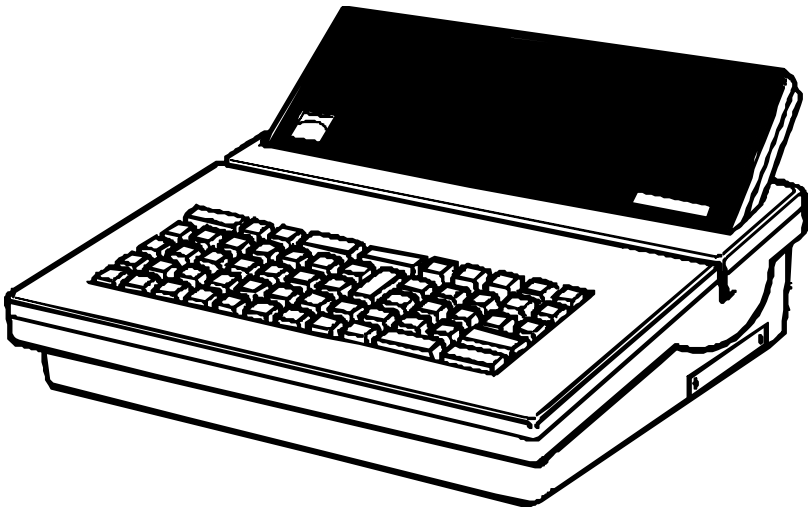
GEMSTONE

Ruby

SuperSystem

Dispenser & DCR Interfaces

Petroleum/C-Store Division



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4.01	August 4, 1999	Dwayne_M1	Revision: Technical Updates
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7.02	February 18, 2004	Cindy_B1	Revision: Part # on pg 13 corrected
Date of Printing, February 18, 2004			

Table of Contents

Fuel & DCR Interfaces

Overview

The Ruby is capable of interfacing with the following pump manufacturers:

- Gilbarco
- Schlumberger
- Tokheim
- Wayne

Each network or major oil (Alliance Data Systems, Citgo, Shell, etc.) has specific standards as to which pump manufacturers will be supported. Please reference the latest Lab Delivery Schedule to determine which pump manufacturers are supported by each network, software application, and version. The latest Lab Delivery Schedule can be found on the VeriFone Bulletin Board Service.

Additionally, each network has specific standards in regard to certain features and dispenser devices that may or may not be supported by the network, software application, and/or version. These features and devices may include dispenser interfaces, DCR keypads, prompts, debit, graphics, VeriPass, etc.

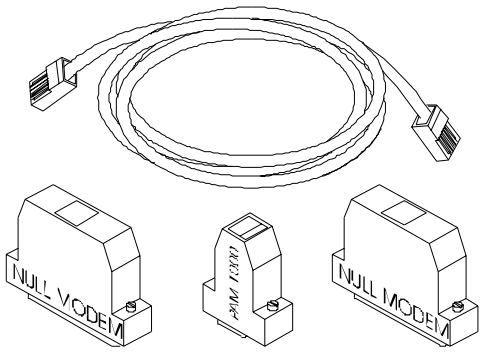
NOTE: Prior to an installation, the pre-installation site preparation must be completed. Please refer to the Site Survey for specific site preparation guidelines when interfacing dispensers, card readers, and other dispenser devices.

Fuel Communications Kit

The Fuel Communications Kit (P/N 13842-01) includes:
RS232 25' Cable, P/N: 13836-25
Gilbarco Adapter, P/N: 13652-01
Tokheim Adapter, P/N: 13581-01
Wayne Adapter, P/N: 13642-01

The appropriate adapter is connected to the pump interface. The RS232 cable is connected to the adapter and then to the Ruby (Controller).

NOTE: Please ensure parts needed are ordered weeks prior to the installation.



13842-01

Fuel Communications Kit

The comport for the dispenser will be assigned when the software application is downloaded to the Ruby (using GemStall). The baud rate for each specific pump interface will also be defined during the GemStall process. It is very important the baud rate set up in the Ruby (Controller) is the same as in the pump interface.

The following table lists a description and the VeriFone part numbers included in the Fuel Communications Kit.

Fuel Communications Kit	
Description	Part Number
RS232 Cable (RJ45-RJ45) 25'	13836-25
Gilbarco Adapter (Male 9-pin PAM)	13652-01
Tokheim Adapter (Male 25-pin null modem)	13581-01
Wayne Adapter (Female 25-pin null modem)	13642-01

The RS232 cable listed is 25-foot in length. Cables are also available in 10, 50, 75, and 100-foot lengths.

NOTE: Spliced communication cables are not permitted. RS232 cables should not exceed 100 feet in length without prior approval from your RSM.

The DB9 male adapter required for interfacing to the Schlumberger Access Module (SAM) is NOT included in the VeriFone Fuel Communications Kit. The VeriFone part number is 55036-01.

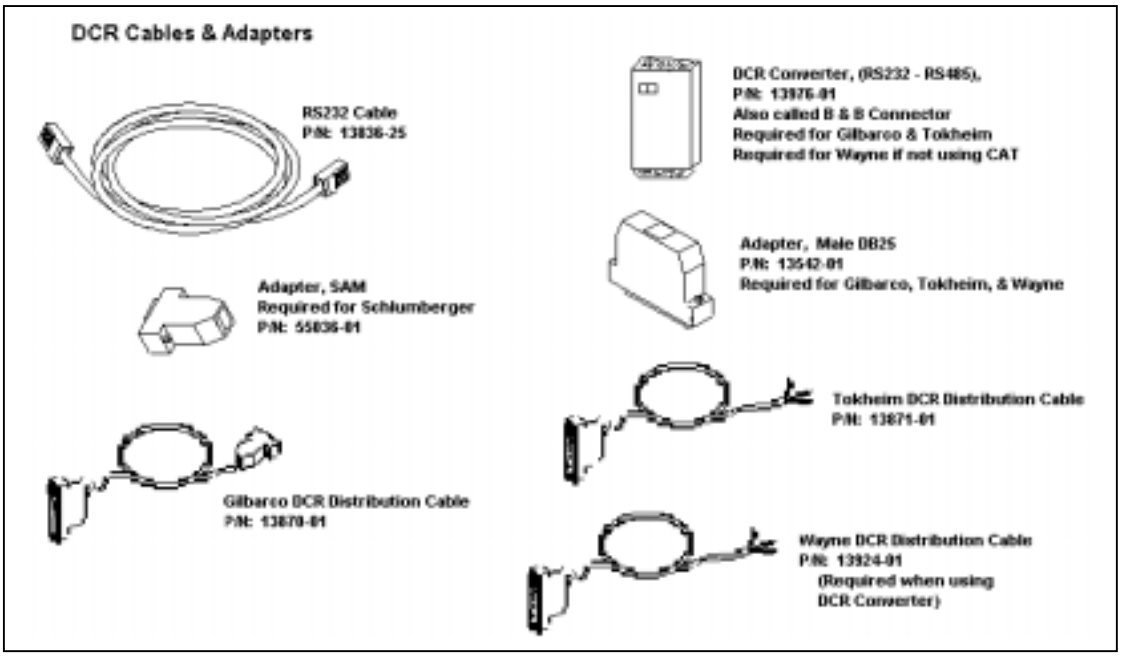
NOTE: Schlumberger was purchased by Tokheim in 1999, however all Schlumberger pump models (i.e., Centurion, etc.) prior to the Tokheim purchase are still considered Schlumberger in the Ruby and in GemStall. The SAM (Schlumberger Access Module) is also known as the Tokheim Access Module (TAM).

Dispenser Card Readers (DCR) Interfacing

The DCR communication parts provide an interface between the Ruby (Controller) and the DCR equipment. The figure below illustrates all the cables, adapters, and connectors needed for each DCR interface.

The RS232 cable shown is 25-foot in length. Cables are also available in 10, 50, 75, and 100-foot lengths.

NOTE: Spliced communication cables are not permitted. RS232 cables should not exceed 100 feet in length without prior approval from your RSM.



The parts needed to interface the DCR to the Ruby (Controller) will be determined by the dispenser manufacturer and interface used. For detailed information, please refer to each dispenser type within this chapter. The appropriate adapter(s) and cable(s) are connected to the pump interface. The RS232 cable is connected to the adapter and then to the Ruby (Controller).

The comport for the DCR will be assigned when the software application is downloaded to the Ruby (using GemStall). The baud rate for each specific pump interface will also be defined during the GemStall process. It is very important the baud rate set up in the Ruby (Controller) is the same as in the pump interface.

The following table lists all the VeriFone part numbers and descriptions for each DCR dispenser type when interfacing the Ruby (Controller).

NOTE: Please ensure parts needed are ordered weeks prior to the installation.

DCR Communications Parts	
Description	Part Number
RS232 Cable, - Required for all DCR applications.	13836-25
Adapter, SAM, - Required for Schlumberger DCR applications. Note: Does not require a converter.	55036-01
DCR Converter, (also referred to as the B & B Connector) - Required for Gilbarco and Tokheim DCR applications. - Required for Wayne DCR applications if CAT Board isn't installed.	13976-01
Adapter, Male DB25, - Required for Gilbarco, Tokheim, and Wayne DCR applications.	13542-01
Cable, DCR Distribution, - Required for Gilbarco CRIND.	13870-01
Cable, DCR Distribution, - Required for Tokheim DPT.	13871-01
Cable, DCR Distribution, - Required for Wayne DCPT – if using the DCR Converter (no CAT Board).	13924-01

Gilbarco Fuel and DCR Interfacing

Gilbarco Fuel Interface Requirements

The following requirements must be met prior to installation:

- The Gilbarco Pump Access Module 1000 (PAM), part number PA02410010001 - RS232 version, must be installed at the site. The PAM 1000 interface box has an aluminum housing. Older versions of the PAM have black or tan sheet metal housings. These older PAMs will not interface with the Ruby.

- Before installation of the Ruby please refer to the specific software application's release notes. The release notes indicate the most recent firmware version needed in the PAM 1000. Release notes can be found on VeriFone's Bulletin Board Service.

- A Gilbarco Universal D-Box, part number PA026100000X0 must be installed prior to the Ruby installation to allow communication to the PAM 1000 interface box. When connecting the D-Box all four wires must be connected. The " X " in the part number equals the number of boards needed.
    - 1 to 12 fueling points:
    - Requires 1 D-Box (1 board for fueling points 1-12)
    - 13 to 24 fueling points:
    - Requires 2 D-Boxes (2 boards for fueling points 1-24)
    - 25 to 32 fueling points:
    - Requires 3 D-Boxes (3 boards for fueling points 1-32)

The D-Box should be installed by a certified Gilbarco pump installer.

To connect the D-Box to the PAM 1000 use one of the following cables.

Gilbarco D-Box Cables	
10 feet	Q11542-52
50 feet	Q11542-53
100 feet	Q11542-54

Cables are available from a Gilbarco distributor.

- The Gilbarco PAM 1000, D-Box, and all other peripheral equipment must be installed using dedicated electrical circuits supplied by the same electrical phase as the Ruby(s). Detailed electrical requirements can be found in the Site Survey. All electrical requirements must be met prior to the Ruby installation.

- The PAM 1000, must be configured to allow the Ruby system to communicate with the existing dispensers. This includes setting the jumpers correctly. Detailed jumper settings can be found on the following pages. All jumper settings should be set by the pump installer. The Ruby communicates with the PAM 1000 at 4800 baud rate in buffer price mode.

When ordering equipment or parts from Gilbarco, specify on the order form that the equipment or parts will be interfaced with a VeriFone Ruby system.

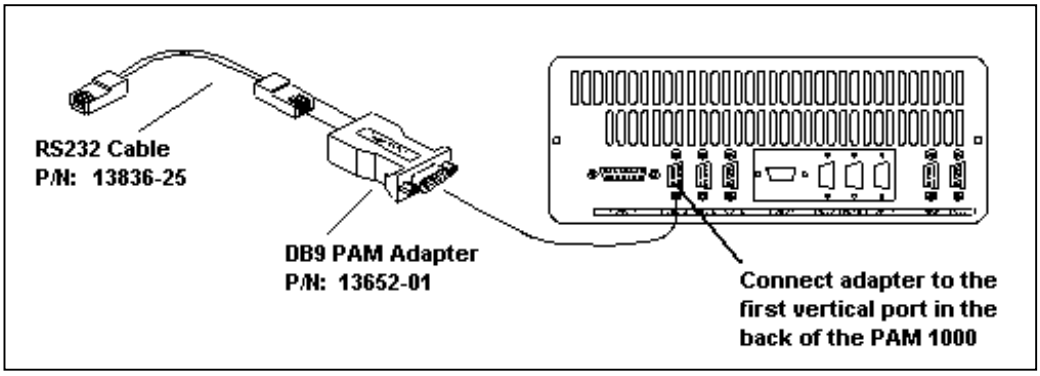
Gilbarco PAM (Pump Access Module) 1000

Parts Needed For Fuel Communications:

- P/N 13836-25 – RS232 Cable
- P/N 13652-01 – Adapter, DB9 PAM

The Gilbarco Adapter (P/N 13652-01) connects to the Gilbarco fuel interface port labeled P909-2 on the PAM (Pump Access Module) unit. After the connection is made the adapter should be secured by tightening the screws.

The RS232 cable is then connected from the adapter to the appropriate port assigned on the Ruby (Controller).



Placement of Boards in PAM

The following lists the board and the position assigned with the PAM 1000.

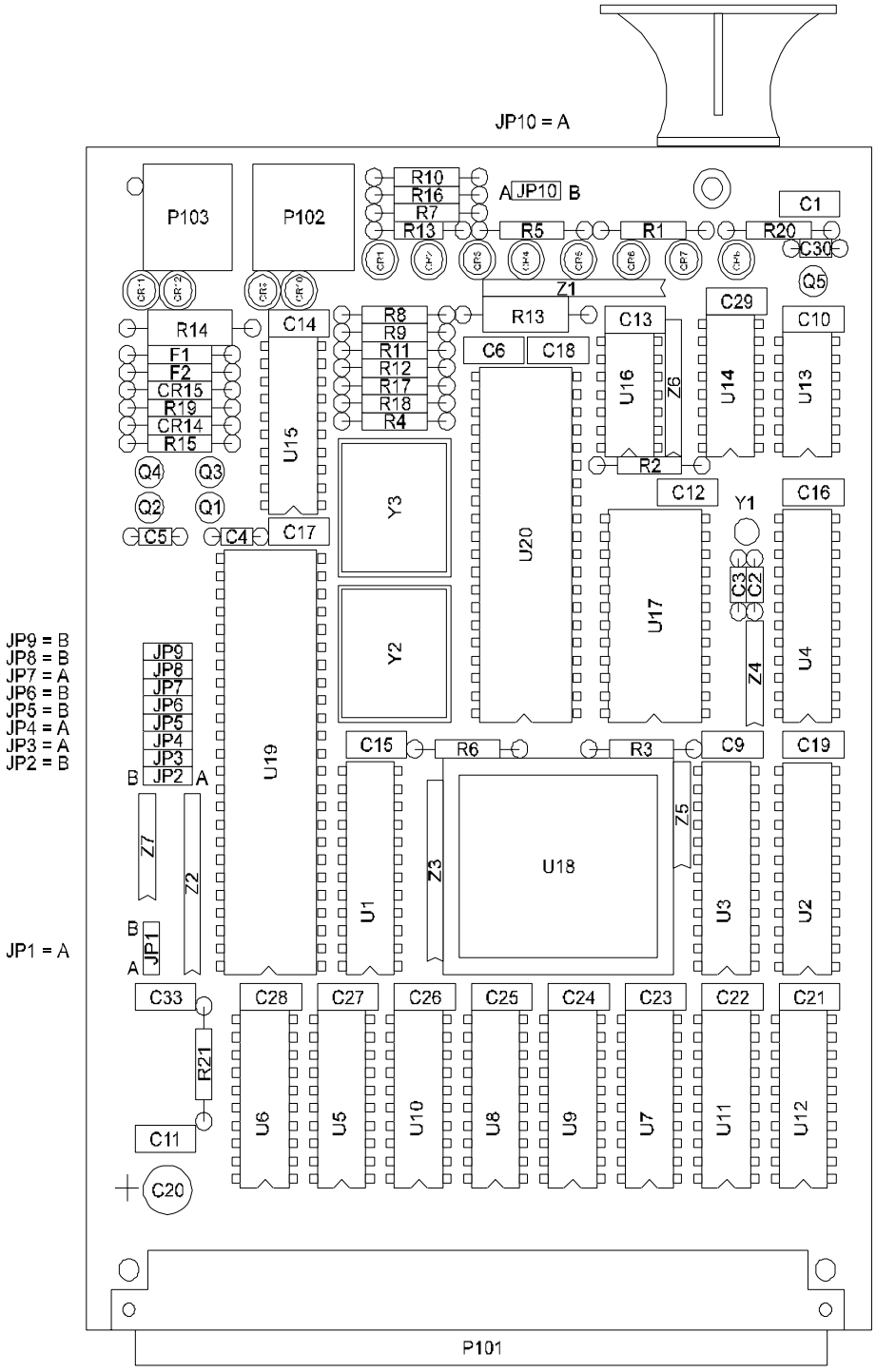
I/O Board = J601
Memory = J604
CPU = J605

Board Jumper Settings

The following lists the jumper settings needed when interfacing the Ruby with the PAM 1000.

