' still flashes	
<ENTER>	'ID stops flashing (number saved)	
<5>	'H1-G01' flashes	Set hose 1 Product group
Type in Number	'H1-G01' still flashes	(Single, Dual, 4 & 6 Hose Multi)
<ENTER>	'H1-G01' stops flashing (number saved)	
<6>	'H1-G02' flashes	Set hose 2 Product group
Type in Number	'H1-G02' still flashes	(Dual, 4 & 6 Hose Multi only)
<ENTER>	'H1-G02' stops flashing (number saved)	
<7>	'H1-G03' flashes	Set hose 1 Product group
Type in Number	'H1-G03' still flashes	(6 Hose Multi only)
<ENTER>	'H1-G03' stops flashing (number saved)	

Refer to Tanks/Pumps/Groups first for a detailed explanation on how to set up groups.

## Comms Options

The unit can support two protocols at once out of the following:

- Compac/PEC
- Gilbarco
- Email

For Email and Gilbarco comms, interface boards are required.

These can be connected to either Port 4 (TTL) or Port 5 (RS232) although if only one interface board is used, it is normally connected to Port 4 (TTL).

If BOTH Email and Gilbarco comms are required, then Compac comms are unavailable.

## Comms Channels

The Communicator has two comms channels (Compac or Gilbarco and Email). Usually Compac pump comms are assigned to channel 1 and the other comms assigned to channel 2.

Channel 1 can be either Current loop or RS232 (to either an Email or Gilbarco I/F board).

Channel 2 is TTL (to either an Email or Gilbarco I/F board).

This table shows which combinations of protocols are used on the two channels.

Channel 1 (Current Loop)	Channel 2 (Current Loop)	Channel 1 RS232 (Port 5)	Channel 2 TTL (Port 4)	Dip-Switch 1	Dip-Switch 2	Dip-Switch 6	Dip-Switch 7
Compac/PEC				ON	OFF	OFF	OFF
Compac/PEC	Compac/PEC			ON	OFF	ON	ON
Compac/PEC			Gilbarco	ON	OFF	OFF	OFF
Compac/PEC			Email	ON	OFF	OFF	OFF
		Email	Gilbarco	OFF	ON	OFF	OFF
		Gilbarco	Email	OFF	ON	OFF	OFF

### Comms Dip-switches

The comms dip-switch is an 8 way switch but normally only numbers 1 and 2 are used. These two switches direct Channel 1 comms to either Current Loop or RS232 (Port 5).

Only one of these switches must be on. The factory default setting is 1 ON 2-8 OFF.

Where more than 16 pumps are controlled, the Current Loop Channel 2 can be added by using Dip switches 6 and 7.

### Second Current Loop Comms Channel

There are two current loop comms channels (for Compac Pumps) on the Com FMS board. If a fault occurs on Current Loop Channel 1 and Current Loop Channel 2 is not being used then the channels can be switched over.

To connect Compac pumps to the second current loop comms channel:

1. Change the comms channel in the pump setup to Channel 2. Refer to Pumps.
2. Move the wires on the 2 core comms cable on the "Current Loop" plug to the second position in from each end. Refer Com FMS Board Replacement for detail.
3. Change the dipswitches to the following settings:

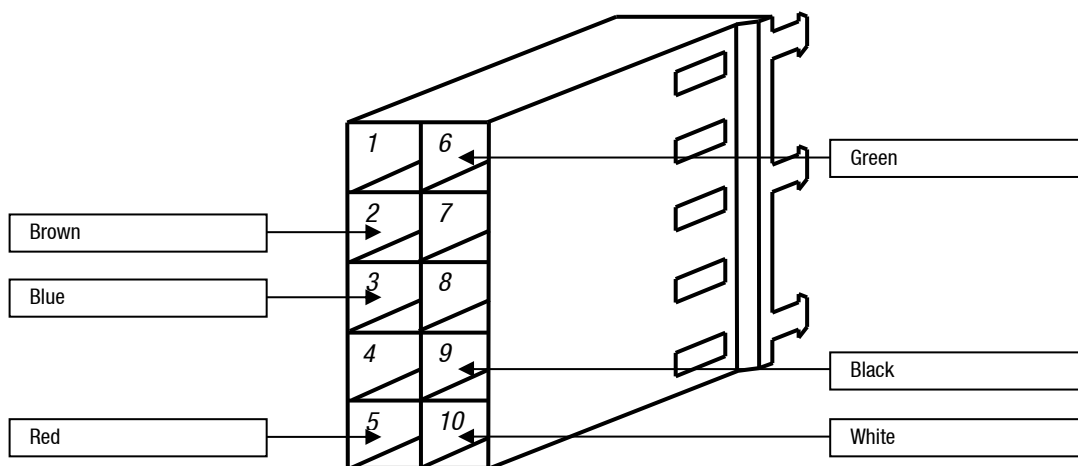
1	X
2	X
3	X
4	X
5	X
6	ON
7	ON
8	X



## Email Comms

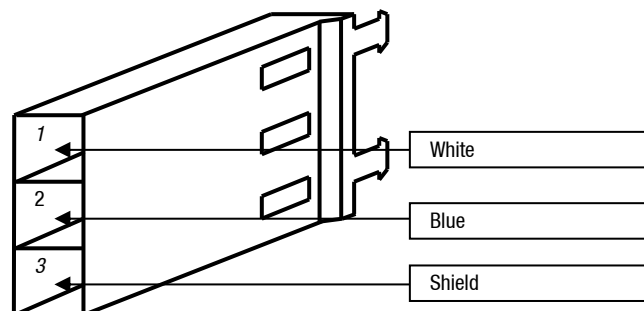
Status of LEDs on Communicator board when connected to Port #4

	Red Rx	Green Tx
Email board unplugged from Communicator board	Off	Flashes rapidly
Email board plugged in but pump not connected	Flashes	Flashes in time with Rx
Email board plugged in but pump set up for Compac comms	Off	Flashes rapidly
Email board plugged in but pump set up for wrong channel	Off	Off
Email board plugged in but pump ID incorrect	Flashes	Flashes in time with Rx
Email board plugged in and operating correctly	Flashes very rapidly and is much brighter than Tx, almost looks like its stuck on	Flashes very rapidly



Cable between Port #4 and J4 on Email Board

**NOTE:** The connections are the same on both ends.



J1 Plug on Comms Board

## Dip Switch SW1

The Yellow, Orange Red and Brown switches should be closest to the centre of the board

i.e. A,B,C & D visible.

**NOTE:** Only issue C Communicator boards support Email protocol.

**NOTE:** Multi hose Email pumps are not supported.

**NOTE:** The Shield and Blue wires should not be swapped over. If they are the system may appear to work but cause intermittent comms problems.

**NOTE:** Take great care line up the locking tabs on the green plugs correctly as reversal of these will damage the Email board.

## Gilbarco Comms

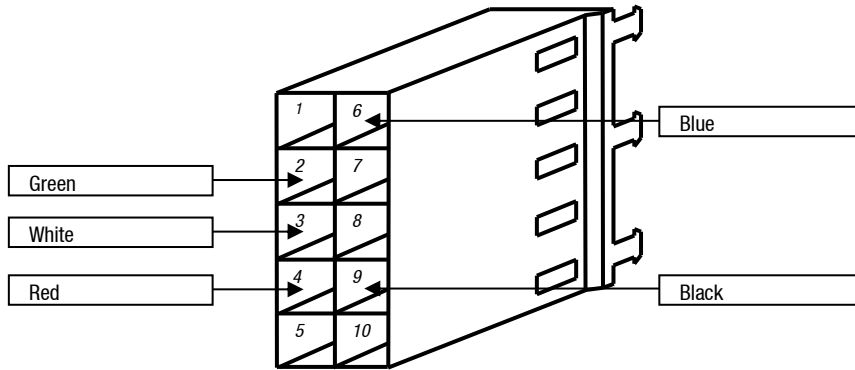
Status of the Red and Green LEDs on Port #4:

Red LED	Green LED	
Flashes rapidly and unevenly	Flashes rapidly and unevenly	Pump communicating normally
OFF	Flashes rapidly	Comms channel set up for Channel 2 but Gilbarco board not connected
ON	OFF	Gilbarco board connected but Comms channel not set up for Channel 2
ON	Flashes rapidly (dimly)	Gilbarco board connected, Comms channel set up for Channel 2 but no pump connected
Flashes slowly (and dimly)	Flashes slowly (and dimly) (simultaneously with Red LED)	Comms channel set up for Channel 2 but short on Gilbarco pump comms or pump comms wires reversed.
Flashes rapidly and unevenly	Flashes rapidly and unevenly	Pump appears to be communicating but does not work when nozzle is lifted - Pump is set up as a Hi-line instead of an Electroline

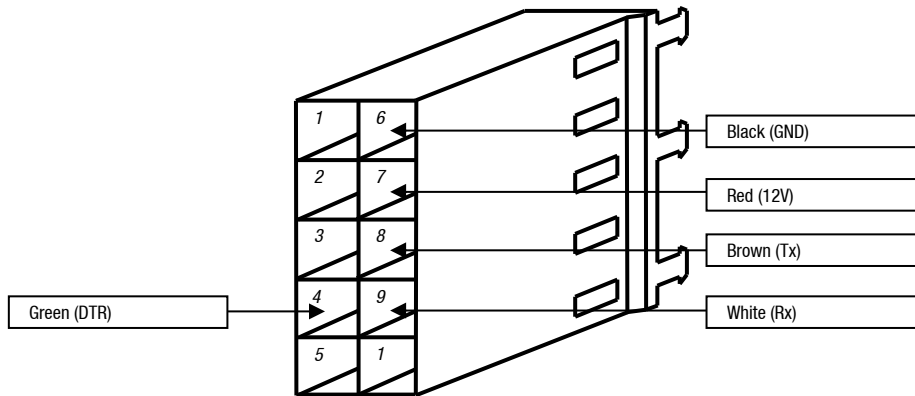
A DC voltage of approx 2 to 5V can be measured across the Gilbarco comms to establish whether a pump is connected.

