Encore® 500S Dispenser VaporTEK™- 3 Vapor Recovery Monitoring Installation Instructions
August 2025

Introduction

This manual provides instructions for installing the VaporTEK™-3 Vapor recovery on the Encore® 500S dispensers.

Notes: 1) For NLx single-hose blending units (X+0 or X+1) built after July 2014, the companion discharge tube conversion kit M16278K004 must be installed prior to M16278K003.
2) One M11907K002 kit is needed for each outlet casting location. Depending on the model configuration, one M11907K00X kit is required for the upper housing piping. Refer to "Upper Hydraulics Vapor Tubes Installation" on page 11 for specific kits by configuration.

Intended Audience

This manual is intended for Gilbarco®-trained and certified Authorized Service Contractors (ASCs).

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Related Documents

Document Number	Title	GOLD℠ Library
MDE-5394	VaporTEK/VaporTEK-3 Controller Board 110 V UL Vapor Recovery Collection System for Encore 500 S Start-Up and Service Manual	• Encore and Eclipse • Veeder-Root Technical Documentation

Abbreviations and Acronyms

Term	Description
ASC	Authorized Service Contractors
AVRN	Assist Vapor Recovery Nozzle
COM	Communications Port
CRIND®	Card Reader In Dispenser
CVN	Catlow Vac-Assist Nozzle
DIN	Deutsche Industrie Norm
ECAL	Electronic Calibration
ICVN	Inverted Catlow Vac-Assist Nozzle
LED	Light Emitting Diode
LPM	Liters Per Minute
PCN	Pump Control Node
USB	Universal Serial Bus
VAC	Voltage Alternate Current
VTEK	VaporTEK

Important Safety Information

Notes: 1) Save this Important Safety Information section in a readily accessible location.

2) Although DEF is non-flammable, Diesel is flammable. Therefore, for DEF cabinets that are attached to Diesel dispensers, follow all the notes in this section that pertain to flammable fuels.

This section introduces the hazards and safety precautions associated with installing, inspecting, maintaining, or servicing this product. Before performing any task on this product, read this safety information and the applicable sections in this manual, where additional hazards and safety precautions for your task will be found. Fire, explosion, electrical shock, or pressure release could occur and cause death or serious injury, if these safe service procedures are not followed.

Preliminary Precautions

You are working in a potentially dangerous environment of flammable fuels, vapors, and high voltage or pressures. Only trained or authorized individuals knowledgeable in the related procedures should install, inspect, maintain, or service this equipment.

Emergency Total Electrical Shut-Off

The first and most important information you must know is how to stop all fuel flow to the pump/dispenser and island. Locate the switch or circuit breakers that shut off all power to all fueling equipment, dispensing devices, and Submerged Turbine Pumps (STPs).

⚠ WARNING


The EMERGENCY STOP, ALL STOP, and PUMP STOP buttons at the cashier's station WILL NOT shut off electrical power to the pump/dispenser. This means that even if you activate these stops, fuel may continue to flow uncontrolled.

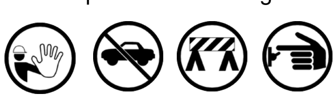
You must use the TOTAL ELECTRICAL SHUT-OFF in the case of an emergency and not the console's ALL STOP and PUMP STOP or similar keys.

Total Electrical Shut-Off Before Access

Any procedure that requires access to electrical components or the electronics of the dispenser requires total electrical shut off of that unit. Understand the function and location of this switch or circuit breaker before inspecting, installing, maintaining, or servicing Gilbarco equipment.

Evacuating, Barricading, and Shutting Off

Any procedure that requires access to the pump/dispenser or STPs requires the following actions:



- An evacuation of all unauthorized persons and vehicles from the work area
- Use of safety tape, cones, or barricades at the affected unit(s)
- A total electrical shut-off of the affected unit(s)

Read the Manual

Read, understand, and follow this manual and any other labels or related materials supplied with this equipment. If you do not understand a procedure, call the Gilbarco Technical Assistance Center (TAC) at 1-800-743-7501. It is imperative to your safety and the safety of others to understand the procedures before beginning work.

Follow the Regulations

Applicable information is available in National Fire Protection Association (NFPA) 30A; *Code for Motor Fuel Dispensing Facilities and Repair Garages*, NFPA 70; *National Electrical Code (NEC)*, Occupational Safety and Health Administration (OSHA) regulations and federal, state, and local codes. All these regulations must be followed. Failure to install, inspect, maintain, or service this equipment in accordance with these codes, regulations, and standards may lead to legal citations with penalties or affect the safe use and operation of the equipment.

Replacement Parts

Use only genuine Gilbarco replacement parts and retrofit kits on your pump/dispenser. Using parts other than genuine Gilbarco replacement parts could create a safety hazard and violate local regulations.

Federal Communications Commission (FCC) Warning

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

Safety Symbols and Warning Words

This section provides important information about warning symbols and boxes.

Alert Symbol

⚠ This safety alert symbol is used in this manual and on warning labels to alert you to a precaution which must be followed to prevent potential personal safety hazards. Obey safety directives that follow this symbol to avoid possible injury or death.

Signal Words

These signal words used in this manual and on warning labels tell you the seriousness of particular safety hazards. The precautions below must be followed to prevent death, injury, or damage to the equipment:

⚠ **DANGER**: Alerts you to a hazard or unsafe practice which will result in death or serious injury.

⚠ **WARNING**: Alerts you to a hazard or unsafe practice that could result in death or serious injury.

⚠ **CAUTION** with Alert symbol: Designates a hazard or unsafe practice which may result in minor injury.

CAUTION without Alert symbol: Designates a hazard or unsafe practice which may result in property or equipment damage.

Working With Fuels and Electrical Energy

Prevent Explosions and Fires

Fuels and their vapors will explode or burn, if ignited. Spilled or leaking fuels cause vapors. Even filling customer tanks will cause potentially dangerous vapors in the vicinity of the dispenser or island.

DEF is non-flammable. Therefore, explosion and fire safety warnings do not apply to DEF lines.

No Open Fire

Open flames from matches, lighters, welding torches or other sources can ignite fuels and their vapors.

No Sparks - No Smoking

Sparks from starting vehicles, starting or using power tools, burning cigarettes, cigars or pipes can also ignite fuels and their vapors. Static electricity, including an electrostatic charge on your body, can cause a spark sufficient to ignite fuel vapors. Every time you get out of a vehicle, touch the metal of your vehicle, to discharge any electrostatic charge before you approach the dispenser island.

Working Alone

It is highly recommended that someone who is capable of rendering first aid be present during servicing. Familiarize yourself with Cardiopulmonary Resuscitation (CPR) methods, if you work with or around high voltages. This information is available from the American Red Cross. Always advise the station personnel about where you will be working, and caution them not to activate power while you are working on the equipment. Use the OSHA Lockout/Tagout procedures. If you are not familiar with this requirement, refer to this information in the service manual and OSHA documentation.

Working With Electricity Safely

Ensure that you use safe and established practices in working with electrical devices. Poorly wired devices may cause a fire, explosion or electrical shock. Ensure that grounding connections are properly made. Take care that sealing devices and compounds are in place. Ensure that you do not pinch wires when replacing covers. Follow OSHA Lockout/Tagout requirements. Station employees and service contractors need to understand and comply with this program completely to ensure safety while the equipment is down.

Hazardous Materials

Some materials present inside electronic enclosures may present a health hazard if not handled correctly. Ensure that you clean hands after handling equipment. Do not place any equipment in the mouth

WARNING

In the event of inclement weather, including snow, ice, or flooding that makes driving conditions dangerous, please avoid servicing units. Always use available door stops to secure upper doors against unwanted/unexpected movement, especially during high winds. If necessary, reschedule service to avoid damage to the equipment. Weather may change unexpectedly; be aware of local weather conditions. During service, if conditions develop making service unsafe, close the unit(s) and proceed to a safe location.

WARNING

The pump/dispenser contains a chemical known to the State of California to cause cancer.

WARNING

The pump/dispenser contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Gilbarco Veeder-Root encourages the recycling of our products. Some products contain electronics, batteries, or other materials that may require special management practices depending on your location. Please refer to your local, state, or country regulations for these requirements.

In an Emergency

Inform Emergency Personnel

Compile the following information and inform emergency personnel:

- Location of accident (for example, address, front/back of building, and so on)
- Nature of accident (for example, possible heart attack, run over by car, burns, and so on)
- Age of victim (for example, baby, teenager, middle-age, elderly)
- Whether or not victim has received first aid (for example, stopped bleeding by pressure, and so on)
- Whether or not a victim has vomited (for example, if swallowed or inhaled something, and so on)

WARNING

Gasoline/DEF ingested may cause unconsciousness and burns to internal organs. Do not induce vomiting. Keep airway open.
Oxygen may be needed at scene. Seek medical advice immediately.

WARNING

DEF generates ammonia gas at higher temperatures. When opening enclosed panels, allow the unit to air out to avoid breathing vapors. If respiratory difficulties develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention.

WARNING

Gasoline inhaled may cause unconsciousness and burns to lips, mouth and lungs.
Keep airway open.
Seek medical advice immediately.

WARNING

Gasoline/DEF spilled in eyes may cause burns to eye tissue.
Irrigate eyes with water for approximately 15 minutes.Seek medical advice immediately.

WARNING

Gasoline/DEF spilled on skin may cause burns.
Wash area thoroughly with clear water.
Seek medical advice immediately.

WARNING

DEF is mildly corrosive. Avoid contact with eyes, skin, and clothing. Ensure that eyewash stations and safety showers are close to the work location. Seek medical advice/recommended treatment if DEF spills into eyes.

IMPORTANT: Oxygen may be needed at scene if gasoline has been ingested or inhaled. Seek medical advice immediately.

Lockout/Tagout

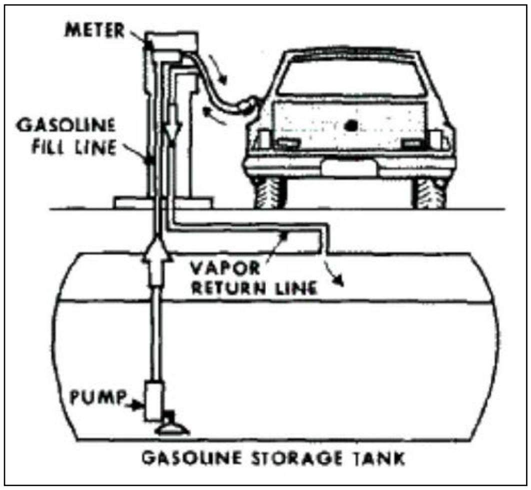
Lockout/Tagout covers servicing and maintenance of machines and equipment in which the unexpected energization or start-up of the machine(s) or equipment or release of stored energy could cause injury to employees or personnel. Lockout/Tagout applies to all mechanical, hydraulic, chemical, or other energy, but does not cover electrical hazards. Subpart S of 29 CFR Part 1910 - Electrical Hazards, 29 CFR Part 1910.333 contains specific Lockout/Tagout provision for electrical hazards.

System Overview and Required Equipment

The Stage II vapor recovery system consists of special nozzles, coaxial hoses, and vapor recovery suction pump at each gasoline dispenser that captures petrol fumes that are lost when a car is refueled and returns them to the underground storage tank.

The Stage II vapor recovery system protects the environment by limiting the release of volatile compounds into the atmosphere.

Figure 1: Vapor Recovery System



VaporTEK Pump

The VaporTEK Pump is a variable-speed piston pump with DC brushless motor. The flow rate is proportional to the speed and the pump achieves maximum flow rate @2500 rpm.
It can draw max 120 LPM, with no restrictions and with the system restrictions it can draw max 95 LPM.

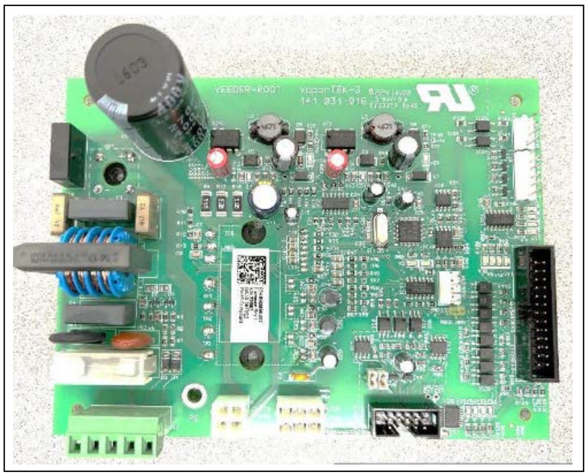
Figure 2: VaporTEK Pump

VaporTEK-3 Controller

The VaporTEK-3 Controller is a motor driver that translates the fuel flow into speed information delivered by the Vapor VAC-Port Encore 500S or RS-422 serial interface connection, and drives the motor on this calculated specific speed.

- It controls the calibration process and maintains the calibration curve for the pump during start up and recalibration.
- It derives the pump speed command from the liquid fuel flow and the pump calibration curve during operation.
- It compares the recent history of vapor measurements to the fuel flow and re-regulates the speed command to the pump to maintain the A/L ratio at 100%.

Figure 3: VaporTEK-3 Controller



Vaporix Controller

The functions of Vaporix-Control are as follows:

- Collects vapor flow measurements from the flow meters.
- Inputs liquid pulses from the Pump Control Node in the dispenser.
- Calculates A/L Ratio for every “valid” dispensing transaction (≥ 25 LPM for ≥ 20 seconds).
- Maintains a log of up to 2000 transactions.
- Provides shutdown trigger to the site in the event of an out-of-compliance condition.

Figure 4: Vaporix Controller 1.0

Vaporix-Flow

The Vaporix-Flow is a flow meter installed in the vapor tubing between the hose casting and vapor pump on each side of the dispenser. It consists of a flow tube and a sensing package that measures the flow of vapor.