I/O Board	JP1 = Open	JP8 = B
	JP2 = Closed	JP9 = A
	JP3 = Open	JP10 = A
	JP4 = Open	JP11 = Open
	JP5 = Open	JP12 = Open
	JP6 = A	JP13 = Closed
	JP7 = B	JP14 = A
Memory Board	JP1 = B	JP3 = B
	JP2 = B	JP4 = B

The following page illustrates a detailed diagram of the PAM 1000 with the jumper settings shown.



PAM 1000 CPU Board Jumper Settings

Gilbarco DCR Requirements

The Gilbarco DCR communication interface is referred to as the CRIND (Card Reader IN Dispenser).

The following Ruby to CRIND communication requirements must be met prior to installation:

- The D-Box board used for CRIND communications must have an RS485 connector installed. The connector is Gilbarco part number R19249-G1.
- CRIND boards in the dispensers must be configured for 4800 baud rate.
- CRIND addresses must be equal to the fueling position number.
- The CRIND requires Gilbarco Generic CRIND software. Major Oil CRIND (MOC) software is not compatible with VeriFone DCR software.
- Each CRIND unit is jumpered for generic communications and has generic firmware installed. The CRIND firmware version depends on the logic board configuration. Please refer to the VeriFone software release notes for specific firmware requirements.
- Planned releases of Gilbarco CRIND firmware make it even more important that the CRIND is jumpered for generic communications.
- The CRIND communications board in the D-Box must be jumpered for G-Site communications. Please refer to the Distribution Box Jumper Settings section for detailed information and an illustration of the jumper settings.
- Each dispenser sends fueling point information to the D-Box via a two-wire interface (TWI). The D-Box translates the fueling point information for input to the PAM. The PAM converts the TWIs to RS232 for input to the Ruby.
- For each dispenser and CRIND, a single two-wire interface (TWI) is pulled to the Universal D-Box for CRIND communications. Each dispenser, no matter the number of sides (single or double), has one TWI.

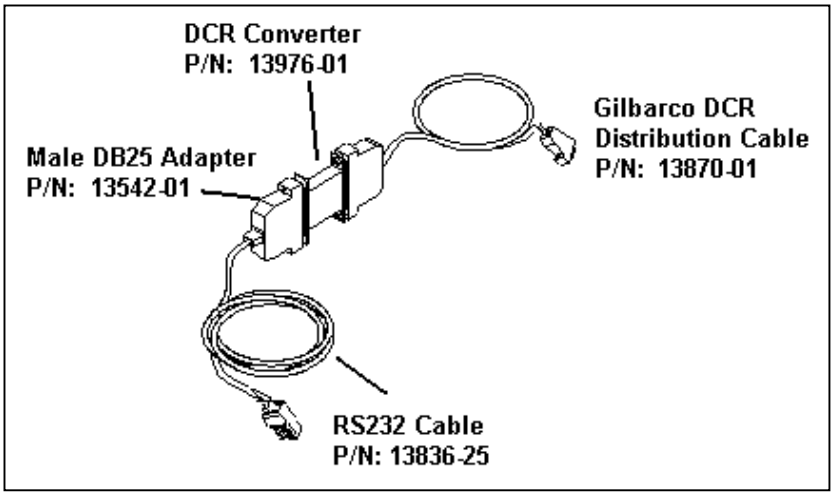
- All hardware must be installed prior to the Ruby installation. There are three fueling point (FP) hardware configurations depending on the number of CRINDS at the site.
    - 1 to 12 fueling points with CRINDs:
    - Requires 1 D-Box (1 board for fuel 1-12, 1 board for CRINDs 1-12)
    - 13 to 24 fueling points with CRINDS:
    - Requires 2 D-Boxes (2 boards for fuel 1-24, 2 boards for CRINDs 1-24)
    - 25 to 32 fueling points with CRINDs:
    - Requires 3 D-Boxes (3 boards for fuel 1-32, 3 boards for CRINDs 1-32)

A hardware configuration diagram is also available in this section as a reference.

Gilbarco DCR Cabling

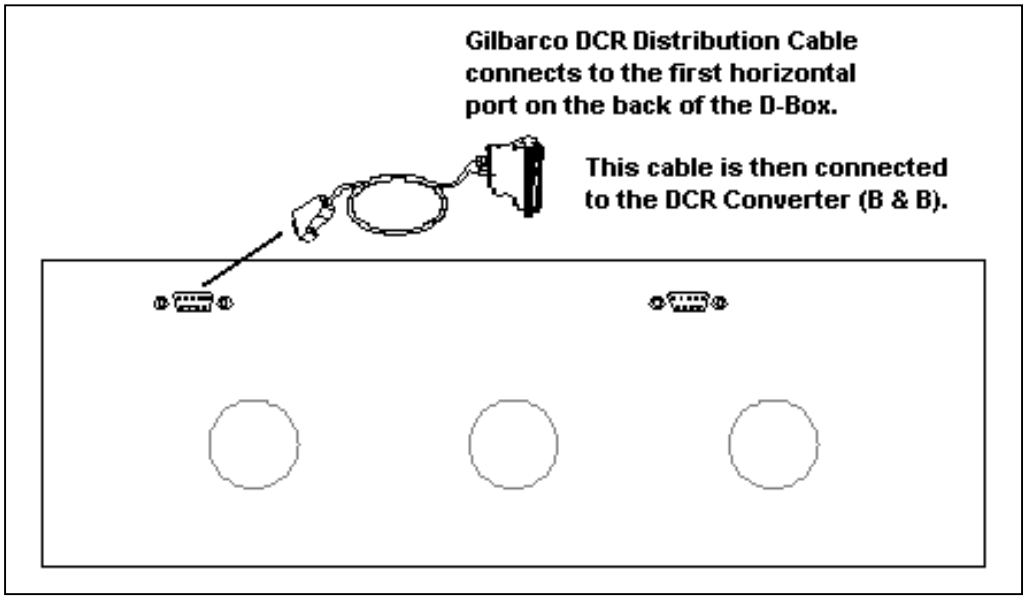
The following parts are needed to establish communication between the Gilbarco CRIND (D-Box) and the Ruby (Controller):

- RS232 Cable: P/N 13836-25
- Male DB25 Adapter: P/N 13542-01
- DCR Converter: P/N 13976-01
- Gilbarco DCR Distribution Cable: P/N 13870-01



The Gilbarco DCR Distribution Cable, also referred to as the B & B Connector, is connected to the DCR Converter (B & B Connector). The DCR Converter is connected to the 25-pin male adapter. The male adapter is connected to an RS232 cable. The RS232 cable is connected to the appropriate comport on the Ruby (Controller).

The DCR Converter converts an RS485 communication to RS232. Ensure the correct dip-switch is set on the converter.



Distribution Box Jumper Settings

The following lists the jumper settings for the Gilbarco D-Box.

Pump Loop Board: JP10 & JP12 - Two Wire (Horizontal)
JP9, JP11 & JP13 - B (Horizontal)
JP14 - Vertical

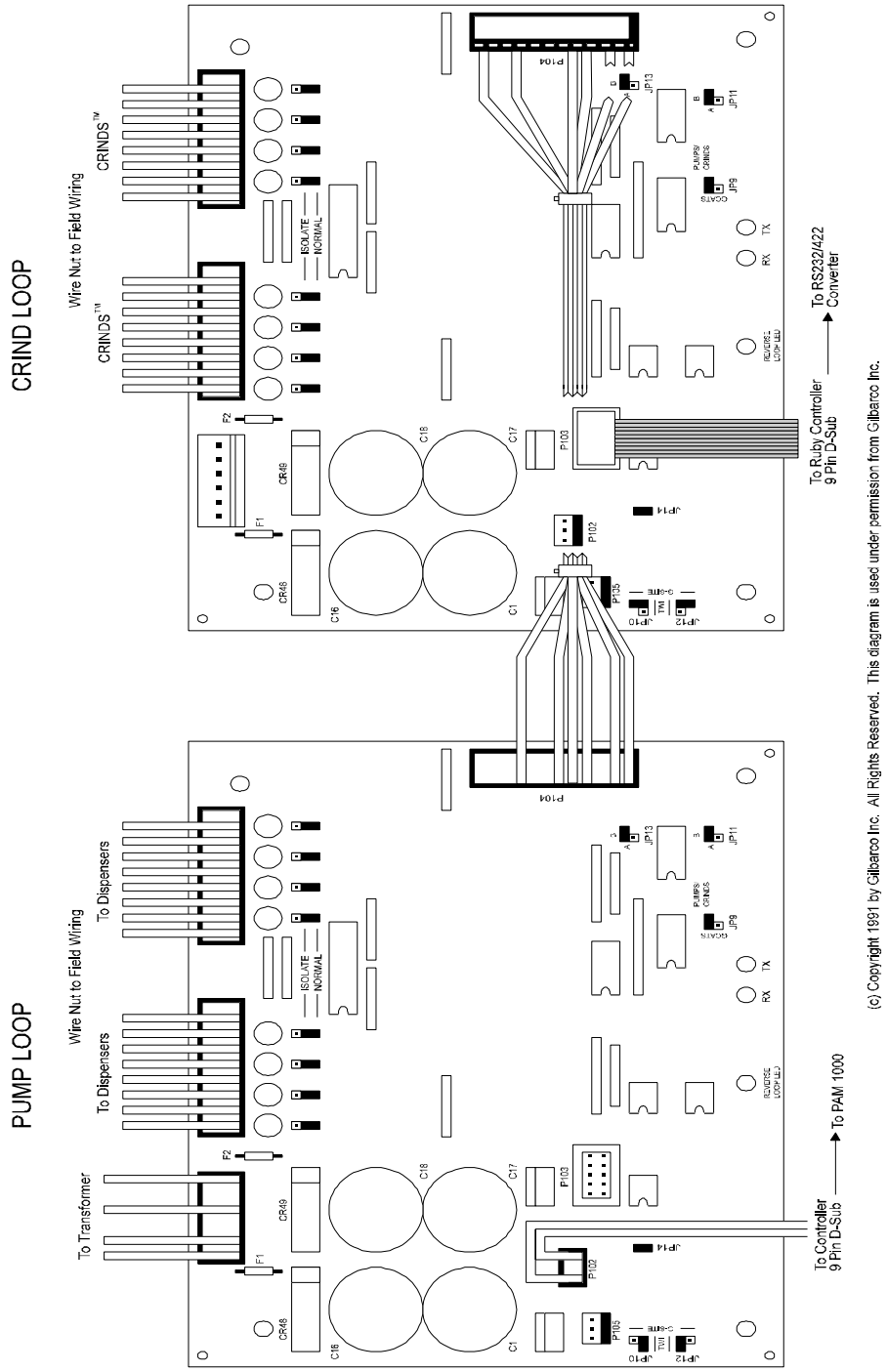
CRIND Loop Board: JP10 & JP12 - G-Site (Vertical)
JP9, JP11 & JP13 - B (Horizontal)
JP14 - Vertical

On both boards in the D-Box, the communications lights are;

CR37 - Two Wire Reverse
CR38 - Receive
CR39 - Transmit

The next page illustrates a detailed diagram.

D-Box Jumper Diagram



Gilbarco Splitter Cable Configuration

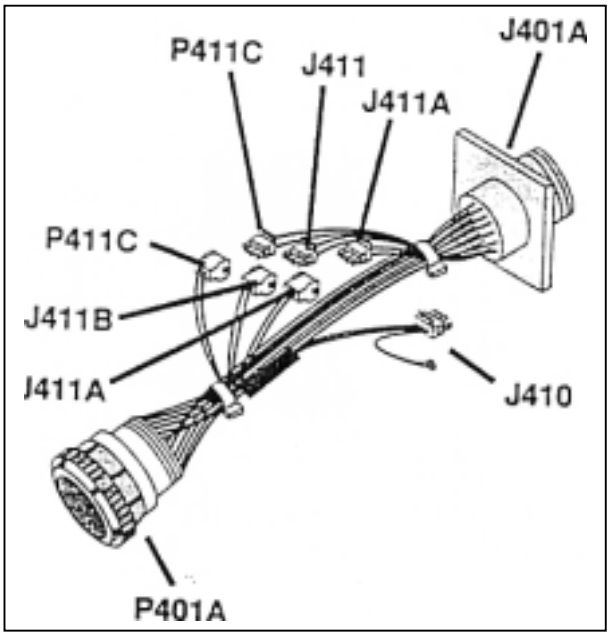
The following tables are for the MPD-3 and The Advance series Gilbarco dispensers. You must use the Generic configuration. MOC is not compatible with VeriFone DCR software.

Gilbarco MPD-3

Generic CRIND's 3-Grade	T17546	J411C	to	P411C	(I17546)
	T17546	J411B	to	P411B	(I17546)
	R19035-G1	J410	to	P410	(I17546)
	R19036-G1	P411	to	J411A	(I17546)
Generic CRIND's 4-Grade	T17546	J411A	to	P411A	(T17546)
	T17546	J411C	to	P411C	(T17546)
	R19035-G1	J410	to	P410	(T17546)
	R19036-G1	P411	to	J411B	(T17546)

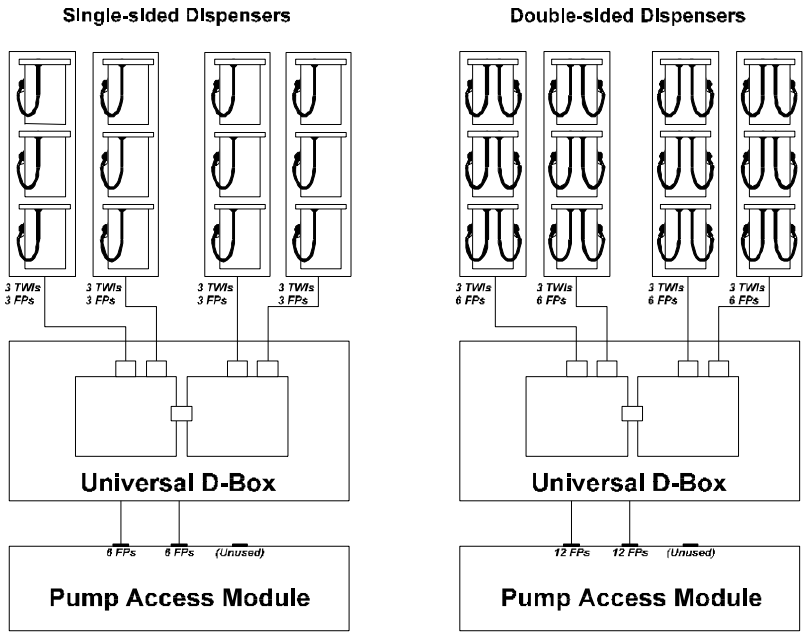
The Advantage Series

Generic CRIND's	From J-Box	P402	to	J402B	(R19248)
	W02469	J402	to	P402B	(R19248)
	R19144	P402A	to	P402C	(R19248)
		NC	to	P405	(R19248)

