



## Introduction

### Purpose

This manual provides instruction for installing Transmitter/Receiver In Dispenser (TRIND™) Texas Instruments Registration and Identification (TIRIS™) Retrofit Kits C00011-010-XXXX in The Advantage® Series and MPD®-3 Multi-Product Dispenser with InfoScreen®, monochrome CRIND™ device, or single-line CRIND device.

The TRIND option allows customers to automatically authorize CRIND-equipped units, using either a hand-held or auto-mounted transponder provided by a major oil company (MOC). Use these kits for one- or two-sided units. Kits are customer specific, depending on unit type, number of sides, and MOC.

Retrofit Kits C00011-010-XXXX are configured according to specific unit requirements.

### Prerequisites

Before installing any TRIND kit, ensure that the existing CRIND device contains the following.

- Z-180 logic board and software (T17764-XX), which is not configured in TRIND retrofit kit. Refer to MDE-2628, Cash Acceptor Retrofit Assemblies for The Advantage Series.
- Plastic options doors for single-line/cash acceptor InfoScreen/cash acceptor and monochrome/cash acceptor

### 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
- ASC TRIND Technology Update on page 20

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

*Note: These kits must be installed by a Marconi ASC (Authorized Service Contractor)*

## Related Documents

Manual	Description
MDE-2531	Pump and Dispenser Start-Up and Service Manual
MDE-2562	CRIND Service Manual
MDE-2628	Cash Acceptor Retrofit Assemblies for The Advantage Series
MDE-2620	Graphics Panel Application for The Advantage Series
MDE-3640	Authorized Service Contractor (ASC) TRIND Installation Tool Kit
MDE-3664	TRIND Start-Up and Service Manual
PT-1728	The Advantage Series Illustrated Parts Manual
PT-1736	CRIND Card Reader Illustrated Parts Manual
PT-1810	MPD Series Illustrated Parts Manual

## Required Tools

The following equipment is needed to install TRIND™ kit C00011:

- Allen wrench set, American standard
- square (carpenter's, 12")
- clean cloth or rag
- center punch
- chip extraction tool, e.g., IC extraction, Digikey Part No. K158-ND or equivalent
- cutting oil
- deburring tool or rounded file
- drill motor, pneumatic (air)
- electric tape, black vinyl
- fish-tape, standard 1/8"
- hammer
- hacksaw
- hole saw, 7/8" (for units with stop or call buttons on right option door)
- isopropyl alcohol (part number END-1082)
- knock-out punch set
- ladders, style 'A', quantity of two (2)
- multimeter
- pencil or marker
- pilot hole drill bits
- pliers
- pocket knife
- putty knife or scraper
- Q12534 CRIND diagnostic card
- ratchet set, standard
- screwdrivers, flat and Phillips head
- shears or snips, sheet metal
- static guard wrist strap
- TRIND ASC tool kit (refer to MDE-3640, ASC TRIND Installation Tool Kit K94577-01)

## Parts Lists

### C00011-XXXX Kit Configurations by Suffix

<b>-Suffix</b>	<b>Configured For</b>	<b>See</b>
-WF_S	The Advantage Series 48" (wide frame) single-sided	page 5
-WF_D	The Advantage Series 48" (wide frame) double-sided	
-NF_S	The Advantage Series 36" (narrow frame) single-sided	
-NF_D	The Advantage Series 36" (narrow frame) double-sided	
-MPDS	MPD-3 single-sided with PMI bezel (slide-in faceplate)	page 7
-MPDD	MPD-3 double-sided with PMI bezel (slide-in faceplate)	
-MPBS	MPD-3 single-sided with Mack bezel (bolt-on faceplate)	page 8
-MPBD	MPD-3 double-sided with Mack bezel (bolt-on faceplate)	

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## The Advantage Series Kit Parts

### The Advantage Series Wide Frame (48") Kits

Kits C00011-WF\_S (single-sided) and C00011-WF\_D (double-sided) for The Advantage® Series 48" units contain the following:

Description	Part Number	Quantity WF_S	Quantity WF_D
1/4-20 bolt x 4" black	K01914-70	4	8
1/4-20 nut, black	Q11890-08	4	8
antenna assembly	T20231-G1	1	2
bracket, antenna	T20211-03	1	2
bracket, mounting	T20211-02	1	0
bracket, positioning	R20620-01	2	4
bracket, universal	T20212-01	2	2
cable clamp, gray	Q13558-04	10	10
cable group	Q13863-06 (note 1)	1	1
card cage assembly	T20606-G2	1	1
conduit, flexible black plastic	Q13592-02	1	1
connector, tube fitting	Q13591-01	1	2
cover, antenna top	T20213-01	1	1
decal, UL	N23951-06	1	1
door assembly	T20613-G1	1	2
gasket, 1/2" x 1/16" strip	Q11899-12	1.5 ft.	1.5 ft.
grommet, bulkhead seal	Q13570-01	1	1
grommet, edge	Q10315-06	1 ft.	1 ft.
grommet, heat shrinkable	Q13570-01	1	1
grommet, round	N15941-38	4	4
jump jack	Q11011-01	9	9
label, UL certification	N23957-G2	1	1
nameplate, FCC label	N23949-09	1	1
screw, 10-32 black	K85736	14	14
screw, sems, 6-32 x 3/8	Q12083-13	1	1
sealant, silicone	END 1576	1 tube	1 tube
software, CRIND Bios TRIND	K93744-XX	(note 2)	(note 2)
standoffs, circuit board (note 3)	Q10651-16	4	4
tie-wrap	Q10178-01	4	4
transmitter, dummy load	R20526-G1	1	
washer, flat	N16599-48	1	1

Notes:

1. See "Cable Group Q13863-06" on page 6.
2. Order entry item.
3. For moving Gateway Board to top of card cage, see page "Relocate Gateway Board on Card Cage" on page 24.

## The Advantage Series Narrow Frame (36") Kits

Kits C00011-002-NF\_S and C00011-002-NF\_D kits for The Advantage Series 36" (narrow frame) single-sided (NF\_S) and double-sided (NF\_D) units contain the following\*:

Description	Part Number	Quantity NF_S	Quantity NF_D
antenna assembly	T20231-G1	1	2
bracket, antenna	T20211-03	1	2
cable clamp, gray	Q13558-04	10	10
cable group	Q13863-06 (note 1)	1	1
card cage assembly	T20606-G2	1	1
cover, top	T20215-01	1	1
decal, UL	N23951-06	1	1
door assembly	T20614-G1	1	2
grommet, edge	Q10315-06	1 ft.	1 ft.
grommet, heat shrinkable	Q13570-01	1	1
jump jack	Q11011-01	9	9
label, UL certification	N23957-G2	1	1
nameplate, FCC label	N23949-09	1	1
screw, sems, 6-32 x 3/8	Q12083-13	1	1
sealant, silicone	END 1576	1 tube	1 tube
software, CRIND Bios TRIND	K93744-XX	(note 2)	(note 2)
standoffs, circuit board	Q10651-16	4	4
tie wrap	Q10178-01	4	4
transmitter, dummy load	R20526-G1	1	
washer, flat	N16599-48	1	1

Notes:

1. See "Cable Group Q13863-06" on page 6.
2. Order entry item.

### Cable Group Q13863-06

Cable group Q13863-06 for all The Advantage Series units contains the following parts:

Description	Part Number	Quantity
cable, AC Power	R20580-G1	1
cable, antenna (hi and low freq)	M00878A002	1
cable, light/microreader	R20773-G2	2
cable, TRIND to CRIND	R20437-G01	1

## MPD-3 Series Kit Parts

### MPD-3 Units with PMI Bezels (Slide-in Faceplates)

C00011-002-MPDS Kits for single-sided units and C00011-002-MPDD Kits for double-sided units with PMI bezels and slide-in faceplates contain the following\*.:

Description	Part Number	Quantity MPDS	Quantity MPDD
antenna assembly	T20231-G1	1	2
bezel assembly	T20616-G1	1	2
bracket, antenna	T20211-03	1	2
cable assembly (J203/J806)	R18163-G1 (notes 1 and 2)	1	1
cable clamp, gray	Q13558-04	10	10
cable group (see note 2)	Q13863-07 (note 2)	1	1
card cage assembly	T20606-G2	1	1
cover, top	T20214-01	1	1
decals, UL	N23951-06	1	1
grommet, edge	Q10315-06	1 ft.	1 ft.
jump jack	Q11011-01	9	9
label, UL certification	N23957-G2	1	1
manager keypad assembly	T17549	1	1
nameplate, FCC label	N23949-09	1	1
screw, sems, 6-32 x 3/8	Q12083-13	1	1
sealant, silicone	END 1576	1 tube	1 tube
software, CRIND Bios TRIND	K93744-XX	(note 3)	(note 3)
standoffs, circuit board	Q10651-16	4	4
tie wrap	Q10178-01	4	4
washer, flat	N16599-48	1	1

Notes:

1. For Manager Keypad connection.
2. For detail refer to "Cable Group Q13863-07" on page 8.
3. Order entry item.

### MPD-3 Units with Mack Bezels (Bolt-on Faceplates)

C00011-002-MPBS Kits for single-sided units and C00011-002-MPBD Kits for double-sided units with Mack bezels and bolt-on faceplates contain the following\*:

Description	Part Number	Quantity MPBS	Quantity MPBD
antenna assembly	T20231-G1	1	2
antenna bracket kit	T20211-03	1	2
bezel assembly	T20616-G2	1	2
cable assembly (J203/J806)	R18163-G1 (note 1)	1	1
cable clamp, gray	Q13558-04	10	10
cable group	Q13863-07 (note 1)	1	1
card cage assembly	T20606-G2	1	1
decal, UL	N23951-03	1	1
grommet, edge	Q10315-06	1 ft.	1 ft.
jump jack	Q11011-01	9	9
label, UL certification	N23957-G1	1	1
manager keypad assembly	T17549	1	1
nameplate, FCC label	N23949-02	1	1
screw, sems, 6-32 x 3/8	Q12083-13	1	1
sealant, silicone	END 1576	1 tube	1 tube
software, CRIND Bios TRIND	K93744-XX	(note 2)	(note 2)
standoffs, circuit board	Q10651-16	4	4
tie wrap	Q10178-01	4	4
washer, flat	N16599-48	1	1

*Notes:*

1. For detail refer to "Cable Group Q13863-07" on page 8.
2. Order entry item.

### Cable Group Q13863-07

Cable Group Q13863-07 for all MPD-3 Series units contains the following parts:

Description	Part Number	Quantity
cable, AC Power	R20580-G1	1
cable, antenna (hi and low freq)	M00878A002	1
cable, TRIND to CRIND	R20437-G01	1



**ASC TRIND™ Tool Kit K94577-01**

<b>Tool Description</b>	<b>Part Number</b>	<b>Quantity</b>
co-axial cable tool	Q13628-01	1
field strength sensor	Q13626-01	1
test tag, TI/RFIDcar mount	Q13630-01	1
test tag, TI/RFID hand held	Q13630-02	1
threaded rod, 3/8-16 x 4"	N23880-01	4
tuning tool, plastic tipped	Q13631-01	1

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## 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 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.

## Hydraulic Pressure Releases and Fuel Leakage

Working on hydraulic systems can result in leakage of fuel that may also be under pressure.



Turn off all circuit breakers for unit being worked on, all dispensers using the same grades of fuel, and all associated STPs.

Do not allow unauthorized or untrained individuals to service hydraulic equipment.

Shear valves, required by NFPA 30A, are intended to shut-off the flow of fuel at the dispenser base (hydraulics area) during vehicle impact or fires. A single-poppet shear valve prevents fuel from flowing from the underground tank. A double-poppet shear valve prevents fuel from flowing from the underground tank and from the dispenser.

## Protect Your Eyes



Spraying fuel from residual pressure in lines can cause serious eye injuries. Always wear eye protection. Gasoline spilled in eyes may cause burns to eye tissue. Rinse eyes with water for approximately 15 minutes. Seek medical advice immediately. It is not necessary to wear eye protection unless performing hydraulic service.

## 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 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.

Gasoline Ingestion


**⚠ WARNING**



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

Gasoline Vapor Inhalation


**⚠ WARNING**



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

Gasoline In Eyes

**⚠ WARNING**



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

Gasoline On Skin



## 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																																																
<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.	<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.	<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.																																																
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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 attack, 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.

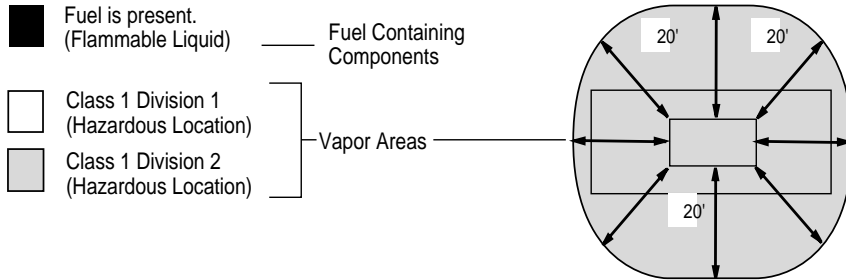
### Replacement Parts

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.

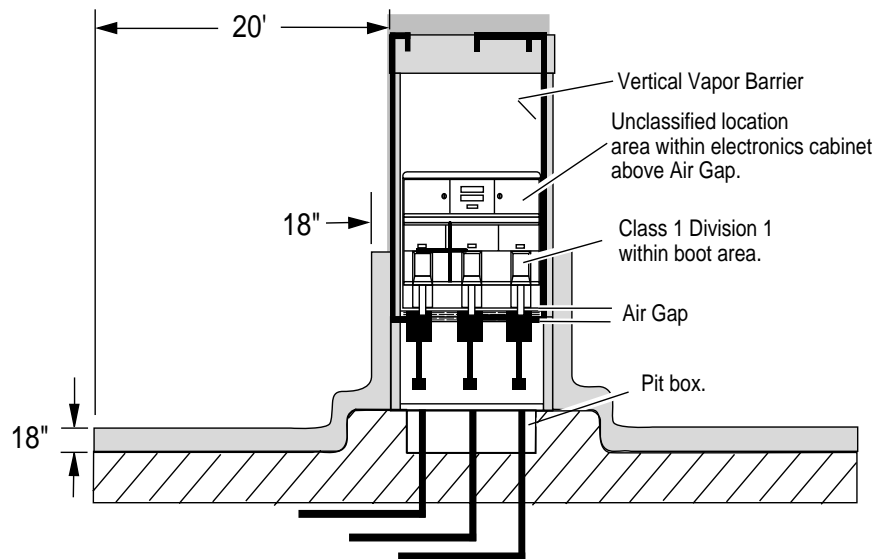
## Classifying Hazardous Locations

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

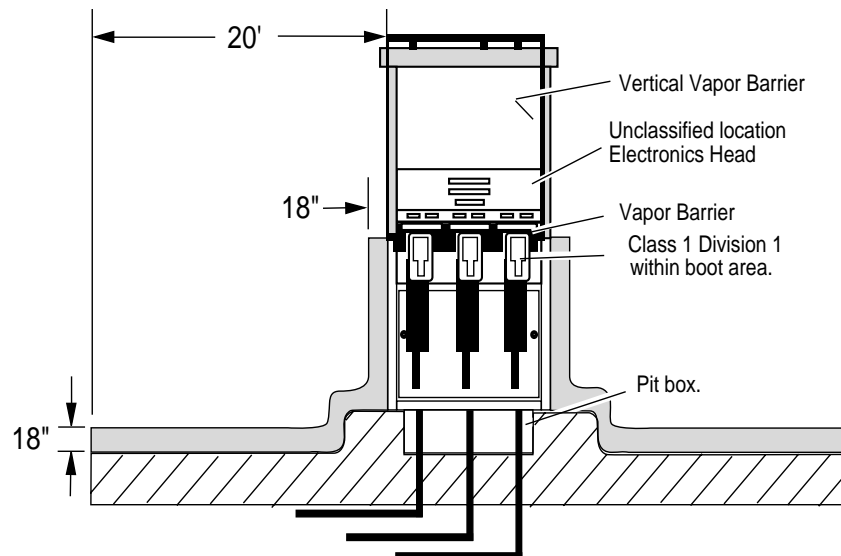
The following diagrams are based on NFPA 30A, section 6 and NFPA 70, section 514.



**The Advantage Series with Air Gap**



**MPD-3 Series with Vapor Barrier**



# ASC TRIND Technology Update

*Note: AUTHORIZED SERVICE CONTRACTORS READ THIS SECTION BEFORE PROCEEDING WITH INSTALLATION*

The TRIND system utilizes technology and devices not commonly used in the industry. Read the following carefully to familiarize yourself with relatively unique aspects of TRIND systems and prevent field problems.

## RF Transmission and Antennas

Located in the TRIND card cage is a transmitter printed circuit board (PCB). The RF antennas are connected to this board during installation.

Applying power to the card cage with either antenna disconnected will result in damage to the transmitter PCB.

- The transmitter PCB may be burned up immediately, or its effective life shortened drastically.
- The PCB may perform properly at installation, but will require premature field service at a later date.

For single-sided units, a 'dummy load' connector R20526-G1 is provided for unused 'B' side of the PCB.

*Note: Power must never be applied to the card cage without a load, either antennas or dummy load connector.*

## Coaxial Cable

Coaxial antenna cables in cable harness M00878A002 used for TRIND systems are more flexible and smaller diameter than more familiar coaxial cable, such as that used for cable television. However, all coaxial cables share this feature:

Too severe a turn or bend in the cable will break the center (solid) wire.

This can result in a seemingly good but in actuality intermittent signal. It may also result in what appears to be proper performance at installation that is followed by premature failure and field service. Replacing damaged cable in the field is an extensive task.

In addition, a damaged cable will cause a situation where the transmitter PCB is powered without load, and damage the PCB.

*Note: Turns or bends in coaxial cables must be gradual loops, no sharper than a 1" radius (2" diameter).*

# Installation Instructions For The Advantage Series Units

## Important Preinstallation Instruction.

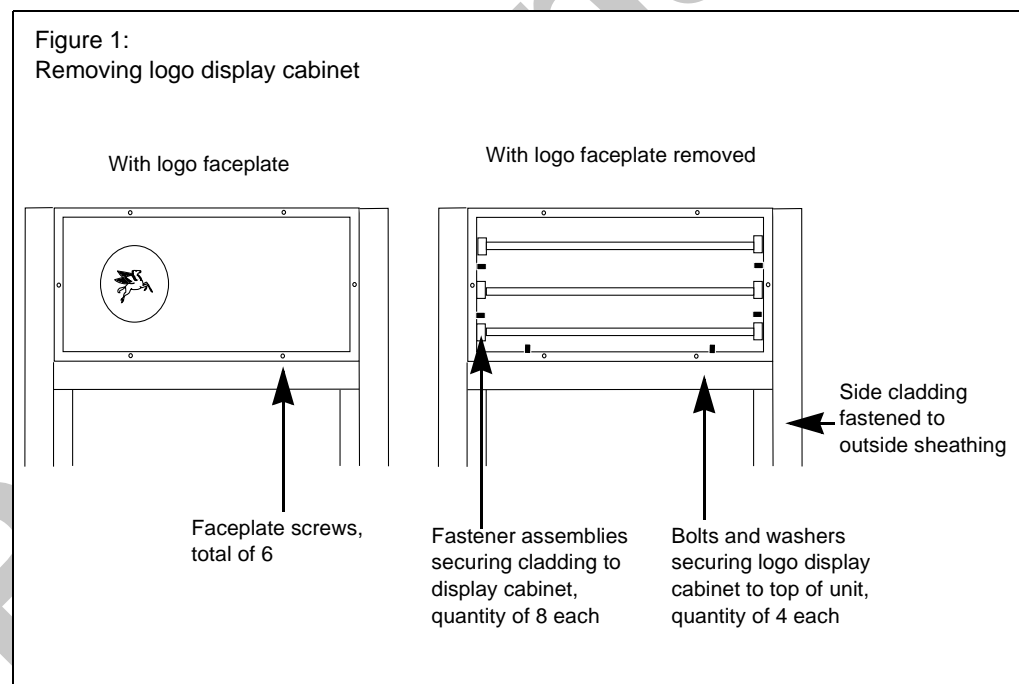
Before beginning, read “Important Safety Information” on page 10 and “ASC TRIND Technology Update” on page 20.

