

Introduction

Purpose

This manual provides installation instructions for installing the M07999B001 Tribrid Card Reader (TCR). The TCR is used in Encore® S EMV units only.

IMPORTANT INFORMATION

This equipment has been tested and found to comply with the limits pursuant to Part 15 of the Federal Communications Commission (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.

The long term characteristics or the possible physiological effects of radio frequency electromagnetic fields have not been investigated by Underwriters' Laboratories, Inc. (UL®).

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Required Reading

Before installing the Card Reader, the installer must read, understand, and follow:

- This manual
- NFPA 30A, The Automotive and Marine Service Station Code
- NFPA 70, The National Electric Code
- Applicable federal, state, and local codes and regulations

Failure to do so may adversely affect the safe use and operation of the equipment.

Note: This installation must be performed by a Gilbarco® Authorized Service Contractor (ASC) to ensure warranty.

Required Tools

The following tools are required to install the TCR:

- Isopropyl alcohol (END-1082)
- Nut drivers, 1/4-inch, 8 mm, 3/8-inch, 9/32-inch socket with long extension
- Putty knife
- Gilbarco Diagnostic card
- CSC test card
- Ratchet set, standard
- Screwdrivers, flat blade and cross tip
- Static guard wrist strap

Parts Lists

The following table provides the parts included in the TCR Kit.

Item	Description	Part Number	Quantity
1	Reader, Secure Tribid	M07999B001	1
2	Cable, TCR/SP Interface	M07702A006	1
3	Cable, Encrypted Card	M07709A001	1
4	Nut, Metric, Flange	M00414B005	1
5	Bracket, Card Reader	M07574B001	1
6	Gasket, Card Reader	M00682B001	1
7	Screw Sel TP Hex HD 6-20X	Q11677-26	2
8	Assembly, Contactless Antenna	M08285A001	1
9	Cable, Antenna Encrypted	M07703A001	1
10	Card, Card Reader Cleaning	Q11482	1

Related Documents

Document Number	Title	GOLD Library
MDE-2562	CRIND Service Manual	CRIND and TRIND®
MDE-3804	Encore and Eclipse Series Start-Up/Service Manual	Encore and Eclipse®
MDE-3893	Encore/Eclipse Owners Manual	Encore and Eclipse
MDE-4516	Encore S Series Owner's Manual	Encore and Eclipse
MDE-4625	Graphics Panel Application and Repair	Encore and Eclipse
PT-1736	CRIND Illustrated Parts Manual	Parts Manual
PT-1936	Encore Series Pump and Dispenser Illustrated Parts Manual	Parts Manual

Abbreviations and Acronyms

Term	Description
ADA	American Disabilities Act
CRIND	Card Reader in Dispenser
CSC	Contactless Smart Card
EMV Chip Cards	Euro Plus/Mastercard®/Visa® Chip Cards
ESD	Electrostatic Discharge
PCA	Printed Circuit Assembly
POS	Point of Sale
RF	Radio Frequency
TCR	Tribrid Card Reader
TRIND	Transmitter/Receiver in Dispenser

Important Safety Information

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 a Gilbarco Authorized Service Contractor or call the Gilbarco Support Center at 1-800-800-7498. 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 Hazard Association (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.

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.

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 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



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

WARNING



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

WARNING



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

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.

Installation of the TCR

Installing the M07999B001 TCR in an Encore S EMV Unit (without Contactless Card Reader Option)

Removing the Existing Card Reader

To remove the existing Card Reader, proceed as follows:

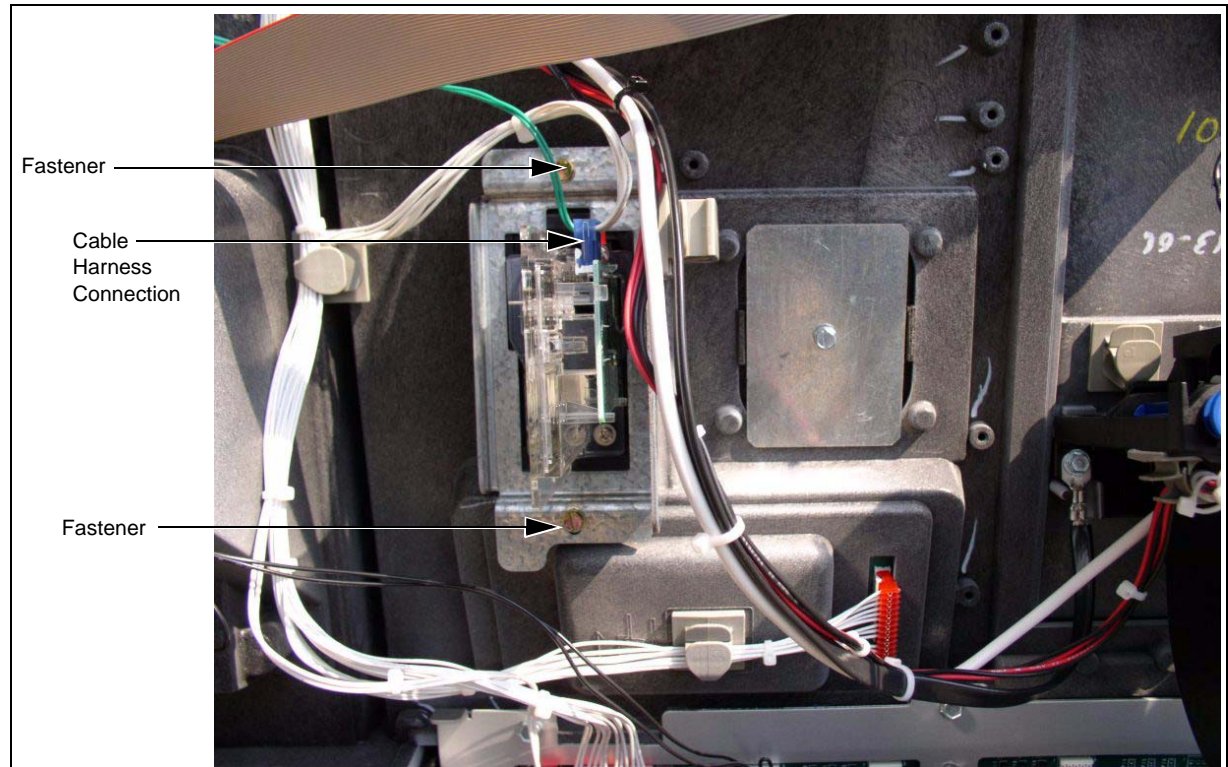
Note: Read all instructions before beginning and observe all safety precautions.

