

Installation

Purpose

This manual provides instructions for installing K96593-01 Printer Replacement Kit in The Advantage® Series, MPD®-3 Series, External CRIND® or G-CAT™4, and PIC. This kit contains the T20414-G1 printer assembly and replaces the T18188 printer as a spare part. The T20414-G1 printer is smaller, prints faster, is more reliable and is upgradable for future enhancements. T20414-G1 and T18188 CRIND printers are interchangeable with minor differences in installation.

Additional Required Parts

Do not begin this installation unless all required parts are on hand. This includes:

- K93713-01 tear bar cutter kit to replace Hecon 24VDC electric cutter, if present.

Note: *T20414-G1 CRIND printer is not compatible with 24VDC electric cutter.*

- MPD-3 units manufactured before November, 1992 **may** contain printer cables with discrete wire connectors to printer controller board, rather than J727 D-sub metal connector. **If unit does not have D-sub connector, printer cable must be replaced** with one (per side) of the following cables:

Part Number	Use with:
W02851-G2	printer left, side A
W02852-G2	printer left, side B
W02853-G2	printer right, side A
W02854-G2	printer right, side B

Related Documents

MDE-2531	Pump & Dispenser Start-Up and Service Manual
MDE-2562	CRIND Service Manual
MDE-2679	CRIND Manual Receipt Chute Kit
PT-1736	CRIND Parts Manual

Recommended Tools

- screwdriver, standard and Phillips
- socket set, US

Parts List

Order one kit per printer to replace.

Part Number	Description	Quantity
N20649-G2	anti-static brush and speaker cover	1
N23140-01	decals, arrow	1
N23219-02	decals, paper loading instructions	1
N23923-01	label, paper loading	1
N23928-01	decals, printer cable	1
Q11677-24	screw	1
Q12068-01	nut	1
Q12083-03	screw	1
R20651-G1	cable, printer	1
T20414-G1	printer assembly	1

Safety Information



Alert Symbol

This is a standard alert symbol. When you see this symbol, along with the following hazard warnings and symbols, be alert to the potential for personal injury or damage to equipment.

Safety Precautions

 WARNING
The hazard or unsafe practice may result in severe injury or death.

 CAUTION
The hazard or unsafe practice could result in minor injury or damage to equipment.

 DANGER
The hazard or unsafe practice will result in severe injury or death.



Electrocution Danger

Working on dispenser electronics without turning off power can lead to electrocution.



Know Location of Emergency Power Cutoff

NFPA-30A, Section 4-1.2, requires the installation of an easily accessible switch to shut off the power to all dispensing devices in the event of an emergency. Know the location of this switch before you begin work.



No Smoking

Sparks and embers from burning cigarettes or pipes can ignite fuels and their vapors.



No Open Flames

Open flames from matches, lighters, welding torches, etc. can ignite fuels and their vapors.



No Power Tools

Sparks from power tools (such as drills) can ignite fuels and their vapors.



No Vehicles In The Area

Moving vehicles in the area during service can create a potential for personal injury to you or others. Sparks from starting vehicles can ignite fuels and their vapors.



No People In The Area

Unauthorized people in the area during service can create a potential for personal injury.



Turn Power Off

Live power to a dispensing device creates a potential shock hazard. Always turn power off to the dispensing device and associated STPs when servicing the unit.



Use Safety Barricades

Unauthorized people or vehicles in the work area are dangerous. Always use safety cones or barricades, safety tape and your vehicle to block the work area.



Wear Eye Protection

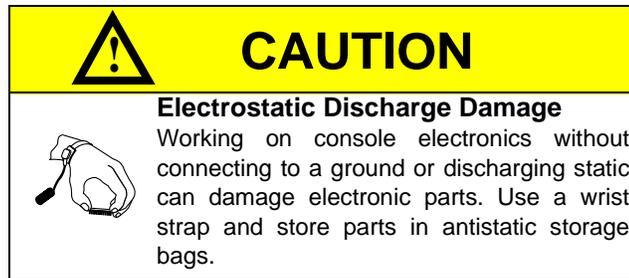
Spraying fuel from residual pressure in the lines can cause serious eye injuries. Always wear eye protection.



Wear Protective Gloves

Sharp edges on sheet metal can cause serious cuts. Wear protective gloves.

Use Electrostatic Discharge Precautions



Read NFPA 30A and NFPA 70

Before servicing equipment, read, understand and be prepared to follow applicable information in the following codes:

- The National Electric Code (NFPA 70)
- The Automotive and Marine Service Code (NFPA 30A)
- Any national, state and local codes that may apply

Failure to service equipment in accordance with NFPA 30A and NFPA 70 may adversely affect the safe use and operation of the system.



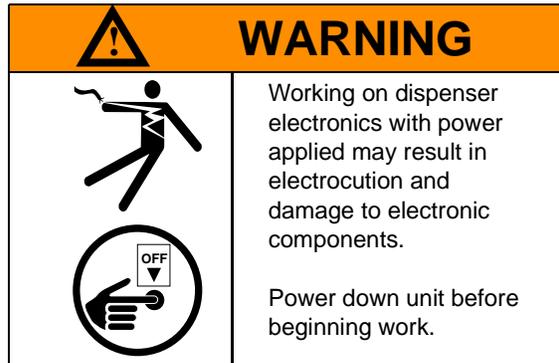
Read All Related Manuals

Knowledge of all related procedures before you begin work is important. Read and understand all manuals thoroughly. If you do not understand a procedure, ask someone who does.

Installation

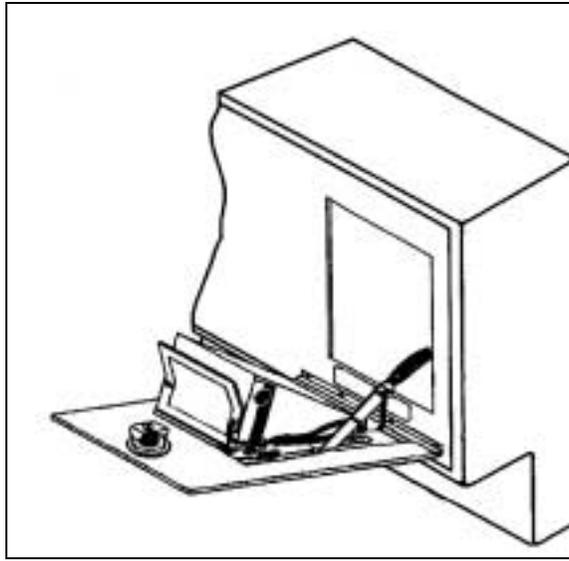
Installing Printer in The Advantage® Series Unit

Preparing Unit



- 1 Read all instructions before beginning.
- 2 Follow all [Safety Precautions](#).
- 3 Record all mechanical and electronic totals.
- 4 Turn off all power to unit, unit lights and STPs.
 - Use system circuit breakers.
 - Multiple disconnects may be required.
 - Isolate each pump at distribution box.
 - Refer to MDE-2531, Pump and Dispenser Start-up and Service for OSHA lock-out/tag-out procedures.
- 5 When system battery is present, turn off system battery by pressing CLEAR then ENTER on manager keypad.