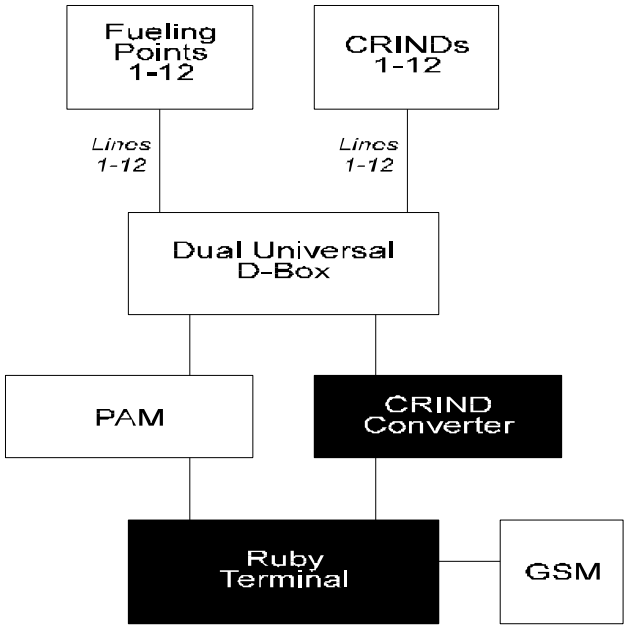


Hardware Configuration Diagram

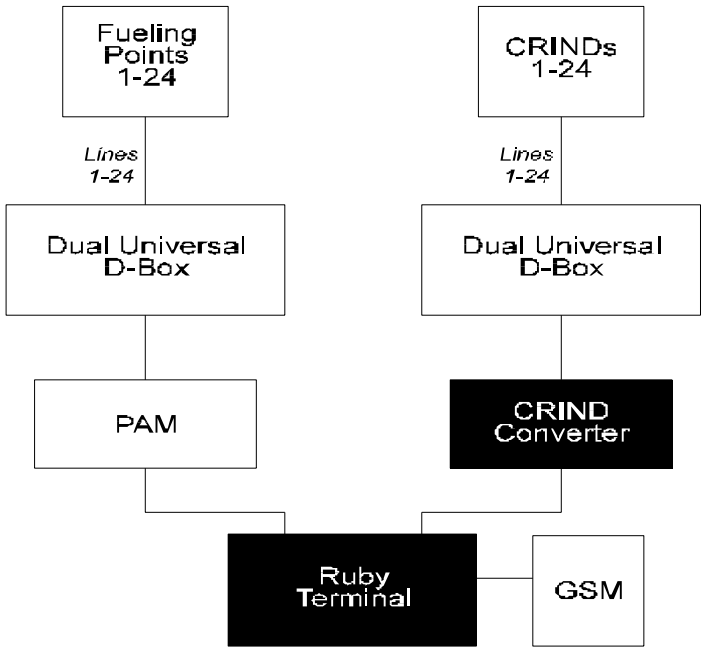
This diagram illustrates a single-sided dispenser versus a double-sided dispenser hardware configuration.



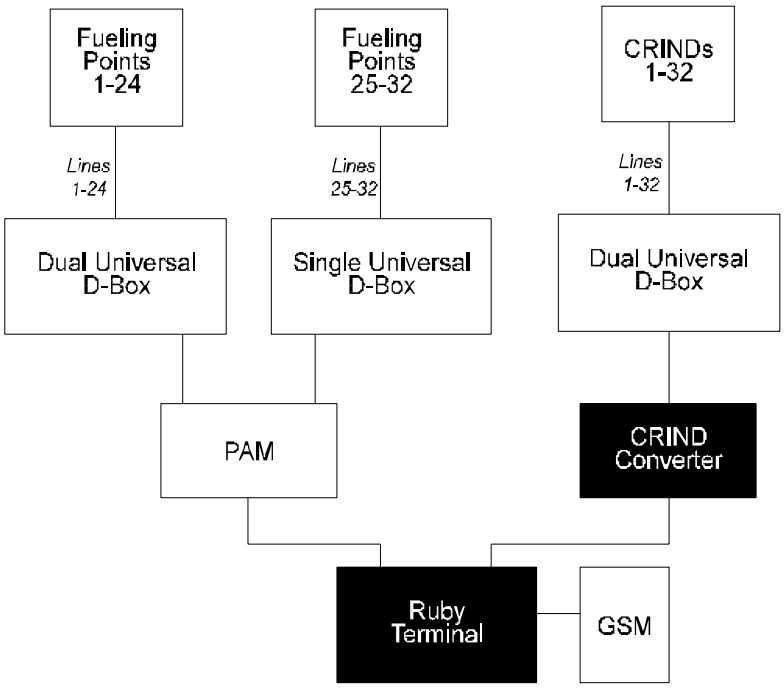
The diagram below illustrates the hardware configuration for 1-12 fueling points with CRIND.



The following diagram illustrates the hardware configuration for 1-24 fueling points with CRIND.



The diagram below illustrates the hardware configuration for 1-32 fueling points with CRIND.



Gilbarco Security Module

The Gilbarco Security Module (GSM) is attached to the Ruby via an RS232 interface. The GSM is an encryption/decryption device that ensures that credit/debit card, PIN, and other critical customer information is maintained under the most secure conditions. This is only required for debit handling networks. The GSM version is dependent on the network.

The GSM is a Gilbarco part and must be ordered through Gilbarco. When receiving the GSM you will also be shipped a gray connector. When interfacing a GSM with the Ruby, do not use this gray connector. You will need to order VeriFone P/N 55028-01, Rev D. This MUST be used to successfully connect the GSM with the Ruby.

Gilbarco Non-blending Dispenser Configuration

The following section includes detailed information to be used when programming the Ruby (Controller) in Fuel Manager. Each pump manufacturer as well as each model of dispenser will have specific settings.

The following programming is to be used only for Gilbarco non-blending dispensers.

This section identifies the Tank Names, Product Configuration, Pump Attributes, and Hose Assignment configuration needed for the Gilbarco non-blending dispenser.

NOTE: The following section relates to the VeriFone Ruby Fuel Manager programming.

Please be advised that the programming within this section may need to be modified based on various functionality and programming in the actual dispenser and/or fuel interface.

After programming the Ruby's Fuel Manager, you should always complete a full fuel initialization and check each dispenser (side A & B) to ensure the programming is accurate and all side are communicating correctly.

Tank Names

The Tank Name file identifies the underground tanks at the site. The site can have up to eight (8) underground tanks.

For the Gilbarco non-blending dispenser start with Tank01 and type over the tank name. Enter a name, which will identify your first underground tank (i.e., Unlead, Midgr, Prem, Diesel, etc.). Continue to name each underground tank. Only type over the tank numbers that will be used at the site. Tank names can be up to six (6) characters in length.

NOTE: Unused tank numbers must remain as "tank05", "tank06", etc. DO NOT rename unused tanks as NONE, UNUSED, etc.

Example – The site has 4 underground tanks, Unlead, Midgrade, Premium, and Diesel. Your Tank Name file will read:

1. Unld
2. Midgr
3. Prem
4. Diesel
5. Tank05
6. Tank06
7. Tank07
8. Tank08

Product Configuration

The Product Configuration file identifies the products used at the site. The Ruby allows a site to have up to nine (9) products. This file links the appropriate tank (set up in the Tank Name file) to a specific product.

NOTE: When setting up this file NEVER TYPE OVER THE PRODUCT NAMES. All product names should be left as is.

For Gilbarco non-blending dispensers, the product names used at the site can be listed in any order in the Product Configuration File. However, if you are changing the order your MUST do the following:

- Arrow to the product name you need and press the <Select> key,
- Arrow to the position you need to move the product to, then press the <Select> key.

DO NOT TYPE OVER THE PRODUCT NAMES IN THE PRODUCT CONFIGURATION FILE.

Products not used at the site should be linked to the "NONE" tank.

Because you are using Gilbarco non-blending dispensers, all tanks linked to each product should be 100%.

- Products 1 – 9: Can be listed in any order.
- Products 1 – 9: Must be set to 100%
- Products not being used at the site should be linked to the "NONE" tank.

Continuing with the example from the Tank Name section, your site has 4 underground tanks; therefore 4 products. We programmed the Product Configuration with the first 4 products used at the site.

The Product Configuration File will read:

1. Unld	T1 Unld	PCT 100%
2. Midl	T1 Midgr	PCT 100%
3. Prem	T1 Prem	PCT 100%
4. Diesl	T1 Diesel	PCT 100%
5. Mid2	T1 None	PCT 100%
6. Mid3	T1 None	PCT 100%
7. Prem2	T1 None	PCT 100%
8. Kerns	T1 None	PCT 100%
9. Diesl2	T1 None	PCT 100%

To link a tank name to a product, place the cursor on the tank field and right or left arrow until the tank name you need appears. Then press the <Enter> key.

Pump Attributes

The Pump Attributes file is in the Pump Configuration file. Specific parameters for each fueling point can be set within the Pump Attributes file.

When using Gilbarco non-blending dispensers, the parameter identifying the blend type should be set to NONE.

Hose Assignments

The Hose Assignments file is in the Pump Configuration file. Hose Assignments identify what product or grade of fuel is linked to what hose at the dispenser. The Ruby is capable of identifying six (6) hoses on each side of the dispenser.

The Hose Assignments need to be set up based on how many products the dispenser will be using for each side. This file also needs to be set up based on how the actual piping for each product has been installed by the pump installer.

Example #1: Non-Blending Dispensers - 3 Products Piped Straight Across
The site has 3 products on each side of the dispenser for the unlead, midgrade, and premium products. The pump is piped with products straight across each side of the dispenser. The dispenser on side 1 (A) reads: Unlead, Midgrade, Premium; side 2 (B) reads: Premium, Midgrade, Unlead. With this set up the hose assignments will read:

1. Unld, Mid1, Prem, None, None, None
2. Prem, Mid1, Unld, None, None, None

In the above example all side A's will be the same as fueling point #1 and all side B's will be the same as fueling point #2.

To change the product arrow right or left, then press the <Enter> key.

Example #2: Non-Blending Dispensers – 3 Products Transversal Piping
The site has 3 products on each side of the dispenser for the Unlead, Midgrade, and Premium products. The pump is piped transversal for each product on each dispenser. The dispenser on side 1 (A) reads: Unlead, Midgrade, Premium; side 2 (B) reads: Unlead, Midgrade, Premium. With this set up the hose assignments will read:

1. Unld, Mid1, Prem, None, None, None
2. Unld, Mid1, Prem, None, None, None

In the above example all side A's and side B's will be the same.

To change the product arrow right or left, then press the <Enter> key.

Example #3: Non-Blending Dispensers – 4 Products Piped Straight Across
The site has 4 products on each side of the dispenser for the unlead, midgrade, premium, and diesel products. The pump is piped with each product straight across each side of the dispenser. The dispenser on side 1 (A) reads: Unlead, Midgrade, Premium, Diesel; side 2 (B) reads: Diesel, Premium, Midgrade, Unlead. With this set up the hose assignments will read:

1. Unld, Mid1, Prem, Diesl, None, None
2. Diesl, Prem, Mid1, Unld, None, None

In the above example all side A's will be the same as fueling point #1 and all side B's will be the same as fueling point #2.

To change the product arrow right or left, then press the <Enter> key.

Example #4: Non-Blending Dispensers – 4 Products Transversal Piping
The site has 4 products on each side of the dispenser unlead, midgrade, premium, and diesel products. The pump is pipe transveral for the products on each dispenser. The dispenser on side 1 (A) reads: Unlead, Midgrade, Premium, Diesel; side 2 (B) reads: Unlead, Midgrade, Premium, Diesel. With this set up the hose assignments will read:

1. Unld, Mid1, Prem, Diesl, None, None
2. Unld, Mid1, Prem, Diesl, None, None

In the above example all side A's and side B's will be the same.

To change the product arrow right or left, then press the <Enter> key.

Example #5: Non-Blending Dispensers – 1 Product
The site has 4 products, the unlead, midgrade, and premium products are on a 3-product dispenser and the Diesel is on a separate dispenser. For the unlead, midgrade, and premium products use the hose assignment examples above.

The diesel dispenser(s)' hose assignments will read:

1. Diesl, None, None, None, None, None
2. Diesl, None, None, None, None, None

To change the product arrow right or left, then press the <Enter> key.

Gilbarco Blending Dispenser Configuration

The following section includes detailed information to be used when programming the Ruby (Controller) in Fuel Manager. Each pump manufacturer as well as each model of dispenser will have specific settings.

The following programming is to be used only for Gilbarco blending dispensers. Gilbarco has fixed and variable blenders.

This section identifies the Tank Names, Product Configuration, Pump Attributes, and Hose Assignment configuration needed for the Gilbarco blending dispensers.

NOTE: The product configuration, pump attributes, and hose assignments will be different for variable blenders than for fixed.

NOTE: The following section relates to the VeriFone Ruby Fuel Manager programming.

Please be advised that the programming within this section may need to be modified based on various functionality and programming in the actual dispenser and/or fuel interface.

After programming the Ruby's Fuel Manager, you should always complete a full fuel initialization and check each dispenser (side A & B) to ensure the programming is accurate and all side are communicating correctly.

Tank Names

The Tank Name file identifies the underground tanks at the site. The site can have up to eight (8) underground tanks.

For the Gilbarco blending dispenser start with Tank01 and type over the tank name. Enter a name which will identify your first underground tank (i.e., Unlead, Midgr, Prem, Diesel, etc.). Continue to name each underground tank. Only type over the tank numbers that will be used at the site. Tank names can be up to six (6) characters in length.

NOTE: Unused tank numbers must remain as "tank05", "tank06", etc. DO NOT rename unused tanks as NONE, UNUSED, etc.

Example – The site has 3 underground tanks: Unlead, Premium, and Diesel. Your Tank Name File will read:

1. Unld
2. Prem
3. Diesel
4. Tank04
5. Tank05
6. Tank06
7. Tank07
8. Tank08

Product Configuration

The Product Configuration file identifies the products used at the site. The Ruby allows the site to have up to nine (9) products. This file links the appropriate tank (set up in the Tank Name file) to a specific product.

NOTE: When setting up this file NEVER TYPE OVER THE PRODUCT NAMES. All product names should be left as is.

For Gilbarco blending dispensers, the product names used at the site can be listed in any order in the Product Configuration File. However, if you are changing the order your MUST do the following:

- Arrow to the product name you need and press the <Select> key,
- Arrow to the position you need to move the product to, then press the <Select> key.

DO NOT TYPE OVER THE PRODUCT NAMES IN THE PRODUCT CONFIGURATION FILE.

Products not used at the site should be linked to the “NONE” tank.

Fixed and Variable Blenders:

A Fixed blender is defined as a dispenser programmed for blending at the manufacturer. An ASR can change the programming in the dispenser. However, the blend programming in the dispenser cannot be changed and will not be affected by the POS.

A Variable blender is also programmed at the manufacturer. An ASR can change the programming in the dispenser. However, the programming will be overrun by the blend programming in the POS. In order to comply with Weights and Measurers all new dispensers should be programmed both at the dispenser and on the POS and MUST match.

In the Product Configuration File, Variable blenders MUST be configured as blenders. For Fixed Blenders you may use the non-blending configuration.

A blended product basically consists of 2 products blended in order to produce another product. Of the 2 products used to make the blend, one of the products is considered the low feedstock, the other product is considered the high feedstock.

The low feedstock will have the lowest percentage of octane. The high feedstock will have the higher percentage of octane.

When programming your Product Configuration File for Gilbarco blenders use the following rules.

- The low feedstock product must be 100% from a pure product tank.
- The high feedstock product must be 100% from a pure product tank.
- The low and high feedstock cannot come from the same tank.
- Blended products must be produced from the low and high feedstock.
- Products can be listed in any order in the Product Configuration File.
- If changing the order in the Product Configuration File, select and move the product – DO NOT TYPE OVER THE PRODUCT NAME.

In the following example your site has 3 underground tanks and four products. We used Product 1 is the low feedstock, Product 2 is the high feedstock, Product 3 is the blended product (midgrade), and Product 4 is the Diesel product. All other products listed are actually not used at the site.

The site is blending unlead and premium to produce the midgrade product. The site is blending midgrade with 60% unlead and 40% premium.

The Product Configuration File will read:

1. Unld	T1 Unld	PCT 100%	
2. Prem	T1 Prem	PCT 100%	
3. Mid1	T1 Unld	PCT 60%	T2 Prem
4. Diesl	T1 Diesel	PCT 100%	
5. Mid2	T1 None	PCT 100%	
6. Mid3	T1 None	PCT 100%	
7. Prem2	T1 None	PCT 100%	
8. Kerns	T1 None	PCT 100%	
9. Diesl2	T1 None	PCT 100%	

Pump Attributes

The Pump Attributes file is in the Pump Configuration file. Specific parameters for each fueling point can be set within the Pump Attributes file.