For MPD-3 Series, go to “Installation Instructions For MPD-3 Units” on page 38.

## Removing Mobil Logo Display Cabinet

Use these procedures for dispensers with Mobil lighted logo display cabinets only. For units without logo display cabinet (blue hat), proceed to ‘Preparing for Installation’ on page 22.

- 1 Remove framed logo faceplates from both long sides of display cabinet by removing six screws per side. See Figure 1. Save screws and logo faceplates for reassembly.



- 2 Remove cover from electrical connection box in display cabinet and disconnect wires. Save cover, screws and wire connectors for reassembly.
- 3 Remove locking nut and washer from conduit nipple in display cabinet. Save nut and washer for reassembly.
- 4 Disconnect side cladding on both sides from light box by removing eight sets (four per side) of bolts, flat washers, lock washers, neoprene washers and cage nuts. Dispose of removed hardware.

- 5 Remove four 3/8-16 bolts, lock washers, flat washers and soft aluminum flat washers securing display cabinet to top of unit. Save all hardware except bolts for reassembly. Dispose of bolts.
- 6 Carefully lift and remove display cabinet. Set cabinet aside for reassembly.

*Note: Logo display cabinet weighs approximately seventy-five pounds. A crew of two, on separate 'A' style ladders, are required to lift and remove cabinet.*

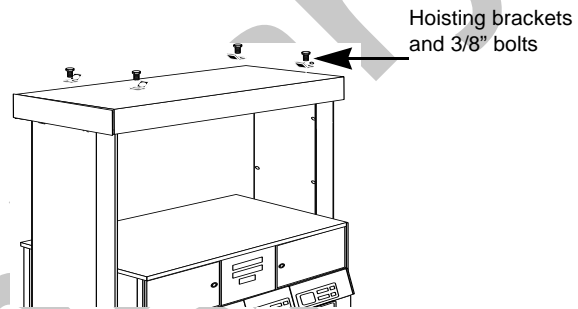
## Preparing For Installation

### Perform these steps for all The Advantage® Series units

- 1 Remove four hoisting brackets from top of unit by removing four bolts and washers. Dispose of hoisting brackets. Save hardware for reassembly.

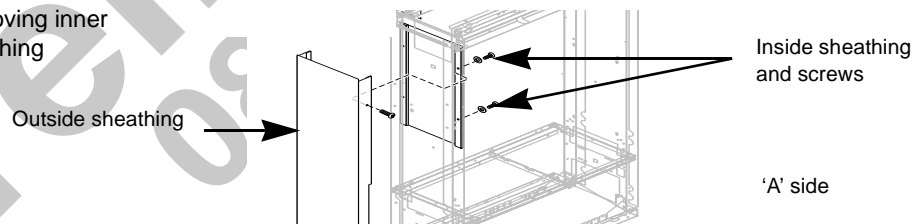
*Note: On units with logo display cabinet, hoisting brackets have already been removed.*

Figure 2:  
Removing hoisting  
brackets



- 2 From 'A' side of unit, remove inner sheathing on left column. Set sheathing and screws aside for reassembly.

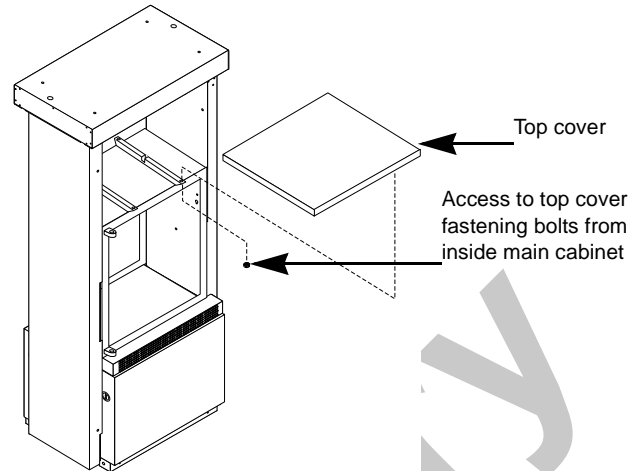
Figure 3:  
Removing inner  
sheathing



- 3 Open main access doors. Refer to MDE-2531, Pump and Dispenser Start-Up/Service Manual for access instructions.

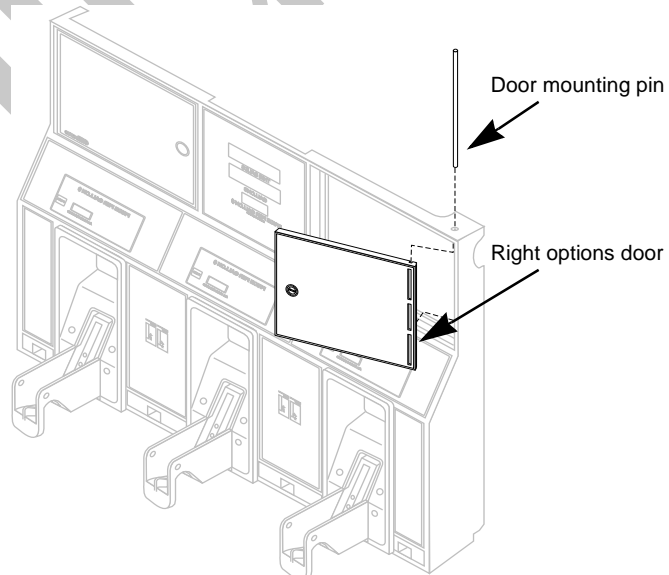
- 4 Remove top cover from main panel by accessing mounting hardware from inside main cabinet. See Figure 4. Save top cover and fastening hardware for reassembly.

Figure 4:  
Removing cabinet  
top cover



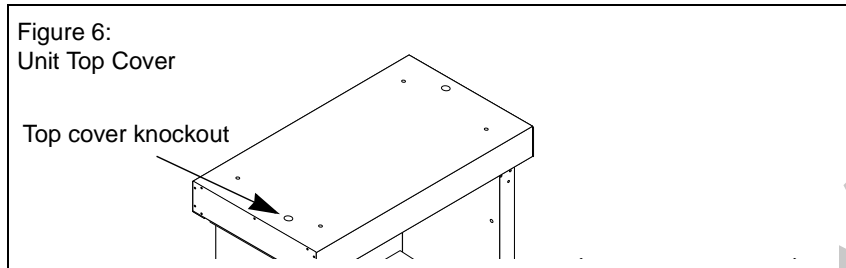
- 5 Remove any call or stop buttons, or magnetic switch hardware from door. Save all removed hardware for reassembly.
- 6 Remove door mounting pin and right options door. See Figure 5.
- 7 Dispose of door. Save pin for reassembly.

Figure 5: Removing options door



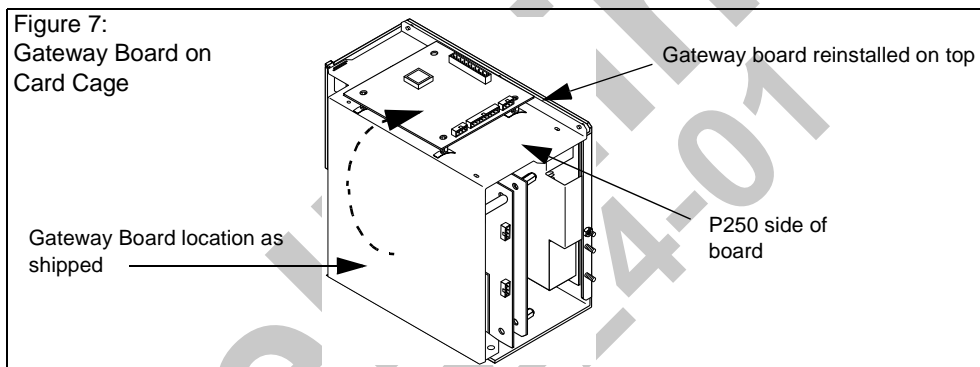
## Removing Knockout in Unit Top Cover

- 1 Remove knockouts from the near left side of unit top cover while facing each side of unit to have antenna installed.
  - For units without end plate, lift left side of top cover for access to knockout from bottom.
  - For units with nine bolt end plates, remove plate for access.



- 2 Lower top cover to original position.  
*Note: For units with end plate, do not replace plate at this time.*

## Relocate Gateway Board on Card Cage



Gateway board is shipped mounted to side of card cage. This accommodates immediate use with the Encore™ Series dispensers. Relocate gateway board to top of card cage according to the following steps:

- 1 Remove Gateway board and standoffs from side of card cage.  
*Note: Existing standoffs do not need to be reused and should be removed.*
- 2 Secure gateway board to top of card cage as shown, using four Q10651-16 standoffs provided with kit.
- 3 Dispose of door. Save pin for reassembly.



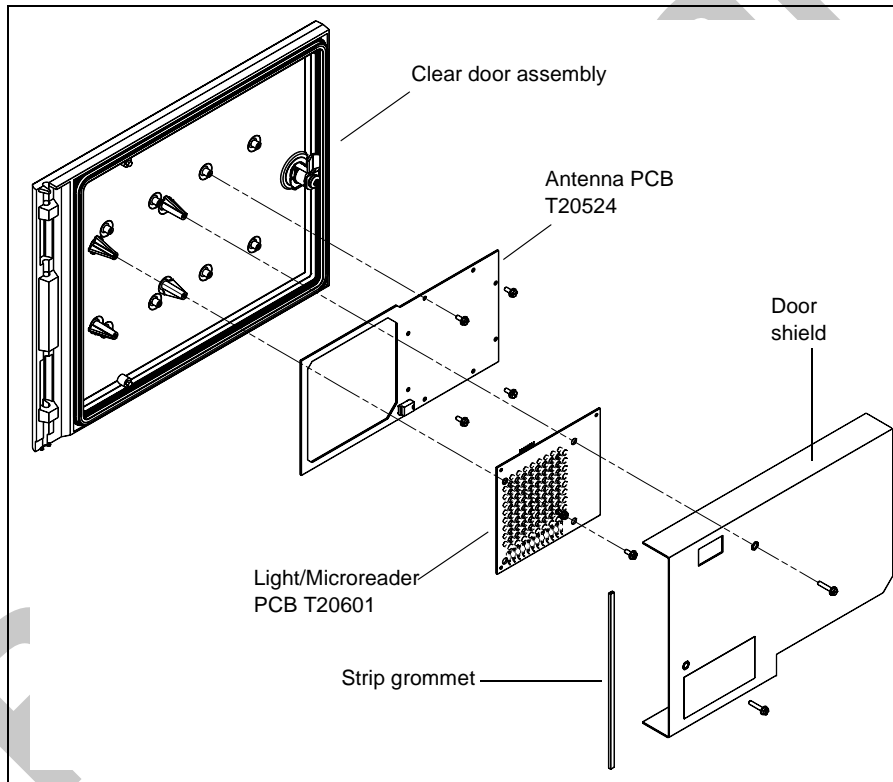
## Modifying Right Options Door

For all units without stop or call button on right options door, go to 'Re-installing Door Alarm Switches' on page 28, if unit has door alarm. If unit does not have door alarm, go to "Installing Right Options Door" on page 28.

### For 48" units with stop or call buttons previously installed, perform the following steps.

Remove all hardware from new right options door according to the following steps and save all parts for reassembly.

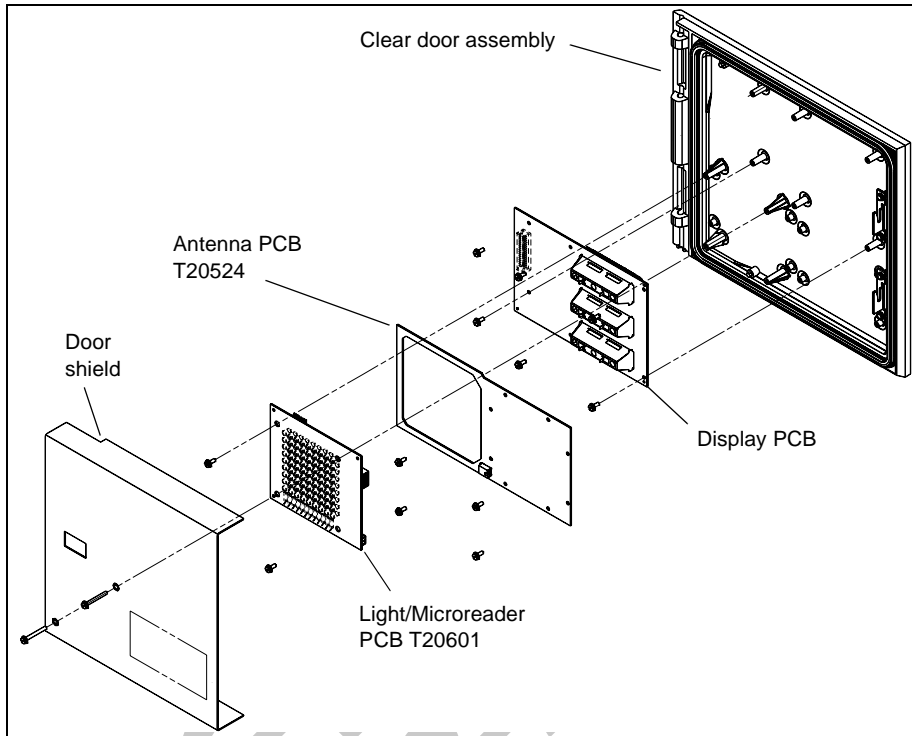
- Remove two screws mounting door shield on rear of door.
- Disconnect cable R20522-G2 from light/microreader printed circuit board (PCB) by disconnecting J181 on cable from P181 on board.
- Remove Light/Microreader PCB.
- Remove screws and antenna board.



**For 36" units with stop or call buttons previously installed, perform the following steps.**

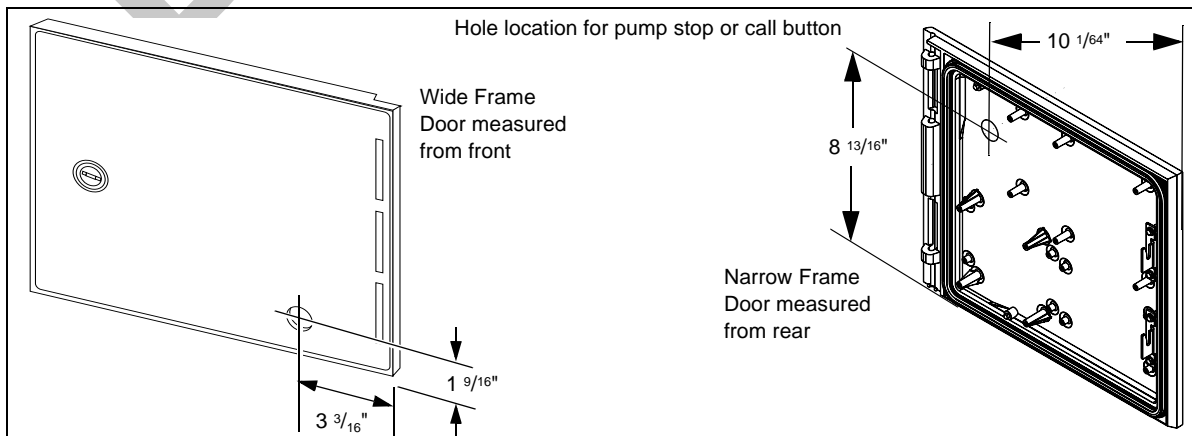
Remove all hardware from new right options door according to the following steps and save all parts for reassembly.

- Remove two screws mounting door shield on rear of door.
- Disconnect cable R20522-G2 from light/microreader printed circuit board (PCB) by disconnecting J181 on cable from P181 on board.
- Remove Light/Microreader PCB.
- Remove screws and antenna board.
- Remove display PCB



**For all units, do the following:**

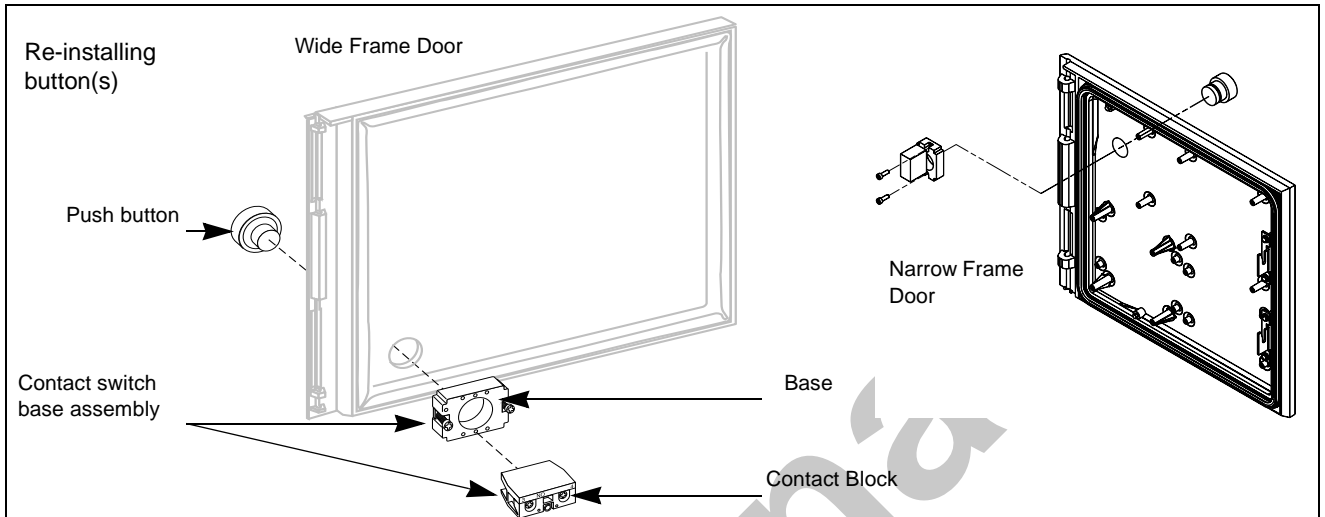
- 1 Mark placement of pump stop or call button on new right options door by measuring from door edges as shown.



- 2 Away from fuel island, drill a 7/8 inch diameter hole in the location shown above. Remove any burrs around hole with deburring tool or rounded file.

