

## Introduction

### Purpose of this Manual

This manual provides instruction for installing TRIND™ Retrofit Kits C00011-005-XX in The Advantage® Series wide frame and narrow frame units and MPD®3 units with InfoScreen®, monochrome CRIND®, or single-line CRIND.

The TRIND option allows customers to automatically authorize CRIND-equipped units using a hand-held transponder tag provided by a major oil company (MOC). Use these kits for one- or two-sided units.

### Prerequisites

Before installing the TRIND kit, ensure that the existing CRIND has the Z-180 logic board T17764-XX, which is not provided in TRIND retrofit kit.

### 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 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.

### Required Reading

Before installing the equipment, 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 effect the safe use and operation of the equipment.

*Note: This kit must be installed by a Gilbarco ASC (Authorized Service Contractor) to insure warranty.*

## Related Documents

MDE-2531	Pump & Dispenser Start-Up & Service Manual
MDE-2562	CRIND Service Manual
MDE-2628	Cash Acceptor Retrofit Assemblies for The Advantage Series with CRIND
MDE-2620	Graphics Panel Application for The Advantage Series
PT-1728	The Advantage Series Illustrated Parts Manual
PT-1736	CRIND Card Reader Illustrated Parts Manual

## Required Tools

**The following equipment is needed to install all TRIND™ Multi 1 kits:**

- Allen wrench set, American standard
- clean cloth or rag
- chip extraction tool, e.g., IC extraction, Digikey Part No. K158-ND or equivalent
- isopropyl alcohol (part# END-1082)
- needle nose pliers
- nut driver, 1/4", 3/8"
- pocket knife
- Q12534 CRIND diagnostic card
- ratchet set, standard
- screwdrivers, flat and Phillips head
- static guard wrist strap

**The following additional tools are required if kit is to be installed on wide frame units with call or stop button on existing right options door:**

- center punch
- deburring tool or round file
- hand drill, battery electric or pneumatic
- light hammer
- pilot drill bit (between 3/32" and 1/4") and 7/8" drill bit
- standard tape measure or rule

## Parts Lists

### TRIND Software

CRIND BIOS TRIND software K93744-XX is an order entry item for all kits.

### Q13863-04 Cable Group for All The Advantage Series Kits

Cable group Q13863-04 for all kits contains the following cables:

Cables	Part Number	Quantity per kit
Gateway to CRIND logic	R20437-G01	1
AC power	R20580-G1	1
Light/Multi-protocol Reader	R20773-G2	2

### C00011-005 Kits for The Advantage Series Wide Frame Units

**Kits C00011-005-WF-D (dual-sided) and C00011-005-WF-S (single-sided) for The Advantage Series Wide Frames (48") contain the following parts.**

Description	Part Number	Quantity
cable clamp, gray	Q13558-04	16
cable group	Q13863-04	For components see table "Q13863-04 Cable Group for All The Advantage Series Kits" on page 3.
cable tie	Q10178-01	4
card cage assembly	T20606-G3 (see note 3)	1
door assembly, right options clear with TRIND	T20613-G1 or T20613-G2 (see note 1)	1 per side
graphics, right option door	AD05002GW00X	(see note 2)
grommet strip, solid	Q10315-01	1.5 ft.
jump jack	Q11011-01	4
label plate, FCC	N23949-06	1
manual, installation instructions	MDE-3883	1
nut	Q12068-03	2
screw, phillips 6-32	Q12083-13	1
screw, phillips 8-32	Q12083-26	2

**Notes:**

1. T20613-02 door assembly is call/stop button ready.
2. Right Option Door Graphics AD05002GW00X are an order entry item.
3. Some kits may contain a T20606-G4 Card Cage. Only differences for installation consist of location of Gateway board (on top of card cage in -G4 units, within card cage for -03 units) and card cage harness cables for connecting to R20773-G2 door cables. All harness cable connections are identical between -G3 and -G4 card cages. See "Addressing Gateway Board" on page 35.

## C00011-005 Kits for The Advantage Series Narrow Frame Units

**Kits C00011-005-NF-D (dual-sided) and C00011-005-NF-S (single-sided) for The Advantage Series Narrow Frames (36") contain the following parts.**

Description	Part Number	Quantity
cable clamp, gray	Q13558-04	16
cable group	Q13863-04	For components see table "Q13863-04 Cable Group for All The Advantage Series Kits" on page 3.
cable tie	Q10178-01	4
card cage assembly	T20606-G3 (see note 1)	1
door assembly, right options clear with TRIND	T20614-G1	1 per side
graphics, right option door	AD02002GN00X	(see note 2)
grommet strip, solid	Q10315-01	1.5 ft.
jump jack	Q11011-01	4
label plate, FCC	N23949-06	1
manual, installation instructions	MDE-3883	1
nut	Q12068-03	2
screw, phillips 6-32	Q12083-13	1
screw, phillips 8-32	Q12083-26	2

**Notes:**

1. Some kits may contain a T20606-G4 Card Cage. Only differences for installation consist of location of Gateway board (on top of card cage in -G4 units, within card cage for -03 units) and card cage harness cables for connecting to R20773-G2 door cables. All harness cable connections are identical between -G3 and -G4 card cages. See "Addressing Gateway Board" on page 35.
2. Right Option Door Graphics AD02002GN00X are an order entry item.

## C00011-005 Kits for The MPD-3 Series Units

### Kit for MPD-3 units:

Kit	Bezel and Faceplate Type	Sides
C00012-005-MPDD	PMI Bezel with Slide-In Faceplate	2
C00012-005-MPDS		1
C00012-005-MPBD	Mack Bezel with Bolt-On Faceplate	2
C00012-005-MPBS		1

All C00012-005 kits for MPD-3 units contain the following parts except as noted in the tables.

Description	Part Number	Quantity
bezel assembly	T20616-GX (see note 1)	1 per side
cable clamp, gray	Q13558-04	16
cable and accessory group	K96646-05	For components see table "K96646-05 Kit for MPD-3 Units" on page 5.
cable tie	Q10178-01	4
card cage assembly	T20606-G3 (see note 3)	1
graphics, bezel	MP02002G001	(see note 2)
grommet strip, solid	Q10315-01	1.5 ft.
jump jack	Q11011-01	4
kit, MPD-3 parts	K96646-05(	see table below)
label plate, FCC	N23949-06	1
manual, installation instructions	MDE-3883	1
nut	Q12068-03	2
screw, phillips 6-32	Q12083-13	1
screw, phillips 8-32	Q12083-26	2

#### Notes:

1. Bezels are order entry item. T20616-G1 bezel assemblies are configured for PMI (slide-in) faceplates; T20616-G2 bezel assemblies are configured for bolt-on (stud) Mack bezel units.
2. Bezel Graphics MP02002G001 are an order entry item.
3. Some kits may contain a T20606-G4 Card Cage. Only differences for installation consist of location of Gateway board (on top of card cage in -G4 units, within card cage for -03 units) and card cage harness cables for connecting to R20773-G2 door cables. All harness cable connections are identical between -G3 and -G4 card cages. See "Addressing Gateway Board" on page 35.

### K96646-05 Kit for MPD-3 Units

K96646-05 Kits are configured as order entry for all MPD-3 units and contain the following parts.

Description	Part Number	Quantity
cable	R18163-G1	1
cable group	Q13863-05 Cable group contains the following parts: • Gateway to CRIND logic R20437-G01, 1 ea. • AC power R20580-G1, 1 ea.	1
manager keypad assembly	T17549-G1	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, dispensary 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 Marconi 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 Marconi Authorized Service Contractor or call the Marconi 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.


## Prevent Electrical Shock and Sparks

Dispensing devices use high voltage. A potential shock hazard exists when working on or around a dispensing device.

Follow OSHA lock-out and tag-out procedures.

Always turn OFF power to the dispensing device and associated submerged turbine pumps (STPs) when servicing or making electrical wiring connections. Multiple disconnects may be required.

**⚠ 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."

### Close Junction Boxes Tightly

Spilled or leaking fuels in the vicinity of electrical junction boxes can be hazardous if boxes are not properly closed. Replace all bolts and tighten junction box cover before turning on AC power. Do not use gaskets on junction box covers.



### **Field Wiring**

Poorly wired pumps or dispensers could cause a fire, explosion or electrical shock. Place all power and lighting wires in threaded, rigid metal conduits. Plug all unused junction box holes. Never use knockout boxes or flexible conduit. Tighten all threaded connections and covers. Do not use gaskets with junction box covers. Do not disturb sealing compound around wires at junction box entrances. Use factory method of routing wires. Use tie wraps to keep unruly wires away from pinch point and hinges. Tuck wires into enclosure before closing doors, bezels, junction boxes, covers and breaker panels. Follow wiring recommendations in installation or service manuals.

