

Kit Instructions

Motherboard Upgrade, Kaby Lake

7709-K906
Issue A



The product described in this document is a licensed product of NCR Corporation.

NCR is a registered trademark of NCR Corporation. NCR SelfServ™ is a trademark of NCR Corporation in the United States and/or other countries. Other product names mentioned in this publication may be trademarks or registered trademarks of their respective companies and are hereby acknowledged.

The terms HDMI and HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.

Where creation of derivative works, modifications or copies of this NCR copyrighted documentation is permitted under the terms and conditions of an agreement you have with NCR, NCR's copyright notice must be included.

It is the policy of NCR Corporation (NCR) to improve products as new technology, components, software, and firmware become available. NCR, therefore, reserves the right to change specifications without prior notice.

All features, functions, and operations described herein may not be marketed by NCR in all parts of the world. In some instances, photographs are of equipment prototypes. Software screen images are representative, and in some cases, may not match a customer's installed software exactly. Therefore, before using this document, consult with your NCR representative or NCR office for information that is applicable and current.

Copyright © 2023
By NCR Corporation
864 Spring St. NW
Atlanta, GA 30308
United States
All Rights Reserved

Revision Record

Issue	Date	Remarks
A	Jul 2023	First Issue

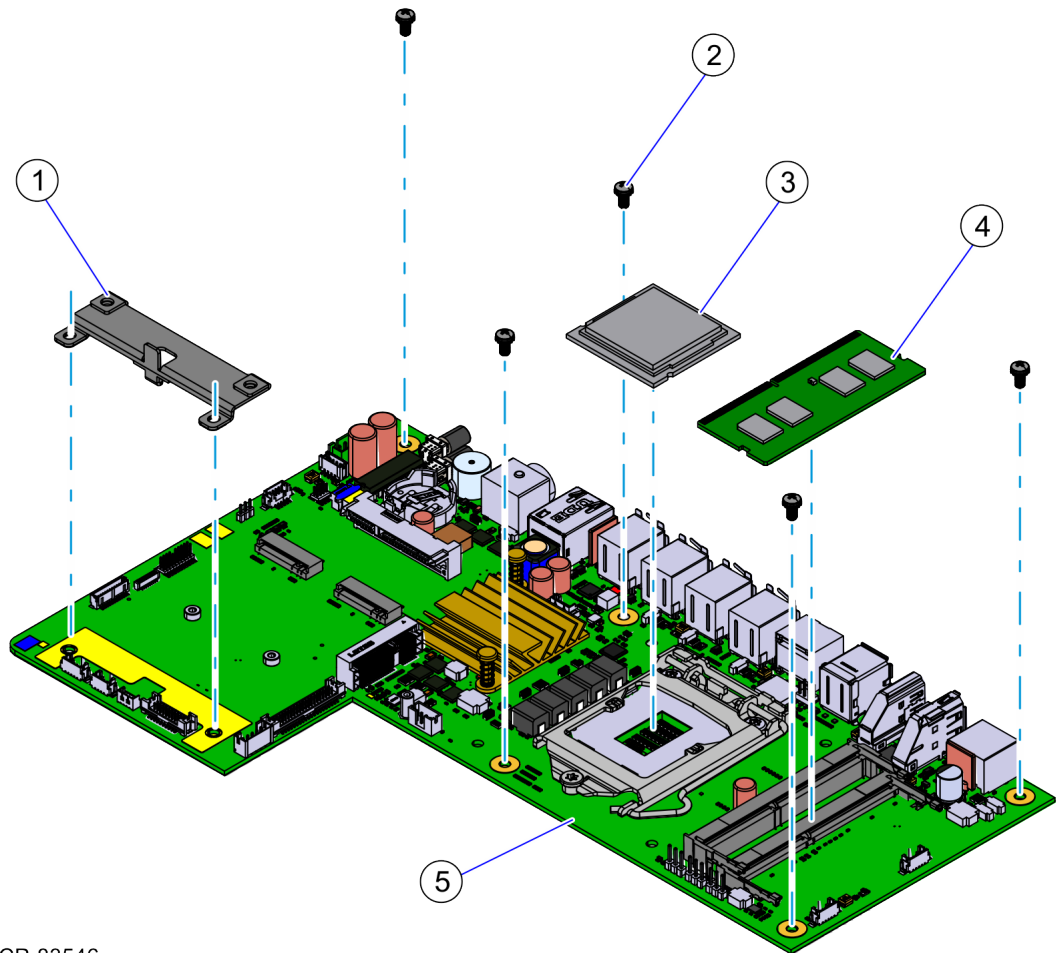
Motherboard Upgrade, Kaby Lake

This publication provides procedures for installing the Kaby Lake Motherboard Upgrade kit on the NCR SelfServ™ 90 (7709) Kiosk.



Note: This kit is applicable to **NCR 7709 R1.2** units only.

Kit Contents



CCP-83546

Part Number	Description
497-0535117	Kit - 7709 Motherboard Upgrade (Kaby Lake) , ATL3218
1	497-0511497 Bracket, Single HDD
2	006-8613167 Screw - SEMS, M3X6mm PH Phillips Machine Screw External-Tooth Washer, Zinc Plated (5 pcs)
3	006-8626692 Intel Core i5-7500T Processor, 35W, Kaby Lake
4	006-8626890 Memory Module - 16GB, DDR4 2400MHz, SO-DIMM, 1.2V
5	497-0531016 Motherboard, XR7+, Kaby Lake (Kaby Lake BIOS)
*	006-1070679 Plastic Bag Zip Closure 4 x 6
*	006-8612565 Shin Etsu X23 7783D Thermal Grease w/ Syringe (0.5 gm)
*	006-8624677 ESD Protective Box
*	497-0423108 Instructions-Kit (Reference Sheet)

Part Number		Description
*	497-0452123	Thermal Grease Application Instructions
*	497-0470565	3 x 5 x .004 / .002 Pink Anto-Stat Poly Ziplock
*	497-0513717	BIOS Instruction Sheet
*	497-0531190	Kaby Lake UEFI BIOS - XR7 Plus. Updated production release of the UEFI BIOS/SPI for the Q170 Integrated Motherboard (Richmond) and Service boards. BIOS Version is 9.0.8.0
*	497-0535119	Label - 7709 Motherboard upgrade (Kaby Lake) , ATL3218
*	497-9999638	Static Bag, 4" x 5", Self seal, Bubble
*	497-9999639	Static/ESD Warning Label, 1 3/4" x 2 1/2"
*	497-9999640	Padded Envelope, 6" x 10"
*	497-9999650	Bag, ESD (14" x 20")
*	497-9999670	Carton - 555 Series Corrugated With Convuluted Foam 6x6x2
*	497-9999690	Carton w/ Foam, 16x12, Package

* Items marked with an asterisk are not called out on the image.

Installation Procedure

Installing the Kaby Lake Motherboard Upgrade kit on an **NCR 7709 R1.2** unit involves the following procedures:


1. Open the NCR 7709 unit and disconnect all cables from the Motherboard. For more information, refer to [Opening the R1.2 Kiosk](#) on page 6.
2. Remove the Receipt Printer. For more information, refer to [Removing the Receipt Printer](#) on page 7
3. Remove the Imaging Scanner. For more information, refer to [Removing the Imaging Scanner](#) on page 9
4. If present, remove the Sensormatic Antenna. For more information, refer to [Removing the Sensormatic Antenna](#) on page 10.
5. Remove the PIN Pad. For more information, refer to [Removing the PIN Pad](#) on page 13.
6. Remove the Supervisor Switch. For more information, refer to [Removing the Supervisor Switch](#) on page 16.
7. Remove the Coupon Sensors. For more information, refer to [Removing the Coupon Sensors](#) on page 17.
8. Remove the Service Cover. For more information, refer to [Removing the Service Cover](#) on page 17.
9. Remove the Display Head. For more information, refer to [Removing the Display Head](#) on page 18.
10. Remove the Old Motherboard. For more information, refer to [Removing the Motherboard](#) on page 20.
11. Install the Kaby Lake Motherboard Upgrade kit. For more information, refer to [Installing the Motherboard](#) on page 27.
12. Re-install the Display Head. For more information, refer to [Installing the Display Head](#) on page 37.
13. Install the Service Cover. For more information, refer to [Installing the Service Cover](#) on page 39.
14. Install the Coupon Sensors. For more information, refer to [Installing the Coupon Sensors](#) on page 39.
15. Install the Supervisor Switch. For more information, refer to [Installing the Supervisor Switch](#) on page 40.
16. Install the PIN Pad. For more information, refer to [Installing the PIN Pad](#) on page 42.
17. If present, install the Sensormatic Antenna. For more information, refer to [Installing the Sensormatic Antenna](#) on page 45.

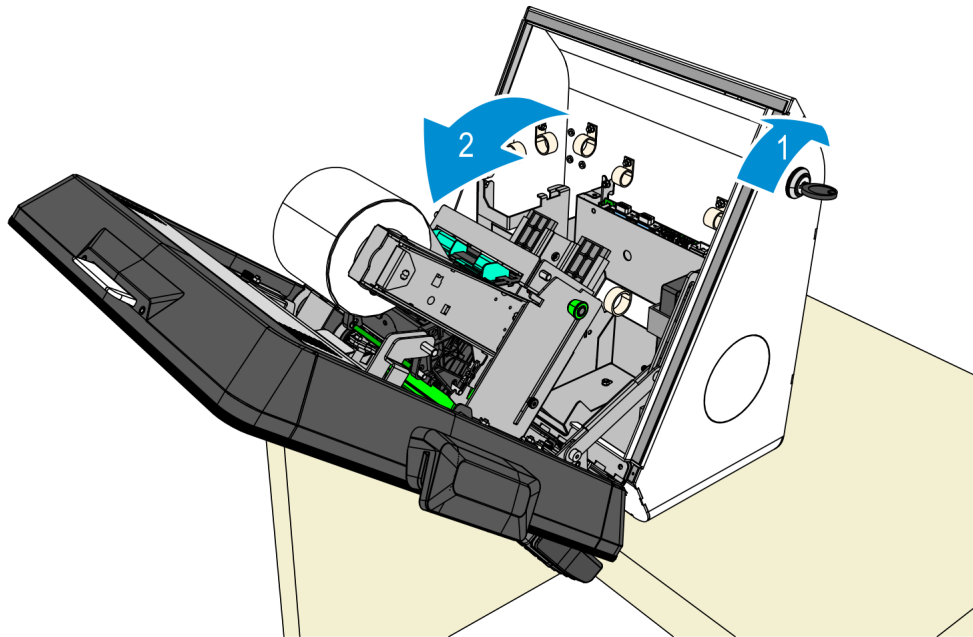
18. Install the Imaging Scanner. For more information, refer to [Installing the Imager Scanner](#) on page 48.
19. Install the Receipt Printer. For more information, refer to [Installing the Receipt Printer](#) on page 50.
20. Connect all cables to the Motherboard. For more information, refer to [Connecting Cables](#) on page 52.

Opening the R1.2 Kiosk

To access the kiosk components, follow this step:

- Insert the key into the lock at the right-hand side of the kiosk, turn the key clockwise and then, carefully open the front of the kiosk.

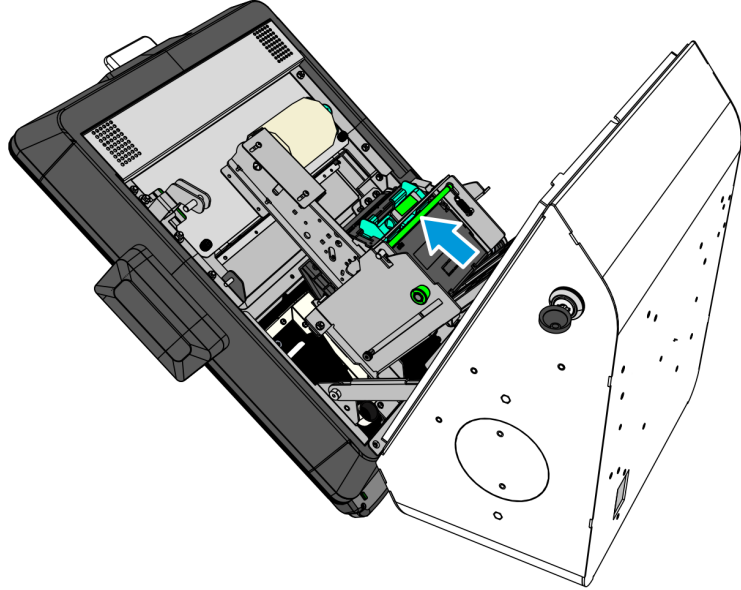
 **Caution:** Do NOT abruptly open and release the front of the kiosk. Hold and support the front of the kiosk until fully extended.



CCP-73618

Removing the Receipt Printer

1. Slide up Receipt Printer into service position.
 - a. Push the printer assembly release rod upward.

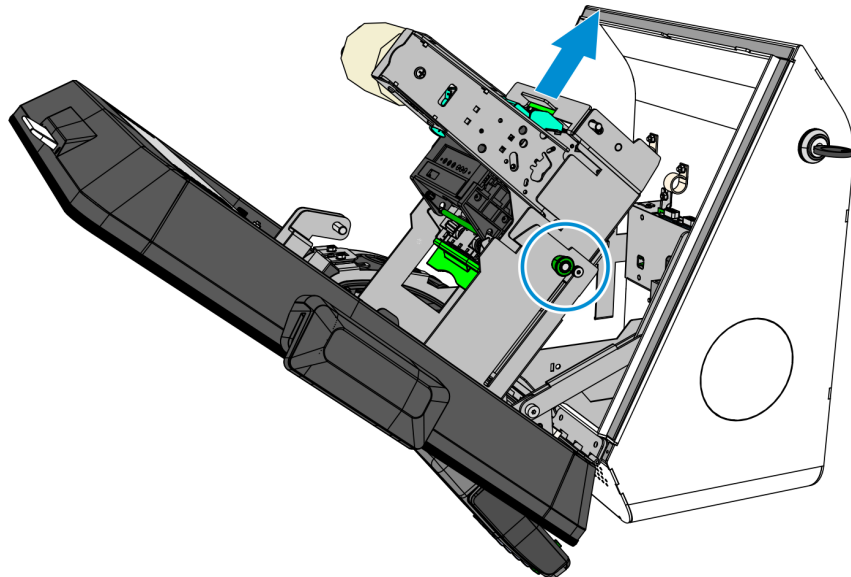


CCP-73621

- b. Pull the printer assembly backward until fully extended and secured by the green plunger.