In Pump Attributes, the parameter identifying the blend type must be selected. Use the <Select> key to scroll through the blend type options. Press the <Enter> key when you have selected the correct blend type.

Hose Assignments

The Hose Assignments file is in the Pump Configuration file. Hose Assignments identify what product is linked to what hose at the dispenser. The Ruby defines six (6) hoses on each side of the dispenser.

The Hose Assignments need to be set up based on how many products the dispenser will be using for each side on the dispenser. This file also needs to be set up based on how the actual piping for each product has been installed by the pump installer.

Use the following chart to configure the hose assignments for Gilbarco blending dispensers.

Type of Blender	Hose 1	Hose 2	Hose 3	Hose 4	Hose 5	Hose 6
Fixed 3-Product	Low or High Feed	Blend	Low or High Feed	None	None	None
Fixed 3/1-Product	Low or High Feed	Blend	Low or High Feed	None	None	Non-Blend
Variable 3-Product --- or --- 3-Product (1-3-5)	Low, High, or Blend Low, High, or Blend	Low, High, or Blend None	Low, High, or Blend Low, High, or Blend	None None	None Low, High, or Blend	None None
Variable 5-Product	Low, High, or Blend	Low, High, or Blend	Low, High, or Blend	Low, High, or Blend	Low, High, or Blend	None
Variable 5/1-Product	Low, High, or Blend	Low, High, or Blend	Low, High, or Blend	Low, High, or Blend	Low, High, or Blend	Low, High, or Blend

Schlumberger Fuel and DCR Interfacing

Schlumberger Fuel Interfacing Requirements

Schlumberger Technologies, Inc. was purchased by Tokheim in 1999, however all Schlumberger pump models (i.e., 4000, Centurion, etc.) prior to the Tokheim purchase are still considered Schlumberger in the Ruby and in GemStall.

The following requirements must be met prior to installation:

- The S/TAM must be installed at the site.
- A Schlumberger Junction Box must be purchased to allow communication to the S/TAM interface box.
- Before installation of the Ruby please refer to the specific software application's release notes. The release notes indicate the most recent firmware version needed in the S/TAM. Release notes can be found on VeriFone's Bulletin Board Service.
- The S/TAM must be configured to allow the Ruby system to communicate with the existing dispensers. This includes setting the jumpers correctly. Detailed jumper settings can be found on the following pages. All jumper settings should be set by the pump installer. The Ruby communicates with the S/TAM at 4800 baud rate.
- The S/TAM, the Ruby system, and all other peripheral equipment must be installed using dedicated electrical circuits supplied by the same electrical phase. Detailed electrical requirements can be found in the Site Survey. All electrical requirements must be met prior to the Ruby installation.

When ordering equipment or parts from Tokheim, specify on the order form the model of the Schlumberger dispenser and indicate the equipment will be interfaced with a VeriFone Ruby system.

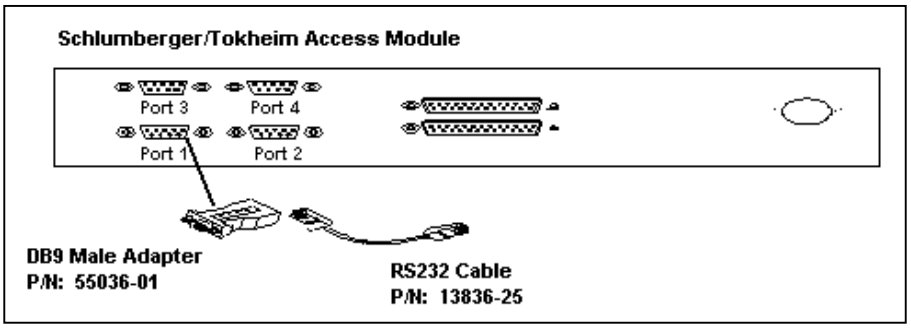
Schlumberger S/TAM (Schlumberger or Tokheim Access Module)

Parts Needed For Fuel Communications:

- P/N 13836-25 – RS232 Cable
- P/N 55036-01– Adapter, SAM

The DB9 male adapter (P/N 55036-01) connects to Port 1 on the S/TAM. After the connection is made the adapter should be secured by tightening the screws.

The RS232 cable is then connected from the adapter to the appropriate port assigned on the Ruby (Controller).



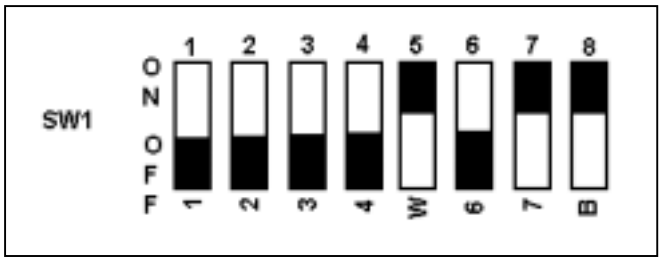
NOTE: The DB9 male adapter is not a null modem. Do not use a "null modem" adapter in place of the Schlumberger adapter as this may result in loss of fuel communications.

The DB9 male adapter required for interfacing to the S/TAM is NOT included in the VeriFone Fuel Communications Kit. This DB9 male adapter must be ordered separately if the original system was not ordered as a Schlumberger system.

S/TAM Dip Switch Settings

Switch settings on the S/TAM are only read during resets, warm starts, and cold starts.

Setting SW1, located in A1 on the S/TAM main board, configures the fuel interface device to station specific reset requirements.



NOTE: The above settings work for all Major Oils EXCEPT Exxon. For Exxon VeriFone software Switch #2 should be ON.

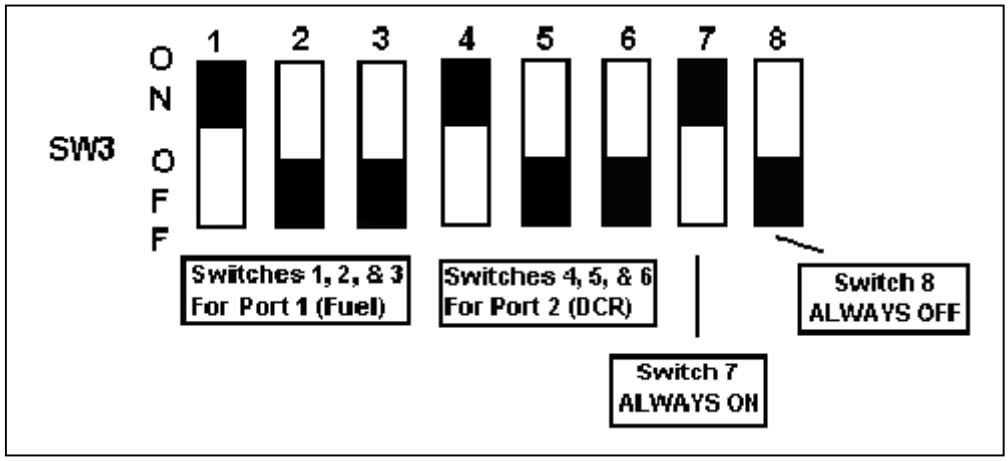
Setting SW3, located in C5 on the S/TAM main board, configures the fuel interface device for communication with the Ruby.

Switches 1, 2, & 3 determine the baud rate for fuel communications. For the S/TAM to communicate with the Ruby the baud rate must be set to 4800. Switches 1, 2, & 3 are configured ON, OFF, OFF for a baud rate of 4800.

Switches 4, 5, & 6 determine the baud rate for the DCR's. For the S/TAM to communicate with the Ruby the baud rate must be set to 4800. Switches 4, 5, & 6 are ON, OFF, OFF for a baud rate of 4800.

Switch 7 is always on, this enables the S/TAM to communicate with the Schlumberger dispensers.

Switch 8 is always off, this is for the debug breakpoint.



Schlumberger DCR Interface Requirements

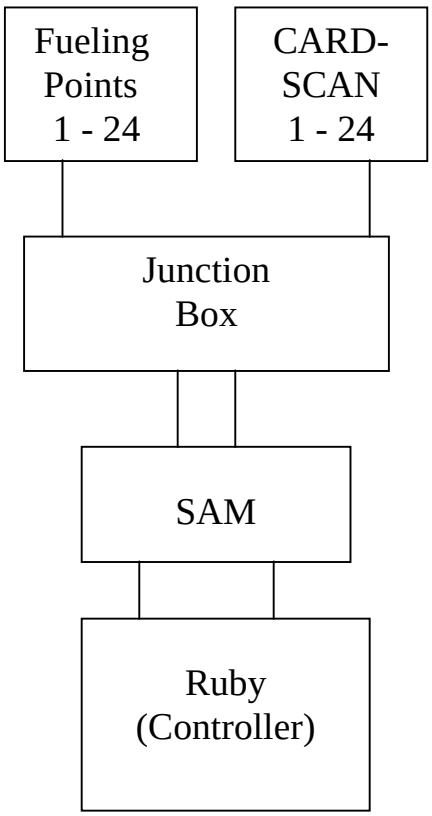
The Schlumberger DCR interface communication is referred to as CARDSCAN.

The following Ruby to CARDSCAN communication requirements must be met prior to installation:

- The CARDSCAN communicates through the S/TAM. Therefore the S/TAM, as well as the junction box, must be installed prior to the installation. Please refer to the Schlumberger fuel interface section in this chapter for requirement details.

- The Ruby software requires Schlumberger CARDSCAN firmware. Before installation of the Ruby please refer to the specific software application's release notes. The release notes indicate the most recent firmware version required. Release notes can be found on VeriFone's Bulletin Board Service.

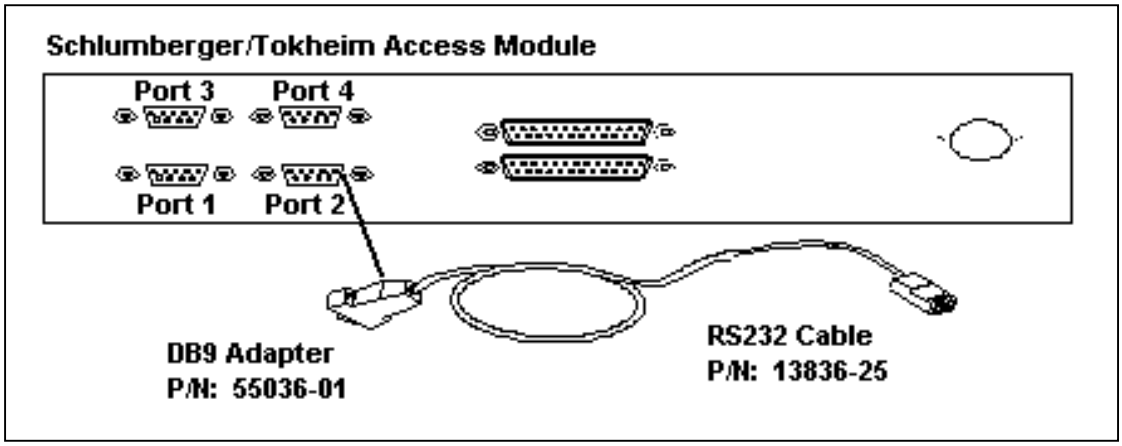
- The S/TAM must be configured to allow the Ruby system to communicate with the existing dispensers. This includes setting the jumpers correctly. Detailed jumper settings can be found on the following pages. All jumper settings should be set by the pump installer. The Ruby communicates with the S/TAM at 4800 baud rate.



Schlumberger DCR Cabling

The following parts are needed to establish communication between the Schlumberger CARDSCAN and the Ruby (Controller).

- RS232 Cable: P/N 13836-25
- DB9 Adapter: P/N 55036-01



Connect the RS232 cable (P/N 13836-25) to the appropriate comport on the Ruby (Controller) and to the male DB9 Adapter (P/N 55036-01). The 9-pin adapter connects to Port 2 on the S/TAM. After the connection is made the adapter should be secured by tightening the screws.

S/TAM Dip Switch Settings

Switch settings on the S/TAM are only read during resets, warm starts, and cold starts.

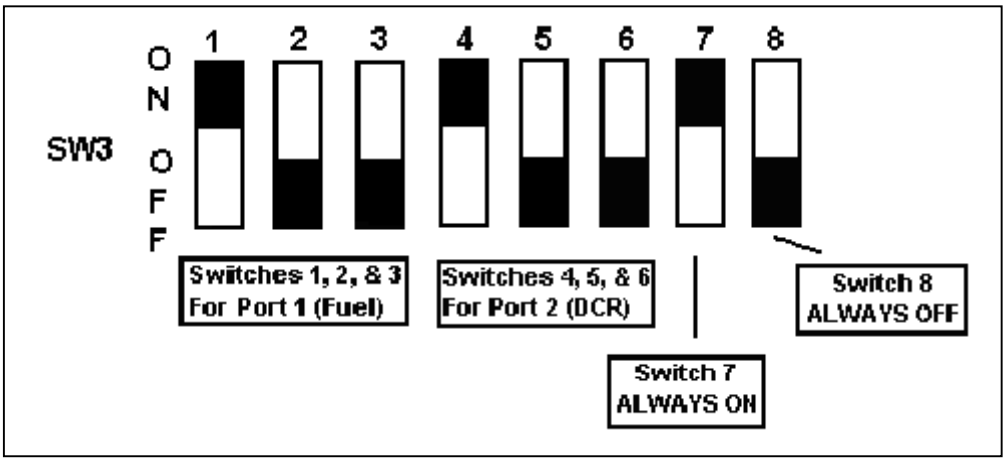
Setting SW3, located in C5 on the S/TAM main board, configures the fuel and CARDSCAN for communication with the Ruby.

Switches 1, 2, & 3 determine the baud rate for fuel communications. For the S/TAM to communicate with the Ruby the baud rate must be set to 4800. Switches 1, 2, & 3 are configured ON, OFF, OFF for a baud rate of 4800.

Switches 4, 5, & 6 determine the baud rate for the DCR's (CARDSCAN). For the S/TAM to communicate with the Ruby the baud rate must be set to 4800. Switches 4, 5, & 6 are ON, OFF, OFF for a baud rate of 4800.

Switch 7 is always on, this enables the S/TAM to communicate with the Schlumberger dispensers.

Switch 8 is always off, this is for the debug breakpoint.



Schlumberger Non-blending Dispenser Configuration

The following section includes detailed information to be used when programming the Ruby (Controller) in Fuel Manager. Each pump manufacturer as well as each model of dispenser will have specific settings.

The following programming is to be used only for Schlumberger non-blending dispensers.

This section identifies the Tank Names, Product Configuration, Pump Attributes, and Hose Assignment configuration needed for the Schlumberger non-blending dispenser.

NOTE: The following section relates to the VeriFone Ruby Fuel Manager programming.

Please be advised that the programming within this section may need to be modified based on various functionality and programming in the actual dispenser and/or fuel interface.

After programming the Ruby's Fuel Manager, you should always complete a full fuel initialization and check each dispenser (side A & B) to ensure the programming is accurate and all side are communicating correctly.

Tank Names

The Tank Name file identifies the underground tanks at the site. The site can have up to eight (8) underground tanks.

For the Schlumberger non-blending dispenser start with Tank01 and type over the tank . Enter a name which will identify your first underground tank (i.e., Unlead, Midgr, Prem, Diesel, etc.). Continue to name each underground tank. Only type over the tank numbers that will be used at the site. Tank names can be up to six (6) characters in length.

NOTE: Unused tank numbers must remain as "tank05", "tank06", etc. DO NOT rename unused tanks as NONE, UNUSED, etc.

Example – The site has 4 underground tanks: Unlead, Midgrade, Premium, and Diesel. Your Tank Name File will read:

1. Unld
2. Midgr
3. Prem
4. Diesel
5. Tank05
6. Tank06
7. Tank07
8. Tank08

Product Configuration

The Product Configuration file identifies the products used at the site. The Ruby allows a site to have up to nine (9) products. This file links the appropriate tank (set up in the Tank Name file) to a specific product.

NOTE: When setting up this file NEVER TYPE OVER THE PRODUCT NAMES. All product names should be left as is.

For Schlumberger non-blending dispensers, the product names used at the site do not need to be listed in a specific order. However, if you change the order of the product names do the following:

- Arrow to the product name you need and press the <Select> key,
- Arrow to the position you need to move the product to, then press the <Select> key.