### **Proper Grounding is Required**

Proper grounding is required for safe operation. See installation manual and applicable NEC, NFPA and local electrical codes for requirements.

### **Avoid Pinched Wires**

Pinched or cut wires (cables) may damage components. Exposed wires could create sparks and electrical shorts when applying power.


PRELIMINARY  
FCC 11/30

## React Quickly to Fuel Spills, Fires or Vehicle Impact

Follow these steps in the event of a fuel spill, fire, or vehicle impact.

- 1 Use station EMERGENCY TOTAL ELECTRICAL SHUT-OFF immediately. Turn off all system circuit breakers to the island.

**⚠ 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."

- 2 Call emergency numbers for fires, vehicle impact or any significant spills.

- 3  Use safety tape, cones or barricades to block the work area. Do not go near fuel spill or allow anyone else in the area.

- 4     Take precautions to avoid igniting fuel. Do not allow starting of vehicles in the area and immediately stop use of open flames, smoking or power tools in the area.

- 5 Provide emergency and first aid assistance.

**⚠ WARNING**

If any gasoline has been inhaled, seek emergency help immediately.

Inhaled gasoline may cause unconsciousness and burns to lips, mouth and lungs.

**⚠ WARNING**

Gasoline spilled on skin may cause burns.

Wash area thoroughly with clean water.

Seek medical advice immediately.

- 6 Use approved and safe procedures to clean up all spills with a "fuel or gasoline absorbent" material approved by your local regulatory agencies. (Dispose of fuel and hazardous absorbent material promptly and according to the requirements of the fire department, local EPA, and federal, state or local resources.)

## Emergency and First Aid Information

Refer to phone book for emergency phone numbers. If needed, follow first aid instructions as outlined in American Red Cross Standard First Aid manuals.

### WARNING



Gasoline Ingestion

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 Vapor Inhalation

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

### WARNING



Gasoline In Eyes

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

### WARNING



Gasoline On Skin

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

## Warning Labels

Several types of warning labels appear on Marconi products to inform and remind users of important safety information. Read, understand and follow these warnings.

### Sample Warning Label

The following labels are typical of those you may find on Marconi's products:

Warning	Mise en garde	Advertencia																																																
<p><b>Electrical shock hazard</b> Each electrical component within this unit may have its own circuit breaker or disconnect switch. Before servicing, turn off all circuit breakers and switches associated with this unit.</p>	<p><b>Danger de décharge électrique</b> Chaque composant électrique au sein de cet élément a son propre disjoncteur ou interrupteur pour couper l'électricité. Avant tout service d'entretien, couper tous les disjoncteurs et les interrupteurs contrôlant cet élément.</p>	<p><b>Peligro de shock eléctrico</b> Cada componente eléctrico en esta unidad puede tener su propio interruptor de circuito o interruptor para desconectar. Antes de darle mantenimiento, apague todos los interruptores asociados con esta unidad.</p>																																																
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## Working Alone

It is highly recommended that someone who is capable of rendering first aid be present during servicing. Be familiar with Cardiopulmonary Resuscitation (CPR) methods if you are working 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 tag out and lock out procedures discussed later in this section.

## Contacting Emergency Personnel

Keep the following emergency phone numbers at hand.

**Ambulance:** \_\_\_\_\_

**Fire:** \_\_\_\_\_

**Police:** \_\_\_\_\_

**Poison Control Center:** \_\_\_\_\_

## Informing Emergency Personnel

Compile the following information for emergency personnel:

- Location of accident (e.g. address, front/back of building, etc.)
- Nature of accident (e.g. possible heart attach, run over by car, burns, etc.)
- Age of victim (e.g. baby, teenager, middle-age, elderly)
- Whether or not victim has received first aid (e.g. stopped bleeding by pressure, etc.)
- Whether or not victim has vomited (e.g. if swallowed or inhaled something, etc.)

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

## 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.

### Breakaways

Required by NFPA 30A, breakaways are emergency devices designed to retain liquid on both sides of the breakaway point installed on each hose. Refer to manufacturer's instructions for proper installation.

### Collection of Fuel in Approved Containers

NFPA 30A, Section 2, requires use of approved containers to collect, transport, and dispose of fuel. Containers must be specifically designed and labeled for handling hazardous fuels.

### Read Material Safety Data Sheets (MSDS)

Before working with any chemicals or fuels in and around a dispensing facility, read the MSDS pertaining to those chemicals as prescribed in the Occupational Safety and Health Administration Standard, 29 CFR 1910.1200. Refer to the supplier's literature.

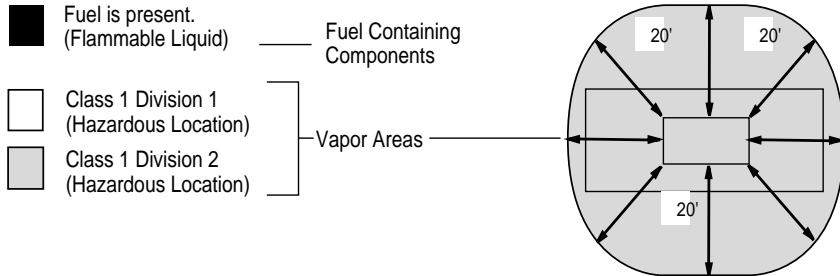
### Replacement Parts

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

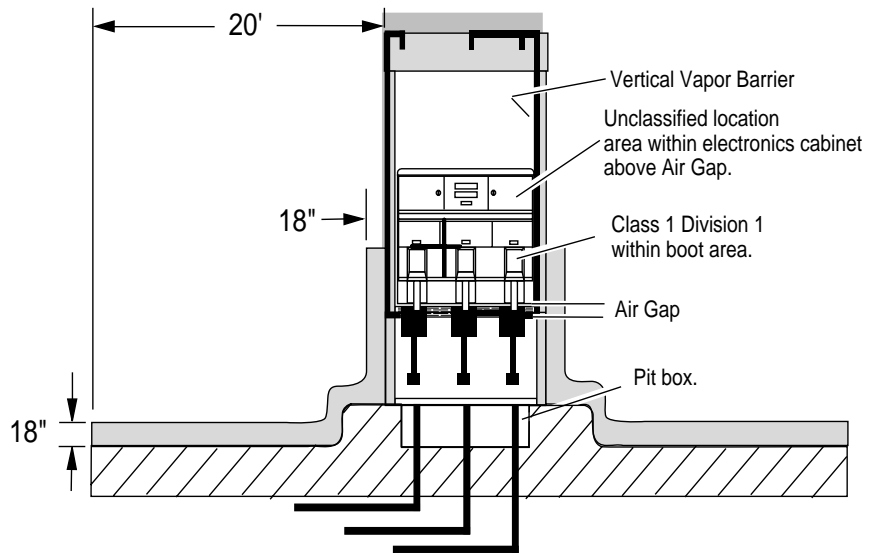
## Classifying Hazardous Locations

Any activity that can cause an explosion (e.g., smoking, drilling, etc.) must be done well outside the vapor area.

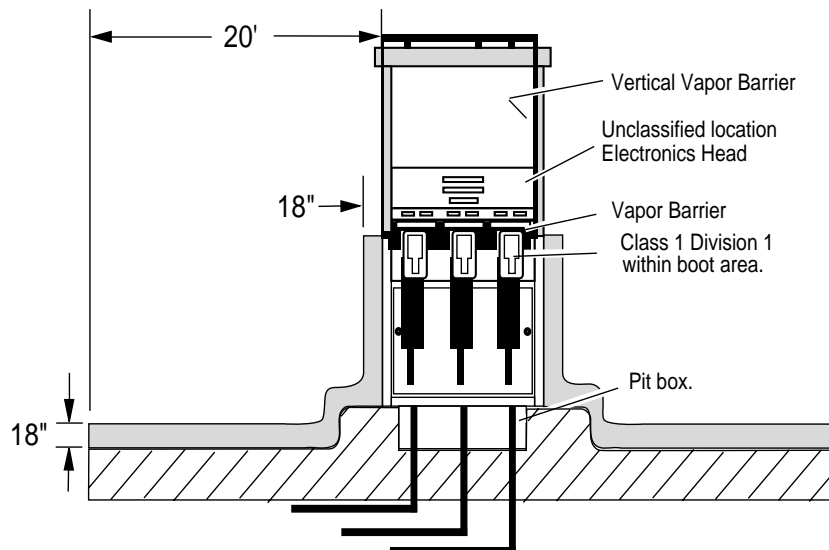
The following diagrams are based on NFPA 30A, section 6 and NFPA 70, section 514.