## Reinstalling 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.

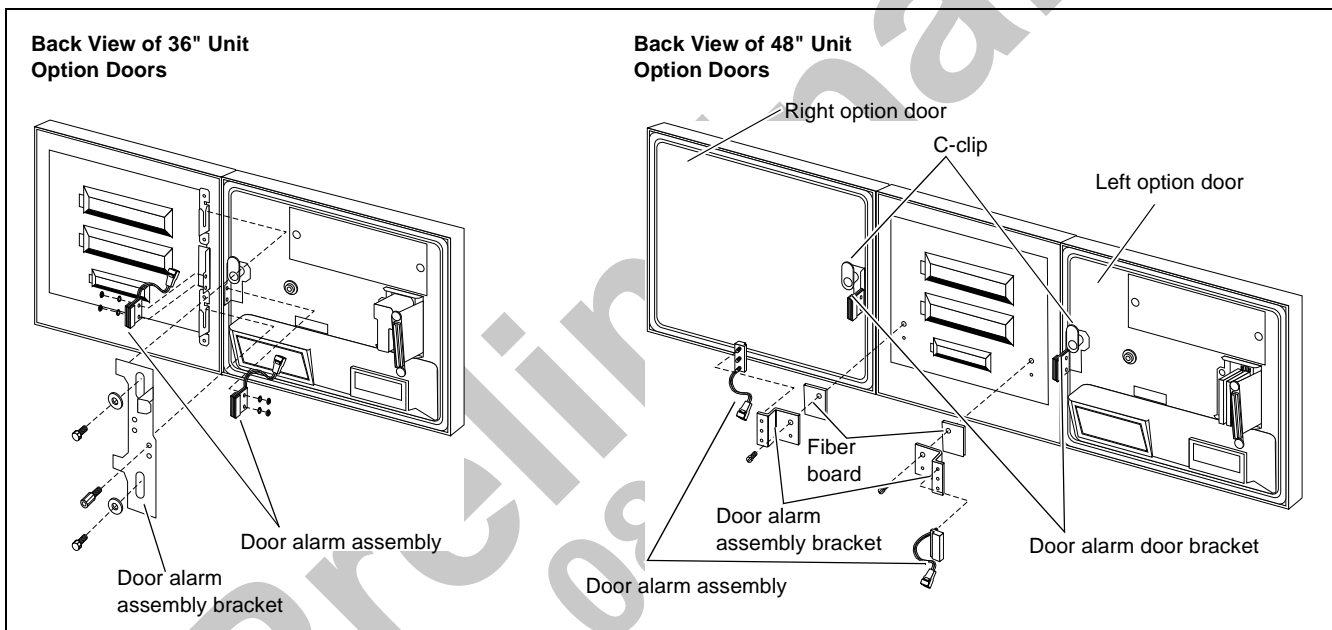


- 3 Turn push button 45° clockwise to lock button to base.
- 4 Tighten two screws on base to secure push button and base assembly to door.  
*Note: Do not overtighten screws.*
- 5 Attach contact block to base with center screw if not already installed.
- 6 Reinstall all new right options door hardware by reversing procedures in Step 1 of “Modifying Right Options Door” on page 25.

## Reinstalling Door Alarm Switches

For units with cash acceptors, follow these steps to reinstall 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. If unit does not have door alarm, go to 'Installing Right Option Door' on page 28.

- 1 Reinstall C-clips removed from old right side option doors.
- 2 Install door alarm assembly to door alarm assembly bracket with screw previously removed.
- 3 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.*
- 4 Be sure magnet does **not** touch door alarm door bracket. Slightly move door alarm door bracket away, if necessary.



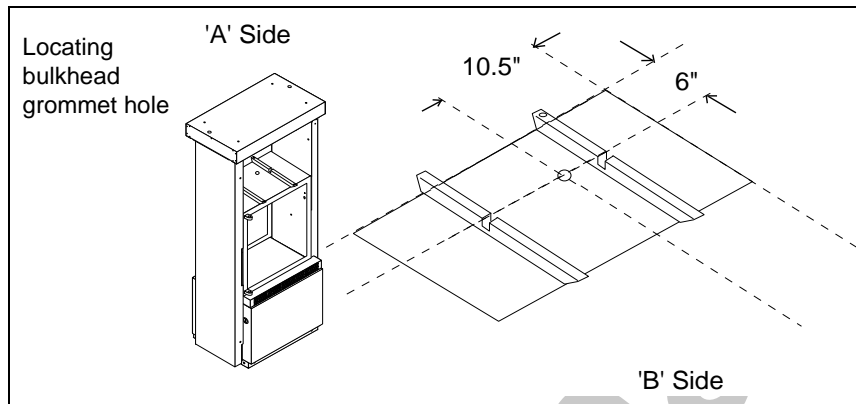
- 5 Reinstall all new right options door TRIND hardware by reversing procedures in Step 1 of "Modifying Right Options Door" on page 25.

## Installing Right Options Door

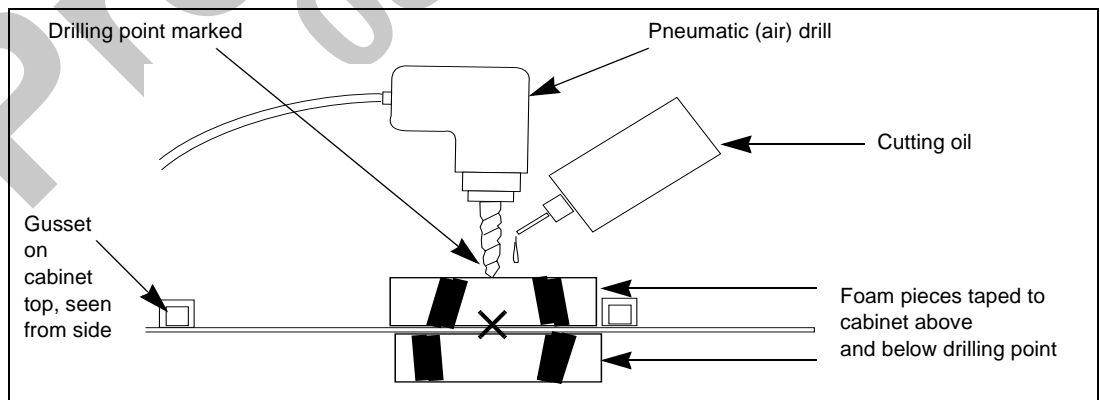
Install new TRIND/TIRIS right options door (one per side for two-sided units), using pin(s) removed and saved in Step 7 on page 23.

## Installing Bulkhead Grommet

- 1 Disconnect two cables and remove ground connector to 'A' side printer. Remove printer from unit and save for reinstallation.
- 2 While facing 'A' side of unit, measure 6" in toward center of cabinet top from outside edge of top, and draw a line on top cover.



- 3 Measure 10.5" in from left side of top, and draw a line. Intersection of both lines is pilot hole location.
- 4 In packaging materials, locate thick rubber packing that can be broken into flat sided pieces, approximately six inches round, square or random.
- 5 On one flat side of thick rubber piece, apply light coating of cutting oil.
- 6 With oil coated surfaces in contact with metal surfaces, heavily tape one each foam piece to top and bottom of main cabinet top, above and below drilling point marked.  
*Note: For foam piece taped to top, mark foam with marking pen or pencil to identify drilling point under foam. Drilling point location accuracy of plus or minus 1/2" is acceptable.*



- 7 Cover shelf area under drilling position with plastic. Kit packaging materials may be used.

- 8** Follow these mandatory safety guidelines:
  - Do not use electric drill. Use only pneumatic (air) drill set or controlled for low speed only (300-500 rpm) or hand operated drill.
  - Deposit a few drops of cutting oil at drilling point and on drill bit, to keep bit from binding, to quench sparks and to bind drill shavings.
  
- 9** Drill through foam pieces, going only as deep as required to penetrate top cover, beginning with small diameter bit (approximately 1/8") and gradually increasing bit size until adequate pilot hole is made.

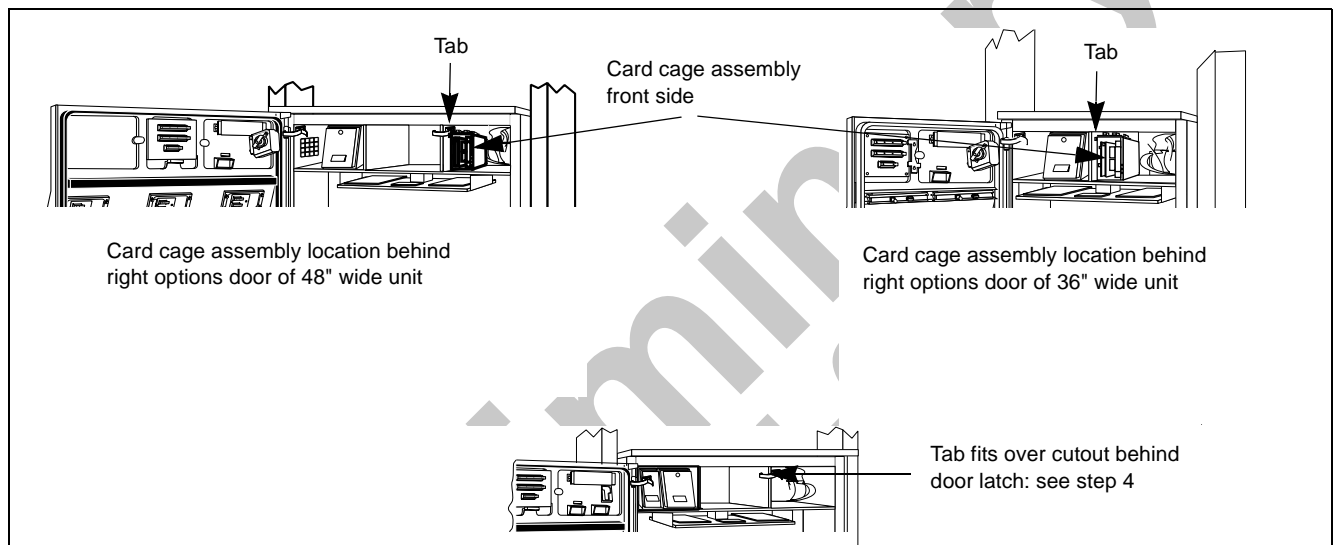
*Note: Hole 3/8" in diameter should be sufficient as pilot for knockout.*
  
- 10** Remove both top and bottom foam pieces, being careful that all drilling residue and oil is removed from cabinet area. Wipe off cabinet surface, top and bottom, with clean cloth or rag.

*Note: Use file or deburring tool to remove burrs or edges that may cut hands.*
  
- 11** Using hydraulic or manual knockout punch, make one inch (1") diameter hole.
  
- 12** Remove plastic covering hardware by folding inwards to retain any drilling residue, and dispose of plastic.
  
- 13** Carefully check interior of main cabinet for trash or residue and clean as needed.
  
- 14** Position bulkhead seal grommet (Q13570-01) with O-ring beneath hole.
  
- 15** Secure grommet in place with locking nut from top of cabinet.
  
- 16** From 'A' side of unit, drop (lower) CRIND tray.

## Installing Card Cage Assembly

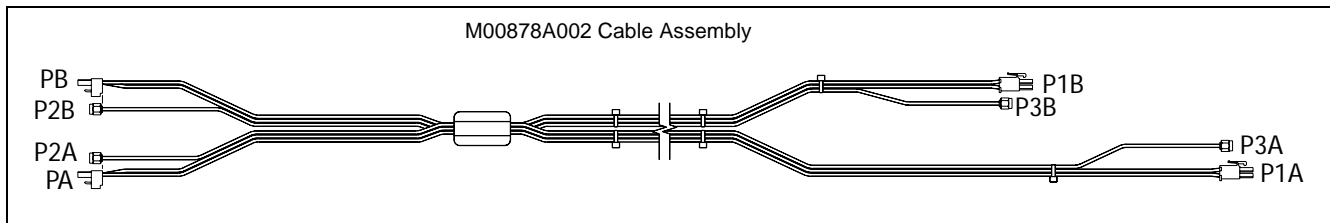
Install card cage assembly from 'B' side of unit according to the following steps:

- 1 Carefully pry out printer cable retainer from underside of printer shelf.
- 2 Pull printer cable out of 2 3/4" round hole from bottom, and install piece of strip grommet Q10315-06 around perimeter of hole.
- 3 For all single-sided units, connect dummy load connector R20526-01 to JB on low frequency transmitter PCB Q13579-01 in card cage. See "Card Cage Assembly T20606-G2" on page 62 for connection point.
- 4 Install card cage assembly fuse side first on printer shelf and against center divider behind right options door, as shown.



- 5 Position card cage so that tab on upper left side of housing fits over latch cutout for main door latch, securing card cage to divider.
- 6 From 'B' side of unit, feed screw Q12083-13 and washer N16599-48 up through hole in shelf into threaded hole in card cage bottom.
- 7 Feed three prong female end of power supply cable R20580-G1 up through grommeted hole in printer shelf to recessed receptacle on card cage assembly. Refer to "Card Cage Assembly T20606-G2" on page 62 for connection points.
- 8 Secure power cable R20580-G1 in cable retainer removed in Step 1, so that power cable and printer cable are both secured, and reinstall cable retainer in grommeted hole.
- 9 Feeding J182 ends of cables R20773-G2 for A and B sides up through grommeted hole and connect P1 to J1 and P2 to J2 on T20662-G2 card cage harness.
- 10 Return printer to shelf and reconnect two printer cables and ground connector.
- 11 Reorient printer and secure to shelf.

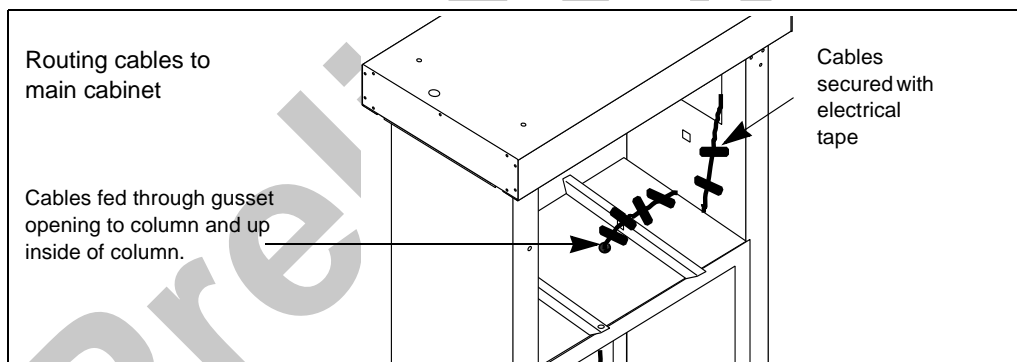
## Installing Transmitter Cables



Before proceeding be sure to be able to easily identify A and B side cable ends. Electric tape, wire numbers or other suitable device may be used.

*Note: Sharp bends in antenna cables will cause damage. All cable turns must be in loops and gradual. Refer to "ASC TRIND Technology Update" on page 20.*

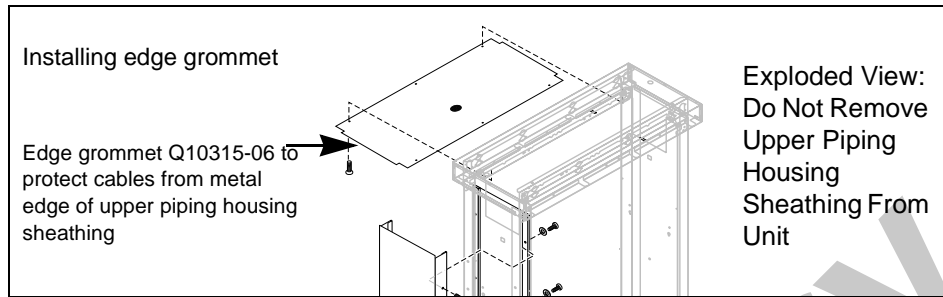
- 1 Feed P1A/B and /P3A/B ends of cable harness M00878A002 up through bulkhead grommet in main cabinet.
- 2 Be sure that there is sufficient length (24") of M00878A002 harness remaining in electrical cabinet to reach connection points on card cage. Cables must be routed through underside of card cage to connection points on 'B' side. See "Card Cage Assembly T20606-G2" on page 62 for connection points.
- 3 Lay cable harness flat across top of main cabinet, through gusset opening to column as shown.



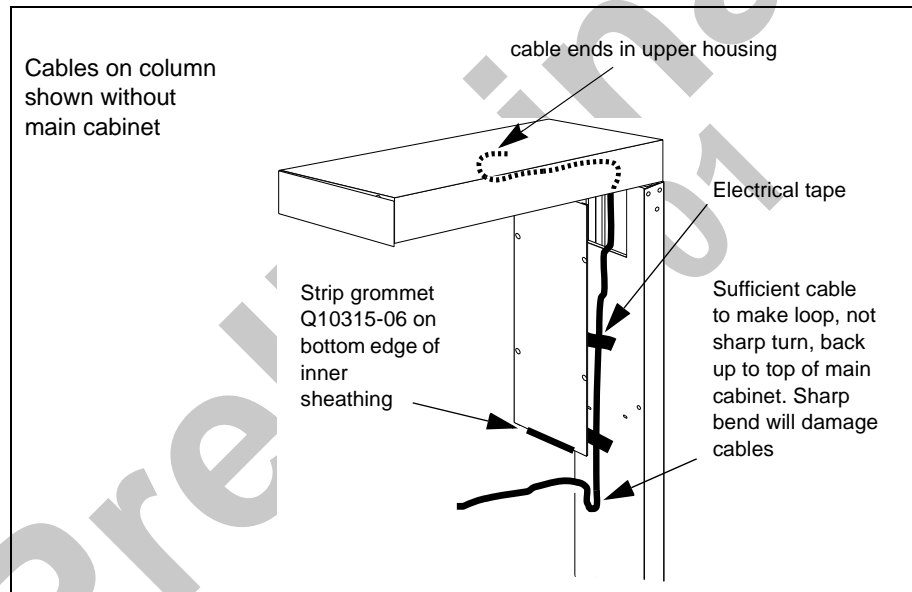
- 4 Use electrical tape to secure cable harness flat to top of cabinet and in gusset opening. See illustration above.
- 5 Route cables from top of main cabinet up along inside of column, keeping cables flat and parallel.
- 6 Loop cable harness 3" down into space between column and main cabinet and back up again to allow for reinstallation of inside sheathing.  
*Note: Turn in cables must be gradual, not sharp, to prevent damage to cables.*
- 7 Feed cables up through knockout openings in unit top cover.



- 8** Without removing upper piping housing sheathing, install piece of edge grommet Q10315-06 along edge of sheathing where cables pass in column. See exploded illustration below.  
*Note: Carefully check for any points along cable harness run where cables may come in contact with sheet metal edges, and install edge grommet to prevent cable damage.*



- 9** Leave cable ends in upper housing.
- 10** Press cable harness flat and parallel to column and secure with electric tape as shown.

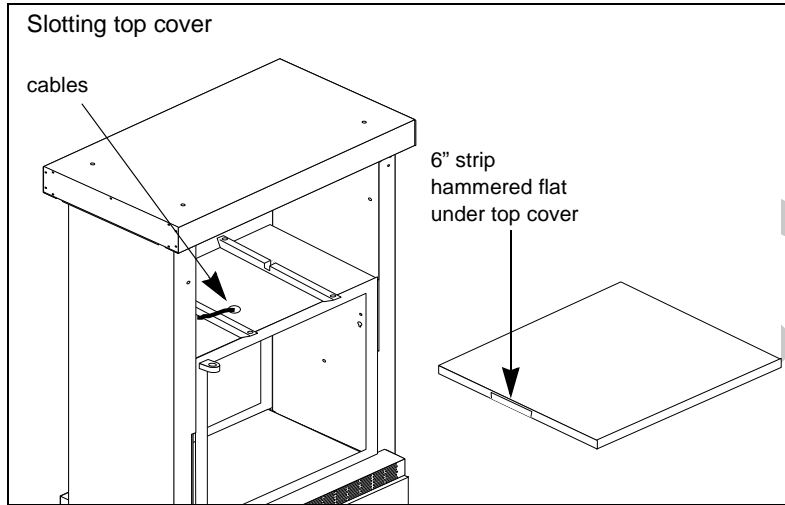


- 11** Install edge grommet Q10315-06 on bottom edge of inner sheathing and replace inner sheathing, using screws saved during disassembly.

## Replacing Main Cabinet Top Cover

- 1 Use hacksaw to cut 3/8" slots in cabinet top cover to allow strip a minimum of 6" wide to be folded back with pliers and hammered flat as shown, to allow cables to pass under top cover to grommet.