Figure 5: Vaporix-Flow

Part Number	Description	Qty per Dispenser
900895--001 (M16035A002)	VTEK3- Mounting Bracket Kit (Including VTEK-3 Board 900890-002) Hardware Revision : REV I and above Firmware Version: VTEK_3 V1.07M.mot	1
140430815	10-Pin Flat Ribbon cable (VTEK-3 to Vaporix Control)	1
900882-001 (M12973A002)	VaporTEK Pump,VaporTEK-3 Vapor Recovery	1
908247 (M12491B001)	Vaporix Flow Meter	2
908360 (M12662B002)	Vaporix Control -1 w/ Macau Software (Firmware: 1.52 and above)	1
140530346	26-Pin Flat Ribbon cable (VTEK-3 to Encore PCN)	1
M04406A006	AC Power Distribution cable (Interface to Encore AC Power Connector)	1
M12075A001	3-conductor power cable for VTEK-3 controller	2
M12094B001	Cable Gland	2
Q13459-01	Clamp, Releasable Flat cable Mounting	4
Q10178-05	Cable Tie (Large Tie Wraps)	2
Q10178-01	Cable Tie (Small Tie Wraps)	5
M16064B001	Cable Mount Adhesive Releaseable	8
M04164B001	DIN Rail	1
M00414B001	MS Hex Nut	2
M11907K017	Down Tube w/ Vaporix	1
M11907K020	VaporTEK dispenser lower hydraulics 2-sided	1

The following table lists the parts included in the M16278K004 Kit:

Item #	Part Number	Description	Quantity
1	M08433B002	Tube, Meter Discharge 11	1
2	M08434B003	Tube, Meter Discharge 12	1
3	M08435B002	Tube, Meter Discharge 21	1
4	M08436B002	Tube, Meter Discharge 22	1
5	Q12974-118	Gskt O-Rng .862Id X 1.068 Od Parco Cmpd 9131-75	10
6	M00415B009	Screw, Metric M8 X 16 Serrated Flange Head	8
7	N23908-01	Clamp, Parflange 7/8 Tubing	4
8	M15530B010	Manifold, Angle Casting Blend Machined	2
9	M00133B001	Clamp, Parflange Double Tube 7/8”	2
10	M00415B010	Screw, Metric M8 X 20 Serrated Flange Head	10
11	MDE-5406	VaporTEK-3 Kit Installation Instructions	1

The following are the required equipments for the initial setup:

Description	Part Number
Burkert Flow Meter with Elaflex-style Nozzle Adapter, and Rubber Hose between Adapter and Meter.	M13351A001
FB1 Handheld Terminal (includes 15-pin to RS-422 cable supplied with unit).	M13353A001
Dongle for FAFNIR Vaporix-Control.	M13352A001
Serial Cable for connection to Vaporix-Control: • Belkin Pro Series Serial Direct Cable • DB9 Male/Male Low Profile Gender Changer • USB-to-serial Portable Adapter	• F3B207-06 • F4A094 • F5U409V1
VaporTEK-Universal serial Bus (USB) Flash Adapter Interface (Isolated)	141057636
Nozzle Adapter to collect vapor (varies with nozzle manufacturer) for Gilbarco® Veeder-Root AVRN/ICVN and OPW 12VW *Note: Only the correct adapter can be used tor system calibration.*	579290-001

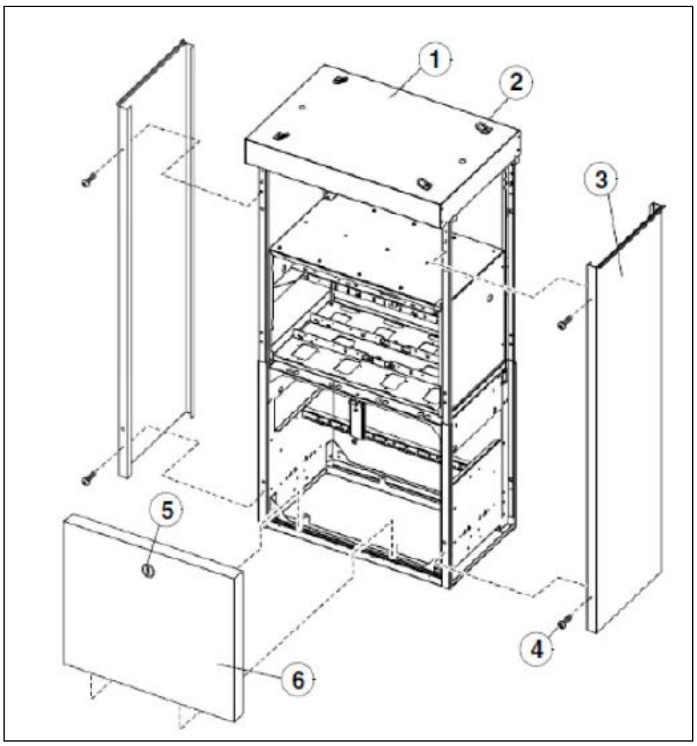
Installation Instructions Mechanical Kits

Removal of External/Cosmetic Sheet Metal from the Encore Unit

To remove the external/cosmetic sheet metal from the Encore unit, proceed as follows:

- Secure safe working area around pump, switch off, tag out power and isolate.
- Identify side A and side B of the dispenser. Side A is the side with the junction box, if installed with this option.
- Remove the four bolts and lift eye on the top panel with a 17 mm socket wrench. Set the upper piping housing cover in a safe location to avoid damaging the part or impeding work.
- Remove the four screws on each of the outer/inner column sheathing with a #2 Phillips screw driver (or) 8 mm socket wrench. Set the panels in a safe location to avoid damaging the part or impeding work.
- Remove the front/back panels by using the key that was delivered with the dispenser.
- Set the panels in a safe location to avoid damaging the part or impeding work.

Figure 6: Removal of External/Cosmetic Sheet Metal from the Encore Unit



Number	Item
1	Upper piping housing cover
2	Lift bracket (4)
3	Outer column sheathing
4	Outer column sheathing screws 4 per side (Total of 8)
5	Front Panel Lock
6	Front Panel

Vapor Recovery Hose Casting Installation Kit (M11907K002)

To install the Vapor Recovery hose casting kit, proceed as follows:

- Remove the gasoline non-vapor hose castings (using a 13 mm socket).
- Save the four bolts and the fuel clamp.
- Remove the fuel and vapor O-rings from kit M11907K002 and lube with mineral oil or other suitable lubricant. (for example; Lubriplate 130A)
- Insert the fuel and vapor O-rings into the hose outlet casting.
- Position the vapor recovery discharge casting in the appropriate location with the hose connection location pointing downward.
- Place the fuel clamp over the fuel pipe and secure with two of the bolts previously removed. Tighten the bolts only to allow play to enable mating of the vapor tube later.
- Complete above steps for each gasoline fueling position.

Figure 7: Hose Casting Installation Kit (M11907K002)

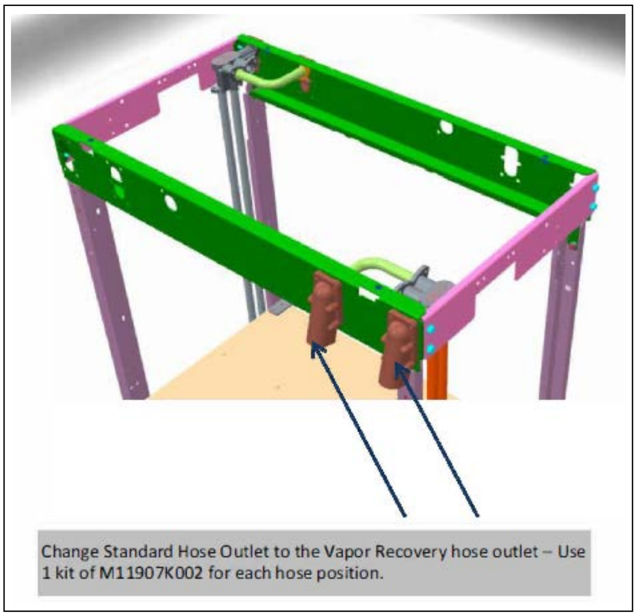
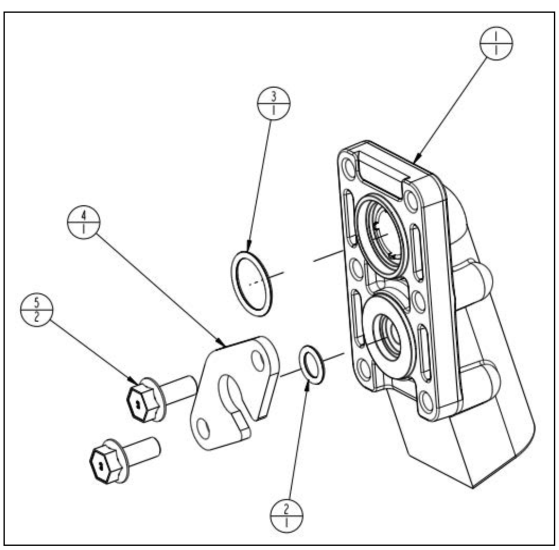


Figure 8: Subassembly View of M11907K002



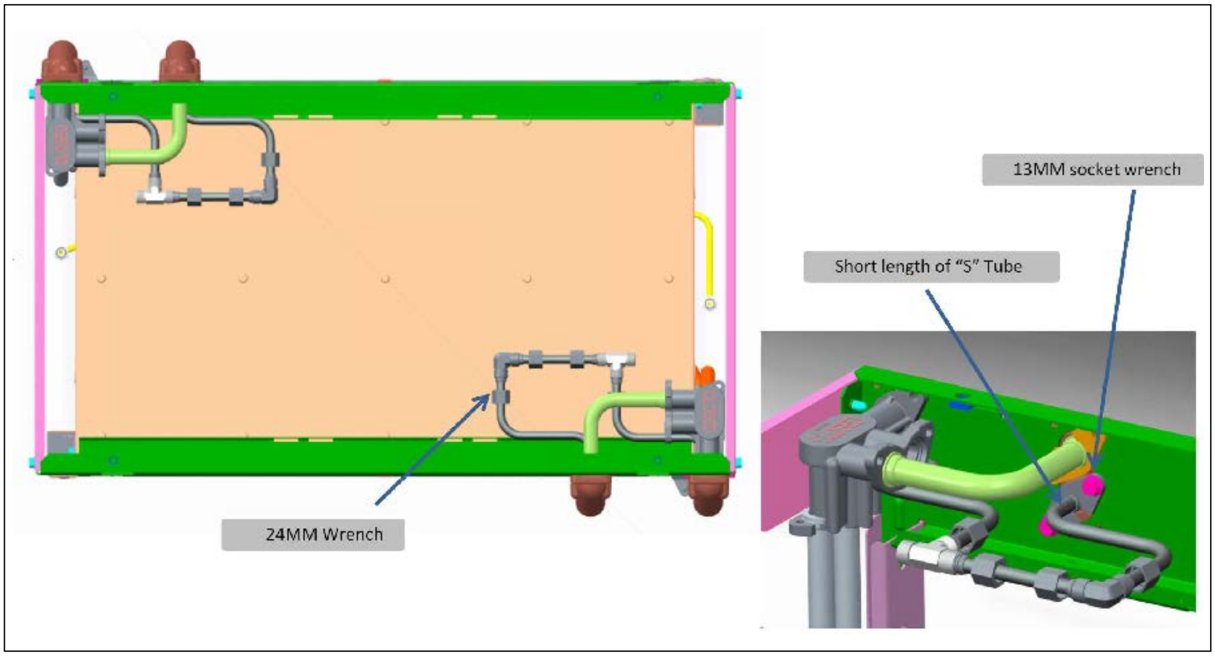
Upper Hydraulics Vapor Tubes Installation

Notes: 1) Diesel outlet castings do not require vapor recovery.
2) NLx series dispensers manufactured after July 2014 will require different discharge tubing to accept vapor recovery components.

To install the upper hydraulics vapor tube, proceed as follows:

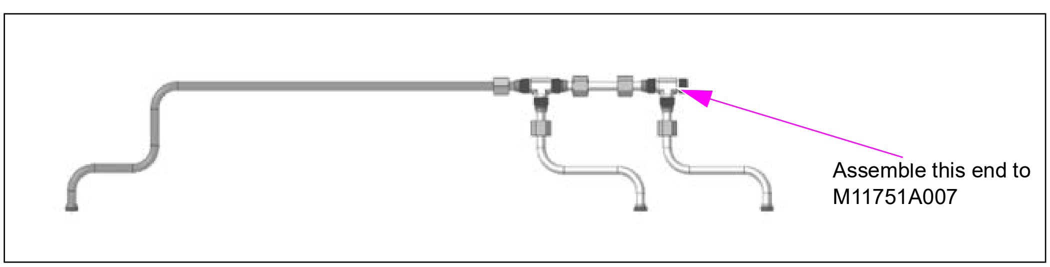
1 **Upper Hydraulics Installation (D-E Configuration)**
Use tubes and parker fittings from Kit M11907K012 and Clamps, bolts, and O-rings from Kit M11907K002.

Figure 9: Upper Hydraulics Installation (D-E Configuration)



2 **Upper Hydraulics Installation (A-D-E Configuration)**
Use Tubes and parker fittings from Kit M11907K013 and Clamps, bolts, and O-rings from M11907K002.

Figure 10: Upper Hydraulics Installation (A-D-E Configuration)



3 Upper Hydraulics Installation (A-E Configuration)
Use Tubes and parker fittings from Kit M11907K009 and Clamps, bolts, and O-rings from kit M11907K002.

Figure 11: Upper Hydraulics Installation (A-E Configuration)

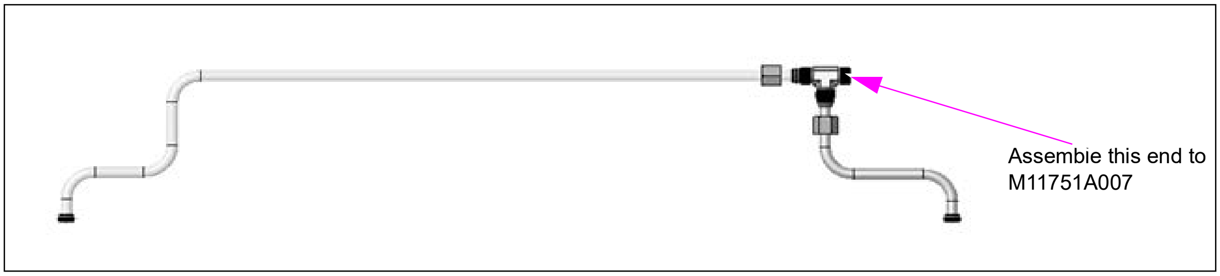


Figure 12: Side Column Tubes and Fafnir Flow Meter Installation in Encore Dispenser (M11907K017)

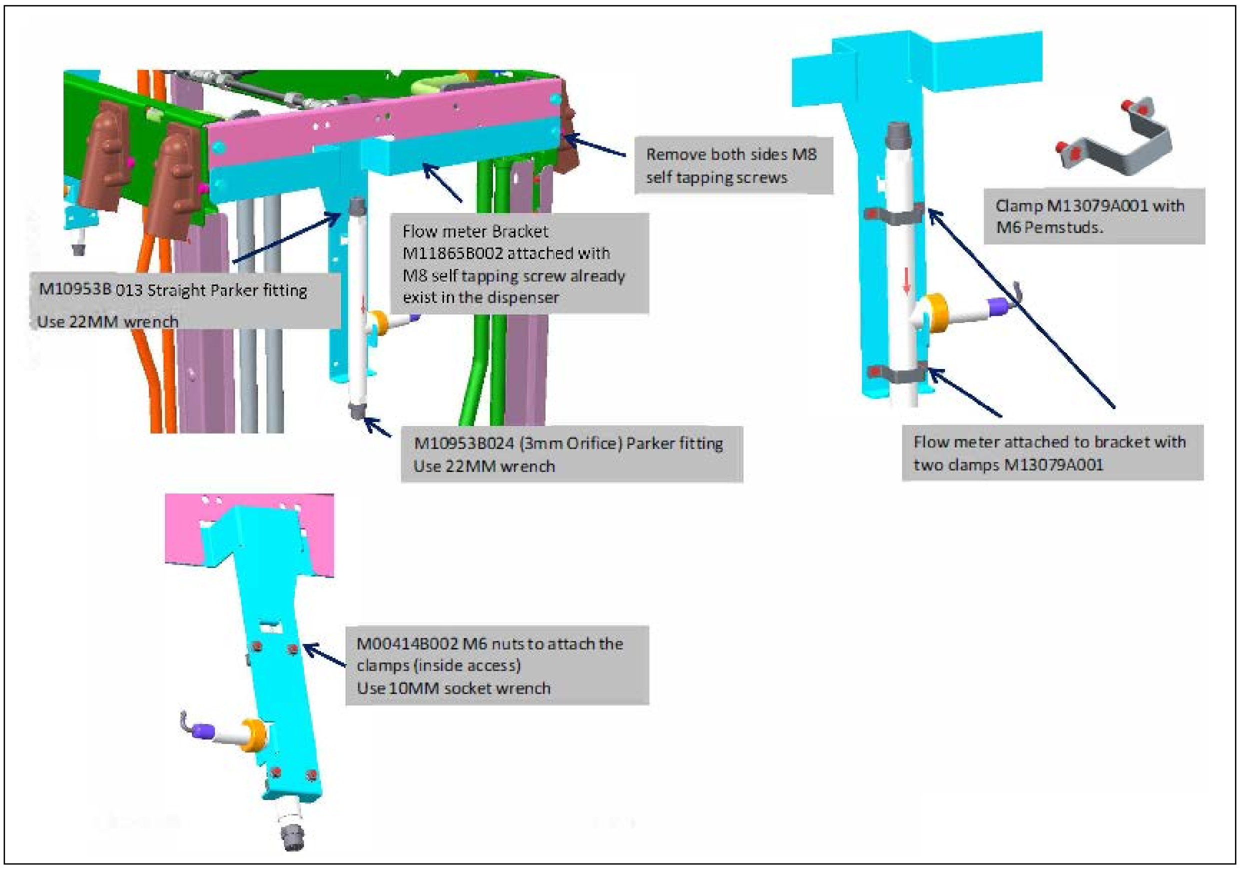
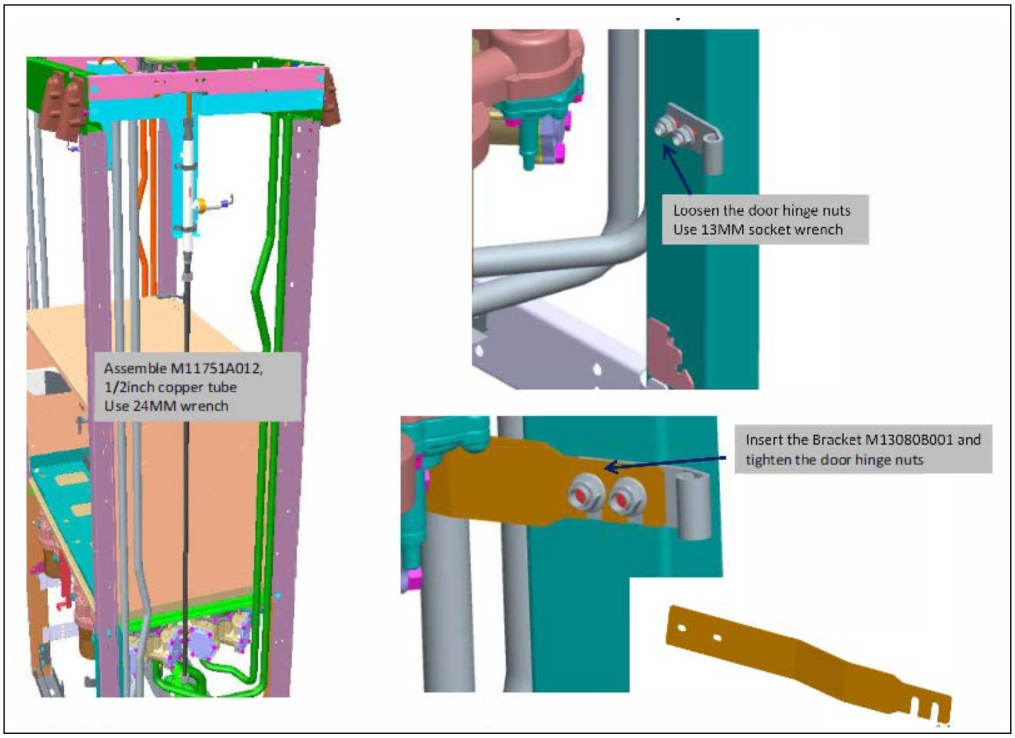