**The Advantage® Series with Air Gap**



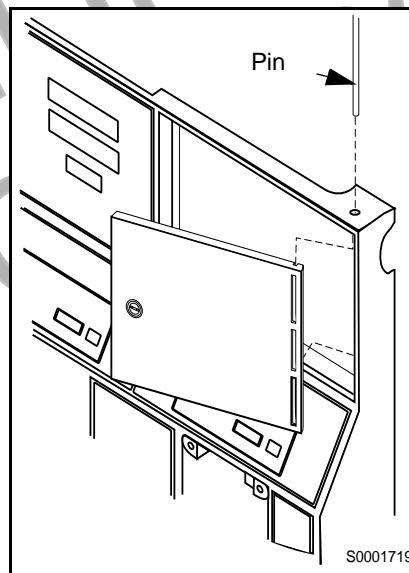
**MPD®-3 Series with Vapor Barrier**



# The Advantage Series Installation

## Preparing for Installation

- 1 Before proceeding read and follow all safety instructions and procedures.
- 2 Open main access doors. Refer to MDE-2531, Pump and Dispenser Start-Up/ Service Manual for access instructions.
- 3 Disconnect and remove existing hardware according to the following:
  - For wide frame units disconnect any cables and remove any call or stop buttons, or door alarm switch hardware from existing right options door. Save all removed hardware for reassembly.
  - For narrow frame units disconnect cables to PPU and main display.
- 4 Remove door mounting pin and right options door.

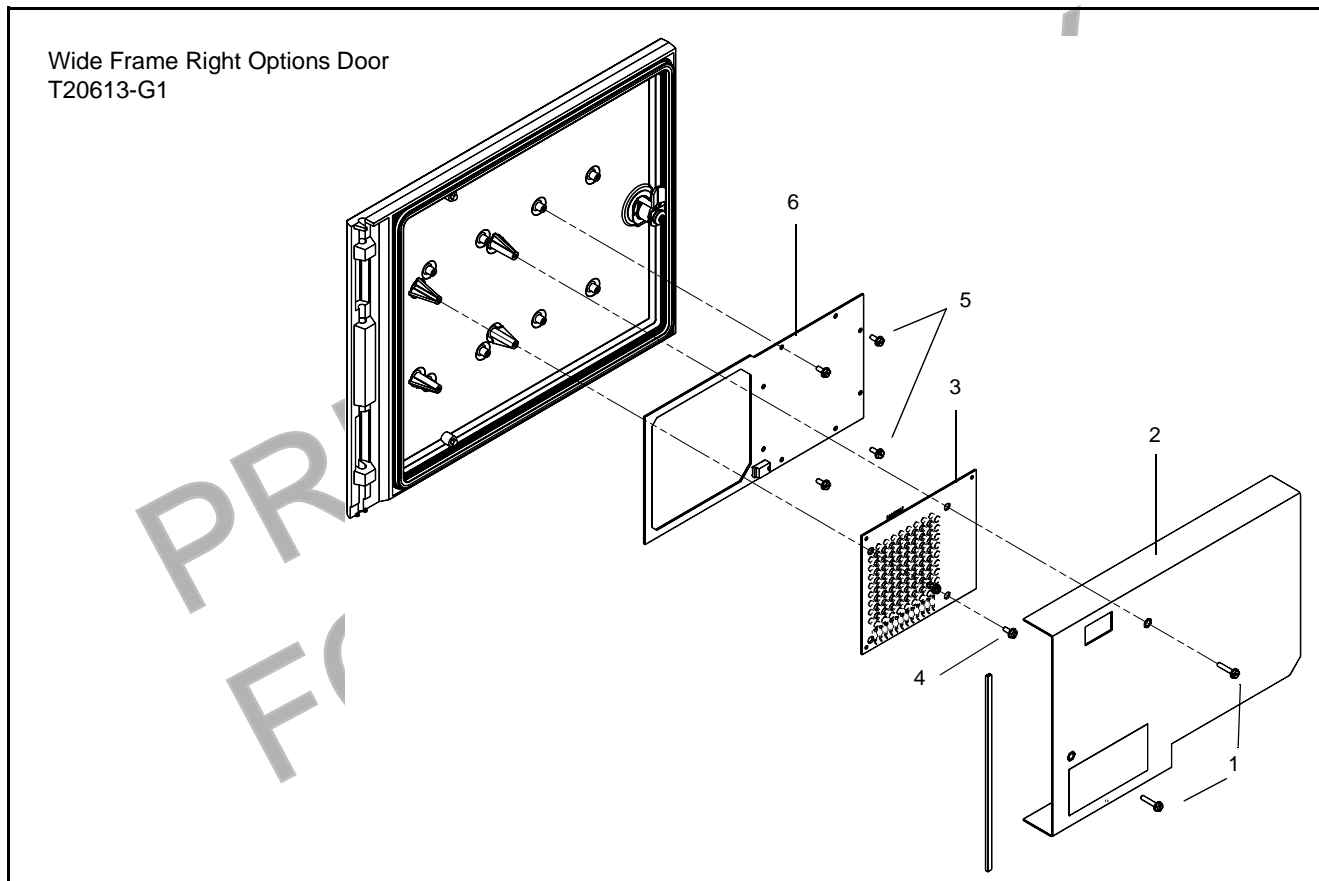


- 5 If unit has Cash Acceptor, remove door alarm and all hardware from old door and save.
- 6 Dispose of door. Save pin for reassembly.

## Modifying Right Options Door On Wide Frame Units

*Note: T20613-G2 door assemblies are call/stop button ready, and do not need to be modified. Instructions are provided for modifying T20613-G1 doors for call/stop button.*

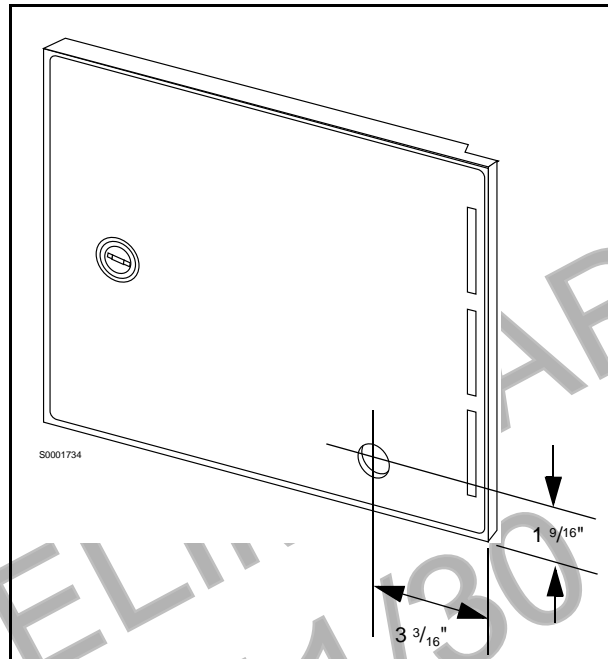
For all narrow frame units, or wide frame units without stop or call buttons or door alarm switches, proceed to “Installing Cables” on page 20. For wide or narrow frame units without stop or call units but with door alarm, proceed to “Re-installing Door Alarm Switches” on page 19. For wide frame units with stop or call button previously installed on right options door, do the following to relocate hardware to new T20613-G1 options door.



- 1 Remove all hardware from new right options door according to the following steps and save all parts for reassembly.
  - Remove two screws (1) mounting sheet metal antenna shield (2) on rear of door. Save shield and screws for reassembly.
  - Disconnect cable R20522-G1 (not shown) from light/multi-protocol reader printed circuit board T20601-G1 (3) by disconnecting J181 on cable from P181 on board.
  - Remove two standoff-screws (4) holding light/multi-protocol reader board (3), and remove board. Save for reassembly.
  - Remove four screws (5) and antenna board T20524-G1(6). Save for reassembly.



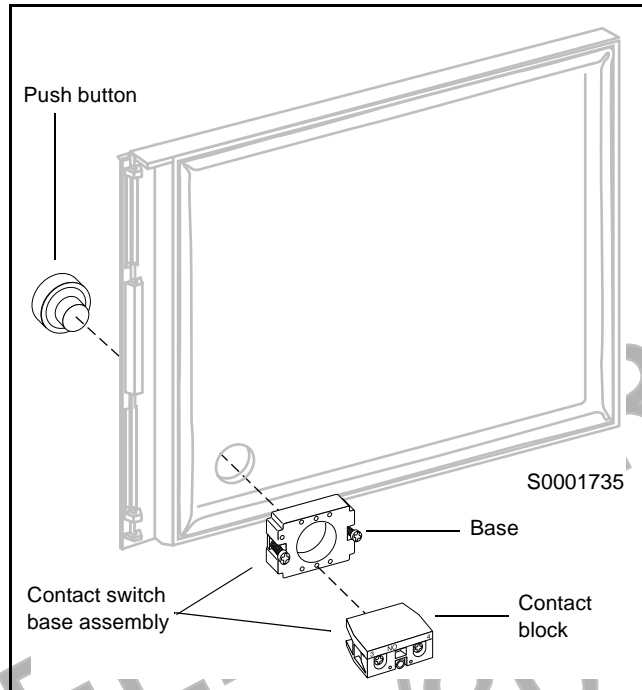
- 2 Use center punch and hammer to mark placement of pump stop or call button hole on new right options door by measuring from door edges as shown below.