Replacing Electric Cutter



Note: T20414-G1 CRIND printer will not work with 24VDC electric cutter.

- 1 Remove connectors (if present) from P563 and P566 on the CRIND regulator board.

Note: P563 and P566 support the 24VDC electric cutter, which is obsolete.

- 2 If electric cutter is present, replace with K93713-01 tear bar cutter kit.

Note: MDE-2679, included with K93713-01 kit, provides complete instructions.

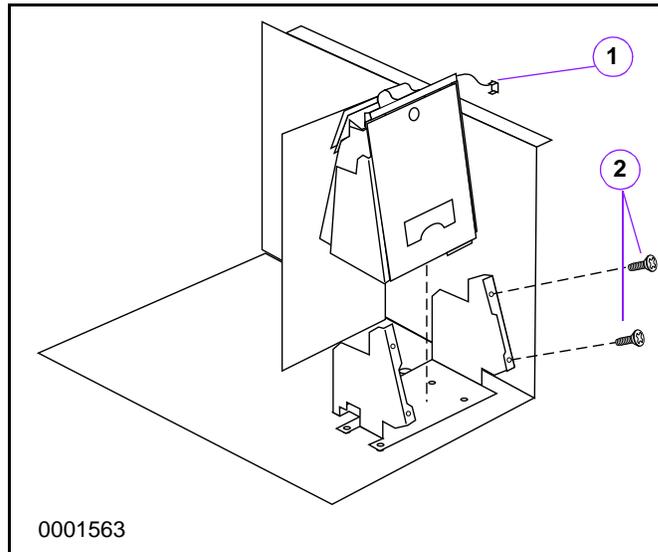
Removing CRIND Printer Assembly



CAUTION



Electrostatic Discharge Damage
 Handling printer controller board without connecting to a ground or discharging static can damage electronic parts. Use a wrist strap and store parts in antistatic storage bags.

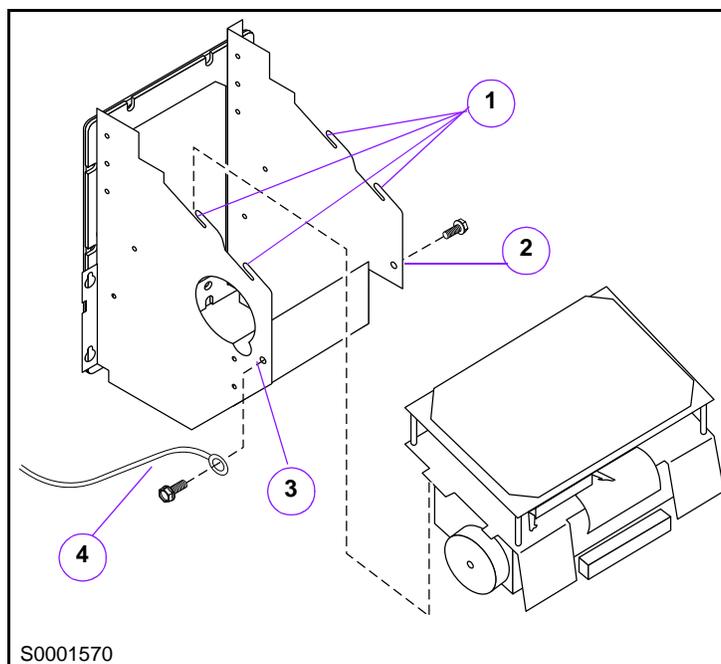


- 1 Open CRIND printer door.
- 2 Loosen four screws (2) securing printer assembly to printer bracket and remove printer assembly from printer bracket. Retain screws.
- 3 Disconnect CRIND printer cables as follows.

Connector	Location
CN6 (30 pin)	CN6 at printer controller board
J727 (37 pin)	D-sub connector on printer assembly
spkr	CRIND door speaker cable
J722	paper feedback sensor
J723	paper jam sensor
J724	low paper switch
J725	door shut switch

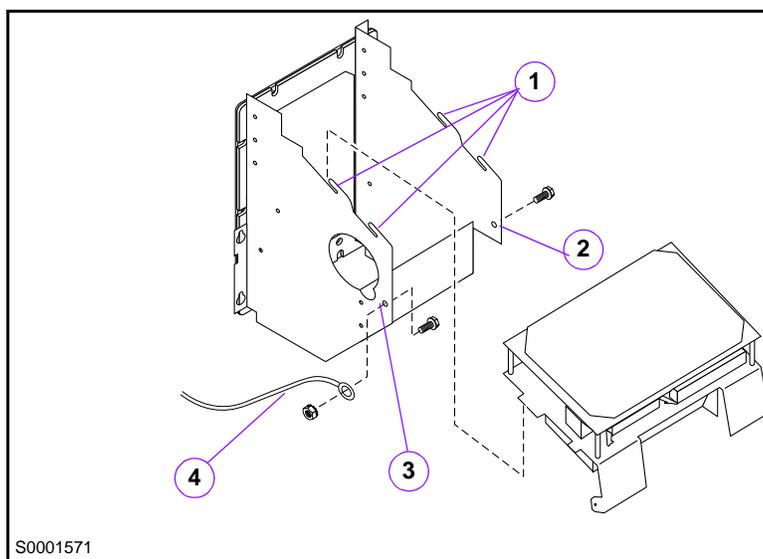
- 4 Remove printer ground wire (1) from vertical divider.

Removing T18188 Printer Assembly from Existing Sheet Metal



- 1 Identify and remove two sheet metal screws at location (2) and (3) securing T18188 printer assembly and ground strap (4) to sheet metal. Discard screws.
- 2 Slide printer assembly forward and up to disengage sheet metal tabs (1). Set aside.

Installing T20414-G1 Printer Assembly to Existing Sheet Metal



- 1 Install T20414 printer assembly onto sheet metal tabs (1) and slide backwards to lock in place.
- 2 Install ground strap (4) to printer assembly at location (3) with Q12083-03 screw and Q12068-01 nut. Install screw from inside, with nut on outside of assembly.
- 3 Install Q11677-24 sheet metal screw at location (2).