- 1 Obtain an approval from the store manager or responsible personnel to remove the unit from service.
- 2 Remove AC power to the unit using the station circuit breaker. Refer to MDE-3893 Encore/Eclipse Owners Manual for details.
- 3 Remove the lower hydraulics panel. The main door has a lower latch underneath the lower left main door corner. Open this latch. Locate the upper main door lock. Insert the main door key and open the main door.
- 4 Repeat step 3 for Side 2 of the unit.
- 5 Disconnect the cable harness or ribbon cable connection from the Card Reader (see [Figure 1](#) on [page 7](#)).
- 6 Remove the ESD Ground Connection cable from the current Card Reader (if it has one).
- 7 Use a 1/4 inch nut driver or 1/4 inch ratchet and socket to remove the two Hex head screws (see [Figure 1](#) on [page 7](#)) that secure the Card Reader bracket (see [Figure 1](#) on [page 7](#)) and the Card Reader to the option door. Dispose of the Card Reader and bracket, unless you want to keep the Card Reader as a used spare part.

Note: Make a note of the Card Reader's gasket orientation. This information will be useful when you install the new Card Reader gasket (M00682B001) and bracket (M07574B001). Also, ensure that the option door has been cleaned with isopropyl alcohol and a clean cloth prior to installing the new Card Reader gasket (M00682B001).

- 8 Remove the old Card Reader gasket from the option door. Use a putty knife, if required.

Figure 1: Rear View of the Encore S Main Door with Card Reader



Installing the Encore TCR Assembly

To install this assembly, proceed as follows:

- 1 Remove the adhesive backing from the Card Reader gasket (M00682B001) and place the gasket over the Card Reader opening from the inside of the open main door.

CAUTION

A properly grounded ESD wrist strap must be worn when performing step 2. Failure to use electrostatic precautions may damage electronic components and void warranty.

- 2 Obtain the TCR assembly (M07999B001) (see [Figure 2](#) on [page 8](#)) from the kit.
- 3 Remove the 6-pin power/data cable (M07702A006) from the TCR.
- 4 Install the ESD ground cable on the new Card Reader before securing it to the main door. Insert the connector end of the ESD Ground cable (M07709A001) (see [Figure 3](#) on [page 8](#)) to the ESD Ground Connection (see [Figure 2](#) on [page 8](#)) on the Card Reader.

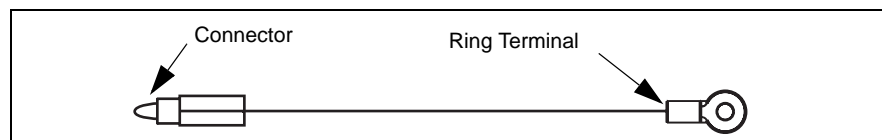
- From the rear of the main door, position the Card Reader and then the Card Reader bracket on the door, such that the Card Reader slot (see [Figure 2](#)) is positioned on the top. Loosely secure the Card Reader bracket and Card Reader to the main door using the two Q11677-26 screws (provided in the kit) in the top and bottom two holes (looking from the back of the Card Reader).

Note: While installing the Card Reader bracket onto the Card Reader, the lip on the bottom of the bracket should face away from you.

Figure 2: TCR Assembly and Encore S EMV Bracket



Figure 3: Encore/Eclipse ESD Ground Cable (M07709A001)



- Align the Card Reader and bracket. Securely tighten the two mounting screws (Q11677-26).

- 7 Reconnect the 6-pin power/data cable (M07702A006) to the 6-pin power/data connector (see [Figure 2](#) on [page 8](#)) on the TCR.

Note: Tie-wrap the loose end of the cable to ensure that it does not interfere with the other wires.

- 8 Connect the appropriate end of M07702A006 to P205 and P206 on the Serial Interface PCB (M07793A001) (see [Figure 4](#)).