- 3 Away from fuel island, drill a  $\frac{7}{8}$  inch diameter hole in location illustrated above.
- 4 Remove any burrs around hole with deburring tool or rounded file.

## Re-installing Button

- 1 Hold contact base on back of door and align with hole drilled earlier.

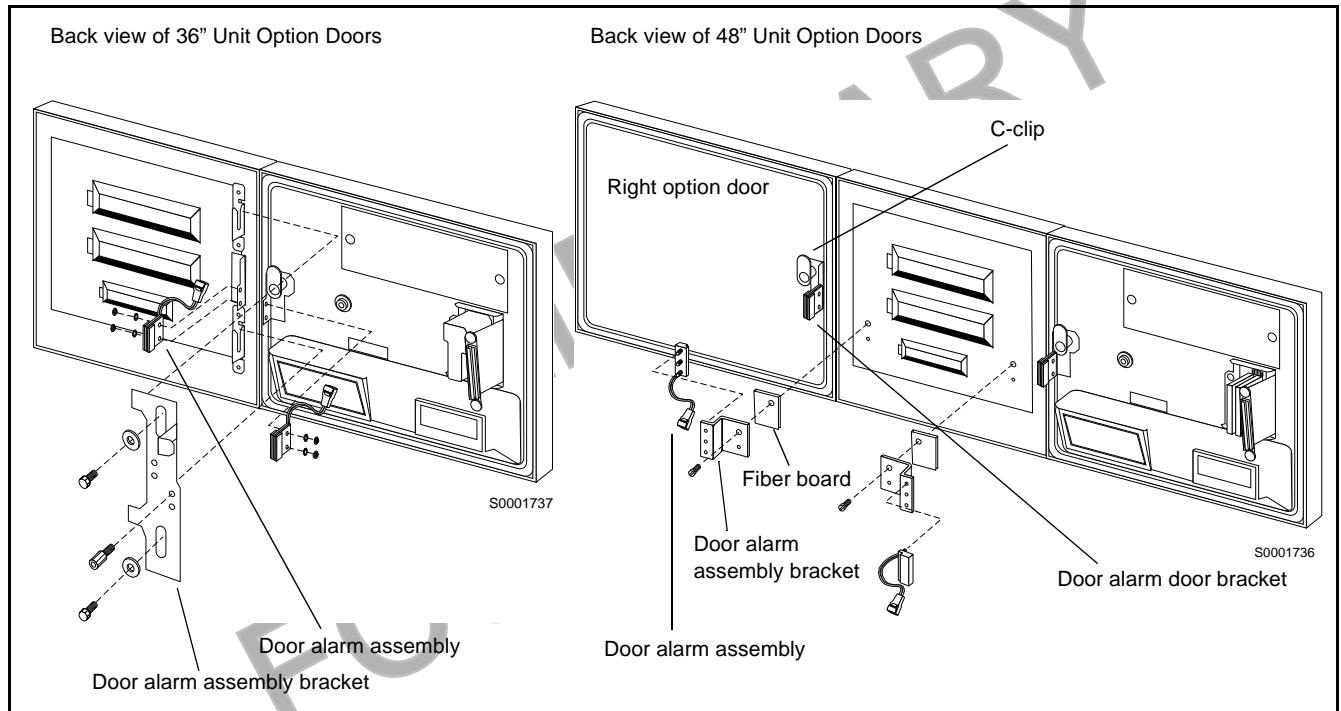


- 2 Insert push button from front of door by aligning tabs with slots in base.
- 3 Turn push button 45° clockwise to lock button to base.
- 4 Tighten two screws on base to secure push button and base assembly to door.  
*Note: Do not overtighten screws.*
- 5 Attach contact block to base with center screw if not already installed.
- 6 If unit does not have door alarm, reinstall all new right options door hardware except sheet metal shield by reversing procedures in Step 1 of "Modifying Right Options Door On Wide Frame Units" on page 16 and proceed to "Installing Cables" on page 20. If unit has door alarm, proceed to "Re-installing Door Alarm Switches" on page 19.

## Re-installing Door Alarm Switches

For units with cash acceptors, follow these steps to re-install door alarm assemblies on TRIND™ right option doors. Refer to diagram on this page for more information. Perform each step for both 'A' and 'B' side right option doors.

- 1 Remove lock hardware from new right options door.
- 2 Re-install C-clips removed from old right side option doors on new door.

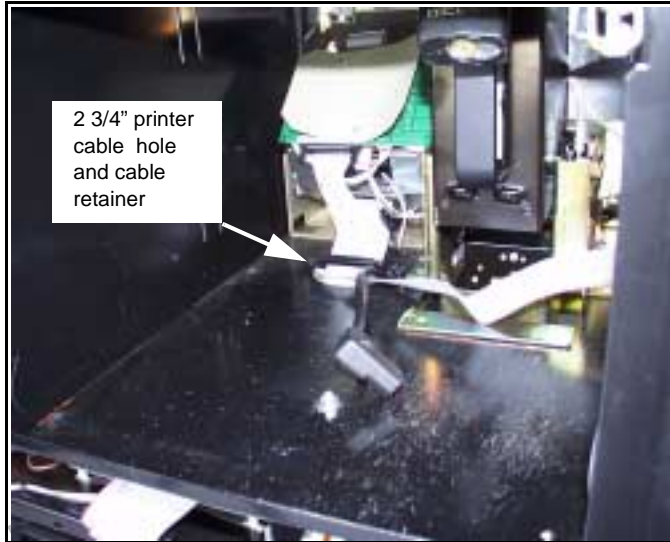


- 3 Install door alarm assembly to door alarm assembly bracket with screw previously removed.
- 4 Attach door alarm assembly bracket to display board with screw previously removed.  
*Note: Replace the piece of fiberboard between door alarm bracket assembly and display board.*
- 5 Be sure magnet does **not** touch door alarm door bracket. Slightly move door alarm door bracket away, if necessary.
- 6 Reinstall all new right options door TRIND hardware except sheet metal cover by reversing procedures in Step 1 of "Modifying Right Options Door On Wide Frame Units" on page 16.

## Installing Cables

**Position kit cables according to the following steps:**

- 1 Carefully pry out printer cable retainer from underside of printer shelf.
- 2 Disconnect printer cable and pull cable out of 2 3/4" round hole from bottom, and install piece of strip grommet Q10315-01 around perimeter of hole.



- 3 Feed three-prong end of power cable R20580-G1 and connector J250 end of R20437-G01 ribbon cable up through hole and lay cable ends toward A side.



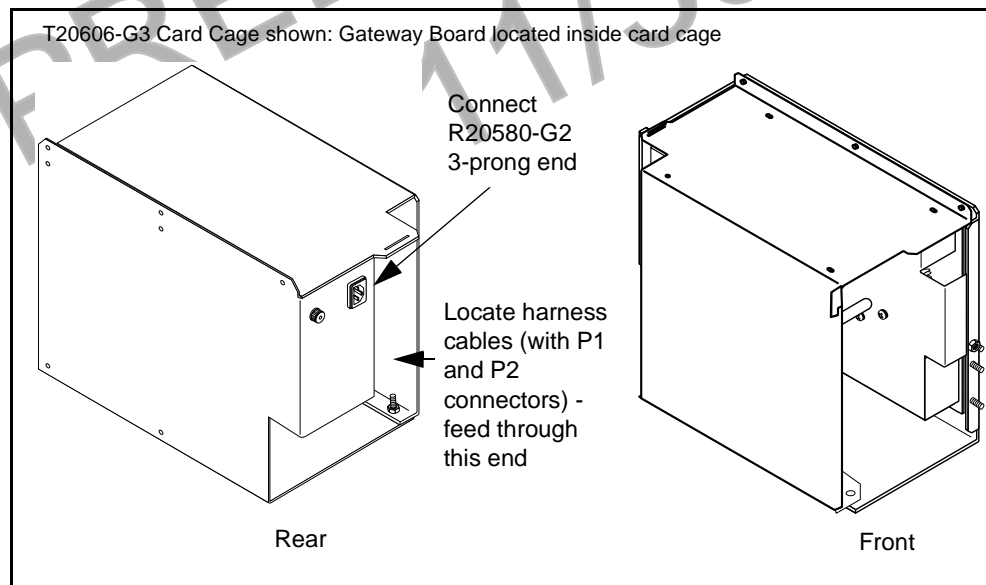
- 4 Reinstall printer cable and retainer disconnected and removed in step 2.

