

## Introduction

### Purpose

This manual provides instructions to install the Ultra-Hi™ Secure Encoder (also referred to as Pulser) for Encore® 500 S/700 S/E-CIM™ units. The secure encoder offers the highest level of security to prevent tampering and fuel theft.

*Note: This installation is not applicable for E300 series of dispensers.*

### IMPORTANT INFORMATION

- The kits are based on the four different generations of Encore units. Before installation, ensure that you have the correct kit based on the unit generation (refer to [“Identifying Correct Retrofit Kit”](#) on [page 3](#) and [“Identifying Unit Generation”](#) on [page 12](#)).
- One kit is required per meter. Units with multiple meters require two kits per dispenser.

### Intended Users

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

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## Required Tools

The following tools are required to install the Ultra-Hi Secure Encoder Retrofit Kits:

- 8-mm (5/16-inch) Nut Driver
- 7-mm Nut Driver
- 7/32-inch Open or Box End Wrench
- 1/4-inch Open or Box End Wrench
- 3/4-inch Open or Box End Wrench
- 9/16-inch Open or Box End Wrench
- Pliers
- Needle-Nose Pliers
- 3/16-inch Hexagonal key (Allen®) Wrench
- 3/8-inch Drive Socket Set Metric and English
- 3/8-inch Drive Ratchet and Extension
- 1/2-inch Drive Ratchet
- Large Slip Joint or Tongue and Groove Pliers
- Hammer
- Blunt Punch
- Screw Drivers (Phillips® and Flat tip)
- Anti-Seize Paste
- T25 Torx Bit

## Recommended Tool

Tap wrench to tap the four holes on the meter cover.

### IMPORTANT INFORMATION

Tap wrench is not included in the kits and must be sourced separately.

Figure 1: Examples of Tap Wrenches



## Identifying Correct Retrofit Kit

The following table lists the different Retrofit Kits and the applicable generation for each. One kit required per meter.

Retrofit Kit	Description
M15177K001	Ultra-Hi Secure Encoder Kit, fits generation 1 and generation 2.
M15177K002	Ultra-Hi Secure Encoder Kit, fits generation 1 and generation 2 with security sealing wire holes.
M15179K001	Ultra-Hi Secure Encoder Kit, fits generation 3.
M15179K002	Ultra-Hi Secure Encoder Kit, fits generation 3 with security sealing wire holes.
M15180K001	Ultra-Hi Secure Encoder Kit, fits generation 4.
M15180K002	Ultra-Hi Secure Encoder Kit, fits generation 4 with security sealing wire holes.

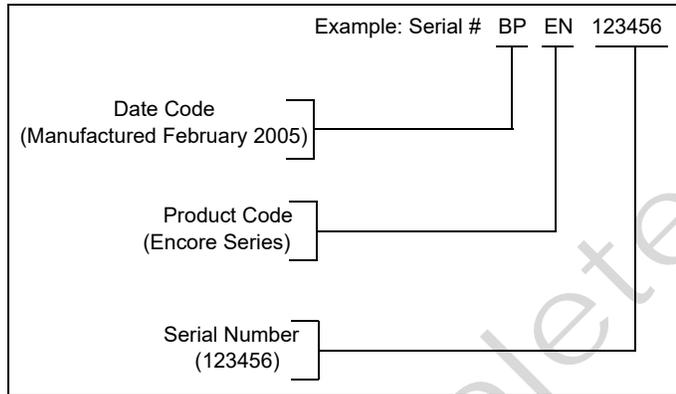
**Figure 2: Ultra-Hi Secure Encoder**



### Serial Number and Date Code

Figure 3 shows serial number system for identifying the serial number and the date code for the Ultra-Hi dispenser:

**Figure 3: Serial Number System**



The following table shows the date code along with the manufactured month and year:

Month		Year							
A	January	A	1952	A	1972	A	1992	A	2012
B	February	B	1953	B	1973	B	1993	B	2013
C	March	C	1954	C	1974	C	1994	C	2014
D	April	D	1955	D	1975	D	1995	D	2015
E	May	E	1956	E	1976	E	1996	E	2016
F	June	F	1957	F	1977	F	1997	F	2017
G	July	G	1958	G	1978	G	1998	G	2018
H	August	H	1959	H	1979	H	1999	H	2019
J	September	J	1960	J	1980	J	2000	J	2020
K	October	K	1961	K	1981	K	2001	K	2021
L	November	L	1962	L	1982	L	2002	L	2022
M	December	M	1963	M	1983	M	2003	M	2023
		N	1964	N	1984	N	2004	N	2024
		P	1965	P	1985	P	2005	P	2025
		R	1966	R	1986	R	2006	R	2026
		S	1967	S	1987	S	2007	S	2027
		T	1968	T	1988	T	2008	T	2028
		U	1969	U	1989	U	2009	U	2029
		W	1970	W	1990	W	2010	W	2030
		X	1971	X	1991	X	2011	X	2031

## Parts List

### M15177K001

The following table lists the parts included in the M15177K001 Kit:

Item	Description	Part Number	Quantity
1	Ultra-Hi Secure Encoder Assy	M15590A001	1
2	Ultra-Hi Liquid Contols® (LC) Meter Assy	M15480A001	1
3	Assy Main Conduit and Wire	M15280A004	1
4	Assy Main Conduit and Wire	M15280A005	1
5	Union, 1/2" Conduit	Q1001604	1
6	Washer Flat .850X1.62X.056	N16599-65	2
7	Socket Head Cap Screw	M15743B001	4
8	Cable Pump Control Node	M15272A001	1
9	Conduit Plate, Lower	M00221B004	2
10	Plate, Conduit	M00224B004	2
11	Gasket, Conduit	M00222B002	2
12	Screw, Metric M5X10	M00417B101	4
13	Ring, O, 2-7/8X3-1/8X1/8	Q10068-24	2
14	Assy, Bracket Transformer	M15158A001	1
15	Nut, Metric Hex (Keps)	Q12885-03	2
16	Nut, Metric Hex (Keps)	Q12885-05	1

### M15177K002

The following table lists the parts included in the M15177K002 Kit:

Item	Description	Part Number	Quantity
1	Ultra-Hi Secure Encoder Assy	M15590A001	1
2	Ultra-Hi LC Meter Assy	M15480A001	1
3	Assy Main Conduit and Wire	M15280A004	1
4	Assy Main Conduit and Wire	M15280A005	1
5	Union, 1/2" Conduit	Q1001604	1
6	Washer Flat .850X1.62X.056	N16599-65	2
7	Socket Head Cap Screw	M15743B001	4
8	Cable Pump Control Node	M15272A001	1
9	Conduit Plate, Lower	M00221B004	2
10	Plate, Conduit	M00224B004	2
11	Gasket, Conduit	M00222B002	2
12	Screw, Metric M5X10	M00417B101	4
13	Ring, O, 2-7/8X3-1/8X1/8	Q10068-24	2
14	Assy, Bracket Transformer	M15158A001	1
15	Nut, Metric Hex (Keps)	Q12885-03	2
16	Nut, Metric Hex (Keps)	Q12885-05	1

**M15179K001**

The following table lists the parts included in the M15179K001 Kit:

Item	Description	Part Number	Quantity
1	Ultra-Hi Secure Encoder Assy	M15590A001	1
2	Shaft Packing Assy	M15479A001	1
3	Assy Main Conduit and Wire	M15280A003	1
4	Union, 1/2" Conduit	Q1001604	1
5	Washer Flat .850X1.62X.056	N16599-65	2
6	Elbow, 1/2" Npt Conduit	K42448	1
7	Socket Head Cap Screw	M15743B001	4
8	Cable Pump Control Node	M15272A001	1
9	Conduit Plate, Lower	M00221B004	2
10	Plate, Conduit	M00224B004	2
11	Gasket, Conduit	M00222B002	2
12	Screw, Metric M5X10	M00417B101	4
13	Form Tap 1/4-20	M15462B001	1
14	Assy, Bracket Transformer	M15158A001	1
15	Nut, Metric Hex (Keps)	Q12885-03	2
16	Nut, Metric Hex (Keps)	Q12885-05	1

**M15179K002**

The following table lists the parts included in the M15179K002 Kit:

Item	Description	Part Number	Quantity
1	Ultra-Hi Secure Encoder Assy	M15590A002	1
2	Shaft Packing Assy	M15479A001	1
3	Assy Main Conduit and Wire	M15280A003	1
4	Union, 1/2" Conduit	Q1001604	1
5	Washer Flat .850X1.62X.056	N16599-65	2
6	Elbow, 1/2" Npt Conduit	K42448	1
7	Socket Head Cap Screw	M15743B001	4
8	Cable Pump Control Node	M15272A001	1
9	Conduit Plate, Lower	M00221B004	2
10	Plate, Conduit	M00224B004	2
11	Gasket, Conduit	M00222B002	2
12	Screw, Metric M5X10	M00417B101	4
13	Form Tap 1/4-20	M15462B001	1
14	Assy, Bracket Transformer	M15158A001	1
15	Nut, Metric Hex (Keps)	Q12885-03	2
16	Nut, Metric Hex (Keps)	Q12885-05	1

**M15180K001**

The following table lists the parts included in the M15180K001 Kit:

Item	Description	Part Number	Quantity
1	Ultra-Hi Secure Encoder Assy	M15590A001	1
2	Shaft Packing Assy	M15479A001	1
3	Assy Main Conduit and Wire	M15280A003	1
4	Union, 1/2" Conduit	Q1001604	1
5	Washer Flat .850X1.62X.056	N16599-65	2
6	Socket Head Cap Screw	M15743B001	4
7	Cable Pump Control Node	M15272A001	1
8	Conduit Plate, Lower	M00221B004	2
9	Plate, Conduit	M00224B004	2
10	Gasket, Conduit	M00222B002	2
11	Screw, Metric M5X10	M00417B101	4
12	Form Tap 1/4-20	M15462B001	1
13	Assy, Bracket Transformer	M15158A001	1
14	Nut, Metric Hex (Keps)	Q12885-03	2
15	Nut, Metric Hex (Keps)	Q12885-05	1
16	Nut, Metric, Flange	M00414B001	1
17	Cable, Pump Control Node	M15272A002	1

**M15180K002**

The following table lists the parts included in the M15180K002 Kit:

Item	Description	Part Number	Quantity
1	Ultra-Hi Secure Encoder Assy	M15590A002	1
2	Shaft Packing Assy	M15479A001	1
3	Assy Main Conduit and Wire	M15280A003	1
4	Union, 1/2" Conduit	Q1001604	1
5	Washer Flat .850X1.62X.056	N16599-65	2
6	Socket Head Cap Screw	M15743B001	4
7	Cable Pump Control Node	M15272A001	1
8	Conduit Plate, Lower	M00221B004	2
9	Plate, Conduit	M00224B004	2
10	Gasket, Conduit	M00222B002	2
11	Screw, Metric M5X10	M00417B101	4
12	Form Tap 1/4-20	M15462B001	1
13	Assy, Bracket Transformer	M15158A001	1
14	Nut, Metric Hex (Keps)	Q12885-03	2
15	Nut, Metric Hex (Keps)	Q12885-05	1
16	Nut, Metric, Flange	M00414B001	1
17	Cable, Pump Control Node	M15272A002	1

## Related Documents

Document Number	Title	GOLD <sup>SM</sup> Library
MDE-2531	Gilbarco Pump and Dispenser Start-Up and Service Manual	<ul style="list-style-type: none"> <li>• Encore and Eclipse®</li> <li>• Service Manual</li> </ul>
MDE-3804	Encore/Eclipse Start-Up and Service Manual	<ul style="list-style-type: none"> <li>• Encore and Eclipse</li> <li>• Encore and Eclipse Installers</li> </ul>
MDE-3860	Programming Quick Reference Guide	<ul style="list-style-type: none"> <li>• Encore and Eclipse</li> <li>• Encore and Eclipse Installers</li> </ul>
MDE-3921	Laptop Tool User Reference Guide	<ul style="list-style-type: none"> <li>• Encore and Eclipse</li> <li>• Encore and Eclipse Installers</li> <li>• Service Manual</li> </ul>
MDE-4281	Calibration Quick Reference Card Encore 300/500/500 S/ 700 S and Eclipse Units	<ul style="list-style-type: none"> <li>• Encore and Eclipse</li> <li>• Encore and Eclipse Installers</li> <li>• Service Manual</li> </ul>
PT-1936	Encore Series Pumps and Dispensers Illustrated Parts Manual	<ul style="list-style-type: none"> <li>• Encore and Eclipse</li> <li>• Encore and Eclipse Installers</li> <li>• Parts Manual</li> </ul>

## Abbreviations and Acronyms

Term	Description
ASC	Authorized Service Contractor
CC	Command Code
CDM	Computer Display Module
DEF	Diesel Exhaust Fluid
E-CIM	Enhanced Customer Interface Module
EC	Error Code
ESD	Electrostatic Discharge
GOLD	Gilbarco Online Documentation
I.S.	Intrinsic Safety
J-box	Junction Box
LC	Liquid Controls
OSHA	Occupational Safety and Health Administration
PCN	Pump Control Node
PPU	Price Per Unit
TRP	Technician Resource Page
UH	Ultra-Hi
UL <sup>®</sup>	Underwriters Laboratories
W&M	Weights and Measures

# 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).

	<b>WARNING</b>
	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.

## Important Safety Information

### 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

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.

## 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.

## Before You Begin

Before you begin, read and understand all safety information found in *MDE-3804 Encore and Eclipse Start-up/Service Manual*.

### CAUTION



A properly grounded Electrostatic Discharge (ESD) wrist strap must be worn while servicing any electronic devices or components. Failure to use electrostatic precautions may damage electronic components and void warranty.

- 1 Inform the manager.
- 2 Barricade the unit to be worked on.
- 3 Remove power to the unit at the breaker panel. Follow OSHA lockout/tagout procedures.

### WARNING

Failure to turn off the unit during kit installation may cause injury or bodily harm from electrical shock. Ensure that all power to the unit is switched off before opening the door to the unit and during installation of the kit.

- 4 Match the parts received in the kit with [“Parts List”](#) on [page 5](#).

# Identifying Unit Generation

Generations are identified based on the different piping configuration. The following table lists the different generations of the Encore units:

Generation	Description
Generation 1	Encore 500/S units built between June 2002 to December 2012.
Generation 2	Encore 500/S units built between February 2009 to December 2012. <i>Note: Dual masters or 2-product versions are not applicable for this generation.</i>
Generation 3	Encore 500/S/700 S/S E-CIM units built between November 2012 to October 2014. <i>Note: Few generation 3 units as late as March 2013 contained earlier LC meters. Check the LC meter type in generation 3 models.</i>
Generation 4	Encore 500/S/700 S/S E-CIM units built after October 2014 till present.
Optional	Includes the provision (small holes and passageways) within the encoder lid and the encoder housing for installing security wires.

Figure 5 through Figure 10 on page 17 show the different piping configurations based on generations. Figure 11 on page 18 shows the older and new LC meter identification.