## Gilbarco Wiring

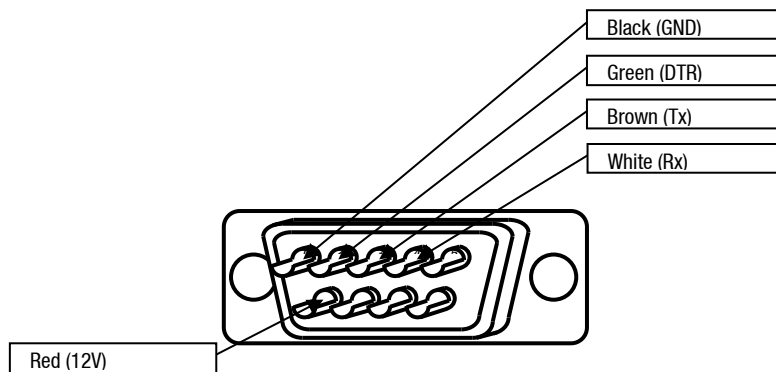
Wiring can either be from CON3 on the Gilbarco I/F board to TTL port 4 on the communicator board (channel 2 only, wiring is the same at both ends) or from CON4 to RS232 port 4 on the communicator board. Examples are shown below:



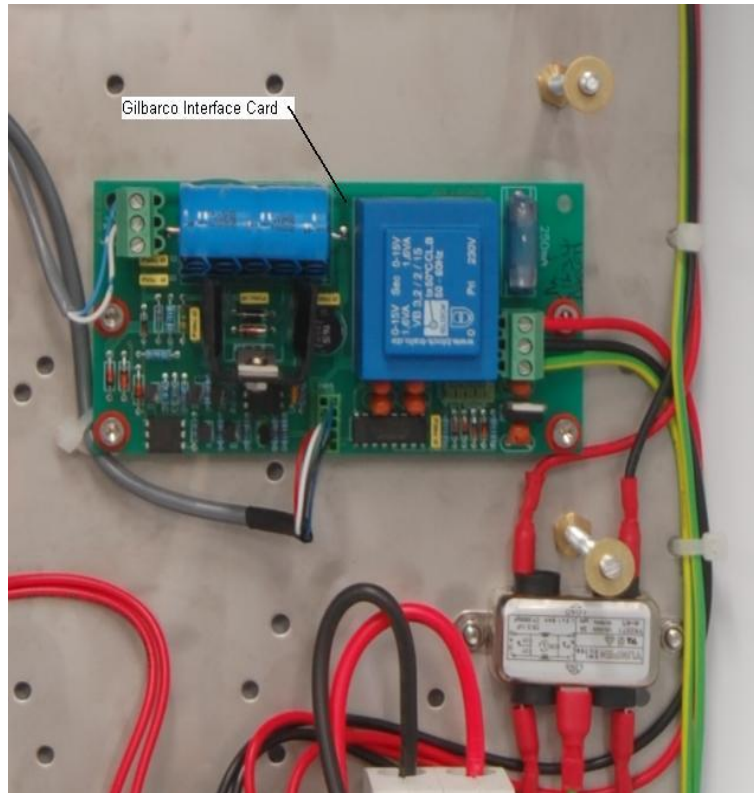
Wiring from CON3 on the Gilbarco I/F board to TTL port 4 on the communicator board



Wiring from CON4 to RS232 port 4



View Looking from Front into the Female Connector



Gilbarco Interface Card with TTL connection

## Option #6 TANKS

This is usually set at the factory. The only time it might need to be changed is if a tank gauge is added or if the tank gauge is changed.

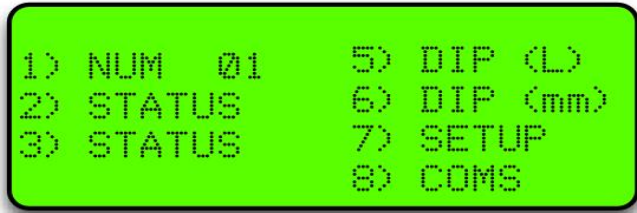
The following Tank interface options are available:

1. Theoretical (THEO)
2. VeederRoot (VDDR or FRNK)
3. Diptronic (DIPT)
4. Franklin (FRNK)
5. Colibri (FRNK)

The following instructions refer to the Franklin setup. Slightly different screens may appear if other tank options are selected.

The Franklin setup displays the information sent from the tank gauging unit and also works for Veeder Root TLS2 and Colibri units. Other setups require a strapping table to be entered.

Select Tanks from the main menu.



Menu Option	Function	Operation
1. No XX	Tank number	Scroll up and down with NO and YES to select tank
2. Status	Displays theoretical Capacity and Volume	
3. Status	Displays tank temperature (Franklin option only)	
4. Delivery	Enter in delivery of product	Type in delivery volume (Theoretical only)
5. Dip (L)	Enter in dipped volume (in litres)	Type in new volume (Theoretical only)
7. Setup	Sets up alarms, capacity and Product Group.	Refer to Tank setup table
8. COMMS	Sets up comms type	Refer to Tank Comms table

Tank number is usually set as 1. If there are more tanks, use the YES and NO keys to select to the tank number you want to set up.

### Tank Setup Table

Select Setup from the Tanks menu and the following screen will open.



Keyboard Entry	Result on Display	Operation
<7>	Capacity Group 00	
<3>	Capacity = XXXXXXXX	Set Tank capacity (NOT required for Diptronic, Franklin or Colibri)
Type in capacity		
<ENTER>	Returns to Setup menu	
<4>	Cursor flashes	Set group
Type in product group number		
<ENTER>	Cursor stops flashing	
<CLEAR>	Returns to setup menu	
<CLEAR>	Returns to main menu	

For the units setup with Franklin comms, return to the main tanks menu and select (2) Status. The tank gauge readings should be displayed. Select (3) Status and the tank temperature should be displayed.

Depending on tank gauging and software installed, other options may or may not be available.

### Tank Comms Table

Select Comms from the menu and the following screen will open.



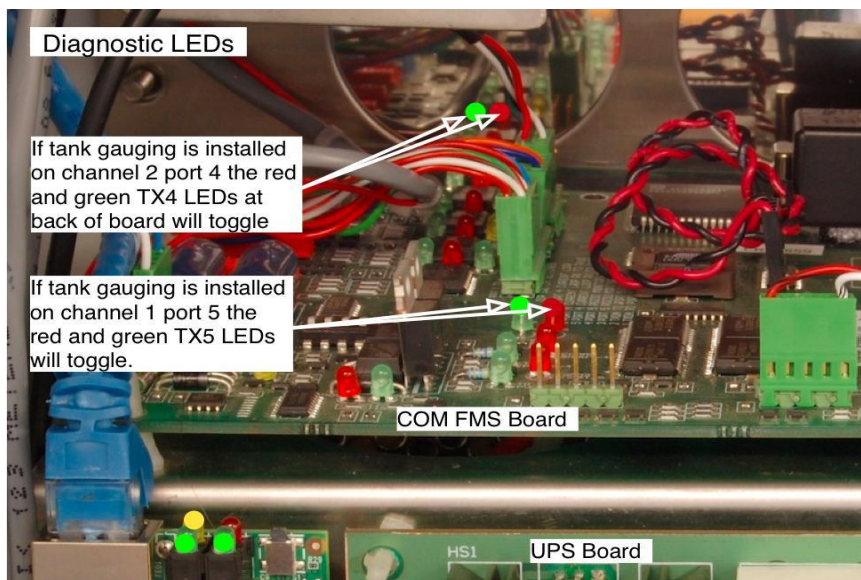
Pressing 1 will scroll through the comms options.

Keyboard Entry	Result on Display	Operation
<8>	THEO \ FRNK \ VDDR \ DIPT	
<1>	2. CHANNEL X 3. ID XX 4. PGRM ID	Scroll through by repeatedly pressing <1> to select comms type
<2> (NOT shown in THEO Mode)	2. CHANNEL 0, 1 or 2	Scroll through by repeatedly pressing <2> to select Channel number 2 <b>NOTE:</b> Tank Gauging normally works on Channel 2 (Selecting Channel 0 turns the tank off)
<3>	ID	Same as tank number
<4>	PGRM ID	Not used

Depending on tank gauging and software installed, other options may or may not be available.

### Tank Gauging Troubleshooting

To check that the tank gauging unit is communicating with the FMS board, look at the following LEDs:



Tank Gauging LEDs

**NOTE:** Most tank gauging is set up on Port 4 Channel 2. The exception is for units controlling Gilbarco pumps.

If the green Tx LED is not flashing, check the settings in the FMS board.

If the red Rx LED is not flashing, check the settings in the tank gauge unit.

If all settings are correct, check for a cable fault by shorting the Rx and Tx wires together at the tank gauge end. The LEDs should flash together. If not, there is a break in the cable.

The wiring of the tank gauging cable may change for different models. If you are changing tank gauge units, you may need to swap the Tx and Rx wires to get it to work.

### Option #7 PRODUCT GROUPS and GRADES

The allocation of tanks and pumps for fuel dispensing involves the use of groups. (If you are used to the concept of grades, you can think of groups as the equivalent of grades.) The group is a controller protocol that aids product reconciliation and also enables fuel dispensing to be tailored to suit different local conditions. The group is like a junction box through which tanks, pumps, devices and products are assigned.

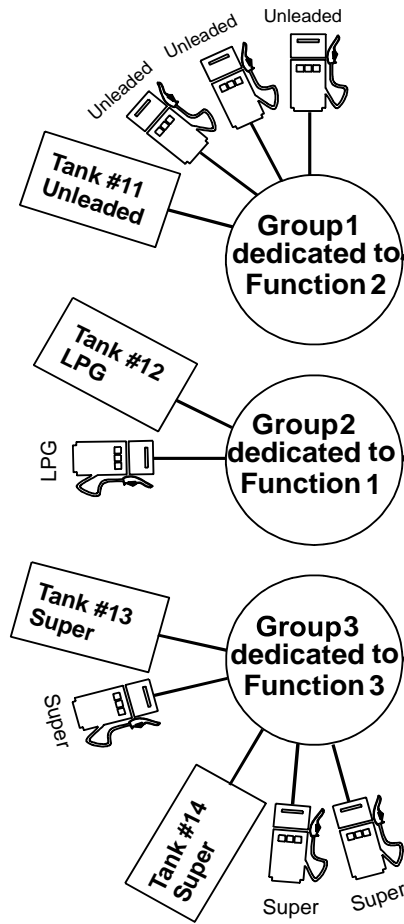


```
GROUP NUMBER 01      N
IS 00 NOT SET       Y
```



# Tanks/Pumps/Groups

## Concept



## Groups

A group is set to one function - e.g. a product - with all the tanks, pumps, and devices needed to perform that function.

## Functions

A function is an interface between the installation and client - e.g. dispensing a product.

Functions 1 - 16 are products, Function 21 is the receipt station, Function 22 is the authorisation station.

## Tanks

Each tank must be individually set to a group.

A tank can only be set to one group. However, more than one tank may be set to the same group.

## Pumps

Each pump must be individually set to a group.

A pump can only be set to one group. However, more than one pump may be set to the same group.

## Multi-Product Dispensers

Each hose on an M.P.D. must be individually set to a group.