## Installing Card Cage

### Prepare T20606-G3 card cage for installation.

*Note: For more cable connection detail see "Addressing Gateway Board" on page 35.*

- 1 Locate tab at left front top of card cage.
- 2 From B side of unit, turning card cage sideways to unit, feed top and rear of card cage up and into shelf.  
*Note: Front of card cage will face B side.*
- 3 Position card cage so that tab fits over latch cutout for main door latch to secure card cage to shelf divider. Note position of two screws protruding from bottom of card cage:
  - For newer units, both screws will pass through holes in printer shelf.
  - For older units, holes will not align with holes in shelf. Remove both screws and save.
- 4 Position rear of card cage on edge of cabinet shelf for easy cable connection.  
*Note: Do not secure card cage at this time. Connecting cables and setting jump jacks are easier if card cage can be manipulated by installer.*



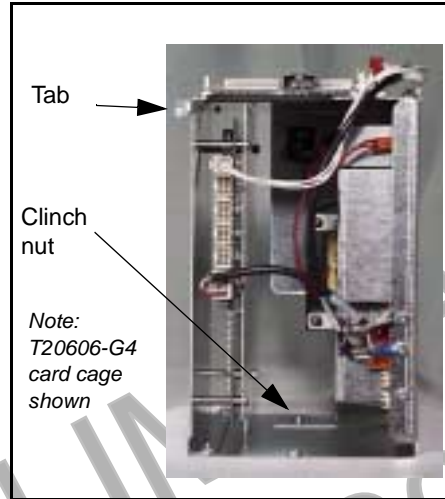
- 5 Connect three prong female end of power cable R20580-G2 to card cage at location shown.
- 6 Locate harness attached to card cage containing P1 and P2 connectors.  
*Note: Cables are already connected to Gateway PCB T20678-G1 at J282A/P282A and J282B/P282B.*
- 7 Feed both harness cables down through hole as shown in illustration in Step 3 of "Installing Cables" on page 20.

### Addressing The Advantage Series Units

For The Advantage units it is easier to address Gateway Board before card cage is installed. Refer to “Addressing Gateway Board” on page 35 for instructions.

#### Install card cage assembly.

Install card cage by doing the following:



*Note: While it is not necessary to remove printer to install card cage you may find your initial installations easier if this is done. To do so, disconnect two cables and remove ground connector to A side printer. Remove printer and printer mounting hardware from unit and save for reinstallation.*

- 1 Locate tab at left front top of card cage.
- 2 From B side, turn card cage sideways to unit, feed top and rear of card cage up and into shelf.

*Note: Front of card cage will face B side.*

- 3 Position card cage so that tab fits over latch cutout for main door latch, securing card cage to shelf divider.
  - If two screws on card cage pass through shelf secure from underside of shelf with two nuts provided in kit.
  - If screws were removed, secure card cage from underside of shelf by installing one screw removed in section “Prepare T20606-G3 card cage for installation.” on page 21 up through hole in shelf to clinch nut on card cage (see illustration above). Dispose of second screw and two nuts.



## Installing Right Option Door

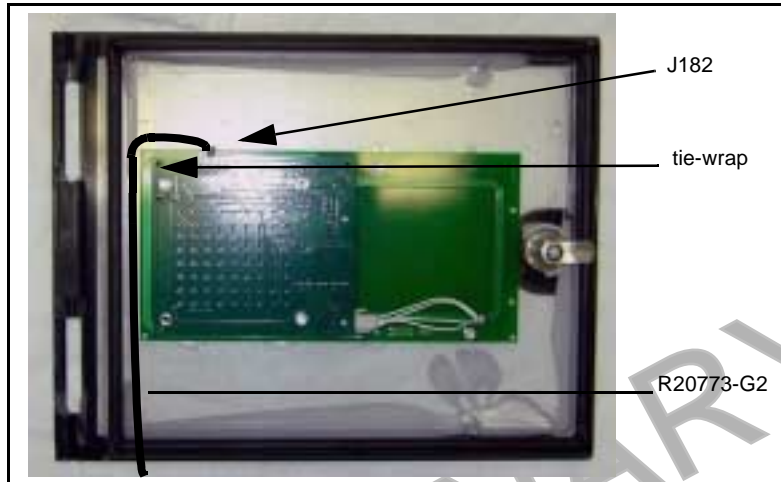
Install new right options door according to the following steps.

- 1 If sheet metal shield has not been previously removed, using 1/4” nut driver, remove sheet metal shield from back of door. Refer to illustration in “Modifying Right Options Door On Wide Frame Units” on page 16 for detail. Save cover and hardware.
- 2 Remove key taped to inside of new right options door and save.
- 3 Position new right options door and install with pin removed with old door and saved.  
*Note: If unit had stop or call button transferred from old door to new TRIND door, reconnect stop or call button wires to contact block.*
- 4 For narrow frame units, reconnect existing cables to new door PPU and main display.

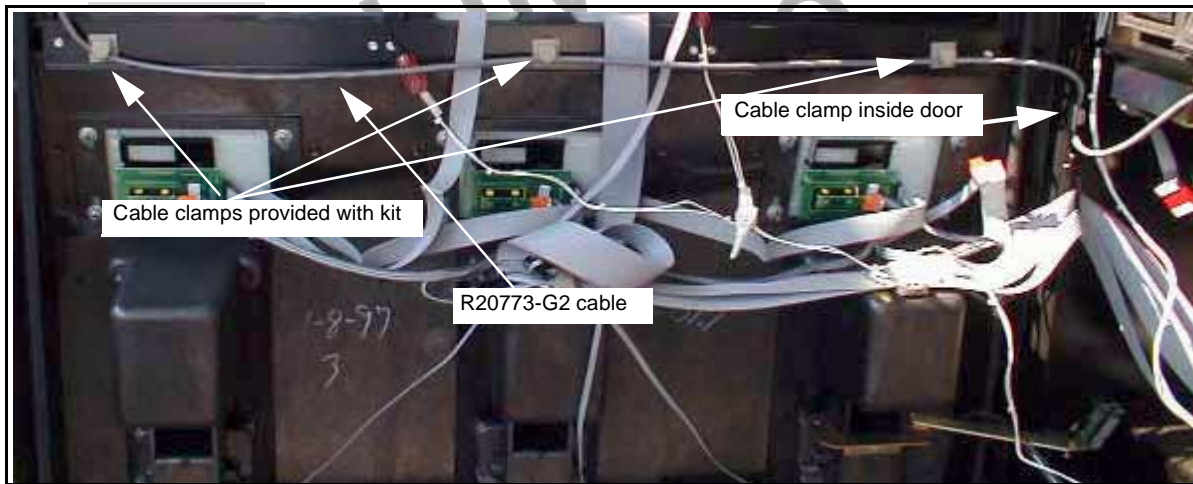
### Route cables to Right Option Doors

- 1 Connect J182 on one R20773-G2 cable to A Side Light/Microreader PCB at P182, and do the same for B Side.

- 2 Route R20773-G2 cables around board as shown for both wide and narrow frame units, securing cable to board with tie-wrap.



- 3 Route A side cable R20773-G2 along door with clamps provided with kit until connector end is fed through clamp inside door. Do the same for B Side cable.



- 4 Route A side card cage harness cable (with P1 connector) to door clamp, and connect to A Side R20773-G2 cable at P1/J1.  
*Note: Card cage harness cables were positioned for installation in Step 7 of "Installing Card Cage" on page 21.*
- 5 Route B side harness cable (with P2 connector) through clamps above CRIND tray to cable clamp inside door, and connect to B Side R20773-G2 cable at P2/J2.  
*Note: When routing from cabinet to main door, allow sufficient slack in cables to allow main door to open and close without pulling or crimping cables or crimping cables when door is closed.*
- 6 Reinstall sheet metal cover on door, being careful to avoid crimping cables.
- 7 Proceed to "Connecting Remaining Cables" on page 31.



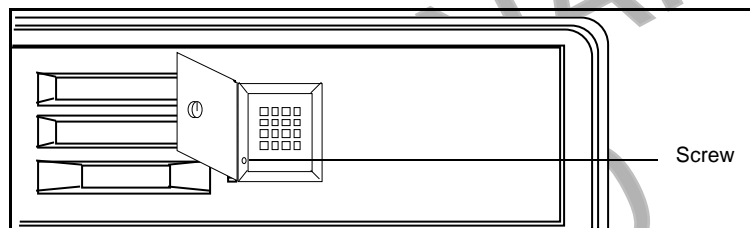
# MPD-3 Series Installation

## Removing Faceplate

MPD-3 units have two types of faceplates; slide-in (PMI bezel) and bolt-on (Mack bezel). Follow directions for the type of faceplate and bezel that applies.

### For units with slide-in faceplates on PMI bezels, do the following:

- 1 Release right side faceplate using keyswitch.
- 2 Open manager keypad door and remove single screw.