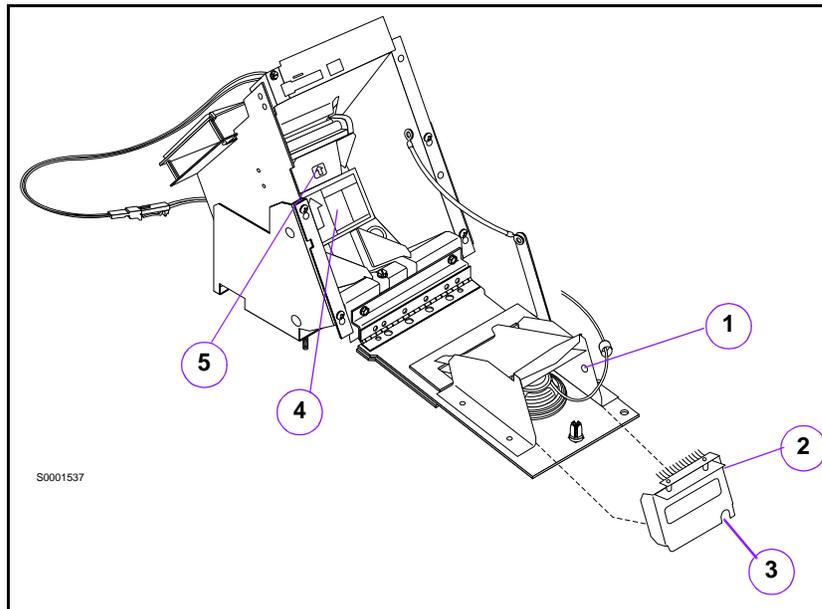
*Note: Holes at locations (2) and (4) are different diameter. Screw and nut **must** be used in hole at location (4).*

Installing Anti-Static Brush and Speaker Cover

**CAUTION****Regulator Board Damage**

CRIND printer door speaker wires carry 5VDC current. A damaged wire can blow the non-replaceable 5VDC fuse on the CRIND regulator board. If blown, the regulator board must be replaced.

Do not damage speaker wires when installing anti-static brush and speaker cover.



- 1 Open CRIND printer door.
- 2 Snap anti-static brush assembly (2) onto tear bar cutter, so that dimple on bracket seats in hole (1) on side of chute. Anti-static brush assembly **must** be seated firmly for proper operation and door closure.

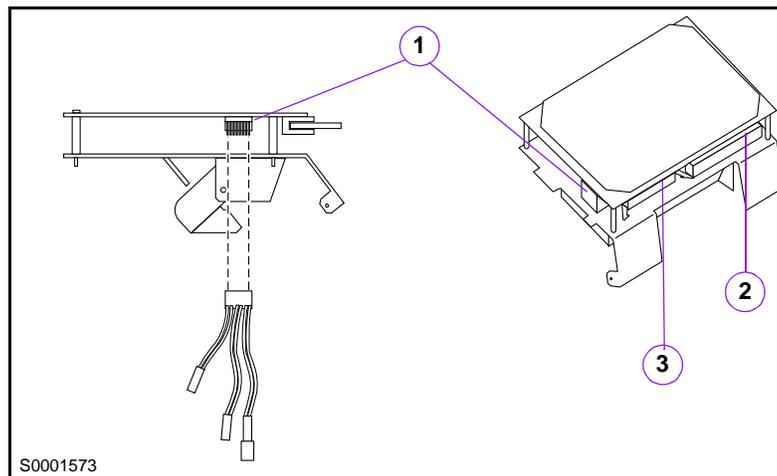
Note: Anti-static brush assembly must be oriented as shown.
- 3 Install existing speaker wire grommet, if door speaker is present, into keyway (3) on anti-static brush and speaker cover (2).
- 4 Apply decals N23923-01 (4) and N23140-01 (5) as shown.
- 5 Close printer door to ensure proper clearance/operation. Replace paper loading instructions on outside of printer door with N23219-02 paper loading instruction decal.

Installing CRIND Printer Cables


CAUTION



Electrostatic Discharge Damage
 Handling printer controller board without connecting to a ground or discharging static can damage electronic parts. Use a wrist strap and store parts in antistatic storage bags.



- 1 Connect R20651 printer assembly cable as follows:

Connector	Location
CN6	CN6 (1) on printer controller board
Spkr (2 pin)	printer door speaker
J724	paper low indicator
J725	printer door shut switch

- 2 Connect existing T19347-GX CRIND printer cable as follows:

Connector	Location
CN2 (30 pin)	CN2 (3) on controller board
J727 (37 pin)	CN1 (2) on controller board

Note: T19347-GX cable assembly may have D-sub connector retaining clips. These clips are for shipping purposes only and do not have to be reset when replacing printer assemblies.

- 3 Install printer ground wire to vertical divider (if clip was removed).
- 4 Install CRIND printer assembly to printer bracket, using four screws previously retained.

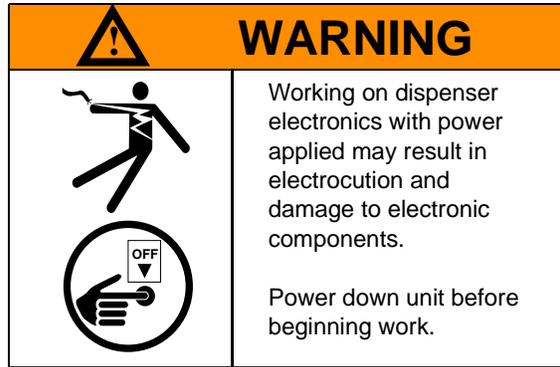
Checking Printer for Watertight Seal

Note: Printer gasket must be compressed approximately 50% when closed in order to maintain a watertight seal.

- 1 Check that gasket on outside of CRIND printer door is compressed when option door is closed.
- 2 If necessary, loosen (do not remove) printer bracket mounting nuts and adjust printer bracket position so that gasket is compressed when option door is closed. Retighten nuts.

Installing Printer in MPD®-3 Unit

Preparing Unit



- 1 Read all instructions before beginning.
- 2 Follow all [Safety Precautions](#).
- 3 Record all mechanical and electronic totals.
- 4 Turn off all power to unit, unit lights and STPs.
 - Use system circuit breakers.
 - Multiple disconnects may be required.
 - Isolate each pump at distribution box.
 - Refer to MDE-2531, Pump and Dispenser Start-up and Service for OSHA lock-out/tag-out procedures.
- 5 When system battery is present, turn off system battery by pressing CLEAR then ENTER on manager keypad.