Figure 13: Side Column Tubes and Fafnir Flow Meter Installation in Encore Dispenser (M11907K017)



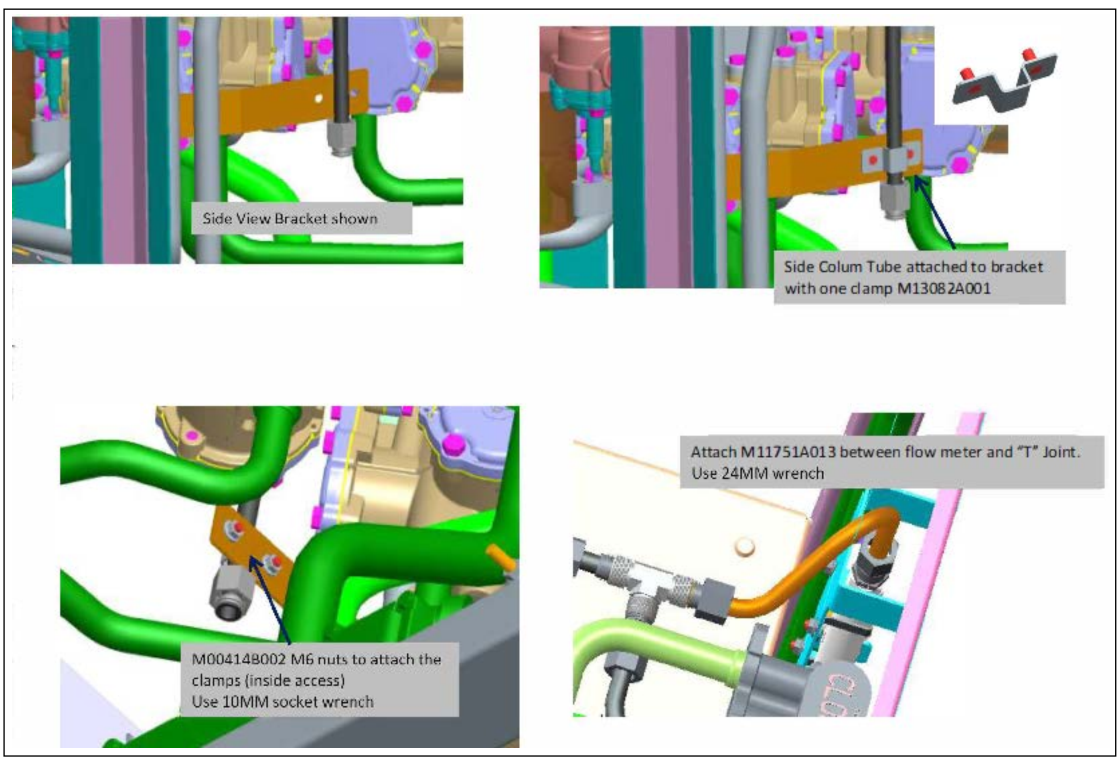
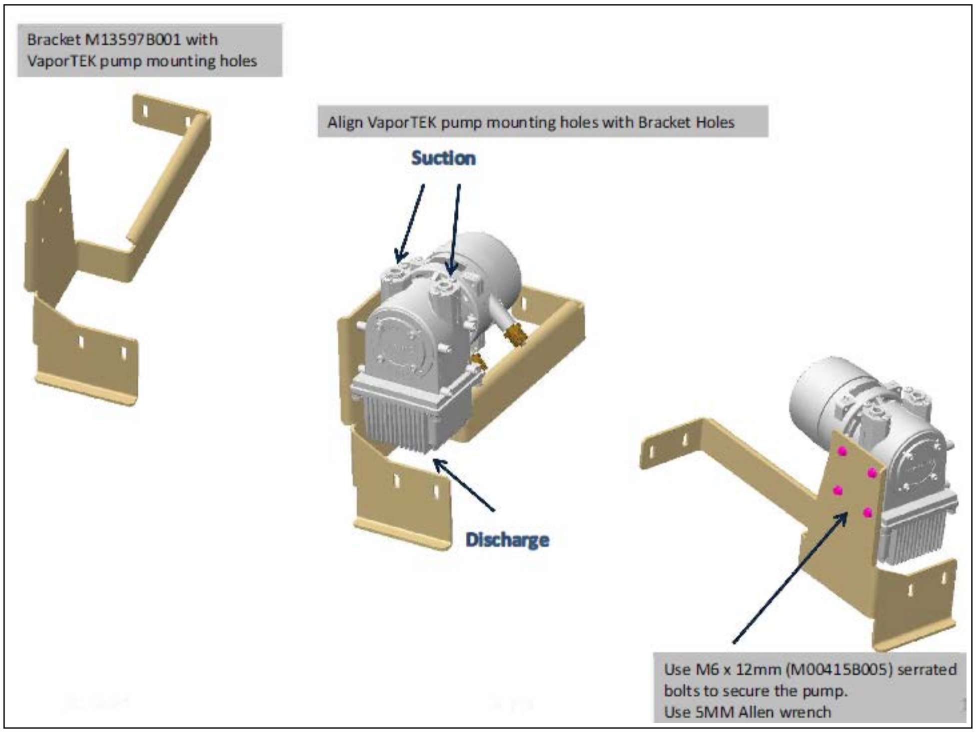


Figure 14: VaporTEK Installation in Encore 500S Dispenser Lower Hydraulics (M11907K020)

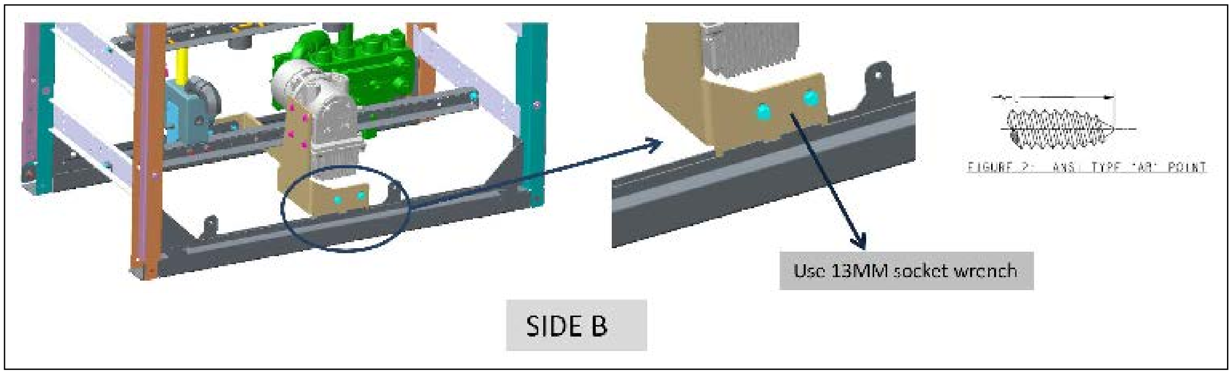


VaporTEK Installation in Encore 500S Dispenser Lower Hydraulics Kit (M11907K020)

To install the VaporTEK in Encore 500S Dispenser Lower Hydraulics Kit M11907K020, proceed as follows:

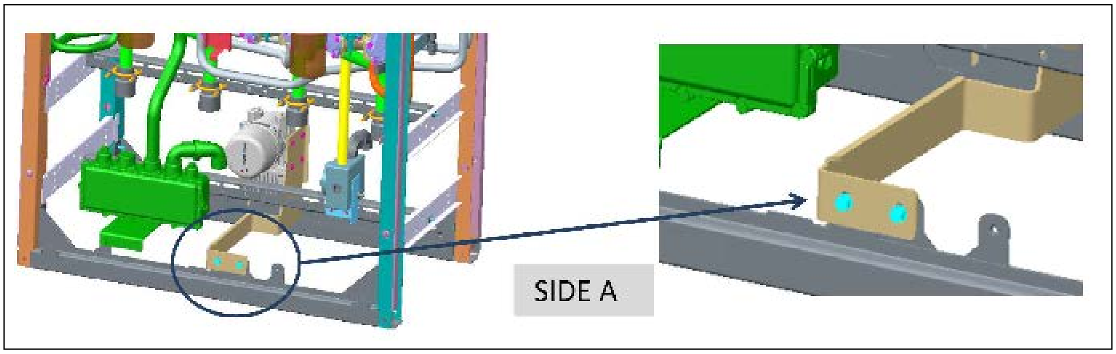
1 Place the VaporTek pump bracket assembly in the dispenser Rail and secure with two M8 self tapping screws M00417B009 (Side B shown).

Figure 15: Installing VaporTEK Pump



2 Place the VaporTEK pump bracket assembly in the dispenser Rail and secure with one M8 self tapping screw M00417B009 (Side A shown - Junction Box side).

Figure 16: Installing VaporTEK Pump (Continued)



3 Assemble straight Parker fittings M10953B002 on suction ports and M10953B023 on the discharge port (use 19 mm wrench).

Figure 17: Installing Parker Fittings

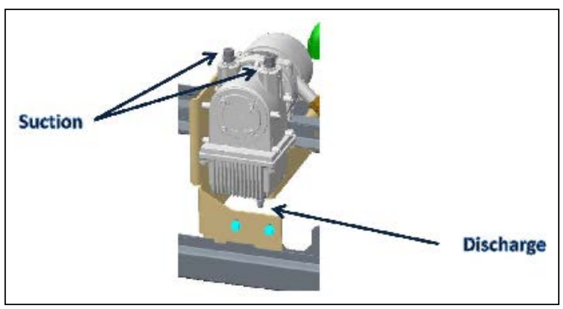


Figure 18: Installing Lower Vapor Tubes

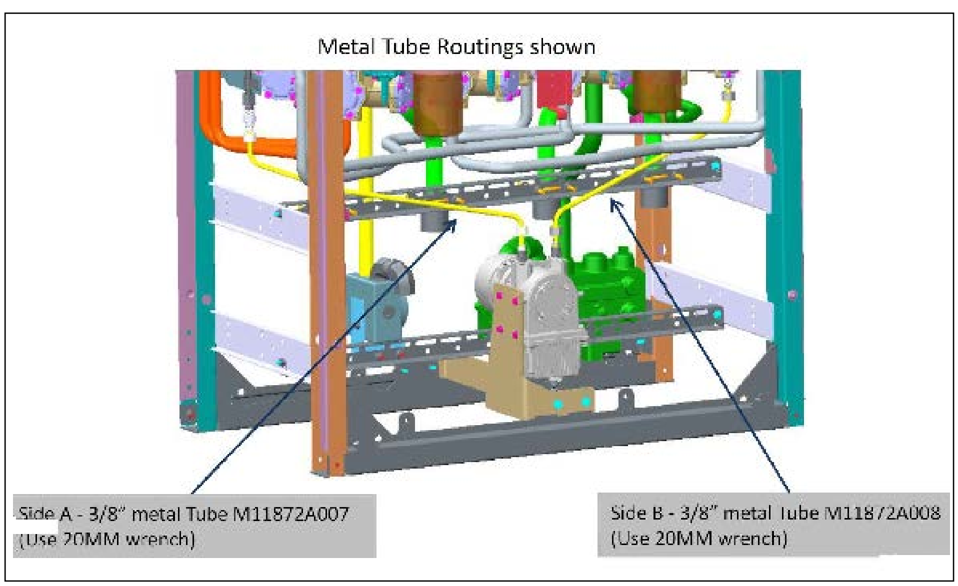


Figure 19: Installing Lower Vapor Tubes (Continued)