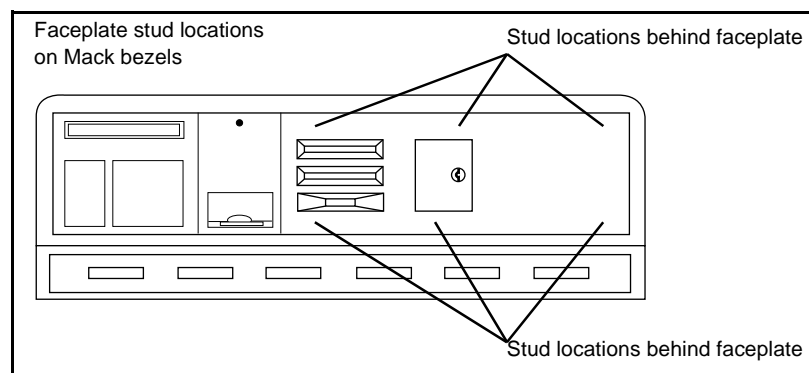


- 3 Gently force faceplate up, and slide tip of knife or flat blade screwdriver under bottom edge of faceplate.
- 4 Pry bottom of faceplate away from unit, until faceplate can be removed from unit. Dispose of faceplate.

### For units with bolt-on faceplates on Mack bezels, do the following:

- 1 Open bezel door and lift until door is latched open.
- 2 Disconnect cable between manager keypad and logic board on bezel door. Discard cable.
- 3 Locate six sets of nuts and washers securing faceplate to bezel studs, and remove hardware.

*Note: This may require removing mounting hardware from price per unit (PPU) and CRIND™ logic boards to gain access.*



- 4 Remove 6 sets of nuts and washers from faceplate studs and remove faceplate. Dispose of hardware and faceplate.
- 5 With putty knife, remove keypad door gasket and any adhesive residue.

### Providing Cable Access into Main Cabinet

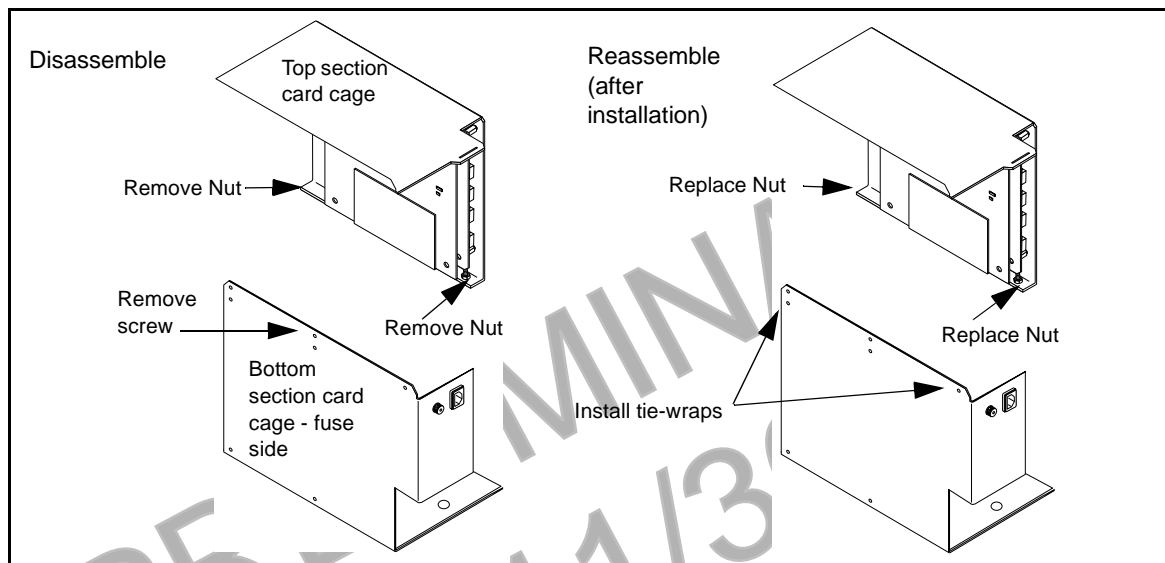
- 1 Open bezel doors on main cabinet.
- 2 Locate indent on rear of door behind 3/4" diameter unopened access point.
- 3 Use 3/4" drill bit to open hole in plastic door from rear of door.  
*Note: If electric drill is used work must be 20' from fuel island.*
- 4 Use deburring tool or file to round edges of hole.

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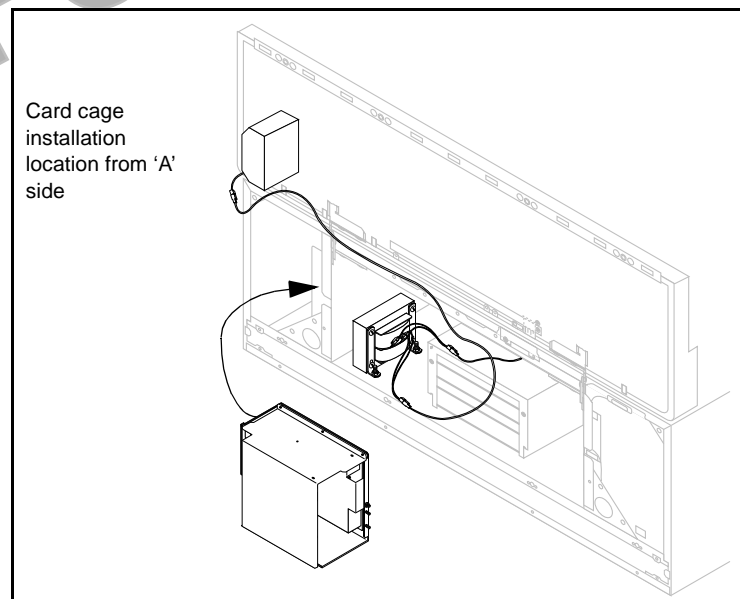
## Installing Card Cage Assembly

Install card cage assembly from 'A' side of unit, according to the following steps:

- 1 Begin to separate card cage assembly into two pieces by removing one screw on top and two nuts at bottom, one each front and rear.



- 2 Disconnect cables joining two sides of card cage.
- 3 From 'A' side of unit, place bottom section of card cage fuse side first on to left shelf.



- 4 Reassemble card cage using nuts removed in Step 1 and two (2) tie wraps in place of screw and reconnect cables.

- 5 For units with Screened Image Display (SIDs) only, do the following:

*Note: If these directions are not followed printed circuit boards will be damaged.*

- From 'B' side of unit, install screw up through hole under card cage. Align screw with mounting hole on card cage, but do not fasten.
- Tilt card cage away from screw, and secure screw to shelf by installing two nuts **under** card cage.
- Let card cage rest on nuts with screw protruding up through hole in card cage.

*Note: This will result in card cage tilting down toward the 'A' side.*

- 6 For all units, from 'A' side of unit, fasten card cage to shelf using 6-32 x 3/8" screw (Q12083-13) supplied with kit.

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## Installing TRIND™ Faceplate Assembly.

Perform the following steps for each side of unit.

### For installing TRIND slide-in faceplates on PMI bezels, do the following:

- 1 Remove new TRIND faceplate assembly from box.
- 2 Peel adhesive backing off round gasket N23881-01. Install gasket adhesive side first to sheet metal shield on back of faceplate to form seal around hole for cables on faceplate assembly.
- 3 Feed ends of faceplate cables (with P1/2 connectors) through 3/4" hole on bezel door drilled in Step 3 of "Providing Cable Access into Main Cabinet" on page 26.
- 4 Follow these directions to install new TRIND faceplate:
  - Feed top edge of faceplate in to groove on top of door.
  - Gently push bottom of faceplate in until faceplate drops into bottom groove.
  - Secure in place with keylock.
- 5 Refer to MDE-2620, Graphics Panel Application for instructions on installing graphics.