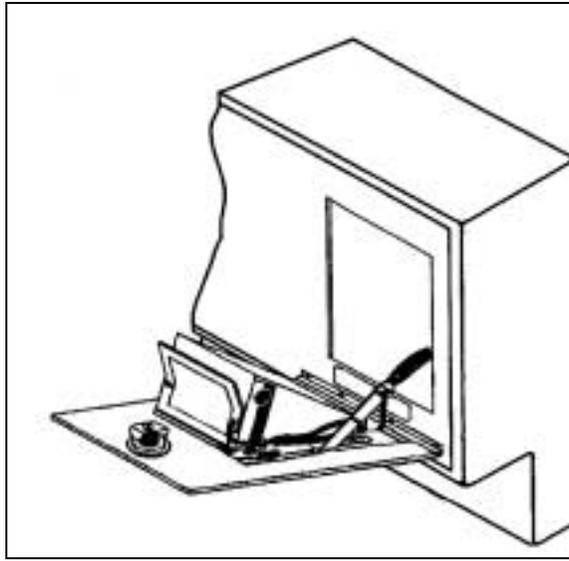
Replacing Older Printer Cable

Some older MPD-3 units (manufactured before November, 1992) may have cables with discrete wire connectors from CRIND regulator board to CRIND printer in place of D-sub connector. Later models use a ribbon cable with J727 D-sub metal connector.

Note: *Do not begin this installation without the proper printer cable. T20414-G1 printer assembly is not compatible with discrete wire connectors, but only with J727 D-sub connector.*

- 1 Inspect cable from CRIND regulator board. If cable is a ribbon cable with a 37-pin D-sub metal connector to the printer, proceed to [Replacing Printer Assembly](#).
- 2 If cable is discrete wire without D-sub metal connector, remove and replace with appropriate cable. See [Additional Required Parts](#). Route replacement cables in parallel with existing cables and use existing cable clamps.

Replacing Electric Cutter



Note: T20414-G1 CRIND printer will not work with 24VDC electric cutter.

- 1 Remove connectors (if present) from P563 and P566 on the CRIND regulator board.

Note: P563 and P566 support the 24VDC electric cutter, which is obsolete.

- 2 If electric cutter is present, replace with K93713-01 tear bar cutter kit.

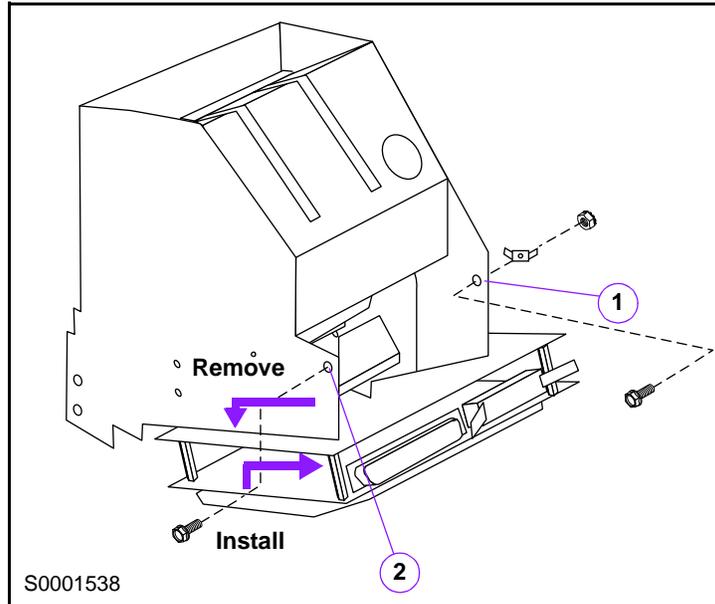
Note: MDE-2679, included with K93713-01 kit, provides complete instructions.

Replacing Printer Assembly



CAUTION

Electrostatic Discharge Damage
 Handling printer controller board without connecting to a ground or discharging static can damage electronic parts. Use a wrist strap and store parts in antistatic storage bags.

- 1 Open CRIND printer door.
- 2 Remove D-sub connector from printer controller board. Disconnect J722, J723, J724 and J725 connectors.
- 3 Remove two screws from locations (1) and (2) and slide printer assembly in direction shown to disengage sheet metal tabs and printer assembly from bracket. Set aside T18188 printer assembly. Retain double wing FastOn tab.
- 4 Install T20414-G1 printer assembly onto sheet metal tabs and slide in direction shown to lock in place.
- 5 At location (1), install Q12083-03 screw and Q12068-01 nut. Install screw from inside, with nut on outside of assembly. Re-install double wing FastOn tab to printer assembly at original location.
- 6 Install Q11677-24 sheet metal screw at location (2).

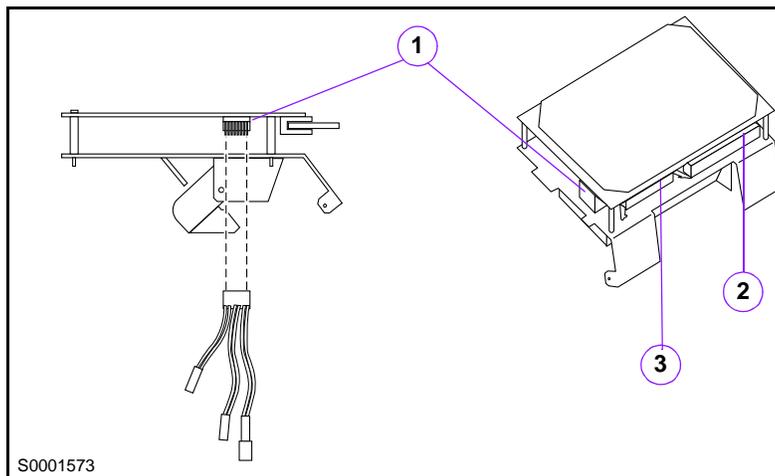
*Note: Holes at locations (1) and (2) are different diameter. Screw and nut **must** be used in hole at location (1).*

Installing CRIND Printer Cables



CAUTION

Electrostatic Discharge Damage
 Handling printer controller board without connecting to a ground or discharging static can damage electronic parts. Use a wrist strap and store parts in antistatic storage bags.

- 1 Connect R20651 printer assembly cable as follows:

Connector	Location
CN6	CN6 (1) on printer controller board
Spkr (2 pin)	not used
J724	paper low indicator
J725	printer door shut switch

- 2 Connect existing R19125-GX cable as follows:

Connector	Location
CN6 (30 pin)	CN2 (3) on printer assembly

- 3 Connect existing W0285X-G2 cable as follows.