DO NOT TYPE OVER THE PRODUCT NAMES IN THE PRODUCT CONFIGURATION FILE.

Products not used at the site should be linked to the "NONE" tank.

Because you are using Schlumberger non-blending dispensers, all tanks linked to each product should be 100%.

- Products 1 – 9: Can be listed in any order.
- Products 1 – 9: Must be set to 100%
- Products not being used at the site should be linked to the "NONE" tank.

Continuing with the example from the Tank Name section, your site has 4 underground tanks; therefore 4 products. We programmed the Product Configuration with the first 4 products used at the site.

The Product Configuration file will read:

1. Unld	T1 Unld	PCT 100%
2. Midl	T1 Midgr	PCT 100%
3. Prem	T1 Prem	PCT 100%
4. Diesl	T1 Diesel	PCT 100%
5. Mid2	T1 None	PCT 100%
6. Mid3	T1 None	PCT 100%
7. Prem2	T1 None	PCT 100%
8. Kerns	T1 None	PCT 100%
9. Diesl2	T1 None	PCT 100%

To link a tank name to a product have the cursor on the tank field and right or left arrow until the tank appears. Then press the <Enter> key.

Pump Attributes

The Pump Attributes file is in the Pump Configuration file. Specific parameters for each fueling point can be set within the Pump Attributes file.

Since you are using Schlumberger non-blending dispensers, the parameter identifying the blend type should be set to NONE.

Hose Assignments

The Hose Assignments file is in the Pump Configuration file. Hose Assignments identify what product or grade of fuel is linked to what hose at the dispenser. The Ruby defines six (6) hoses on each side of the dispenser.

The Hose Assignments need to be set up based on how many products the dispenser will be using for each side. This file also needs to be set up based on how the actual piping for each product has been installed by the pump installer.

Example #1: Non-Blending Dispensers - 3 Products Piped Straight Across
The site has 3 products on each side of the dispenser for the unlead, midgrade, and premium products. The pump is piped with each product straight across each side of the dispenser. The dispenser on side 1 (A) reads: Unlead, Midgrade, Premium; side 2 (B) reads: Premium, Midgrade, Unlead. With this set up the hose assignments will read:

1. Unld, Mid1, Prem, None, None, None
2. Prem, Mid1, Unld, None, None, None

In the above example all side A's will be the same as fueling point #1 and all side B's will be the same as fueling point #2.

To change the product arrow right or left then press the <Enter> key.

Example #2: Non-Blending Dispensers – 3 Products Transversal Piping
The site has 3 products on each side of the dispenser for the unlead, midgrade, and premium products. The pump has transversal piping for each product on each dispenser. The dispenser on side 1 (A) reads: Unlead, Midgrade, Premium; side 2 (B) reads: Unlead, Midgrade, Premium. With this set up the hose assignments will read:

1. Unld, Mid1, Prem, None, None, None
2. Unld, Mid1, Prem, None, None, None

In the above example all side A's and side B's will be the same.

To change the product arrow right or left, then press the <Enter> key.

Example #3: Non-Blending Dispensers – 4 Products Piped Straight Across
The site has 4 products on each side of the dispenser for the unlead, midgrade, premium, and diesel products. The pump is piped with each product straight across each side of the dispenser. The dispenser on side 1 (A) reads: Unlead, Midgrade, Premium, Diesel; side 2 (B) reads: Diesel, Premium, Midgrade, Unlead. With this set up the hose assignments will read:

1. Unld, Mid1, Prem, Diesl, None, None
2. Diesl, Prem, Mid1, Unld, None, None

In the above example all side A's will be the same as fueling point #1 and all side B's will be the same as fueling point #2.

To change the product arrow right or left, then press the <Enter> key.

Example #4: Non-Blending Dispensers – 4 Products Transversal Piping
The site has 4 products on each side of the dispenser unlead, midgrade, premium, and diesel products. The pump has transversal piping for each product on each dispenser. The dispenser on side 1 (A) reads: Unlead, Midgrade, Premium, Diesel; side 2 (B) reads: Unlead, Midgrade, Premium, Diesel. With this set up the hose assignments will read:

1. Unld, Mid1, Prem, Diesl, None, None
2. Unld, Mid1, Prem, Diesl, None, None

In the above example all side A's and side B's will be the same.

To change the product arrow right or left, then press the <Enter> key.

Example #5: Non-Blending Dispensers – 1 Product
The site has 4 products, the unlead, midgrade, and premium products are on a 3-product dispenser and the Diesel is on a separate dispenser. For the unlead, midgrade, and premium products use the hose assignment examples above.

The diesel dispenser(s)' hose assignments will read:

1. Diesl, None, None, None, None, None
2. Diesl, None, None, None, None, None

To change the product arrow right or left, then press the <Enter> key.

Schlumberger Blending Dispenser Configuration

The following section includes detailed information to be used when programming the Ruby (Controller) in Fuel Manager. Each pump manufacturer as well as each model of dispenser will have specific settings.

The following programming is to be used only for Schlumberger blending dispensers.

This section identifies the Tank Names, Product Configuration, Pump Attributes, and Hose Assignment configuration needed for the Schlumberger blending dispensers.

NOTE: The following section relates to the VeriFone Ruby Fuel Manager programming.

Please be advised that the programming within this section may need to be modified based on various functionality and programming in the actual dispenser and/or fuel interface.

After programming the Ruby's Fuel Manager, you should always complete a full fuel initialization and check each dispenser (side A & B) to ensure the programming is accurate and all side are communication correctly.

Tank Names

The Tank Name file identifies the underground tanks at the site. The site can have up to eight (8) underground tanks.

For the Schlumberger blending dispenser start with Tank01 and type over the tank name. Enter a name, which will identify your first underground tank (i.e., Unlead, Midgr, Prem, Diesel, etc.). Continue to name each underground tank. Only type over the tank numbers that will be used at the site. Tank names can be up to six (6) characters in length.

NOTE: Unused tank numbers must remain as "tank05", "tank06", etc. DO NOT rename unused tanks as NONE, UNUSED, etc.

Example – The site has 3 underground tanks: Unlead, Premium, and Diesel. Your Tank Name file will read:

1. Unld
2. Prem
3. Diesel
4. Tank04
5. Tank05
6. Tank06
7. Tank07
8. Tank08

Product Configuration

The Product Configuration file identifies the products used at the site. The Ruby allows the site to have up to nine (9) products. This file links the appropriate tank (set up in the Tank Name file) to a specific product.

NOTE: When setting up this file NEVER TYPE OVER THE PRODUCT NAMES. All product names should be left as is.

For Schlumberger blending dispensers, the product names used at the site do not need to be listed in a specific order. However, to change the order of the product names, do the following:

- Arrow to the product name you need and press the <Select> key,
- Arrow to the position you need to move the product to, then press the <Select> key.

DO NOT TYPE OVER THE PRODUCT NAMES IN THE PRODUCT CONFIGURATION FILE.

Products not used at the site should be linked to the "NONE" tank.

Continuing with the example from the Tank Name section, your site has 3 underground tanks, and will have 4 products. The site is blending unlead and premium to produce the midgrade product. The site is blending midgrade with 60% unlead and 40% premium.

The Product Configuration File will read:

1. Unld	T1 Unld	PCT 100%	
2. Mid1	T1 Unld	PCT 60%	T2 Prem
3. Prem	T1 Prem	PCT 100%	
4. Diesl	T1 Diesel	PCT 100%	
5. Mid2	T1 None	PCT 100%	
6. Mid3	T1 None	PCT 100%	
7. Prem2	T1 None	PCT 100%	
8. Kerns	T1 None	PCT 100%	
9. Diesl2	T1 None	PCT 100%	

Pump Attributes

The Pump Attributes file is in the Pump Configuration file. There are several parameters for each fueling point can be set within the Pump Attribute file.

In Pump Attributes there is a parameter identifying the blend type. For Schlumberger blending dispensers you must select NONE.

Hose Assignments

The Hose Assignments file is in the Pump Configuration file. Hose Assignments identify what product or grade of fuel is linked to what hose at the dispenser. The Ruby defines six (6) hoses on each side of the dispenser.

The Hose Assignments need to be set up based on how many products the dispenser will be using for each side on the dispenser. This file also needs to be set up based on how the actual piping for each product has been installed by the pump installer.

Use the following chart to configure the hose assignments for Schlumberger blending dispensers. All Schlumberger blending dispensers are set up the same.

NOTE: The number under each hose refers to the product listed in the Product Configuration file. If your Product Configuration File is listed differently than above, then the chart below will also be different.

Dispenser Type	Hose 1	Hose 2	Hose 3	Hose 4	Hose 5	Hose 6
3-Product	1, 2, or 3	1, 2, or 3	1, 2, or 3	None	None	None
3/1-Product	1 or 4	1, 2, or 3	1, 2, or 3	1 or 4	None	None

Tokheim Fuel and DCR Interfacing

Tokheim Fuel Interface Requirements

The following requirements must be met prior to installation.

- The Tokheim dispenser interface must be purchased to allow the Ruby to communicate with the existing dispensers. This interfaces is the Tokheim Dedicated Hose Controller (DHC), Model 83, (Tokheim P/N 83). The standard Model 83 is designed to work with the Ruby. This is the standard DHC, with no suffix attached to the model number.

- Standard Model 83 DHCs with a date code earlier than 094 do not have correct software to operate the Ruby system. Upgrades to these DHCs can be accomplished by ordering the Tokheim part number 319022-1 chip kit. Instructions are included with the kit.

- Before installation of the Ruby please refer to the specific software application's release notes. The release notes indicate the most recent firmware version required. Release notes can be found on VeriFone's Bulletin Board Service.

- When the DHC is shipped, the cover MUST be removed and the battery connected to J-3 of the power supply board. When the DHC is powered up, the yellow diagnostic light should flash 5 times.

- The 67 or 98-Box is the DHC's dispenser interface box. Either the 67 or 98-box must be installed and connected to the DHC prior to installation. J-8 (on the DHC) is the connection for this interface box, which is connected (to the DHC) using the standard Tokheim Model 180 cable.

- The Tokheim DHC, the Ruby system, and all other peripheral equipment must be installed using dedicated electrical circuits supplied by the same electrical phase. Detailed electrical requirements can be found in the Site Survey. All electrical requirements must be met prior to the Ruby installation.

- The DHC communicates with a baud rate of 9600. The baud rate setting is set at J-4. When installing Ruby software ensure a 9600 baud rate in GemStall has been selected.

When ordering equipment or parts from Tokheim, specify on the order that the equipment or parts will be interfaced with a VeriFone Ruby system.

The following models of DHCs will not work with the Ruby system. However, each can be converted to a standard Model 83.

Models 83K – TX, 83K-AM, and 83A-CH:
These models must be upgraded with a complete application board Tokheim part number 230498-2. This application board will have EC.06.13.00 software installed.

If you are installing an application board from your stock, it must have EC.06.013.00 software or higher. It is imperative, upon installation of the upgrade application board into the unit, that chips U-4 and U-12 be removed from the DHC board. Failure to remove these chips will cause the DHC not to function correctly with the Ruby system.

Before installation of the Ruby please refer to the specific software application's release notes. The release notes indicate the most recent firmware version required. Release notes can be found on VeriFone's Bulletin Board Service.

Models 83A and 83AW:
These units incorporated the use of an O.C.I.A. translator box. This type of DHC must be modified by removing the translator box.

Modes 83A and 83AW must be upgraded with a complete application board Tokheim part number 230498-2. This application board will have EC.06.13.00 software installed.

If you are installing an application board from your stock, it must have EC.06.013.00 software or higher. It is imperative, upon installation of the upgrade application board into the unit, that chips U-4 and U-12 be removed from the DHC board. Failure to remove these chips will cause the DHC not to function correctly with the Ruby system.

Before installation of the Ruby please refer to the specific software application's release notes. The release notes indicate the most recent firmware version required. Release notes can be found on VeriFone's Bulletin Board Service.

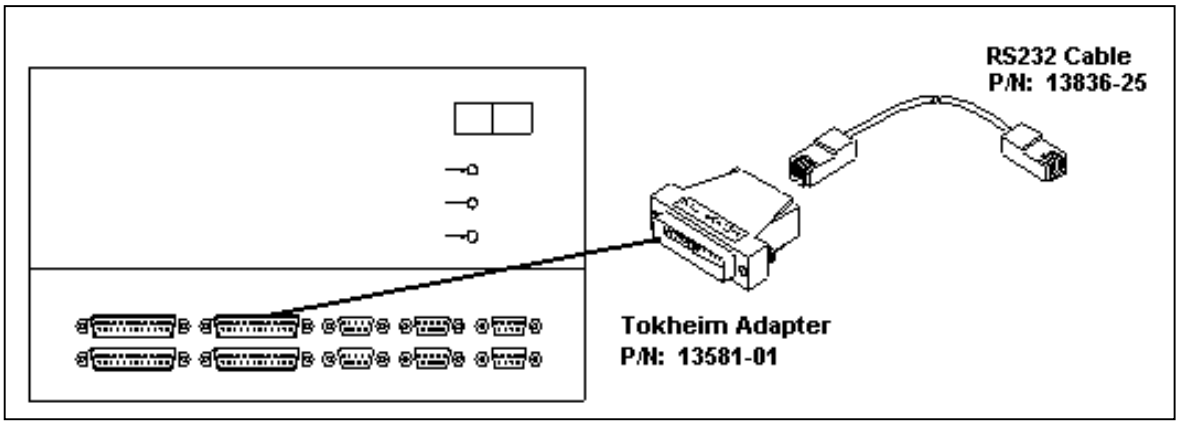
Tokheim Dedicated Hose Controller (DHC)

Parts Needed For Fuel Communications:

- P/N 13836-25 – RS232 Cable
- P/N 13581-01 – Adapter, DB25M Null Modem

The Tokheim adapter (P/N 13581-01) connects to the DHC J4 connector. After the connection is made the adapter should be secured by tightening the screws.

The RS232 cable is then connected from the adapter to the appropriate port assigned on the Ruby (Controller).



A 67-Box is connected to the DHC. The dispensers send fueling point information to the 67-Box. The 67-Box translates the fueling point information to the DHC. The DHC converts the RS485 to RS232 for input to the Ruby.

Tokheim DCR Interface Requirements

The Tokheim dispenser card reader is called a Dispenser Payment Terminal (DPT).

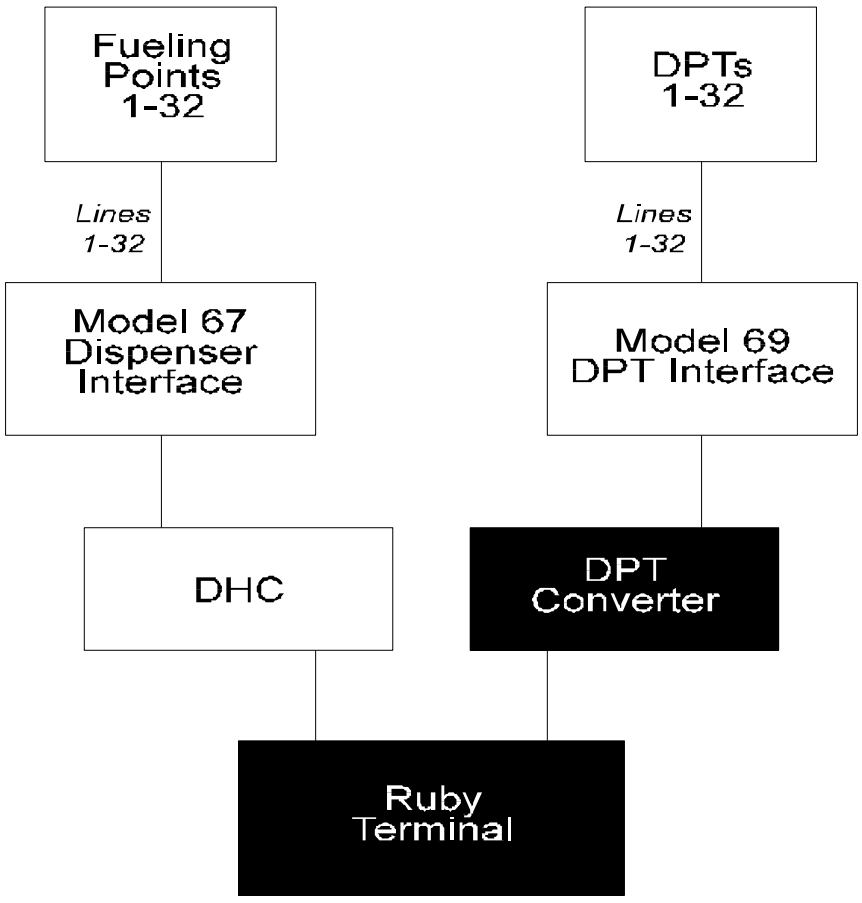
The following Ruby interface communication requirements for the Tokheim DPT must be met prior to installation:

- The DPT boards in the dispensers must be configured for 9600 baud rate.
- Each DPT address (position) must match the fueling point address (position).
- Each DPT must be configured for generic communications and have generic firmware installed. The DPT firmware version depends on the features being used at the dispenser. Before installation of the Ruby please refer to the specific software application's release notes. The release notes indicate the most recent firmware version required. Release notes can be found on VeriFone's Bulletin Board Service.
- The Tokheim 69-Box must be installed and the DPT communication loops must be connected.