**Figure 4: Generation 1 Piping Configuration - 1**

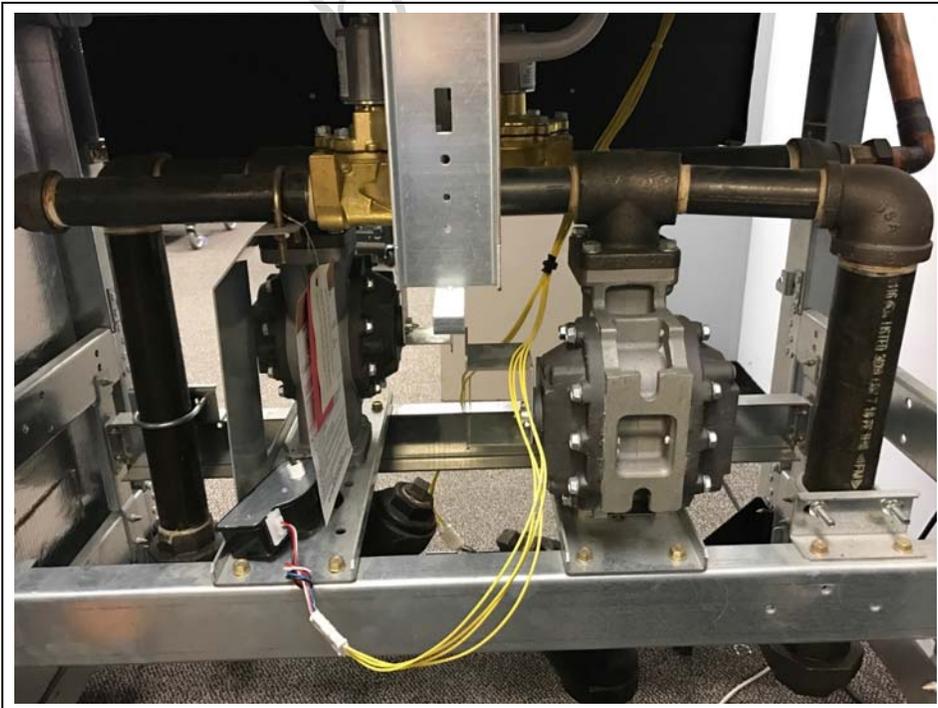


Figure 5: Generation 1 Piping Configuration - 2

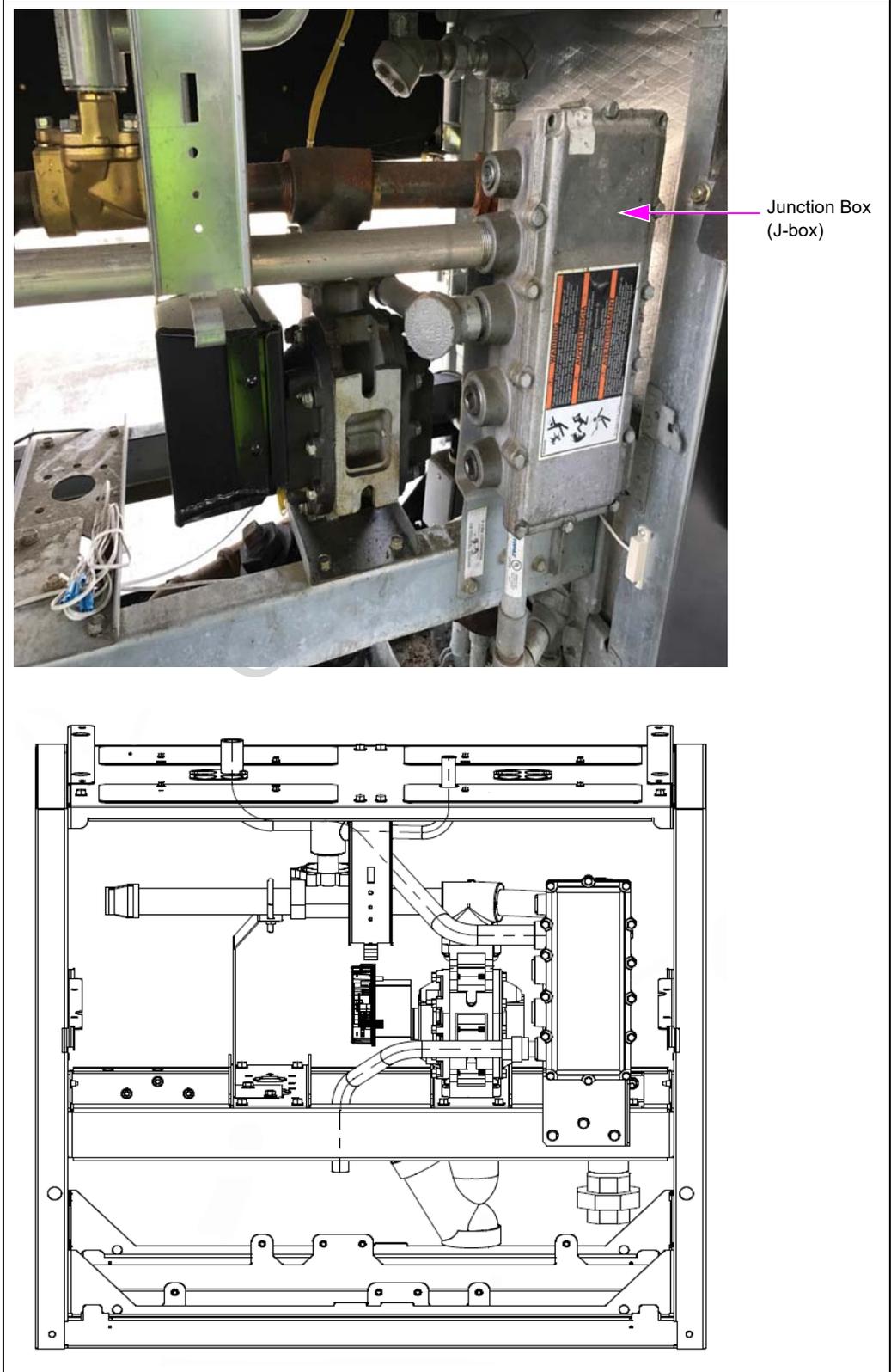


Figure 6: Generation 2 Piping Configuration

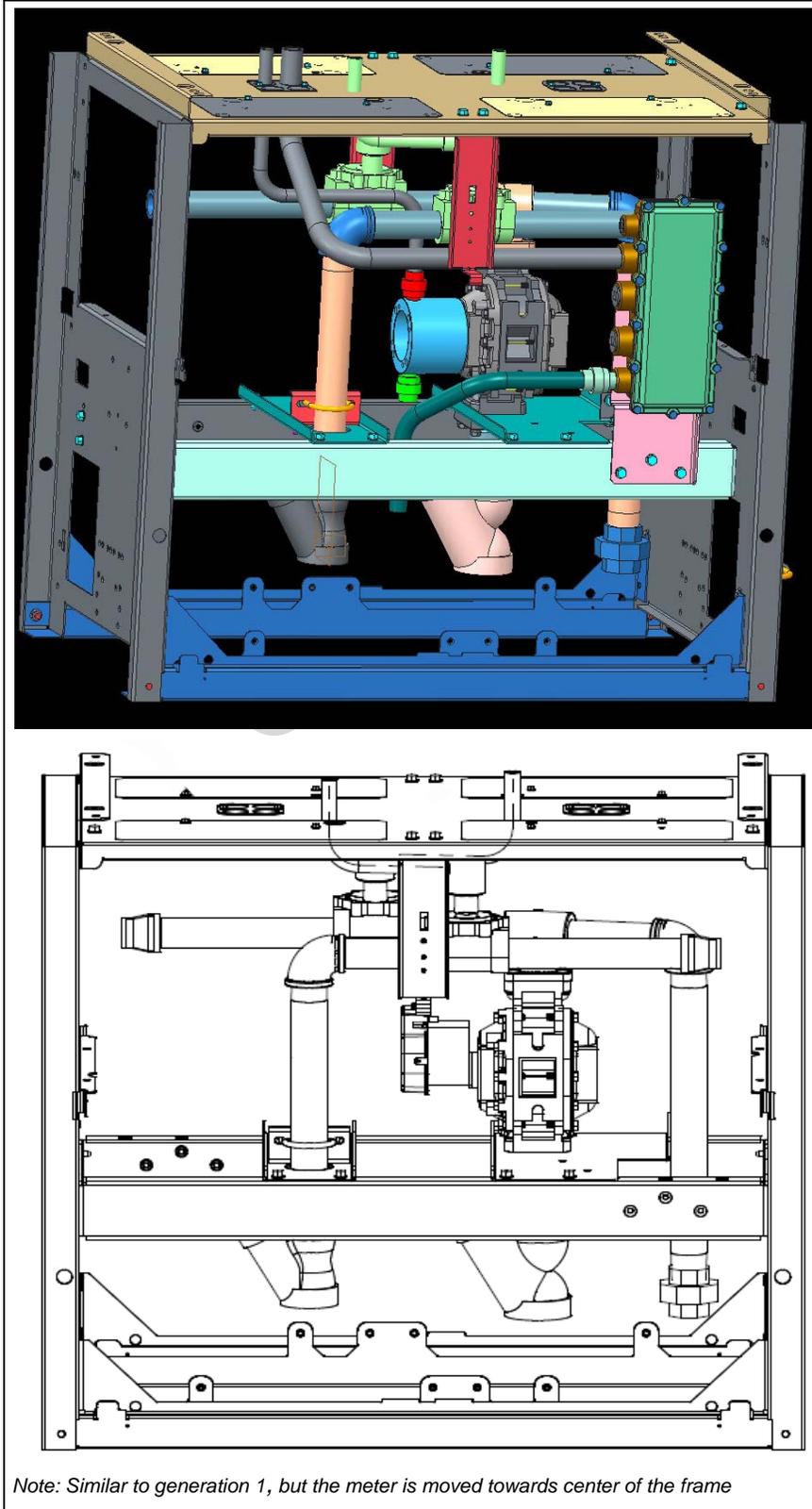


Figure 7: Generation 3 Piping Configuration

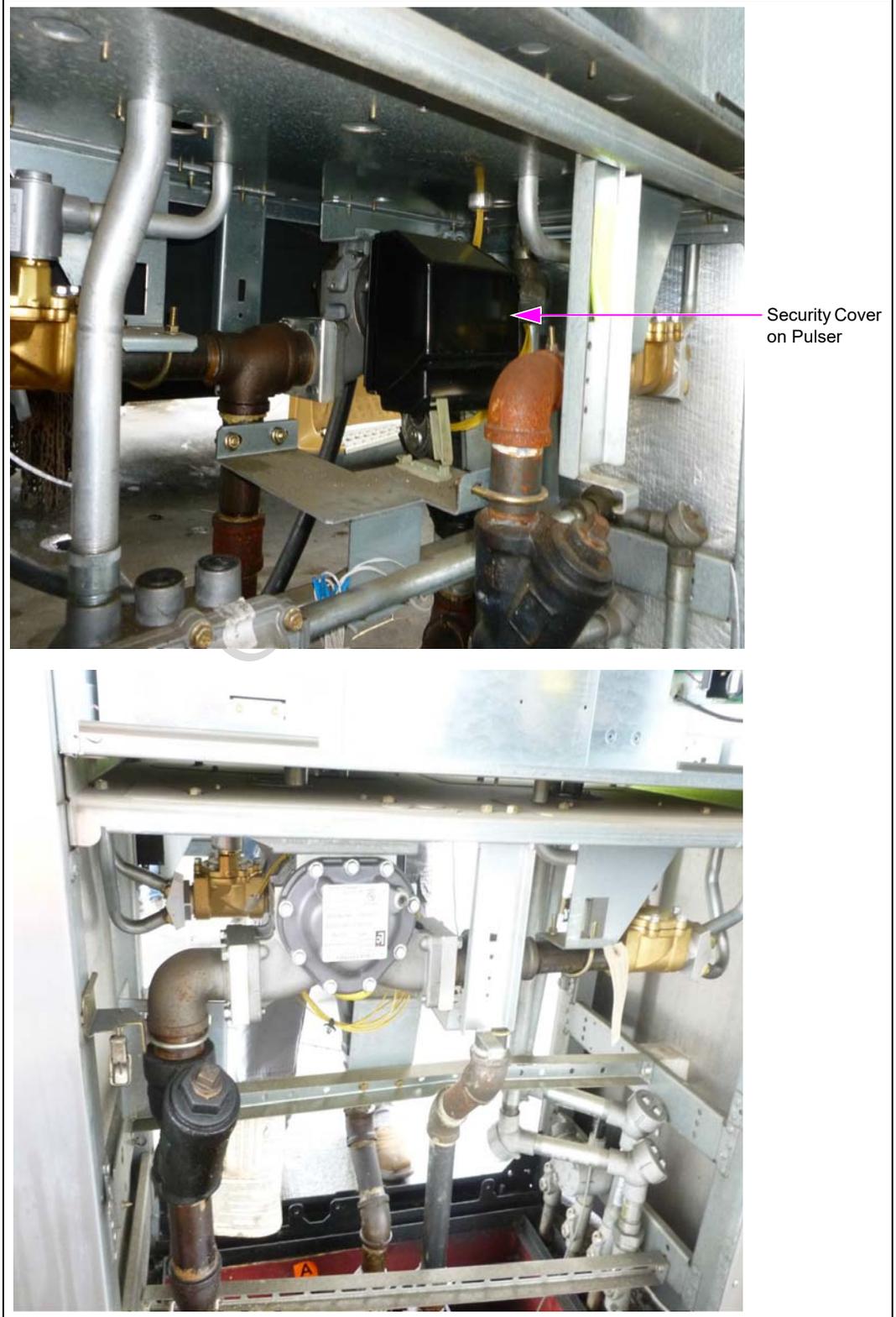


Figure 8: Generation 3 Piping Configuration (Rear View)