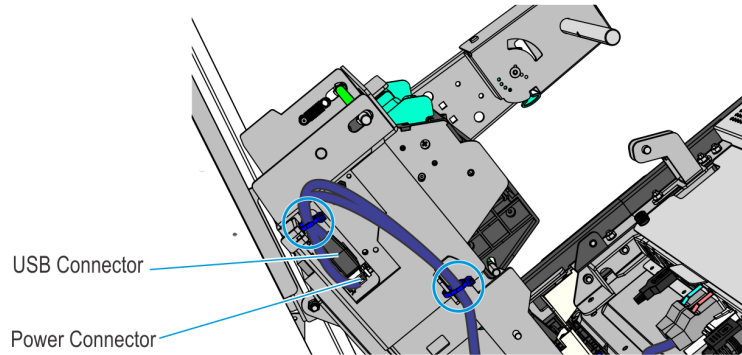


Caution: Ensure that the green plunger holds the printer assembly in place. Do not release the printer assembly if it is not yet secured by the green plunger.



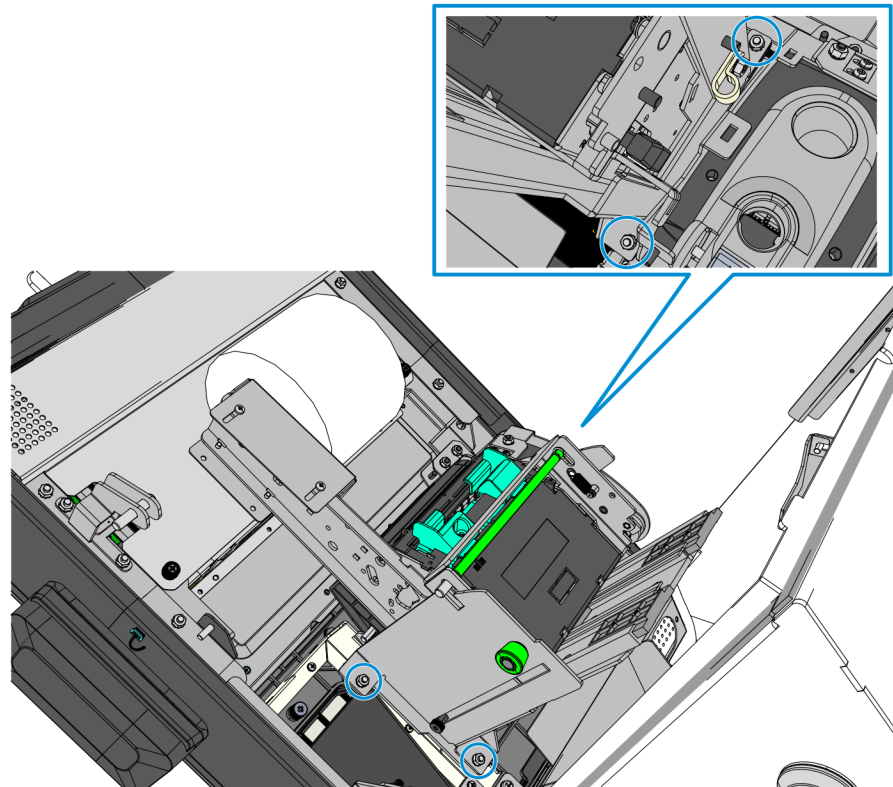
CCP-73622

2. Disconnect the USB and Power cables from the printer. Remove the cable tie securing the cables to the printer bracket encircled below.



CCP-78447

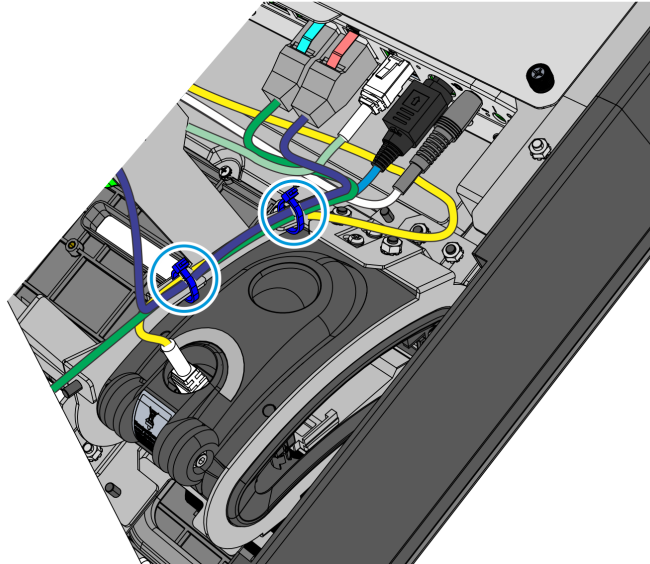
3. Slide the printer back down and remove the four nuts securing the Receipt Printer assembly to the kiosk.



CCP-73169

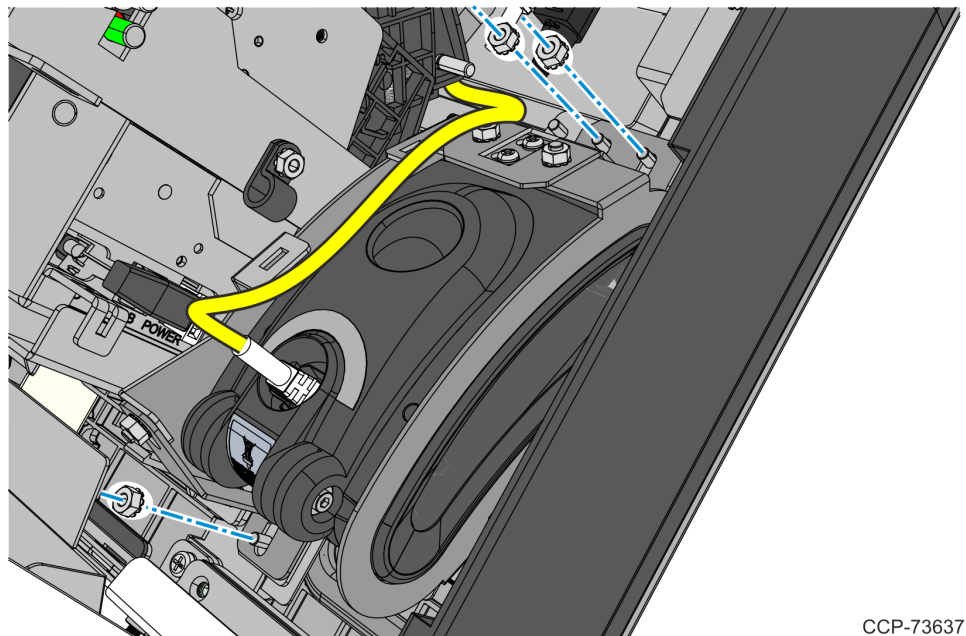
Removing the Imaging Scanner

1. Disconnect the Imaging Scanner Cable from the motherboard, and cut off the cable ties securing the cables routed at the back of the scanner.



CCP-78446

2. Remove the three nuts securing the Imager to the kiosk and then lift the imager out of its mounting area.



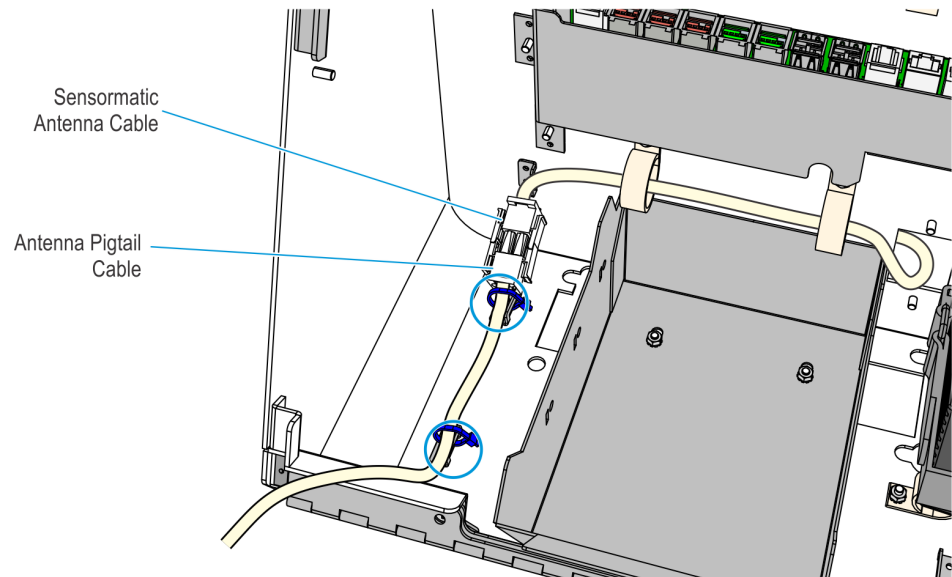
CCP-73637

Removing the Sensormatic Antenna



Caution: Make sure that the Sensormatic Controller is powered OFF. Do NOT connect or disconnect the Sensormatic Cables or Antenna from the Sensormatic Controller when power is ON as this could damage the controller.

1. Disconnect and remove the Sensormatic Cables.
 - a. Disconnect the Sensormatic Antenna Pigtail cable from the Antenna Cable, and remove the cables ties.

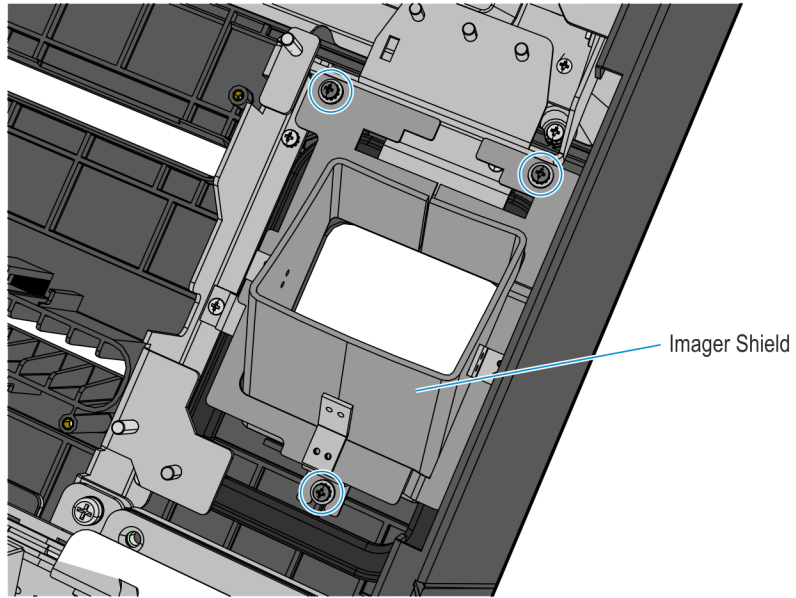


CCP-79150

- b. Route the Sensormatic Antenna Cable out of the kiosk.

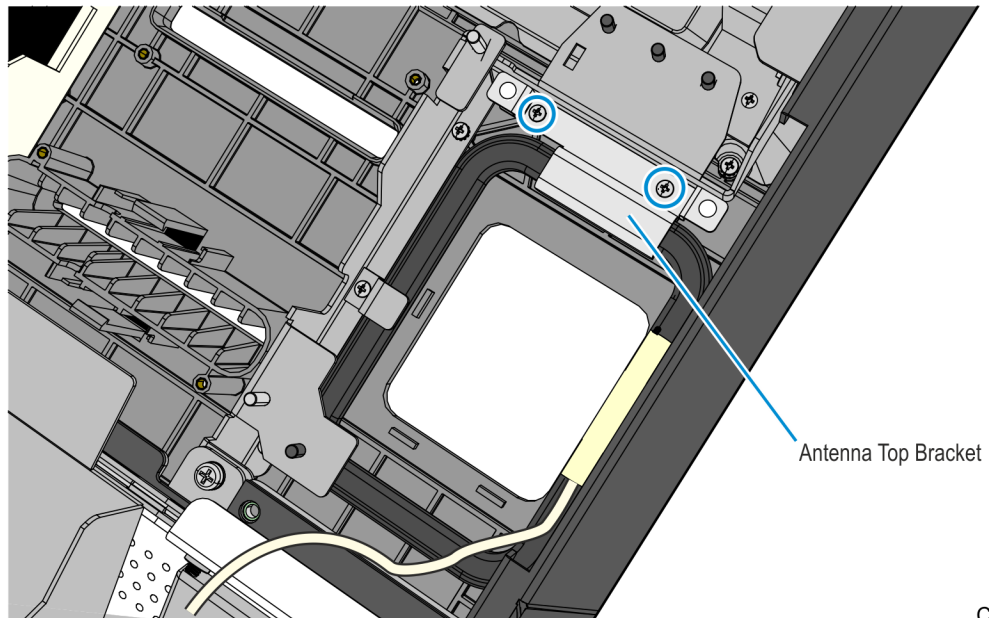
2. Remove three screws and washers securing the Imager Shield assembly and then remove the assembly from the kiosk.

! Important: Do not throw away the washers. Keep the washers and use these when re-installing the Imager Shield.



