



Introduction

Purpose

This manual provides instructions for installing the TRIND® C00011-011 Retrofit Kit into Encore® S Series™ units that contain the CRIND® device.

The Transmitter/Receiver In Dispenser (TRIND) option allows customers to automatically authorize Card Reader In Dispenser (CRIND) device-equipped units using a hand-held low frequency transponder tags provided by a Major Oil Company (MOC) or retailer. Use this kit for one or two-sided unit.

Important Notice

This equipment has been tested and found to comply with the limits for a Class A digital device 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 may 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 yet been investigated by Underwriters' Laboratories, Incorporated (UL®).

Required Reading

Before installing the equipment, the installer must read, understand, and follow:

- this manual
- National Fire Protection Agency (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 effect the safe use and operation of the equipment.

Note: This kit must be installed by a Gilbarco Authorized Service Contractor (ASC)

Related Documents

Document Number	Description	GOLD Library
MDE-3804	Encore and Eclipse Series Start-Up/Service Manual	Encore and Eclipse
MDE-4516	Encore S Series Owners Manual	Encore and Eclipse
MDE-3664	TRIND Start-Up, Service, and Parts Manual	CRIND and TRIND
PT-1936	Encore Illustrated Parts Manual	Parts Manual
PT-1736	CRIND Card Reader Illustrated Parts Manual	Parts Manual

Recommended Tools

The following equipment is needed to install TRIND kit M02112K00X:

- clean cloth or rag
- isopropyl alcohol (part number END-1082)
- nut drivers, metric
- nut drives, standard
- multimeter
- needle nose pliers
- pliers
- pocket knife
- putty knife or scraper
- Diagnostic Card Q12534-170
- ratchet set, metric
- ratchet set, standard
- screwdrivers, flat and Phillips head
- static guard wrist strap
- TRIND ASC tool kit K94577-02 (refer to MDE-3640 ASC TRIND Installation Tool Kit)

Parts Lists

TRIND Retrofit Kit C00011-011 Parts List

The following section provide the parts lists for kit C00011-011. The kit is designed for a dual-sided unit.

Description	Part Number	Quantity
Assembly, TRIND Electronics	M06380A001	1
Assembly, Light and Inductor	M06143A00X	(see note 1)
Cable Group:	Q13863-12	1
• TRIND Door Cable (Side 1)	M00507A001	1
• TRIND Door Cable (Side 2)	M00507A002	1
• Cable, TRIND Gateway to CCN	M00515A002	1
• Cable, TRIND Option Door Data and Power	R20773-G1	2
• Cable, TRIND Power Enhanced Encore	M06525A001	1
Graphics (Envelope)	T18832-01	1
Jumper, 0.100 Centers	Q11011-01	10
Kit, Encore S Parts:	K96646-04	-
• Window, TRIND Display	M05987B001	1
Kit, TRIND Encore Component Parts:	M02183K001	-
• Cable Mount, Adhesive	Q13558-04	16
• Screw, Self-Tapping Hex	Q11677-23	6
• Tie, Cable	Q10178-01	4
Label, Patent and FCC	M02962B007	1

Notes:

1. Part M06143A00X is a customer specific order entry item (A001 is red, A002 is orange).
2. Part M06525A001 is a customer specific order entry item (based on site survey data).

ASC TRIND Tool Kit K94577-02

The following section provide the lists the parts for ASC TRIND Tool Kit K94577-02. The ASC TRIND Tool kit is a separate order entry item and is not included with the retrofit kit.

Description	Part Number	Quantity
Tool Kit, ASC TRIND	K94577-02	-
• cable, standalone jumper	R20602-G2	1
• test tag, TI/RFID hand held	Q13630-02	1

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.


The first and most important information you must know is how to stop all fuel flow to the pump and island.

Emergency Total Electrical Shut-Off

Locate the switch or circuit breakers that shut-off all power to all fueling equipment, dispensing devices, and submerged turbine pumps (STPs). These you must operate in the event of an emergency.

⚠ 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 only these cashier station "stops."





Total Electrical Shut-Off Before Access

Any procedure requiring access to electrical components or the electronics of the dispenser requires total electrical shut-off of that unit.