E.g. in the example shown, an M.P.D. dispensing LPG and Super would have its LPG hose(s) set to Group 2 and its Super hose(s) set to Group 3.

## Groups

The first stage in setting up is to marry the functions performed by the site to groups that you create in the groups menu option. Each group is dedicated to one grade or function.

In the 'Groups' menu option, first select a unique number for a group, then select the number of the grade or function it is to be dedicated to. The group numbers don't have to be in sequence and may be any numbers between 1 and 20.

For the grade/function map refer to Pump Grade maps.

## Tanks

Once the groups have been decided, the 'Tanks' menu option enables each tank to be allocated to a group. A tank must be dedicated to one group; it cannot be allocated to different groups. However, more than one tank may be dedicated to the same group.

## Select Tank

Each tank must be set up individually

## Select Tank – Group

This option allows you to match the tank number to the appropriate group number.

## Pumps

The 'Pumps' menu option is where pumps are set up.

## Select Pump

Each pump is set up individually.

## Set Channel

- 0 - offline / not used.
- 1 - on board current loop 1 / external protocol converter.
- 2 - on board current loop 2 / internal protocol converter.

## Set Type

- C12 - Compac current loop pump comms, 1200 baud (NZ Standard).
- C24 - Compac current loop pump comms, 2400 baud (Compac pumps only).
- GC - Gilbarco Calcopac.
- GEL - Gilbarco Electroline.
- GHL - Gilbarco High line.
- GMP - Gilbarco Multi product.
- EME - Email Eclipse
- EMV - Email Vision

## Set ID

The number in the pump head. This must be unique per channel, per protocol.

## Set hose – Group

Allocate different product hoses to different groups; for a single hose just set H1.

## Setting Product Groups

Pumps are not directly assigned to a Product Grade.

Each pump is assigned to a Product Group.

Each Product Group is in turn assigned to a Product Grade.

For simplicity, in the majority of applications the Product Group numbers can mirror the Product Grade numbers according to the standard Grade Map.

The most common are:

Grade number	Product names as they appear in the Communicator / Commander	Also referred to, or used for the following products
1	Super	Premium, Premium Unleaded, 96, LRP
2	Unleaded	Unleaded 91 , 91, ULP
3	Diesel	
4	PULP	Premium Unleaded Petrol
5	LPG	
6	Oil	
7	Kerosene	
8	AVGAS	
9	JET A1	

This option simply assigns products to groups.

Keyboard Entry	Result on Display	Operation
Enter Passcode		
<ENTER>	Main Menu is displayed	
<7>	1) Group # XX 2) IS XX Product (or NOT set)	
Use N and Y keys to scroll up or down the Groups		Select Group to assign product to
<2>	1) Group # XX 2) IS XX (flashes) Product (or NOT set)	
Type in product number Refer to Grade Map for Product number		
<ENTER>	2) IS (Selected Product name)	
Use N and Y keys to scroll up or down to select another Group		Same as for previous Group
or <CLEAR>	Returns to Main menu	

## Assign Pump Number

### Pump Numbers for Each Model

Model	Number of pump numbers to set up
Master Premier Laser Single	One
Master Premier Laser Dual	Two
Laser 4 hose Quad	Two
Legend 4 hose	Two
Legend 6 hose	One in each C4000

### Order of Pump Numbers

Compac comms:

The pump number for Side A is usually **lower** than Side B

Gilbarco comms:

The pump number for Side A must be **higher** than Side B

## Assign Hoses

It is important to look at the Pump or Dispenser from the 'FRONT'.

Remove the doors and a 'FRONT' sticker will be found on the hydraulic mounting rail.

When looking at the front of the Pump/Dispenser, Hose 1-Side A is always on your right (as per the following diagrams).

### Master, Premier and Laser (Single and Dual)



## Cards

### Expiry Date

The expiry date on the card must be less than 10 years from today's date. If the date is more than 10 years old, *Expired Card* will appear when the card is swiped. To allow expired cards to be used you can use this procedure: Change the second digit from the right in the 'B' configuration code to 1.

### Overriding the Expiry Date

Enter the Passcode. If the Display on the unit reads "ENTER PASS CODE" type in your 6 digit Passcode. (If you do not know the passcode, contact the Compac Industries Help Desk. The default Password on new Communicator Controllers is 000000) Or, if the display reads PASS CARD, press the <NO> key. This will then bring up "ENTER PASS CODE". The main menu will then be displayed.

Press <4> (SYSTEM). The system sub menu will be displayed.

1. Press <5> (CFG B)
2. Display will read: CFG B = XXXXXXXXXXXXX (12 digit binary number) Was  
XXXXXXXXXXXX
3. Take careful note of the existing CFG B number
4. Type in a new 12 digit number with the 11<sup>th</sup> digit from the left = 1 for example  
XXXXXXXXXX1X. This will overwrite the existing number in the top line but you will still be able to still view the old number in the bottom line as you type in the new number.  
for example Old CFG B was 000000100000 new CFG B with expiry date override =  
000000100010
5. Press <ENTER>
6. Press <CLEAR> twice to return to Main screen.

**NOTE:** Although it is possible to put the clock back in the Communicator to less than 10 years from the expiry date of the card to make it work this is not recommended as date range reporting functionality is affected and some transactions may not be able to be retrieved.

### Setting ISO and Access Codes

**NOTE:** If two cards systems are being supported (i.e. an Oil company / Nationwide card and an in-house Compac Standard card) then the Oil company card must be set up as ISO/Access code 1 and the Compac Standard in-house card set up as ISO and Access 2. If they are setup the other way around the system may return a 'BAD CARD' or 'INVALID CARD'.

### Oil Company ISO and Access Codes

If the unit is part of a Network, the appropriate ISO and Access codes will be downloaded via the modem by the System Administrator. Otherwise contact the Compac Helpdesk.

## **Modems**

### **ETIC -IPL- A -220 -ADSL Router, 4G Comset Modem**

ETIC -IPL- A -220 -ADSL Router is connected to the phone line via a lightning protector and flameproof junction box. 4G Comset Modem requires a 3g/4g aerial connected to it.

There is no set-up or programming required.

## Diagnostic LEDs

There are a number of diagnostic LEDs on the Com FMS board to assist in the diagnosis of comm's problems

LED name on board	Location	Colour	Operation
POWER	Near Dipswitches	Green	ON to indicate Power Supply working
W/DOG	Near Dipswitches	Red	Watchdog Indicates software has stopped running (may have restarted) IC fitted incorrectly or leg broken/bent
TX/1	Adjacent Port #1 TTL plug	Green	Transmit data to Modem or Direct host
RX/1	" " " "	Red	Receive data from Modem or Direct host
DCD/1	" " " "	Green	Handshaking line to Modem
TX/2	Adjacent Port #2 TTL plug	Green	To Audit Trail Printer
RX/2	" " " "	Red	
CTS/2	" " " "	Yellow	ON when Audit Trail Printer connected
TX/3	Adjacent Port #3 TTL plug	Green	Used for Receipt Printer and Commander
RX/3	" " " "	Red	
TX/4	Adjacent Port #4 TTL plug	Green	Only used when Gilbarco or Email pumps
RX/4	" " " "	Red	Running on comms channel 2



## Diagnostic LEDs in a System with Compac Comms Only

In a typical system (with Compac pumps only) this is how the diagnostic LEDs will appear.

### Com FMS Board

LED	Comms working correctly	Comms wiring reversed	Short on comms
To Pumps / 5	Flashes	Flashes	Flashes (very fast)
From Pumps / 5	Flashes	Flashes	Flashes (very fast)
Comm Short / 5	OFF	ON	Flashes (very fast)
TX / 5	Flashes	Flashes	Flashes
RX / 5	Flashes (faster than TX / 5)	Stuck ON	Stuck ON
WDOG	OFF	OFF	OFF
POWER	ON	ON	ON
To Pumps / 4	n/a	n/a	n/a
From Pumps / 4	n/a	n/a	n/a
Comm Short / 4	n/a	n/a	n/a

### C4000 Board

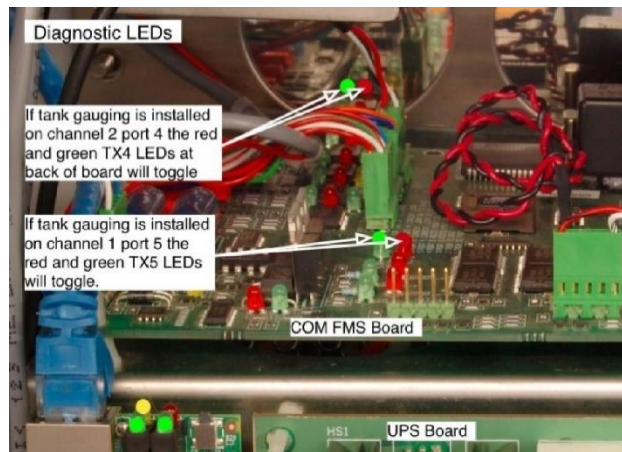
LED	Comms working correctly	Comms wiring reversed	Short on comms
D6 (on C4000)	Flashes	Stuck ON	OFF
D7 (on C4000)	Flashes	OFF	OFF

## Troubleshooting

Symptom	Problem	Solution
One pump drags the comms down on the other pumps	An unused hose has been allocated to a group	Check group allocations for that pump
“Receipt unavailable” displayed keeps trying to initialise GPRS modem	Cardreader not plugged in when unit was powered up	Plug cardreader in and re-power
“Receipt unavailable” displayed	Paper not through far enough to be detected by paper out sensor	Press paper feed button momentarily
Cardreader does nothing when card swiped	Cardreader was plugged in after the unit was powered up	Re-power the unit
	Cardreader unplugged	Plug cardreader in

## Tank Gauging Troubleshooting

To check that the tank gauging unit is communicating with the FMS board, look at the following LEDs:



**NOTE:** Most tank gauging is set up on Port 4 Channel 2. The exception is for units controlling Gilbarco pumps.

If the green Tx LED is not flashing, check the settings in the FMS board.

If the red Rx LED is not flashing, check the settings in the tank gauge unit.

If all settings are correct, check for a cable fault by shorting the Rx and Tx wires together at the tank gauge end. The LEDs should flash together. If not, there is a break in the cable.

The wiring of the tank gauging cable may be change for different models. If you are changing tank gauge units, check you have the correctly wired cable.

## Error Messages

PRINTER NOT AVAILABLE	Try pressing Paper feed button on printer, check that paper is installed correctly. Otherwise there is a fault in the printer - Call a service agent.
BUFFER FULL	The memory is full. Old transactions need to be deleted before any more transactions can be made - Refer to Deleting Transactions.
Pump unavailable or Pump OFF LINE	Comms problem between the unit and the pumps.