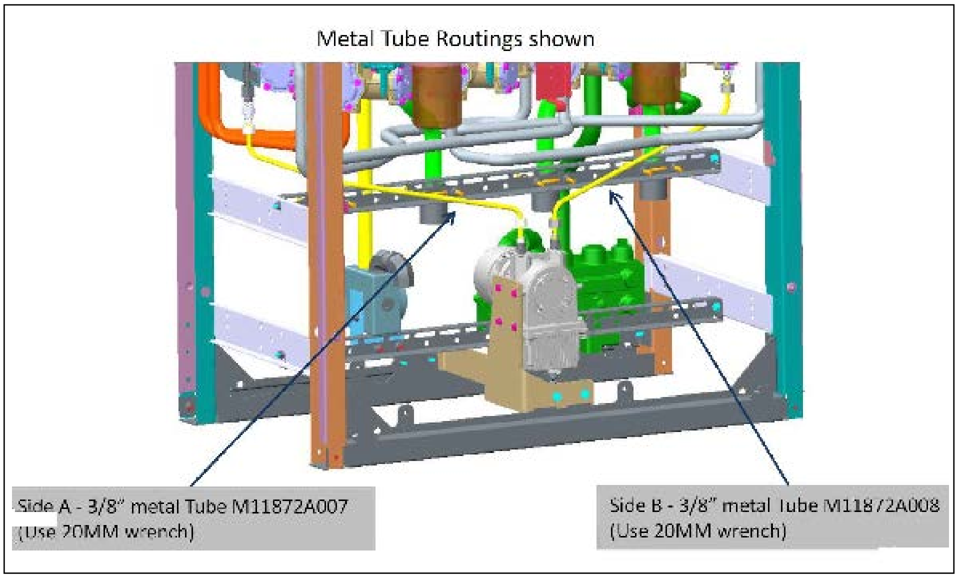
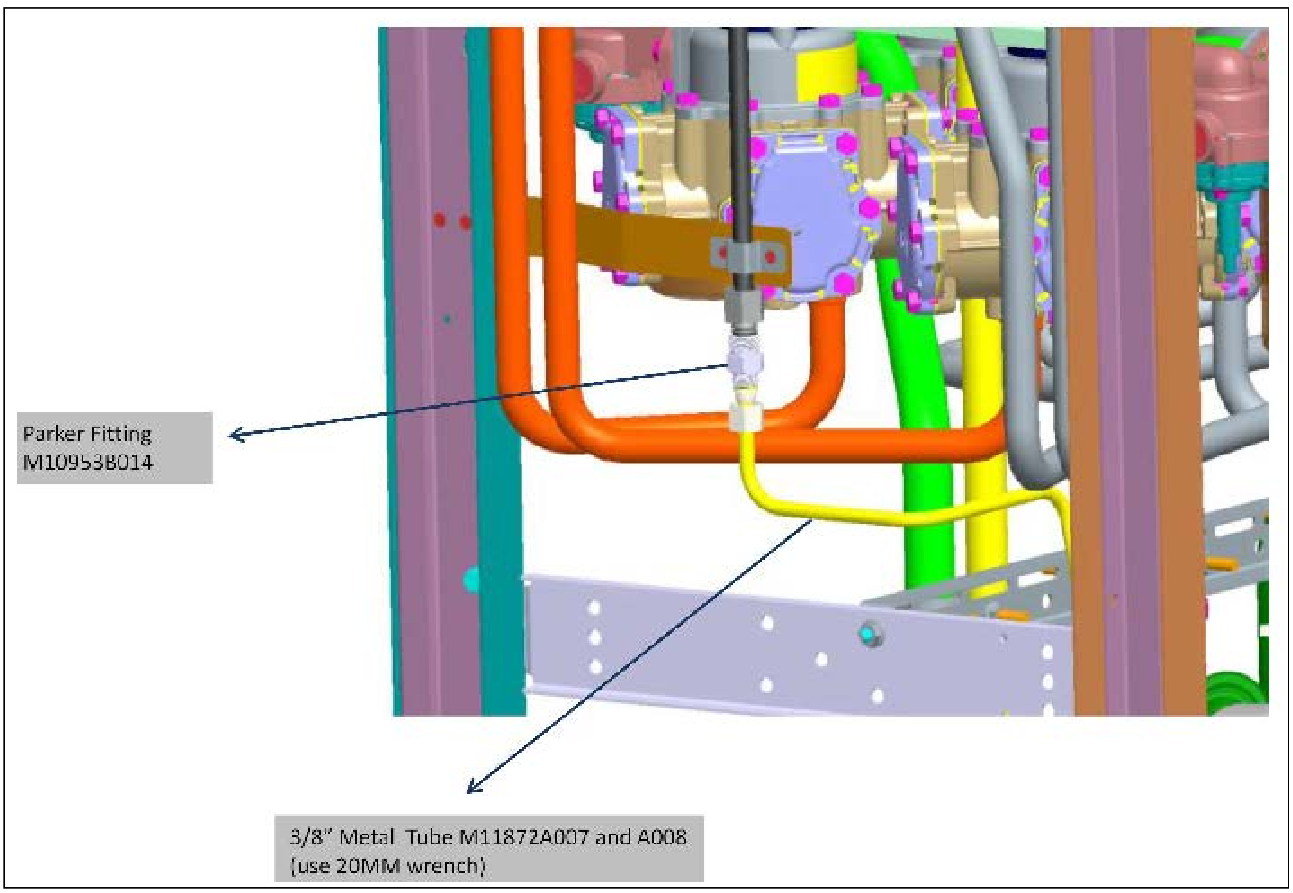


Figure 20: Installing Parker Fittings on Lower Vapor Tubes

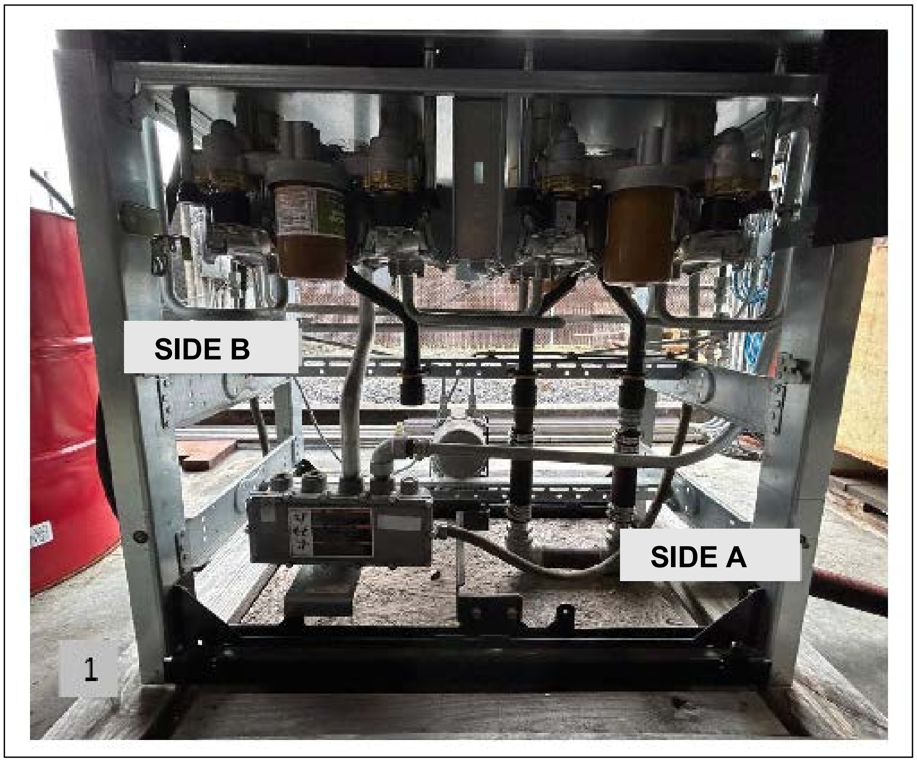


Installation Instructions and Wiring Diagrams for VaporTEK-3 Electrical/Electronics Kits

Cable Gland Installation (M12094B001)

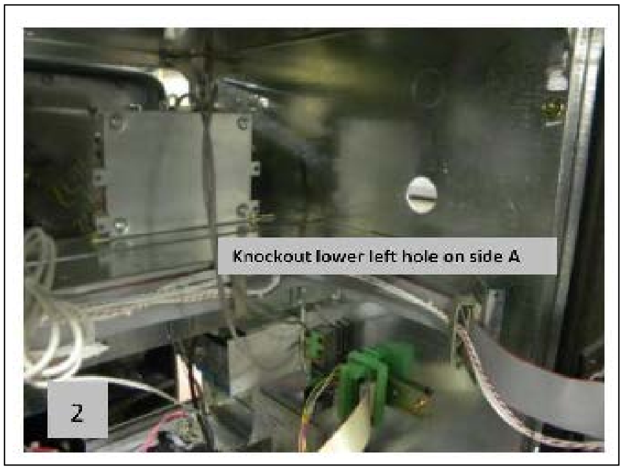
The installation procedure describes how to route the VaporTEK cables (Motor and Sensor) and Fafnir flow meter cables (Side A and Side B) through the cable gland with the cable connectors in-place.

Figure 21: Identifying Side A and Side B

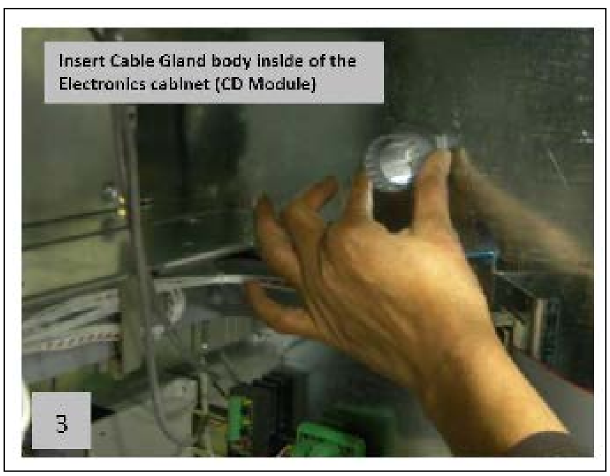


To install the cable grand, proceed as follows:

1 Knock out the lower left hole on Side A.



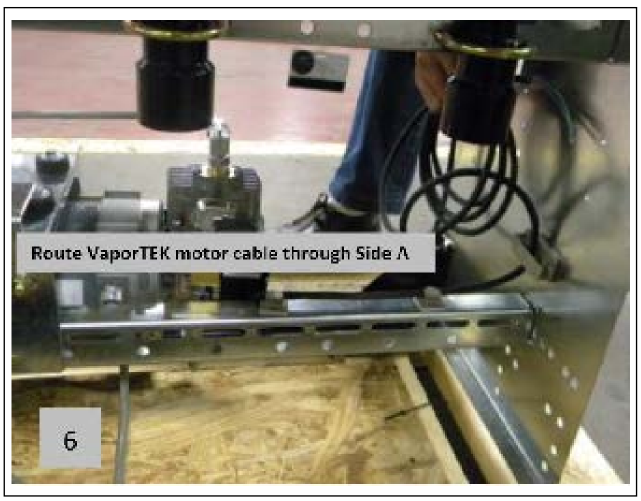
2 Insert cable Gland body inside of the Electronics cabinet (CD Module).



3 See the cable Gland body thread (M32 x l.5) from the side panel (outside of the electronics cabinet).

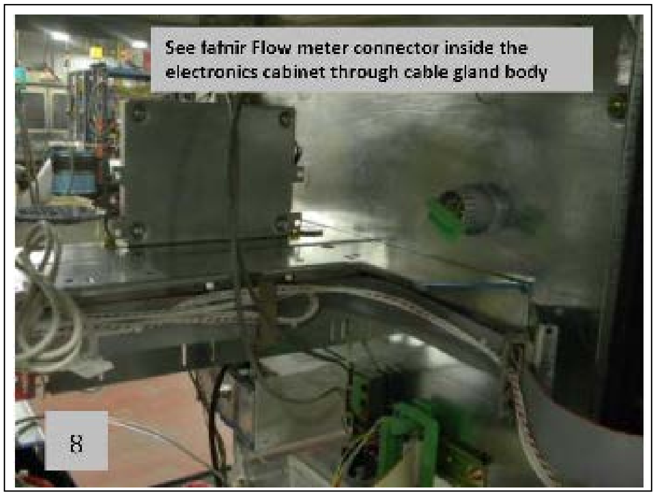
4 Tighten the cable Gland Locknut from the side panel (outside the electronics cabinet).

5 Route the VaporTEK motor cable through Side A.

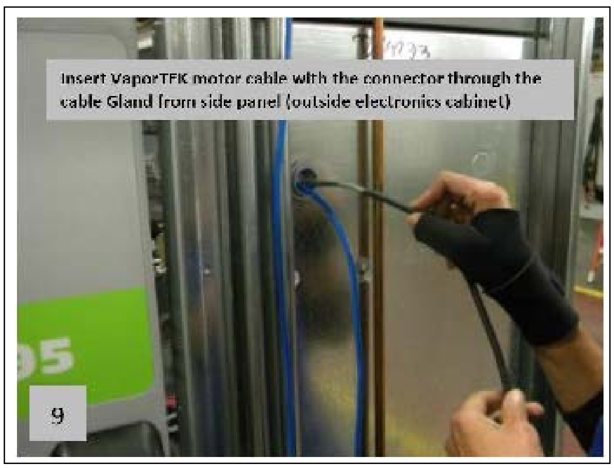


6 Insert Fafnir flow meter cable with the connector (Side A) through the cable Gland from side panel (outside electronics cabinet).

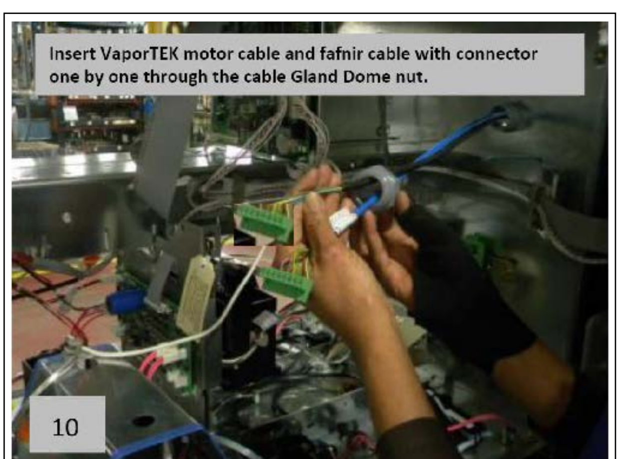
7 See Fafnir flow meter connector inside the electronics cabinet through cable Gland body.



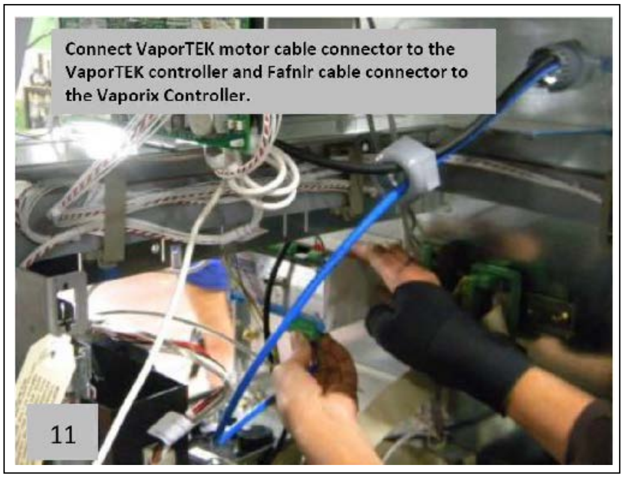
8 Insert VaporTEK motor cable with the connector through the cable Gland from the side panel (outside electronics cabinet).



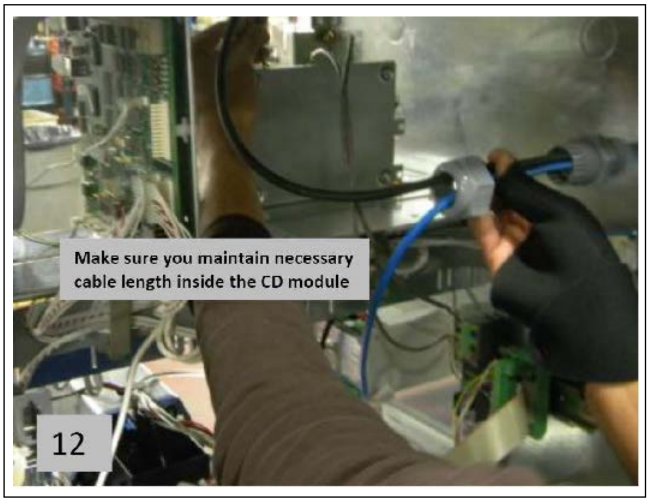
9 Insert VaporTEK motor cable and Fafnir cable with connector one-by-one through the cable Gland Dome nut.