NFPA 30A, Section 4-1.2, published by the National Fire Protection Association, requires the installation of an easily accessible switch or circuit breaker to shut-off the power to all fueling equipment, dispensing devices and STPs in the event of an emergency. Know the function and location of this switch or circuit breaker before inspecting, installing, maintaining, or servicing Gilbarco equipment.

Evacuation, Barricading and Shut-Off

Any procedures requiring accessing the pump/dispenser or STPs requires the following three actions:

-   An evacuation of all unauthorized persons and vehicles
-  Using safety tape or cones as barricades to the effected units
-  A total electrical shut-off of that unit

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 Call 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

There is applicable information in: NFPA 30A: *Automotive and Marine Service Code*; NFPA 70: *National Electrical Code (NEC)*; OSHA regulations; and federal, state, and local codes which 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.

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 that follow must be followed to prevent death, injury or damage to the equipment.

DANGER

This signal word is used to alert you to a hazard or unsafe practice which **will** result in **death or serious injury**.

WARNING

This alerts you to a hazard or unsafe practice that **could** result in **death or serious injury**.

CAUTION

This signal word designates a hazard or unsafe practice which **may** result in **minor injury**.

CAUTION

When used by itself, CAUTION designates a hazard or unsafe practice which may result in **property or equipment damage**.

Prevent Explosions and Fires

Fuels and their vapors will become explosive if ignited. Spilled or leaking fuels cause vapors. Even filling customer tanks will cause explosive vapors in the vicinity of dispenser or island.

No Open Flames



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 fuels and their vapors. After getting out of a vehicle, touch the metal of your vehicle to discharge any electrostatic charge before you approach the dispenser island.

Other Useful Safety Information

This subsection provides additional safety information.

OSHA Lock-Out and Tag-Out Requirements


OSHA Standard 29 CFR 1910-147 Control of Hazardous Energy Sources (Lock-Out/Tag-Out) covers ways to avoid personal injury because power was turned on or fuel pressure was applied **unexpectedly** while servicing equipment. The rule requires:

- (1) Turning off equipment power and fuel under pressure.
- (2) Use of a locking device (breaker, valve, etc.) or label device with a warning tag.

Station employees and service contractors need to understand and comply with this program completely to ensure safety while the equipment is down.

Use Electrostatic Discharge Precautions

Place yourself at a neutral static-free potential by doing the following:

- 1 Touch an unpainted metal surface.
- 2  Use a wrist strap connected to a grounded metal frame or chassis.
- 3 Make sure all power has been removed from unit and the CRIND device.

- 1 Set the jump jacks (Figure 1) on Gateway Board T20678-GX to match the CRIND addresses of the fueling unit subject to TRIND installation. Refer to the following table for the jack settings that correspond to a CRIND address.

Note: For generic CRIND, address the Gateway Board to correspond with the proper CRIND address. This should be done in accordance with Site Controller requirements.

MOC Encore CRIND Addresses	Jack Settings				
Side 1 = Address on Gateway Board T20678 'A' Side	JP6	JP7	JP8	JP9	JP10
Side 2 = Address on Gateway Board T20678 'B' Side	JP14	JP15	JP16	JP17	JP18
1	IN	OUT	OUT	OUT	OUT
2	OUT	IN	OUT	OUT	OUT
3	IN	IN	OUT	OUT	OUT
4	OUT	OUT	IN	OUT	OUT
5	IN	OUT	IN	OUT	OUT
6	OUT	IN	IN	OUT	OUT
7	IN	IN	IN	OUT	OUT
8	OUT	OUT	OUT	IN	OUT
9	IN	OUT	OUT	IN	OUT
10	OUT	IN	OUT	IN	OUT
11	IN	IN	OUT	IN	OUT
12	OUT	OUT	IN	IN	OUT
13	IN	OUT	IN	IN	OUT
14	OUT	IN	IN	IN	OUT
15	IN	IN	IN	IN	OUT
16	OUT	OUT	OUT	OUT	IN
17	IN	OUT	OUT	OUT	IN
18	OUT	IN	OUT	OUT	IN
19	IN	IN	OUT	OUT	IN
20	OUT	OUT	IN	OUT	IN
21	IN	OUT	IN	OUT	IN
22	OUT	IN	IN	OUT	IN
23	IN	IN	IN	OUT	IN
24	OUT	OUT	OUT	IN	IN
25	IN	OUT	OUT	IN	IN
26	OUT	IN	OUT	IN	IN
27	IN	IN	OUT	IN	IN
28	OUT	OUT	IN	IN	IN
29	IN	OUT	IN	IN	IN
30	OUT	IN	IN	IN	IN
31	IN	IN	IN	IN	IN
32	OUT	OUT	OUT	OUT	OUT