Figure 4: Connection of the Cable from the Card Reader to P205 and P206 on the Serial Interface PCB (M07793A001)

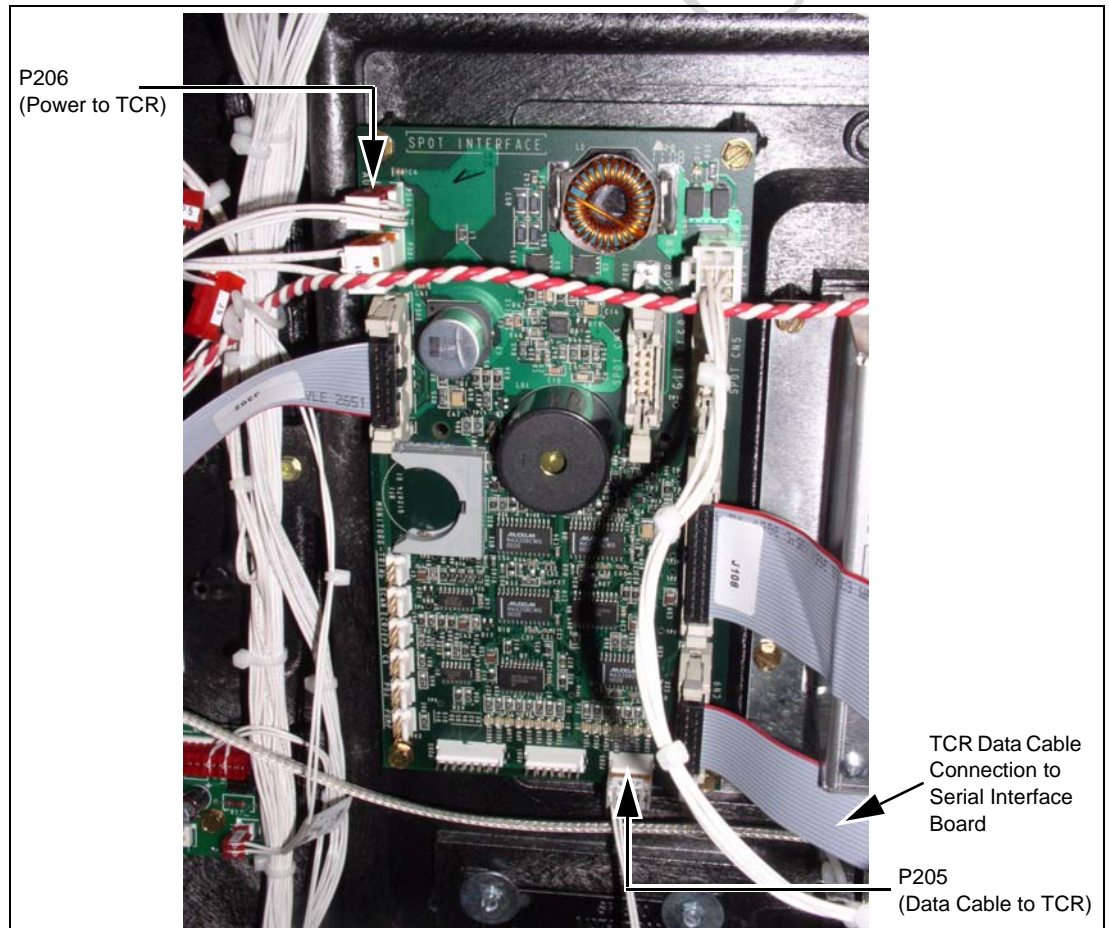
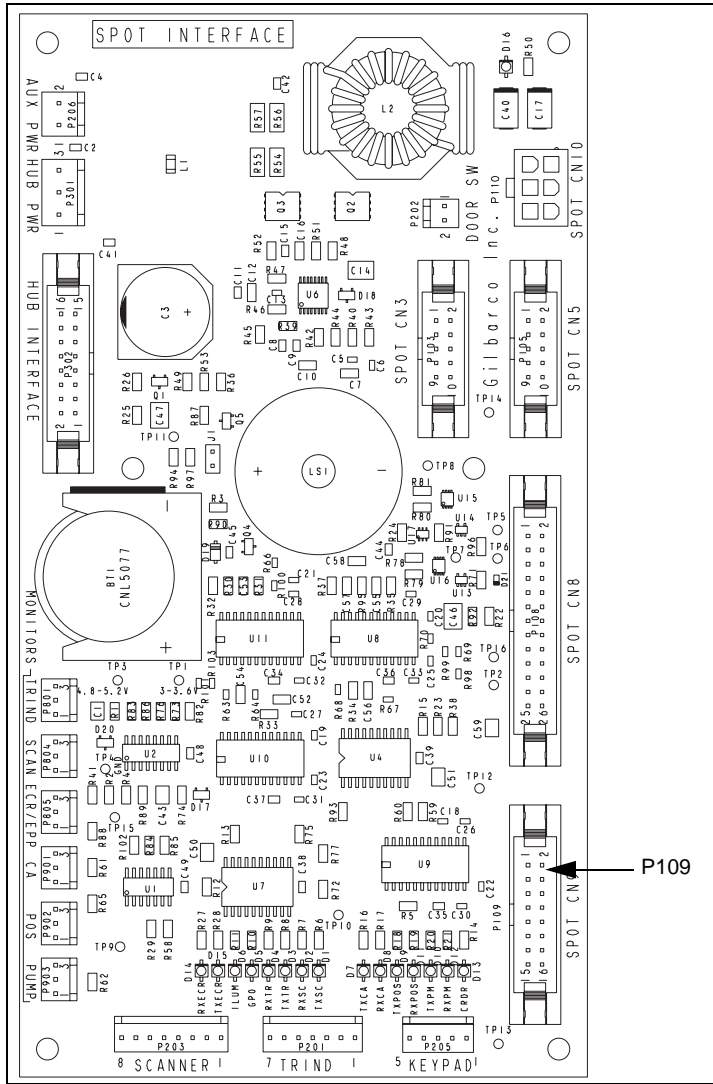