DPT Communication

The DPT in each dispenser sends credit/debit information to the 69-Box via TWI. The 69-Box translates DPT information from the TWI per dispenser to a RS485 line. The DCR Converter (B & B connector) converts the RS485 to RS232 for input to the Ruby.

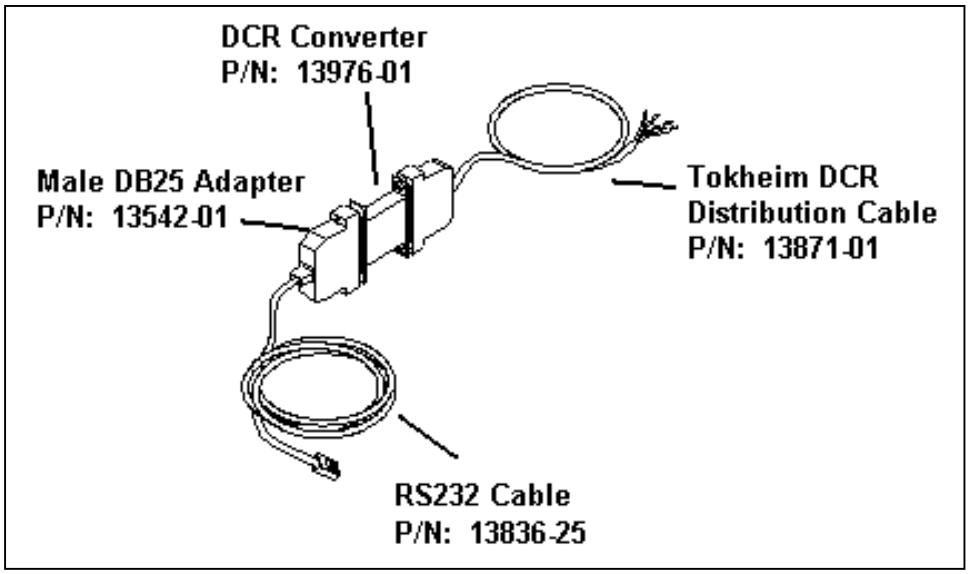
System Component Suppliers		
Fueling Points	Tokheim	May exist at site
DPTs	Tokheim	Must be purchased
Model 67 Dispenser Interface	Tokheim	May exist at site
Model 69 DPT Interface	Tokheim	Must be purchased
DHC	Tokheim	May exist at site
DPT Converter	VeriFone	Provided with DCR configuration
Ruby Terminal	VeriFone	Provided with DCR configuration



Tokheim DCR Cabling

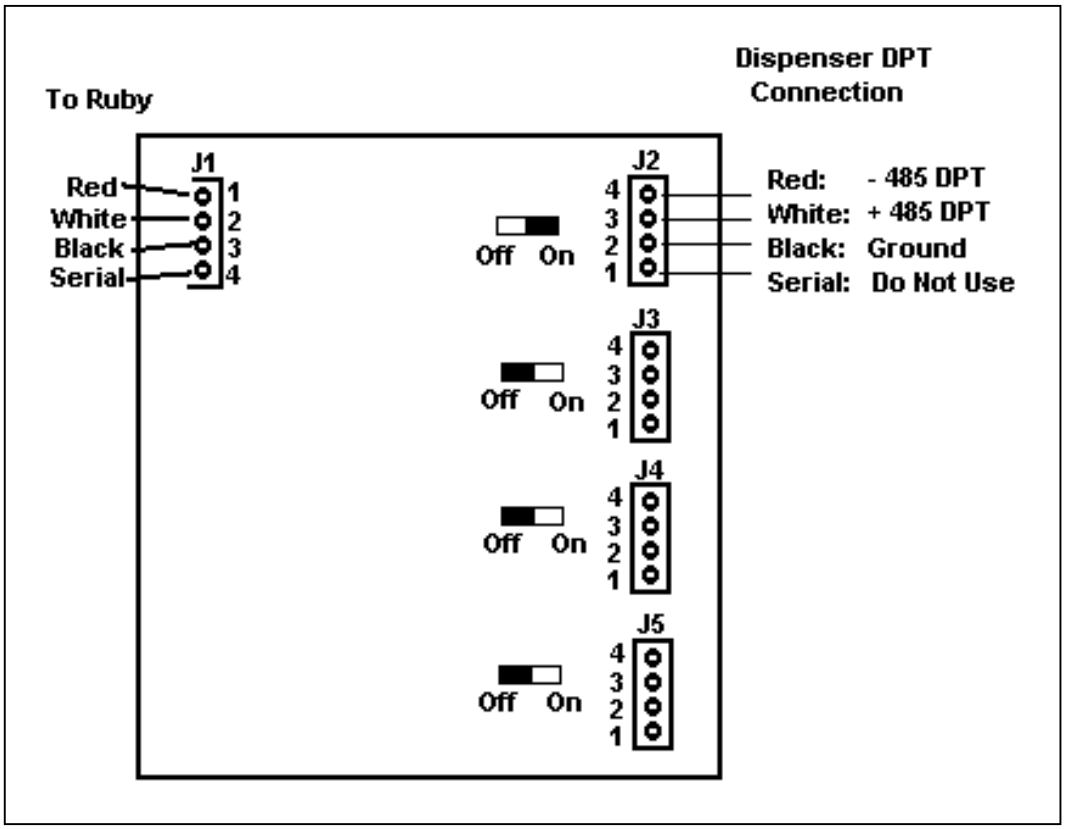
The following parts are needed to establish communication between the Tokheim DPT and the Ruby (Controller):

- RS232 Cable: P/N 13836-25
- Male DB25 Adapter: P/N 13542-01
- DCR Converter: P/N 13976-01
- Tokheim DCR Distribution Cable: P/N 13871-01



The Tokheim DCR Distribution Cable is connected to the DCR Converter (B & B Connection). The DCR Converter is connected to the 25-pin male adapter. The male adapter is connected to an RS232 cable. The RS232 cable is connected to the appropriate comport on the Ruby (Controller).

The DCR Converter, also referred to as a B & B Connection, converts an RS485 communication to RS232. Ensure the correct dip-switch is set on the converter.



Connect the red, white, and black leads of the Tokheim DPT Interface board in the 69-Box. Do not use the shield lead. Tokheim recommends putting the DCR Converter (B & B Connector) inside the 69-box to protect it from tampering.

Tokheim DPT Jumper Settings

When installing the Ruby system with Tokheim dispensers it is important to ensure the jumper and dip switch settings are correct for the dispenser DPT. Improper setting of the dip switches will result in malfunctioning DPTs.

The following are the correct switch and jumper settings.

TCSA UDC Switches:
- Switch 1 - ON
- Switch 2 - ON
- Switch 3 - ON
- Switch 4 - ON
- Switch 5 - ON
- Switch 6 - ON
- Switch 7 - OFF
- Switch 8 - OFF

TCSA DPT Switches SW1
- Switch 1 - ON
- Switch 2 - if DPT is on A side of dispenser: ON, B side: OFF
- Switch 3 - refer to TCSA DPT manual
- Switch 4 - refer to TCSA DPT manual
- Switch 5 - refer to TCSA DPT manual
- Switch 6 - refer to TCSA DPT manual
- Switch 7 - refer to TCSA DPT manual
- Switch 8 - OFF

TCSA UDC Jumpers
- JU1 - 1 & 2
- JU2 - 2 & 3
- JU3 - 1 & 2
- JU4 - 1 & 2
- JU5 - 1 & 2
- JU6 - OPEN

Premier UDC Switches
- Switch 1 - ON
- Switch 2 - ON
- Switch 3 - ON
- Switch 4 - ON
- Switch 5 - ON
- Switch 6 - ON
- Switch 7 - OFF
- Switch 8 - OFF

Premier DPT Switches SW1
- Switch 1 - ON
- Switch 2 - if DPT is on A side of dispenser: ON, B side: OFF
- Switch 3 - refer to Premier DPT manual
- Switch 4 - refer to Premier DPT manual
- Switch 5 - refer to Premier DPT manual
- Switch 6 - refer to Premier DPT manual
- Switch 7 - refer to Premier DPT manual
- Switch 8 - OFF

Premier UDC Jumpers
- JU5 - 1 & 2
- JU6 - OPEN
- JU7 - OPEN
- JU8 - 2 & 3
- JU9 - 1 & 2
- JU10 - 1 & 2
- JU11 - 1 & 2
- JU12 – OPEN

Tokheim Non-blending Dispenser Configuration

The following section includes detailed information to be used when programming the Ruby (Controller) in Fuel Manager. Each pump manufacturer as well as each model of dispenser will have specific settings.

The following programming is to be used only for Tokheim non-blending dispensers.

This section identifies the Tank Names, Product Configuration, Pump Attributes, and Hose Assignment configuration needed for the Tokheim non-blending dispenser.

NOTE: The following section relates to the VeriFone Ruby Fuel Manager programming.

Please be advised that the programming within this section may need to be modified based on various functionality and programming in the actual dispenser and/or fuel interface. After programming the Ruby's Fuel Manager, you should always complete a full fuel initialization and check each dispenser (side A & B) to ensure the programming is accurate and all side are communicating correctly.

Tank Names

The Tank Name file identifies the underground tanks at the site. The site can have up to eight (8) underground tanks.

For the Tokheim non-blending dispenser start with Tank01 and type over the tank name. Enter a name that will identify your first underground tank (i.e., Unlead, Midgr, Prem, Diesel, etc.). Continue to name each underground tank. Only type over the tank numbers that will be used at the site. Tank names can be up to six (6) characters in length.

NOTE: Unused tank numbers must remain as "tank05", "tank06", etc. DO NOT rename unused tanks as NONE, UNUSED, etc.

Example – The site has 4 underground tanks: Unlead, Midgrade, Premium, and Diesel. Your Tank Name File will read:

1. Unld
2. Midgr
3. Prem
4. Diesel
5. Tank05
6. Tank06
7. Tank07
8. Tank08

Product Configuration

The Product Configuration file identifies the products used at the site. The Ruby allows a site to have up to nine (9) products. This file links the appropriate tank (set up in the Tank Name file) to a specific product.

NOTE: When setting up this file NEVER TYPE OVER THE PRODUCT NAMES. All product names should be left as is.

For Tokheim non-blending dispensers, the product names used at the site do not need to be listed in a specific order. However, to change the order of the product names do the following:

- Arrow to the product name you need and press the <Select> key,
- Arrow to the position you need to move the product to, then press the <Select> key.

DO NOT TYPE OVER THE PRODUCT NAMES IN THE PRODUCT CONFIGURATION FILE.

Products not used at the site should be linked to the "NONE" tank.

Because you are using Tokheim non-blending dispensers, all tanks linked to each product should be 100%.

- Products 1 – 9: Can be listed in any order.
- Products 1 – 9: Must be set to 100%
- Products not being used at the site should be linked to the "NONE" tank.

Continuing with the example from the Tank Name section, your site has 4 underground tanks; therefore 4 products. We programmed the Product Configuration with the first 4 products used at the site.

The Product Configuration File will read:

1. Unld	T1 Unld	PCT 100%
2. Mid1	T1 Midgr	PCT 100%
3. Prem	T1 Prem	PCT 100%
4. Diesl	T1 Diesel	PCT 100%
5. Mid2	T1 None	PCT 100%
6. Mid3	T1 None	PCT 100%
7. Prem2	T1 None	PCT 100%
8. Kerns	T1 None	PCT 100%
9. Diesl2	T1 None	PCT 100%

To link a tank name to a product have the cursor on the tank field and right or left arrow until the tank appears. Then press the <Enter> key.

Pump Attributes

The Pump Attributes file is in the Pump Configuration file. Specific parameters for each fueling point can be set within the Pump Attributes file.

Since you are using Tokheim non-blending dispensers, the parameter identifying the blend type should be set to NONE.

Hose Assignments

The Hose Assignments file is in the Pump Configuration file. Hose Assignments identify what product or grade of fuel is linked to what hose at the dispenser. The Ruby defines six (6) hoses on each side of the dispenser.

The Hose Assignments need to be set up based on how many products the dispenser will be using for each side. This file also needs to be set up based on how the actual piping for each product has been installed by the pump installer.

Example #1: Non-Blending Dispensers - 3 Products Piped Straight Across
The site has 3 products on each side of the dispenser for the unlead, midgrade, and premium products. The pump is piped with each product straight across each side of the dispenser. The dispenser on side 1 (A) reads: Unlead, Midgrade, Premium; side 2 (B) reads: Premium, Midgrade, Unlead. With this set up the hose assignments will read:

1. Unld, Mid1, Prem, None, None, None
2. Prem, Mid1, Unld, None, None, None

In the above example all side A's will be the same as fueling point #1 and all side B's will be the same as fueling point #2.

To change the product arrow right or left, then press the <Enter> key.

Example #2: Non-Blending Dispensers – 3 Products Transversal Piping
The site has 3 products on each side of the dispenser for the unlead, midgrade, and premium products. The pump has transversal piping for each product on each dispenser. The dispenser on side 1 (A) reads: Unlead, Midgrade, Premium; side 2 (B) reads: Unlead, Midgrade, Premium. With this set up the hose assignments will read:

1. Unld, Mid1, Prem, None, None, None
2. Unld, Mid1, Prem, None, None, None

In the above example all side A's and side B's will be the same.

To change the product arrow right or left, then press the <Enter> key

Example #3: Non-Blending Dispensers – 4 Products Piped Straight Across
The site has 4 products on each side of the dispenser for the unlead, midgrade, premium, and diesel products. The pump is piped with each product straight across each side of the dispenser. The dispenser on side 1 (A) reads: Unlead, Midgrade, Premium, Diesel; side 2 (B) reads: Diesel, Premium, Midgrade, Unlead. With this set up the hose assignments will read:

1. Unld, Mid1, Prem, Diesl, None, None
2. Diesl, Prem, Mid1, Unld, None, None

In the above example all side A's will be the same as fueling point #1 and all side B's will be the same as fueling point #2.

To change the product arrow right or left, then press the <Enter> key

Example #4: Non-Blending Dispensers – 4 Products Transversal Piping
The site has 4 products on each side of the dispenser unlead, midgrade, premium, and diesel products. The pump has transversal piping for the products on each dispenser. The dispenser on side 1 (A) reads: Unlead, Midgrade, Premium, Diesel; side 2 (B) reads: Unlead, Midgrade, Premium, Diesel. With this set up the hose assignments will read:

1. Unld, Mid1, Prem, Diesl, None, None
2. Unld, Mid1, Prem, Diesl, None, None

In the above example all side A's and side B's will be the same.

To change the product arrow right or left, then press the <Enter> key

Example #5: Non-Blending Dispensers – 1 Product
The site has 4 products, the unlead, midgrade, and premium products are on a 3-product dispenser and the Diesel is on a separate dispenser. For the unlead, midgrade, and premium products use the hose assignment examples above.

The diesel dispenser(s)' hose assignments will read:

1. Diesl, None, None, None, None, None
2. Diesl, None, None, None, None, None

To change the product arrow right or left, then press the <Enter> key.

Tokheim Blending Dispenser Configuration

The following section includes detailed information to be used when programming the Ruby (Controller) in Fuel Manager. Each pump manufacturer as well as each model of dispenser will have specific settings.

The following programming is to be used only for Tokheim blending dispensers. Tokheim has fixed, mechanical, and variable blenders.