Figure 9: Generation 4 Piping Configuration - 1



Figure 10: Generation 4 Piping Configuration - 2

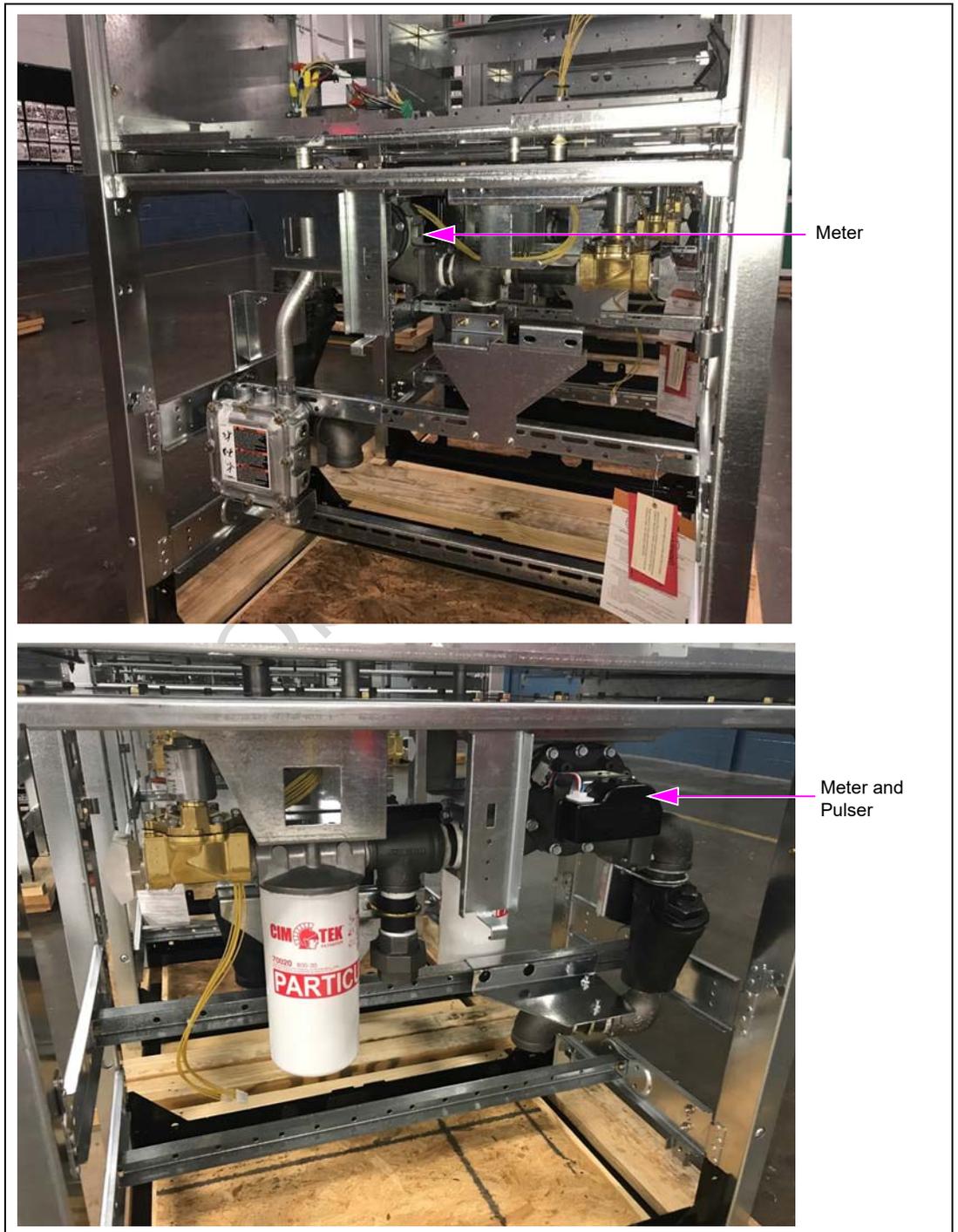
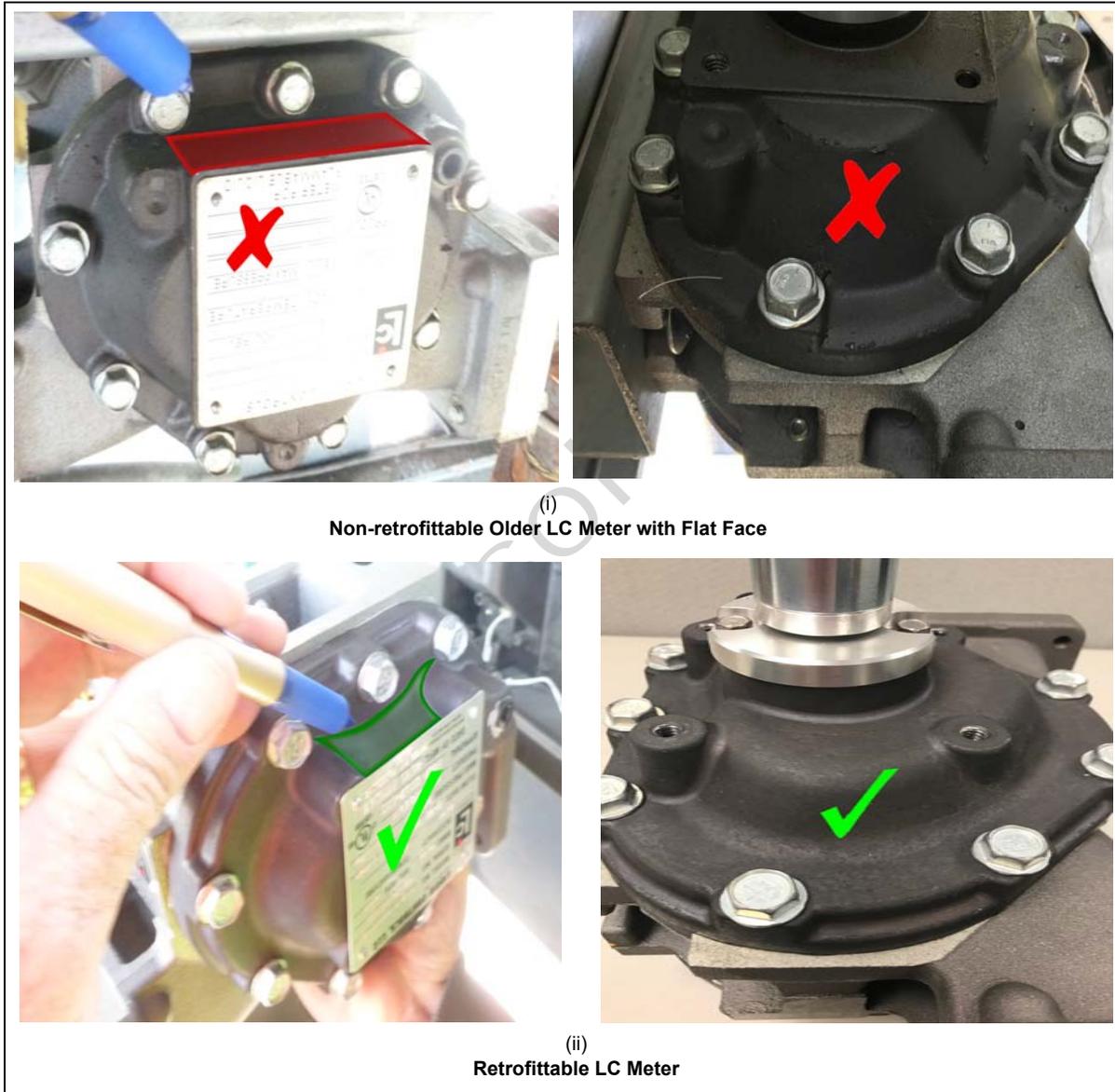


Figure 11: LC Meter Identification

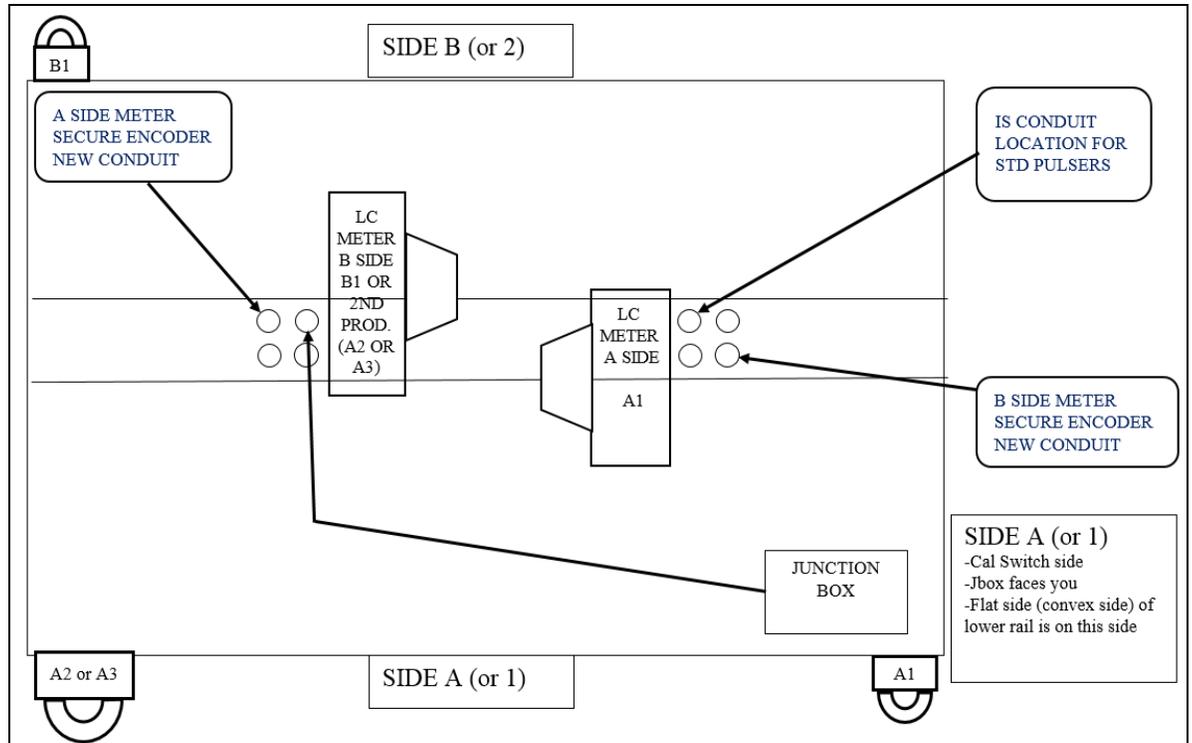


### IMPORTANT INFORMATION

This retrofit kit requires additional aluminum conduit(s) to be installed through the airgap plate and into the Computer Display Module (CDM). Visually check the unit to see if it has been retrofitted with auxiliary conduits, third-party security systems, or with custom non-factory installed junction boxes or conduits, as there may be interference with the installation and routing of the new conduits. It may be necessary to remove or re-route the third-party components. Refer to [Figure 12](#), [Figure 13](#) on [page 19](#) and [Figure 14](#) on [page 20](#) to study the routing and mounting of the kit before disassembly to assure proper fitments. The kit components must be installed as shown in the following figures to assure compliance with safety and Underwriters Laboratories (UL) regulations.

Figure 12 through Figure 14 on page 20 show the Ultra-Hi Secure Encoder Kit installed in different generations.