Figure 5: Serial Interface PCB (M07793A001)



- 9 Locate the ground ring terminal on the lower portion of the EMV CRIND display mounting bracket and remove the screw that secures the ground connection. Retain the screw for reinstallation.
- 10 Connect the ring terminal (see [Figure 3](#) on [page 8](#)) of the ESD Ground cable (M07709A001) to the EMV CRIND display mounting bracket ground connection. Secure the connection with the screw and lock washer that was removed in step 9.
- 11 Ensure that all ground cables are secured to the unit with sufficient slack to prevent cable pulls and pinching.

Note: A cable from P109 on M07793A001 connects to the Card Reader connection on EMV CRIND display (see [Figure 5](#)).

Commissioning the Dispenser/Updating CRIND Software

For EMV units, after installing the TCR, you will have to commission the dispenser. At this point, you may also update the EMV CRIND software using the SPOTUpdate tool. For detailed instructions on how to commission the dispenser and update the EMV CRIND software, refer to MDE-4771 EMV CRIND Start-up/Service Manual.

Completing the Installation for Encore S EMV Units (without Contactless Card Reader Option)

To complete the installation, proceed as follows:

- 1 Close and secure the main doors using the security latch and the main door lock. Reinstall and lock the lower panel door.
- 2 Apply the appropriate graphic logos. Refer to MDE-4625 Graphics Panel Application and Repair for graphic application instructions.
Note: Graphic logos are order entry items.

Installing the M07999B001 TCR in an Encore S EMV Unit (with Contactless Card Reader Option)

Removing the Existing Card Reader

To remove the existing Card Reader, proceed as follows:

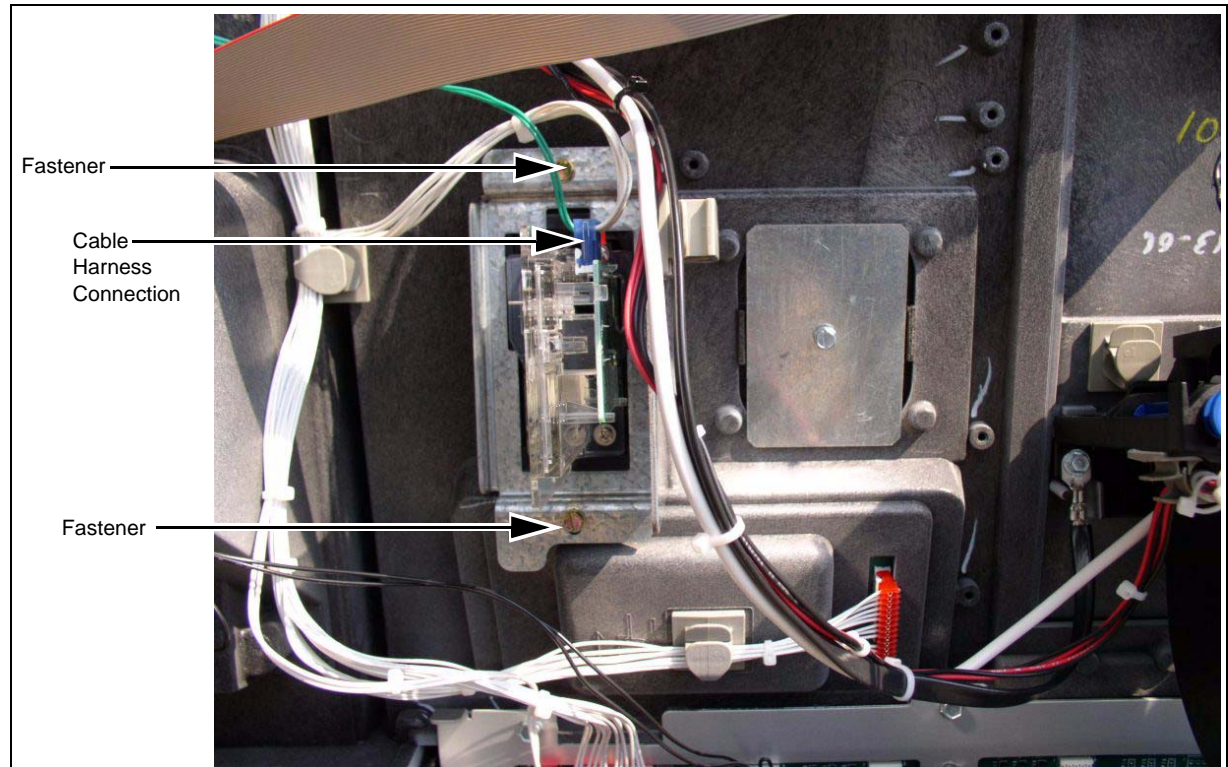
Note: Read all instructions before beginning and observe all safety precautions.