## Service Procedures

The unit is designed to perform many different operations depending on the application. The contents of the cabinets shown in the following procedures may not reflect the actual cabinet you are working on.

### Maintenance

#### Introduction

The unit is a fairly simple device requiring the following regular maintenance:

#### Cleaning the Cabinet

The cabinet should be cleaned with a soft cloth and non-abrasive cleaner to remove dirt, grease, graffiti and unauthorised stickers. All instruction and branding decals should be replaced if damaged or faded.

**NOTE:** Do not use buckets of water, hoses or water blasters to clean the cabinet as water may enter and damage delicate components. Water damage is not covered by warranty.

#### Card Reader

Card reader should be swiped through with a cleaner card (Part number F-BA-CARDRD-CKIT) wet with cleaner fluid. The card reader may need to be cleaned daily on dirty, dusty or wet sites

#### PIN Pad

The fascia should be cleaned to keep the printing legible. A soft dry rag should be used. Do not use a rag wet with solvent or petrol as the PIN pad fascia printing may be damaged. No other service is required, as there are no moving parts.

#### Door Seals

If the seals appear perished or damaged or there is water leakage into the cabinet through the seals, they should be replaced. Order new seals through your Compac agent.

#### Protection

The unit should have been mounted facing away from prevailing winds and in a sheltered place. If there are recurring problems with moisture, dust, sun damage or any other problems caused by the environment, moving the unit, constructing a shelter or other protective measures should be considered.

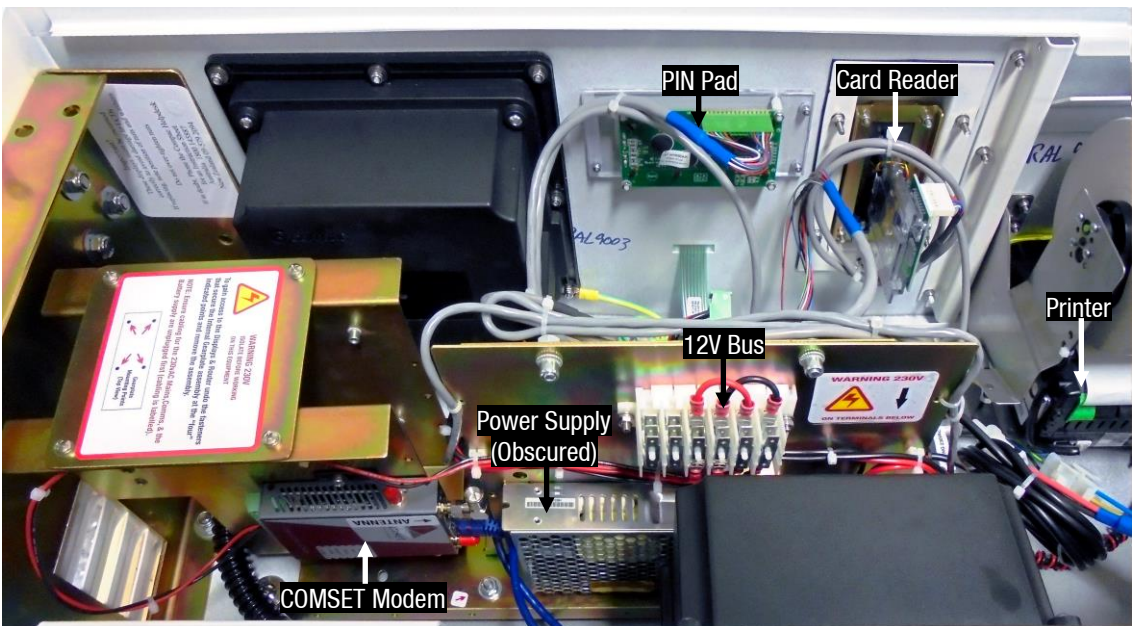
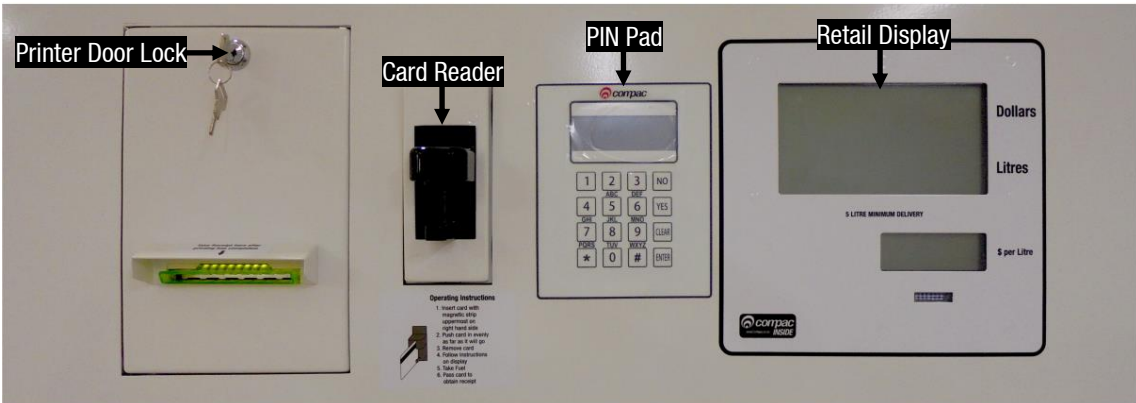
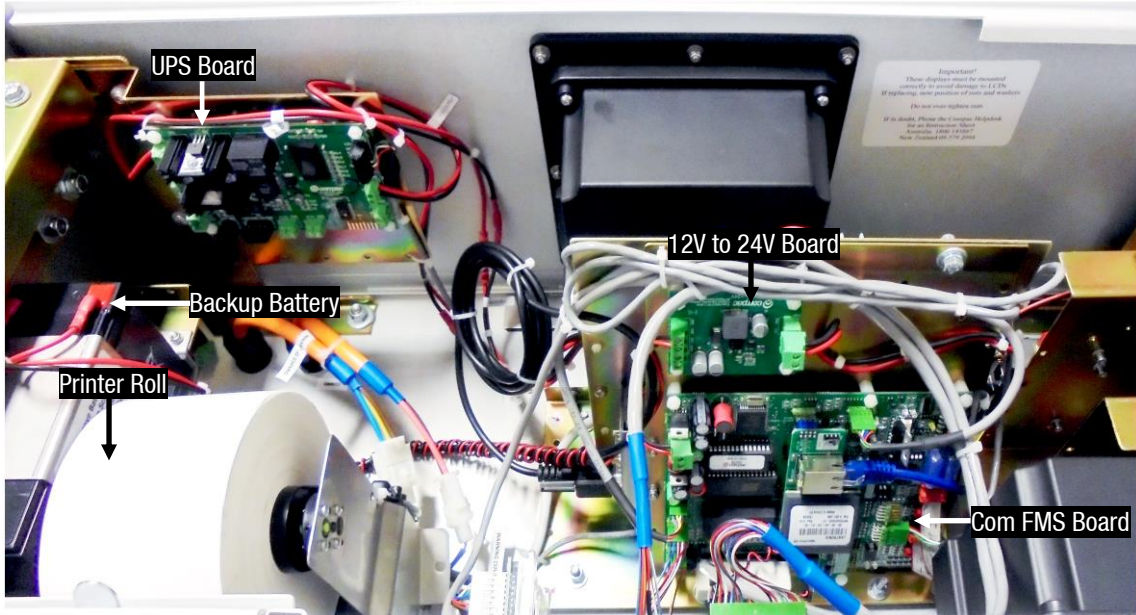
## Compac Dispenser and Pump Service Recommendations

The Weekly and monthly checks can be carried out by a site owner or manager. 6 month and 12 month checks should be carried out by a suitably qualified service agent.

**NOTE:** The information below is the minimum service requirements. Depending on the site conditions and the fuel quality you may need to service and replace filters or other components on a more frequent basis.

Maintenance operation	Weekly	Monthly	6 Month	12 Month
Check the pump/dispenser panels and fascias for any sign of physical damage or missing parts, screws etc. Arrange a service agent to fit replacement parts where required	X	X	X	X
Record the electromechanical and electronic tote	X	X	X	X
Run a cleaning card with cleaning fluid on it through the card reader (If fitted). This may need to be carried out daily on high-use sites or sites in areas with a lot of dust present.		X	X	X
Check the operation of the card reader with a test card		X	X	X
Clean the display fascias		X	X	X
Clean the pump/dispenser panels		X	X	X
Inspect the refuelling hose, breakaway and nozzle for damage. Replace if required		X	X	X
Check the operation of the nozzle switch		X	X	X
Perform a test transaction and check the printed receipt is legible. Check the printer paper roll and replace if it has less than 10mm of paper remaining on the reel measured from the side of the roll.		X	X	X
Check all the wiring terminations are tight, the K factor seal is in place			X	X
Conduct a segment test using the parameter button and check display for shorts / corrosion etc			X	X
Check there is no moisture or water inside the cabinet, also check the sump for water and pump out if necessary.			X	X
Run a test fill and check the calibration and flow rate. If the flow rate is low, investigate and change the filter if required.			X	X
Inspect the pump / dispenser for fuel leaks			X	X
Check that the motor belt is correctly tensioned and it is not worn or frayed			X	X
Check the mains and non-intrinsically safe cables for damage or bare wires and that explosion-proof glands are in place where required				X
Visually check that no non-standard modifications have been made to the wiring within the dispenser				X
Change or clean the filter (If fitted)				X
Check that the lids are fitted to explosion proof and vapour proof enclosures and that all lid fixing screws, bolts and seals are in place.				X