**Figure 12: Generation 1 and Generation 2 Encore 500 Ultra-Hi Layout - Top View**



**Figure 13: Generation 3 Encore 500 Ultra-Hi Layout - Top View**

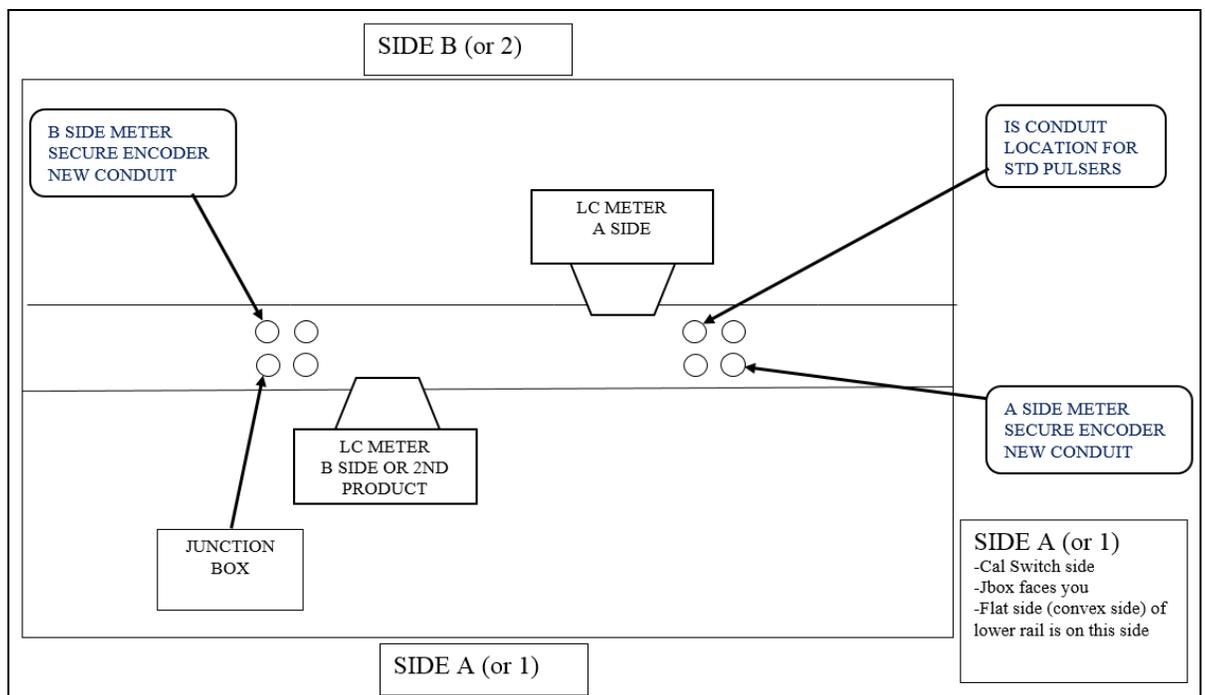
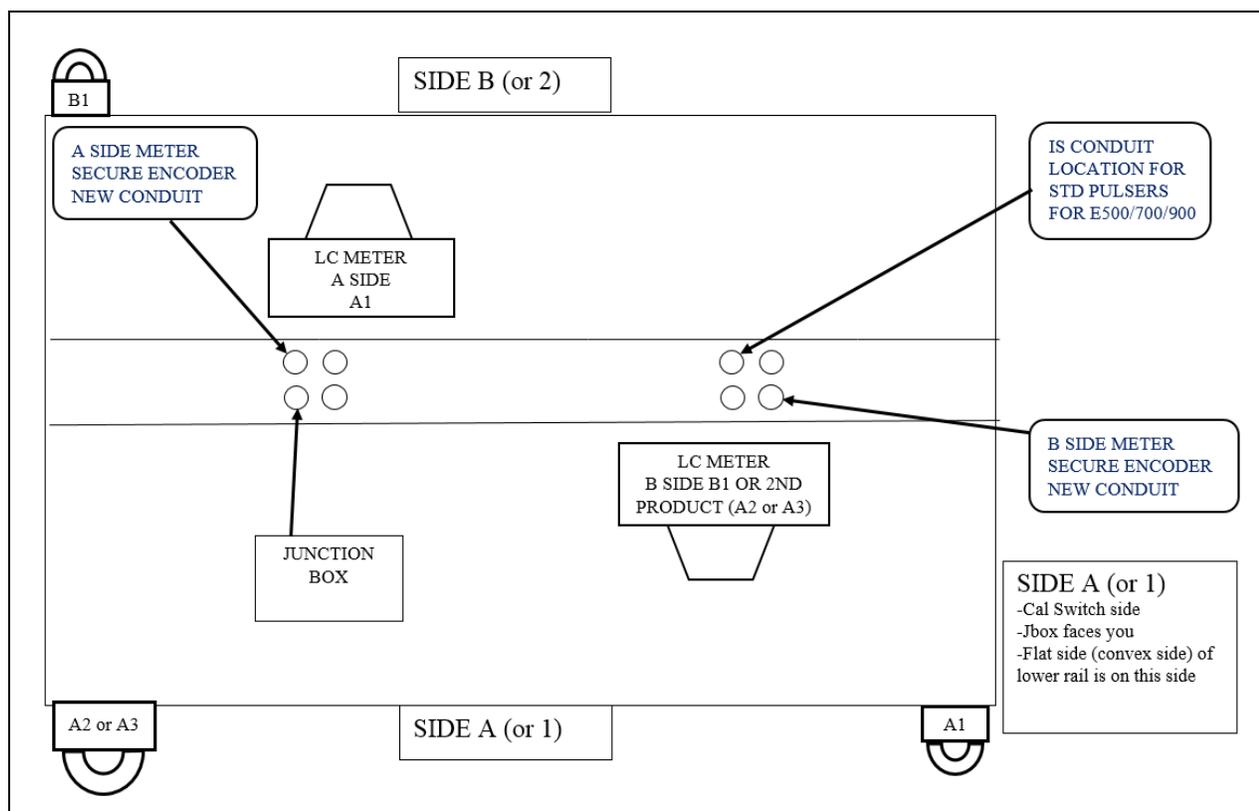


Figure 14: Generation 4 Encore 500/700 Ultra-Hi Layout - Top View



Note: Diesel Exhaust Fluid (DEF) is always the A2 product. The second product on a single side unit is A2 if non DEF equipped and A3 if DEF equipped.

The following table lists the hose side and its description:

Hose Side	Product	Cable Marking	Meter No. In W&M Log	Epulser No. In Event Log
A	Diesel	A1	1	1
A	DEF	A2 (DEF)	5	2
A	2nd Product Diesel (not DEF equipped)	A2 (non DEF)	5	2
A	2nd Product Diesel (with DEF)	A3	4	3
B	Diesel (dual master)	B1	2	5

## High-Level Overview

Installation of the Ultra-Hi Secure Encoder Retrofit Kits includes the following:

- 1 Remove the existing Encore pulser.
- 2 Install the Ultra-Hi Secure Encoder.
- 3 Upload the latest software.

## Installing Encore Ultra-Hi Secure Encoder Retrofit Kits

### IMPORTANT INFORMATION

All old pulsers must be replaced with the new Ultra-Hi Secure Encoders. Do not combine an old pulser with a new encoder within a dual dispenser.

### Removing Existing Encore Series Pulser

#### **⚠ WARNING**

Ensure that the power supply and supply pressure is shut off to the unit before the removal.

To remove the existing Encore Series pulser, proceed as follows:

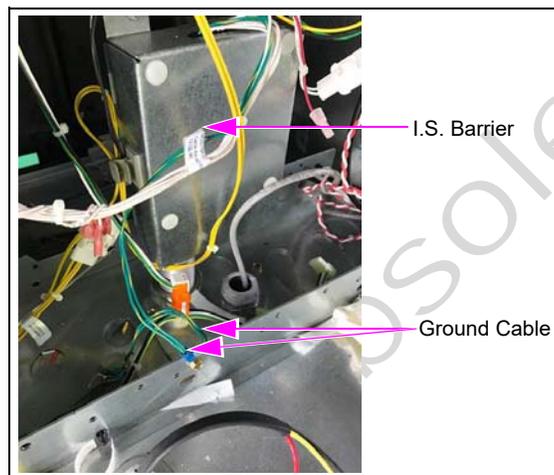
- 1 Remove lower panels and open the CDM doors.
- 2 Trip off shear valve. Bleed pressure by removing the nozzle and opening into approved container.
- 3 In the lower hydraulics area, remove the clamshell security box over the pulser if this option was installed.
  - a Remove the lock and the hinged outer shield cover.
  - b Remove the four hexagonal nuts (with 1/2-inch Socket) and lift off the base plate, being careful to not damage the wiring.
  - c Remove the three hexagonal bolts (with 3/8-inch Socket) to remove the flat mounting plate.

**Figure 15: Removing Clamshell Security Box**



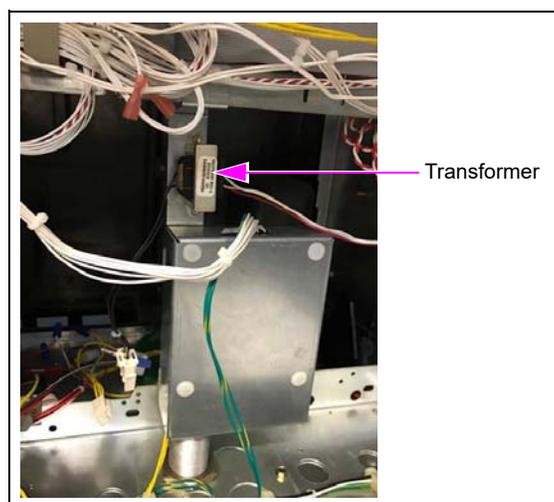
- 4 Disconnect pulser(s) cables in the hydraulics area.
- 5 Inside the CDM, disconnect and remove the cable that connects the Intrinsic Safety (I.S.) barrier box assembly to the Ultra-Hi interface board.
- 6 Disconnect and remove the pulser cable that connects the Ultra-Hi interface board to the Pump Control Node (PCN).
- 7 Disconnect the ground cable.

**Figure 16: Disconnecting the Ground Cable**



- 8 If equipped, remove the small transformer from I.S. barrier bracket and lay to the side. Retain the mounting hardware and transformer for reinstallation.

**Figure 17: Removing Transformer**



- 9 Loosen the I.S. barrier box assembly (metal case) by removing its mounting screws, two at bottom and one at top on the tee rail.
- 10 Slightly lift the I.S. barrier box up and over its conduit, temporarily moving it out of the way.

- 11 Remove the two screws that secure the conduit plate of the large-threaded conduit that was beneath the I.S. barrier with 5/16-inch or 8-mm Nut Driver.
- 12 Lift out the I.S. barrier box assembly along with the potted conduit and conduit plate.

### For Generation 1 and Generation 2 units

*Notes: 1) For older models (approximately 2012 and earlier), the meter must be replaced. The existing pulser can be left as installed as the entire meter will be removed.*  
*2) The kit for generation 1 and generation 2 units contains a new meter with a new output shaft packing assembly already installed and with replacement meter flange O-rings. It may save time and effort to attach the new encoder to the new meter before installing the meter, as the encoder mounting bolts are easier to access. See installation of encoder steps below.*

- 1 Refer to *MDE-3804 Encore/Eclipse Start-Up and Service Manual* for meter replacement instructions. The U-bolts securing the piping may need to be loosened to aid removing the meter.
- 2 Wipe and clean the meter mounting flange faces. Apply lube (oil, grease, or petroleum jelly) to the O-rings to help avoid rolling or pinching the seal. Wipe clean the flange mounting faces on the piping.
- 3 Install the new meter and hand-tighten all meter mounting bolts. Tighten the meter flange bolts to the recommended torque of 25 lb-ft (34 N-m). Tighten the top two nuts onto the frame bracket to the recommended torque of 37 lb-ft (50 N-m).
- 4 Retighten the U-bolts on the piping if necessary.

### For Generation 3 and Generation 4 Units

*Notes: 1) For these units, the existing meter will be left in place but retrofitted with a new shaft packing assembly, which is included in the kit.*  
*2) Refer to the pictures of the two meter side covers shown in [Figure 5 on page 13](#) and [Figure 6 on page 14](#) (In some cases, due to production overlap, a very early generation 3 dispenser may have an earlier style meter. If so, a meter must be purchased separately).*

- 1 Remove the pulser from the meter by removing the two small screws on the backside of the pulser using a 1/4-inch wrench or pliers.