- 1 Obtain an approval from the store manager or responsible personnel to remove the unit from service.
- 2 Remove AC power to the unit using the station circuit breaker. Refer to MDE-3893 Encore/Eclipse Owners Manual for details.
- 3 Remove the lower hydraulics panel. The main door has a lower latch underneath the lower left main door corner. Open this latch. Locate the upper main door lock. Insert the main door key and open the main door.
- 4 Repeat step 3 for Side 2 of the unit.
- 5 Disconnect the cable harness or ribbon cable connection from the Card Reader (see [Figure 6](#) on [page 13](#)).
- 6 Remove the ESD Ground Connection cable from the current Card Reader (if it has one).
- 7 Use a 1/4 inch nut driver or 1/4 inch ratchet and socket to remove the two Hex head screws (see [Figure 6](#) on [page 13](#)) that secure the Card Reader bracket (see [Figure 6](#) on [page 13](#)) and the Card Reader to the option door. Dispose of the Card Reader and bracket, unless you want to keep the Card Reader as a used spare part.

Note: Make a note of the Card Reader's gasket orientation. This information will be useful when you install the new Card Reader gasket (M00682B001) and bracket (M07574B001). Also, ensure that the option door has been cleaned with isopropyl alcohol and a clean cloth prior to installing the new Card Reader gasket (M00682B001).

- 8 Remove the old Card Reader gasket from the option door. Use a putty knife, if required.

Figure 6: Rear View of the Encore S Main Door with Card Reader



Installing the Encore TCR Assembly

To install this assembly, proceed as follows:

- 1 Remove the adhesive backing from the Card Reader gasket (M00682B001) and place the gasket over the Card Reader opening from the inside of the open main door.

CAUTION

A properly grounded ESD wrist strap must be worn when performing step 2. Failure to use electrostatic precautions may damage electronic components and void warranty.

- 2 Obtain the TCR assembly (M07999B001) (see [Figure 7](#) on [page 14](#)) from the kit.
- 3 Remove the 6-pin power/data cable (M07702A006) from the TCR.
- 4 Install the ESD ground cable on the new Card Reader before securing it to the main door. Insert the connector end of the ESD Ground cable (M07709A001) (see [Figure 8](#) on [page 14](#)) to the ESD Ground Connection (see [Figure 7](#) on [page 14](#)) on the Card Reader.

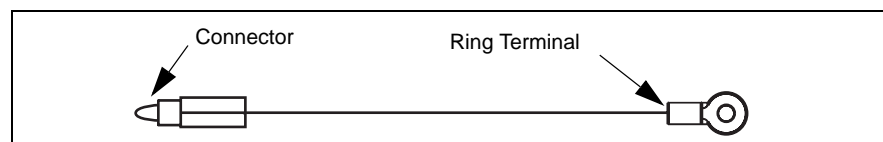
- From the rear of the main door, position the Card Reader and then the Card Reader bracket on the door, such that the Card Reader slot (see [Figure 7](#)) is positioned on the top. Loosely secure the Card Reader bracket and Card Reader to the main door using the two Q11677-26 screws (provided in the kit) in the top and bottom two holes (looking from the back of the Card Reader).

Note: While installing the Card Reader bracket onto the Card Reader, the lip on the bottom of the bracket should face away from you.

Figure 7: TCR Assembly and Encore S EMV Bracket



Figure 8: Encore/Eclipse ESD Ground Cable (M07709A001)



- Align the Card Reader and bracket. Securely tighten the two mounting screws (Q11677-26).

- 7 Reconnect the 6-pin power/data cable (M07702A006) to the 6-pin power/data connector (see [Figure 7](#) on [page 14](#)) on the TCR.

Note: Tie-wrap the loose end of the cable to ensure that it does not interfere with the other wires.

- 8 Connect the appropriate end of M07702A006 to P205 and P206 on the Serial Interface PCB (M07793A001) (see [Figure 9](#)).

Figure 9: Connection of the Cable from the Card Reader to P205 and P206 on the Serial Interface PCB (M07793A001)