Installing the Enhanced Gateway Board (TRIND Electronics - M06380A001)

Install the enhanced gateway board assembly from Side 2 of the unit according to the following steps:

- 1 Place the assembly on the shelf provided, aligning four studs on underside of card cage with holes provided on shelf.
- 2 Secure assembly to shelf using three (3) nuts (M00414B005) with external lock washers provided with kit.

Installing Light and Inductor Assembly M06143A00X

Perform the following steps to install Light and Inductor Assembly M06143A00X.

- 1 Install M06143A00X to Encore S bezel using three (3) screws (Q11677-24) provided.
- 2 Repeat step 1 for the other side bezel.

Routing Cables

Perform the following steps to install retrofit kit cables. Refer to [“TRIND Cable Block Diagram R20775, Sheet 2” on page 13](#) for details on making connections.

- 1 Obtain AC Power Cable M06525A001 from the kit.
- 2 Locate the M00806A00X AC Power Distribution Cable inside the electronics cabinet of the dispenser. Attach plug P1 of AC Power Cable M06525A001 to one of the AC taps on AC Power Distribution Cable M00806A00X .
- 3 Attach the ground connection of AC Power Cable M06525A001 to a convenient chassis ground.
- 4 Obtain Light/Multi-Protocol Cable R20773-G1 from the kit and connect the J182 end of the cable to P182 on Light Board Assembly M06143A001.
- 5 Secure the R20773-G1 Cable to door, and route and feed the other cables.
- 6 For both CIM Doors, use cable clamps to route cables to and along the door.
Note: Be sure that the cables are secured with sufficient slack to allow door to open and close without pinching the cabling.
- 7 Connect the J1/J2 end of the R20773-GX cable to P2 end of the M00507A00X Ribbon Cable extending from the Card Cage Assembly .

Figure 2: M00507A00X Ribbon Cable

- 8 Obtain Light/Multi-Protocol Cable R20773-G1 from the kit and connect the J182 end of the cable to P182 on the Light Board Assembly M06143A00X.
- 9 Secure the R20773-G1 Cable to the door and route the cable through the bezel.
- 10 Feed cables into the CIM door.
- 11 Use the cable clamps to route the cables to and along the door.
Note: Be sure that cables are secured with sufficient slack to allow door to open and close without pinching the cabling.
- 12 Connect the J1/J2 end of the R20773-G1 cable to the P1 end of the M00507A00X Ribbon Cable extending from the Card Cage Assembly.
- 13 Obtain TRIND Gateway Ribbon Cable M00515A00X from the kit and perform the following to connect Enhanced Gateway Board T20678-GX to CRIND Control Node Printed Circuit Assembly M00089A00X :
 - Connect J250 on gateway cable M00515A00X to plug P250 on Enhanced Gateway Board T20678-GX
 - Connect J3110 on gateway cable M00515A00X to plug P3110 on CRIND Control Node PCA.