Connector	Location
J727 (37 pin) *	CN1 (2) on printer assembly

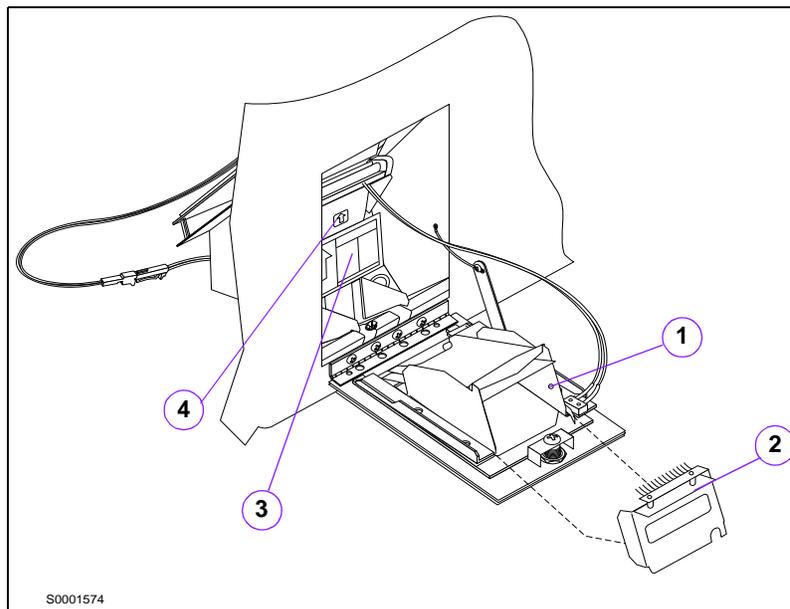
* If existing cable has no J727 D-sub connector, replace cable per [Additional Required Parts](#).

Installing Anti-Static Brush and Speaker Cover

**CAUTION****Regulator Board Damage**

CRIND printer door speaker wires carry 5VDC current. A damaged wire can blow the non-replaceable 5VDC fuse on the CRIND regulator board. If blown, the regulator board must be replaced.

Do not damage speaker wires when installing anti-static brush and speaker cover.



- 1 Open CRIND printer door.
- 2 Snap anti-static brush assembly (2) onto tear bar cutter, so that dimple on bracket seats in hole (1) on side of chute. Anti-static brush assembly **must** be seated firmly for proper operation and door closure.

Note: Anti-static brush assembly must be oriented as shown.
- 3 Apply decals N23219-02 (3) and N23140-01 (4) as shown.
- 4 Close printer door to ensure proper clearance/operation. Replace paper loading instructions on outside of printer door with N23219-02 paper loading instruction decal.

Installing Printer in External CRIND or G-CAT™4

Preparing Unit



 WARNING	
	Working on CRIND electronics with power applied may result in electrocution and damage to electronic components.
	Power down CRIND device before beginning work.

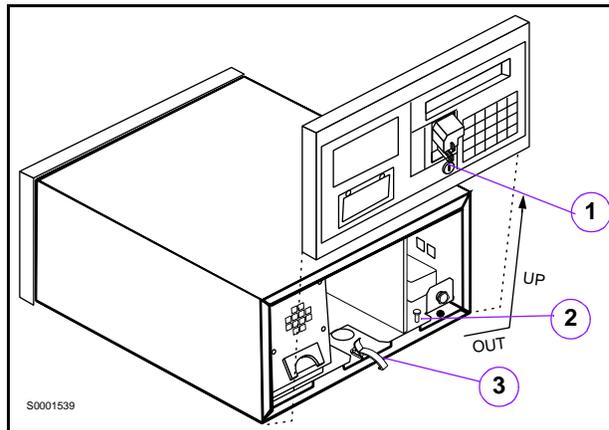
- 1 Read all instructions before beginning.
- 2 Follow all [Safety Precautions](#).
- 3 Turn off all power to CRIND.
 - Use system circuit breakers.
 - Isolate each CRIND at power distribution box.

Accessing CRIND Printer

CAUTION

Attempting to remove External CRIND chassis from housing without disconnecting cables on both sides of **will cause serious damage** to CRIND components.

Remove **both** bezels and disconnect cables before attempting to slide chassis out of CRIND housing.



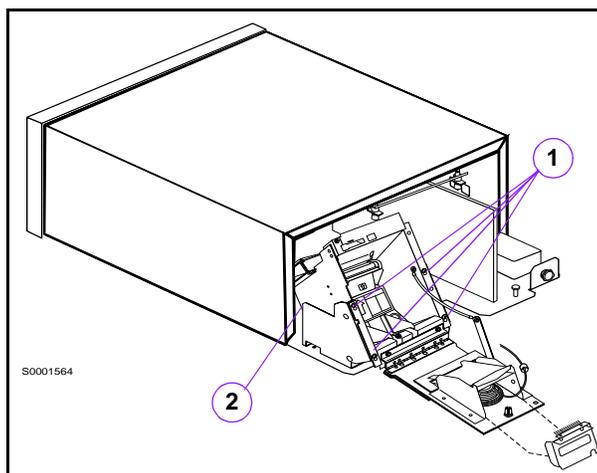
- 1 Remove AC power from CRIND.
- 2 Open printer access door (1) on A side of unit.

Note: A side of unit for two-sided units is the side with the model label.
- 3 Release toggle latch (3) located in bottom center of housing.
- 4 Pull bottom of bezel out and then up.
- 5 Disconnect all cabling from bezel.
- 6 For single-sided units, reach through center of housing and open latch on B side of unit. For two-sided units, open B side printer door and release toggle latch.
- 7 Remove B side bezel and disconnect door cables.
- 8 Push all cabling disconnected from bezels into center of external CRIND chassis.
- 9 Lay toggle latch (3) flat, lift up on plunger pin (2), and pull chassis out from housing. Be careful not to damage wiring.

Removing T18188 Printer Assembly

**CAUTION**

Electrostatic Discharge Damage
Handling printer controller board without connecting to a ground or discharging static can damage electronic parts. Use a wrist strap and store parts in antistatic storage bags.



- 1 Open CRIND printer door.
- 2 Cable clamp may be present on printer controller board. Remove ribbon cables from cable clamp and disconnect from CRIND printer.
- 3 Loosen four screws (1) securing CRIND printer to printer bracket.
- 4 Remove CRIND printer carefully from printer bracket.
- 5 Remove two screws (2), one on each side, holding T18188 printer assembly to sheet metal.
- 6 Pull printer assembly forward to disengage tabs and lift out.