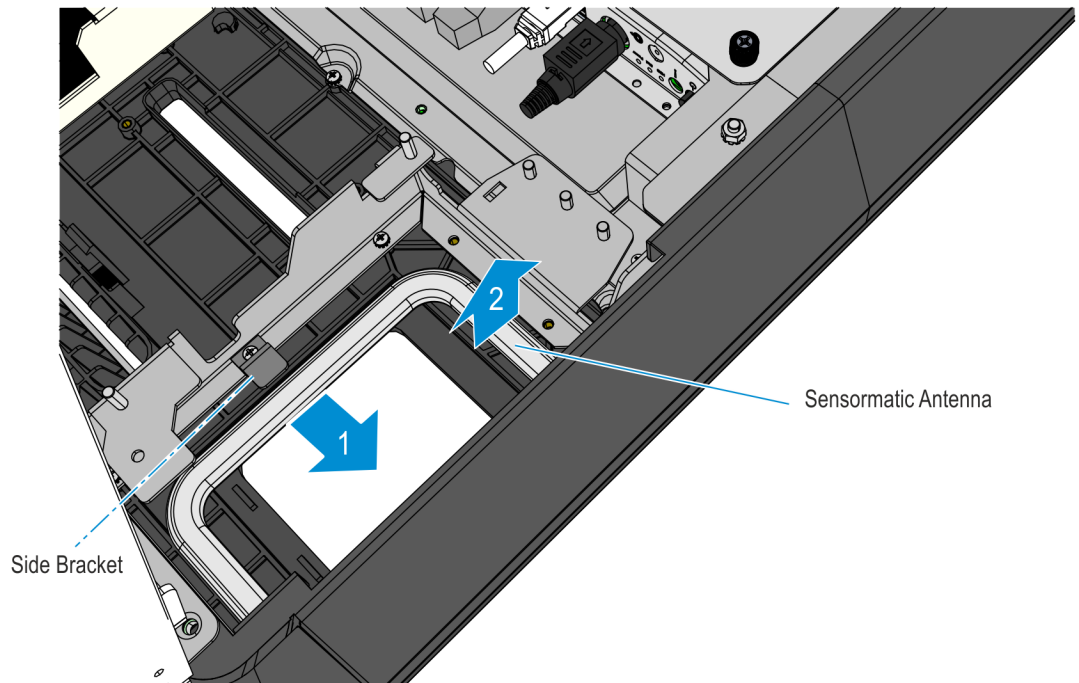
CCP-73178

3. Remove the antenna top bracket by removing two screws.



CCP-73179

- Slide the Sensormatic antenna away from its side bracket and lift it out of the kiosk head.



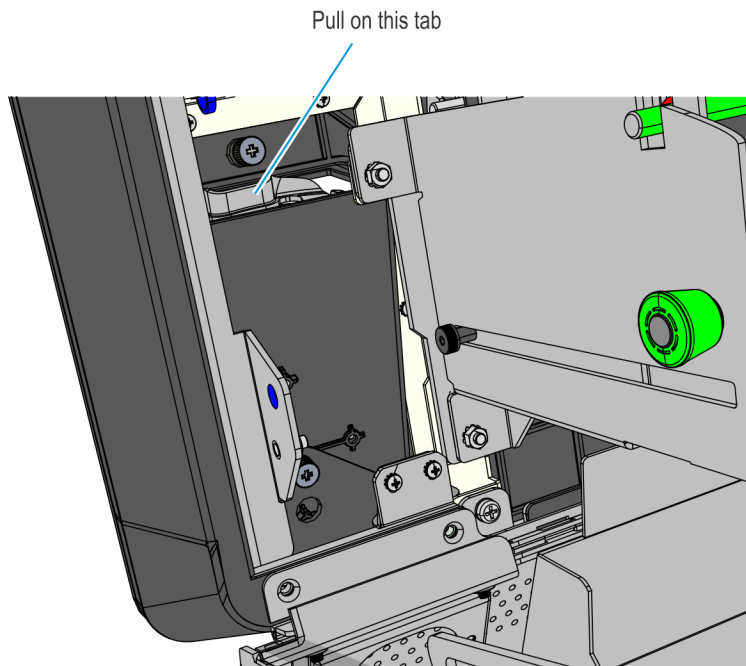
Removing the PIN Pad

Refer to the following for procedures in removing the PIN Pad from **NCR 7709 R1.2** units:

- [Removing the Ingenico IPP320/350 PIN Pad](#) below
- [Removing the Verifone VX805/820 PIN Pad](#) on page 15

Removing the Ingenico IPP320/350 PIN Pad

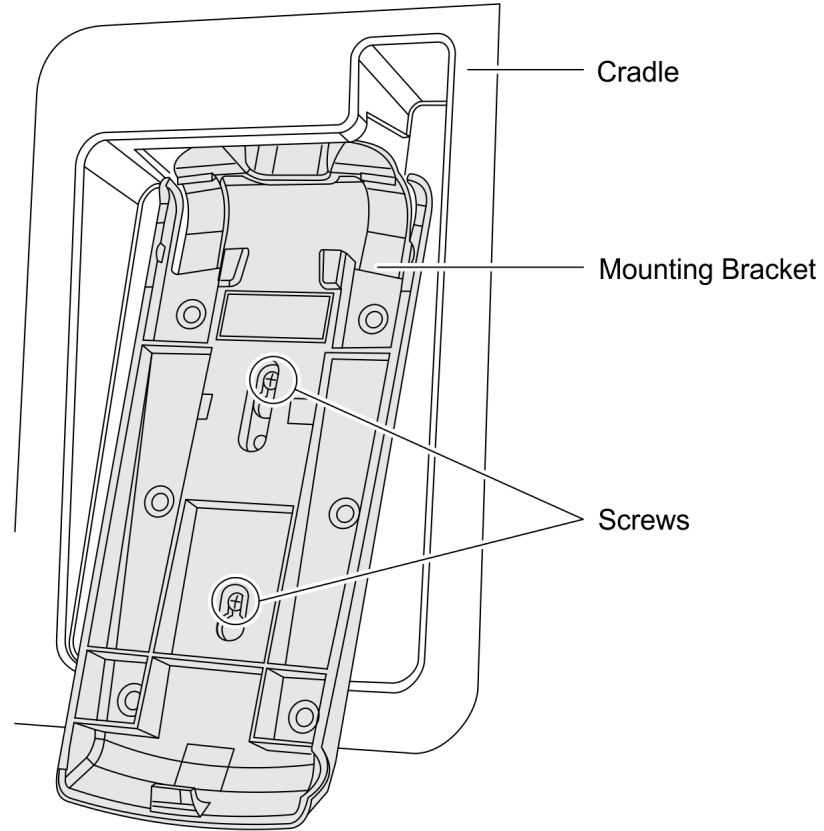
1. While holding the PIN Pad from outside of the kiosk, pull on the tab on the upper portion of the Mounting Bracket (accessed from the inside of the kiosk), and then remove the PIN Pad.



CCP-77992

2. Disconnect the PIN Pad Cable from the PIN Pad.

3. Loosen the two screws that secure the Mounting Bracket to the PIN Pad Cradle.

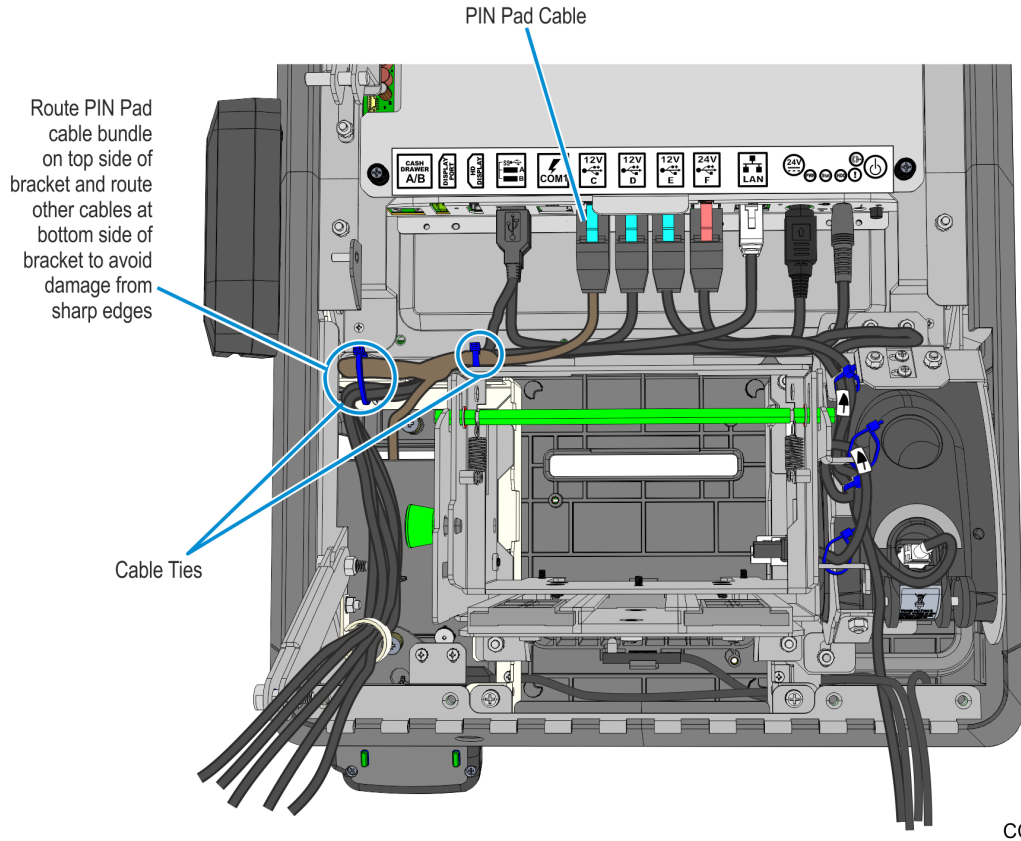


CCP-60090

4. Slide up and remove the Mounting Bracket.

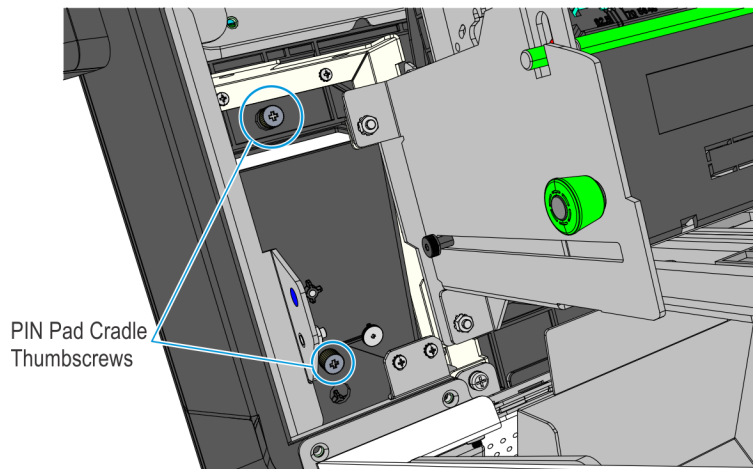
Removing the Verifone VX805/820 PIN Pad

1. Disconnect the PIN Pad Cable from the Motherboard and cut off cable ties as necessary.



CCP-73740

2. While holding the PIN Pad from outside the Kiosk, loosen the two thumb screws securing the PIN Pad Cradle to the Display Head and then remove the PIN Pad and PIN Pad Cradle Assembly.