Parts Location

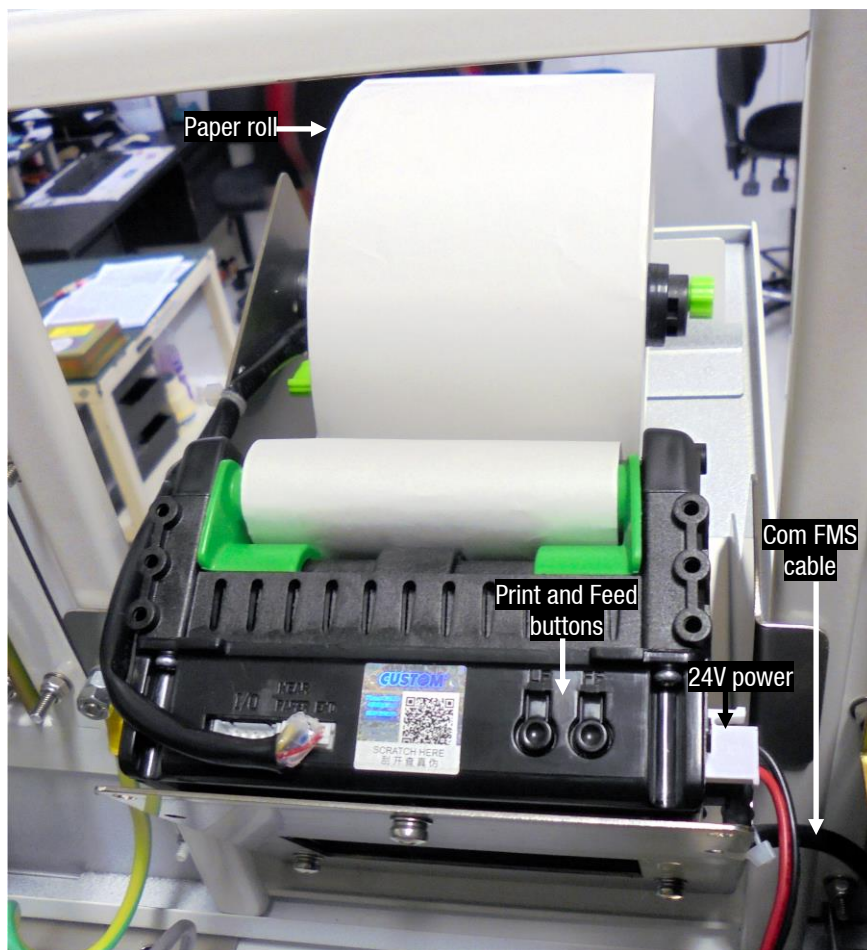




## Changing Receipt Printer

**NOTE:** Use only Compac supplied thermal paper. If you do not use this paper you may damage the printer and have receipt printing problems.

1. Unlock the lock on the printer door and swing down the printer unit
2. Tear off the paper and feed the scrap piece out using the feed button and remove the old roll
3. Place the new roll on the spindle with the paper feeding off the roll as shown in the photograph below
4. Feed the end of the paper into the paper slot pressing the feed button
5. Press "Feed" button to feed paper until it appears from the paper chute
6. If the paper does not appear in the exit chute you can lift up the hinged plastic cover plate and make sure it has not jammed
7. Press the "Print" button to do a test print. If nothing appears on the paper, the paper is probably the wrong way around
8. Swing the printer back into place and lock
9. Perform a test transaction



## Printer Module Replacement

**NOTE:** Always take anti-static precautions when working with electronic components. i.e., wearing a wristband with an earth strap.

### Tools Required to Replace the Printer Module:

- 5.5mm nut driver
- Replacement printer module
- Step ladder for ease of access to the top of the unit

### Removal

1. Remove the lid of the Card King, unlock the printer door and swing it out
2. Turn off the power to the unit and remove the paper roll
3. Remove the data and power cables from the printer (press in the retaining clips to release them)
4. Unscrew the four nylock nuts that secure the printer to the inside of the door and retrieve the nylon washers
5. Gently pull the printer away from the door

### Replacement

1. Install the new printer with the nylock nuts and nylon washers
2. Replace the power and data cables
3. Replace the paper roll and feed the paper into the printer
4. Re-power the unit
5. Perform a test print using the Print button
6. Lock the printer door and replace the lid
7. Perform a test transaction and check that a receipt is printed

## Lantronix Board Replacement

### CAUTION

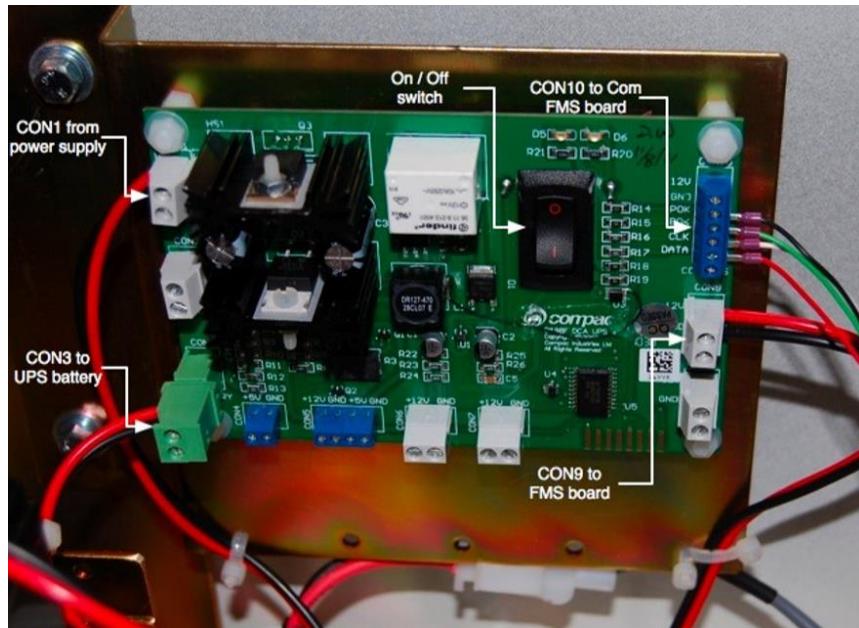
Always take anti-static precautions when working with electronic components. i.e., wearing a wristband with an earth strap.

### Removal & Replacement

1. Turn off the mains switch and the UPS switch.
2. Unplug the network cable.
3. Unclip the standoff using pliers and remove board.
4. Replace.



## UPS Board Connections



CON 1	Input Power	Red=12V Black=GND	From power supply. Both wires should be wrapped with a label marked "12 Volt In". Can be unplugged at spade connectors
CON 3	Battery	Red=12V Black=GND 2 pin plug	This 2 pin plug connects the UPS to the battery. While there is mains power, the UPS will keep the battery fully charged.
CON 9	Com FMS Board	Red=12V Black=GND	This connector supplies 12 volt UPS power to the Com FMS board. Both wires should be wrapped with a label marked "12 Volt Out". Can be unplugged at spade connectors
CON 10	Com FMS Board	Thin Black=POK Thin Green=BOK Thin White=CLK Thin Red=DATA	Supplies the Com FMS board with information about the status of mains and battery
	UPS Power Switch		This switch switches the power off to the CE board, Printer, Pin pad, Router, Cardreader, and FMS board.
	LEDs		There are two LEDs on the UPS board. One of the LEDs (D5) indicates that Mains is "OK" the other (D6) is for battery "OK". Both mains and battery must be "OK" before the OPT will allow a transaction to take place.
<p><b>NOTE:</b> Use the above table as a guide only as wire colours can change during production and after servicing.</p> <p><b>NOTE:</b> Take care to observe correct polarity as there are components that can be permanently damaged if connected incorrectly.</p>			

## COM FMS Board Replacement

**NOTE:** Always take anti-static precautions when working with electronic components. i.e., wearing a wristband with an earth strap. Always take precautions to avoid arcs and short circuits that may damage sensitive components.

### Tools Required to Replace the FMS Board

- 3 mm allen key
- Replacement FMS board.

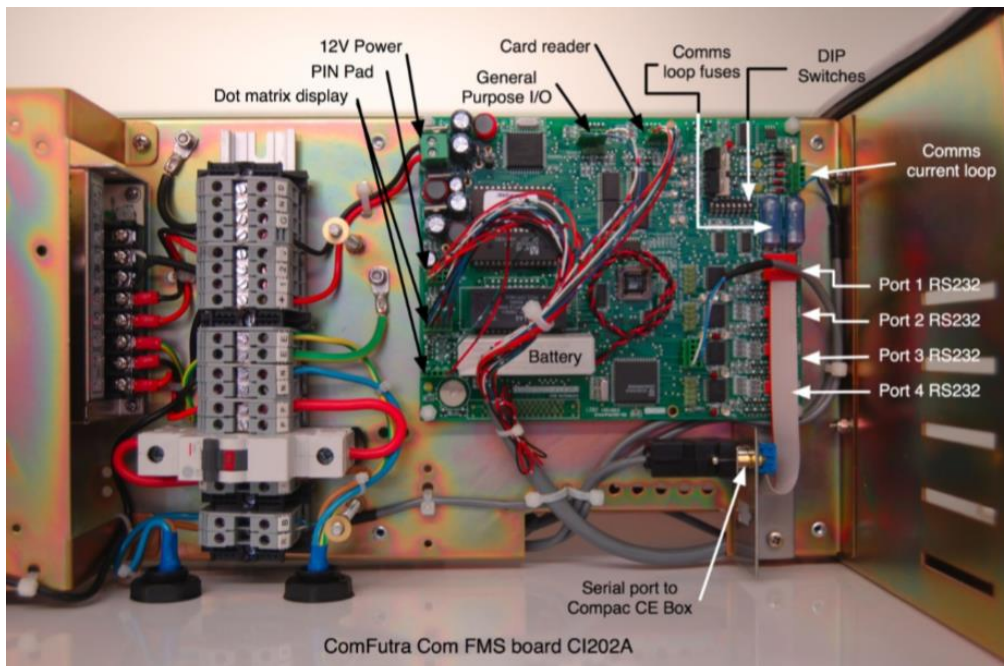
**NOTE:** Check if the board has memory and software chips (consult with Compac Help Desk to see if you can use existing software or if you also need to install new chips).

### Removal

1. Turn off the mains switch.
2. Remove any components that may obstruct the easy removal of the board. Note the locations and connections to the parts removed
3. Unplug the connections to the board.
4. Undo the four machine screws holding the board and remove it.
5. Remove the memory and software chips from the FMS board if they are to be re-used and installed into the replacement FMS board.

### Replacement

1. Replace the Comm FMS board and reconnect.
2. Once a new PCB has been installed in the electronic module install the memory and software chips onto the appropriate sockets on the board.
3. Replace all the components that were removed to access the board.
4. Verify the site pump and comms settings are correct. If the memory and software used are new, the site specific settings such as tanks / groups will need to be entered. Refer Main Menu Options.
5. Set the time and date. Refer to Setting the Clock.



Due to the varied configurations of the units, all combinations of wiring can not be listed here. Take careful note of all connections before removal and use the list below as a guide only. The RS232 ports are RS232 mirrors of the TTL ports.