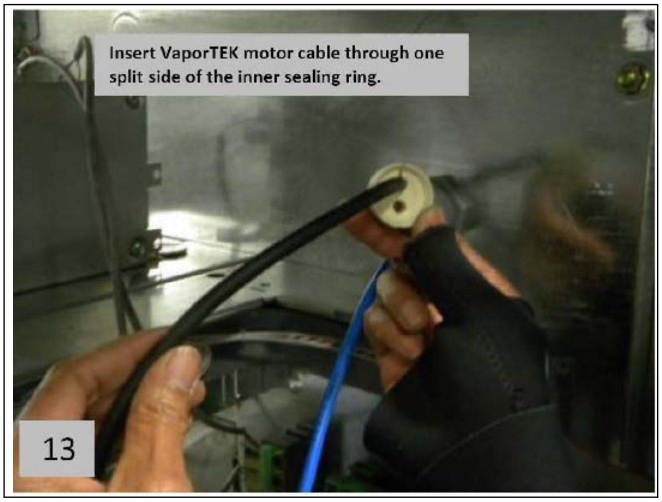
10 Connect VaporTEK motor cable connector to the VaporTEK controller and Fafnir cable connector to the Vaporix Controller.



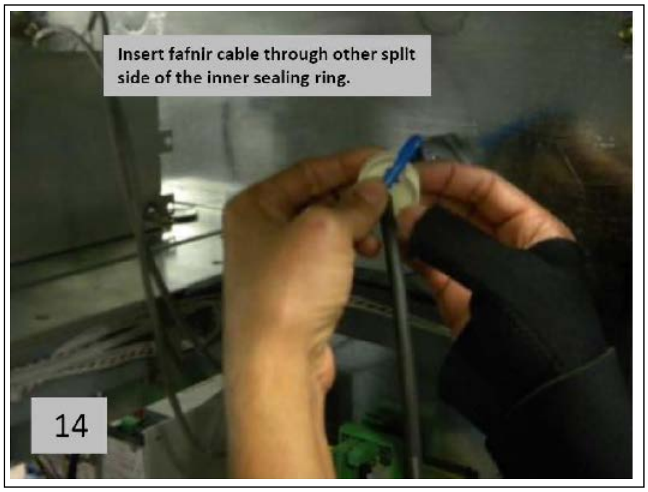
11 Ensure that you maintain necessary cable length inside the CD module.



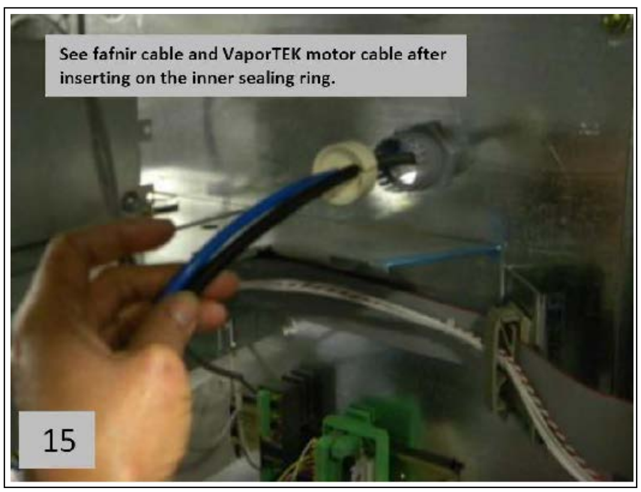
12 Insert VaporTEK motor cable through one split side of the inner sealing ring.



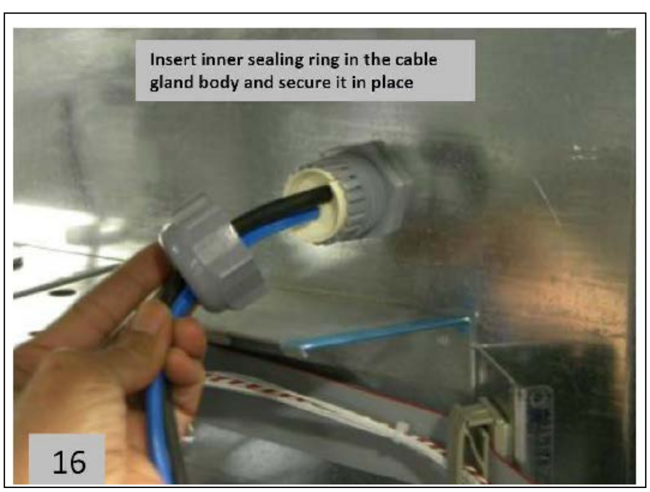
13 Insert Fafnir cable through other split side of the inner sealing ring.



14 See Fafnir cable and VaporTEK motor cable after inserting on the Inner sealing ring.

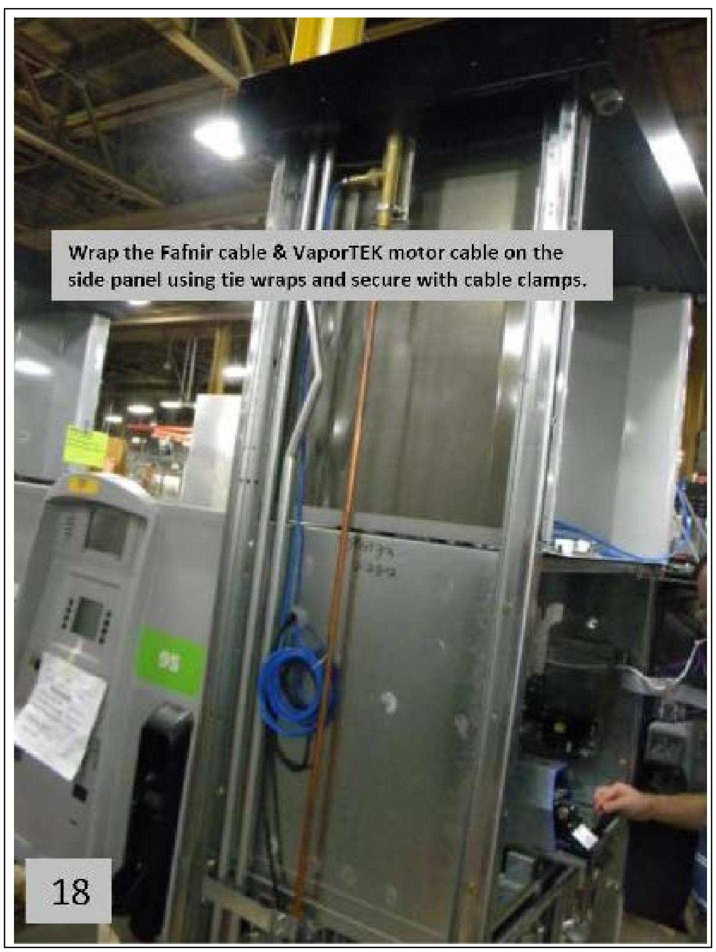


15 Insert inner sealing ring in the cable Gland body and secure it in place.



16 Tighten the Dome nut on the cable Gland body.

17 Wrap the Fafnir cable and VaporTEK motor cable on the side panel using tie wraps and secure with cable clamps.



18 Repeat the same steps for VaporTEK sensor cable and Fafnir flow meter cable (Side B) through the other side of the dispenser.

Installing the Din Rail and Vaporix Controller

To install the Din rail and Vaporix controller, proceed as follows:

Figure 22: Din Rail

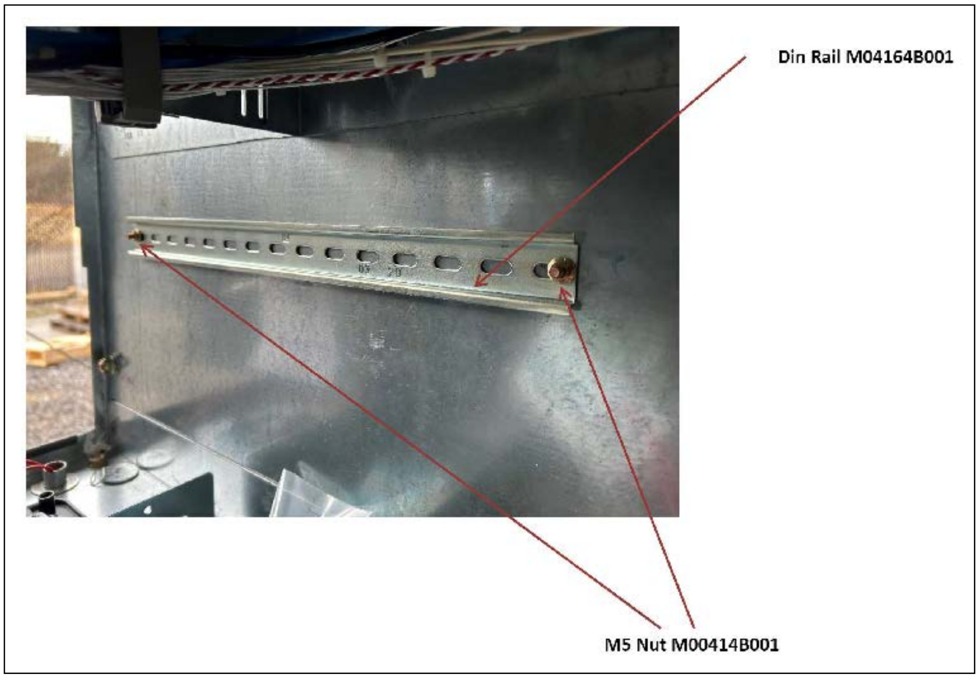


Figure 23: VaporIX Controller Installation in Din Rail

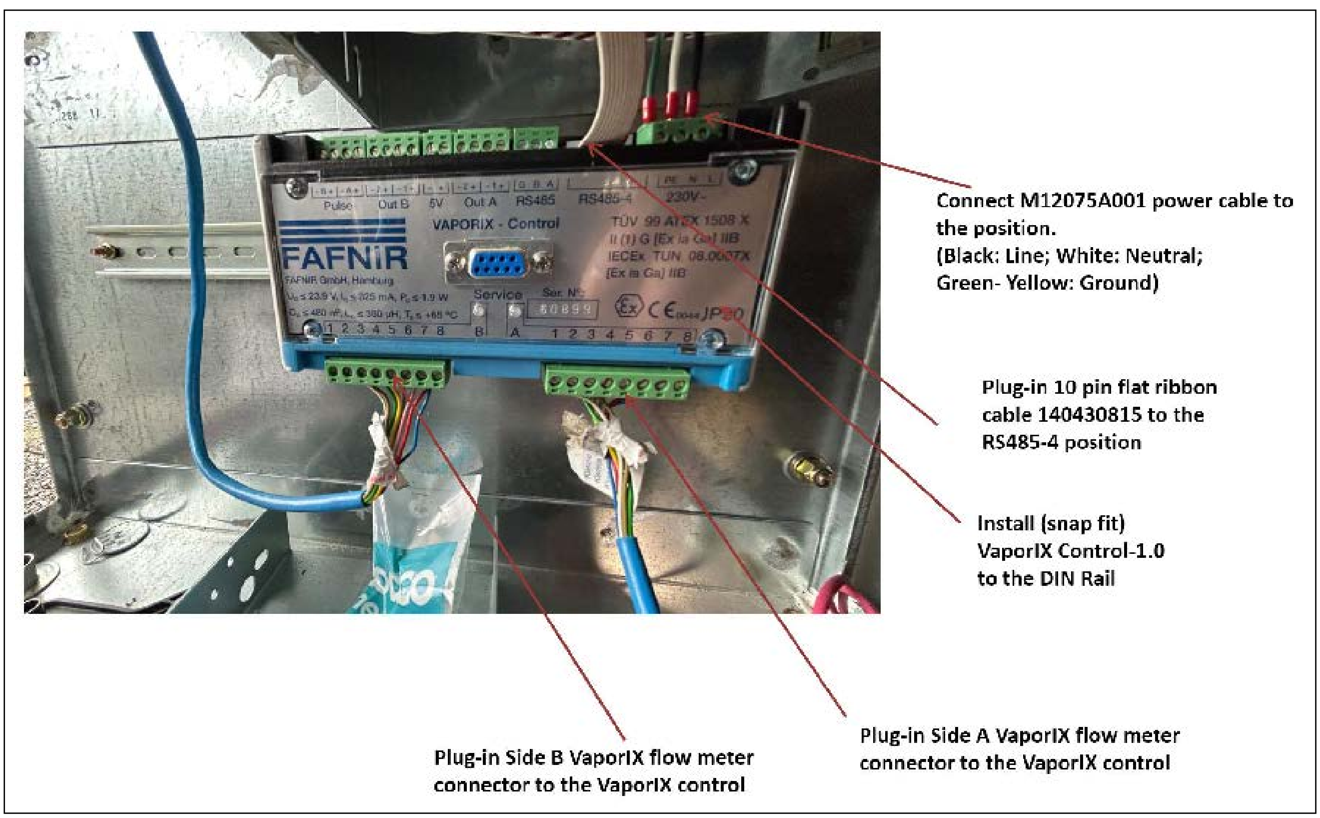


Figure 24: VaporTEK-3 Controller Kit (900895-001)

(VaporTEK-3 Controller Board 900890-002) Hardware REV I and above/Firmware VTEK_3 VI.07M.mot