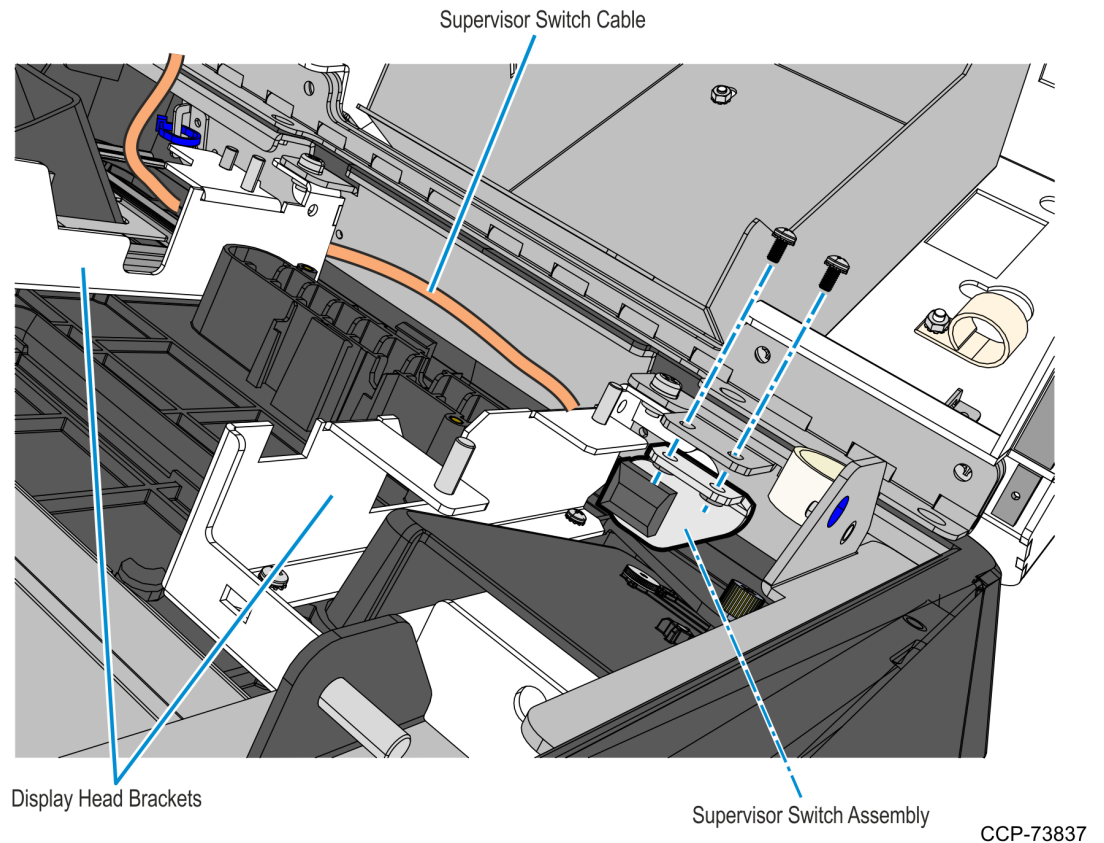


CCP-78706

3. Remove the two screws securing the PIN Pad to the PIN Pad Cradle.
4. Disconnect the PIN Pad Cable from the PIN pad.

Removing the Supervisor Switch

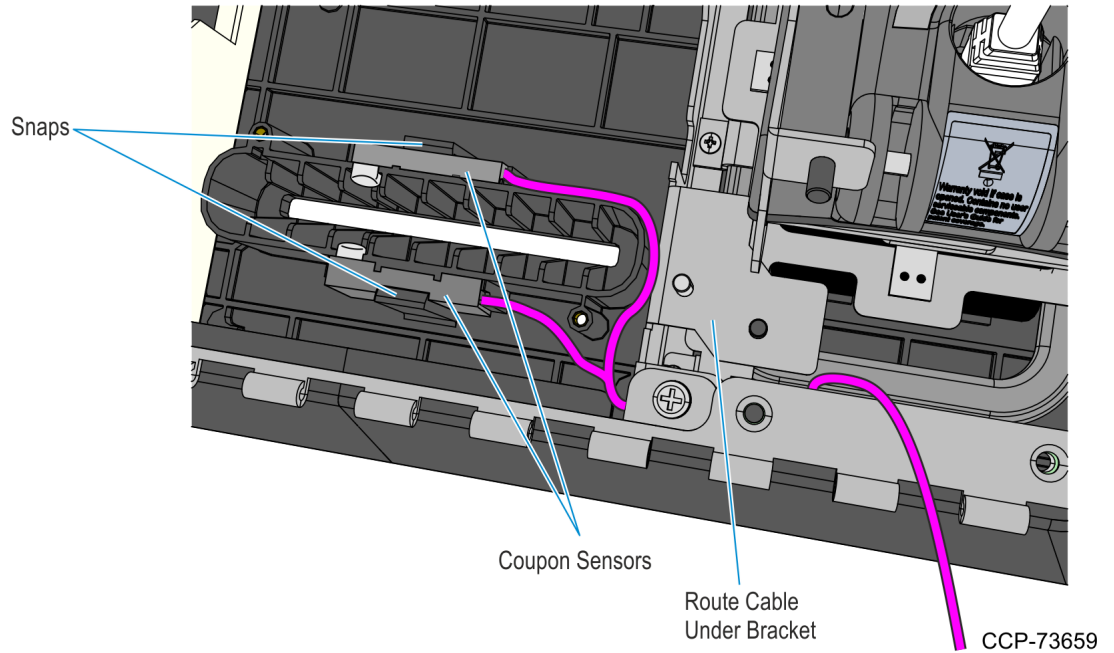
1. Remove the two M4 screws securing the Supervisor Switch assembly to the Display Head and route out the cable from under the two Display Head Brackets shown below.



2. Remove cable tie that secures the Supervisor Switch cable to the Display Head, and then temporarily place the Supervisor Switch assembly inside the main cabinet.

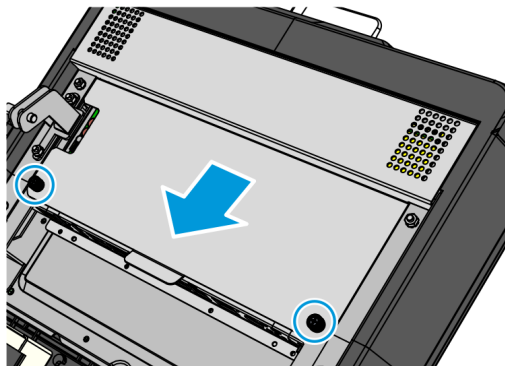
Removing the Coupon Sensors

- Remove the Coupon Sensors from the Cable Snaps and route the cable out of the bracket.



Removing the Service Cover

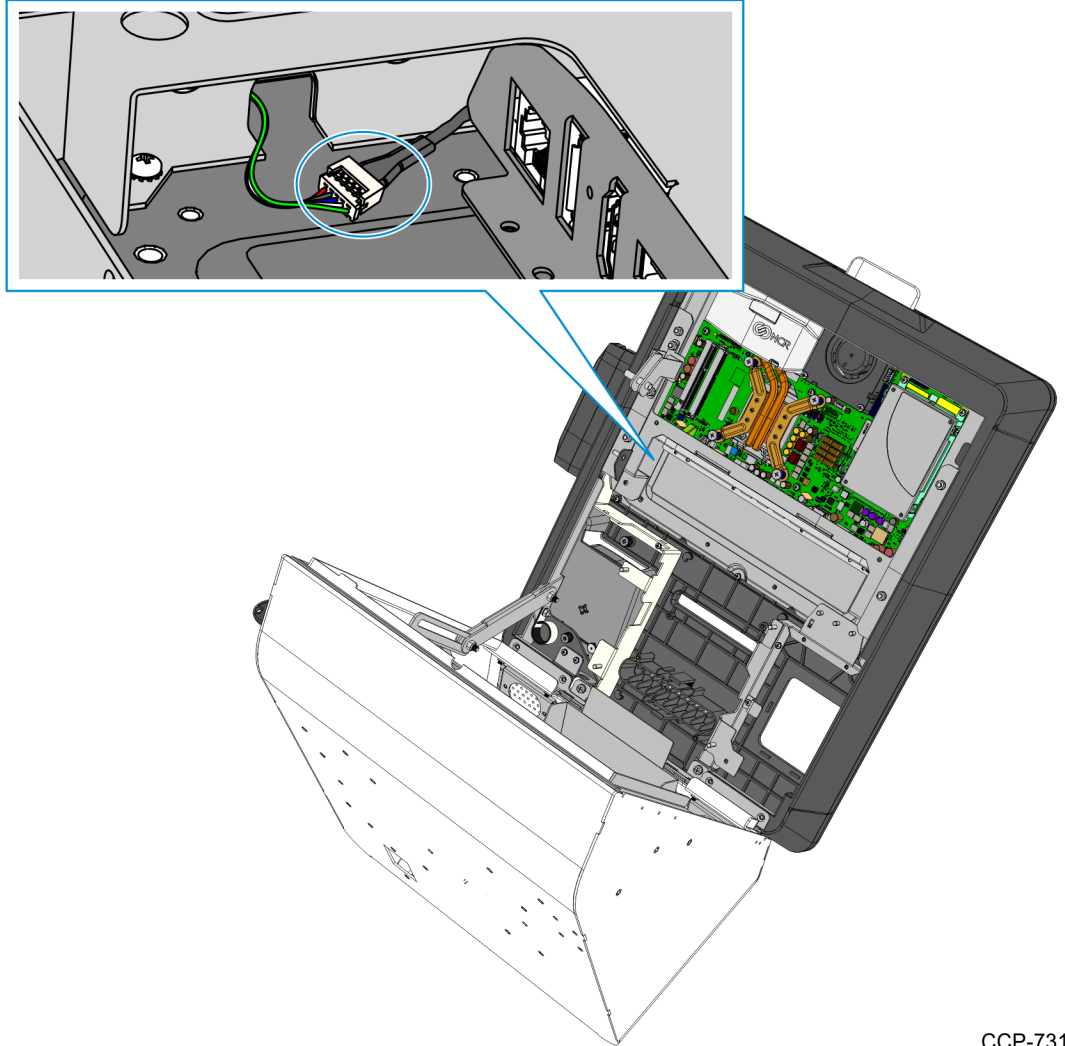
- Loosen the two thumbscrews, slide the cover downward and lift it up to remove from the Display Head.



CCP-73679

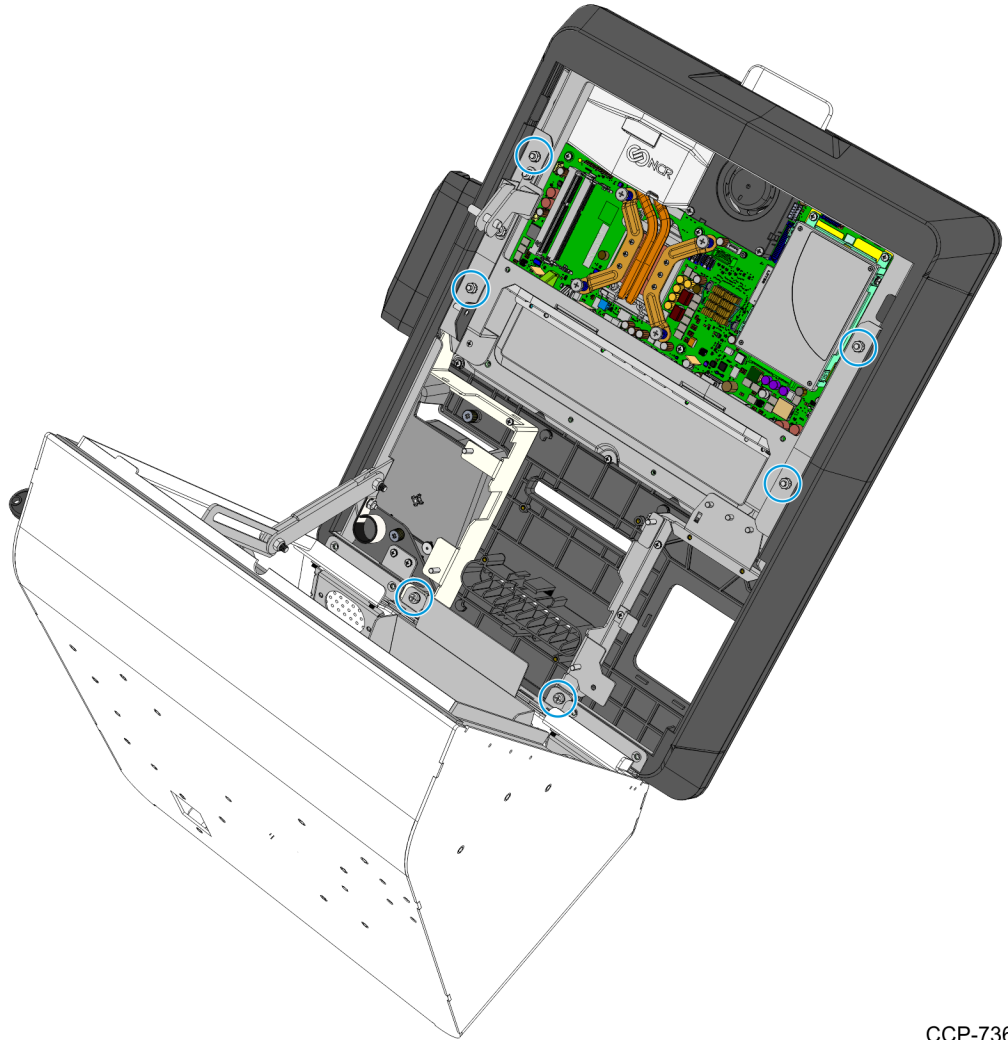
Removing the Display Head

1. Underneath the left-hand motherboard cover bracket, disconnect the MSR cable from its extension cable.



2. While supporting the Motherboard and Display assembly on the front side, remove the following:

- two nuts on the right-hand side bracket
- two nuts on the left-hand side bracket
- two screws on the bottom brackets.



CCP-73650

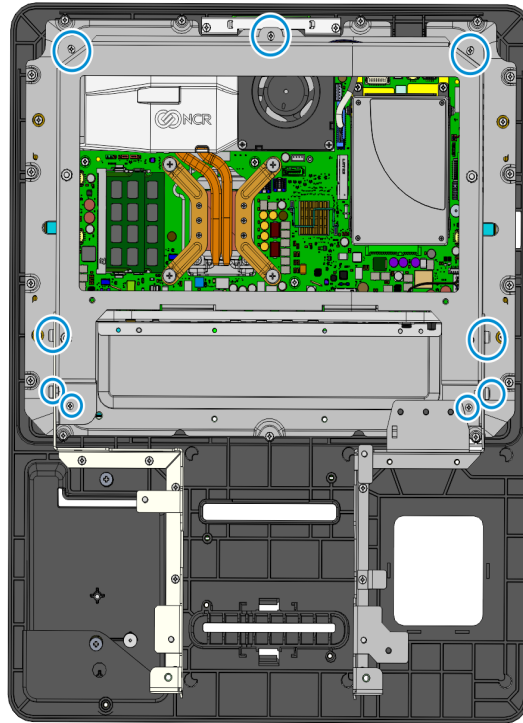
3. Carefully place the front the kiosk on a flat surface cushioned with bubble wrap or soft cloth.



Caution: Be careful not to scratch nor damage the display.

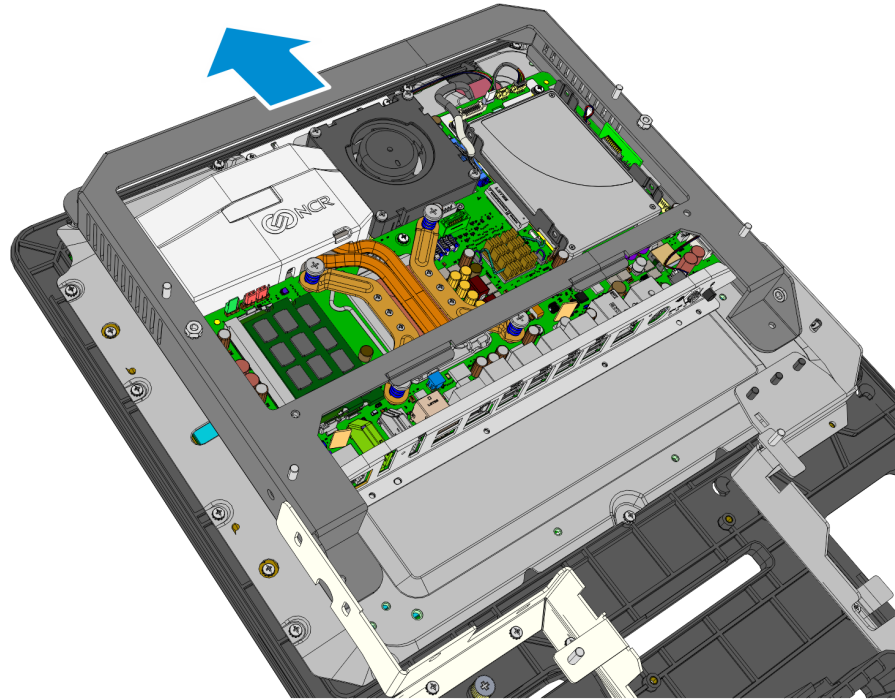
Removing the Motherboard

1. Remove the Motherboard Bracket.
 - a. Remove the nine screws that secure the Motherboard Bracket to the Display Head.



CCP-73652

- b. Slide and lift the Motherboard Bracket from the Display Head.