### For installing TRIND™ bolt-on (stud type) faceplates, do the following:

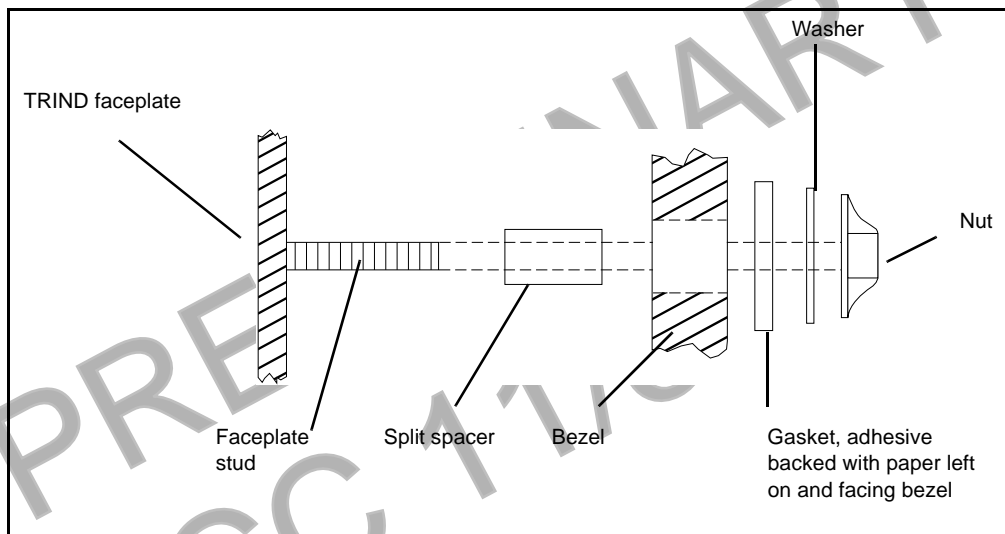
- 1 Remove new TRIND faceplate assembly from box.
- 2 Remove existing manager keypad from bezel door, and use putty knife to remove keypad gasket and adhesive residue from door.
- 3 Replace the door gasket removed in step 2 with adhesive backed gasket Q11659-01.
- 4 Replace existing keypad and keypad cable with T17549-G1 keypad assembly and R18163-G1 keypad cable, but do not install keypad on bezel door.

*Note: At user's discretion, new keypad can be placed behind brand panel lighting or in the well behind the printer door, on either side of printer, provided cable is run and secured properly and safe access is maintained.*
- 5 Remove yellow tape on back of bezel door covering round hole.
- 6 Peel adhesive backing off round gasket N23881-01. Install gasket adhesive side first to seal around hole on back of bezel door.
- 7 Feed ends of faceplate cables with P1/2 connectors through 3/4" hole on door.

- 8 Install 6 split spacers K87404-01 on the faceplate side of the bezel door, in the mounting holes for the faceplate. See illustration on this page.
- 9 Install faceplate assembly T20616-G2, securing in place from back side of bezel door using in this order:
  - 6 adhesive backed gaskets, Q11659-01.

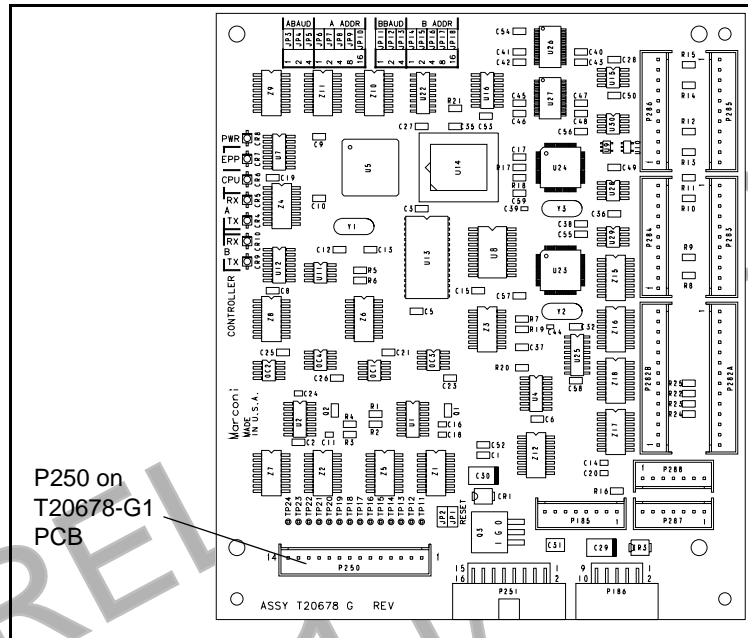
*Note: Do not remove paper backing on adhesive side, and install paper side to bezel door:*

  - 6 flat washers, N16599-01
  - 6 self-locking nuts, Q10218-04
- 10 Refer to MDE-2620, Graphics Panel Application for instructions on installing graphics.



# Connecting Remaining Cables

- 1 From A side, pass J250 end of cable R20437-G01 through card cage to B side.



- 2 Connect J250 on ribbon cable R20437-G01 to P250 on Gateway PCB T20678-G1 in card cage (on T20606-G3 card cages) or on top of card cage (T20606-G4 card cages).

## From A side of unit make the following connections:

- 1 On ribbon cable R20437-G01, connect J258A to P258 on A side CRIND Logic Board.  
*Note: A side of split cable R20437-G01 has red wire.*
- 2 On ribbon cable R20437-G01, connect J258B to P258 on B side CRIND Logic Board.

## Connect R20580-G1 power cable according to the following:

*Note: Connections are unit specific. Use appropriate connectors to intercept power by installing R20590-G1 inline. Refer to "Cable Block Diagram" on page 37.*

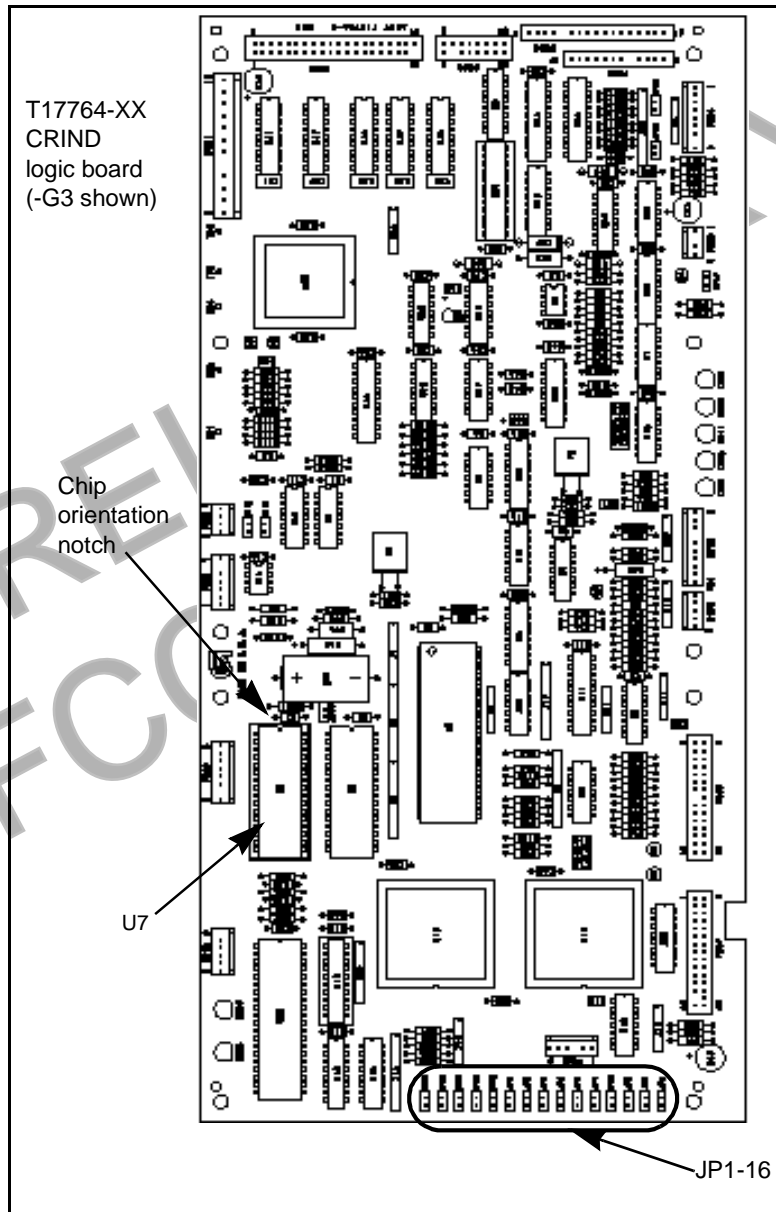
For units with:	Do the following:
System cable W02468	Install inline using 15 pin P601 and J601 connectors
System cable T19612	Install inline using 3 pin connectors J601/J708 and P601/P708

# CRIND® BIOS TRIND™ Multi 1 Upgrade

Units must have current Z-180 CRIND logic board.

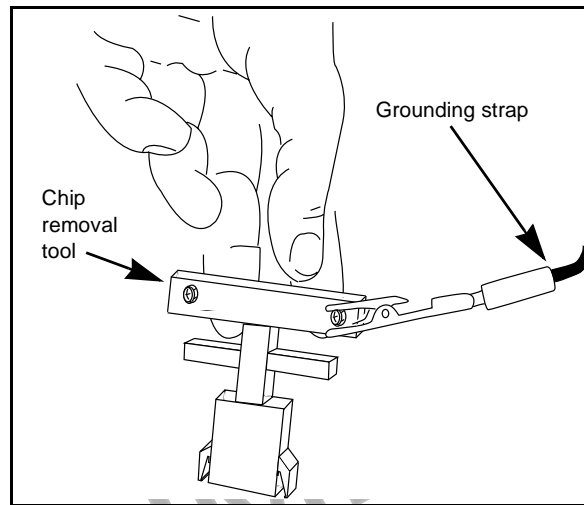
Install the CRIND BIOS TRIND software K93744-XX, one per logic board, on the T17764-XX CRIND logic board(s) according to the following steps.