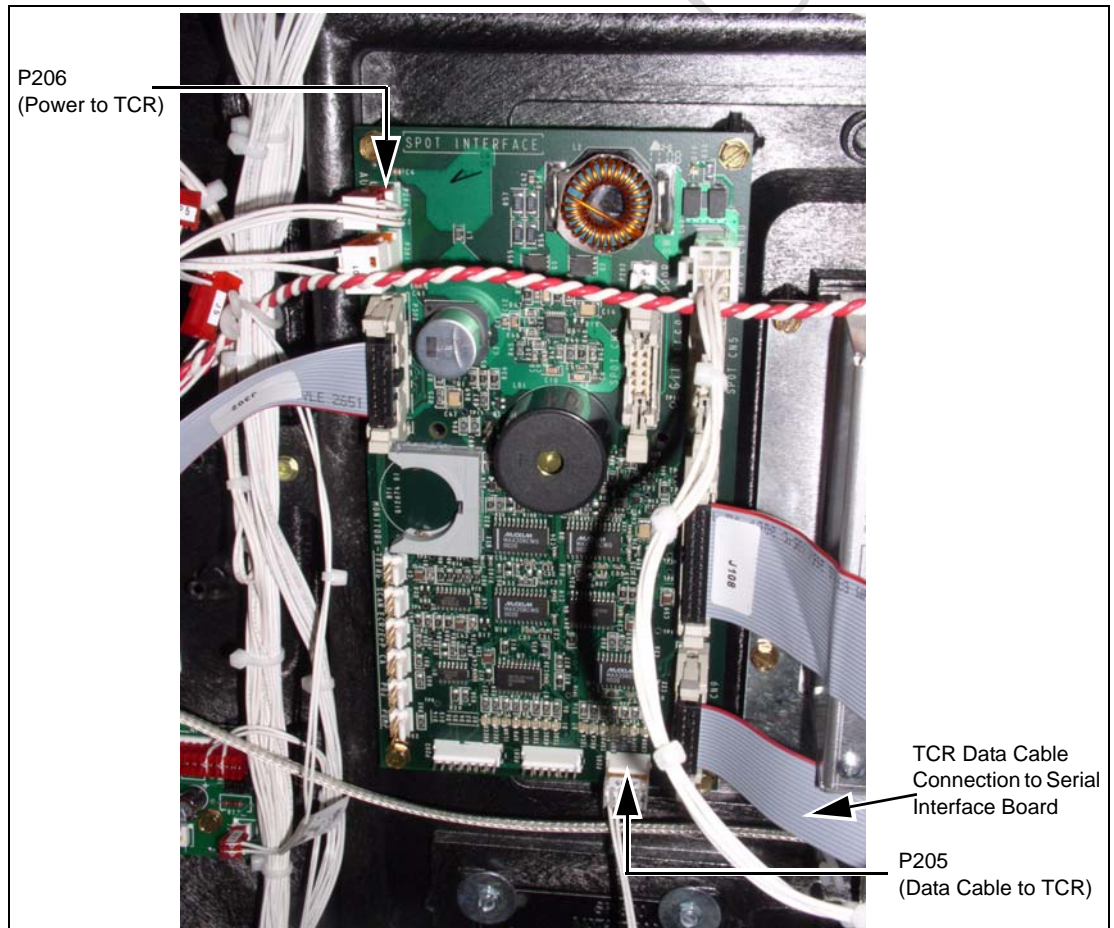
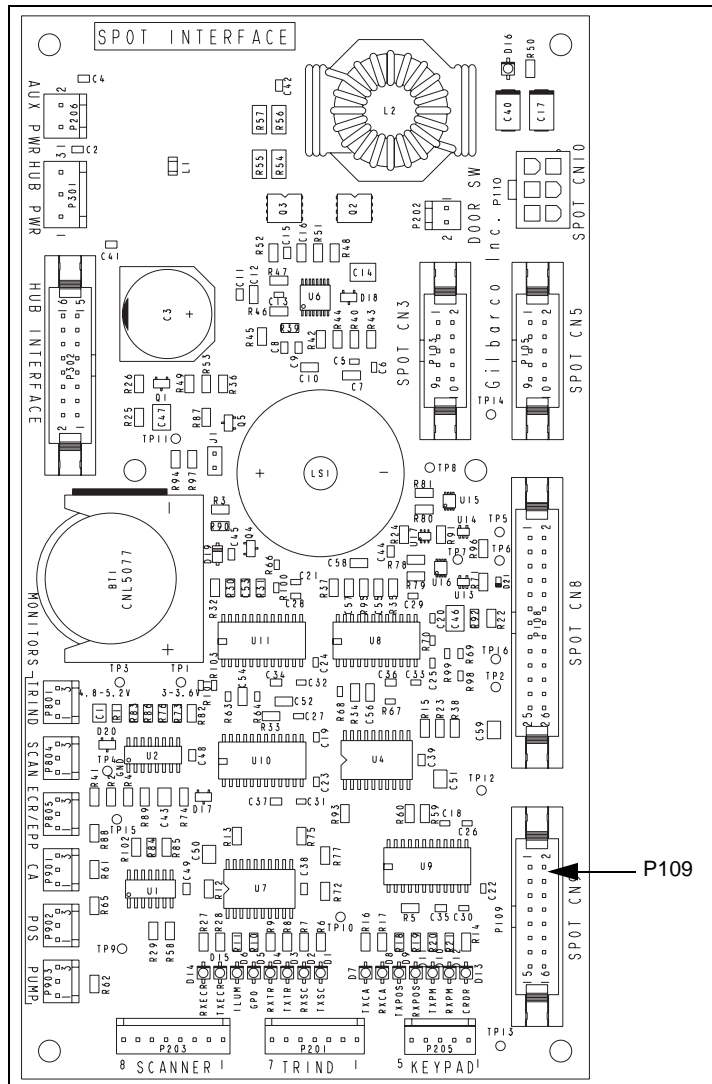


Figure 10: Serial Interface PCB (M07793A001)