NOTE: The product configuration and hose assignments will be different for variable blenders than for fixed and electronic.

This section identifies the Tank Names, Product Configuration, Pump Attributes, and Hose Assignment configuration needed for the Tokheim blending dispensers.

NOTE: The following section relates to the VeriFone Ruby Fuel Manager programming.

Please be advised that the programming within this section may need to be modified based on various functionality and programming in the actual dispenser and/or fuel interface.

After programming the Ruby's Fuel Manager, you should always complete a full fuel initialization and check each dispenser (side A & B) to ensure the programming is accurate and all side are communicating correctly.

Tank Names

The Tank Name file identifies the underground tanks at the site. The site can have up to eight (8) underground tanks.

For the Tokheim blending dispenser start with Tank01 and type over the tank name with a name which will identify your first underground tank (i.e., Unlead, Midgr, Prem, Diesel, etc.). Continue to name each underground tank. Only type over the tank numbers that will be used at the site. Tank names can be up to six (6) characters in length.

NOTE: Unused tank numbers must remain as "tank05", "tank06", etc. DO NOT rename unused tanks as NONE, UNUSED, etc.

Example – The site has 3 underground tanks, Unlead, Premium, and Diesel. Your Tank Name file will read:

1. Unld
2. Prem
3. Diesel
4. Tank04
5. Tank05
6. Tank06
7. Tank07
8. Tank08

Product Configuration

The Product Configuration file identifies the products used at the site. The Ruby allows the site to have up to nine (9) products. This file links the appropriate tank (set up in the Tank Name file) to a specific product.

NOTE: When setting up this file NEVER TYPE OVER THE PRODUCT NAMES. All product names should be left as is.

For Tokheim blending dispensers, the product names used at the site do not need to be listed in a specific order. However, to change the order of the product names, do the following:

- Arrow to the product name you need and press the <Select> key,
- Arrow to the position you need to move the product to, then press the <Select> key.

DO NOT TYPE OVER THE PRODUCT NAMES IN THE PRODUCT CONFIGURATION FILE.

Products not used at the site should be linked to the "NONE" tank.

Fixed, Electronic, and Variable Blenders:
A Fixed blender is defined as a dispenser programmed for blending at the manufacturer. An ASR can change the programming in the dispenser. However, the blend programming in the dispenser cannot be changed and is not affected by the POS.

An Electronic blender is defined as a dispenser programmed for blending at the manufacturer. An ASR can change the programming in the dispenser. The blend programming in the dispenser MUST match the blend programming on the POS.

A Variable blender is defined as a dispenser programmed for blending at the manufacturer. An ASR can change the programming in the dispenser. However, the programming will ALWAYS be overrun by the blend programming in the POS. In order to comply with Weights and Measurers all new dispensers should be programmed both at the dispenser and on the POS and should match.

A blended product basically consists of 2 products blended in order to produce another product. Of the 2 products used to make the blend, one of the products is considered the low feedstock, the other product is considered the high feedstock.

The low feedstock will have the lowest percentage of octane. The high feedstock will have the higher percentage of octane.

When programming your Product Configuration File for Tokheim blenders use the following rules.

- The low feedstock product must be 100% from a pure product tank.
- The high feedstock product must be 100% from a pure product tank.
- The low and high feedstock cannot come from the same tank.
- Blended products must be produced from the low and high feedstock.
- Products can be listed in any order in the Product Configuration File.
- If changing the order in the Product Configuration File, select and move the product – DO NOT TYPE OVER THE PRODUCT NAME.

Continuing with the example from the Tank Name section, your site has 3 underground tanks and 4 products. The site is blending unlead and premium to produce the midgrade product. The site is blending midgrade with 60% unlead and 40% premium.

The Product Configuration File will read:

1. Unld	T1 Unld	PCT 100%	
2. Prem	T1 Prem	PCT 100%	
3. Mid1	T1 Unld	PCT 60%	T2 Prem
4. Diesl	T1 Diesel	PCT 100%	
5. Mid2	T1 None	PCT 100%	
6. Mid3	T1 None	PCT 100%	
7. Prem2	T1 None	PCT 100%	
8. Kerns	T1 None	PCT 100%	
9. Diesl2	T1 None	PCT 100%	

Pump Attributes

The Pump Attributes file is in the Pump Configuration file. Specific parameters for each fueling point can be set within the Pump Attributes file.

For Premier blenders, Mode F26 configures your blend type. If F26 blend type is set to 2, then the Ruby blend type should be set to None or Fixed. If F26 blend type is set to 0, then the Ruby blend type should be set to Variable. For F26, do not set the blend type to 1.

In Pump Attributes, the parameter identifying the blend type must be selected. Use the <Select> key to scroll through the blend type options. Press the <Enter> key when you have selected the correct blend type.

Hose Assignments

The Hose Assignment file is in the Pump Configuration file. Hose Assignments identify what product is linked to what hose at the dispenser. The Ruby defines six (6) hoses on each side of the dispenser.

The Hose Assignments need to be set up based on how many products the dispenser will be using for each side on the dispenser. This file also needs to be set up based on how the actual piping for each product has been installed by the pump installer.

Use the following chart to configure the hose assignments for Tokheim blending dispensers.

Type of Blender	Hose 1	Hose 2	Hose 3	Hose 4	Hose 5	Hose 6
Fixed 3-Product	Low, or High	Blend	Low, or High	None	None	None
Mechanical 3-Product	Low, or High	Blend	Low, or High	None	None	None
Variable 3-Product	Low, High, or Blend	Low, High, or Blend	Low, High, or Blend	None	None	None
--- or --- (1-3-5)	Low, High, or Blend	None	Low, High, or Blend	None	Low, High, or Blend	None
Variable 5-Product	Low, High, or Blend	Low, High, or Blend	Low, High, or Blend	Low, High, or Blend	Low, High, or Blend	None

Wayne Fuel & DCR Interfacing

Wayne Fuel Interface Requirements

The following requirements must be met prior to installation.

- The Wayne Pump Interface Board Plus (PIB-Plus) must be purchased and installed in the Electronic Central (2400) to allow the Ruby system to communicate with the existing dispensers.

- The PIB-Plus with Electronic Central (2400) should be ordered from a Wayne distributor. The complete PIB System Kit, which includes the PIB-Plus board, cables, connectors, and mounting hardware can be ordered using Wayne part number 883039-001. Before installation of the Ruby please refer to the specific software application's release notes. The release notes indicate the most recent firmware version required. Release notes can be found on VeriFone's Bulletin Board Service.

- The PIB-Plus communicates with the Ruby at a baud rate of 1200.

- The Wayne Electronic Central (2400), the Ruby system, and all peripheral equipment are required to be installed using dedicated electrical circuits which are supplied by the same electrical phase. Detailed electrical requirements can be found in the Site Survey. All electrical requirements must be met prior to the Ruby installation.

When ordering equipment or parts from Wayne, specify that the equipment or parts will be interfaced with a VeriFone Ruby system.

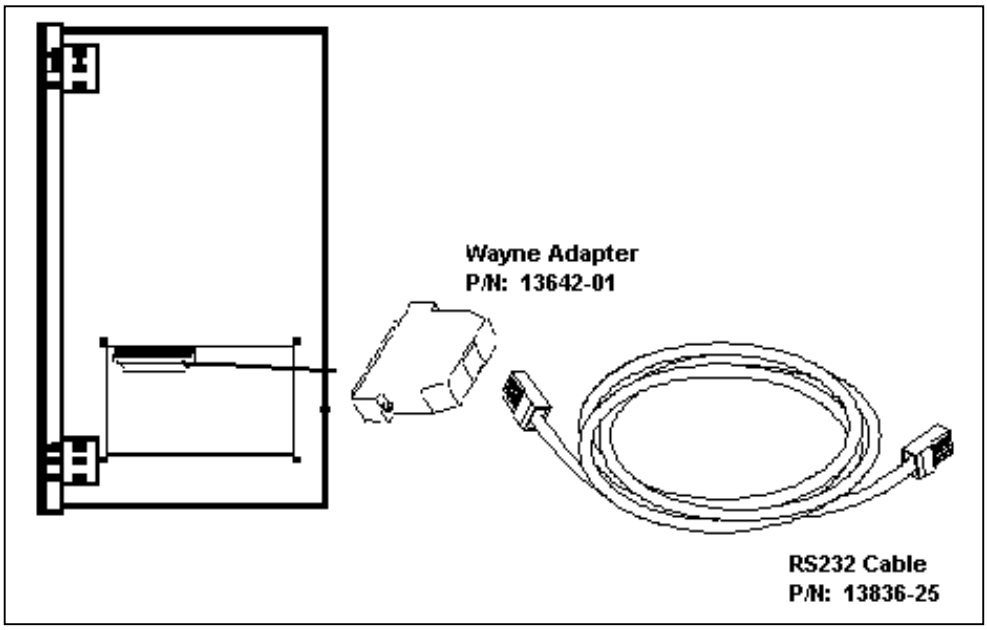
Wayne PIB-Plus

Parts Needed For Fuel Communications:

- P/N 13836-25 – RS232 Cable
- P/N 13642-01 – Adapter, DB25 Null Modem

The Wayne Adapter (P/N 13642-01) connects to the Wayne PIB-Plus interface port. After the connection is made the adapter should be secured by tightening the screws.

The RS232 cable is then connected from the adapter to the appropriate port assigned on the Ruby (Controller).



The PIB-Plus converts fueling point information (via a TWI) to RS232 communication for input to the Ruby.

Wayne DCR Interface Requirements

The Wayne dispenser card reader is called a Dispenser Card Payment Terminal (DCPT).

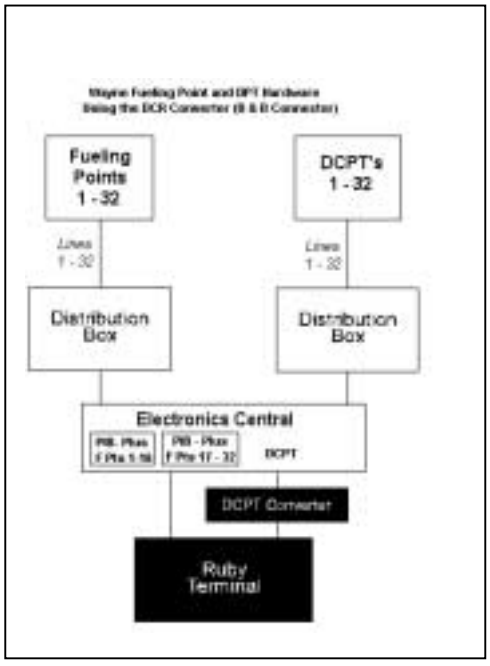
The following Ruby interface communication requirements for the DCPT must be met prior to installation:

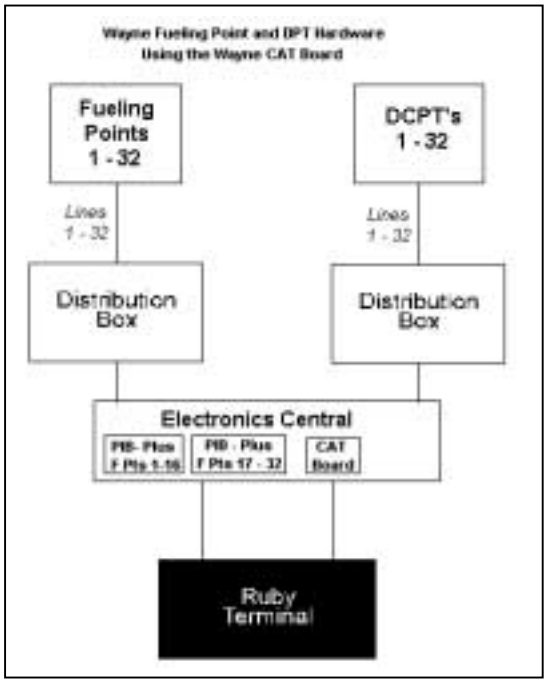
- Installation of the Electronic Central PIB-Plus.
- DCPT boards in the dispensers must be configured for 9600 baud rate.
- DCPT addresses must be the same as the fueling point address.
- Each DCPT unit is jumpered for generic communications and has generic firmware installed. Before installation of the Ruby, please refer to the specific software application's release notes. The release notes can be found on VeriFone's Bulletin Board Service.

Wayne DCPT Communication

There are two communication hardware options for installation when interfacing the Wayne DCPT's with the Ruby. They are:

Installation of the CAT (Card Access Terminal) board in the Electronic Central (2400), or Cable/adapter connections using the DCR Converter (B & B Connector).

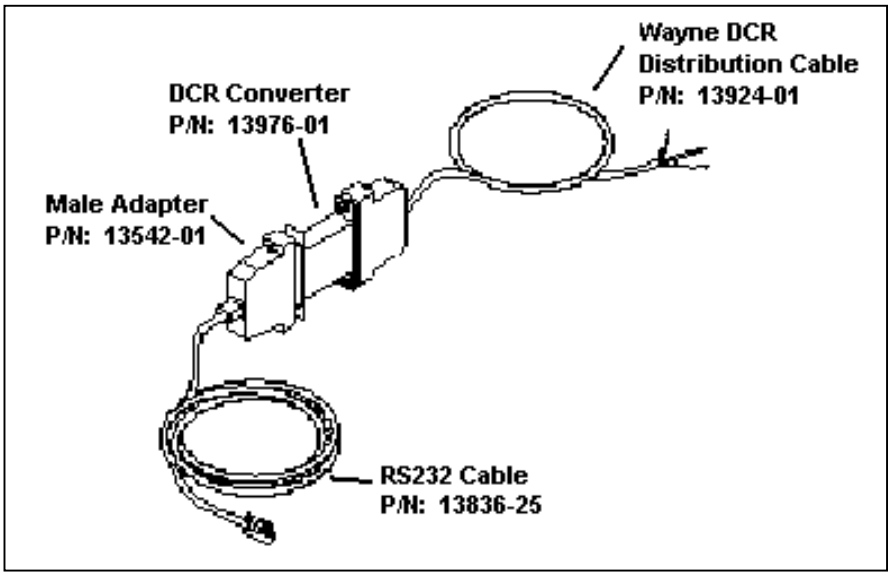




Wayne DCR Cabling – DCR Converter

The following parts are needed to establish communication between the Wayne DCPT and the Ruby (Controller) when installed with the DCR Converter:

- RS232 Cable: P/N 13836-25
- Male DB25 Adapter: P/N 13542-01
- DCR Converter: P/N 13976-01
- Wayne DCR Distribution Cable: P/N 13824-01



Connect the RS232 cable to the appropriate comport on the Ruby and to the male DB25 adapter (P/N: 13542-01). The male adapter is connected to the DCR Converter (B & B Connector).

The other end of the DCR Converter is connected to the Wayne DCR Distribution Cable (P/N: 13924-01). The DCR Converter converts an RS485 communication to RS232. To ensure communications, the correct dip switch must be set on the DCR Converter.

Connect the red lead of the DCR Distribution Cable to the minus (-) leads of the DCPTs (either brown or purple wires) and the white lead of the DCR Distribution Cable to the plus (+) leads (either brown or purple wires) of the DCPTs using wire nuts. Wayne DCPT wires may vary in color. A quick test with a voltmeter will verify which color is being used for positive. Connect the ground lead (usually black) of the DCR Distribution Cable to the Electronic Central ground. Wayne recommends placing the wire nut connections inside the Electronic Central for protection.

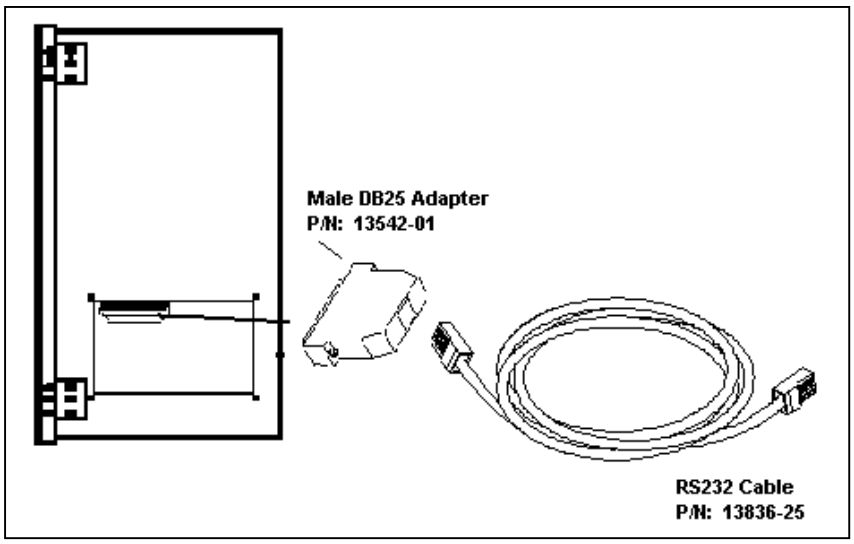
Do not use the terminal strips in the Electronic Central to connect the Wayne DCPT distribution cable to the leads of the DCPTs. All connections must be securely fastened to prevent DCPT communication failure.