*Note: A properly grounded electrostatic discharge wrist strap must be worn during this procedure.*





- 1 Locate and remove existing BIOS at U7 on CRIND® logic board T17764-XX using a grounded chip removal tool.



- 2 Install TRIND BIOS K93744-XX (one per logic board) at position U7, orienting notch on chip with indication mark on board as shown.
- 3 Install jump jack on JP-16 for each side of unit.  
*Note: Jumper on JP-16 informs the CRIND that a TRIND system is present.*
- 4 Restore CRIND tray to operating position.

## Dispenser Set-Up

### Addressing Dispenser

Each dispenser on the G-Site controller must be addressed differently; no two dispensers may have the same address. Address is at discretion of the installer. Follow these steps:

- 1 From A side of unit, locate dip switches on power supply board (PCB) T20314-G1 in card cage.
- 2 Using switches 2, 3, 4 and 5 address each dispenser according to the following table:

*Note: Switch one in down position is standalone mode selected, used for service only.*



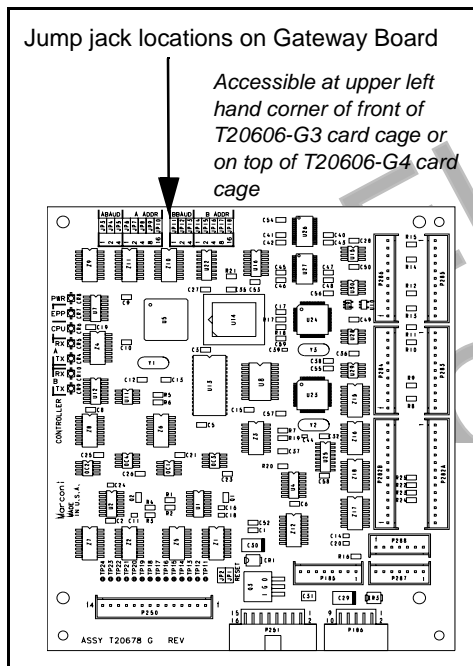
### Setting Baud Rate

For major oil company (MOC) TRIND™ installations there is no requirement to set or change baud rate.

## Addressing Gateway Board

Address for TRIND™ must match address on CRIND® logic board. Follow these steps:

- 1 From A side of unit lower CRIND tray. Refer to MDE-2562 CRIND Service Manual.
- 2 Locate jump jacks on A and B side CRIND logic boards T17764-XX.
- 3 Note position of jump jacks and set jump jacks on Gateway board T20678-G1 to match address on CRIND logic boards for both A and B sides.



MOC and Generic CRIND Addresses

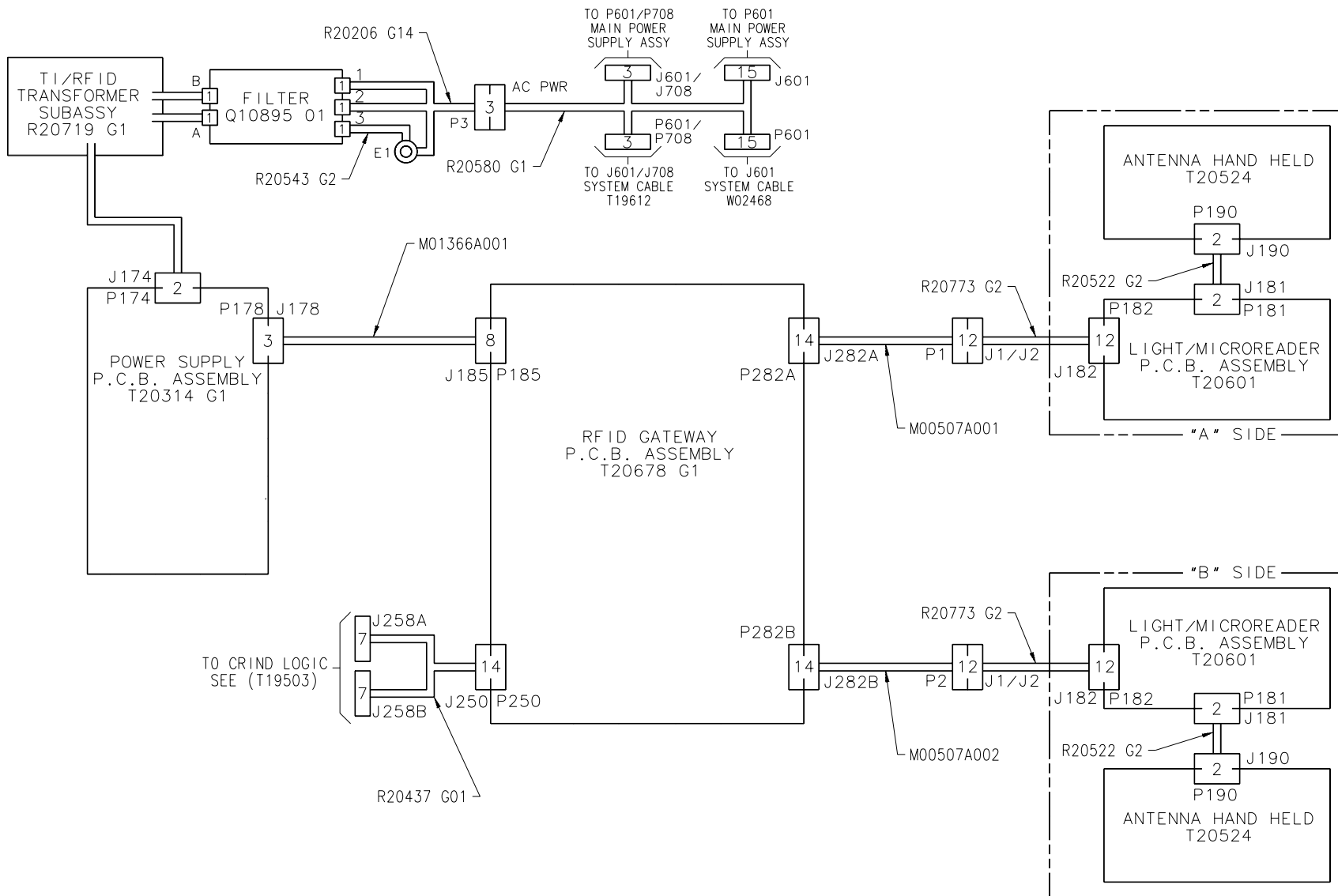
Address On CRIND Logic Board T17764-XX	JP8	JP7	JP6	JP5	JP4
= Address on Gateway Board T20128 'A' Side	JP6	JP7	JP8	JP9	JP10
= Address on Gateway Board T20128 'B' Side	JP14	JP15	JP16	JP17	JP18
1	IN	OUT	OUT	OUT	OUT
2	OUT	IN	OUT	OUT	OUT
3	IN	IN	OUT	OUT	OUT
4	OUT	OUT	IN	OUT	OUT
5	IN	OUT	IN	OUT	OUT
6	OUT	IN	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

## Testing TRIND™

- 1 For The Advantage series units, if printer was removed, replace printer and reconnect two cables and ground.
- 2 Restore power to unit. Refer to Pump and Dispenser Service Manual MDE-2531.
- 3 Restoring power with new BIOS will Cold Start the CRIND. Refer to CRIND Service Manual MDE-2562.  
*Note: Cold Start is required if TRIND equipment is installed or changed.*
- 4 Present test tag at option door from a distance of 6” or less. Light board should light and flash sequentially and emit one beep. A screen prompt should appear.  
*Note: If light does not function properly, check to see if opposite side of unit was activated, indicating a crossed cable.*
- 5 When using test tag, screen will show “Test Confirmed”. In regular operation, screen will display instructions to begin fueling.

## Completing Installation

- 1 Close and secure option and maindoor.
- 2 Install graphics. Refer to MDE-2620 Graphics Installation for The Advantage Series.
- 3 Peel backing paper off FCC label plate provided in kit.
- 4 Affix FCC label plate to inside frame sheathing on column under existing FCC label.
- 5 Restore power to unit. Refer to Pump and Dispenser Service Manual MDE-2531.



Cable Block Diagram

Cable Block Diagram

Note: Illustration assumes T20606-G3 Card Cage, with wire harness that includes M00507A00X cables. For T20606-G4 Card Cage, a different harness is used but cables have the same connector ends: P1 for Side 1 and P2 for Side 2 connections to R20773-G2 cables.

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