Preparing T20414-G1 Printer Assembly for Installation

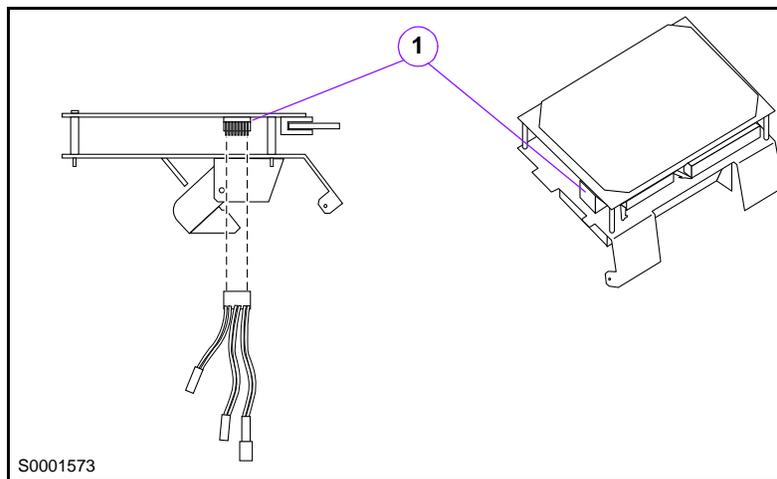
*Note: Before installing T20414-G1 printer assembly in External CRIND, you **must** rotate the printer controller board 180 degrees to provide clearance with External CRIND circuit boards. Follow the procedure in this section.*



CAUTION

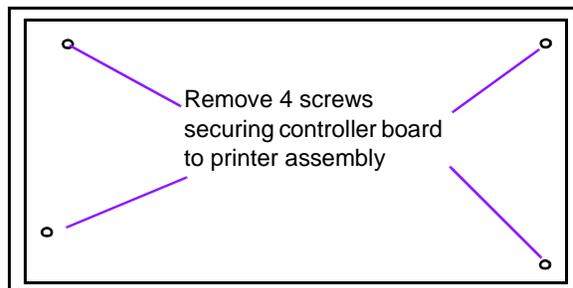


Electrostatic Discharge Damage
Working on CRIND electronics without connecting to a ground or discharging static can damage electronic parts. Use a wrist strap and store parts in antistatic storage bags.

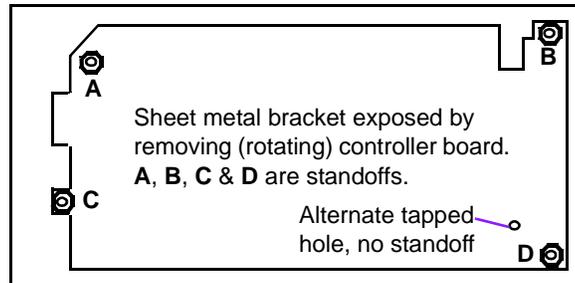


- 1** Install CN6 connector of R20651 cable to CN6 connector (1) on printer controller board.

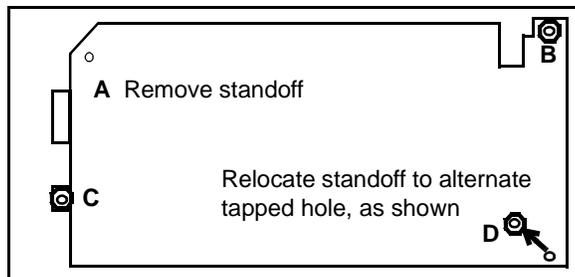
*Note: CN6 connector **must** be installed before re-installing controller board in rotated position because of clearance.*



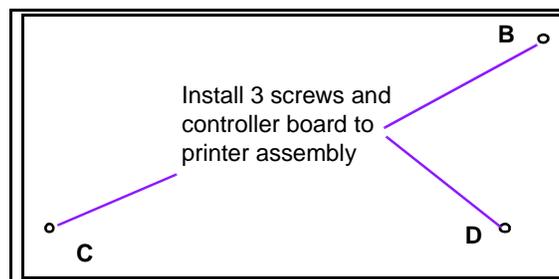
- 2** Remove four screws securing printer controller board to sheet metal bracket.



- Carefully lift printer controller board off standoffs and rotate 90 degrees to expose standoffs. Do **not** disconnect internal cables.



- Remove standoff A and relocate standoff D as shown.
- Continue to rotate the printer controller board until it is 180 degrees from original position and connectors are accessible from inside the printer door.

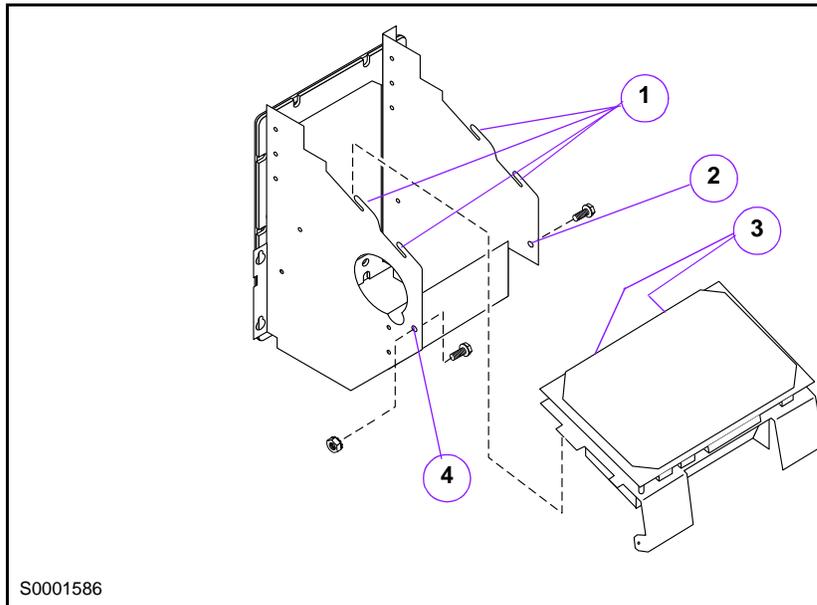


- Install three mounting screws in standoff locations B, C and relocated D.

Installing T20414-G1 Printer Assembly

**CAUTION****Electrostatic Discharge Damage**

Handling printer controller board without connecting to a ground or discharging static can damage electronic parts. Use a wrist strap and store parts in antistatic storage bags.



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Note: CN1 (37 pin) and CN2 (30 pin) connectors have been rotated 180 degrees in previous step to location (3).

- 1 Install T20414-G1 printer assembly onto sheet metal tabs (1).
- 2 Install Q11677-24 sheet metal screw at location (2).
- 3 Install Q12083-03 screw and Q12068-01 nut at hole (4). Install screw from inside, with nut on outside of assembly.

*Note: Holes at locations (1) and (2) are different diameter. Screw and nut **must** be used in hole at location (1).*

- 4 Install CRIND printer to printer bracket and tighten screws.
- 5 Remove label from outside of CRIND printer door and replace with N23219-02 paper loading instruction label.