*Note: Remove top cover from work area to cut slot. Do not cut metal in proximity to dispensers. Place top cover on cardboard while hammering to prevent damage to paint.*



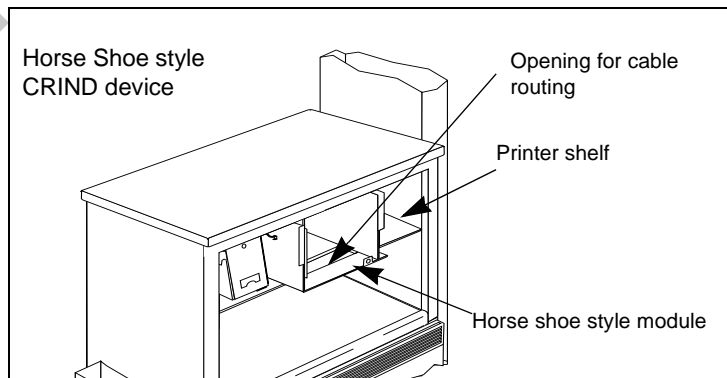
- 2 Clean edges and burrs around cuts in cover with file or deburring tool.
- 3 Thoroughly seal spaces around and between cables in main cabinet bulkhead grommet with RTV sealant.  
*Note: Place some packaging plastic inside bulkhead grommet from top to prevent sealant from running out bottom when applied.*

## Routing R20773-G2 Cables

*Note: Retrofit kit comes with ten (10) adhesive-backed cable clamps (Q13558-04). Note the following variations for routing cables to main cabinet:*

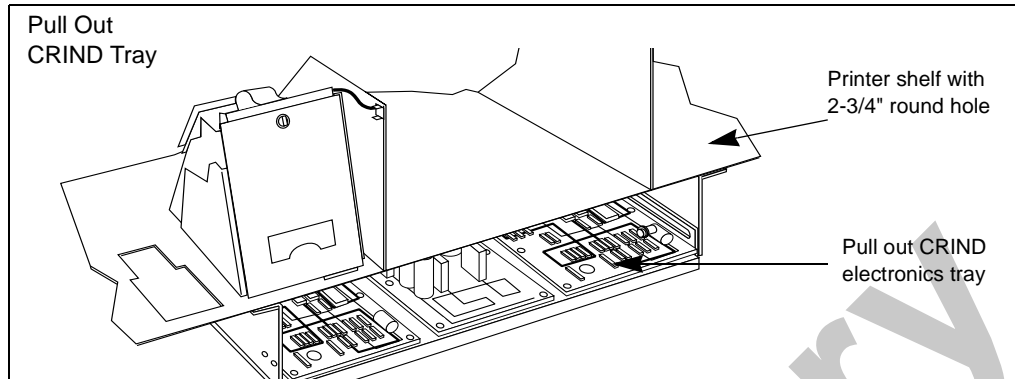
### Horse Shoe style CRIND Device

For these units, utilize opening in printer shelf bottom for routing.



### Pull Out CRIND Tray

For these units utilize round 2-3/4" hole in printer shelf bottom, used for printer cable. Use cable clamps to secure cables to underside of printer shelf.

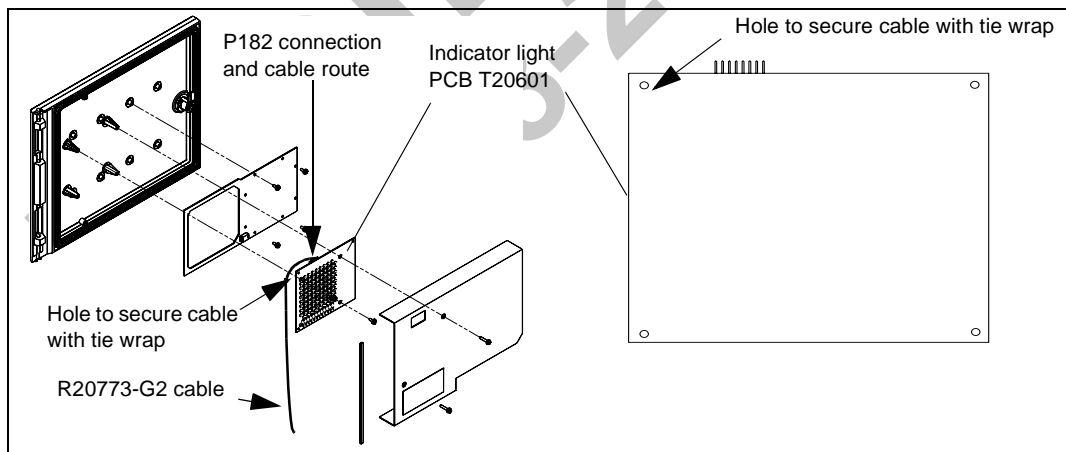


### Cable Routing Along Option and Main Doors

When routing door cables to card cage, leave excess cable on door, routing cable around edges of printed circuit board.

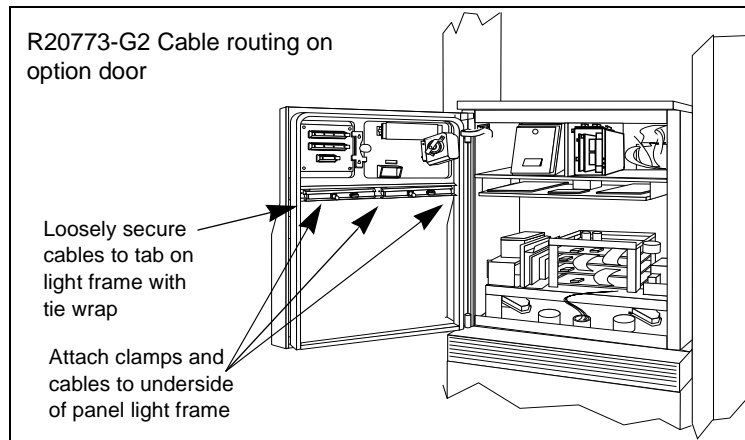
*Note: It is critical that door cables do not get crimped or pulled when either options door or main door are opened or closed. Be sure that door cables are secured such that they cannot be caught in main door when door is closed, and always close main door before options door.*

- 1 Remove option door shield
- 2 Connect J182 connectors on R20773-G2 cables to P182 on Light/Microreader PCB for each side right options door.

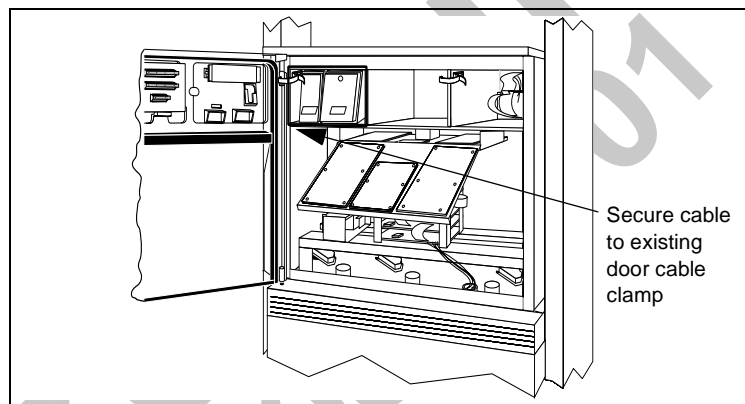


- 3 Loosely secure cables using tie wrap Q10178-01 and hole on indicator light printed circuit board.
- 4 Leaving sufficient cable to reach connection points on card cage, use clamps to secure cables to underside of lighting frame. Be sure clamps are secured to non-removable part of frame, so access is maintained for lighting service.

- 5 Ensure that option door opens and closes freely without stressing or crimping cables, use tie wrap Q10178-01 to loosely secure cables to small fixed tab at end of light frame, forcing cables between light frame and door gasket.

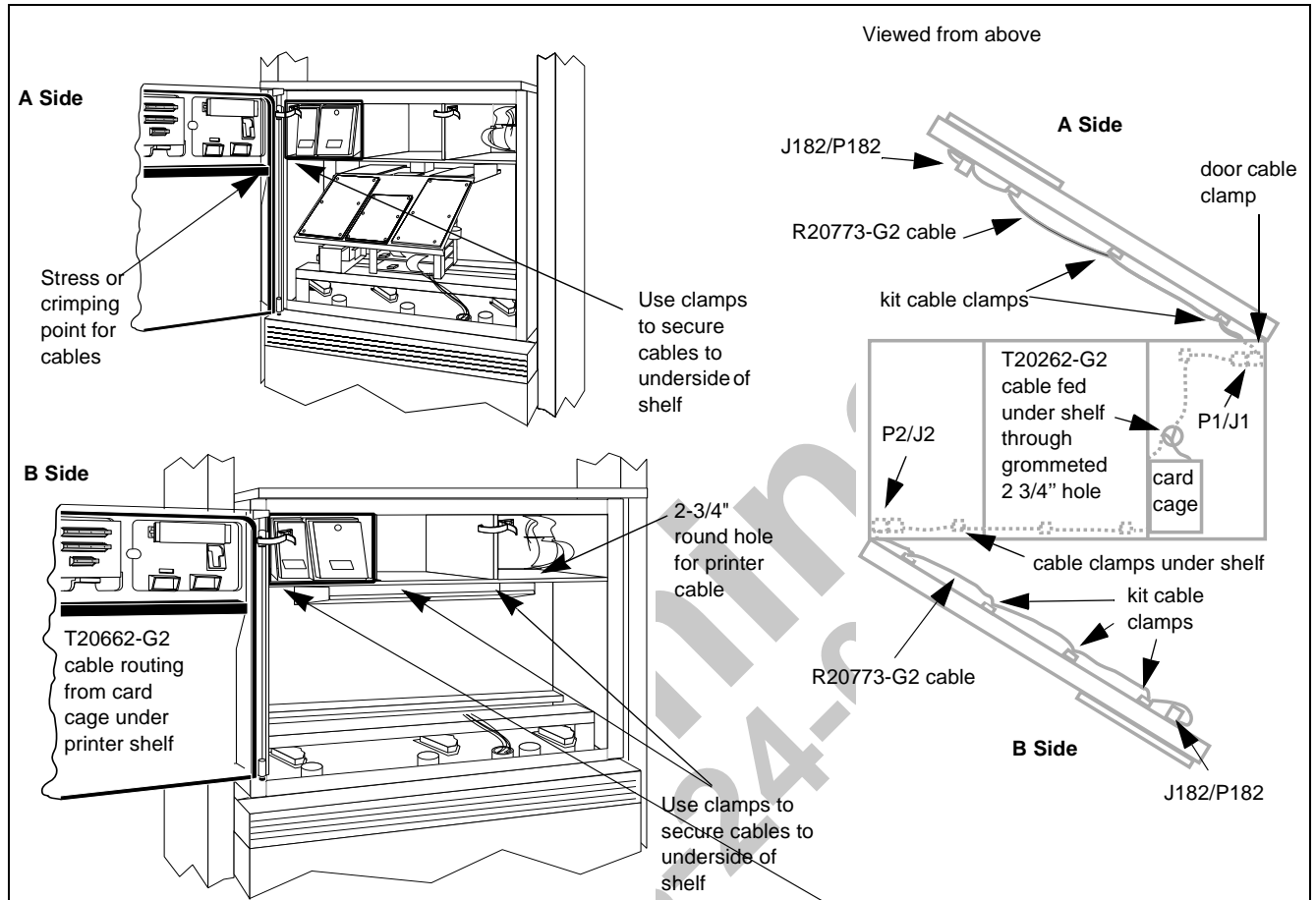


- 6 Secure J1/J2 end of each R20773-G2 cable to existing cable clamp (for door cabling) just inside main cabinet, allowing enough slack for main door to open and close freely without pulling on or crimping cable. See illustrations below and on next page.



## T20662-G2 Cable Routing In Main Cabinet

Card Cage cable harness T20662-G2 contains two cables with connectors P1 and P2. P1 for A Side is shorter of the two. Each cable is designed to extended to the point where the main door and electronics cabinet are hinged. Feed cables through 2-3/4" round hole in printer shelf. Use clamps to secure cables to underside of shelf



Go to "Preparing Antenna Cable Connections" on page 49.

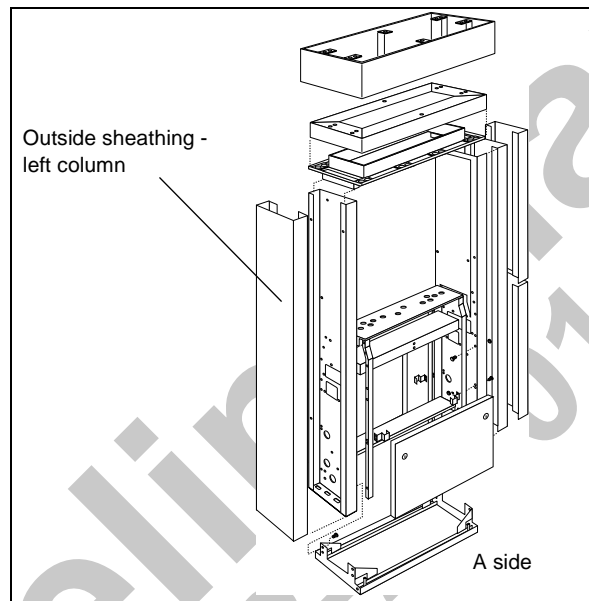
## Installation Instructions For MPD-3 Units

Before beginning read “Classifying Hazardous Locations” on page 19 and “ASC TRIND Technology Update” on page 20.

The TRIND™ retrofit can only be done on MPD-3 units with CRIND™ printer on left.

### Preparing For Installation

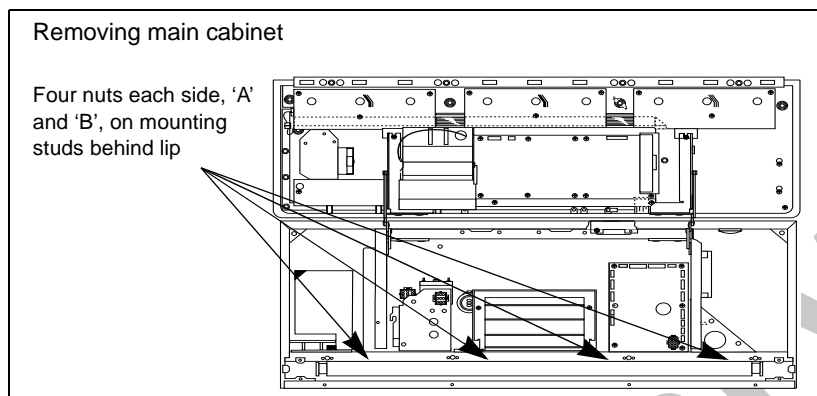
- 1 From ‘A’ side, remove left column outside sheathing (or top section only for two piece sheathing).



- 2 Temporarily secure inner sheathing to frame using tape.
- 3 Open main access door. Refer to MDE-2531 for instructions.

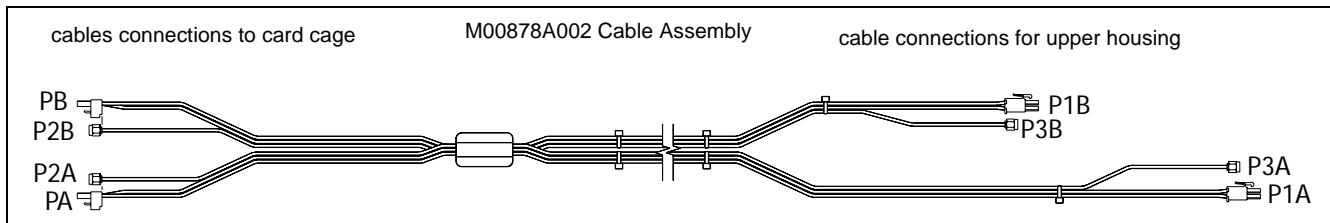
## Removing Main Cabinet

- 1 Locate four nuts on each side of main cabinet, 'A' and 'B', that secure cabinet to frame.



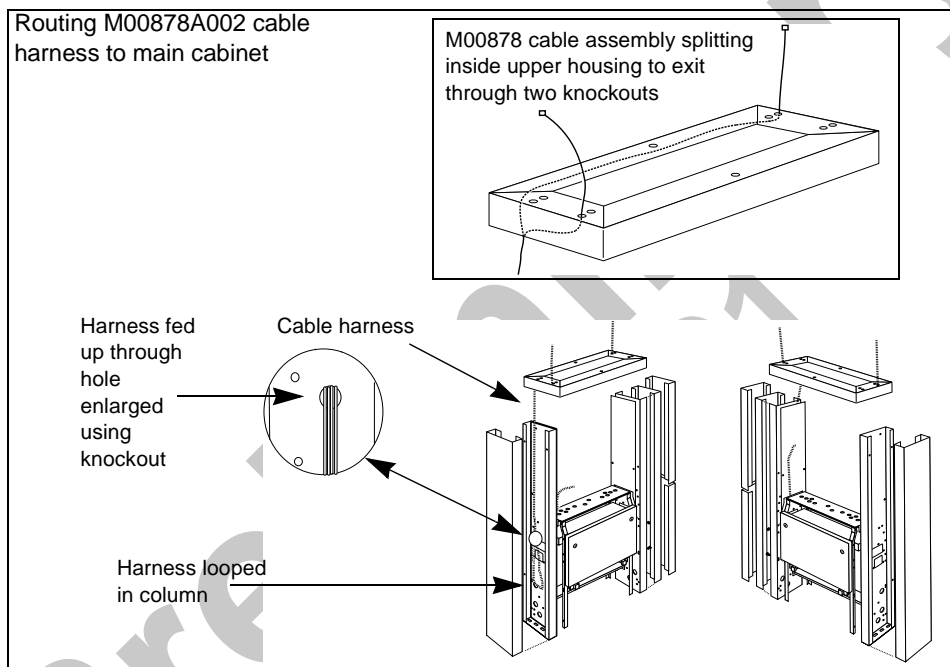
- 2 Remove all eight nuts and washers, and save for reassembly.
- 3 Disconnect barrel connectors to allow cabinet to be removed from unit.  
*Note: If barrel connectors are mounted to holding plate(s), remove plates and discard.*
- 4 Carefully lift cabinet up and off studs, and remove from fuel island.
- 5 Remove inner sheathing on left column (viewed from 'A' side). Set sheathing and screws aside for reassembly. See illustration below.  
*Note: For units with VaporVac®, VaporVac pan does not need to be removed. Sheathing can be carefully pulled out from center until top bends clear of pan.*

## Installing Transmitter Cables



Before proceeding be sure you can easily identify A and B side cable ends. Electric tape, wire numbers or other suitable device may be used as needed.

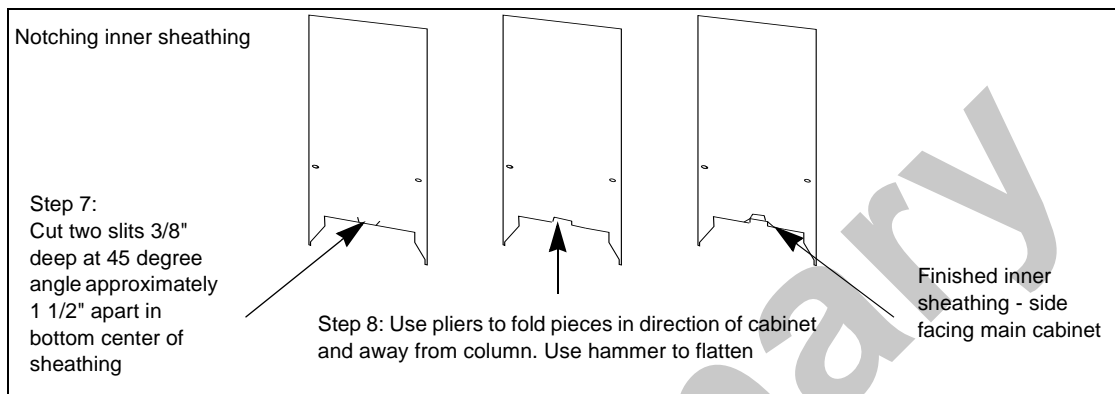
*Note: Sharp bends in antenna cables will cause damage. All cable turns must be in loops and gradual. Refer to "ASC TRIND Technology Update" on page 20.*



- 1 Feed cable ends PA/B and P2A/B (see illustration above) down from upper piping housing into left column seen from 'A' side. Leave a minimum of 12" of cable in upper housing.
- 2 Feed cables down between piping brackets and inside column.
- 3 There are several holes in column above or below main cabinet level, approximately 7/16" in diameter. Locate hole that provides access for using knockout and is most closely aligned with bottom of cabinet, and open hole to 7/8" diameter or larger.  
*Note: Various units have different holes and configurations. Any hole on column, square, rectangular or round, of sufficient size or made so with knockout can be used for cables.*
- 4 Use rounded file or deburring tool to round edges of hole. Cover edges of hole with electric tape.
- 5 Loop cables below hole and back up through hole and out of column.