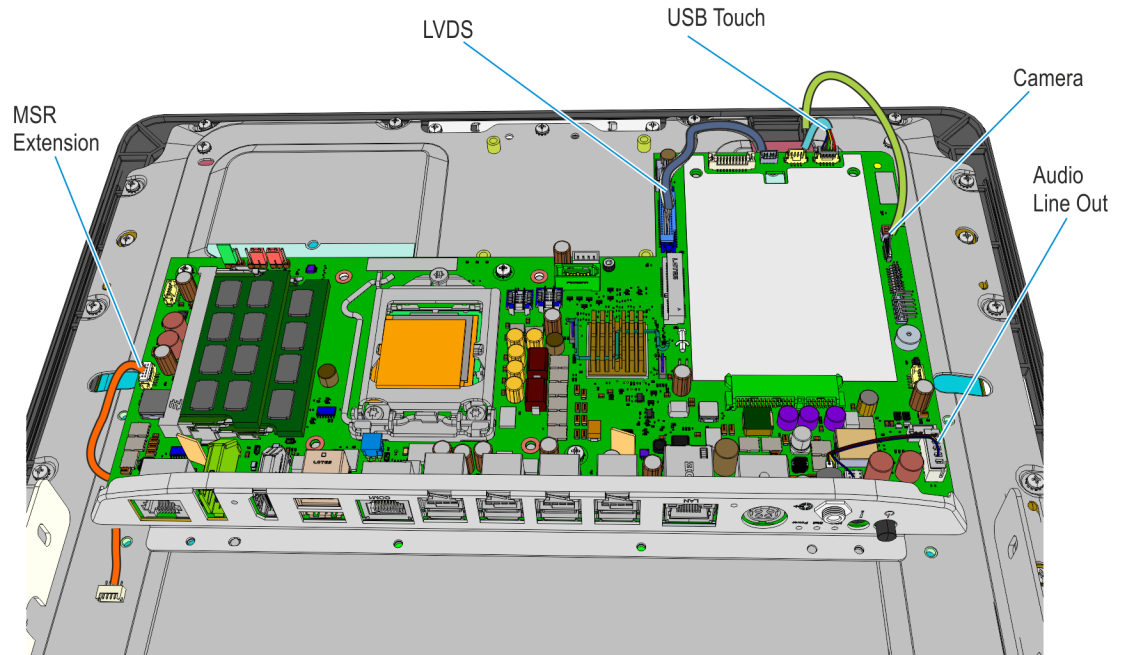


CCP-73653

2. Do the following:
 - Remove the Storage Media assembly. For more information, refer to [Removing the Storage Media](#) on page 23.
 - Remove the Heat Sink assembly. For more information, refer to [Removing the Heat Sink](#) on page 25.
 - Remove the CPU Fan. For more information, refer to [Removing the CPU Fan](#) on page 26.

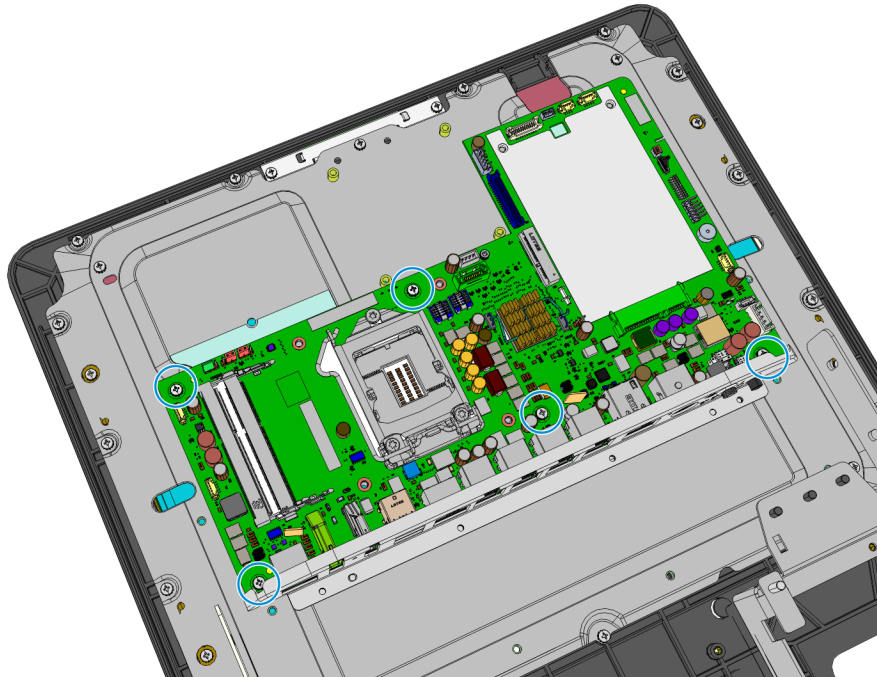
3. Carefully disconnect the following cables from the Motherboard:

- LVDS cable
- Touch USB cable
- Camera cable
- Audio Line Out cable
- MSR extension cable from the Motherboard.



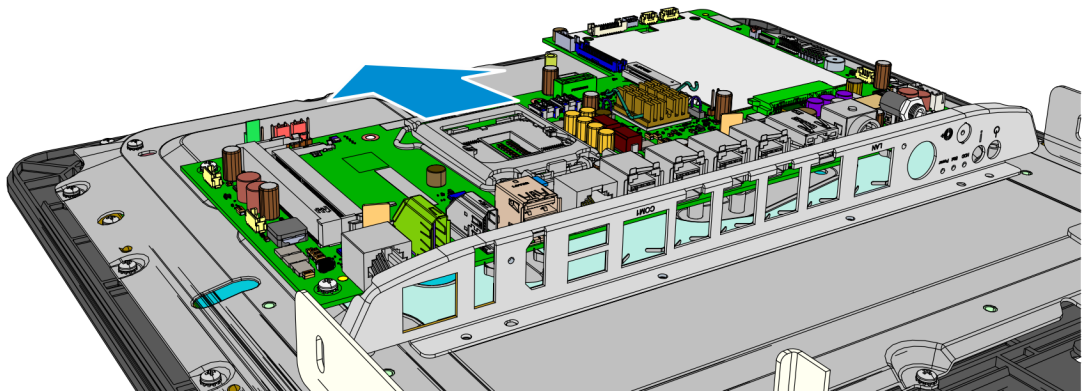
CCP-73668

4. Remove the five screws that secure the Motherboard to the Display Head.



CCP-73669

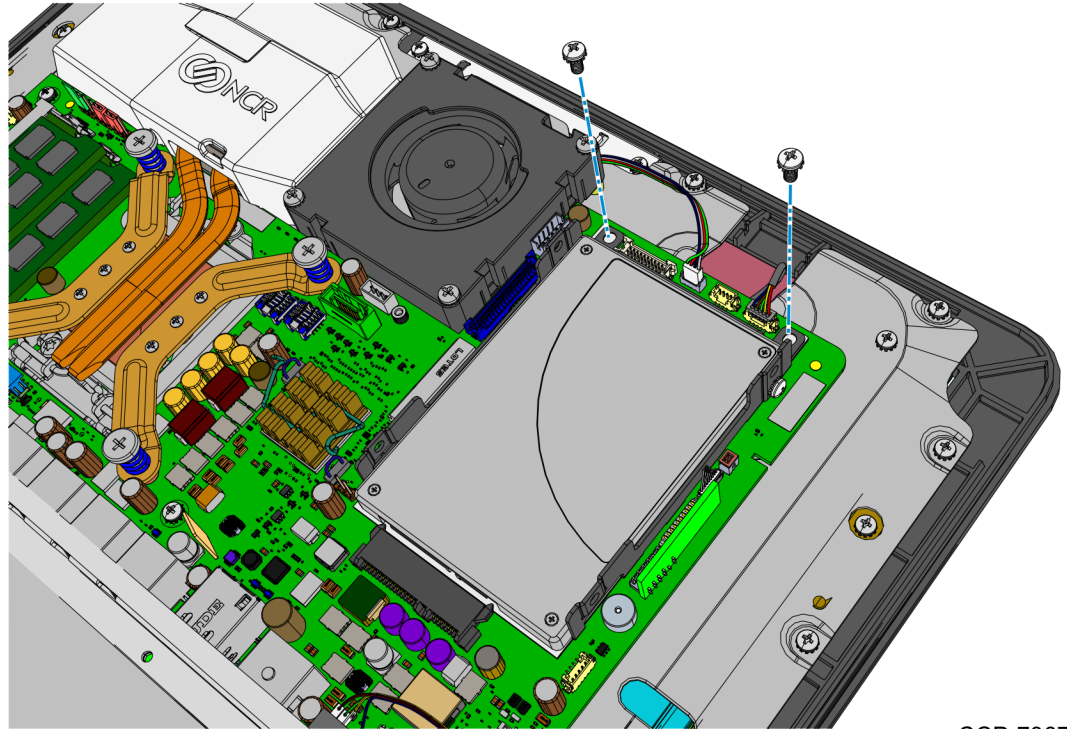
5. Slide the Motherboard backward out of the I/O panel and lift the motherboard off of the Display Head.



CCP-73670

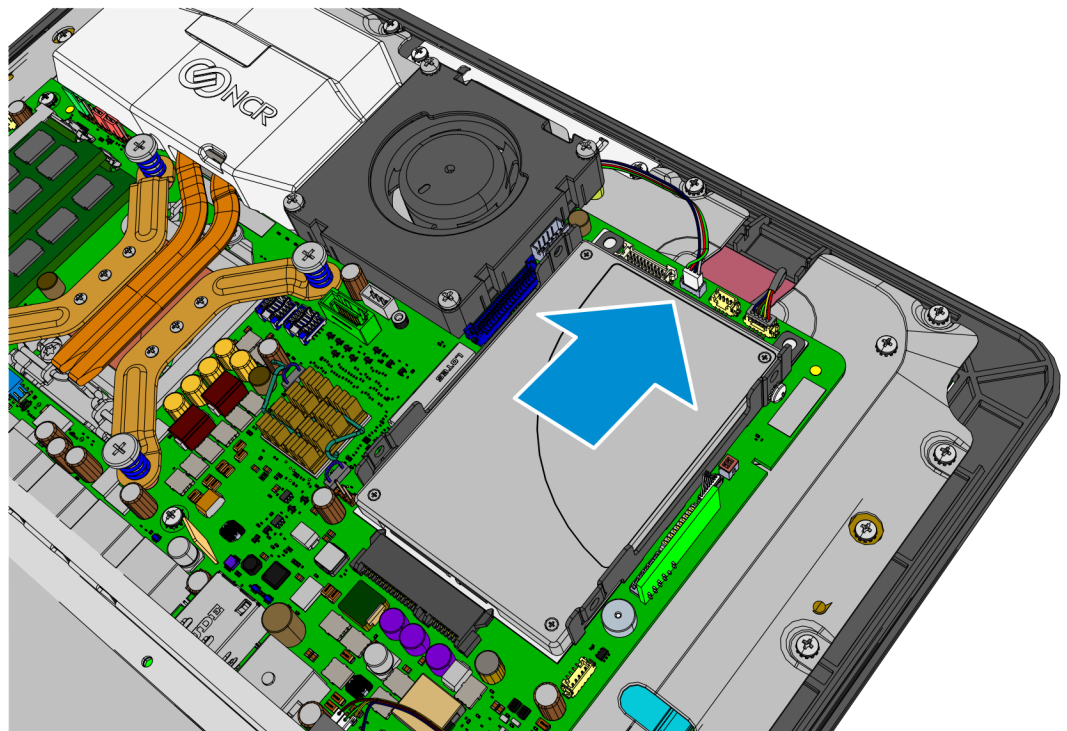
Removing the Storage Media

1. Remove the two screws securing the Storage Media assembly to the Motherboard.



CCP-73671

2. Slightly slide the Storage Media assembly upward to disconnect the Storage Drive from the SATA connector and then remove the assembly.