Installing CRIND Printer Cables

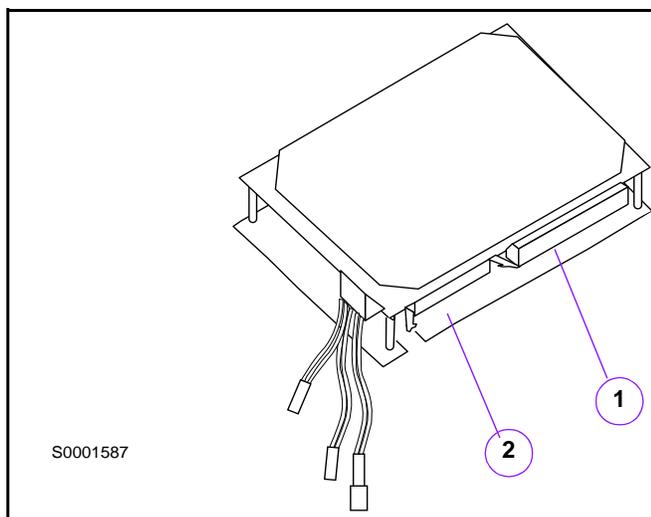
Note: Connector numbers on T20414-G1 printer assembly do not necessarily correspond to connector numbers on T18188 printer assembly.



CAUTION



Electrostatic Discharge Damage
 Handling printer controller board without connecting to a ground or discharging static can damage electronic parts. Use a wrist strap and store parts in antistatic storage bags.



- 1 Connect R20651 printer assembly cable as follows:

Connector	Location
Spkr (2 pin)	not used
J724	paper low indicator
J725	printer door shut switch

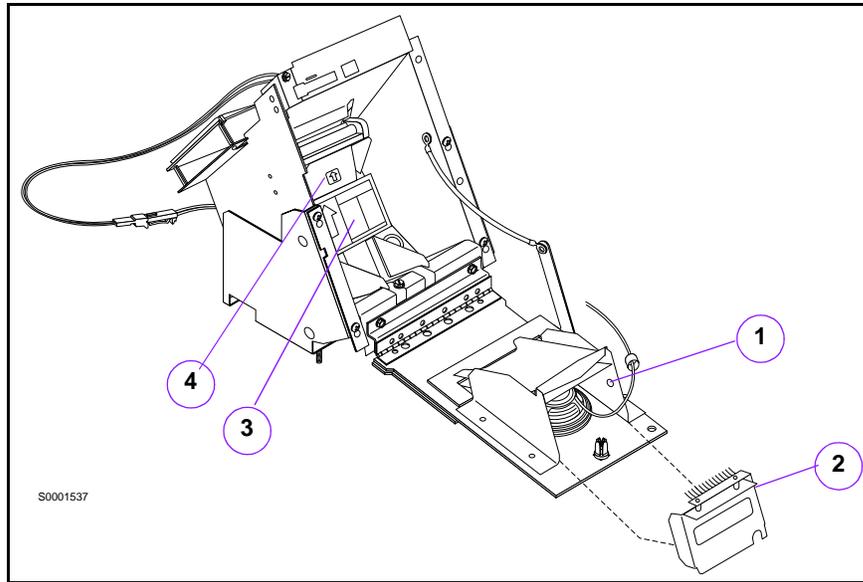
- 2 Connect existing R19817 cable as follows:

Connector	Location
CN6 (30 pin)	CN2 (2) on printer assembly

- 3 Connect existing T18274-G1 (A side) and T18275-G1 (B side) cables as follows.

Connector	Location
J727 (37 pin)	CN1 (1) on printer assembly

Installing Anti-Static Brush and Speaker Cover



Note: Typical CRIND printer shown for purposes of illustration only. External CRIND does not have speaker on printer door.

- 1 Open CRIND printer door.
- 2 Snap anti-static brush assembly (2) onto tear bar cutter, so that dimple on bracket seats in hole (1) on side of chute. Anti-static brush assembly **must** be seated firmly for proper operation and door closure.

Note: Anti-static brush assembly must be oriented as shown.

- 3 Apply decals N23923-01 (3) and N23140-01 (4) as shown.
- 4 Close printer door to ensure proper clearance/operation. Replace paper loading instructions on outside of printer door with N23219-02 paper loading instruction decal.

Installing Printer in PIC

Preparing Unit



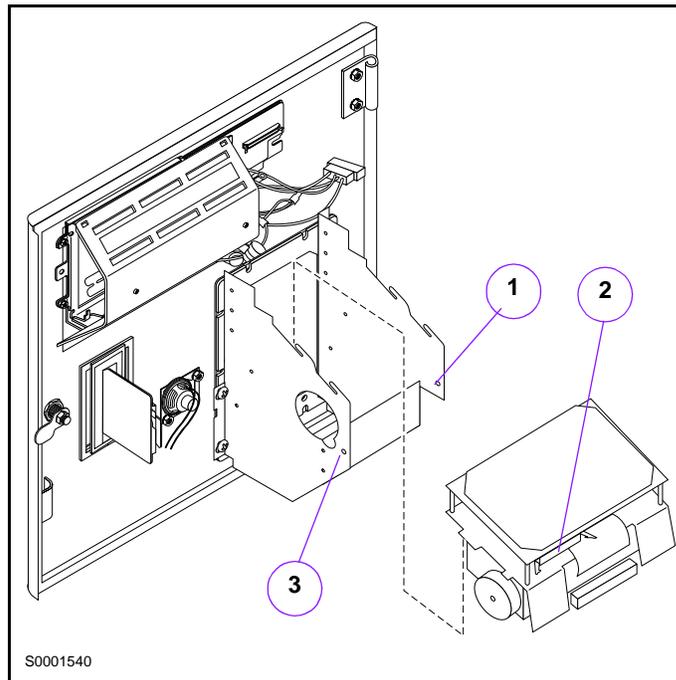
 WARNING	
 	<p>Working on dispenser electronics with power applied may result in electrocution and damage to electronic components.</p> <p>Power down unit before beginning work.</p>

- 1 Read all instructions before beginning.
- 2 Follow all [Safety Precautions](#).
- 3 Turn off all power to PIC.
 - Use system circuit breakers.
 - Isolate PIC at distribution box.

Removing T18188 Printer Assembly

**CAUTION**

Electrostatic Discharge Damage
Handling printer controller board without connecting to a ground or discharging static can damage electronic parts. Use a wrist strap and store parts in antistatic storage bags.