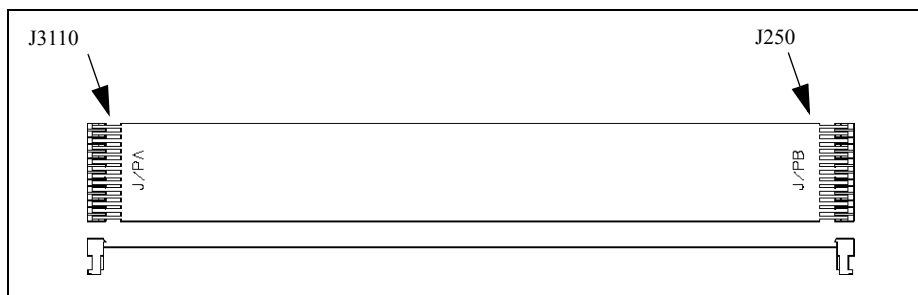
Figure 3: TRIND Gateway 14 Position Ribbon Cable M00515A00X

Figure 4: Enhanced Gateway Printed Circuit Board Assembly T20678-GX

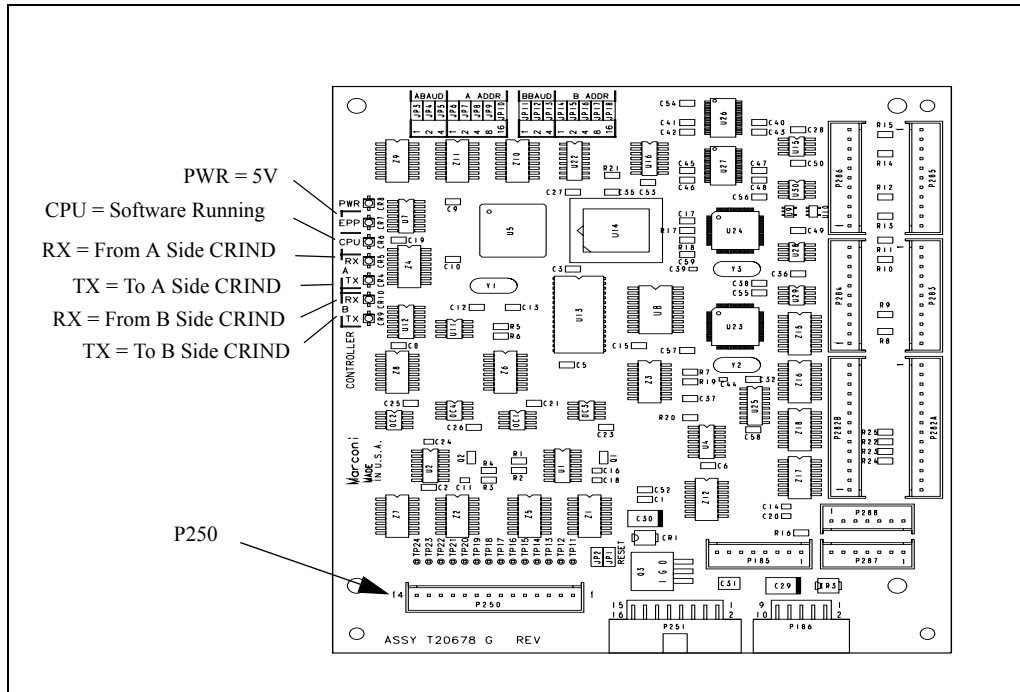
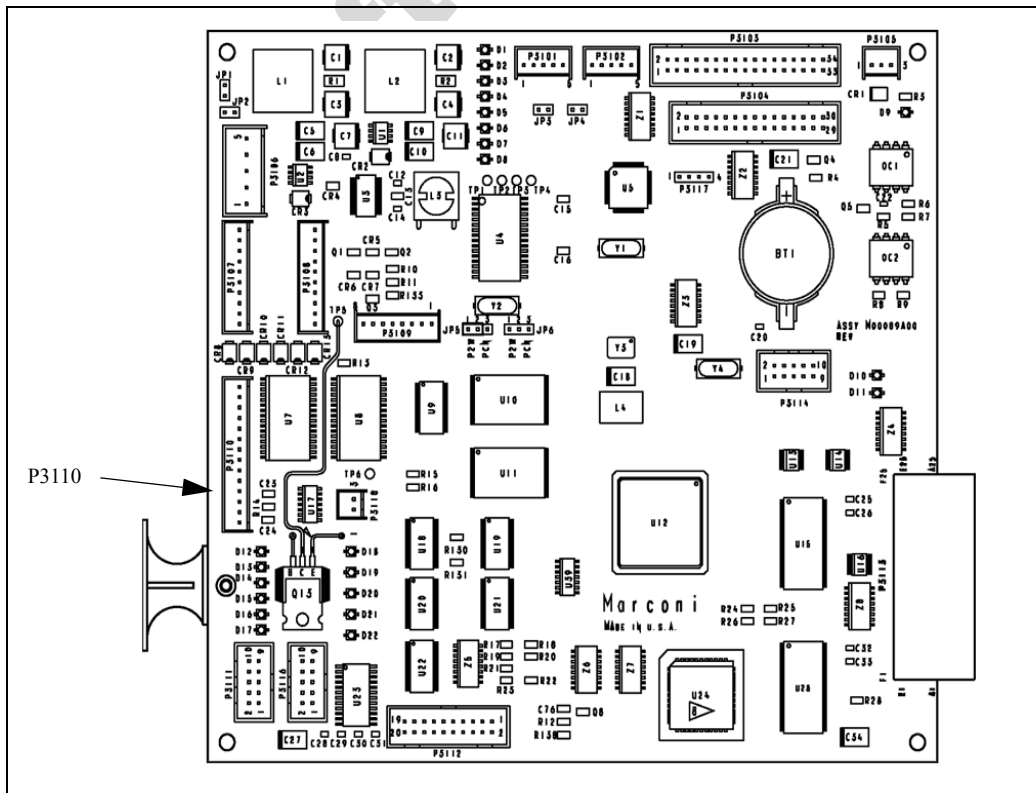
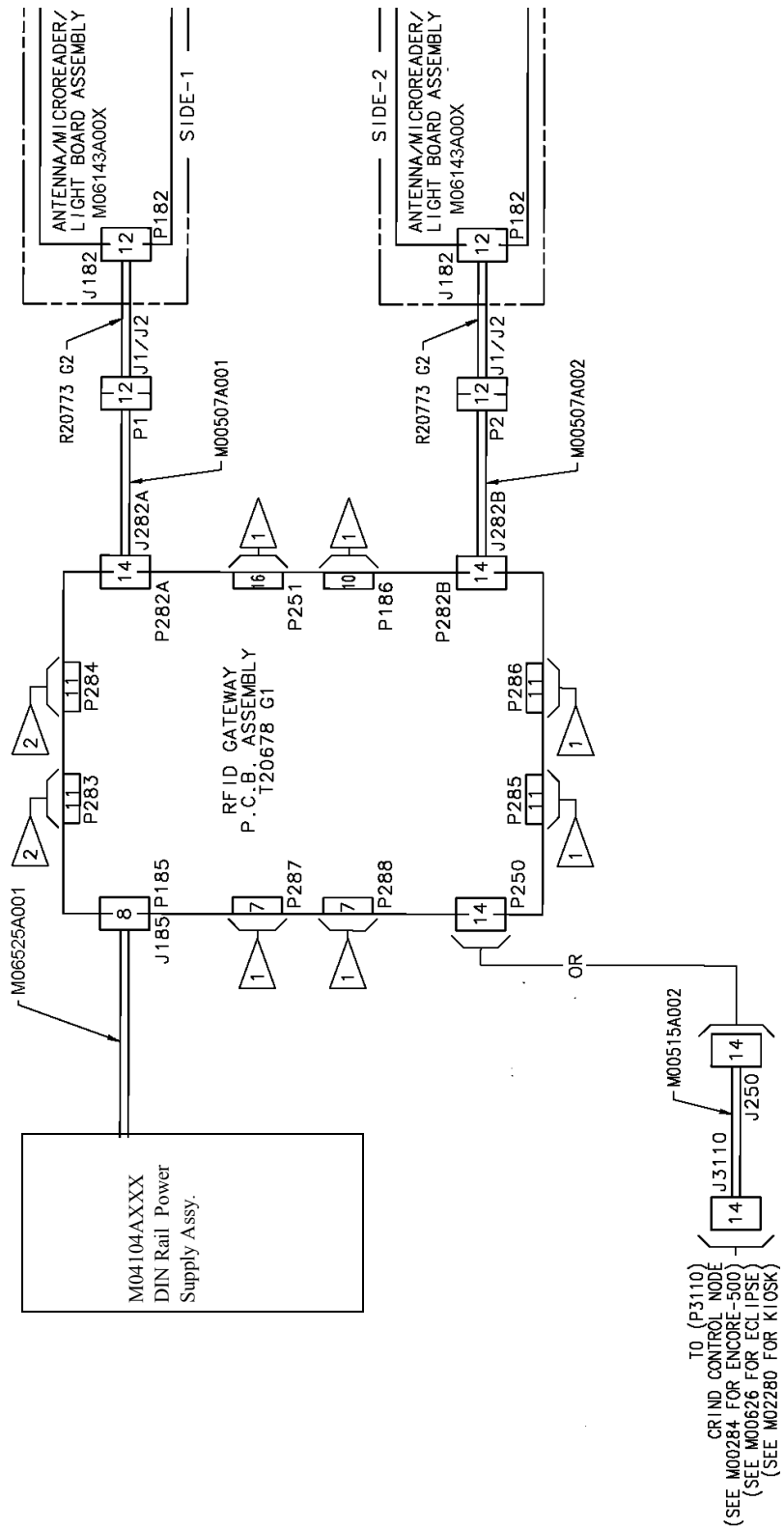