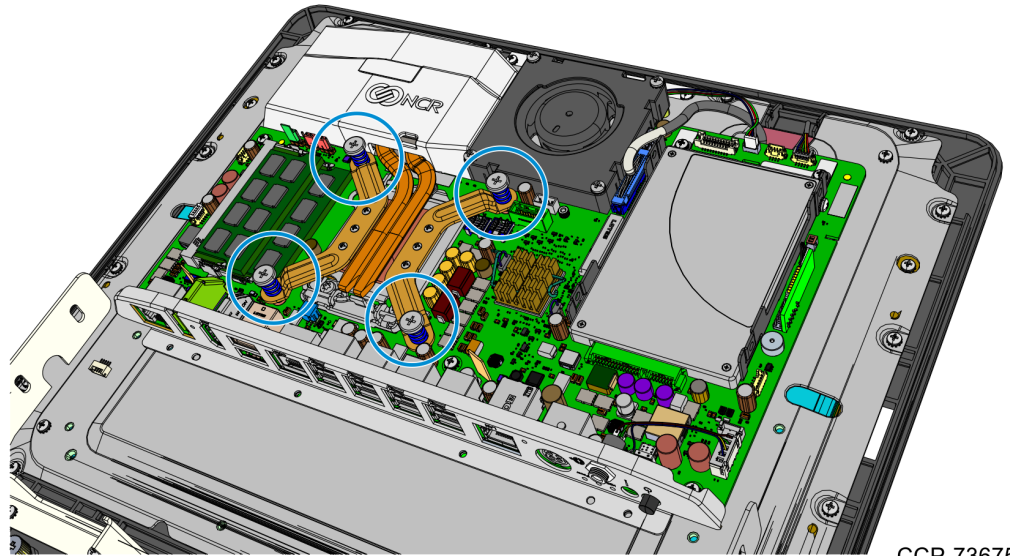
CCP-73673

Removing the Heat Sink

1. Loosen the spring-loaded screws.

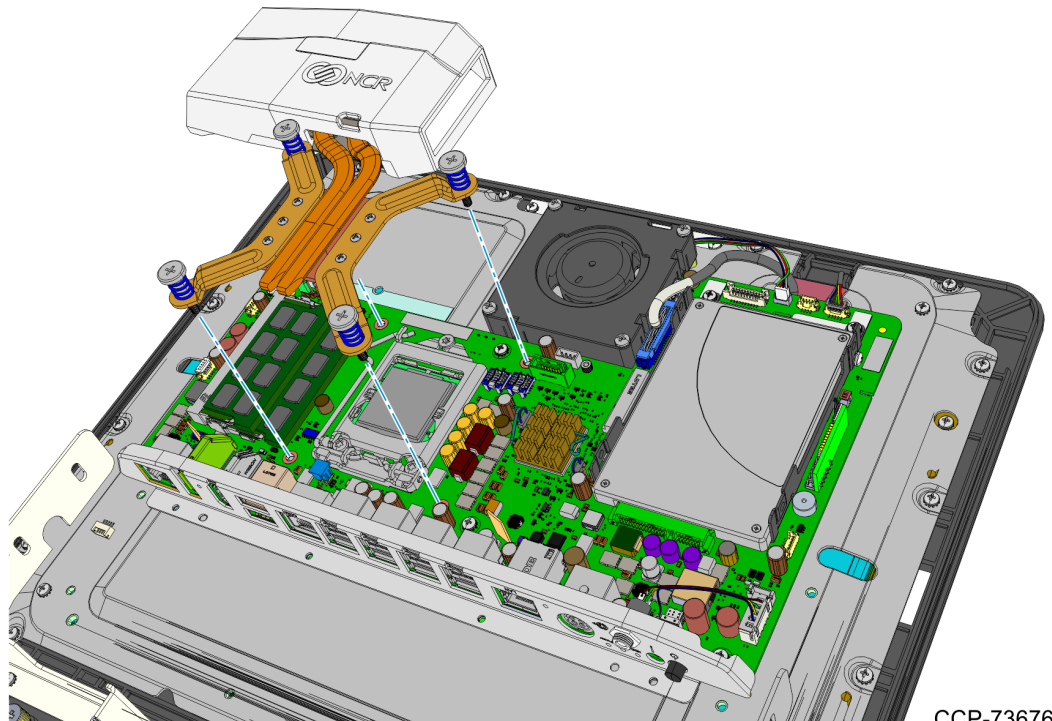


Note: Use a sequential rotating pattern when loosening the spring-loaded screws. Loosen each screw a little at a time to evenly raise the Heat Sink from the CPU.



CCP-73675

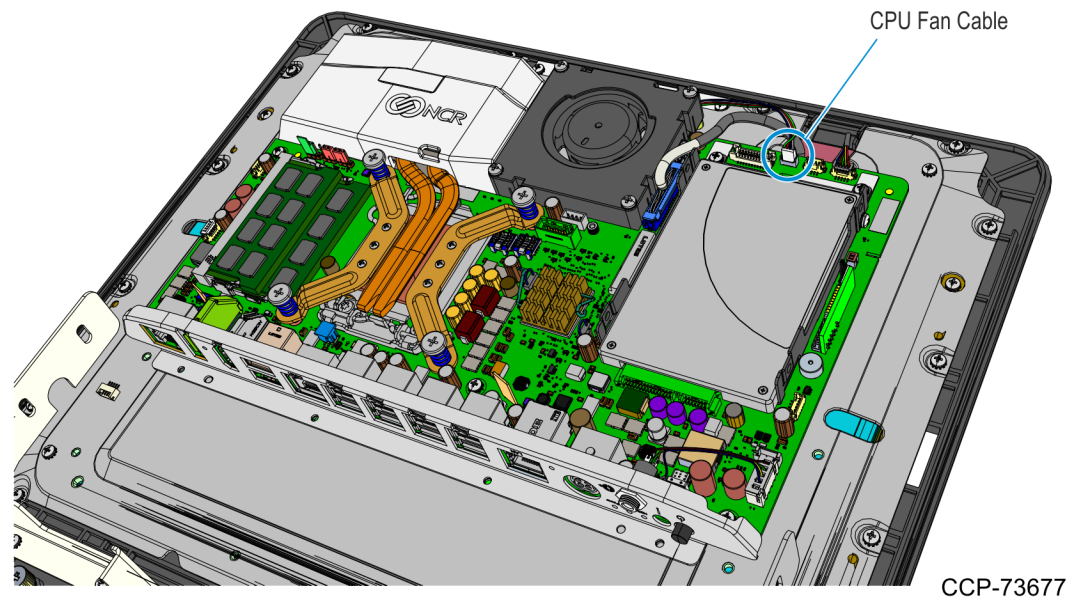
2. Remove the Heat Sink assembly from the Motherboard.



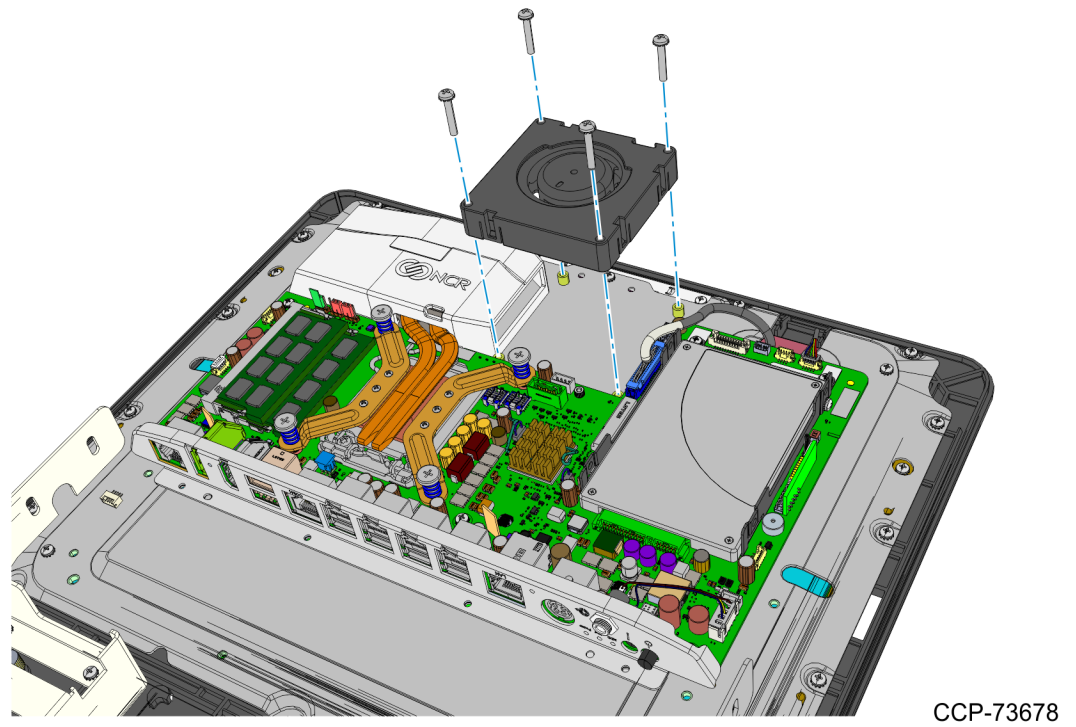
CCP-73676

Removing the CPU Fan

1. Disconnect the CPU Fan cable.



2. Remove the four screws that secure the CPU Fan.



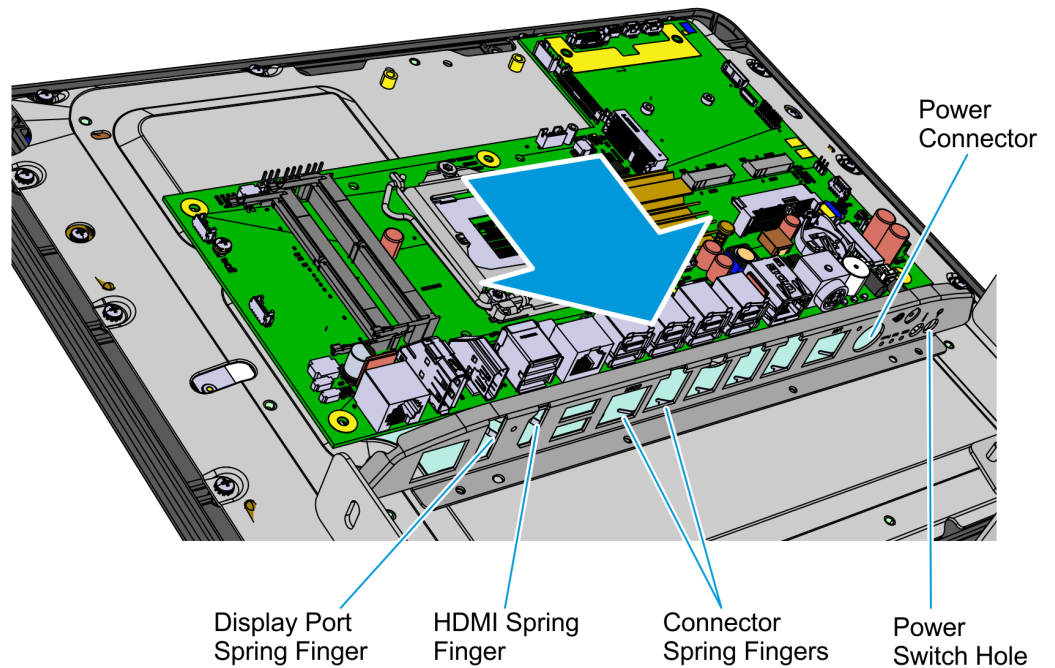
Installing the Motherboard

1. Mount and secure the Motherboard onto its tray.



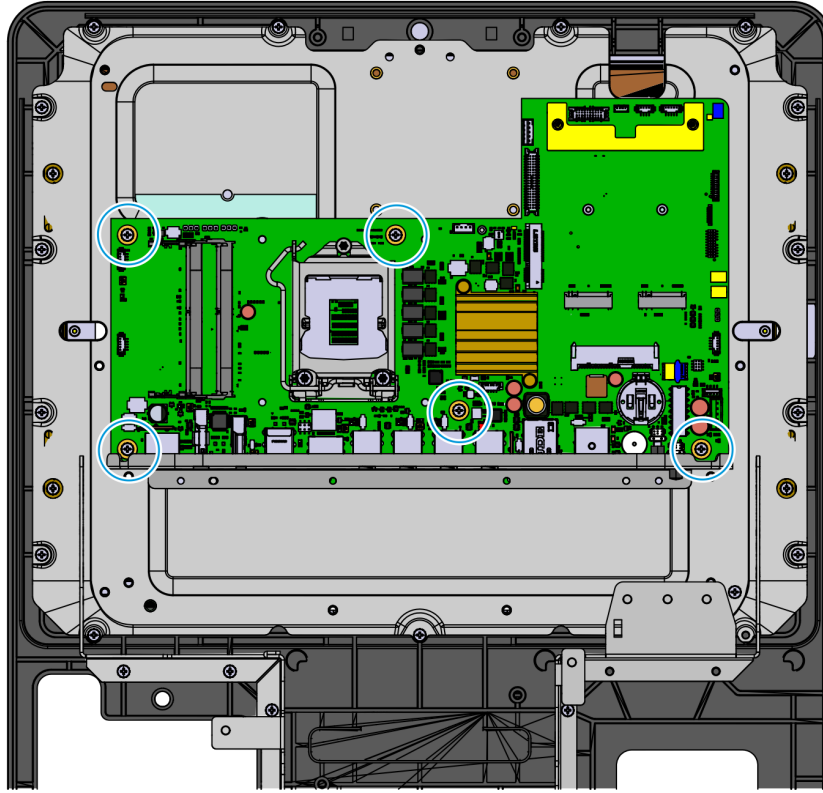
Caution: Make sure to align the power button and the spring fingers for the Display Port, HDMI, and Power connectors.

- a. Place the Motherboard on its tray and slide the Motherboard forward, aligning its I/O Ports to the corresponding apertures and spring fingers on the EBox.



CCP-83547

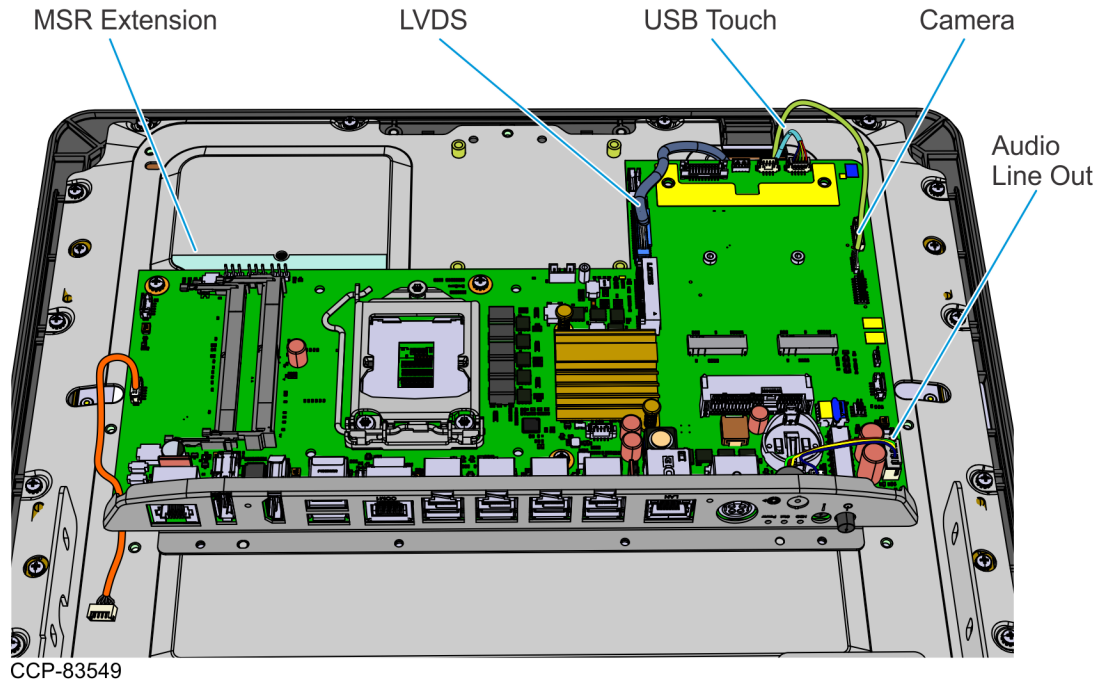
- b. Secure the Motherboard with five screws. Push the Motherboard against the spring fingers along the connectors while tightening the screws.