Figure 25: VaporTEK-3 Controller Kit Installation

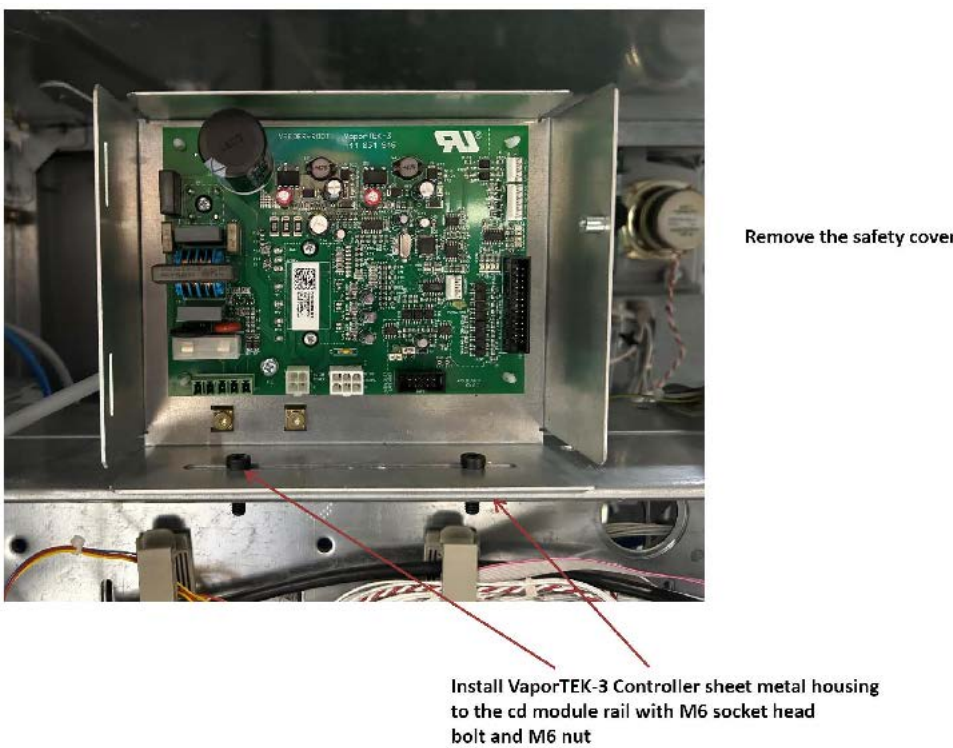


Figure 26: AC Power Distribution Cable M04406A006 Installation

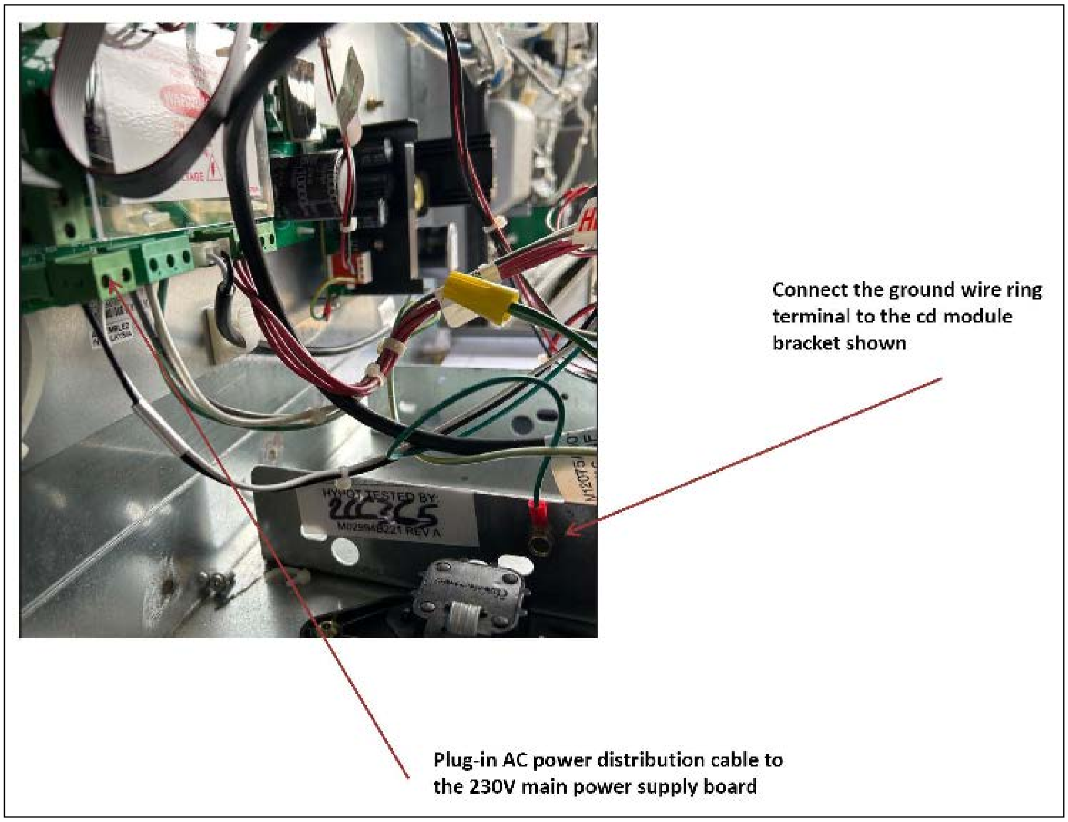


Figure 27: Power Cable (M12075A001) Installation

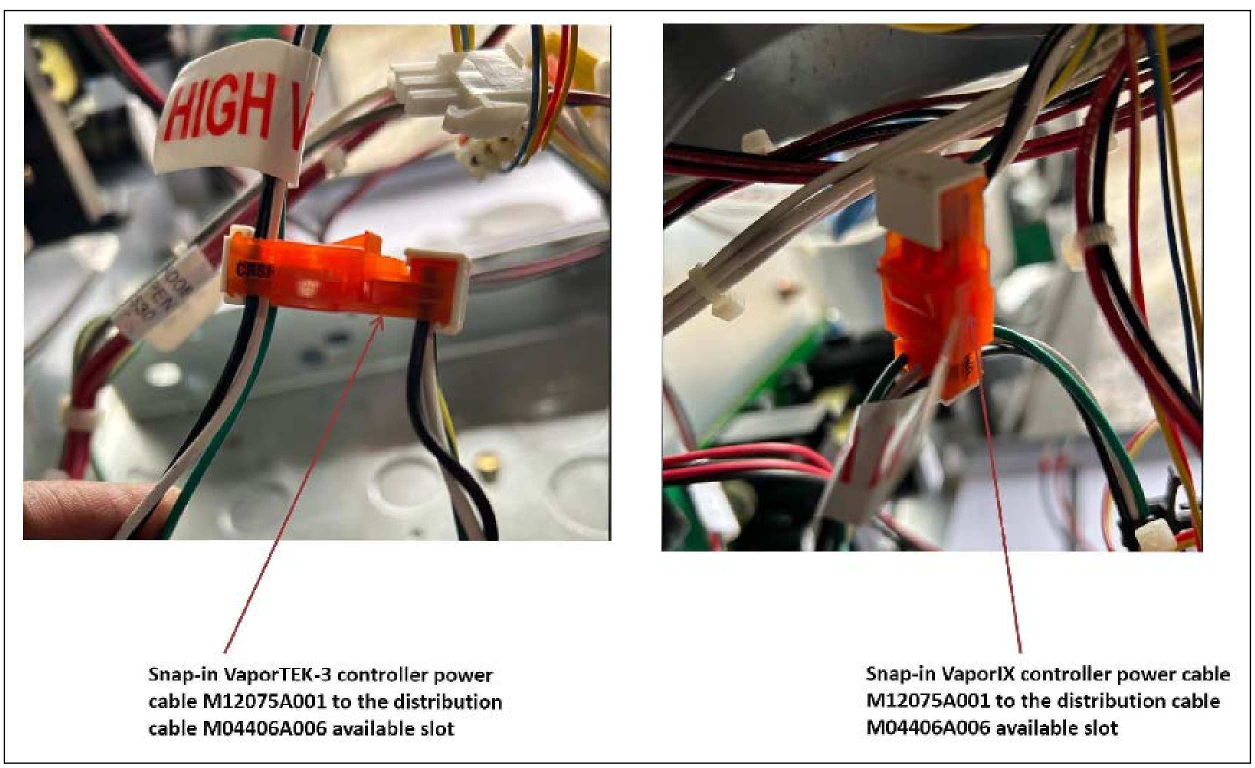


Figure 28: 140530346 Cable Installation to Pump Control Node

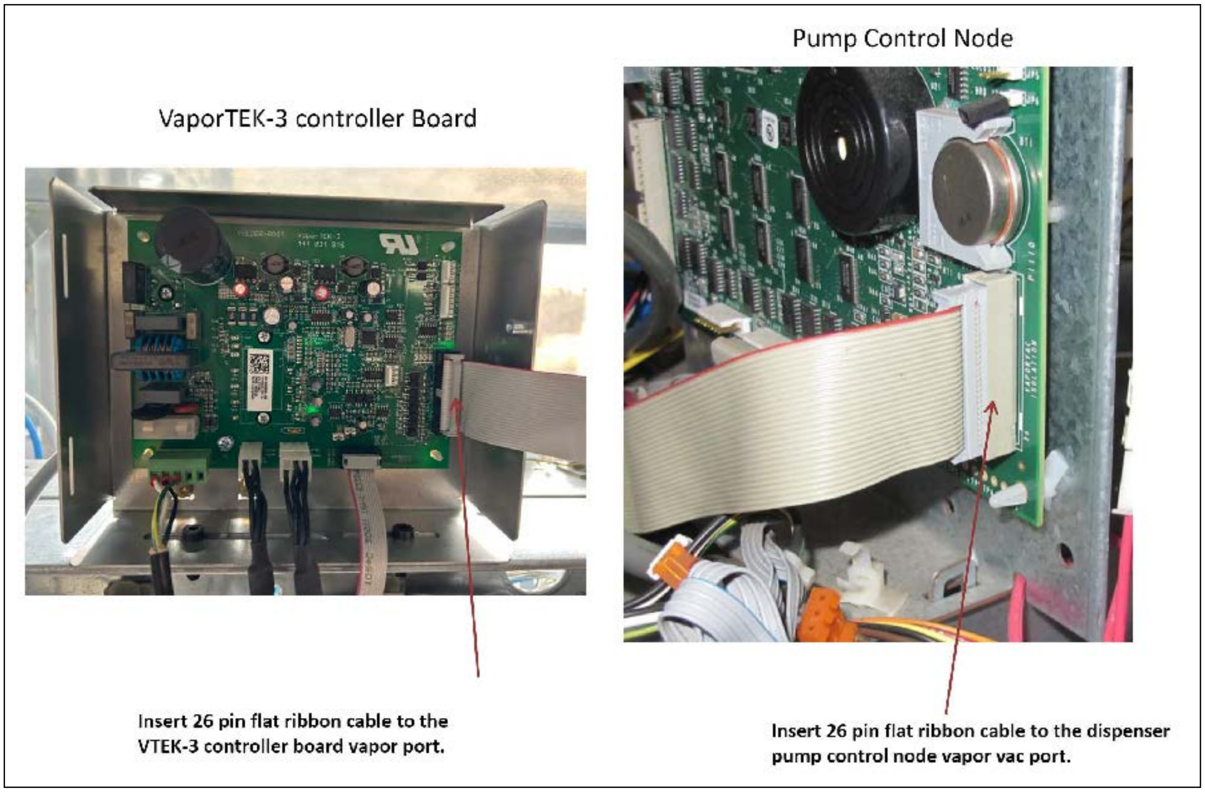


Figure 29: VaporTEK Controller Board Connections

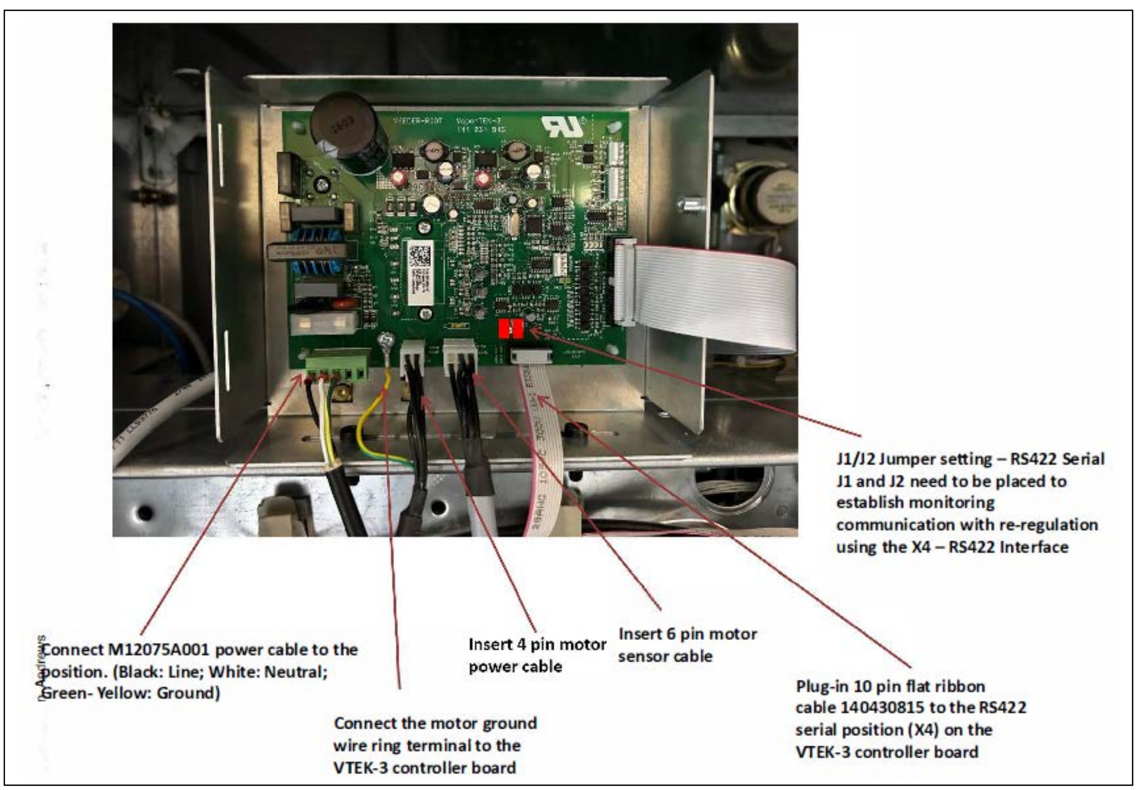


Figure 30: Installing VaporTEK Controller Board Cover

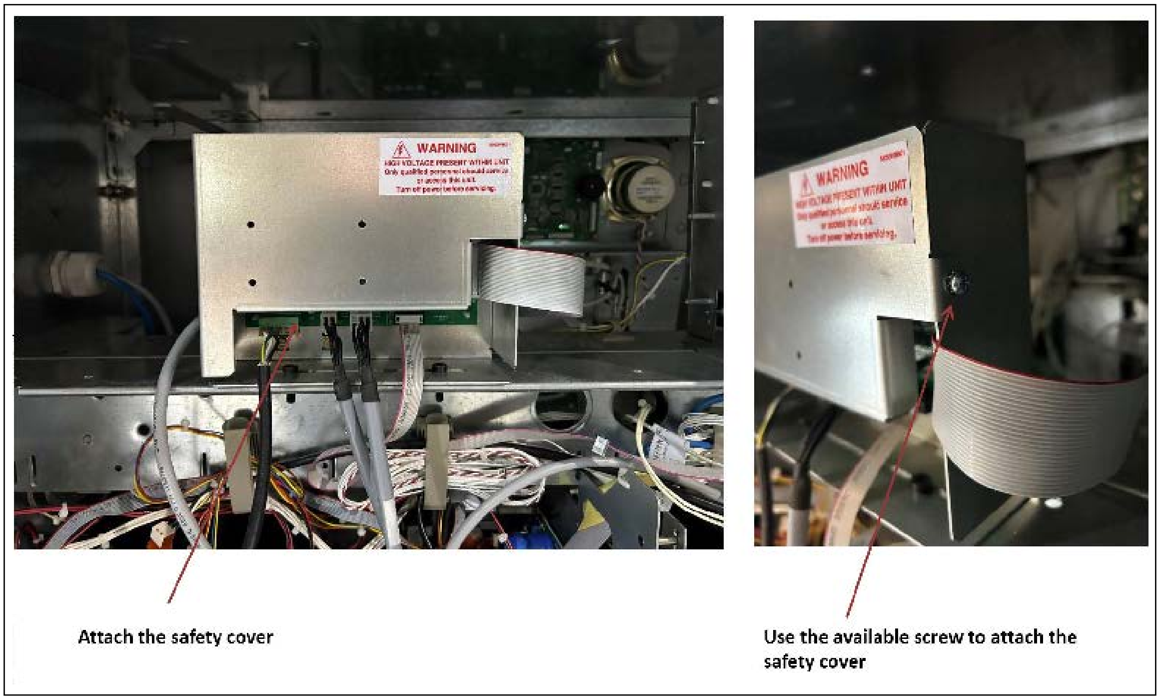
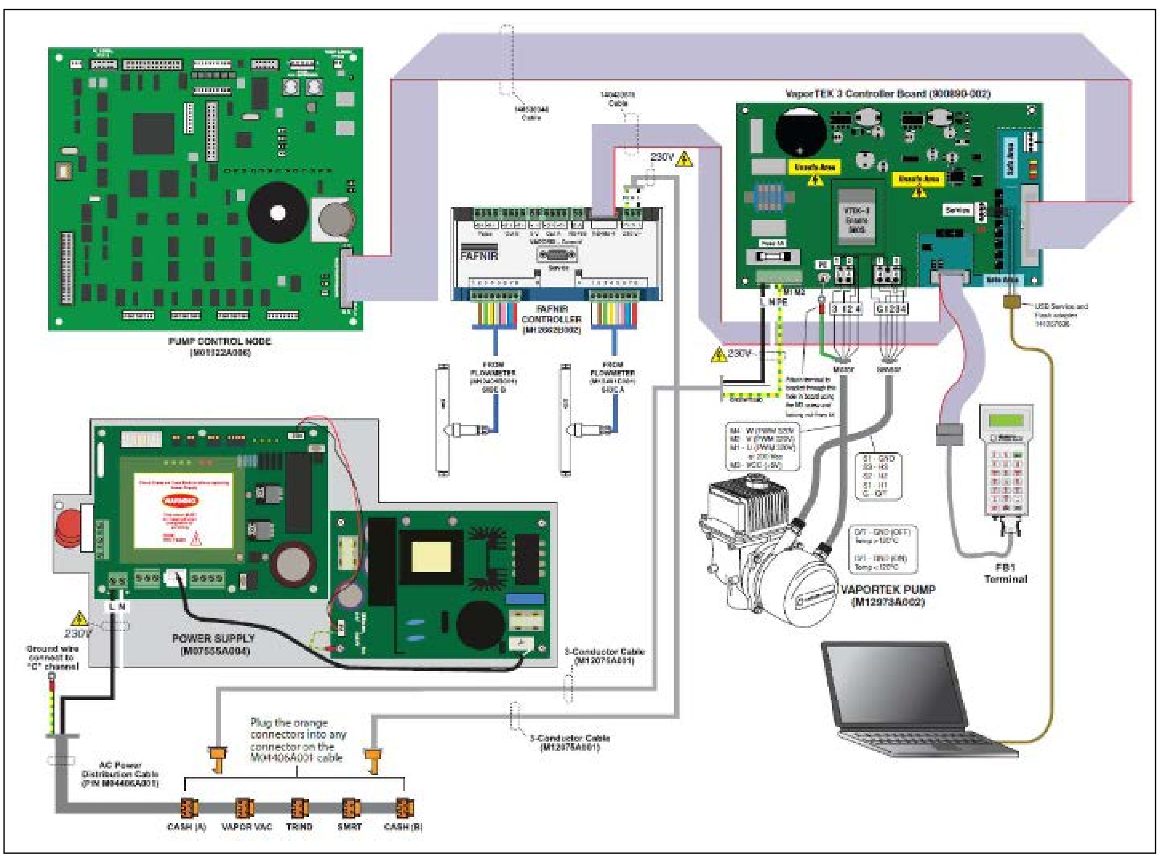