**Figure 18: Removing Pulser**



- 2 Slip off the outer sheet metal cover.  
*Note: Ensure that the pressure supply is shut off and the pressure from hydraulics is relieved.*
- 3 Remove sheet metal pulser bracket from the meter by removing the two screws using a 5/16-inch or 8-mm nut driver.

**Figure 19: Removing Sheet Metal Pulser Bracket**



- 4 Remove the shaft assembly from meter by pulling it out while maintaining a straight orientation.

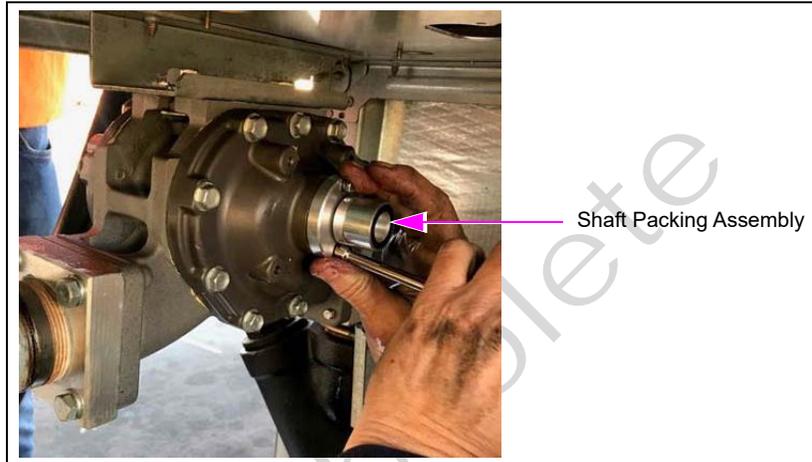
**Figure 20: Old Shaft Removal**



- 5 If the dispenser has two meters (Dual master or Two Single-sided) repeat the removal steps for the pulser and shaft assembly on the other meter.
- 6 Ensure the face of the meter and the pocket for the shaft packing assembly is wiped clean.
- 7 Remove the shaft packing assembly from its packaging and make sure the O-ring is lubricated (use oil, white grease, or petroleum jelly if needed).  
*Note: Protect the seal from dirt and debris.*

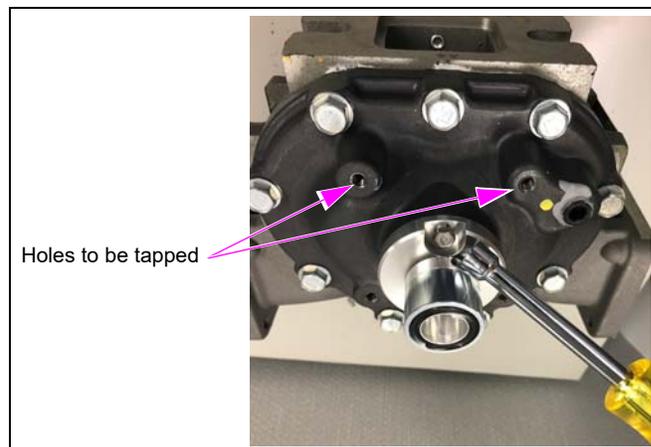
- 8 Install the shaft packing assembly into the meter. Ensure to align the two tangs into the mating slots within the meter to assure it seats fully (see [Figure 21](#)).
- 9 Install and tighten the new 10-24 screws provided in the kit to a recommended torque of 45 lb-in (5 N-m).

**Figure 21: Install Shaft Packing Assembly**



- 10 Check the four meter cover holes for existing threads. Depending on application, the holes may have to be tapped before installing the encoder.  
*Note: If the holes are already tapped, check the tap depth (refer to step a). If the black clamshell security cover was previously installed, usually there is only one hole that was left untapped and the other three may need the threads tapped slightly deeper.*

**Figure 22: Tapping Holes**

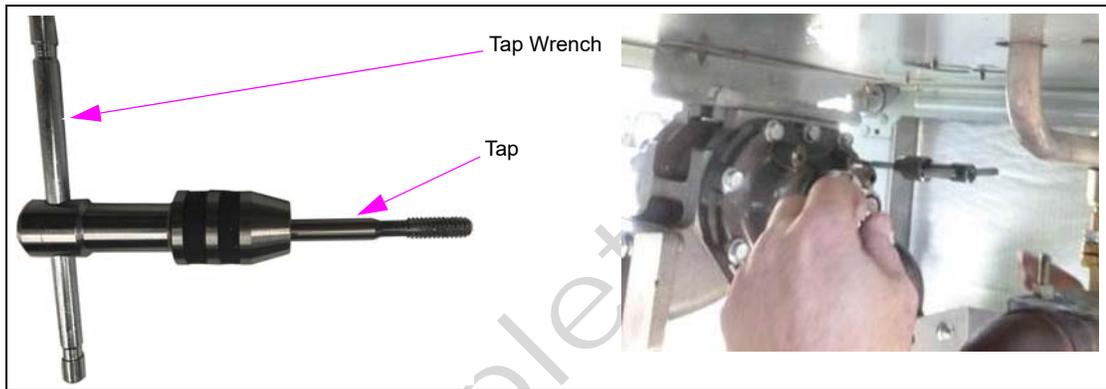


- a Apply the applicable lubricant on the tap tip.

- b Use a tap wrench and the tap provided in the kit to tap the four holes on the meter cover to a thread depth of at least 1/2 inch (12.7 mm).

*Note: Figure 23 shows a special bottoming tap included in the kit for thread rolling into castings to provide the full depth of threads.*

**Figure 23: Tap**



### IMPORTANT INFORMATION

Using a 1/4-20 socket head cap screw (M15743B001) from the kit, check the thread depth by inserting the bolt into the newly tapped holes to ensure that the threads are at least 1/2-inch (12.7-mm) in depth. The new encoder must seat fully against the meter cover face. Remove the bolt after checking the thread depth.

## Installing Encoder onto Meter

To install the encoder onto meter, proceed as follows:

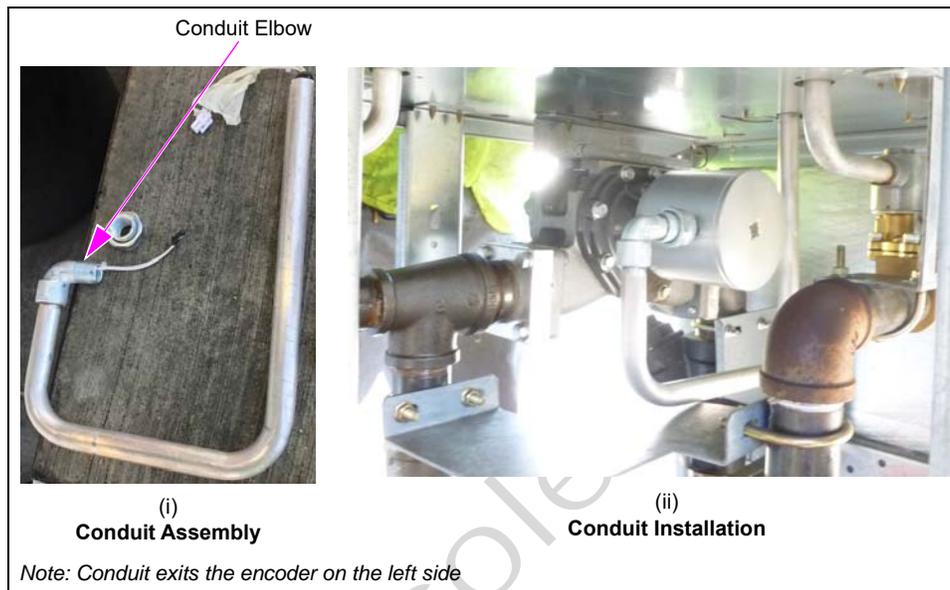
- 1 Unpack the new encoder and remove its lid by rotating counterclockwise. Set the lid aside for reinstallation. Avoid damage to the large threads of the lid.
- 2 Install the encoder onto the meter. Refer to [Figure 26](#) through [Figure 28](#) on [page 27](#) to confirm the proper orientation of the conduit opening.
- 3 Align to the tapped holes of the cover. Insert all four 3-inch Socket Head Cap Screws (M15743B001) and hand-tighten initially.

**Figure 24: New Ultra-Hi Encoder Installation**





**Figure 27: Conduits Identification - Generation 3**



**Figure 28: Conduits Identification - Generation 4**



- 5 Tighten the four encoder mounting bolts to a recommended torque of 85 lb-in (9.6 N-m). Leave lid off for now.
- 6 Separate the two halves of the conduit union. Apply anti-seize compound to the male pipe thread end. Install and tighten the threaded half of the conduit union into the encoder housing.
- 7 Install and tighten the other half of the conduit union, with anti-seize compound on the threads, onto the threaded end of the conduit assembly.
- 8 **(For generation 3 only)** This model has an extra conduit elbow (K42448 male X female elbow) that must be installed between the union and the conduit from the encoder. Apply anti-seize compound to the threads. Install the female end of the elbow onto the conduit, then install the other half of the conduit union onto the male end of the elbow.

## Installation of Conduit and Conduit Plates

To install the Conduit and Conduit Plates, proceed as follows:

### **WARNING**

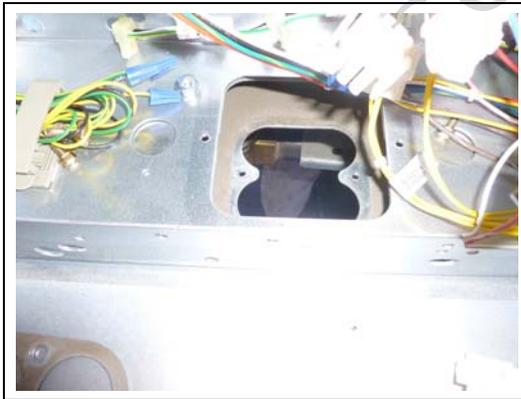
The air gap openings must be covered appropriately for safety compliance.

*Notes: 1) The small airgap plates through which conduits pass into the CDM are either altered by removing knockouts or replaced (spares are in the kit) for this installation, and will vary depending on the unit, the options, the number of meters, and the type of junction box or main conduit.*

*2) Utilizing the knockouts simplifies the installation and saves time instead of having to unplug all the wiring connections of the conduit in order to remove the existing conduit plates.*

- 1 Remove the old conduit plate.

**Figure 29: Old Conduit Plate Removal**



- 2 Before installing the new conduit(s) from the encoder through the airgap area, determine your configuration and review the layouts carefully (refer to [Figure 12 on page 19](#) through [Figure 14 on page 20](#)).