Wayne DCR Cabling – CAT Board

The following parts are needed to establish communication between the Wayne DCPT and the Ruby (Controller) when installed with the CAT Board:

- RS232 Cable: P/N 13836-25
- Male DB25 Adapter: P/N 13524-01

Connect the RS232 cable (P/N: 13836-25) to the appropriate comport on the Ruby (Controller) and to the male DB25 adapter (P/N: 13542-01). The male adapter is connected to the CAT Board serial connection.



Wayne Non-blending Dispenser Configuration

The following section includes detailed information to be used when programming the Ruby (Controller) in Fuel Manager. Each pump manufacturer as well as each model of dispenser will have specific settings.

The following programming is to be used only for Wayne non-blending dispensers.

This section identifies the Tank Names, Product Configuration, Pump Attributes, and Hose Assignment configuration needed for the Wayne non-blending dispenser.

NOTE: The following section relates to the VeriFone Ruby Fuel Manager programming.

Please be advised that the programming within this section may need to be modified based on various functionality and programming in the actual dispenser and/or fuel interface.

After programming the Ruby's Fuel Manager, you should always complete a full fuel initialization and check each dispenser (side A & B) to ensure the programming is accurate and all side are communicating correctly.

Tank Names

The Tank Name file identifies the underground tanks at the site. The site can have up to eight (8) underground tanks.

For the Wayne non-blending dispenser start with Tank01 and type over the tank name. Enter a name that will identify your first underground tank (i.e., Unlead, Midgr, Prem, Diesel, etc.). Continue to name each underground tank. Only type over the tank numbers that will be used at the site. Tank names can be up to six (6) characters in length.

NOTE: Unused tank numbers must remain as "tank05", "tank06", etc. DO NOT rename unused tanks as NONE, UNUSED, etc.

Example – The site has 4 underground tanks: Unlead, Midgrade, Premium, and Diesel. Your Tank Name file will read:

1. Unld
2. Midgr
3. Prem
4. Diesel
5. Tank05
6. Tank06
7. Tank07
8. Tank08

Product Configuration

The Product Configuration file identifies the products used at the site. The Ruby allows a site to have up to nine (9) products. This file links the appropriate tank (set up in the Tank Name file) to a specific product.

NOTE: When setting up this file NEVER TYPE OVER THE PRODUCT NAMES. All product names should be left as is.

For Wayne non-blending dispensers, the product names used at the site need to be listed in a specific order. To change the order of the product names do the following:

- Arrow to the product name you need and press the <Select> key,
- Arrow to the position you need to move the product to, then press the <Select> key.

DO NOT TYPE OVER THE PRODUCT NAMES IN THE PRODUCT CONFIGURATION FILE.

Products not used at the site should be linked to a tank – DO NOT USE THE "NONE" TANK. Because you are using Wayne non-blending dispensers, all tanks linked to each product should be 100%.

- Products 1 – 9: Can be listed in any order.
- Products 1 – 9: All products should be linked to a tank – do not use the "NONE" tank.
- Products 1 – 9: Should be 100%.

Continuing with the example from the Tank Name section, your site has 4 underground tanks, therefore 4 products. We programmed our 4 products to be the first 4 in the Product Configuration table.

The Product Configuration file will read:

1. Unld	T1 Unld	PCT 100%
2. Mid1	T1 Midgr	PCT 100%
3. Prem	T1 Prem	PCT 100%
4. Diesl	T1 Diesel	PCT 100%
5. Mid2	T1 Tank05	PCT 100%
6. Mid3	T1 Tank06	PCT 100%
7. Prem2	T1 Tank07	PCT 100%
8. Kerns	T1 Tank08	PCT 100%
9. Diesl2	T1 Tank09	PCT 100%

To link a tank name to a product, place the cursor on the tank field and right or left arrow until the tank name you need appears. Then press the <Enter> key.

Pump Attributes

The Pump Attributes file is in the Pump Configuration file. Specific parameters for each fueling point can be set within the Pump Attributes file.

Since you are using Wayne non-blending dispensers, the parameter identifying the blend type should be set to NONE.

Hose Assignments

The Hose Assignments file is in the Pump Configuration file. Hose Assignments identify what product is linked to what hose at the dispenser. The Ruby defines six (6) hoses on each side of the dispenser.

The Hose Assignments need to be set up based on how many products the dispenser will be using for each side. This file also needs to be set up based on how the actual piping for each product has been installed by the pump installer.

Example #1: Non-Blending Dispensers - 3 Products Piped Straight Across
The site has 3 products on each side of the dispenser for the unlead, midgrade, and premium products. The pump is piped with each product straight across each side of the dispenser. The dispenser on side 1 (A) reads: Unlead, Midgrade, Premium; side 2 (B) reads: Premium, Midgrade, Unlead. With this set up the hose assignments will read:

1. Unld, Mid1, Prem, None, None, None
2. Prem, Mid1, Unld, None, None, None

In the above example all side A's will be the same as fueling point #1 and all side B's will be the same as fueling point #2.

To change the product arrow right or left then press the <Enter> key.

Example #2: Non-Blending Dispensers – 3 Products Transversal Piping
The site has 3 products on each side of the dispenser for the unlead, midgrade, and premium products. The pump has transversal piping for each product on each dispenser. The dispenser on side 1 (A) reads: Unlead, Midgrade, Premium; side 2 (B) reads: Unlead, Midgrade, Premium. With this set up the hose assignments will read:

1. Unld, Mid1, Prem, None, None, None
2. Unld, Mid1, Prem, None, None, None

In the above example all side A's and side B's will be the same.

To change the product arrow right or left, then press the <Enter> key

Example #3: Non-Blending Dispensers – 4 Products Piped Straight Across
The site has 4 products on each side of the dispenser for the unlead, midgrade, premium, and diesel products. The pump is piped with each product straight across each side of the dispenser. The dispenser on side 1 (A) reads: Unlead, Midgrade, Premium, Diesel; side 2 (B) reads: Diesel, Premium, Midgrade, Unlead. With this set up the hose assignments will read:

1. Unld, Mid1, Prem, Diesl, None, None
2. Diesl, Prem, Mid1, Unld, None, None

In the above example all side A's will be the same as fueling point #1 and all side B's will be the same as fueling point #2.

To change the product arrow right or left, then press the <Enter> key

Example #4: Non-Blending Dispensers – 4 Products Transversal Piping
The site has 4 products on each side of the dispenser unlead, midgrade, premium, and diesel products. The pump has transversal piping for the products on each dispenser. The dispenser on side 1 (A) reads: Unlead, Midgrade, Premium, Diesel; side 2 (B) reads: Unlead, Midgrade, Premium, Diesel. With this set up the hose assignments will read:

1. Unld, Mid1, Prem, Diesl, None, None
2. Unld, Mid1, Prem, Diesl, None, None

In the above example all side A's and side B's will be the same.

To change the product arrow right or left, then press the <Enter> key

Example #5: Non-Blending Dispensers – 1 Product
The site has 4 products, the unlead, midgrade, and premium products are on a 3-product dispenser and the Diesel is on a separate dispenser. For the unlead, midgrade, and premium products use the hose assignment examples above.

The diesel dispenser(s)' hose assignments will read:

1. Diesl, None, None, None, None, None
2. Diesl, None, None, None, None, None

To change the product arrow right or left, then press the <Enter> key.

Wayne Blending Dispenser Configuration

The following section includes detailed information to be used when programming the Ruby (Controller) in Fuel Manager. Each pump manufacturer as well as each model of dispenser will have specific settings.

The following programming is to be used only for Wayne blending dispensers. Wayne has fixed and variable blenders.

NOTE: The hose assignments will be different for variable blenders than for fixed.

This section identifies the Tank Names, Product Configuration, Pump Attributes, and Hose Assignment configuration needed for the Wayne blending dispensers.

NOTE: The following section relates to the VeriFone Ruby Fuel Manager programming.

Please be advised that the programming within this section may need to be modified based on various functionality and programming in the actual dispenser and/or fuel interface.

After programming the Ruby's Fuel Manager, you should always complete a full fuel initialization and check each dispenser (side A & B) to ensure the programming is accurate and all side are communication correctly.

Tank Names

The Tank Name file identifies the underground tanks at the site. The site can have up to eight (8) underground tanks.

For the Wayne blending dispenser start with Tank01 and type over the tank name. Enter a name that will identify your first underground tank (i.e., Unlead, Midgr, Prem, Diesel, etc.). Continue to name each underground tank. Only type over the tank numbers that will be used at the site. Tank names can be up to six (6) characters in length.

NOTE: Unused tank numbers must remain as "tank05", "tank06", etc. DO NOT rename unused tanks as NONE, UNUSED, etc.

A blended product basically consists of 2 products blended in order to produce another product. Of the 2 products used to make the blend, one of the products is considered the low feedstock, the other product is considered the high feedstock.

The low feedstock will have the lowest percentage of octane. The high feedstock will have the higher percentage of octane.

For Wayne blenders the low feedstock product must be defined as "tank04" and the high feedstock product must be defined as "tank05" in the Ruby.

Example – The site has 3 underground tanks: Unlead, Premium, and Diesel. Your Tank Name file will read:

1. Diesel
2. Tank02
3. Tank03
4. Unld
5. Prem
6. Tank06
7. Tank07
8. Tank08

Product Configuration

The Product Configuration file identifies the products used at the site. The Ruby allows the site to have up to nine (9) products. This file links the appropriate tank (set up in the Tank Name file) to a specific product.

NOTE: When setting up this file NEVER TYPE OVER THE PRODUCT NAMES. All product names should be left as is.

Fixed and Variable Blenders

A Fixed blender is defined as a dispenser programmed for blending at the manufacturer. An ASR can change the programming in the dispenser. However, the blend programming in the dispenser cannot be changed and is not affected by the POS.

A Variable blender is defined as a dispenser programmed for blending at the manufacturer. An ASR can change the programming in the dispenser. However, the programming will ALWAYS be overrun by the blend programming in the POS. In order to comply with Weights and Measurers all new dispensers should be programmed both at the dispenser and on the POS and should match.

For Wayne blending dispensers, the order the product names used at the site need to be listed in a specific order. To change the order of the product names do the following:

- Arrow to the product name you need and press the <Select> key
- Arrow to the position you need to move the product to, then press the <Select> key.

DO NOT TYPE OVER THE PRODUCT NAMES IN THE PRODUCT CONFIGURATION FILE.

Products not used at the site need to be set up, you cannot link products to the “NONE” tank.

You must use the following rules when configuring the products for Wayne blenders.

- Products 1 - 3 must be 100%.
- Products 1 - 3 must be pure products (not used to produce the blended product).
- Products 4 & 5 must be 100%.
- Products 4 & 5 must be the products used to make blended product.
- Product 4 must be the low feedstock product.
- Product 5 must be the high feedstock product.
- Products 6 – 9 must be blended products.
- Products 6 – 9 must be configured so that the first blended product has the highest percentage of product 4.
- Products 6 – 9 must have progressively lower percentages of product 4.

Continuing with the example from the Tank Name section, your site has 3 underground tanks and 4 products. The site is blending unlead and premium to produce the midgrade product. The site is blending midgrade with 60% unlead and 40% premium.

The Product Configuration File will read:

1. Diesl	T1 Diesel	PCT 100%	
2. Diesl2	T1 Tank02	PCT 100%	
3. Kerns	T1 Tank03	PCT 100%	
4. Unld	T1 Unld	PCT 100%	
5. Prem	T1 Prem	PCT 100%	
6. Mid1	T1 Unld	PCT 60%	T2 Prem
7. Mid2	T1 Unld	PCT 50%	T2 Prem
8. Mid3	T1 Unld	PCT 40%	T2 Prem
9. Prem2	T1 Unld	PCT 30%	T2 Prem

NOTE: Even though the site is only blending midgrade 60/40, Products 6– 9 must be blended products and the products must be linked to a tank.

Pump Attributes

The Pump Attributes file is in the Pump Configuration file. There are several parameters for each fueling point within the Pump Attribute file.

In Pump Attributes the parameter identifying the blend type must be selected. Use the <Select> key to scroll through the blend type options, press the <Enter> key when you have selected the correct blend type.

Hose Assignments

The Hose Assignments file is in the Pump Configuration file. Hose Assignments identify what product is linked to what hose at the dispenser. The Ruby defines six (6) hoses on each side of the dispenser.

The Hose Assignments need to be set up based on how many products the dispenser will be using for each side on the dispenser. This file also needs to be set up based on how the actual piping for each product has been installed by the pump installer.

Use the following chart to configure the hose assignments for Wayne blending dispensers.

NOTE: The number under each hose refers to the product listed in the Product Configuration file.

Type of Blender	Hose 1	Hose 2	Hose 3	Hose 4	Hose 5	Hose 6
Fixed Model 590 3-Product	4 or 5	6, 7, 8, or 9	4 or 5	None	None	None
Variable Model 580 Macro 10 3-Product	None	4 or 5	None	6, 7, 8 or 9	None	4 or 5
Variable Model 580 Macro 11 3-Product	None	4 or 5	6, 7, 8, or 9	4 or 5	None	None
Variable Model 395 Macro 13 4-Product	1, 2, or 3	None	4 or 5	None	6, 7, 8, or 9	4 or 5
Variable Model 585 Model 395 Macro 12 5-Product	1, 2, or 3	None	4, 5, 6, 7, 8 or 9	6, 7, 8, or 9	7, 8 or 9	4, 5, 6, 7 8 or 9

Option 51 – High and Low Feedstock Percentages

Opt 51 in the Wayne dispenser will indicate the blend assignment by position (hose assignment). The low feedstock in the blend must match the percentage shown in Opt 51 for that position (hose assignment).

Option 51 at the dispenser also indicates the high feedstock percentage. However, the Ruby shows the low feedstock percentage.

To get the low feedstock percentage for programming the Ruby, subtract the high feedstock percentage at the dispenser using Option 51. Subtract this number from 100. This equals your low feedstock percentage you need to program in the Ruby.

If the blend ratios at the dispenser and those of the Ruby do not match, the state of the dispenser will be shown as OFF-LINE.

The following table shows the default options for the most common types of Wayne blenders.

Wayne Blend Ration Defaults

Opt 51	Fix (590) hoses 1, 2, 3 Macro 7	Variable (580) hoses 2, 4, 6 Macro 10	Variable (580) hoses 2, 3, 4 Macro 11	Variable (585, 395) 5 products Macro 12	Variable (395) 4 products Macro 132
1	0	-	-	-	-
2	50	100	100	100	100
3	100	-	50	75	75
4	-	50	0	50	50
5	-	-	-	25	0
6	-	0	-	0	-

Option 54 – High and Low Feedstock Percentages

If Option 54 = 1, then the low feedstock for the blended products must be configured in decreasing order.

If option 54 = 2, then the low feedstock for blended products must be configured in ascending order.

Checking Product Configuration Via The Decade 2400

Make the following 2400 checks prior to programming the Ruby:

Mode 03: Tank assignment - This indicates the tanks from which the dispenser is drawing.

Mode 18: Fuel to position - This shows product assignment by hose.

Wayne Dispenser Default Mode 03 & 18 Settings

Dispenser model number	Mode 03 product assignments by pipe (#1,2,3,4)	Mode 18 product assignments by hose (#1-2-3-4-5-6-7)
375	0541	5-0-5-8-7-6-4
390	0321	1-2-3-0-0-0-0
395	0541	1-0-4-6-7-8-5
395	0541	1-0-4-6-7-5-0
395	0541	0-4-6-7-8-0-1
490	4321	1-2-3-4-0-0-0
580	0540	0-0-4-0-6-0-5
585	0540	0-0-4-6-7-8-5
590	0540	0-4-6-5-0-0-0