Figure 5: CRIND Control Node PCA M00089A00X



TRIND Cable Block Diagram R20775, Sheet 2



Enabling the TRIND Device and Verifying Addresses

Perform the following steps to enable the TRIND device and verify the CRIND addresses that with the Gateway Board.

- 1 Restore power to the fueling units. Refer to MDE-3804 Encore and Eclipse Series Start-Up/Service Manual.
- 2 Initiate CRIND BIOS Diagnostics using Diagnostic Card Q12534-170.
- 3 At the **Diagnostic Startup Menu** window select **1. Main Menu**.
- 4 At Main Menu window select **1. Device Config**.
- 5 At the **Device Config** window select **4. TRIND**.
- 6 At the **TRIND Menu** window for the **Enable TRIND** item, select **1. Yes** to enable TRIND. Press **ENTER** on the CRIND Keypad to have the selection accepted.
- 7 Press the **CANCEL** key several times until the **Diagnostic Startup Menu** appears.
- 8 At the **Diagnostic Startup Menu** window select **1. Main Menu**.
- 9 At the **Main Menu** window select **1. CRIND Config**.
- 10 At the **CRIND Config** window select **CRIND ID's**.
- 11 At the **CRIND ID's** window select **1. CRIND ID Side A** for side 1, or **2. CRIND ID Side B** for side 2.
- 12 At the **CRIND ID Side A** or **CRIND ID Side B** window, observe and make note of the **CRIND ID**. Verify that the **ID** value is the same as the dispenser address setup on Gateway Board T20678-GX.

Testing the TRIND Device

Perform the following steps to test the TRIND device. For details on wire connections, refer to [“TRIND Cable Block Diagram R20775, Sheet 2”](#) on page 13.

- 1 If the Site Controller is not operational, proceed to step 2. otherwise proceed to 6.
- 2 If the Site Controller (G-SITE® or third party) is not operational (i.e., the application has not been loaded), place the unit in the “stand alone” mode.

Note: The following steps are used to place the unit in the stand alone mode. Both the Stand Alone jumper cable and the RFID Micro Reader PCA jump jack methods are listed. The installer should select the method that is the most effective based on the type on installation that is encountered.