**Figure 30: New Conduit Plates**



- 3 Hold the conduit in its approximate mounting location and observe its route through the airgap plates.

- 4 When the knockouts are used on the existing plates, the conduit washer (included in kit) must be installed to cover the resulting gap around the conduit.
- 5 Install washers on both upper and lower airgap conduit plates.
- 6 **(For CANADA applications only)** The sponge gasket must be installed onto lower airgap conduit plate, to seal against the new conduit. Check fitments to assure holes in gasket line up properly, then peel and stick the adhesive to the correct orientation. Orient the sponge gasket such that the encoder conduit passes through the smaller openings.

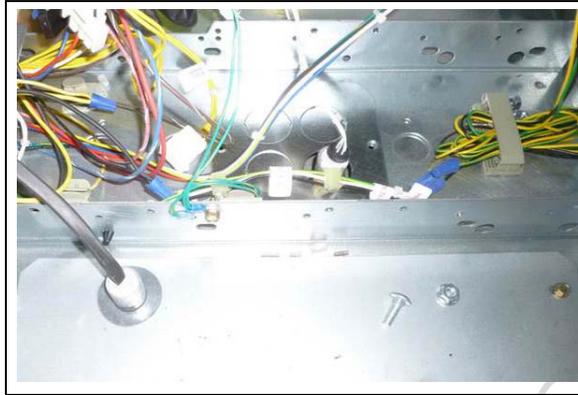
**Figure 31: Sponge Gasket for Canada Application**



- 7 In some Master only or Master-satellite dispensers (depending on the configuration), there will be no new conduit in the I.S. barrier box location. Install the conduit plates (solid plates with no holes) back into this location in order to seal the airgap.
- 8 Tighten the small M5 screws for conduit plates to a recommended torque of 45 lb-in (5 N-m).
- 9 If you are using the knockout method, locate and then knock out the proper opening in upper air gap conduit plate while it is still bolted down.
- 10 Remove or loosen the upper airgap conduit plate and rotate it out of the way.
- 11 Reach in and access the lower airgap plate using a blunt punch.
- 12 Knock out the correct hole for new conduit in the lower airgap conduit plate.
- 13 Install the top end (non-threaded end) of the new conduit up through airgap opening. Once loosely in position, attach connector to the encoder connector, and push into the encoder cavity. Then push conduit union together and loosely attach the union halves for now at the encoder.
- 14 Drop washer over conduit at the lower airgap.

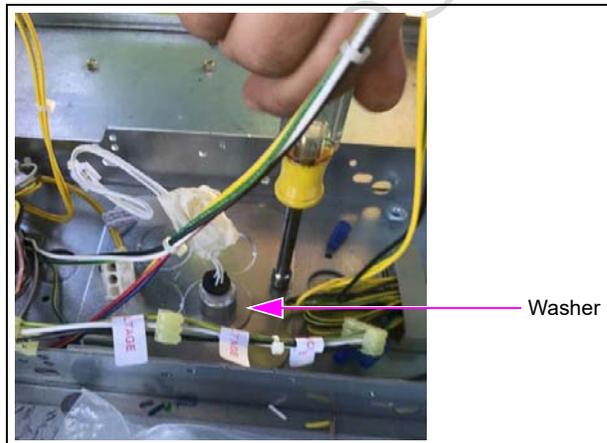
- 15 Re-install upper airgap conduit plate if necessary.

**Figure 32: Installation of Upper Conduit Plate with Knockout Removed**



- 16 Slide washer over the conduit at upper airgap plate (floor of the CDM).

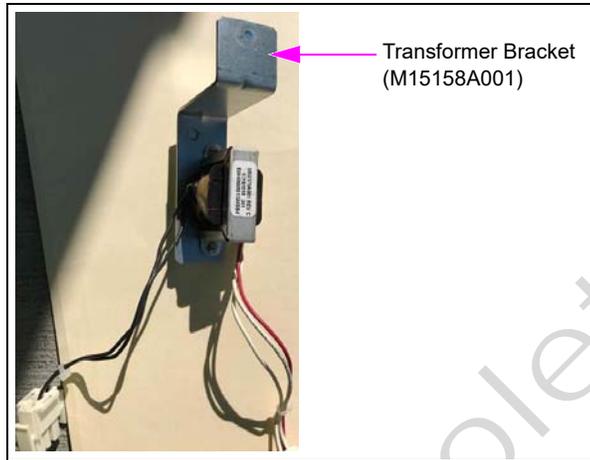
**Figure 33: Washer Installation**



- 17 For some assemblies, the openings through the airgap plates where the I.S. barrier was removed must be covered. There must be no openings left through either the lower airgap plate or the floor of the CDM. Install the blank conduit plates provided with the kit to cover the openings.
- 18 Tighten the conduit union at the encoder.
- 19 Install the encoder lid. Use a 1/2-inch square drive ratchet to a recommended torque of 75 lb-in (8.5 N-m).  
*Note: Do not overtighten.*

- 20 If necessary, install the new transformer bracket within the CDM and reinstall the small transformer(s) that was removed in step 8 on page 22.

**Figure 34: Installing the Transformer**



## Cable Connections within CDM

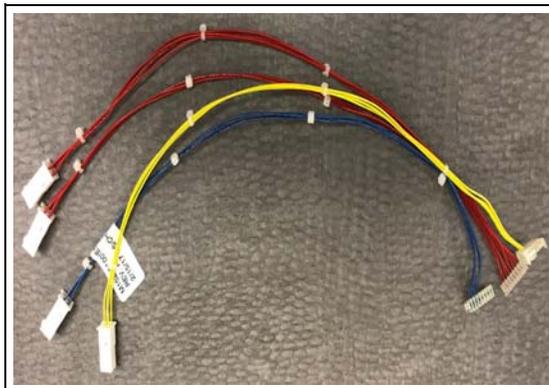
To make cable connections within CDM, proceed as follows:

### IMPORTANT INFORMATION

Cable routing is critical. It is very important to route and dress the cables properly. Exercise care in routing the cables, keeping in mind that the door(s) opens and closes for service. The cables must be dressed neatly. Ensure that there is no interference after the cables are connected and routed.

- 1 Install the cable provided for connection between the PCN and the pulser conduit.

**Figure 35: Cable Installation**



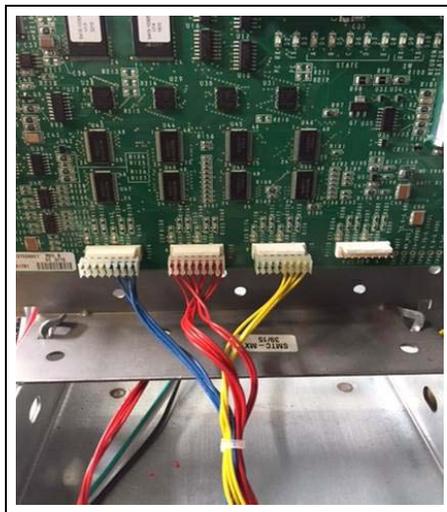
*Note: Most applications use the shorter M15272A001 Cable. A longer cable (M15272A002) is provided if extra length is needed. Note the connector markings and make connections accordingly. The cable has multiple connectors and not all connectors are used, as the cable is designed for universal fit of all variations.*

- 2 Install the appropriate pulser connection ports at the PCN; for example, J1114 connector on cable installs into P1114 on the PCN.
- 3 Regardless of the dispenser configuration, J1112 and J1114 should be plugged onto their respective headers on the PCN.
  - For units **without DEF, J1113 should be plugged.**
  - For units **with DEF, J1113 should not be connected;** instead, the cable coming from the Coriolis Interface Assembly should remain in place.
- 4 Depending on the unit type and configuration, make the connection to the pulser conduit using the appropriate connector.

The following table provides information on the use of different cable connectors based on the unit configuration.

Unit Configuration	Connector A1 (Red)	Connector A2 (Yellow)	Connector A3 (Blue)	Connector B1 (Red)
Single	Used	-	-	-
Dual Master	Used	-	-	Used
2 Grade Diesel	Used	Used	-	-
Single + DEF	Used	-	-	-
Dual Master + DEF	Used	-	-	Used
2 Grade Diesel + DEF	Used	-	Used	-

**Figure 36: Cable Connections to the PCN**



*Note: On generation 3 and 4 units, the side A meter in the hydraulics is physically located on the opposite side of the dispenser frame from the actual side A. This can be confusing on dual masters or single-sided two product models and was not the case on older generation 1 and 2 models. The side A of the dispenser has the calibration switch, the nozzle boot for the side A product or the single-master hose, and is the side with the factory-installed J-box.*

- 5 Route the cables safely along the center U-channel of the CDM.
 

*Note: Ensure that there is no interference with optional security covers.*

# Completing the Installation

## Power and Pressure Startup

- 1 Switch ON supply pressure and open shear valves.
- 2 Check for leaks in the hydraulics area especially at the meter connections and at the meter output shaft.
- 3 Apply power to unit. It is normal for error codes to appear at this stage.
- 4 Proceed to upgrade the software.

## Uploading Latest Software

IMPORTANT INFORMATION
Ultra-Hi Secure Encoder requires download software version V03.4.16. Currently this is the only version that supports Ultra-Hi Encoders. This document will be updated when newer versions that support Ultra-Hi Encoders are available.

To verify the software version installed, power up the dispenser and look for the pump version number on the volume display at start-up or retrieve a version log using the Gilbarco Laptop Tool.

*Note: For directions on using Laptop Tool, refer to MDE-3921 Laptop Tool User Reference Guide.*

*Notes: 1) Dual master or two-grade units that contain two LC meters within one dispenser must have both encoders of the same type.  
2) To upload the latest software version, use the Gilbarco single-click update to obtain the current production version. Refer to all Technician Resource Pages (TRPs) on the Gilbarco extranet for information on the current software version. V03.4.16 is the only version that supports Ultra-Hi Secure Encoders.*

- 1 Ensure that the Weights and Measures (W&M) switch for the PCN is unsealed and turned ON before uploading software.
- 2 Using the Laptop Tool, upload and install the correct software version.
- 3 When PCN software installation is complete, check all configuration and programming options if the previous software version was earlier than 01.8.30L or 02.8.30P. For a list of changes for these software versions, refer to *MDE-3860 Programming Quick Reference Guide*, *MDE-3804 Encore Start-Up and Service Manual* and current TRPs.
- 4 Configure the dispenser for the secure encoder by entering level-4 programming and setting Command Code (CC) 84 to **2**.
- 5 Turn off the W&M switch and press **F2** on the manager keypad to exit the programming mode.