- 6 Feed cable ends into vapor barrier, dressing and securing cables in place with electrical tape.
- 7 Away from island, use snips or shears to cut slits 1-1/2" apart in bottom center of inside sheathing at 45 degree angles. See illustration below.
- 8 Fold pieces forward on cabinet side of sheathing. Use hammer to flatten folded pieces as shown.



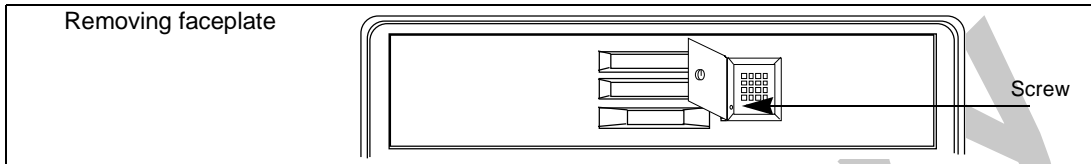
- 9 Reposition inner sheathing and tape in place, being sure that cables pass through opening at bottom.
- 10 Replace outside sheathing, and remove tape from inner sheathing.
- 11 Dress and secure cables on cabinet top with electrical tape.

## 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.

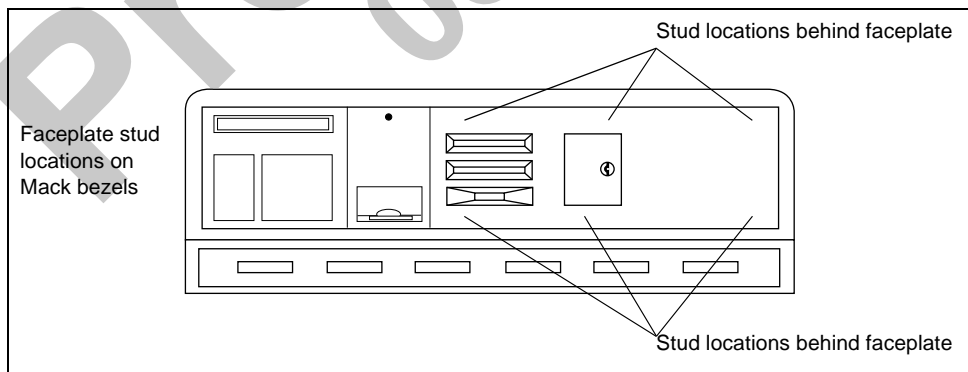


- 3 Gently force faceplate up, and slide tip of knife or flat blade screwdriver under bottom edge of faceplate.
- 4 Pry bottom of faceplate away from unit, until faceplate can be removed from unit.
- 5 Dispose of faceplate.

### 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, and discard cable.
- 3 Locate six sets of nuts and washers on studs securing faceplate to bezel door, and remove hardware.

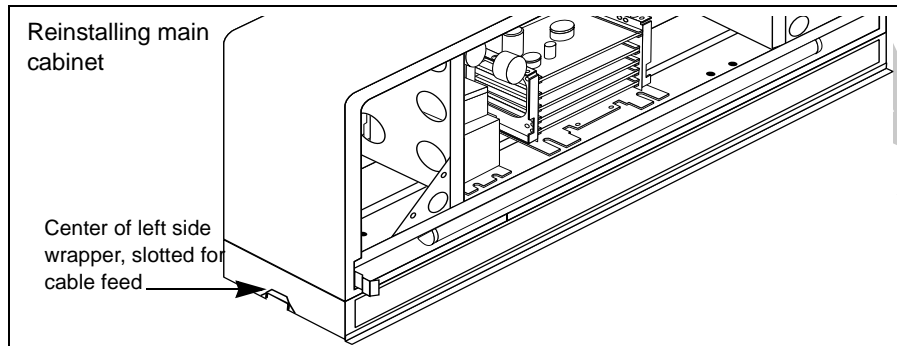
*Note: This may require removing mounting hardware from price per unit (PPU) and CRIND logic boards to gain access.*



- 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.

## Routing Cables 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.

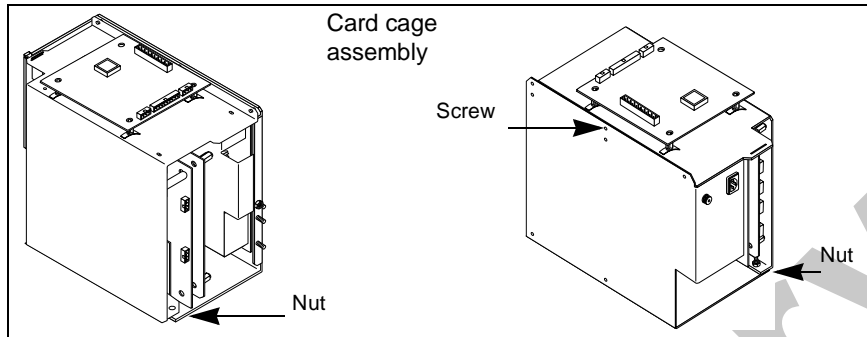


- 5 On left side of main cabinet (viewed from 'A' side), in center bottom of wrapper, use snips to cut two 3/8" slits at 45 degree angle.  
*Note: Slots and folds duplicate those done on inner sheathing. See illustration on page 41.*
- 6 Fold pieces out from cabinet and press flat against wrapper from outside.
- 7 Carefully return cabinet to unit, and lower cabinet on to studs.
- 8 Feed cables up into cabinet under slot made in wrapper.
- 9 Secure cabinet in place with nuts and washers removed with cabinet.
- 10 Heavily seal around cable entry slot with RTV sealant from inside cabinet.
- 11 Reconnect barrel connectors.

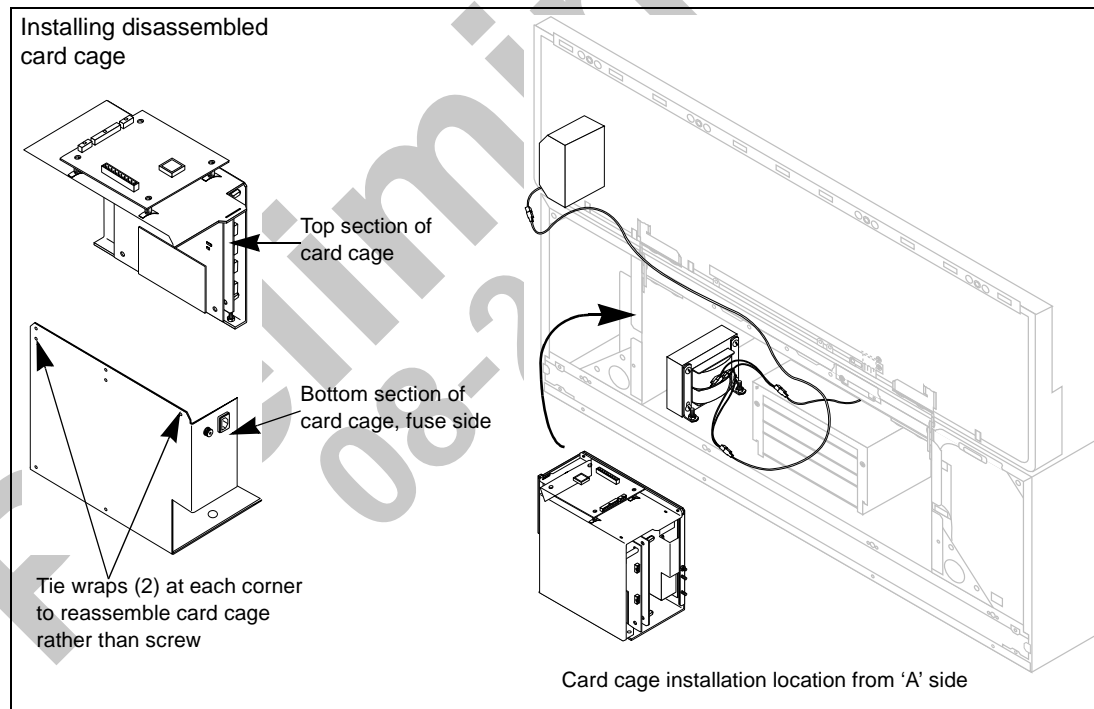
## Installing Card Cage Assembly

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, 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 all single-sided units, connect dummy load connector R20526-01 to JB on transmitter PCB. See "Card Cage Assembly T20606-G2" on page 62 for connection point.

- 6 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.*

- 7 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.

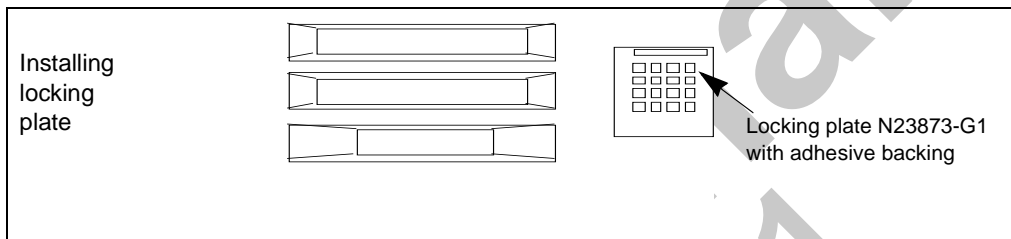
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## Installing TRIND Faceplate Assembly.

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. For 'B' side faceplates only, feed faceplate cables back into faceplate housing through round hole in shield to shorten cable leads.  
*Note: 'B' side cables have a shorter run to card cage than 'A' side.*
- 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 Peel paper backing off adhesive strip on rectangular locking plate N23873-G1 and install plate along top lip of manager keypad recess. This plate provides a bearing surface for lock cam on new TRIND faceplate.

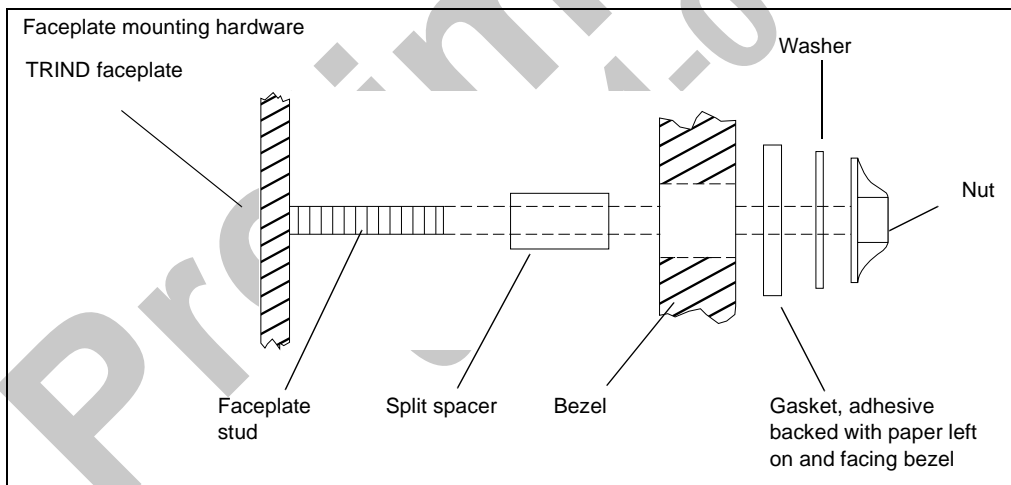


- 4 Feed ends of cables R20773-G2 through 3/4 inch hole on bezel door drilled in Step 3 of "Routing Cables into Main Cabinet" on page 43. Pull slack cable through hole.
- 5 Follow these directions to install new TRIND faceplate:
  - Feed top edge of faceplate in to groove on top of door.
  - Gently push bottom of faceplate in until faceplate drops into bottom groove.*Note: Faceplate may be tight fit. If needed, with faceplate forced up into top groove, firmly hit faceplate along bottom edge with palm of hand until faceplate is in bottom groove.*
  - Secure in place with keylock.
- 6 Refer to MDE-2620, Graphics Panel Application for instructions on installing graphics.

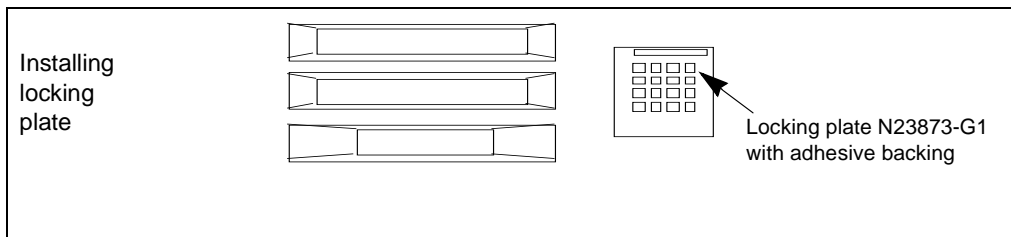
### For installing TRIND™ bolt-on (stud type) faceplates, do the following:

- 1 Remove new TRIND faceplate assembly from box. For 'B' side faceplates only, feed faceplate cables R20773-G2 back into faceplate housing through round hole in shield to shorten cable leads.  
*Note: 'B' side cables have a shorter run to card cage than 'A' side.*
- 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 and long cable R18163-G1, 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 cables R20773-G2 through 3/4" hole on door and pull slack cable through hole.
- 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 T17534-XX 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.

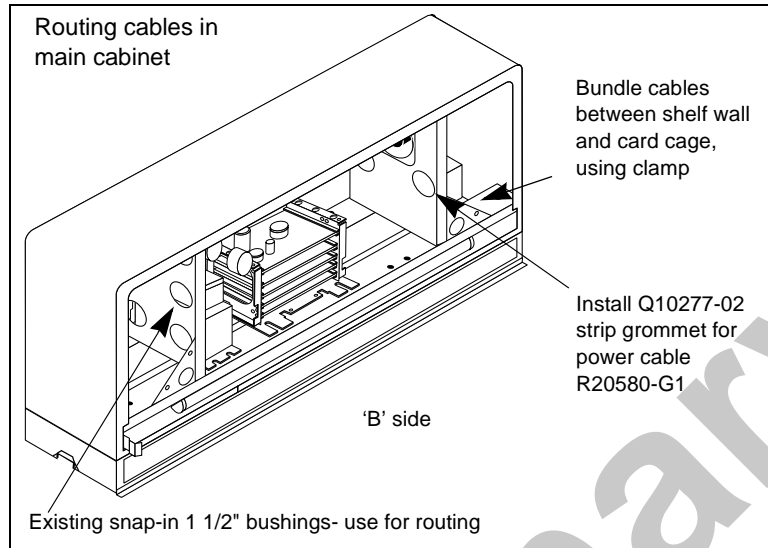


- 11 Peel paper backing off adhesive strip on rectangular locking plate N23873-G1 and install plate along top lip of manager keypad recess. This plate provides a bearing surface for lock cam on new TRIND faceplate.



## Routing Cables in Main Cabinet

Kit comes with ten cable clamps (Q13558-04).



Install strip grommet Q10277-02 in 1-1/2" hole for power cable R20850-01.

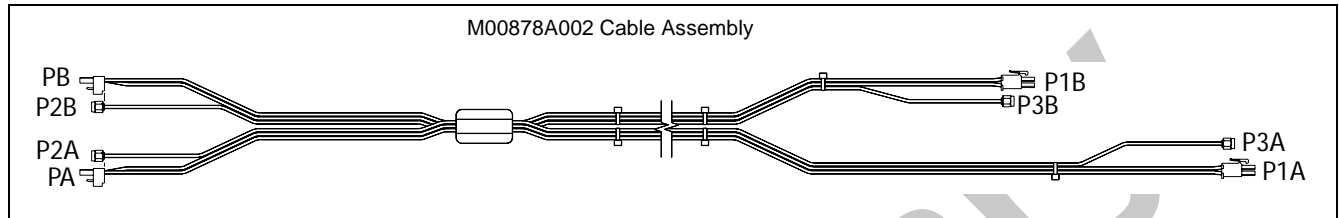
*Note: Route cables on 'B' side to card cage so that all cables are between card cage and shelf where possible, or door will not close without potential damage to cables or hardware.*



## Preparing Antenna Cable Connections

For all units, gain access to upper housing from underside, by removing upper housing bottom sheathing or VaporVac belly pan, as required. Refer to MDE-2531 Service Manual for instructions. Save all parts and hardware for reassembly. For

For additional information refer to “Cable Block Diagram R20762” on page 60 and “Cabinet Cable Connections” on page 61.



Do the following:

- 1 Locate previously installed P1A/B and P3A/B ends (4 total) of cables on cable harness M00878A002 in upper housing.
- 2 Be sure that all connectors can be identified for A and B sides, respectively.

### Upper Housing Connections

Do the following to connect M00878A002 cable harness assembly to antenna:

- 1 For A Side, inside upper housing:
  - Connect P1A on harness to J1 low frequency antenna cable.
  - Connect P3A on harness to J2 high frequency antenna cable.
- 2 For B Side, inside upper housing:
  - Connect P1B on harness to J1 low frequency antenna cable.
  - Connect P3B on harness to J2 high frequency antenna cable.
- 3 Use tie wraps supplied with kit to secure cables to frame in upper housing, away from maintenance access areas for piping and valves.

## Assembling Antenna Mounting Brackets

**CAUTION**

If power tools are used for assembly work must be done at least 20" from fuel island

Use saw horse, work bench or even packaging boxes as platform to assemble antenna related parts on a flat surface. Use packaging materials under parts to protect against dirt or scratches.

Assemble antenna and universal mounting brackets at ground level according to the following steps.

*Note: If power tools are used for assembly, work must be done at least 20' from fuel island.*

- 1 For assembly detail for 48" or 36" wide units, with or without light box, see Figures 6 (48") on page 50 or Figure 8 on page 51 for (36").