CCP-83548

2. Connect the following cables to the Motherboard:

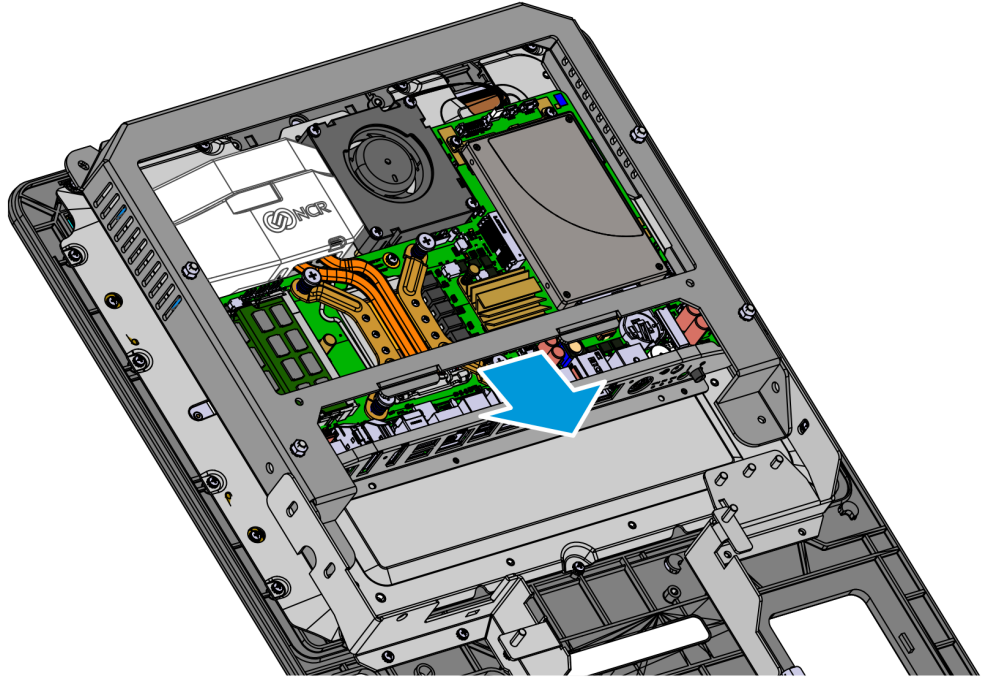
- LVDS
- USB Touch
- Camera
- Audio
- MSR Extension



3. Do the following:

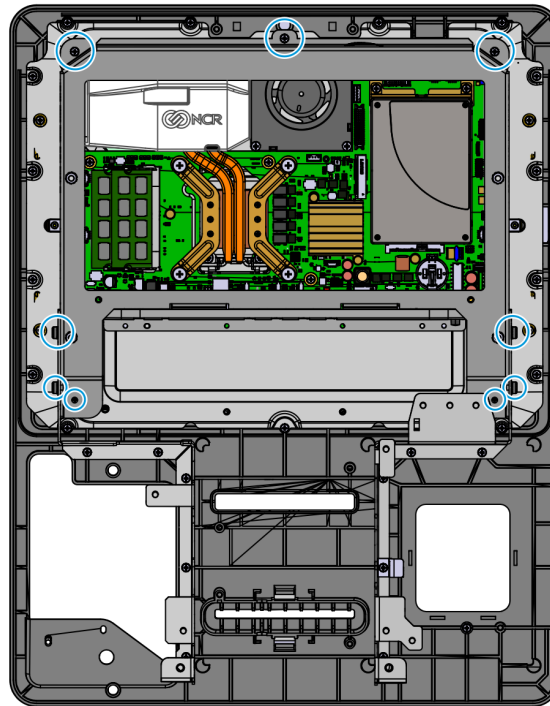
- Install the Storage Media assembly. For more information, refer to [Installing the Storage Media](#) on page 31.
- Install the Memory Module. For more information, refer to [Installing the Memory Module](#) on page 32.
- Install the Processor. For more information, refer to [Installing the Processor](#) on page 33.
- Install the Heat Sink assembly. For more information, refer to [Installing the Heat Sink](#) on page 34.
- Install the CPU Fan. For more information, refer to [Installing the CPU Fan](#) on page 36.

4. Mount and secure the Motherboard Bracket.
 - a. Slide the bracket into the Z-shaped bracket on the display head.



CCP-83556

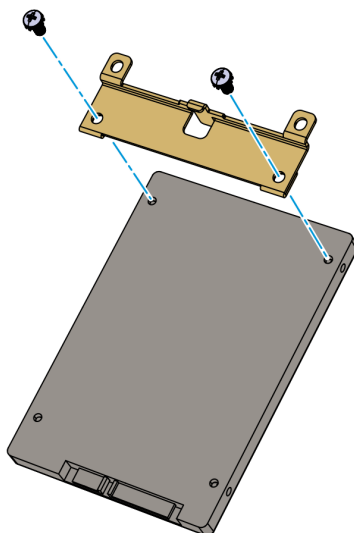
- b. Secure the bracket to the display head using nine screws.



CCP-83557

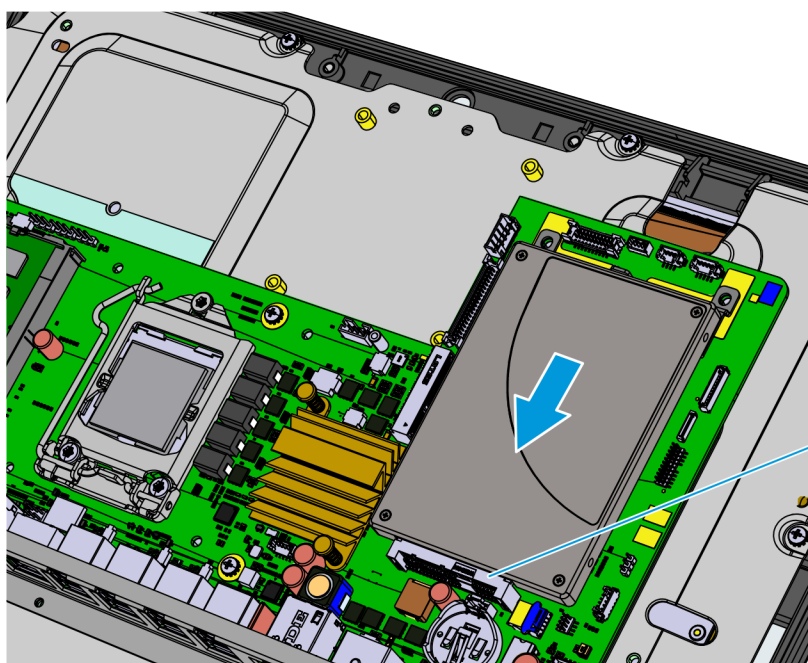
Installing the Storage Media

1. Mount the Storage Media on the bracket and secure with two screws.



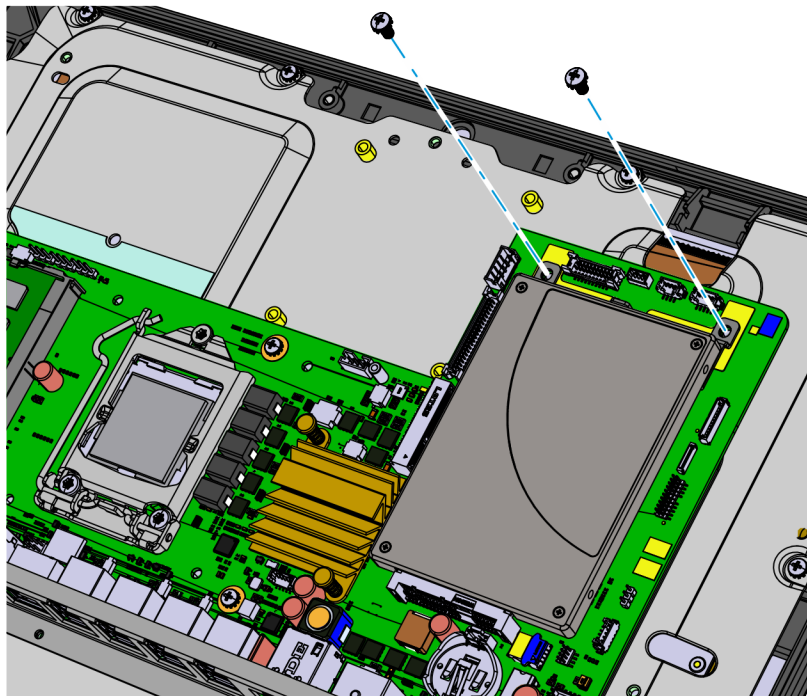
CCP-78110

2. Connect the Storage Media to the on-board SATA connector to mount the Storage Media assembly.



CCP-83550

- Secure the Storage Assembly to the Motherboard using two screws.

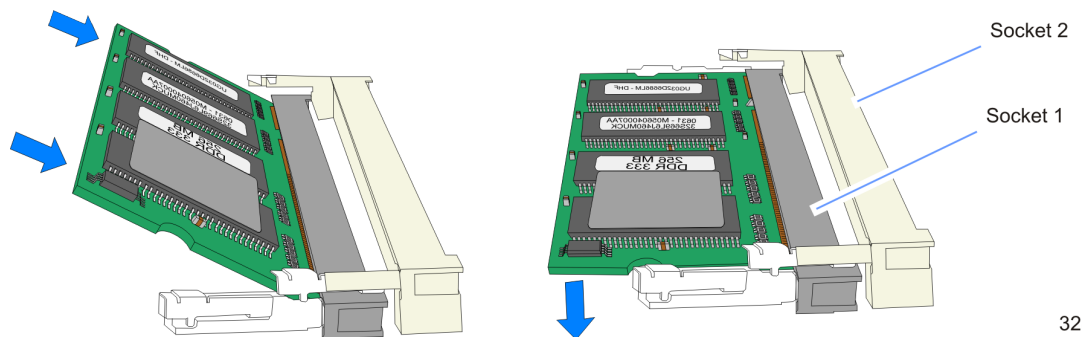


CCP-83551

Installing the Memory Module

Memory configurations containing a single memory module should be installed in the lower socket (Socket 1). Memory can be expanded by installing a second module in the upper socket (Socket 2).

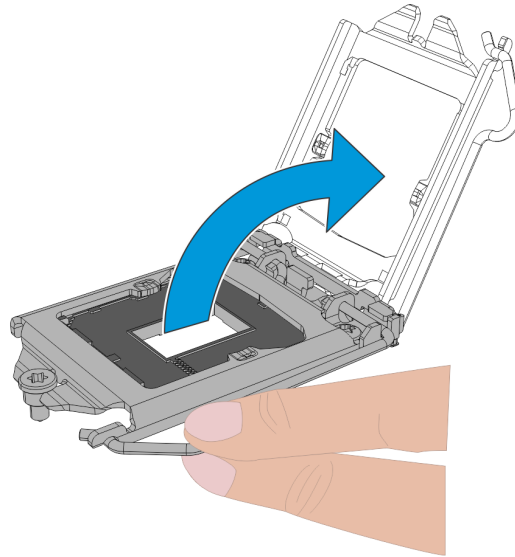
- To install a module, align it with the socket and push it into the socket (the socket is keyed).
- Press the module down until it latches in position. Ensure that the edges of the module engage the latches and that the latches are completely engaged.



32844

Installing the Processor

1. Press down on the CPU Socket Latch and open the Socket Cover.



72205

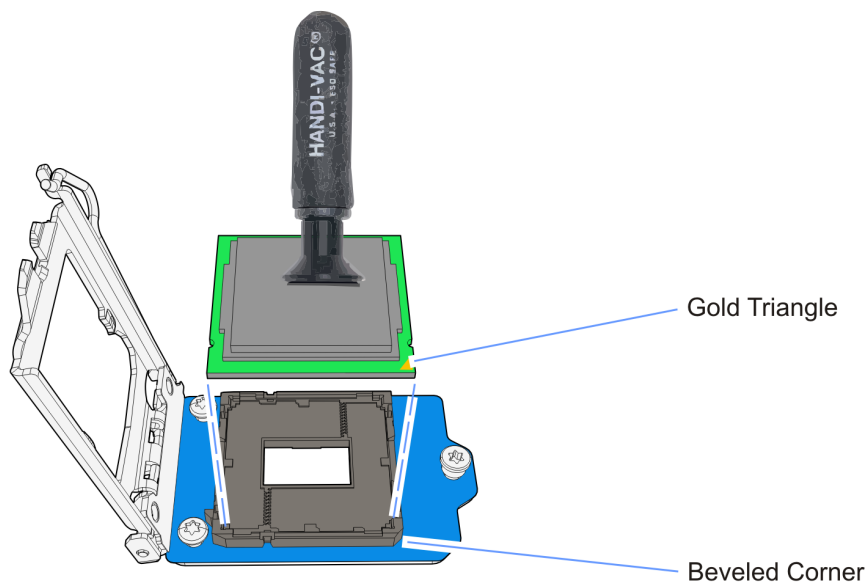
2. Carefully install the CPU using the Handi-Vac CPU Tool on the CPU socket.



Caution: Always use the Handi-Vac CPU Tool when handling the CPU. Do not touch the CPU contacts. Do not insert the CPU at an angle or force the CPU into the socket.



Note: Take note of the orientation of the CPU Module (gold triangle location).



32846

3. Close the Socket Cover, slipping the cover under the screw head.

Installing the Heat Sink

1. Remove the old thermal grease from the Heat Sink surfaces.



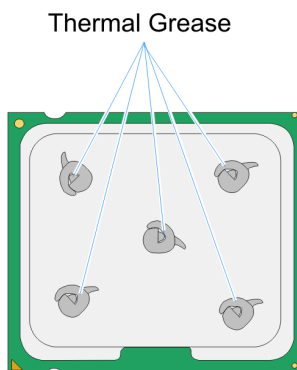
Caution:

- Remove as much of the existing grease from the Heat Sink using a nonabrasive, dull object. A paper towel is an effective choice.
 - Do not use a sharp, metal object such as a razor blade, knife, trowel, or similar as it may scratch the Heat Sink.
 - Remove remaining residue using a non-abrasive, lint free cloth and rubbing alcohol.
 - Make sure the surface is completely clean and lint free. Residue can mix with fresh grease to cause uneven contact and non-uniform cooling.
 - Make sure no grease contacts the circuit board. Heat Sink grease is a strong electrical conductor and can short signals on the motherboard.
2. Apply thermal grease to the Processor. Use approximately one quarter of the contents of the grease syringe to the top of the Processor. Do not use the entire contents of the syringe. Too much grease can block the airflow around the processor heat spreader. The goal is for the processor chip to be evenly covered with grease once the Heat Sink is installed.