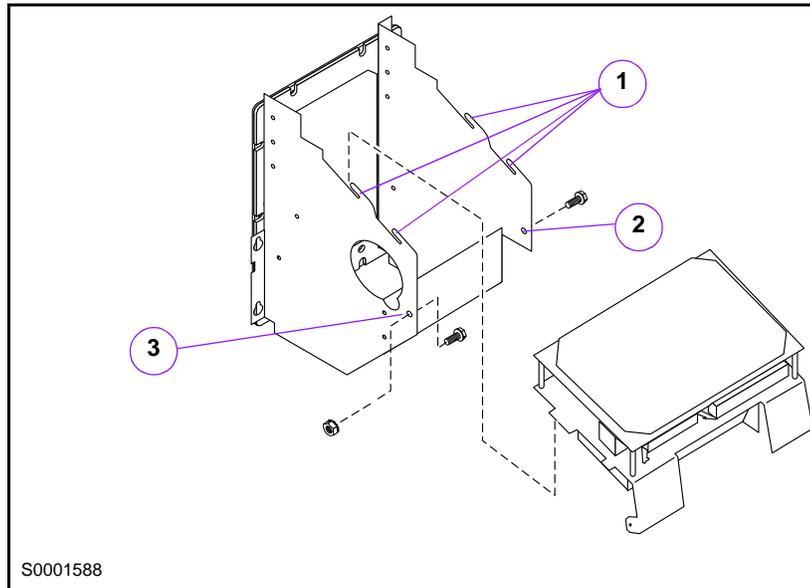


- 1 Remove AC power from PIC.
- 2 Open main door.
- 3 Open CRIND printer door.
- 4 Remove printer cable D-sub connector from printer controller board (2). Disconnect J722, J723, J724 and J725 connectors.
- 5 Remove two screws from locations (1) and (3) and slide printer assembly forward and up to disengage sheet metal tabs and printer assembly from bracket. Set printer assembly aside.

Installing T20414-G1 Printer Assembly

**CAUTION****Electrostatic Discharge Damage**

Handling printer controller board without connecting to a ground or discharging static can damage electronic parts. Use a wrist strap and store parts in antistatic storage bags.

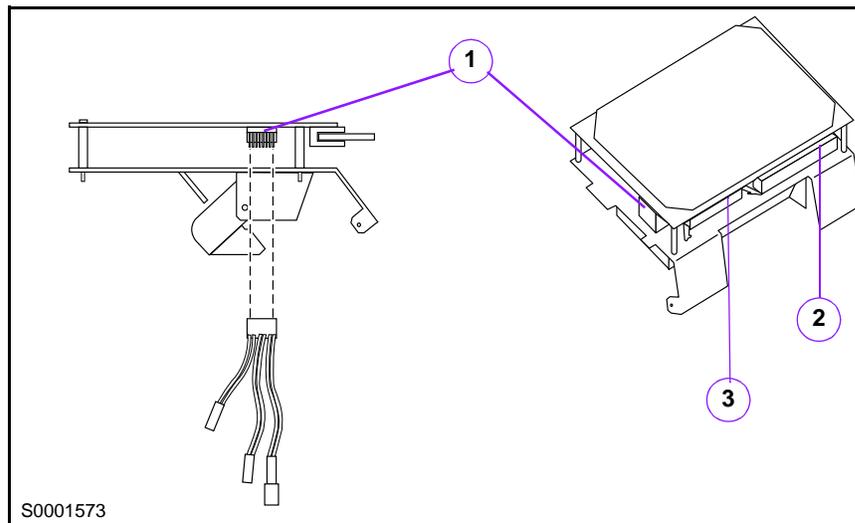


- 1 Install T20414-G1 printer assembly onto sheet metal tabs (1) and slide backwards to lock in place.
- 2 Install Q12083-03 screw and Q12068-01 nut at location (3). Install screw from inside, with nut on outside of assembly.
- 3 Install Q11677-24 sheet metal screw at location (2).

*Note: Holes at locations (2) and (3) are different diameter. Screw and nut **must** be used in hole at location (3).*

Installing CRIND Printer Cables

Note: Connector numbers on the T20414-G1 printer assembly do not necessarily correspond to connector numbers on T18188 printer assembly.



1 Connect R20651 cable as follows:

Connector	Location
CN6	CN6 (1) on printer controller board
spkr	not used
J724	low paper sensor
J725	door shut switch

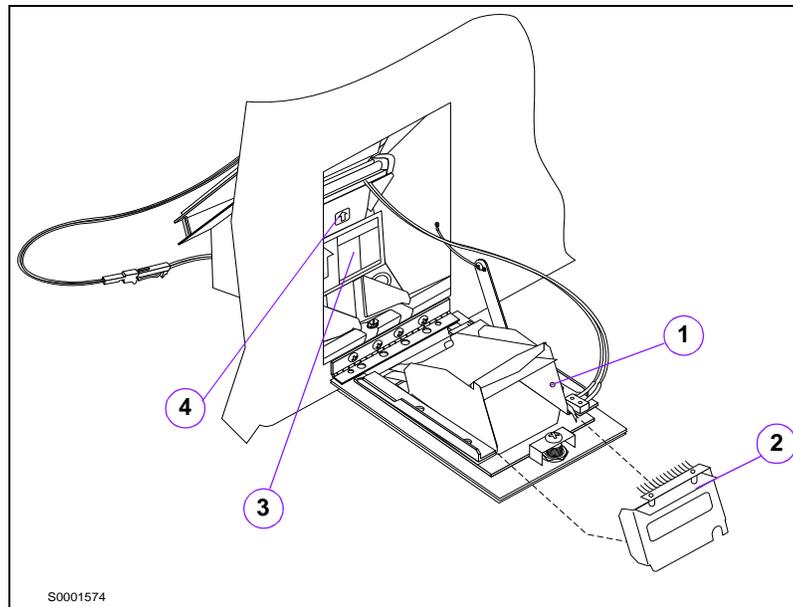
2 Connect R19817-G2 cable as follows:

Connector	Location
CN6 (30 pin)	CN2 (3) on printer controller board

3 Connect W03752-G1 (A side) and W03754-G2 (B side) cables as follows.

Connector	Location
J727 (37 pin)	CN1 (2) D-sub connector on printer controller board

Installing Anti-Static Brush and Speaker Cover



Note: Typical CRIND printer shown for purposes of illustration only. PIC does not have speaker on printer door.

- 1** Open CRIND printer door.
- 2** Snap anti-static brush assembly (2) onto tear bar cutter, so that dimple on bracket seats in hole (1) on side of chute. Anti-static brush assembly **must** be seated firmly for proper operation and door closure.

Note: Anti-static brush assembly must be oriented as shown.

- 3** Apply decals N23219-02 (3) and N23140-01 (4) as shown.
- 4** Close printer door to ensure proper clearance/operation.