*Note: For single-sided units, antenna bracket T20211-03 does not have antenna mounting arms; it has straight lip that goes to unit side without antenna.*

Figure 8: Assembling universal and antenna brackets for The Advantage Series 48" (wide) frame units

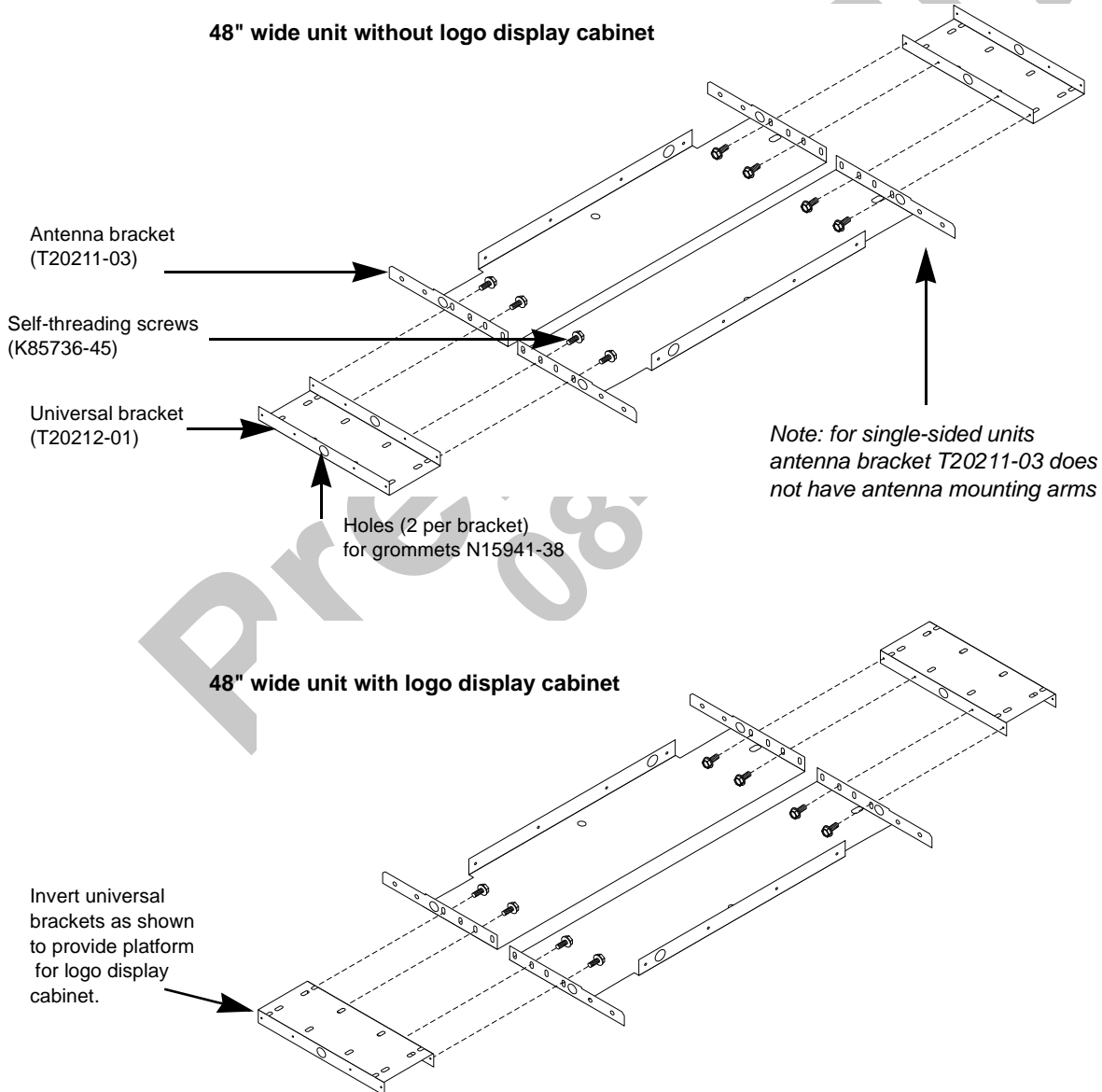
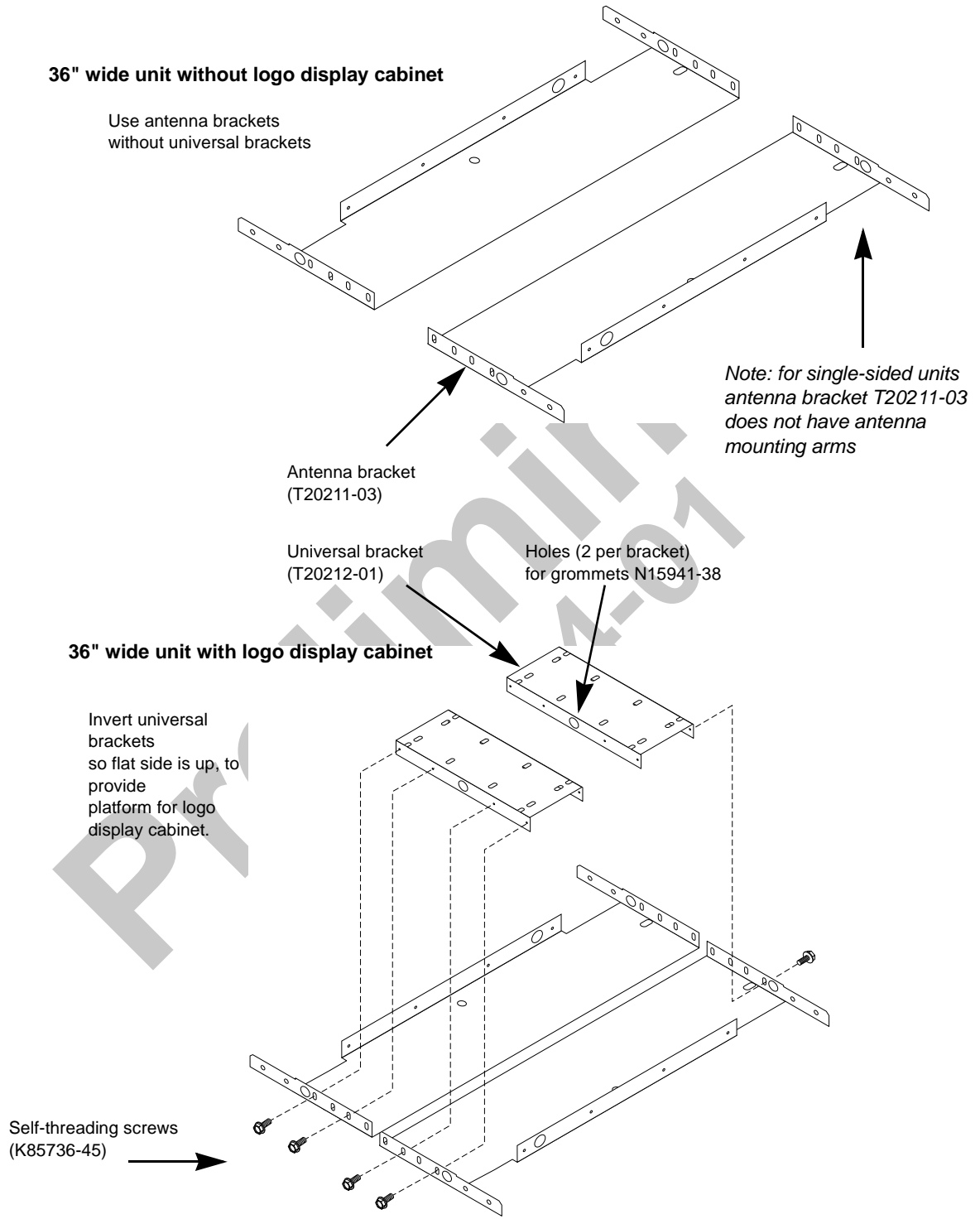
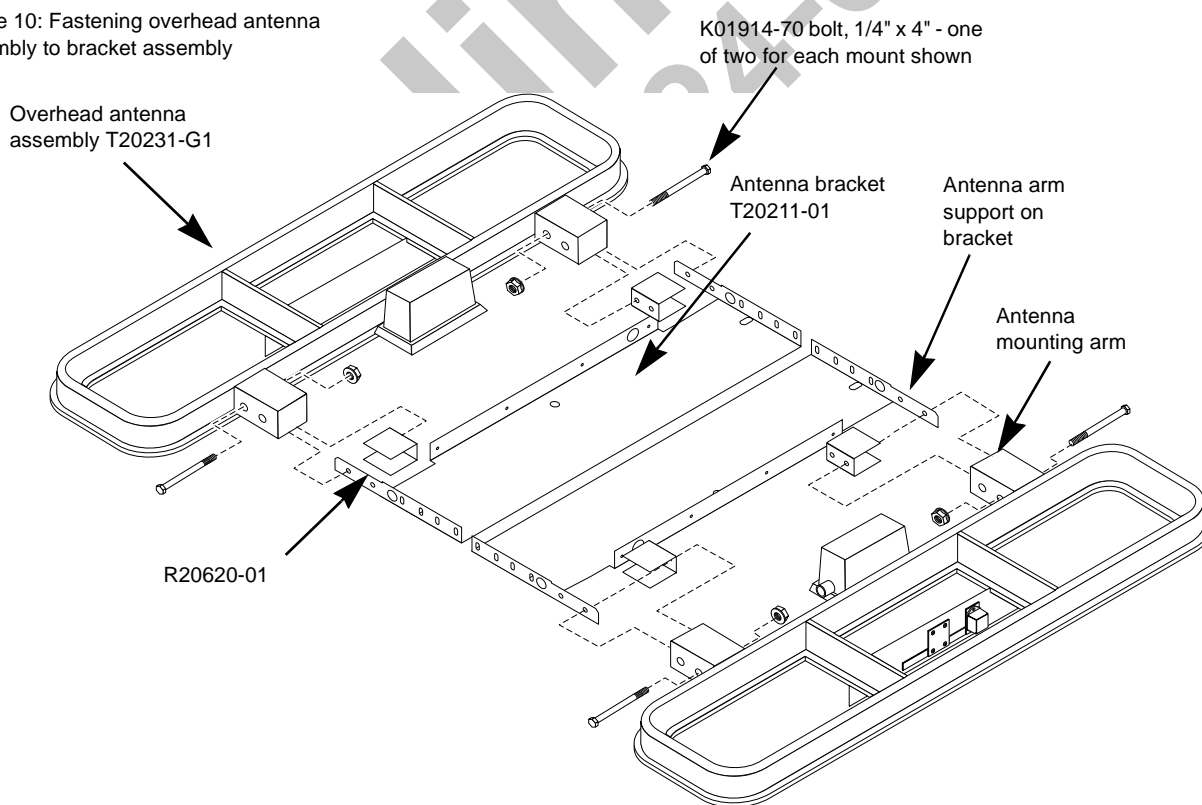


Figure 9: Assembling universal and antenna brackets for The Advantage Series 36" (narrow) frame units



- 2 For all installations requiring both antenna and universal brackets, fasten universal brackets to antenna brackets using self-threading screws (K85736-45) from antenna bracket side.
- 3 Install two round grommets (N15941-38) in two holes on only one universal bracket. See Figure 12 on page 55.
- 4 Lift complete bracket assembly and place on top of unit, aligning mounting holes with four tapped holes (3/8-16) on top of unit and keeping grommeted universal bracket to grommeted side of top cover.  
*Note: Use RTV sealant supplied with kit to seal both around base of all mounting holes and non-mounting holes where hardware must be reinstalled. Where holes are under or go through bracket assembly, apply sealant under assembly, between it and top cover for water seal.*
- 5 If unit does not have logo display cabinet, secure bracket assembly to unit using four bolts and washers removed with hoisting brackets and saved for reassembly in Step 1 of "Preparing For Installation" on page 22.
- 6 If unit does have logo display cabinet, loosely (hand tight) thread four pieces of threaded rod N23880-01 provided in ASC TRIND™ tool kit into four tapped holes to keep parts from slipping while logo display cabinet is re-installed.  
*Note: Threaded rods will keep antenna bracket assembly aligned properly as logo display cabinet is positioned.*
- 7 Position arms of antenna assembly T20231-G1 between matching arms on antenna brackets. See Figure 8.
- 8 Install two 4" bolts (K01914-70) and nuts (Q11890-08) on each two bolt antenna mount. See Figure 10.

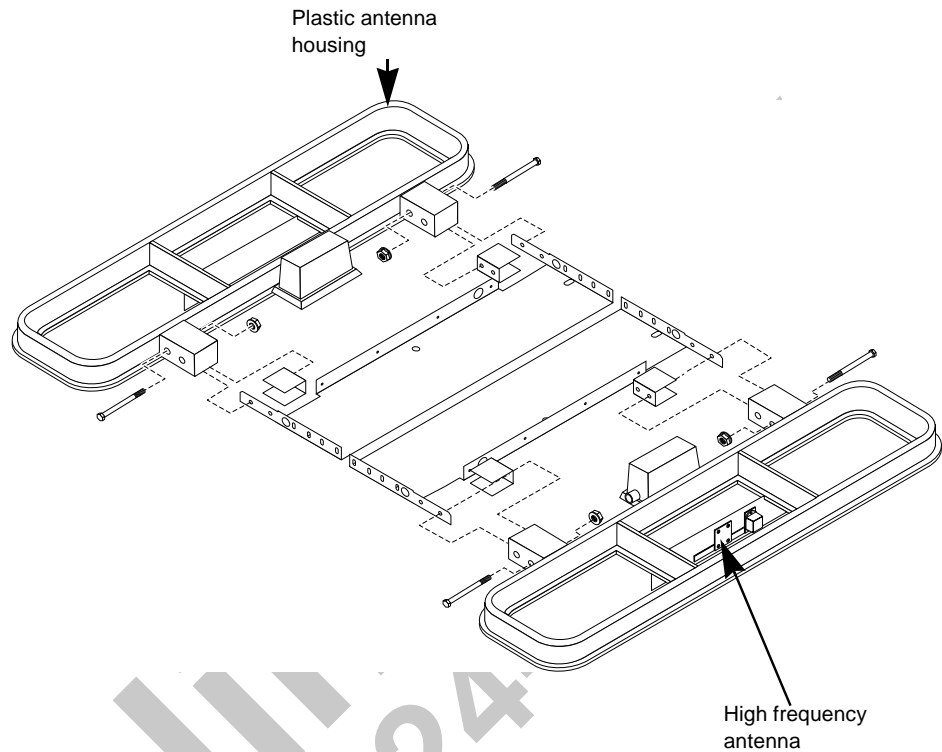
Figure 10: Fastening overhead antenna assembly to bracket assembly



## Mounting High Frequency Antenna

Mount high frequency antenna to plastic antenna housing from bottom according to the following steps.

Figure11:  
Installing high frequency antenna



- 1 Locate two pre-drilled holes in bottom of plastic antenna housing, and align high frequency antenna mounting bracket to holes, with cable fitting facing towards unit.
- 2 Secure in place with two screws provided with high frequency antenna.
- 3 Remove antenna connection box cover and save cover and screws for reassembly.

## Installing Transmitter Cables

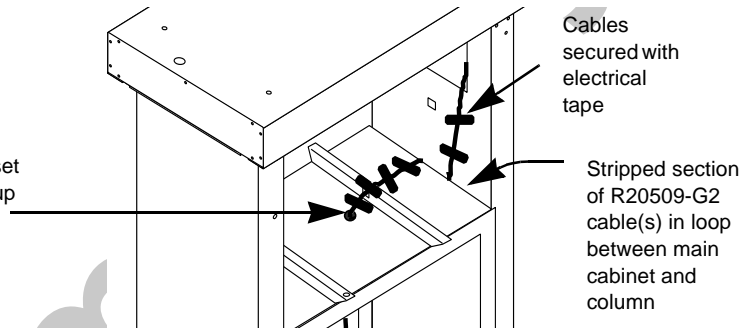
Before proceeding be sure to mark both ends of one of two R20509-G2 cables and one of two Q13578-01 cables to be identified as 'A' side. Electric tape, wire numbers or other suitable device may be used.

*Note: Sharp bends in antenna cables will cause damage. All cable turns must be in loops and gradual. Refer to "ASC TRIND Technology Update" on page 20.*

- 1 Feed two pin connector end of two R20509-G2 cables and black ends of two Q13578-01 cables up through bulkhead grommet in main cabinet.
- 2 Be sure that there is sufficient length (24") of all four cables to reach connection points on card cage. Cables must be routed through underside of card cage to connection points on 'B' side. See "Card Cage Assembly T20606-G2" on page 62 for connection points.
- 3 Lay cables flat across top of main cabinet, through gusset opening to column as shown in Figure 12.

Figure 12:  
Routing cables to  
main cabinet

Cables fed through gusset  
opening to column and up  
inside of column.

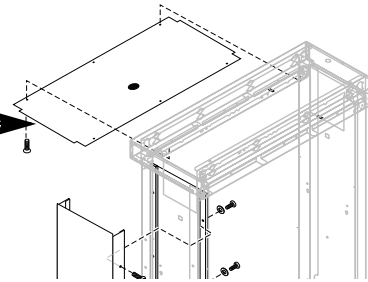


- 4 Locate points on R20509-G2 cables (39" from PA/B connector) where cables shield has been stripped for a space of between 1" and 2".  
*Note: There are two such points on each R20509-G2 cable, one at 21" and one at 39" from PA/B connector. Disregard the stripped point closest (21") to PA/B.*
- 5 Position stripped section of R20509-G2 cable(s) so it is approximately one inch clear of the top of main cabinet and main cabinet top cover when cover is replaced later.
- 6 Use tie wrap or electrical tape to loosely bind cables together at gusset opening.
- 7 Use electrical tape to secure cables flat to top of cabinet and in gusset opening. See Figure 12.
- 8 Route cables from top of main cabinet up along inside of column, keeping cables flat and parallel. See Figure 15 on page 55.
- 9 Loop cables 3" down into space between column and main cabinet and back up again to allow for reinstallation of inside sheathing. Be sure that stripped section of R20509-G2 cable(s) will be in the air between the main cabinet and column sheathing, and not under cabinet top cover or behind inner sheathing when replaced. See Figure 12.  
*Note: Turn in cables must be gradual, not sharp, to prevent damage to cables.*
- 10 Feed cables up through grommet in unit top cover and through grommets in universal bracket being sure that there is sufficient cable length to reach connection points in antenna connection box and on high frequency antenna assembly. See Figure 14 on page 55.

- 11** Without removing top sheathing, install piece of edge grommet Q10315-06) along edge of top sheathing where cables pass in column. See exploded view in Figure 13.  
*Note: Carefully check for any points where cables are run where cables may come in contact with sheet metal edges, and install edge grommet to prevent cable damage.*

Figure 13:  
Installing edge grommet

Edge grommet Q10315-06 to protect cables from metal edge of top sheathing



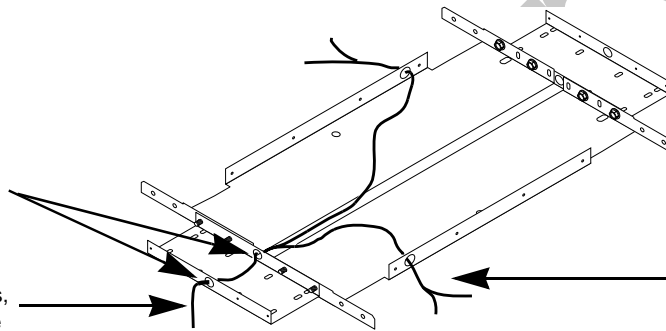
Exploded View:  
Do Not Remove Top Sheathing From Unit

- 12** Be sure that cables marked for 'A' side go to that side, and other pair to 'B' side.

Figure 14:  
Transmitter cable installation

Round grommets installed on universal brackets

Two each R20509-G2 and Q13578-01 cables, one each A and B side



One each R20509-G2 and Q13578-01 cable per side

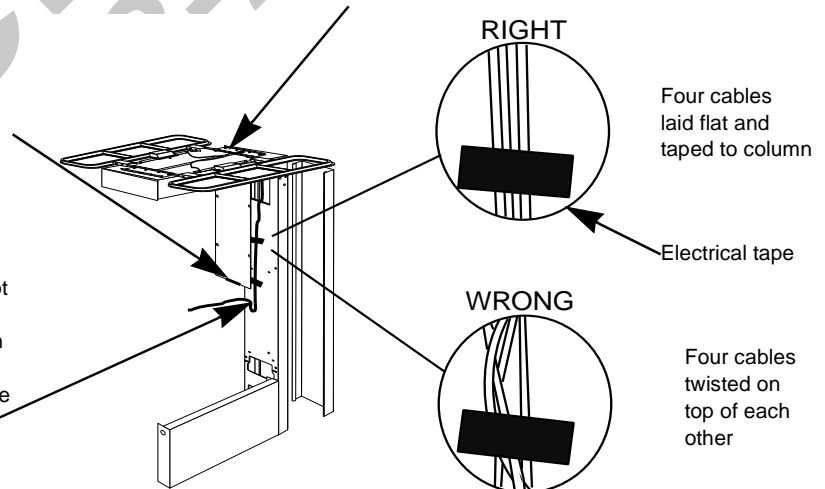
- 13** Lay cables flat and parallel to column and secure with electric tape as shown in Figure 15.