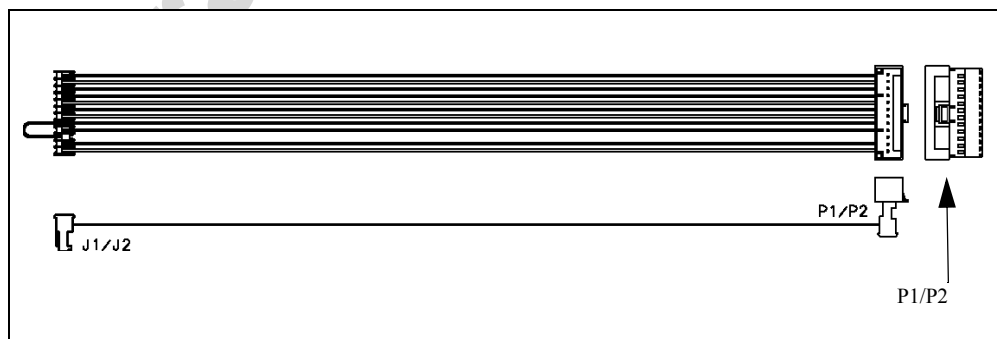
- 3 Locate the side 1 card cage cable harness and disconnect P1 of cable M00507A00X or locate RFID Micro Reader PCA M06100A00X that’s part of the M06143A00X assembly, and place a jumper in JP3. If using the jump jack in JP3 in the RFID Micro Reader PCA proceed to step 5, if not, go to step 4.

Note: The “jump jack” method is by far the most convenient way of placing the unit in the standalone mode. It is recommended that this method be used if at all possible.

- 4 Obtain Standalone Jumper Cable R20602-GX from the ASC TRIND Tool Kit, and connect the P1/P2 end of the cable to the P1 end of M00507A00X cable for side 1. Refer to the [“TRIND Cable Block Diagram R20775, Sheet 2”](#) on page 13 for the location of M00507A00X.

Note: Connect the jumper cable to side 1 only to ensure successful standalone operation. Jumper cable connection places both side 1 and side 2 in standalone mode.

Figure 6: Standalone Jumper Cable R20602-GX



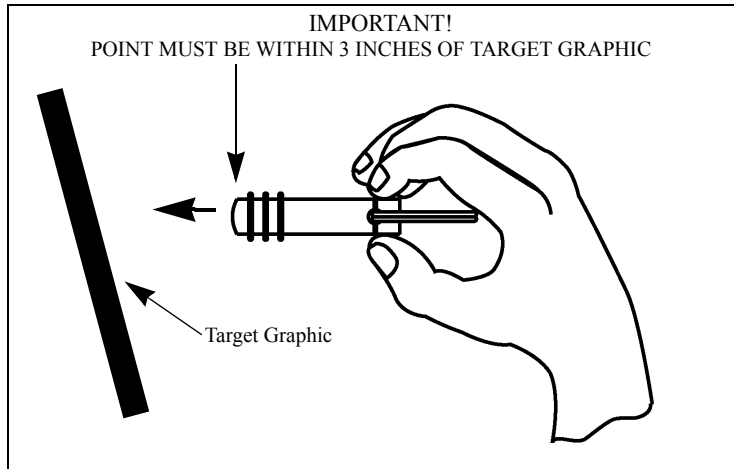
- 5 Restore power to the card cage by reconnecting Power Cable M06525A001.
- 6 Allow about 12 seconds for the Gateway Board software to start up, then verify that the SYNC and STAT Light Emitting Diodes (LEDs) on RFID Micro Reader PCA M06100A00X flash, and the OKT LED is illuminated.

Note: A visual of these indicators may be obtained by viewing TRIND from the front door prior to the installation of the TRIND graphics.

- 7 From side 1 of the unit, point the hand held test tag (Q13630-02 from the ACS TRIND tool kit) at the TRIND target graphic. The TRIND indicator will light when the tag is approximately 3 inches or less away for the target graphic. Repeat for side 2.

Note: If the indicator fails to light, check whether the light on other side is on; if so, it indicates a crossing of side 1 and 2 cables. Check connections.

Figure 7: TRIND Hand Held Test Tag



- 8 Once testing has been successfully completed, remove power from the unit(s), remove the jumper cable or jump jack from JP3, and restore power to the unit.

Completing Installation

After all testing has been completed, perform the following steps.

- 1 Verify that all newly installed cables and wires are properly dressed and do not obstruct CIM Door closure.
- 2 Obtain FCC label nameplate M02962B007 from the kit, and install the label near the UL and Gilbarco labels located on the inner column sheathing.
- 3 Close and secure all doors.
- 4 Install the TRIND graphics.
- 5 Clean up the work site, removing all materials to be discarded and all tools.

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