- 6 After the dispenser reboots, Error Code (EC) 8025 is displayed for each grade. Turn on the W&M switch, and enter level 4 programming. Set CC 84 to **2** again to detect pulsers and verify installation.  
*Note: This allows the unique ID for each secure encoder to be detected and verified in each of the current physical pulser positions.*
- 7 Turn off the W&M switch and press **F2** on the manager keypad to exit the programming mode.
- 8 Ensure that there are no error codes displayed on any grade for the unit. If any error code is displayed, identify the error and troubleshoot appropriately.  
*Note: For the latest error codes and definitions, refer to MDE-3860 Programming Quick Reference Guide and MDE-3804 Encore Start-Up and Service Manual. For definitions of pulser error codes, refer to “Appendix A: Ultra-Hi Secure Encoder Error Codes and Troubleshooting” on page 36.*
- 9 Dispense product for each position (minimum 10 gallons) to purge the meter and to verify everything is installed properly. Check for leaks in the hydraulics area, especially at the meter connections and at the meter output shaft.
- 10 Before calibration, check the configured prover can size by referring to CC 82. For calibration procedure, refer to *MDE-4281 Calibration Quick Reference Card Encore 300/500/500 S/700 S and Eclipse Units*.
- 11 Proceed to calibrate meter(s).

<b>IMPORTANT INFORMATION</b>
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Meters must be calibrated before placing the dispenser back into service.
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- 12 After verifying calibration, place a new seal on the PCN W&M switch.

## Appendix A: Ultra-Hi Secure Encoder Error Codes and Troubleshooting

This section contains an error code list and troubleshooting steps for the secure encoder. Refer to this section and follow the troubleshooting steps carefully for any of the following errors.

*Note: Before any work is performed, pull the pump Event Logs and check for any recent encoder errors. Also ensure that you power down the dispenser before removing or reconnecting any connections.*

Error Code	Error Condition	Actual/Potential Cause
20	Encoder Disconnected	<ul style="list-style-type: none"> <li>Faulty or broken cable</li> <li>Faulty encoder</li> </ul> For more information, refer to <a href="#">"EC 20 - Encoder Disconnected"</a> on page 37.
5047	Reverse Flow	<ul style="list-style-type: none"> <li>Leaky valve</li> <li>Dispenser not configured for secure encoder</li> </ul>
5050	Invalid Encoder Pattern	<ul style="list-style-type: none"> <li>Dispenser not configured for secure encoder</li> </ul>
8025	ID Mismatch	<ul style="list-style-type: none"> <li>Initial start-up</li> <li>Different encoder installed</li> </ul> For more information, refer to <a href="#">"EC 8025 - ID Mismatch"</a> on page 37.
8040	Communication Interrupt	<ul style="list-style-type: none"> <li>Faulty or broken cable</li> <li>Faulty encoder</li> </ul> For more information, refer to <a href="#">"EC 8040 - Communication Interrupt"</a> on page 38.
8041	Missing Data	<ul style="list-style-type: none"> <li>Broken or loose data wire</li> <li>Faulty encoder</li> </ul> For more information, refer to <a href="#">"EC 8041 - Missing Data"</a> on page 38.
8042	Missing Clock	Broken or loose clock wire For more information, refer to <a href="#">"EC 8042 - Missing Clock"</a> on page 38.
8044	Checksum Error	<ul style="list-style-type: none"> <li>Electrical noise</li> <li>Faulty cable</li> <li>Faulty encoder</li> </ul> For more information, refer to <a href="#">"EC 8044 - Checksum Error"</a> on page 38.
8046	Lift off Detection	Encoder not engaged with magnetic cup For more information, refer to <a href="#">"EC 8046 - Lift off Detection"</a> on page 38.
8050	Sensor Failure	<ul style="list-style-type: none"> <li>Encoder too far away from magnet cup</li> <li>Missing magnet cup</li> </ul> For more information, refer to <a href="#">"EC 8050 - Sensor Failure"</a> on page 38
8051	Lid Separation	<ul style="list-style-type: none"> <li>Lid removed</li> <li>Lid not securely tightened</li> </ul> For more information, refer to <a href="#">"EC 8051 - Lid Separation"</a> on page 38

*Note: Error Codes 5047 and 5050 are pre-existing error codes. In case of secure encoder retrofitting, these errors may be displayed on initial startup before the dispenser is configured for the secure encoder. After the unit is configured properly, EC 5047 takes on its original meaning (reverse flow) and EC 5050 becomes invalid for a secure encoder configuration.*

## EC 20 - Encoder Disconnected

*Note: EC 20 defaults to a persistent major error.*

EC 20 is generated when the PCN loses all communication with the encoder, wires are damaged, or the encoder fails to draw the required minimum amount of current through the PCN. This error applies to all unit types with Sandpiper™ electronics of any generation with secure encoders and PCN V03.4.16. The error will display on the Price per Unit (PPU) corresponding to the suspect encoder position.

### Troubleshooting EC 20

- 1 Inspect the encoder cabling for damaged contacts or wires. Also ensure that all connections are made properly. If faulty encoder cabling is found, replace the cabling. Refer to [“Clearing Persistent Encoder Errors”](#) on page 39.
- 2 If no faulty cables were discovered (potential tamper incident), try clearing the error before proceeding to the next step. Refer to [“Clearing Persistent Encoder Errors”](#) on page 39.
- 3 Check Event Log for occurrences of the error for the encoder in question. If the error is present and is not associated with service activities, replace the encoder in question. Refer to [“Updating Serial ID of Ultra-Hi Secure Encoder”](#) on page 39. (If the error is associated with the DEF grade, refer to *MDE-4949 Encore 500/500 S Ultra-Hi DEF+1 and Dual DEF Retrofit Kit (EN DEF RF) Installation Instructions* for additional troubleshooting information. Refer to [“Clearing Persistent Encoder Errors”](#) on page 39).
- 4 Replace PCN and for Ultra-Hi Secure Encoder. Refer to [“Updating Serial ID of Ultra-Hi Secure Encoder”](#) on page 39.

## EC 8025 - ID Mismatch

*Note: EC 8025 is a major error.*

EC 8025 is generated when the PCN detects that the ID of an installed secure encoder does not match the ID recorded in the PCN memory. It persists until the error condition has been remedied. This error applies to all unit types with Sandpiper electronics of any generation with secure encoders and PCN V03.4.16. The error will display on the PPU corresponding to the unidentified encoder.

### Troubleshooting EC 8025

EC 8025 is displayed as a result of installing a new/different secure encoder. Refer to [“Updating Serial ID of Ultra-Hi Secure Encoder”](#) on page 39.

- 1 Inspect the encoder cabling for damaged contacts or wires. Also ensure that all connections are made properly. If faulty encoder cabling is found, replace cabling. Follow the Ultra-Hi Secure Encoder Serial ID Update Procedure.
- 2 Replace the encoder. Refer to [“Updating Serial ID of Ultra-Hi Secure Encoder”](#) on page 39.
- 3 Replace the PCN. Refer to [“Updating Serial ID of Ultra-Hi Secure Encoder”](#) on page 39.

## EC 8040 - Communication Interrupt

## EC 8041 - Missing Data

## EC 8042 - Missing Clock

## EC 8044 - Checksum Error

*Note: Each of these errors is a major error.*

Either of these errors may be generated by faulty encoder cabling or a defective encoder. These errors apply to all unit types with Sandpiper electronics of any generation with Ultra-Hi Secure Encoder and PCN V03.4.16. These errors will display on the PPU corresponding to the suspect encoder position.

### Troubleshooting EC 8040, EC 8041, EC 8042, and EC 8044

- 1 Inspect the encoder cabling for damaged contacts or wires. Also ensure that all connections are made properly. If faulty encoder cabling is found, replace the cabling. Refer to [“Clearing Persistent Encoder Errors”](#) on page 39.
- 2 If no faulty cables were discovered (potential tamper incident), try clearing the error before proceeding to the next step. Refer to [“Clearing Persistent Encoder Errors”](#) on page 39.
- 3 Check Event Log for occurrences of the error for the encoder(s) in question. If any of these errors is present and are not associated with service activities, replace the encoder(s) in question. Refer to [“Updating Serial ID of Ultra-Hi Secure Encoder”](#) on page 39.
- 4 Replace the PCN. Refer to [“Updating Serial ID of Ultra-Hi Secure Encoder”](#) on page 39.

## EC 8046 - Lift off Detection

## EC 8050 - Sensor Failure

## EC 8051 - Lid Separation

*Note: Both EC8046 and EC8051 are persistent major errors. EC8050 is a major error.*

Either of these errors may be generated by faulty encoder cabling, a defective encoder, or a tamper event. These errors apply to all unit types with Sandpiper electronics of any generation with secure encoders and PCN V03.4.16. These errors will display on the PPU corresponding to the suspect encoder position.

## Troubleshooting EC 8046, EC 8050, and EC 8051

*Note: Once the encoder lid or encoder itself has been lifted/removed, wait for at least two minutes after reinstallation (and with power applied) before attempting to clear the error.*

- 1 Check that the secure encoder lid is securely tightened and the encoder is properly mounted. If either is out of place, resolve the issue. Refer to [“Clearing Persistent Encoder Errors”](#).
- 2 Inspect encoder cabling at both ends for damaged contacts or wires or loose connector pins. Also ensure that all connections are made properly. If faulty cabling is found, replace cabling. Refer to [“Clearing Persistent Encoder Errors”](#).
- 3 If the lid is in place, the encoder is properly mounted and no faulty cables were discovered (potential tamper incident), try clearing the error before proceeding to the next step. Refer to [“Clearing Persistent Encoder Errors”](#).
- 4 If the problem is not resolved, replace encoder. Then, update the serial ID for the new encoder. Refer to [“Updating Serial ID of Ultra-Hi Secure Encoder”](#).
- 5 Replace PCN. Then, update the serial ID for the new encoder. Refer to [“Updating Serial ID of Ultra-Hi Secure Encoder”](#).

## Clearing Persistent Encoder Errors

To clear the persistent encoder errors, proceed as follows:

- a Press **F1** on the Manager Keypad.
- b Access level 4 programming > **Enter**.
- c Press **F2**.

## Updating Serial ID of Ultra-Hi Secure Encoder

To update the serial ID of the secure encoder, proceed as follows:

- a Turn ON/open security switch.
- b Press **F1** on the Manager Keypad.
- c Access level 4 programming > **Enter**.
- d Access CC:84 > **Enter**.
- e Press 2 > **Enter**.
- f Turn OFF/close W&M switch.
- g Press **F2**.

Obsolete

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