Figure 15:  
Cables on column shown without main cabinet

Strip grommet Q10315-06 on bottom edge of inner sheathing

Sufficient cable to make loop, not sharp turn, back up to top of main cabinet. Sharp bend will damage cables

Cables (4) fed through grommet to inside of column



Four cables laid flat and taped to column

Electrical tape

Four cables twisted on top of each other

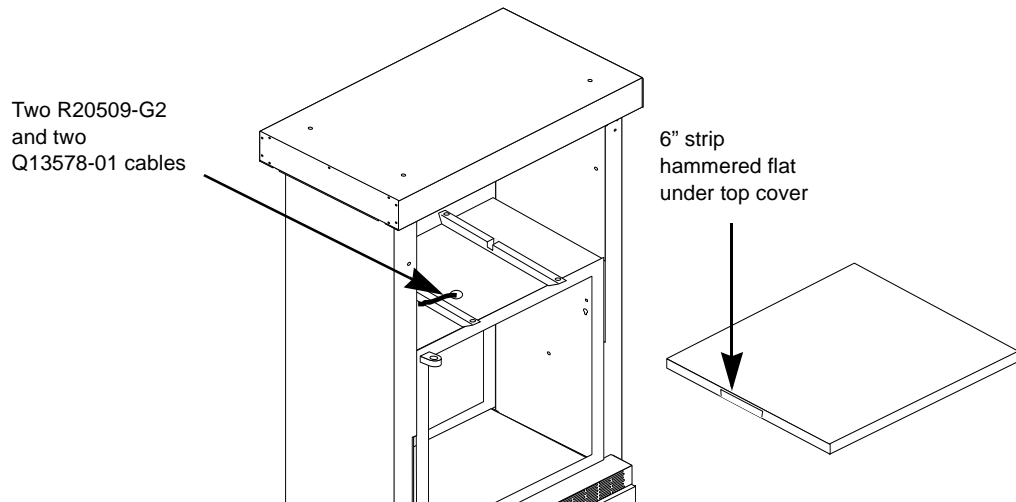
- 14** Install edge grommet Q10315-06 on bottom edge of inner sheathing (see Figure 15), and replace inner sheathing, using screws saved during disassembly.

*Note: Be sure that section of R20509-G2 cable with stripped shield is in the air between main cabinet and inner sheathing, not behind sheathing or on top of main cabinet.*

- 15 Use hacksaw to cut 3/8 inch slots in cabinet top cover to allow strip a minimum of 6" wide to be folded back with pliers and hammered flat as shown in Figure 16, to allow cables to pass under top cover to grommet.

*Note: Remove top cover from work area to cut slot. Do not cut metal in proximity to dispensers. Place top cover on cardboard while hammering to prevent damage to paint.*

Figure 16:  
Slotting top cover



- 16 Clean edges and burrs around cuts in cover with file or deburring tool.
- 17 Thoroughly seal spaces around and between cables in main cabinet bulkhead grommet with RTV sealant supplied with kit.  
*Note: Place some packaging plastic inside bulkhead grommet from top to prevent sealant from running out bottom when applied.*
- 18 For units with top cover end plates, replace end plate using nine screws removed and saved with plate.

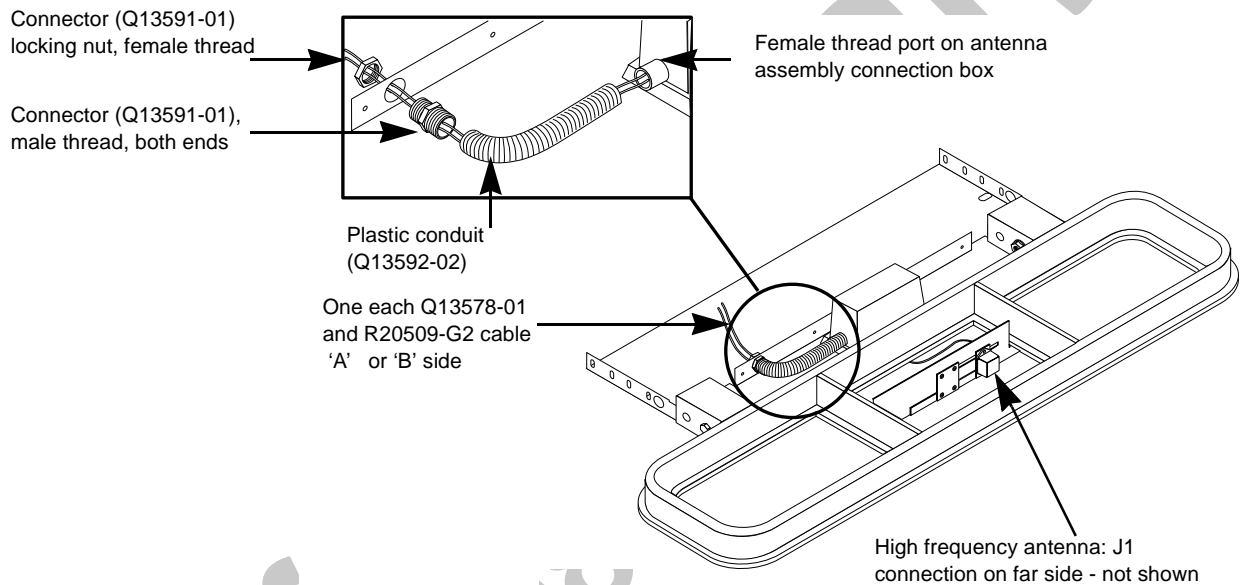


## Installing Cables to Overhead Antennas

Cables should be separated into pairs for 'A' and 'B' side as instructed in 'Installing Transmitter Cables' on page 32.

- 1 Pull 'A' or 'B' side cables, one each R20509-G2 and Q13578-01, back through hole on antenna bracket T20211-01 onto top of unit.
- 2 Thread one end of plastic conduit Q13592-02 onto large threaded end of connector Q13591-01 until plastic conduit bottoms out. See Figure 17.
- 3 Discarding ferrule, feed pair of cables through female thread locking nut of Q13591-01 connector from non-threading side, and through hole on antenna bracket. Push other end of plastic conduit over female thread port on connection box.

Figure 17: Antenna assembly and antenna cables seen from above



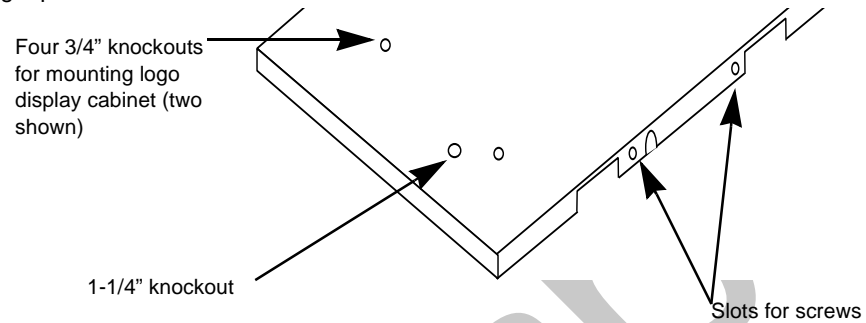
- 4 Feed cables through Q13591-01 connector and plastic conduit into antenna connection box.  
*Note: Feed sufficient length of Q13578-01 cable to exit antenna connection box and reach connector J1 on high frequency antenna.*
- 5 Push small male thread side of connector through hole in antenna bracket, and secure connector with connector nut from other side of bracket (ferrule not needed).  
*Note: Be sure that flats of hex connector Q13591-01 are straight up and down on sides, or top cover will not fit over at installation.*
- 6 If using brass connector Q13591-01, cover exposed brass with black vinyl electric tape.
- 7 In antenna assembly connection box, connect P1 on cable R20509-G2 to J1 on low frequency antenna board.
- 8 Allow co-ax cable Q13578-01 to exit antenna connection box through box cover opening, and connect P1 on co-ax cable to J1 on high frequency antenna using co-axial cable tool Q13628-01 found in the ASC TRIND tool kit. Do not overtighten co-axial cable.  
*Note: Do not replace connection box cover at this time.*

## Installing Top Cover

### For units with logo display cabinet

- 1 Remove four 3/4 inch knockouts from top cover T20213-01 for wide frames or T20215-01 for narrow frames.

Figure 18:  
Installing top cover



- 2 Remove 1-1/4 inch knockout from one side of top cover for logo display wiring and use RTV sealant to seal around underside of unused knockout.
- 3 Reinstall locking nut first and then washer removed from lighting conduit in Step 3 of “Removing Mobil Logo Display Cabinet” on page 21.
- 4 Use straight edge set across bracket assembly to set nut and washer to be flush with top cover underside when top cover is installed over bracket assembly.  
*Note: Installing contractor must provide as needed any additional fittings to provide connection to logo display box in accordance with NFPA 70, The National Electric Code.*
- 5 Place top cover on threaded rods N23880-01 holding antenna bracket assembly, being careful not to bend top cover at weak points.
- 6 With top cover resting on threaded rods, feed logo display wires up through 1-1/4 inch knockout.
- 7 Lower top cover over threaded rods until it rests on antenna bracket assembly and wires and rods protrude out from top cover.
- 8 Secure top cover to mounting bracket assembly using four black sheet metal screws (K85736-45) through two slots on each long side of top cover.

### For units without logo display cabinet

- 1 Use RTV sealant to seal around underside of unused knockouts.
- 2 Carefully place top cover over antenna and bracket assembly.
- 3 Secure top cover to mounting bracket assembly with four black sheet metal screws (K85736-45) through two slots on each long side of top cover.

## Routing Cables

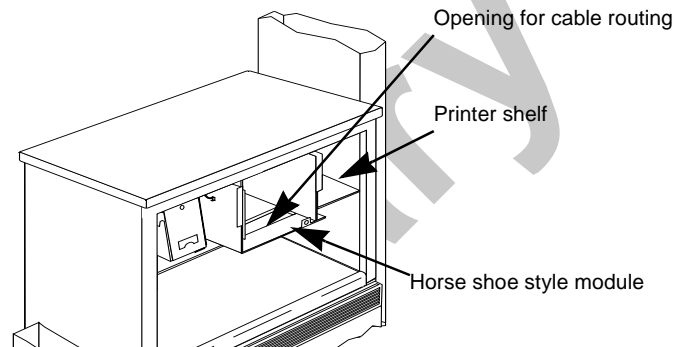
Retrofit kit comes with twenty (20) cable clamps, four large (Q13558-06) and sixteen small (Q13558-08). Number required for proper installation varies with units. Large clamps are for use with power cable R20580-G1.

**Note these variations for routing cable to card cage:**

### Horse Shoe style CRIND™

For these units, utilize opening in printer shelf bottom for routing.

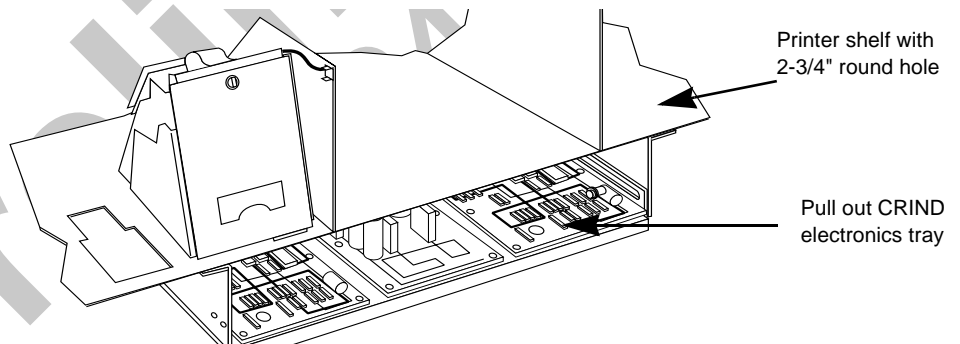
Figure 19:  
Horse Shoe style  
CRIND



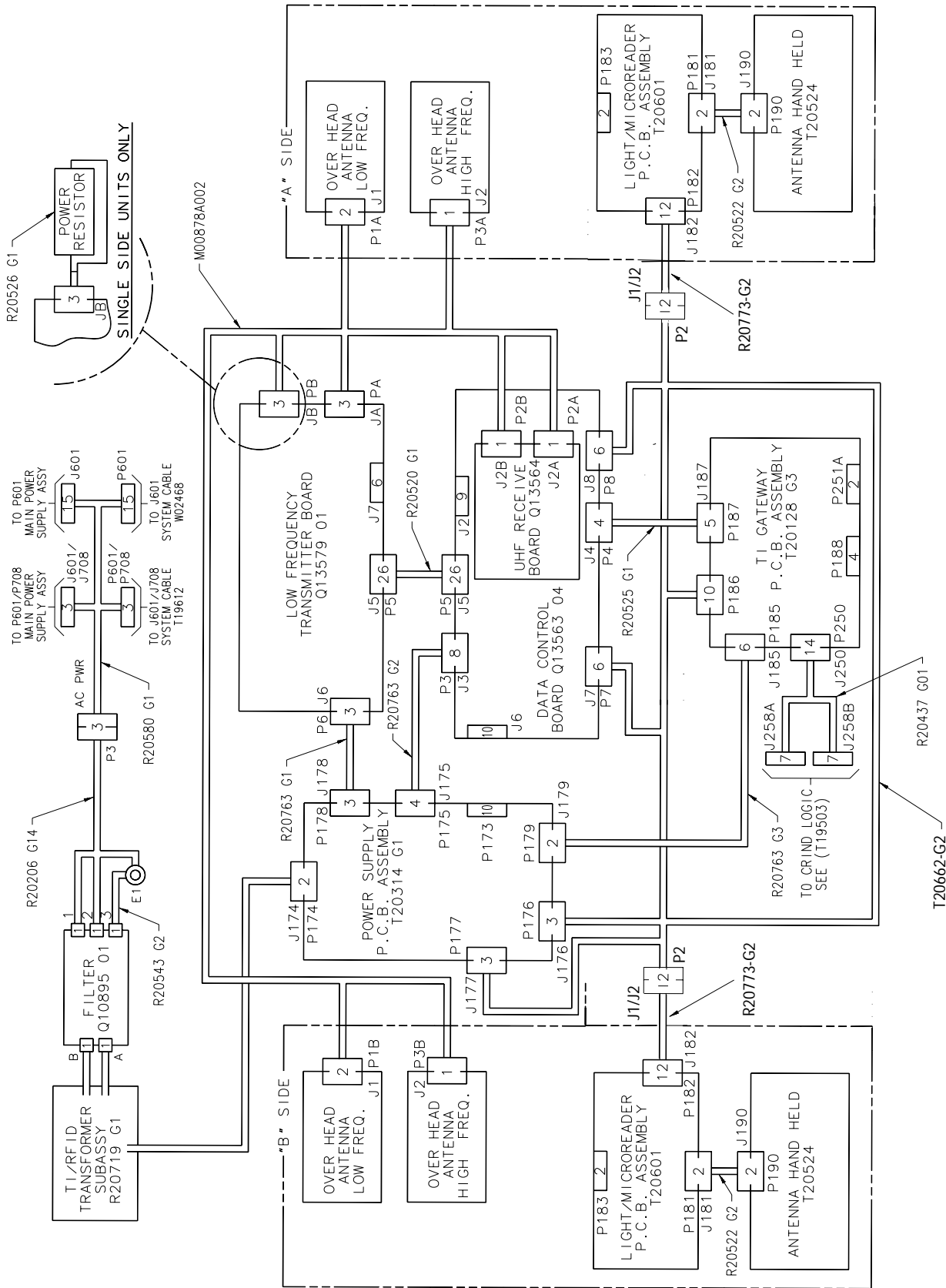
### Pull Out CRIND Tray

For these units utilize round 2-3/4 inch hole in printer shelf bottom, used for printer cable. Use cable clamps to secure cables to underside of printer shelf.

Figure 20:  
Pull Out  
CRIND Tray



# Cable Block Diagram R20762



## Cabinet Cable Connections

For illustration of card cage assembly, see “Card Cage Assembly T20606-G2” on page 62.

*Note: For all single-sided units, install dummy load connector R20526-01 on JB on transmitter PCB and skip all ‘B’ side connections. If power is applied to card cage without antenna cables or dummy load connected the transmitter board will be damaged.*

Cable harness T20662-G2 is shipped with card cage connections made. Make the following connections to the cable harness connectors:

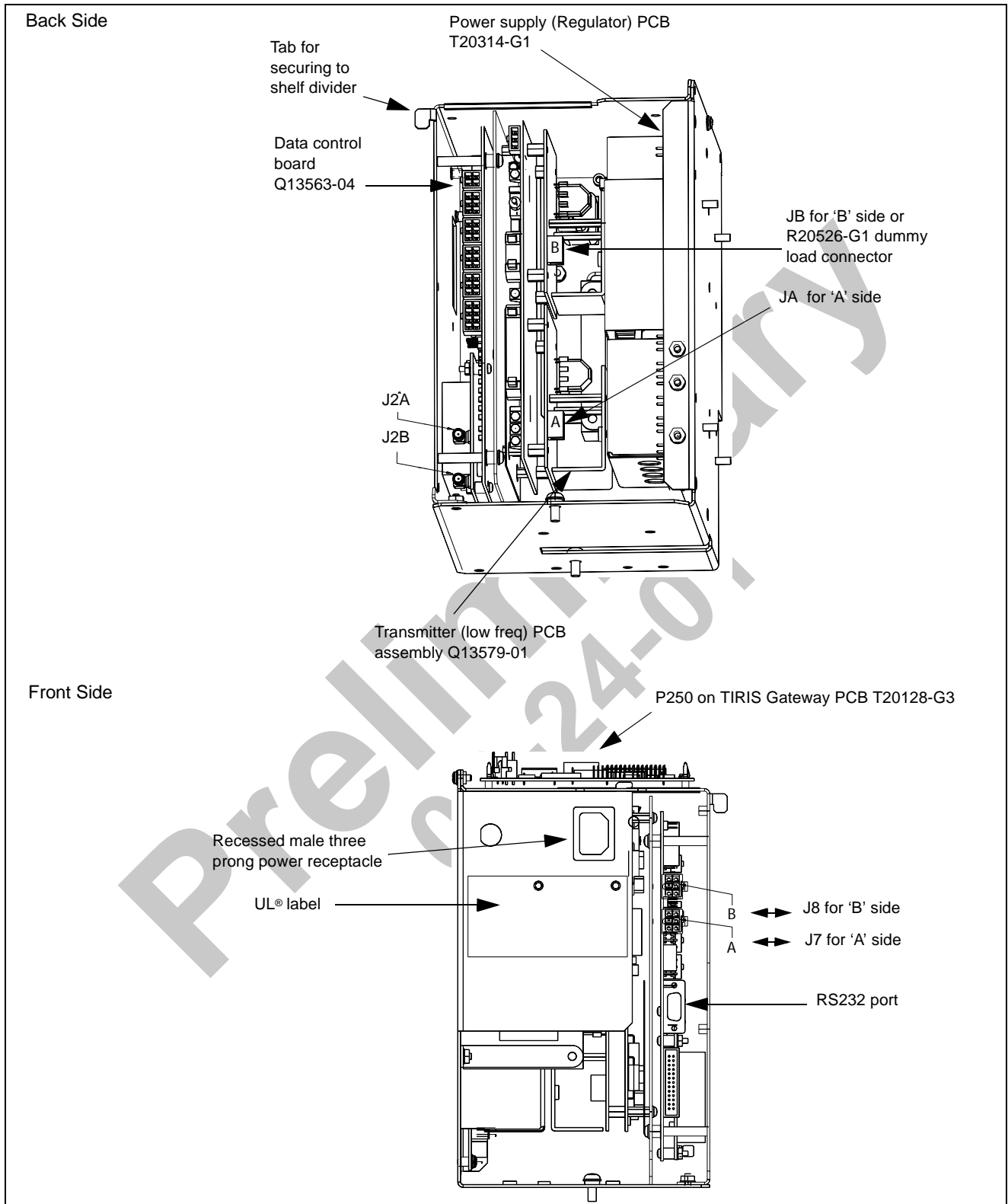
Side	Connector	On Installed Cable	to Connector on Card Cage Harness
A	J1	A Side R20773-G2	P1
B	J2	B Side R20773-G2	P2
Notes: Cable R20773-G2 comes already installed in MPD-3 faceplate assembly.			