Figure 31: VaporTEK-3 Installation Wiring Diagram



Bill of Material VaporTEK-1 Field Replacement with VaporTEK-3

To replace the VaporTEK-1 Field with VaporTEK-3 in Encore 500S dispenser (lncase of VaporTEK-1 pump (M12973A001), Controller (M12965B001), or Interface (M12966B001) failure, below are the components required:

Part Number	Description	Qty Per Dispenser
900895-001	VTEK3- Mounting Bracket Kit (Including VTEK-3 Board 900890-002) Hardware Revision: REV I and above Firmware Version: VTEK_3 Vl.07M.mot	1
140430815	10-Pin Flat Ribbon Cable (VTEK-3 to Vaporix Control)	1
900882-001	VaporTEK Pump, VaporTEK-3 Vapor Recovery	1
908360	VaporlX Control -1 w/ Qatar Software Firmware: 1.52 and above	1

Note: Use existing Vaporix Control 1, flash the firmware 1.52 and above.

Vaporix Programming Pump 02.8.86 for Collection and Monitoring

Error Codes

Following table lists the error codes associated with VaporTEK:

Error Code	Description
6042	Vaporix alarm side A.
6043	Vaporix alarm side B.
6044	Vaporix option is set, but board is not detected.
6045	Shutdown warning side A (show on the dispenser log file).
6046	Shutdown warning side B (show on the dispenser log file).
6047	Vaporix board is detected, but option is not set.

Collection + Monitoring units require two special programming steps. First, the Vaporix-Control must be enabled and the PCN must be set up to provide output pulses to the VaporTEK interface using CC 91, FC 4. Then, the fuel density must be set using CC 75.

To program the dispenser, proceed as follows on the manager keypad:

1. Press **F1** on the manager keypad.
2. Press **0** > **1** > **2** > **8** > **Enter**.
3. Press **91** > **Enter**.
4. Press **3** > **Enter** (right digit in cash).
5. Turn ECAL switch to right.
6. Press **4** > **Enter** (for Vaporix with shutdown capability). Press **3 > Enter** (for Vaporix), if shutdown is not enabled.

   Note: Local regulations will dictate which option to use.
7. Press **F1**. The VaporVac is now set for Vaporix.

   Next, the fuel density must be programmed:
8. Press **75** > **Enter**.
9. Press **1** > **Enter** (for meter 1), volume blinks.
10. Press **1** > **Enter** (for gas).
11. Press **2** > **Enter** (for meter 2), right cash blinks.
12. Press **1** > **Enter** (for gas), volume blinks.
13. Press **5** > **Enter** (for meter 5), right cash blinks.
14. Press **1** > **Enter** (for gas), volume blinks.
15. Press **6** > **Enter** (for meter 6), right cash blinks.

16 Press **1** > **Enter** (for gas), volume blinks.

If unit is a three-grade, you must program the meters 3 and 4. If this is a two-grade unit, skip to step 21.

17 Press **3** > **Enter** (for meter 3), right cash blinks.

18 Press **2** > **Enter** (for diesel), volume blinks.

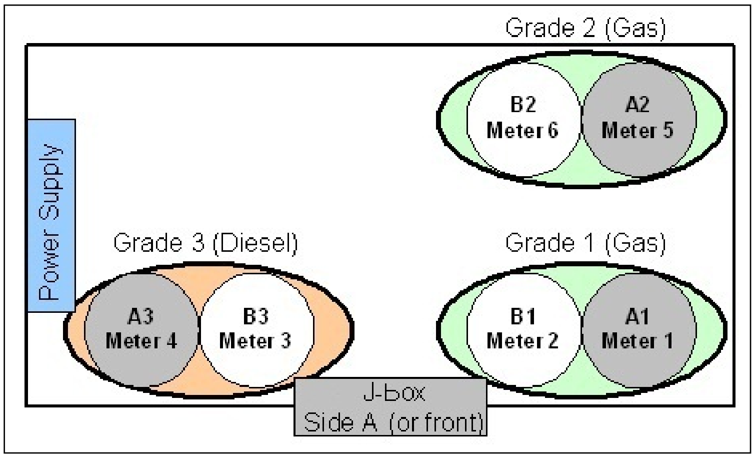
19 Press **4** > **Enter** (for meter 4), right cash blinks.

20 Press **2** > **Enter** (for diesel), volume blinks.

21 Return ECAL switch to left.

22 Press **F2** to return to idle state.

Figure 32: Three-grade Encore



System Integrity Test and Calibration

For more details, refer *MDE-5394 VaporTEK/VaporTEK-3 Controller Board 110 V UL Vapor Recovery Collection System for Encore 500 S Start-Up and Service Manual*.

Troubleshooting Guide for Vaporix

For more details, refer *MDE-5394 VaporTEK/VaporTEK-3 Controller Board 110 V UL Vapor Recovery Collection System for Encore 500 S Start-Up and Service Manual*.

Vaporix-Diagnose

Collection + Monitoring Only

VAPORIXDiagnose is a program located in the ftp site http://www.fafnir.org/DL/perm/VAPORIX1. It manages the transfer and analysis of the vapor recovery data collected by the Vaporix-Control. It can be hosted on any Windows-based computer with Microsoft Excel.

Before Starting Vaporix Diagnostics Program

Prior to the program start-up, the Vaporix-Control measurement analysis unit must be connected via a free serial RS-232 interface or USB interface with a serial adapter to a computer. See serial cable manufacturer information in the recommended equipment list.

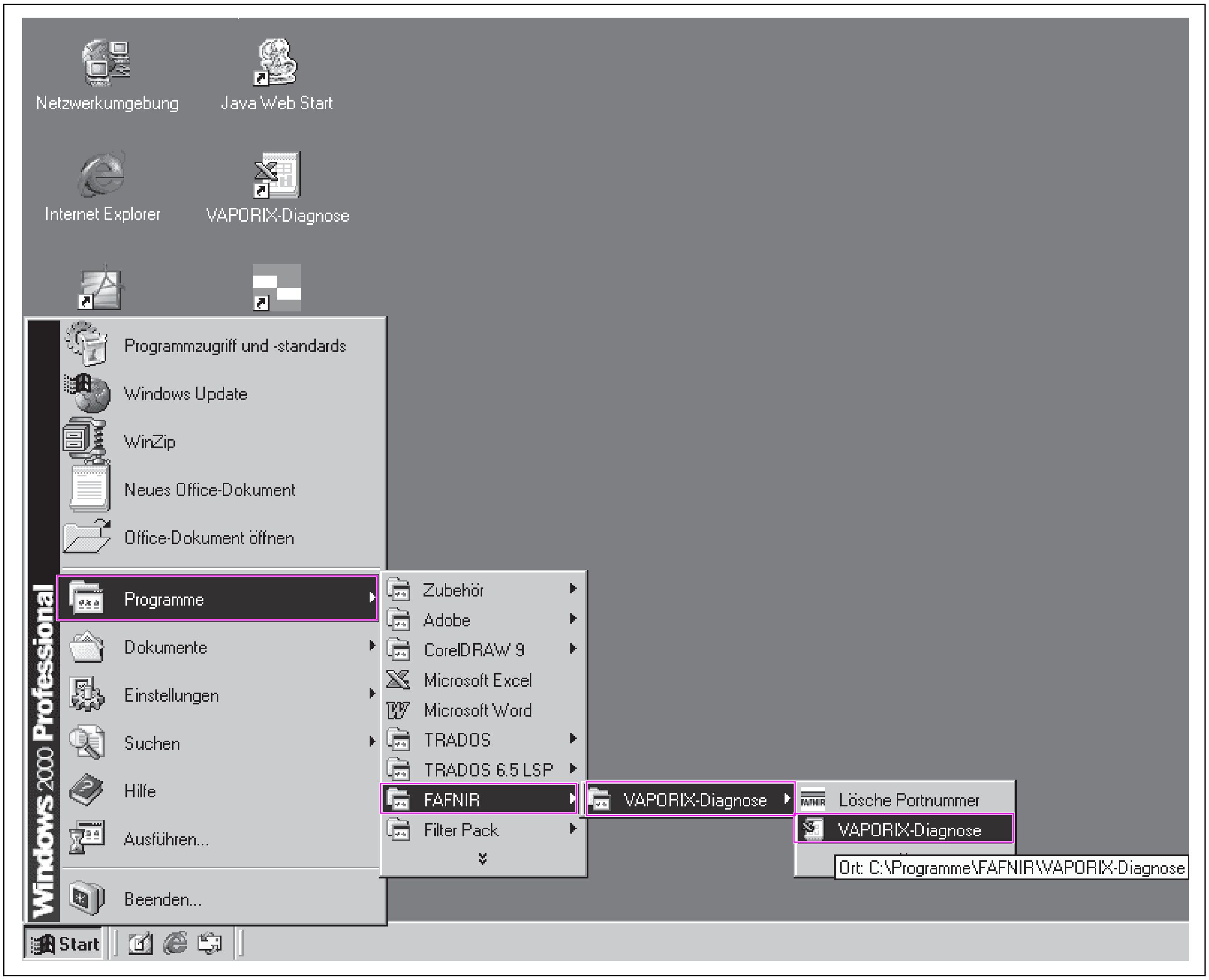
Starting Vaporix Diagnostics Program

To start the Vaporix diagnostics program, proceed as follows:

1 Navigate to **Start** > **All Programs** > **FAFNIR** > **VAPORIX-Diagnose**, then select the **VAPORIX-Diagnose** program.

If you did not specify a different program group during the installation procedure, you will find the program in the FAFNIR program group.

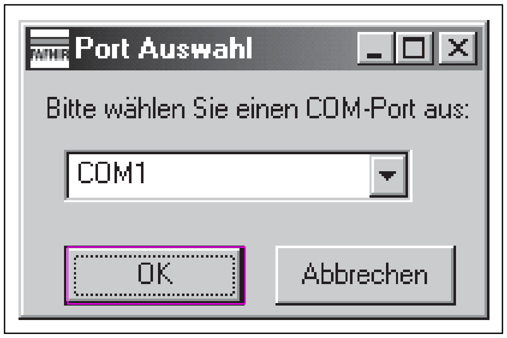
Figure D-1: Starting Vaporix Diagnostics Program



When the program is started for the first time, a dialog box will open up in which you must specify the COM port to be used to carry out communication with the Vaporix-Control measurement analysis unit.

2 Select the COM port that is connected to the Vaporix-Control measurement analysis unit.

Figure D-2: Selecting COM Port



*Note: The Microsoft Excel template contains macros for the purpose of preparing the diagrams. When the program is started, a window appears with appropriate warning information. Select the **Activate macros** button to use all the Vaporix diagnostics program functions.*

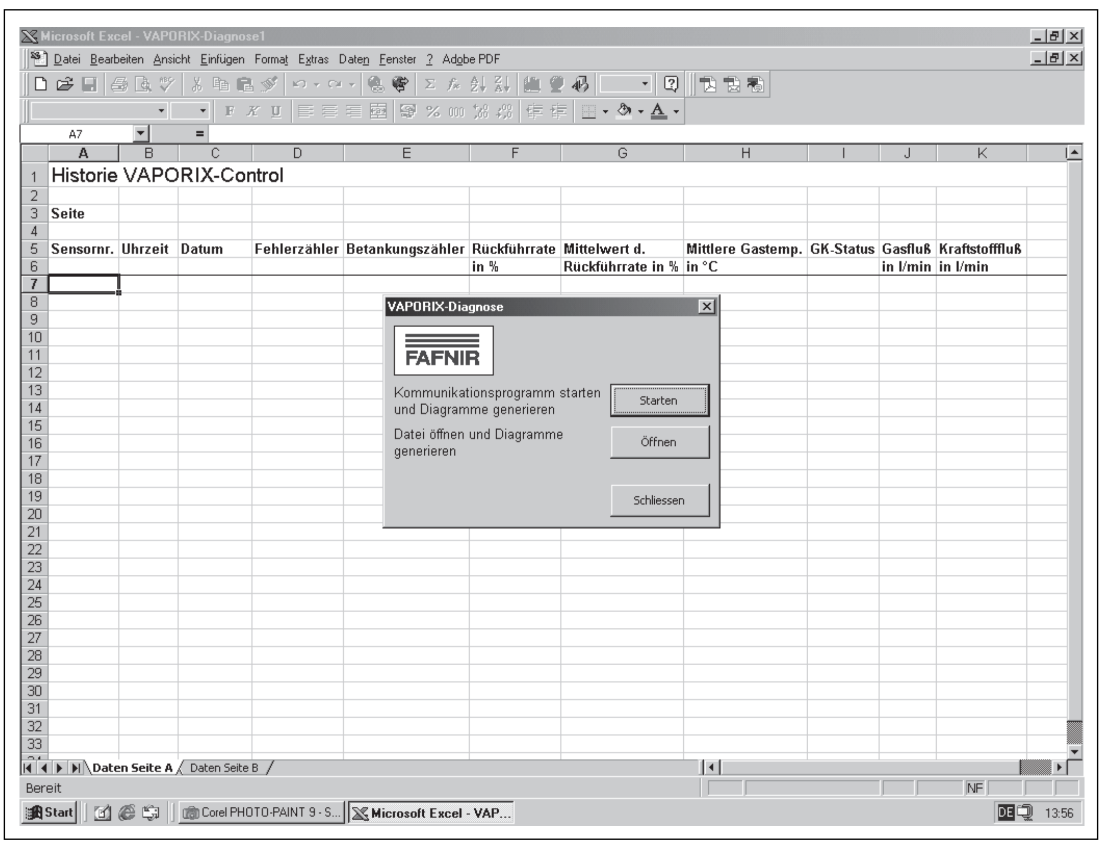
Reading Out Data History

To read out and display the data history of the connected Vaporix-Control measurement analysis unit in graphical form, proceed as follows:

1 Select the **Start** button.

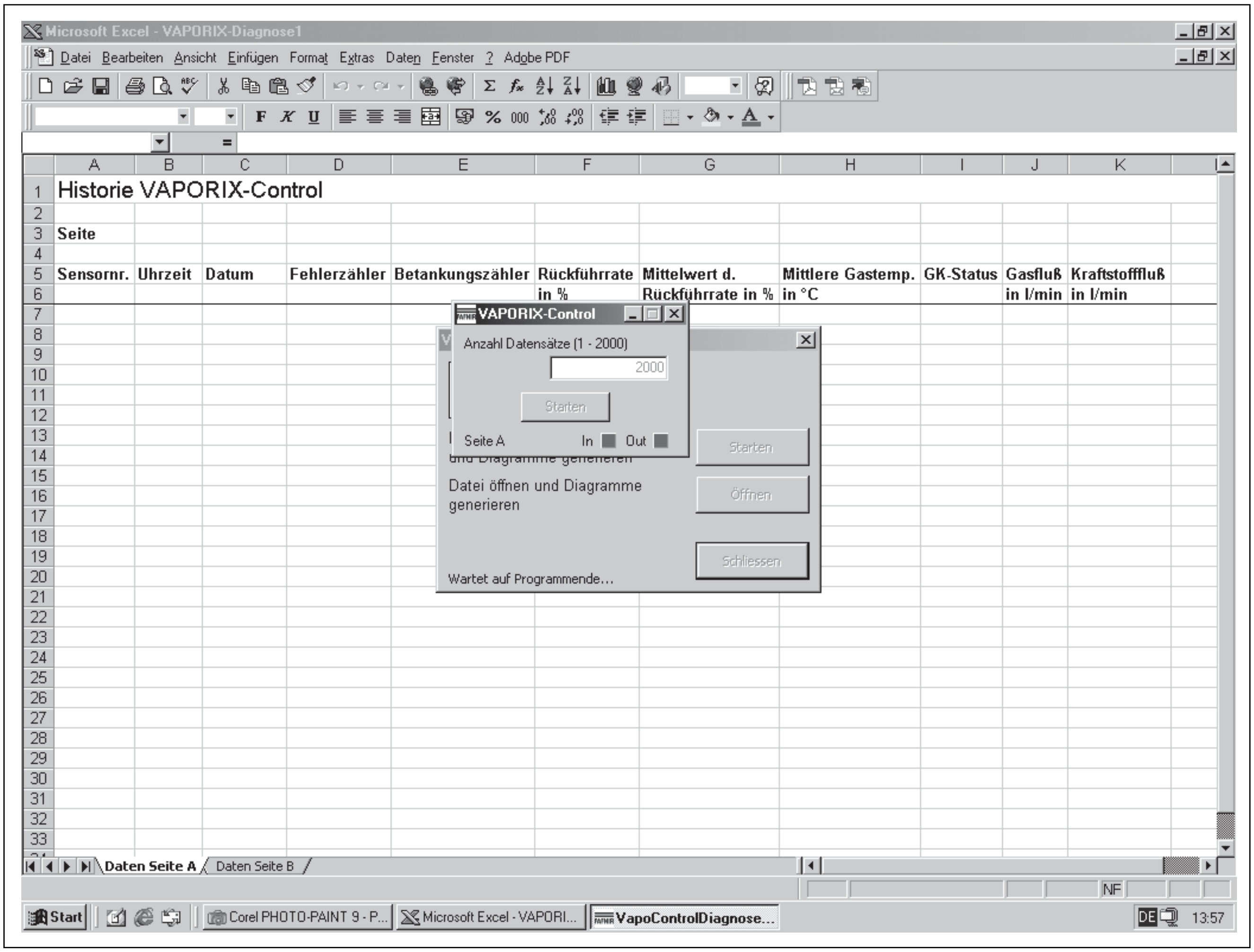
*Note: You can read and display already available data history in graphical form by pressing the **Open** button.*

Figure D-3: Dialog Box for Displaying Data History



2 After establishing communication with the measurement analysis unit by pressing the **Start** button, the number of data records of the filling operation history to be read out is scanned. To obtain an informative overview, select the 2000 data records specified in the pre-setting (maximum number).

Figure D-4: Defining Number of Data Records



3 Press the **Start** button to read out the data history. In the lower section of that dialog box, you will see a status display that shows which data records are being processed.

Following the reading-out operation, the program offers the possibility of reorganizing the history memory. The data available in Vaporix-Control is then deleted with the exception of the last 96 data entries.

Note: Reorganization prevents identical data from being read out repeatedly.

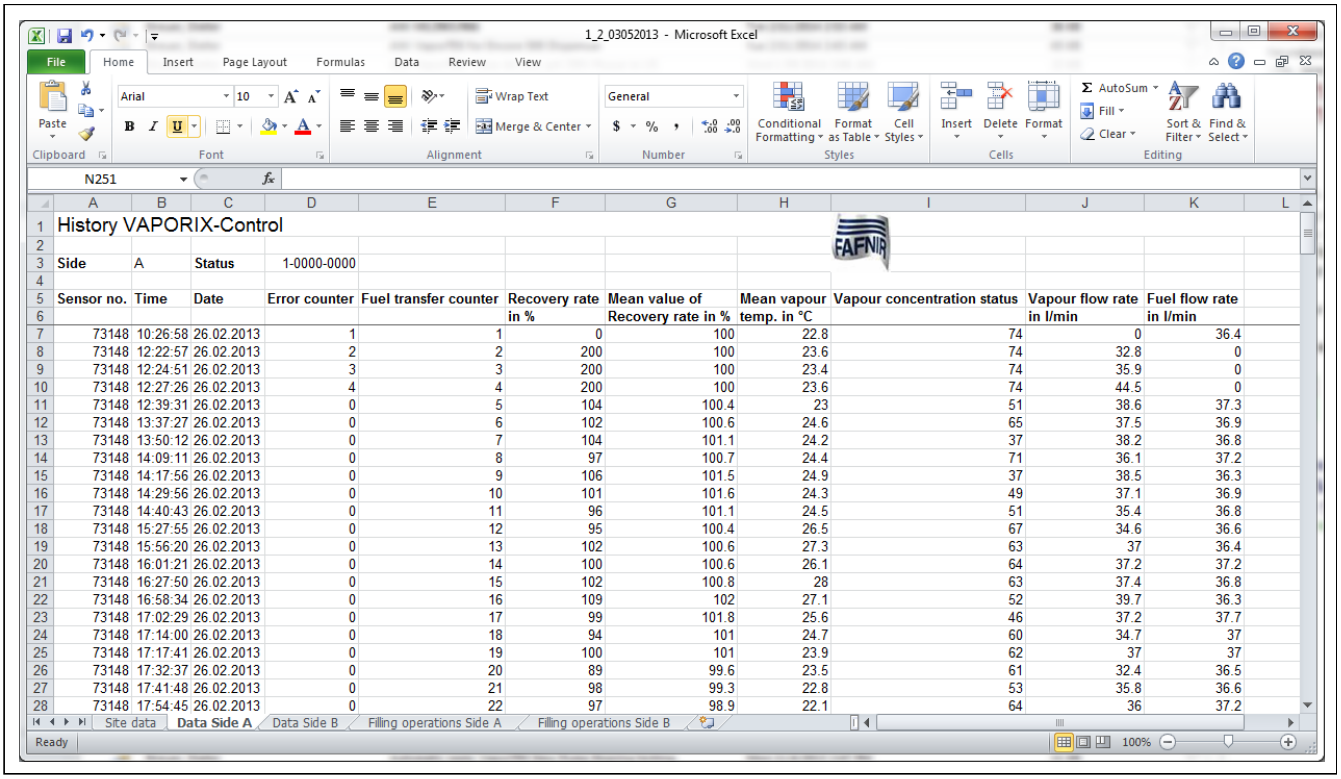
4 Following the reorganization process, communication to the Vaporix-Control measurement analysis unit is automatically terminated and Microsoft Excel generates the diagrams. A message displays that the process will now be terminated. Click **OK** to confirm.

Note: To read out further data history of the Vaporix-Control measurement analysis unit, you must restart the Vaporix diagnostics program using the Windows Start menu. However, Microsoft Excel can remain open.

Representing Data History

The data history of both dispenser sides is displayed in each case in tabular form and as a diagram on separate worksheets. The bottom card file tabs show the dispenser side that is applicable for the data.

Figure D-5: Representing Dispenser Side A Data History in Microsoft Excel

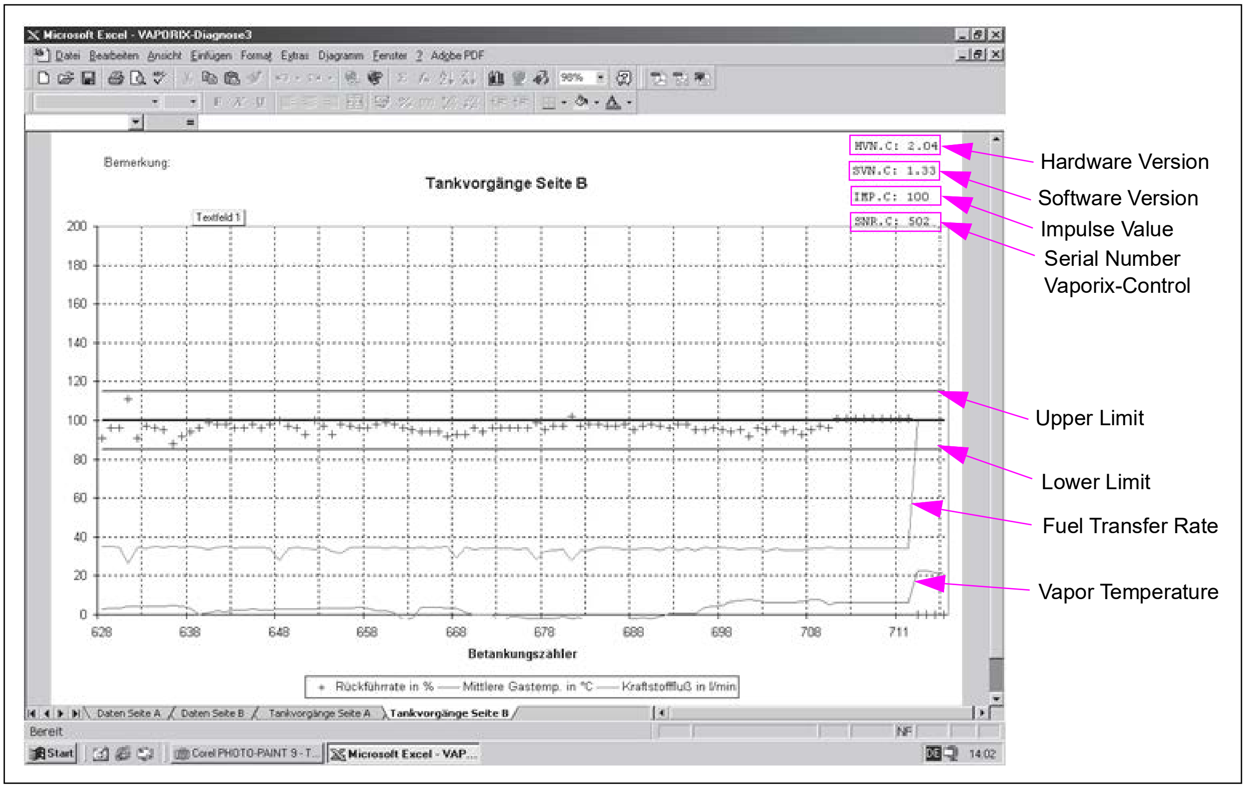


History VAPORIX-Control

Side	A	Status	1-0000-0000							
Sensor no.	Time	Date	Error counter	Fuel transfer counter	Recovery rate in %	Mean value of Recovery rate in %	Mean vapour temp. in °C	Vapour concentration status	Vapour flow rate in l/min	Fuel flow rate in l/min
73148	10:26:58	26.02.2013	1	1	0	100	22.8	74	0	36.4
73148	12:22:57	26.02.2013	2	2	200	100	23.6	74	32.8	0
73148	12:24:51	26.02.2013	3	3	200	100	23.4	74	35.9	0
73148	12:27:26	26.02.2013	4	4	200	100	23.6	74	44.5	0
73148	12:39:31	26.02.2013	0	5	104	100.4	23	51	38.6	37.3
73148	13:37:27	26.02.2013	0	6	102	100.6	24.6	65	37.5	36.9
73148	13:50:12	26.02.2013	0	7	104	101.1	24.2	37	38.2	36.8
73148	14:09:11	26.02.2013	0	8	97	100.7	24.4	71	36.1	37.2
73148	14:17:56	26.02.2013	0	9	106	101.5	24.9	37	38.5	36.3
73148	14:29:56	26.02.2013	0	10	101	101.6	24.3	49	37.1	36.9
73148	14:40:43	26.02.2013	0	11	96	101.1	24.5	51	35.4	36.8
73148	15:27:55	26.02.2013	0	12	95	100.4	26.5	67	34.6	36.6
73148	15:56:20	26.02.2013	0	13	102	100.6	27.3	63	37	36.4
73148	16:01:21	26.02.2013	0	14	100	100.6	26.1	64	37.2	37.2
73148	16:27:50	26.02.2013	0	15	102	100.8	28	63	37.4	36.8
73148	16:58:34	26.02.2013	0	16	109	102	27.1	52	39.7	36.3
73148	17:02:29	26.02.2013	0	17	99	101.8	25.6	46	37.2	37.7
73148	17:14:00	26.02.2013	0	18	94	101	24.7	60	34.7	37
73148	17:17:41	26.02.2013	0	19	100	101	23.9	62	37	37
73148	17:32:37	26.02.2013	0	20	89	99.6	23.5	61	32.4	36.5
73148	17:41:48	26.02.2013	0	21	98	99.3	22.8	53	35.8	36.6
73148	17:54:45	26.02.2013	0	22	97	98.9	22.1	64	36	37.2

Each line in the Microsoft Excel table corresponds to an evaluated filling operation. The meaning of the individual columns is indicated in the header.

Figure D-6: Graphical Representation of Dispenser Side B Data History



Note: For an analysis of the displayed data history, refer to the FAFNIR diagnostics summary.

Vaporix Status Error Codes

Following table lists the status error codes for Vaporix:

<table>
<tr><th colspan="3">Symptoms</th><th rowspan="2">Probable cause</th><th rowspan="2">Corrective Action</th></tr>
<tr><th>Primary</th><th>Secondary</th><th>Tertiary</th></tr>
<tr><td>Status Error 0-0010-0000</td><td>Measured gas flow may be too high.</td><td rowspan="8">N/A</td><td>Wetted Sensor</td><td>Locate and repair leak/purge sensor and automatic reset after the liquid is evaporated.</td></tr>
<tr><td>Status Error 0-0000-0001</td><td>Vaporix-Flow is not available.</td><td>Wrong power input wiring.</td><td>Check the wiring and automatic reset when the problem is corrected.</td></tr>
<tr><td>Status Error 0-0000-0010</td><td>Vaporix-Control detects fuel and vapor flow at different sides of the dispenser.</td><td>Wrong flow sensor connection (side A in side B port and side B in side A port).</td><td>Check and correct the wiring and automatic reset when the problem is corrected.</td></tr>
<tr><td>Status Error 0-0000-1100</td><td rowspan="5">N/A</td><td>Clock backup battery alarm.</td><td>Battery is discharged and Vaporix-Control needs to be exchanged.</td></tr>
<tr><td>Status Error 0-0001-0000</td><td>Internal Error</td><td>Check supply voltage and take power from Vaporix-Control for a few seconds. If there is no improvement, exchange Vaporix-Control</td></tr>
<tr><td>Status Error 0-1000-0000</td><td>The dongle has activated the maintenance mode.</td><td rowspan="2">N/A</td></tr>
<tr><td>Status Error 1-0000-0000</td><td>PCM functionality.</td></tr>
<tr><td>Sensor Number 999</td><td>Sensor is defective.</td><td>Replace the sensor.</td></tr>
</table>

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