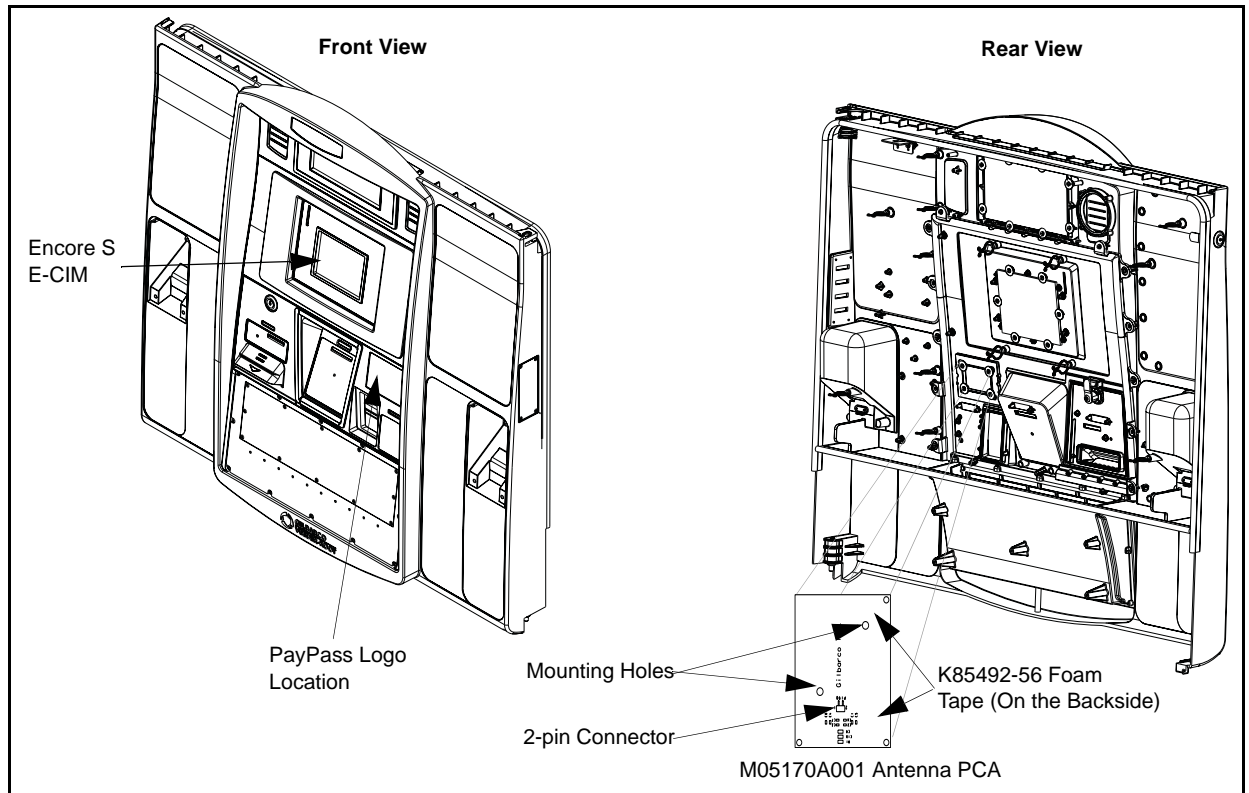
- 9 Locate the ground ring terminal on the lower portion of the EMV CRIND display mounting bracket and remove the screw that secures the ground connection. Retain the screw for reinstallation.
- 10 Connect the ring terminal (see [Figure 8](#) on [page 14](#)) of the ESD Ground cable (M07709A001) to the EMV CRIND display mounting bracket ground connection. Secure the connection with the screw and lock washer that was removed in step 9.
- 11 Ensure that all ground cables are secured to the unit with sufficient slack to prevent cable pulls and pinching.

Note: A cable from P109 on M07793A001 connects to the Card Reader connection on EMV CRIND display (see [Figure 10](#)).

Installing the Antenna PCA (M08285A001)

The RF antenna must be located directly behind the area where the MasterCard PayPass®, American Express® ExpressPaySM and other logo graphics are attached as shown in [Figure 11](#).

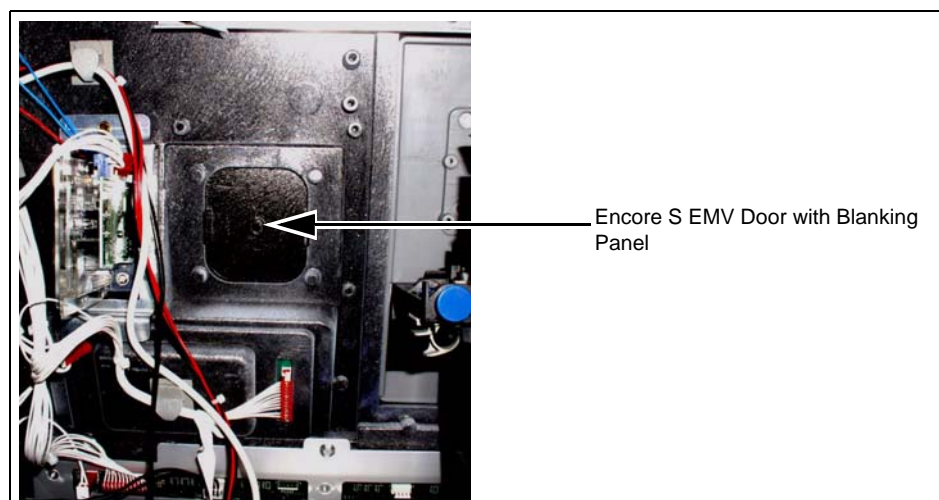
Figure 11: Encore S Main Door Showing Antenna PCA Location



To install the antenna, proceed as follows:

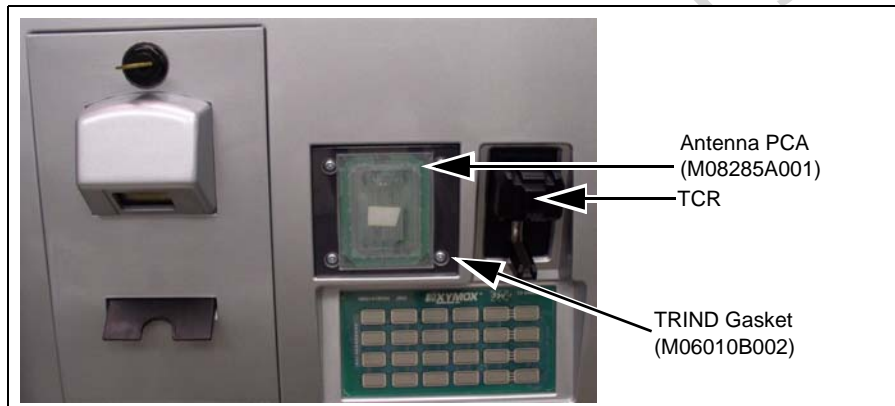
- 1 Remove the small bracket holding in the TRIND blanking panel, and knock out the TRIND blanking panel (see [Figure 12](#)) using a hammer.

Figure 12: Encore S EMV Door with the Blanking Panel



- 2 Remove the narrow sealing gasket from the exposed TRIND lens space on the outside of the door and replace it with the TRIND gasket (M06010B002).
- 3 Locate the M08285A001 Antenna PCA placed on the TRIND CSC Reader Lens (M05987B002) and place it over the TRIND gasket. Secure the TRIND CSC Reader Lens by installing and tightening the four screws (M00419B117) (see [Figure 13](#)).
- 4 Connect one end of the M07703A001 Antenna Cable to the Card Reader antenna connector of the TCR top (see [Figure 7](#) on [page 14](#)) and the other end of the antenna cable to the 2-pin connector on the M08285A001 PCA antenna (see [Figure 11](#) on [page 17](#)).

Figure 13: Antenna PCA on TRIND CSC Reader Lens



- 5 Repeat steps 1 to 4 on the other side of the unit.

Commissioning the Dispenser/Updating CRIND Software

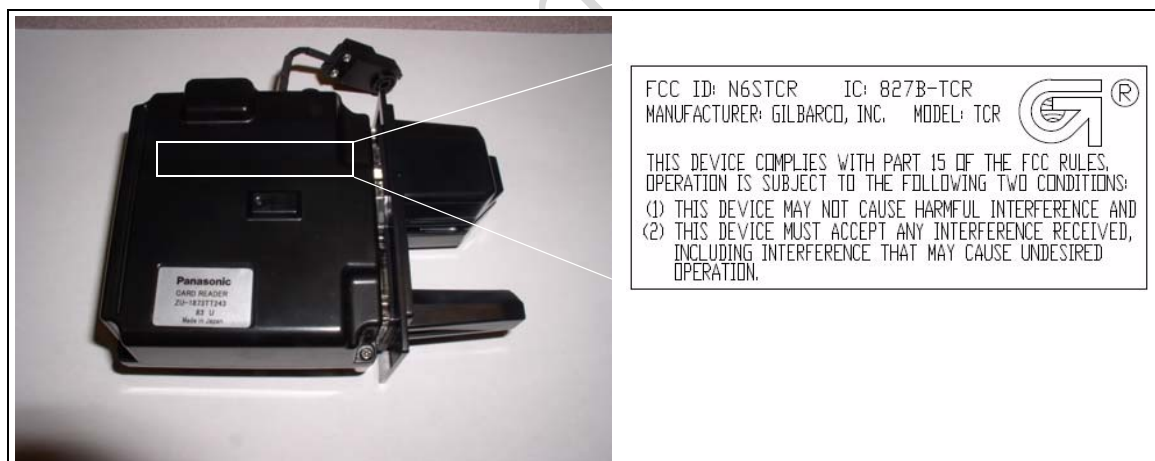
For EMV units, after installing the TCR, you will have to commission the dispenser. At this point, you may also update the EMV CRIND software using the SPOTUpdate tool. For detailed instructions on how to commission the dispenser and update the EMV CRIND software, refer to MDE-4771 EMV CRIND Start-up/Service Manual.

Completing the Installation for Encore S Units (with Contactless Card Reader Option)

To complete the installation, proceed as follows:

- 1 Install the N23951-14 FCC Label on the back of the Card Reader as shown in [Figure 14](#).

Figure 14: FCC Label on TCR (Side)



- 2 Close and secure the main doors using the security latch and the main door lock. Reinstall and lock the lower panel door.
- 3 Test the RF Readers by sliding the CRIND diagnostic card (Q12534) through both the readers with the magnetic strip facing upwards.
- 4 Pass the Card Reader test card in front of the RF antenna (flat side towards the antenna).
- 5 Verify if a valid read was made from the test card. The CRIND beeper will emit an audible beep upon performing a successful read.
Note: The test card should be read from a minimum distance of 1 inch when presented parallel to the bezel surface.
- 6 Apply the appropriate graphic logos. Refer to MDE-4625 Graphics Panel Application and Repair for graphic application instructions.
Note: Graphic logos are order entry items.

7 Obtain the FCC Decal (M02962B011) from the kit and install it under the patent label.



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