Card Cage Connections:

*Note: For illustration refer to “Card Cage Assembly T20606-G2” on page 62.*

Side	Connector	On Installed Cable	to Connector on...
A	PA	M00878A001	JA on Card Cage
	P2A		J2A on Card Cage
B	PB	M00878A001	JB on Card Cage
	P2B		J2B on Card Cage
A&B	J250	R20437-G01	P250 on Card Cage
A	J258A		P258A on CRIND Logic Board A Side
B	J258B		P258B on CRIND Logic Board B Side

## Card Cage Assembly T20606-G2

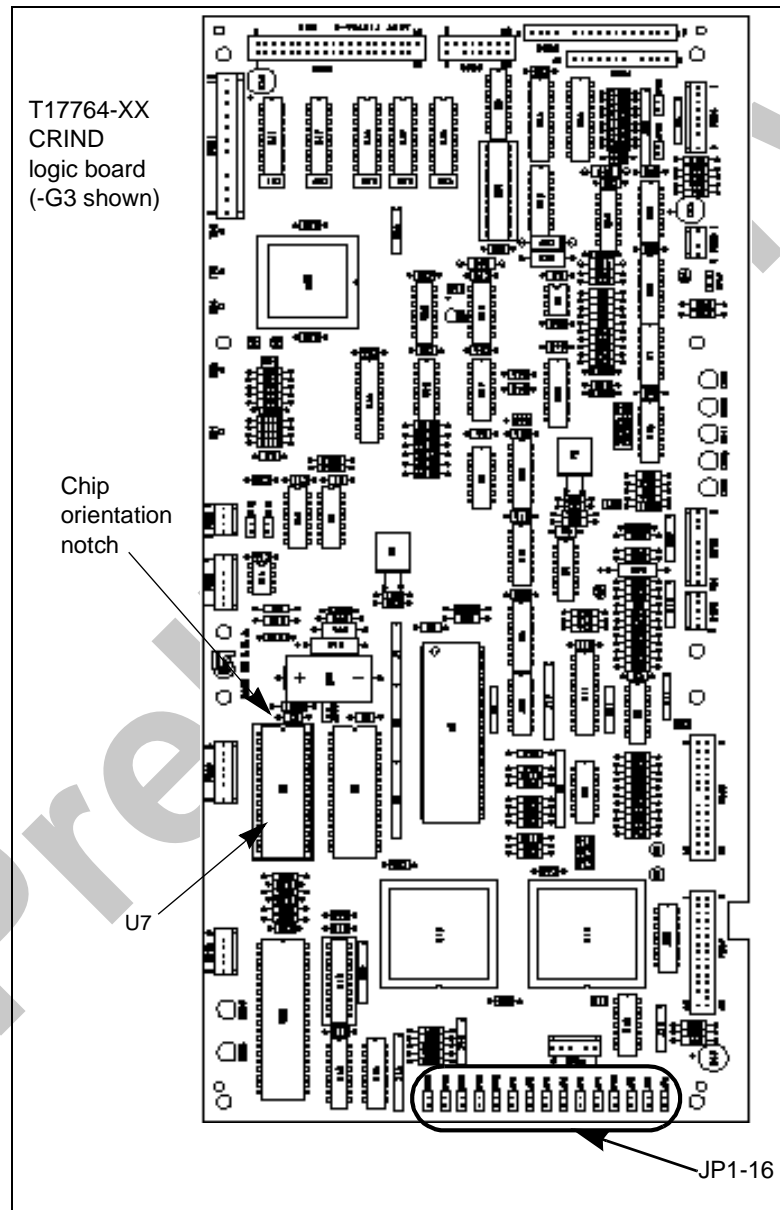


# CRIND® BIOS TRIND™ TIRIS Upgrade

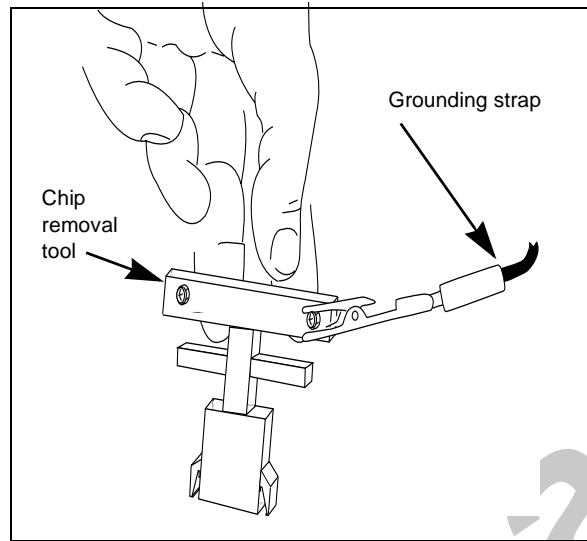
Units must have current Z-180 CRIND logic board.

Install the CRIND Bios TRIND software K93744-01, 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 K93744-01 (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 device 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 stand-alone 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 device must match address on CRIND® logic board. Follow these steps:

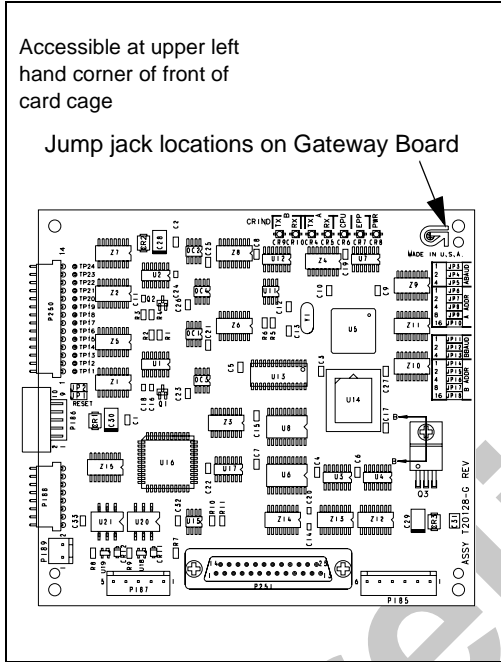
- 1 Access unit's CRIND logic board. Refer to MDE-2562 CRIND Service Manual.
- 2 Locate jump jacks on A and B side CRIND logic boards T17764-XX.
- 3 Note position of jump jacks and set jump jacks on Gateway board T20128-G3 to match address on CRIND logic boards for both A and B sides.

### MOC and Generic CRIND Addresses

Address On CRIND Logic Board T17764-XX	JP8	JP7	JP6	JP5	JP4
= Address on Gateway Board T20128 'A' Side	JP1	JP2	JP4	JP8	JP16
= Address on Gateway Board T20128 'B' Side	JP1	JP2	JP4	JP8	JP16

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 Cladding Cap

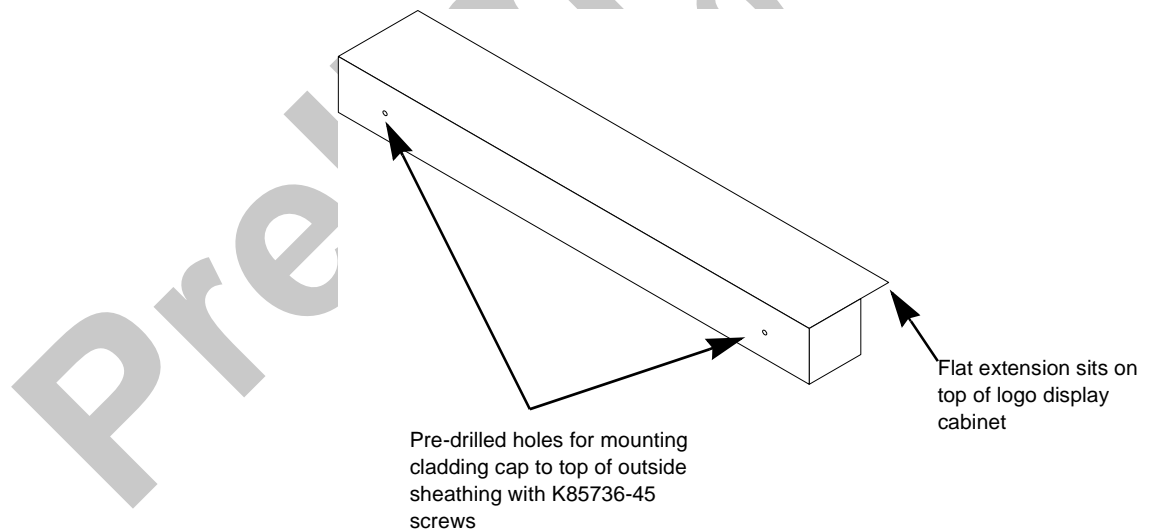


Cladding caps R20554-01 (quantity of 2) are used to fill the gap between the side cladding and logo display cabinet resulting from raising cabinet during the TRIND™ retrofit.

Perform the following steps to install each cladding cap.

- 1 Replace outside sheathing with side cladding still attached, using only as many screws as necessary to hold in place temporarily.
- 2 Fit cladding cap R20554-01 over top of side cladding with flat piece extended on to top of logo display cabinet. Cladding cap will extend below top edge of side cladding.
- 3 Using center punch and hammer, mark two mounting holes (per unit side) on side cladding through two existing holes in cladding cap.
- 4 Remove outside sheathing and attached side cladding from unit, and take to a non-hazardous location away from the fuel island.
- 5 Drill holes at the points marked by the center punch for self-threading screws K85736-45.
- 6 Re-install the outside sheathing with side cladding attached using all screws removed during disassembly.

Figure 20: Installing cladding cap



- 7 Attach cladding cap to side cladding using K85736-45 self threading black screws.
- 8 Proceed to "CRIND® BIOS TRIND™ TIRIS Upgrade" on page 63.

## Preparation for Tuning Antennas

Antenna tuning requires use of field strength sensor Q13626-01 supplied with ASC tool kit.

- 1 For units without G-Site™ put unit in ‘Stand Alone’ mode by disconnecting J4 on the DCB board and placing jumper on light microreader board at JP3.

*Note: JP3 and J4 can never both be in or both out. One and only one must always be in, the other out.*

- 2 Restore power to unit(s) and cold start the CRIND. Refer to MDE-2562, CRIND Service Manual for detailed instructions.

*Note: Be sure transmitter cables are connected before restoring power.*

- 3 Once the CRIND display indicates unit is downloading, remove the Cold Start jump jack.

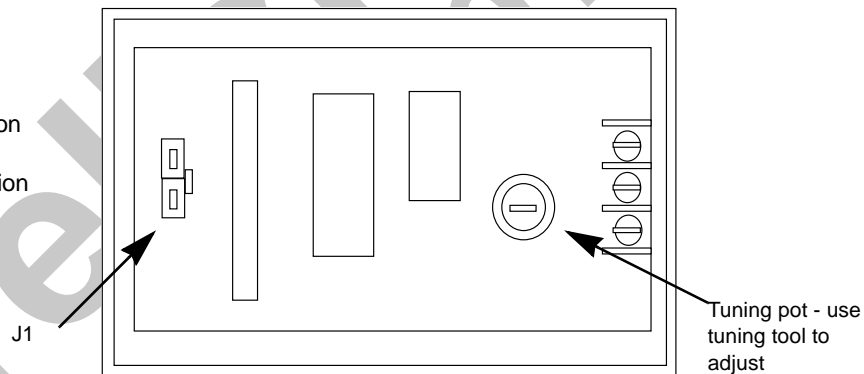
## Tuning Antennas

- 1 Locate tuning pot on printed circuit board in over-head antenna connection box. Pot has slot for tuning tool. See Figure 20.

- 2 Tuning pot in ‘A’ side over head antenna connection box should be turned out 5 to 6 turns.

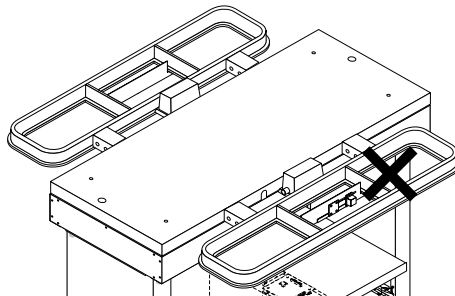
*Note: Use tuning tool Q13631-01 from the ASC TRIND tool kit to make pot adjustments. Refer to MDE-3640 ASC TRIND Tool Kit for instructions.*

Figure 21:  
Tuning pot location  
in overhead  
antenna connection  
box



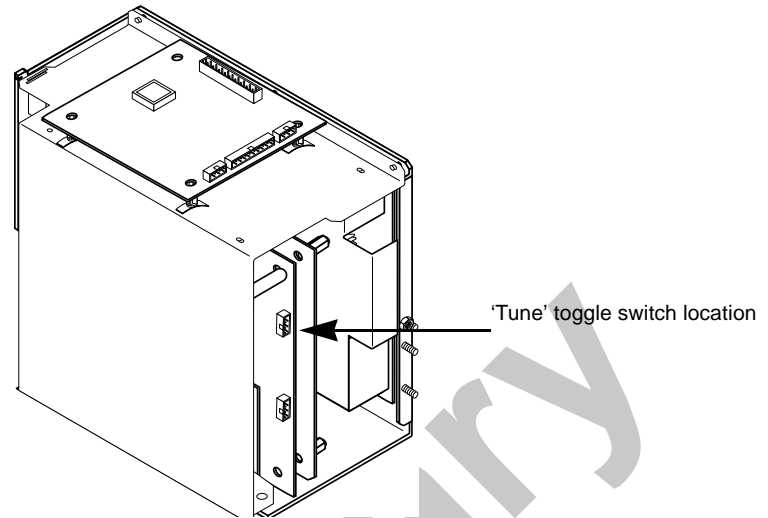
- 3 Place field strength sensor in position shown on ‘A’ side plastic antenna housing, to right of connection box and on top of plastic antenna housing. See Figure 22.

Figure 22:  
Position field  
strength sensor  
Q13626-01



- 4 On card cage, move three position 'tune' toggle switch from center position to 'A'. See Figure 23.

Figure 23:  
Tune toggle  
switch



- 5 Connect leads on multi-meter set to DC voltage to field strength sensor.
- 6 By fine adjustments to tuning pot, set to highest DC voltage reading.  
*Note: Voltage will peak at a point, and then decrease with turns in either direction. Set at peak.*
- 7 On antenna connection box top cover, cut cover gasket over groove cut in cover.
- 8 Reinstall cover with screws supplied allowing antenna cable Q13578-01 to pass out of box through groove.
- 9 Repeat Steps 1 through 8 for 'B' side and then return tune toggle switch to center position.

## Testing TRIND

Perform the following procedures to test the TRIND.

- 1 Place the unit in the stand alone mode or ensure that the unit is operating with a G-SITE.
- 2 From 'A' side of unit touch hand held test tag (Q13630-02 from the ACS TRIND tool kit) to TRIND target graphic. Door or faceplate TRIND indicator will light.  
*Note: If indicator fails to light check whether light on other side is on; if so it indicates a crossing of 'A' and 'B' side cables. Check connections.*
- 3 From 'A' side of unit hold car mount test tag (Q13630-01 from the ASC TRIND tool kit) in front of unit, at a distance of approximately 6 feet from overhead antenna. Door or faceplate TRIND indicator will light.
- 4 Repeat Steps 1 through 3 for 'B' side.

## Alternative Testing Using Laptop

- 1 Connect laptop to RS232 port on DCB.
- 2 Go to:
  - Windows program
  - Accessories
  - Terminal
  - Settings
  - Communications
- 3 Set for:
  - 9600 baud
  - 8 bit
  - No parity
  - Comm 1
- 4 Then go to:
  - Help screen
  - Antenna scan
  - Choose 1, 2, 3 and 4

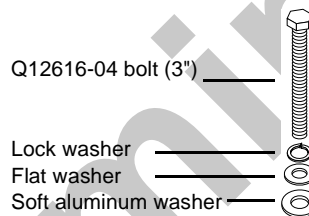
*Note: This will test both antennas*
- 5 From 'A' side of unit touch hand held test tag (Q13630-02 from the ACS TRIND tool kit) to front of TRIND target graphic. Door or faceplate TRIND indicator will light.
- 6 From 'A' side of unit hold car mount test tag (Q13630-01 from the ASC TRIND tool kit) in front of unit, at a distance of approximately 6 feet from overhead antenna. Door or faceplate TRIND indicator will light.
- 7 Repeat Steps 5 and 6 for 'B' side.

## Re-installing Logo Display Cabinet

*Note: Logo display cabinet weighs approximately 75 lbs. Two people are required to perform steps 1 through 3.*

- 1 Carefully lift and place logo display cabinet on top of unit so that it rests on the four threaded rods N23880-01.
- 2 With logo display cabinet carefully held in place, feed lighting wires on top cover up into cabinet.
- 3 With wires fed into cabinet, carefully lower cabinet over threaded rods and conduit nipple until cabinet rests securely on top cover, taking care that wires are not crushed by cabinet.
- 4 Remove two threaded rods from opposite corners.
- 5 Secure logo display cabinet to unit top using two of four Q12617-04 bolts, 3" long, and lock washers, flat washers and soft aluminum washers removed in Step 5 of 'Removing Mobil Logo Display Cabinet' on page 22, through two mounting holes without threaded rods.

Figure 24: Logo display cabinet hardware



- 6 With logo display secured, remove remaining two threaded rods and replace with remaining two Q12617-04 bolts, soft aluminum washers, flat washers and lock washers. Keep threaded rods for other installations.

*Note: Return threaded rods N23880-01 to the ASC TRIND tool kit to be used for future installations.*

- 7 Install washer first and then locking nut on to conduit nipple extending into logo display cabinet, and tighten.
 

*Note: Install contractor supplied fittings (washers, locking nuts, conduit connectors, etc.) as needed on conduit nipple to provide electrical connection to logo display box in accordance with NFPA 70, The National Electric Code. Washers and locking rings must firmly secure metal to metal surfaces of top cover and logo display cabinet at conduit.*
- 8 From inside of logo display cabinet seal four unused slots (1/2 inch x 5/8 inch) with RTV. (Slots were for cladding to display cabinet fasteners.)
- 9 Reconnect wires disconnected in Step 2 of 'Removing Mobil Logo Display Cabinet' on page 21.
- 10 Reinstall logo display faceplates, re-using the six screws per side removed in Step 1 of 'Removing Mobil Logo Display Cabinet' on page 21.

## Completing Installation

After all testing has been completed, do the following:

- 1 Shut off all power to the unit.
- 2 Replace or refasten all components and hardware, including:
  - Replace all sheathing and/or pans removed.
- 3 Close all secure all doors.
- 4 Clean up work site, removing all materials to be discarded and all tools.
- 5 Reapply power and Cold Start the unit.

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*Exxon® is a registered trademark of the Exxon Corporation.*

*Mobil® is a registered trademark of the Mobil Oil Company.*

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