Component	Wire Colours	Comment
Port 1 RS232		Direct host
Port 2 RS232		
Port 3 RS232		
Port 4 RS232		Tank gauging or Gilbarco comm's
Port 5 RS232		RS232 output of current loop for long distance pump comm's
Port 1 TTL		Connects to Lantronix board for TCPIP communication with CompacOnline, Netbase or ATG box.
Port 2 TTL		Used in conjunction with Port 1 TTL
Port 3 TTL		
Port 4 TTL		
IC (5pin)		Power for capacitance keypad.
Card Reader		
General Purpose Inputs		
Power	Red, Black	Uses 12 volt from power supply
PIN Pad Keyboard		
Dot Matrix Display		
IBM Keyboard		Not used
Batt	Red, Black	3.6V lithium battery
Dip Switches		Use DIP switches to allocate port functions. If replacing a board, make sure DIP switch positions match up.
<b>NOTE:</b> Use the above table as a guide only as wire colours can change during production and after servicing.		

## C4000 Board Replacement

Depending on the model of unit the C4000 board (or boards) may be mounted in different positions. The C4000 board is recognisable by the three parameter switches on the board.

Refer to the C4000 Master Manual for more information.

### Removal & Replacement

Due to the varied mounting, there are no specific instructions.

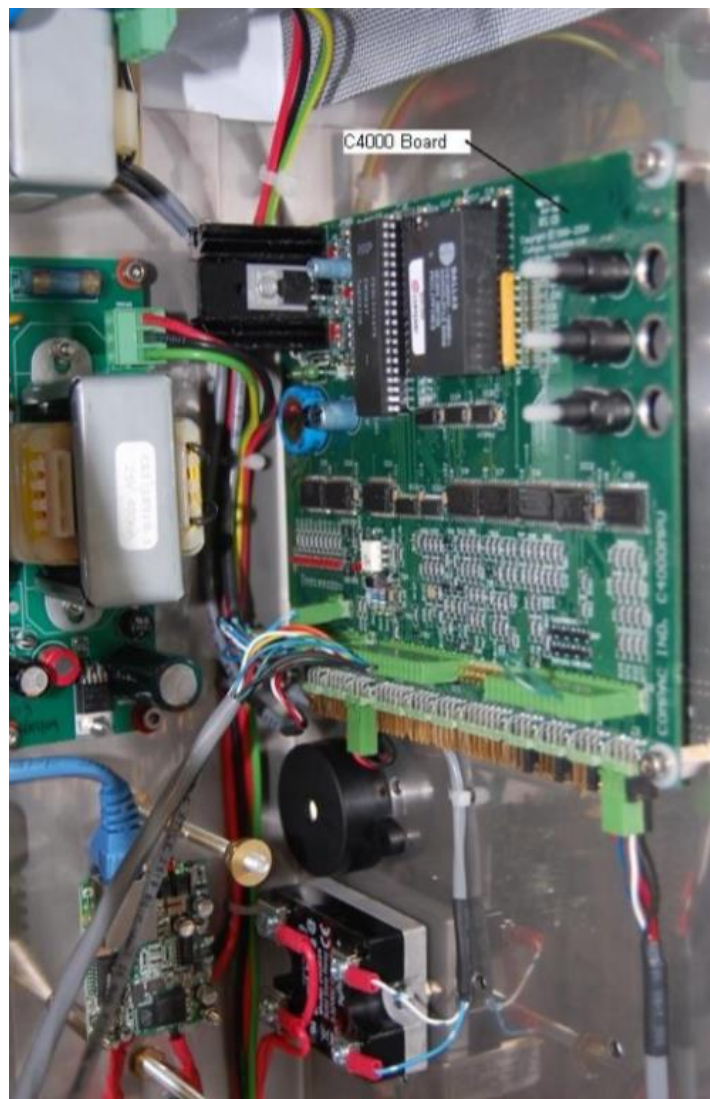
Remove all components that may interfere with the removal of the board, taking note of the position and polarity of all wiring.

Remove the C4000 board.

Replacement is the opposite of removal. If a software chip was not included on the replacement board, use the chip from the old board, refer to the C4000 Master Manual for more information.

### Configuration

The C4000 board can be set up in different ways depending on whether it is being used for CWID authorisation or for reporting mechanical register outputs. Refer to Compac and the C4000 Master Manual for details.



## Keypad and Display Screen Replacement

### Tools Required

- Replacement keypad
- 7mm nut driver
- Side cutters
- Cable Ties

### Removal

1. Cut the cable ties around the key pad and remove the cable tie clips.
2. Note the position and orientation of the connectors before removing them.
3. Unscrew the four nylock nuts that retain the keypad to the door.

### Replacement

Replacing the keypad is the reversal of the removal procedure.

Test the keypad and display for correct operation.

***NOTE:*** Replace the gasket if it is damaged or perished.

## Modem Replacement

### Tools Required

- Side cutters
- Screwdriver
- Replacement ADSL router - F-MDM-ADSL-1220B
- Replacement 4G Modem - FO-MDM-CMST4GXTA
- Cable ties
- Step ladder for ease of access to top of the unit

### Removal

1. Remove lid of Card King and turn off the mains switch
2. Clip the large cable tie and all cable ties holding cables to the modem
3. Unplug the power and RS232 connections on the side of the modem (ADSL Router)
4. Unplug the cable from the socket labelled PTSN(ADSL Router)
5. Push in the DIN rail clip at the base of the modem and pull the modem free

### Replacement

1. Replace the modem onto the DIN rail making sure it clips into place
2. Replace the plugs into the same sockets that they were removed from
3. Cable tie the modem in place and cable tie up all loose wires
4. Repower the unit and check that you can get an internet connection to the unit

### Removing the Lightning Protection Unit

The lightning protection unit is located on the DIN rail and is cable tied to the modem. To remove:

1. Clip the cable tie
2. From the line side, remove the brown wire, the two earth wires (green and/or green/yellow) wires
3. On the equipment side, undo the red, earth and green wires
4. Unclip the unit from the DIN rail
5. Replacement is the reverse of removal

Wiring is as follows:

EQPT	
E1	Red
Earth	Green/Yellow
E2	Green

Line	
L1	Brown
Earth	Green/Yellow
L2	Blue



## Card Reader Replacement

**NOTE:** Always take anti-static precautions when working with electronic components. i.e., wearing a wristband with an earth strap.

### Tools Required

- 7mm nut driver
- Sidecutters
- Cable ties
- Replacement card reader
- Step ladder for ease of access to the top of the unit

### Removal

1. Remove the lid of the Card King
2. Turn off the power to the unit
3. Remove the data cable from the card reader
4. Unscrew the four nylock nuts that secure the card reader to the inside of the cabinet and retrieve the washers
5. Gently pull the card reader and retaining bracket away from the door

### Replacement

1. Install the new card reader with the nylock nuts and washers
2. Replace the data cable and cable tie back in place
3. Re-power the unit
4. Perform test transactions using all authorised card types
5. Replace the lid

## Power Supply Replacement

The power supply converts mains power into the appropriate voltages for the individual components in the unit. The printer requires 24 volts which is supplied by a separate board connected to the 12 volt output of the power supply.

### Tools Required

- 10 mm nut driver
- Pozidriv screwdriver
- Sidecutters
- Cable ties
- Replacement power supply
- Step ladder for ease of access to the top of the unit

### Removal

1. Isolate the unit from the power supply
2. Remove the lid of the Card King
3. Clip all cable ties that may interfere with the removal of the power supply
4. Undo the nuts holding the power supply gear plate to the chassis and lift out
5. Clip the two large cable ties that hold the power supply and undo the four screws that secure it to the gear plate
6. Note the positions of all the wires leading to the power supply and remove them

Replacement is the opposite of removal.

### 12 Volt to 24 Volt Board

The printer requires a 24 volt power supply. This is done through the C1221A board located next to the Com FMS board.

### Removal

1. Turn off the unit
2. Unplug the 12 volt power cable from the board
3. Remove the red wire from the 24V terminal and the black wire from the GND terminal
4. Undo the four nylon nuts and washers and remove the board

### Replacement

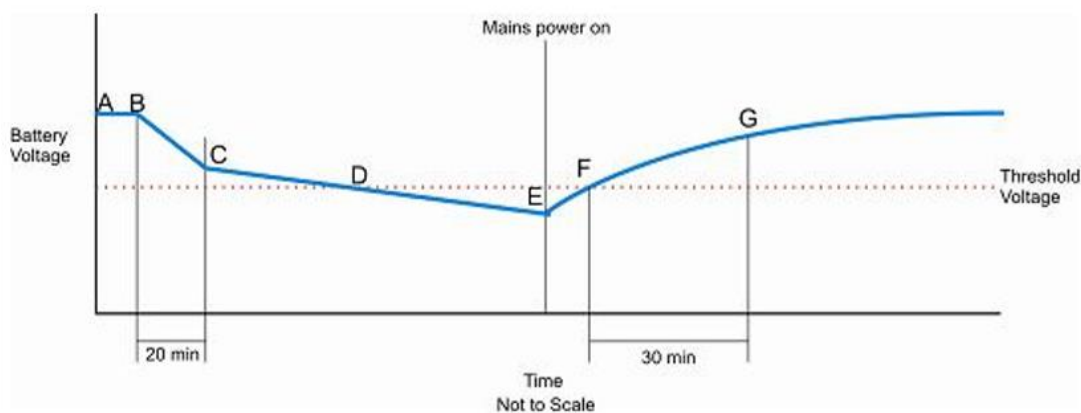
Replacement is the reverse of removal.

Check that printer is working before leaving site.



## Mains Power Loss

The diagram below shows what happens when power is lost and then restored.



A	Battery fully charged and mains power is powering the unit
B	Mains power failure, unit running on battery.
C	20 minutes after mains failure, power is shut off.
D	If mains power failed for a significant amount of time, the voltage of the battery may dip below the set 11.5 volts threshold.
E	Mains power restored, battery charging begins.
F	Battery reached set threshold level.
G	30 minutes after battery reaching the threshold level, transactions can now take place.

After mains power to the unit is lost it will no longer allow transactions but the user will still be able to obtain a receipt that was generated before the power outage.

A receipt can be obtained for up to 20 minutes after mains power failure. The unit will completely power down after 20 minutes. After restoring mains power the unit will power up. If the voltage of the battery dipped below the threshold level at any time, transactions will be disabled until the battery has been charged for at least 30 minutes above the threshold voltage. This is to ensure there is enough power to print receipts should power fail again.

If the battery voltage does not dip below the threshold level while the mains power is disconnected, normal operation can resume as soon as mains power has been restored.

## Backup Battery Replacement

The backup battery enables receipts to be printed up to 20 minutes after loss of power to the site. The battery has an expected life of 5 years in ideal conditions. If the unit powers down less than 20 minutes after the power has been turned off then the battery needs replacing. It is suggested that this function be tested every six months.

**NOTE:** Always take precautions with the exposed battery terminals to avoid arcs and short circuits. This can damage sensitive components or cause fire or explosion.

### Tools Required

- 3mm hex key
- Replacement Battery part number FO-BATT-0001.

### Removal

1. Remove lid of Card King
2. Turn off the power switch and unplug the connector CON3 from the UPS board
3. Unscrew four hex-drive machine screws while supporting the weight of the battery carrier
4. Slowly lower the battery clear and remove the positive and negative leads from the battery
5. Unscrew the two screws that secure battery bracket and slide the bracket off the battery and holder to enable the battery to be removed

### Replacement

Replacement is the reverse procedure of removal.

**CAUTION:** Take care not to touch the exposed battery cables with the steel bracket.

**CAUTION:** Ensure the Red lead connects to the red battery terminal marked ⊕. Severe internal damage can be caused if the battery is connected the wrong way around.

**NOTE:** Please ensure the used battery is disposed of in accordance with local environmental regulations.

## UPS Board Replacement

**NOTE:** Always take anti-static precautions when working with electronic components. i.e., wearing a wristband with an earth strap.

**NOTE:** Always take precautions to avoid arcs and short circuits that may damage sensitive components. The high current from the battery leads and terminals may cause fire or explosion if shorted out.

### Tools Required

- Long nose pliers
- Small flat blade screwdriver (less than 3mm blade)
- Replacement UPS board part number FO-BRD-0004

### Removal

1. Turn off the mains switch and the UPS switch and take careful note of the polarity/colour of all the existing connections.
2. Unplug the battery connector and unscrew all the terminal block screws.
3. Unclip the four standoffs using pliers and remove board.

### Replacement

1. Ensure the replacement UPS switch is off and clip in the replacement UPS board.
2. Connect all the screw down terminal block wires in the order noted during removal.
3. Plug in the battery connector.
4. Switch on UPS and check that the LEDs D5 and D6 are lit.

## Software Upgrading

This is the software upgrade procedure to be followed for all EPROMS.

1. Ensure, before working on the pump, that anti-static precautions are taken (i.e. wearing of wristband with earth strap).
2. Check that all current data has been uploaded from the unit.
3. Record all existing parameters and settings.
4. The above steps are taken to safeguard against software incompatibility causing loss of information.
5. Turn off power.
6. Remove software EPROM using an EPROM extractor.
7. Plug in new software EPROM, being careful that the dimple is at the correct end of the socket (see diagram below). Also ensure that all the legs are correctly located in the socket.
8. Turn on power.
9. Check that the data recorded in Step 3 is still present, if not contact Help Desk for instructions.
10. Check date/time and all other settings are correct.
11. Test pump operation.

**NOTE:** When replacing Integrated Circuit chips, ensure that the notch is facing in the direction of the IC board socket (the notch is the end referred to as the "front").

When inserting the IC chip, the rear pin (of the IC chip) must be plugged into the rear pin socket of the IC board socket. If the chip is shorter than the socket, any spare pin sockets should be at the front.

Failure to correctly insert the IC chips or adhere to the above guidelines specified will result in a loss of memory data.

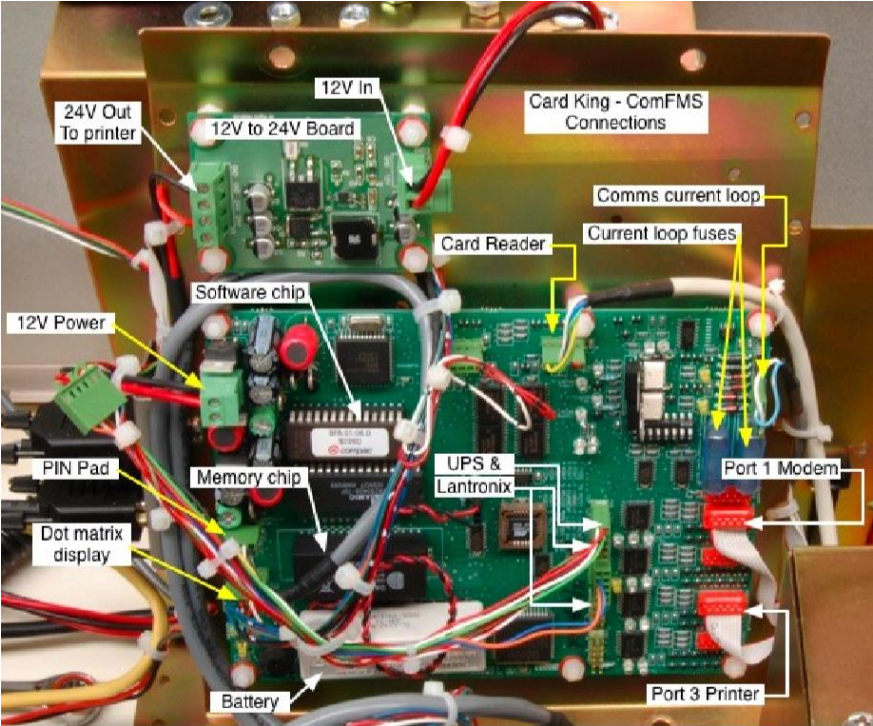


# Appendix

## Comm FMS Board Connections

The following pictures and diagrams indicate the common wiring location and wire colours for the Comm FMS board.

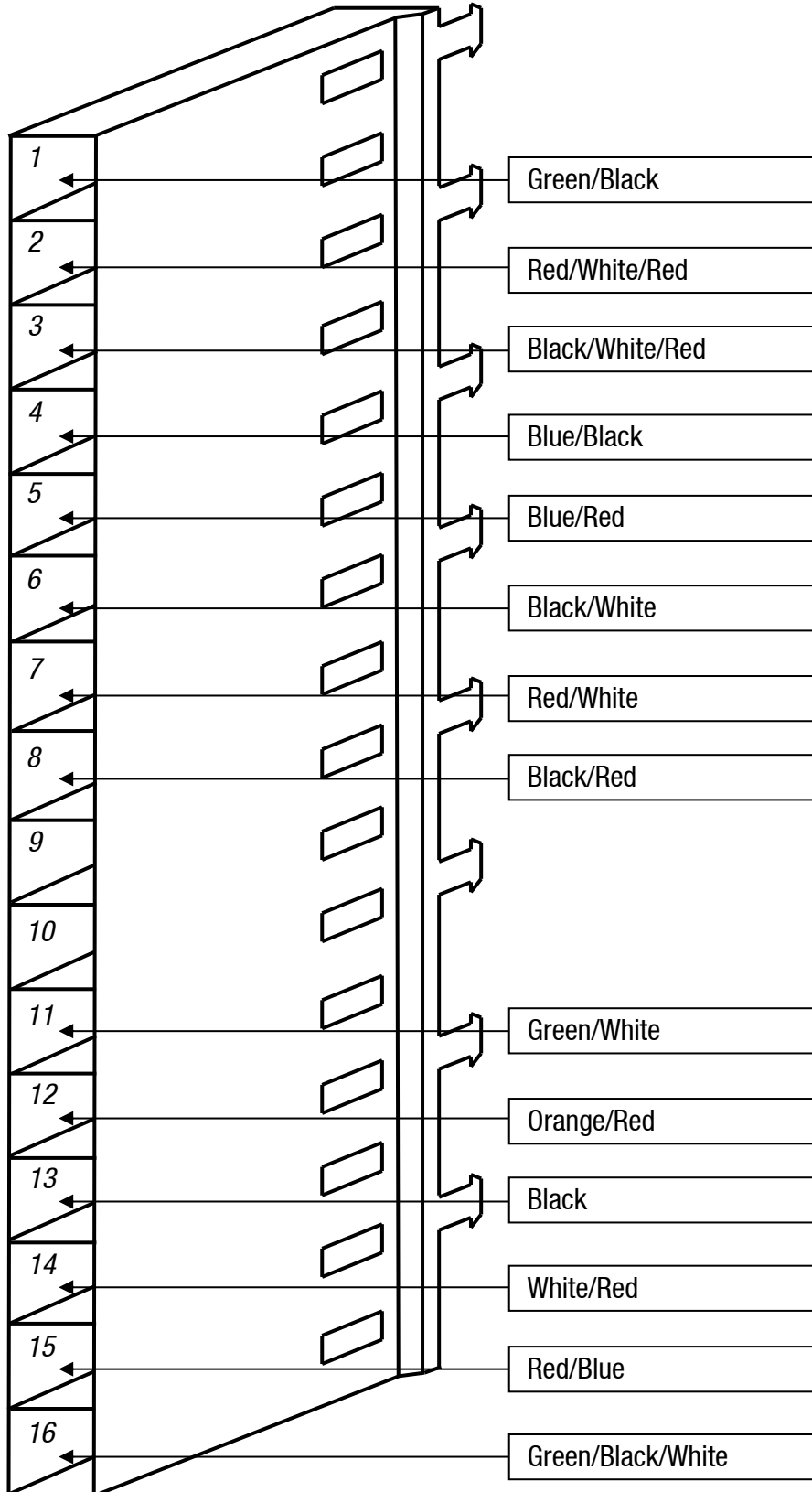
**NOTE:** Due to the wide range of configurations, actual wiring in the unit may vary from what is shown here.



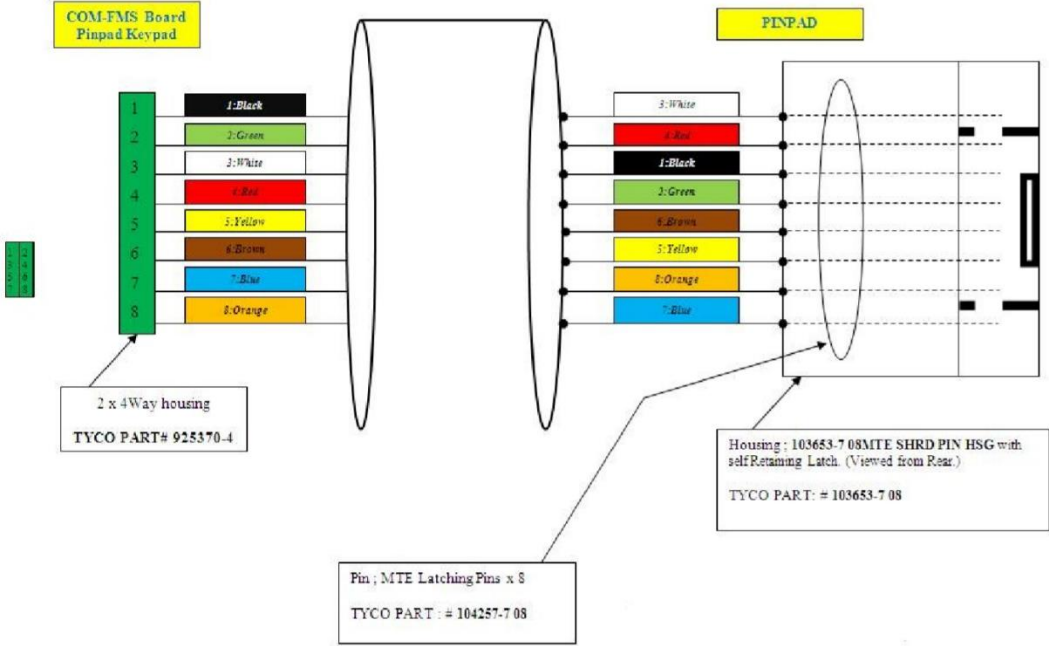
## Plugs and Connectors

### Display

The Display is connected as shown below:



# Membrane Keypad



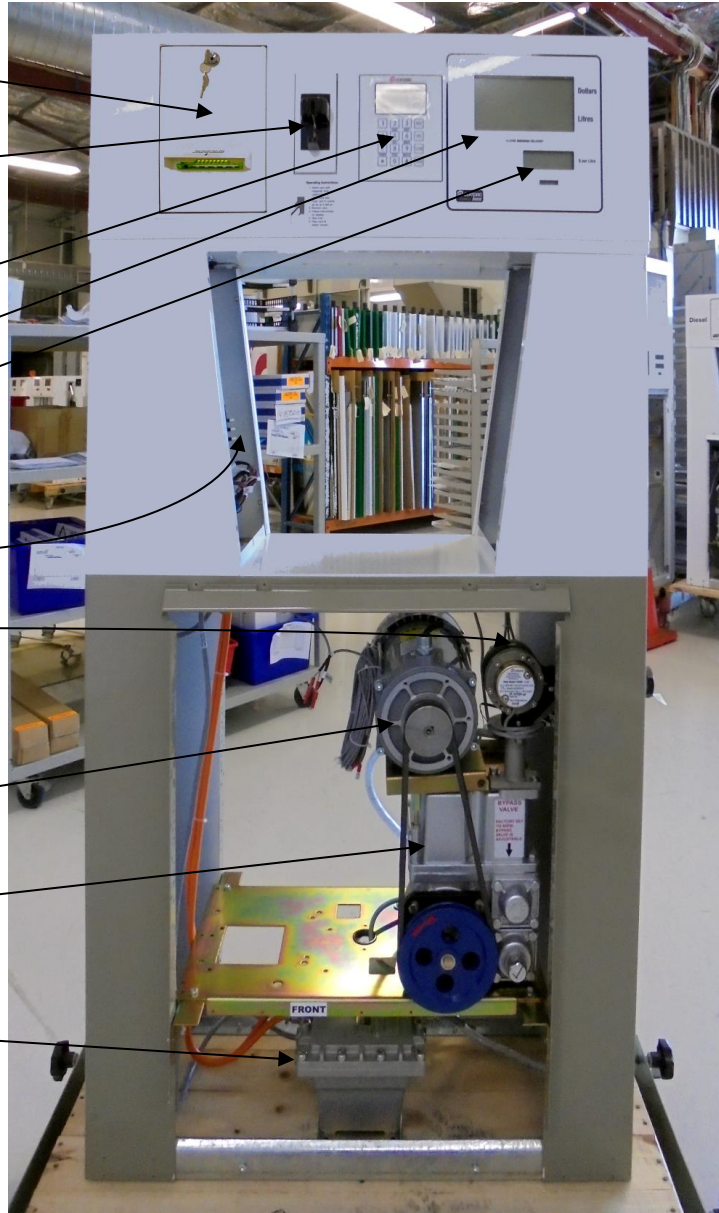


## Spare Parts List

The following parts list may contain components that are not specific to your particular unit. To ensure you get the correct parts, always quote serial number of the unit when ordering.

### Spare Parts

- Printer  
F-BA-PRT-VKP80
- Paper Roll  
F-BA-PRTVKP80130
- Card Reader  
F-BA-CDR-MT-TTL2
- Membrane Keypad  
F-FAS-PPAD-CMFM
- Complete PIN Pan  
F-BL-20X4LCD-LCD
- Retail Display  
F-CP-DISPLAY-7DIPA
- Tote  
F-BA-TOTE-A-K
- C4000 Board(Obscured)  
F-CP-C4PROCESIA2
- COM50 Flowmeter(Complete)  
F-METER-COM50
- COM50 Flowmeter (Electronics only)  
F-METER-COM-E
- Electric Motor ¾ Hp  
F-MOTOR-230-750W  
F-MOTOR-SIDA-M
- Pump Unit  
F-PUMP-ZYB-50
- C4000 Power Supply  
Electronics only  
F-CP-C4PWR-ASS230
- Motor Triac  
F-AT-BTA40-RD91
- Card Cleaner Kit  
F-BA-CARDCLN





## Electronic Components

Part Number	Description
F-CP-COM-FMS12	12V Com FMS board
FO-BATT-0001	Backup battery
F-BA-CDR-MT-TTL2	Card reader
FO-BRD-0004	CI198 DCA UPS board
F-BA-CARDCLN	Card cleaning kit
F-CP-DSPLY-7D1PA	7 Digit display Module (Plastic)
F-BL-20X4LCD-LCD	PIN pad display
F-BA-PRT-VKP80	Printer
F-CI221A-BOOSTT	12v to 24v converter board
F-MDM-ADSL-1220B	ETIC -IPL- A -220 -ADSL Router
FO-MDM-CMST4GXTA	4G Comset Modem, 1 metre power lead, configured for Telstra AUS, Specify site when ordering
FO-MDM-CMST4GXVN	4G Comset Modem, 1 metre power lead, configured for Vodafone NZ, Specify site when ordering
FO-MDM-CMST4GXXT	4G Comset Modem, 1 metre power lead, configured for Spark NZ, Specify site when ordering

## Glossary of Terms

TERM	DESCRIPTION
<b>ATG</b>	Automatic Tank Gauging
<b>Class 1 Zone 0</b>	An area in which an explosive-gas atmosphere is present continuously or is present for long periods.
<b>Class 1 Zone 1</b>	An area in which an explosive-gas atmosphere is likely to occur in normal operation.
<b>Class 1 Zone 2</b>	An area in which an explosive-gas atmosphere is not likely to occur in normal operation, and if it does occur it will exist for short periods only.
<b>ComFutra</b>	A model of pump mounted authorisation terminal made by Compac.
<b>CPU</b>	Central Processing Unit.
<b>CWID</b>	Compac Wireless Identifier.
<b>DCA</b>	Driveway Card Acceptor - A type of pump authorisation terminal made by Compac.
<b>Encoder</b>	A device that translates rotary motion into electronic pulses. Often referred to as a pulser.
<b>Head</b>	Dispenser calculator/Indicator. C4000 PCB, complete with power supply.
<b>HID</b>	Transponder key authorisation system
<b>Intrinsically safe circuit</b>	A circuit in which any spark or any thermal effect produced in the test conditions prescribed in the relevant standard (which includes normal operation and specified fault conditions) is incapable of causing ignition of a given explosive atmosphere.
<b>Intrinsically safe electrical equipment</b>	Electrical equipment in which all the circuits are intrinsically safe. The equipment may be self-contained or may form part of an intrinsically safe electrical system.
<b>Intrinsically safe electrical system</b>	An assembly of interconnected items of electrical equipment in which the circuits or parts of circuits, intended to be used in an explosive atmosphere, are intrinsically safe circuits.
<b>LED</b>	Light emitting diode.
<b>Memory chip</b>	EPROM chip that stores parameters and/or transaction & totals.
<b>OPT</b>	Outdoor Payment Terminal - A type of authorisation terminal designed for credit card applications made by Compac.
<b>PCB</b>	Printed Circuit Board.
<b>RAS</b>	Retail Authorisation Station - Authorisation terminal designed for manned sites
<b>Via</b>	'Plated through hole' in a PCB that enables tracks to swap sides on a PCB.
<b>Software chip</b>	EPROM chip with label indicating program version.

## 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. Refer to the relevant installation manual for procedures.

### Mechanical Checks

Yes No

Check unit is undamaged and has not been tampered with.		
Is the unit in a sheltered position and facing away from the prevailing wind and rain?		
Check all panels are securely fastened using tamper-proof fastenings where supplied.		
Check that all cable entries to unit are through glands.		

### Power-on Checks

Yes No

Check that the CE board, FMS board, pinpad, printer, cardreader, router and modem all power up.		
Check pumps are re-priced to the current fuel price.		
Check that different fuels are correctly priced on all hoses.		

### Transaction Checks

Yes No

Complete transaction using white card/CWID/HID/Pin authorisation methods		
Complete transaction using credit card (credit card DCA only).		
Check that all hoses can be selected and authorised by the unit.		
Check all hoses stop on or before the pre-authorised value (credit card DCA only).		

### Receipt Checks (where fitted)

Yes No

Check that the correct \$, L and fuel grade are printed on the receipt.		
Check the date, time and header information is correct.		

## USB Module Checks (where fitted)

Yes No

Check the supplied USB key is recognised by the unit.	<input type="checkbox"/>	<input type="checkbox"/>
Select "Set Price" and check that the unit price is correctly updated on all hoses.	<input type="checkbox"/>	<input type="checkbox"/>
Select "Get Transactions" and check that transactions are uploaded to the USB key.	<input type="checkbox"/>	<input type="checkbox"/>

## CompacOnline checks (where connected)

Yes No

Check the site appears on CompacOnline.	<input type="checkbox"/>	<input type="checkbox"/>
Check that transactions have been recorded on CompacOnline.	<input type="checkbox"/>	<input type="checkbox"/>
Change price on line and check that the price is uploaded to all units.	<input type="checkbox"/>	<input type="checkbox"/>

## Tank Gauging Checks (where fitted)

Yes No

Check that tanks are set up in CompacOnline and that correct levels are being reported.	<input type="checkbox"/>	<input type="checkbox"/>
Check that the correct products are assigned to the correct tanks.	<input type="checkbox"/>	<input type="checkbox"/>

## Customer Training

Yes No

Check site attendants understand refuelling procedures.	<input type="checkbox"/>	<input type="checkbox"/>
Check that site administrators understand how to obtain transactions and administer cards.	<input type="checkbox"/>	<input type="checkbox"/>

## Final Checks

Yes No

Ensure all cables are plugged back in after remote accessing.	<input type="checkbox"/>	<input type="checkbox"/>
Tidy up all rubbish and clean the exterior of the unit before leaving.	<input type="checkbox"/>	<input type="checkbox"/>

If one or more of these tests fail, contact the Compac help desk or your service centre so the problem can be logged and parts issued if required.