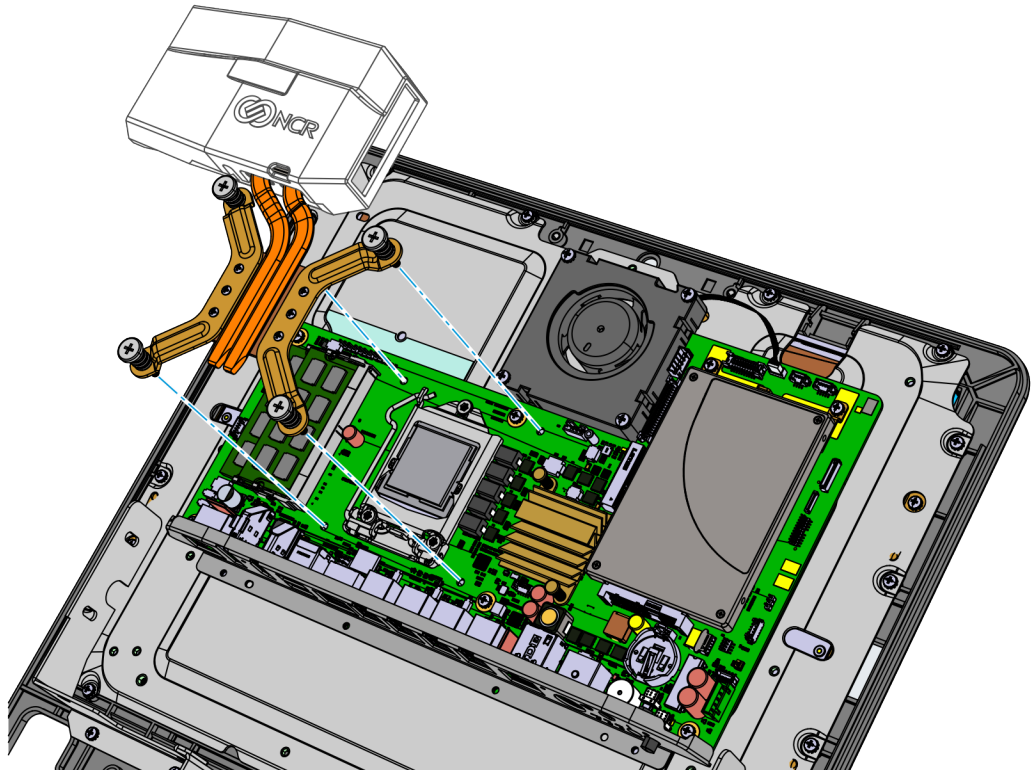


Caution:

- Do not apply the grease with a bare finger tip or talc-coated glove. Oils on skin and particulate on the glove can contaminate the grease.
- Make sure none of the grease gets on the circuit board. Heat sink grease is a strong electrical conductor and can short signals on the board if it crosses trace paths.
- Recheck to make sure no foreign contaminants are present on either the bottom of the heat sink or the top of the Processor.



3. Install the Heat Sink assembly on top of the processor.

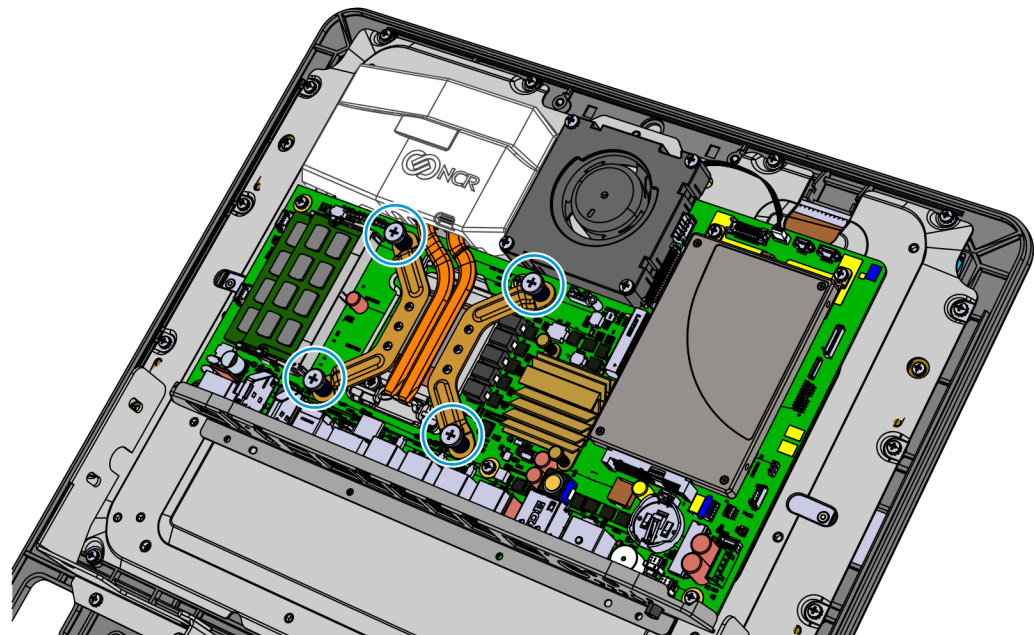


CCP-83552

4. Tighten the spring-loaded screws.



Note: Do not fully tighten any screw on the first turn. Use a stepping method when tightening the spring-loaded screws. Tighten each screw a little at a time, 2 turns at a time, to evenly secure the Heat Sink on the CPU.

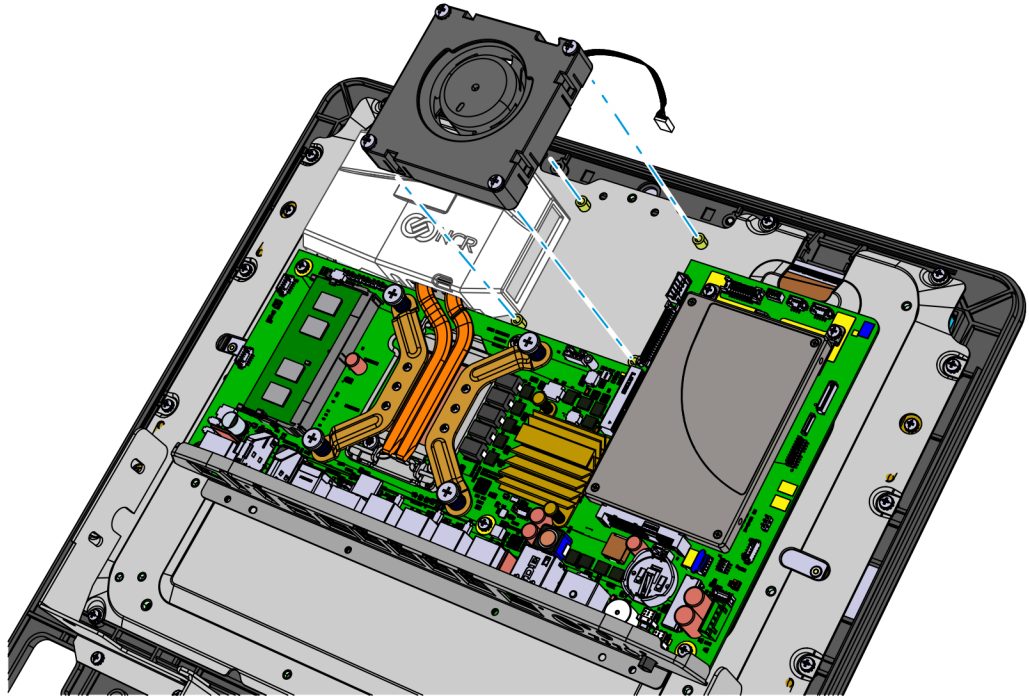


CCP-83553

Installing the CPU Fan

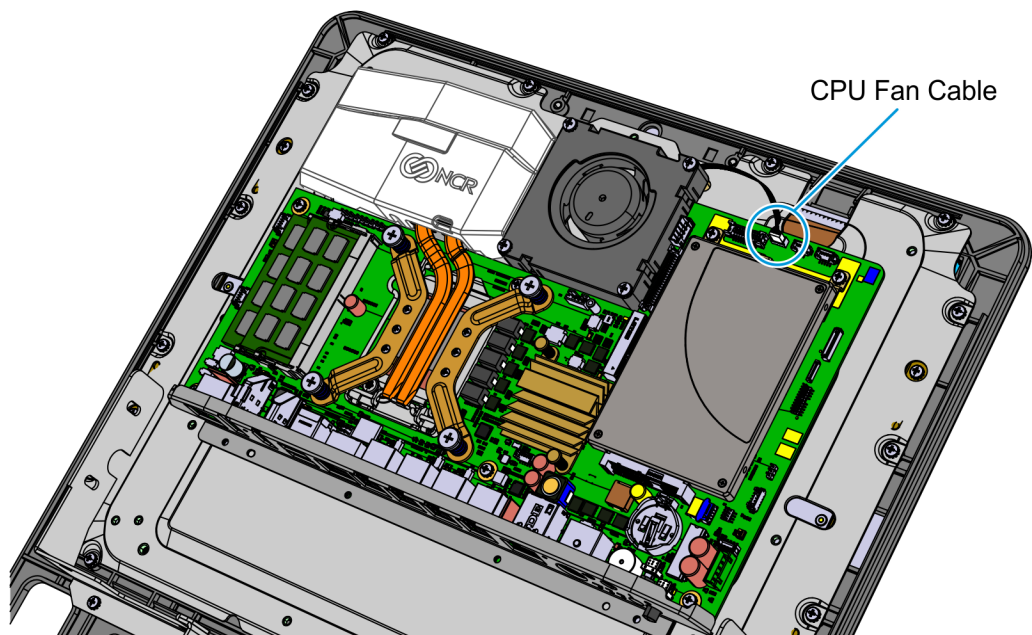
1. Mount the CPU Fan on the motherboard and secure with four screws.

! Important: When replacing the fan, the air flow should exit out the left side of the fan, in the direction of the CPU Heat Sink. There is an arrowhead located on the fan that indicates the air flow direction.



CCP-83554

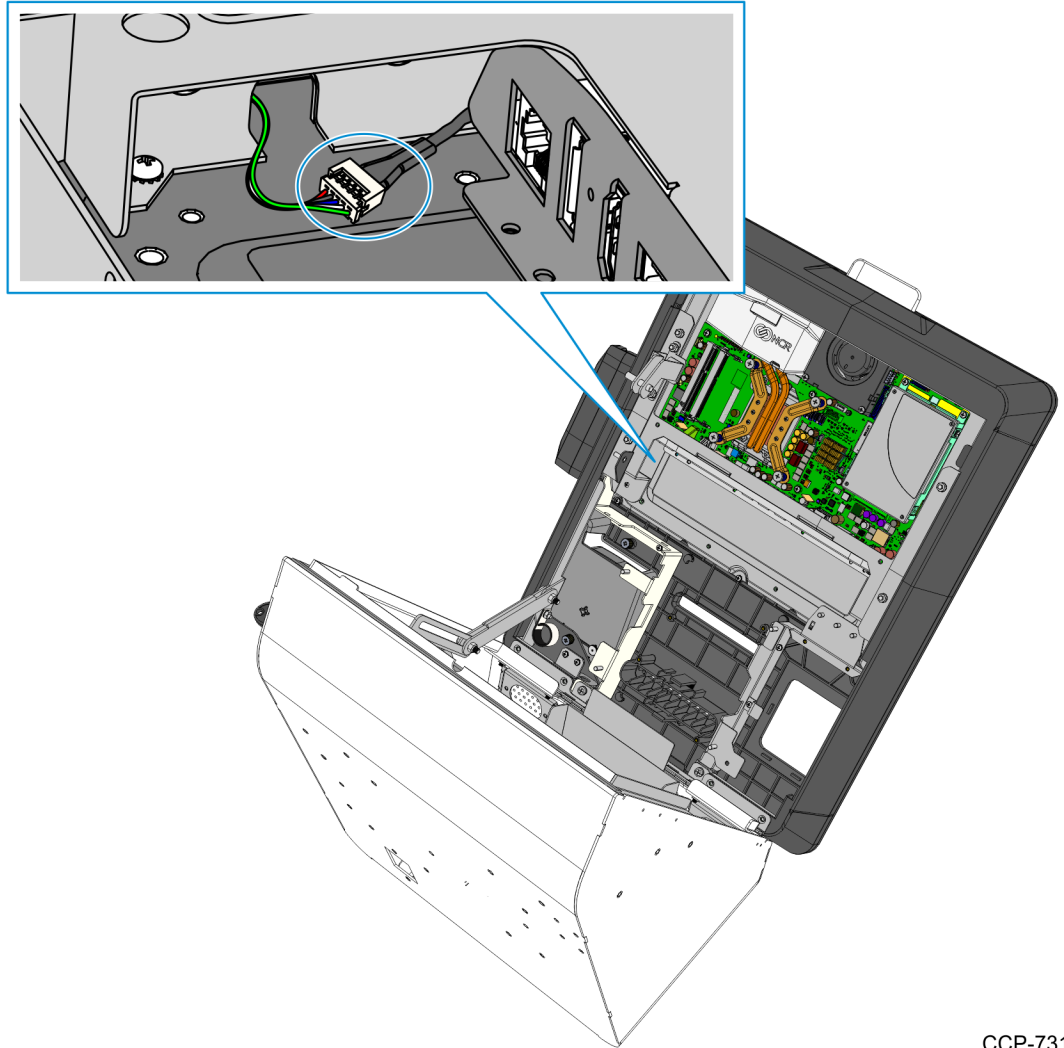
2. Connect the CPU Fan cable.



CCP-83555

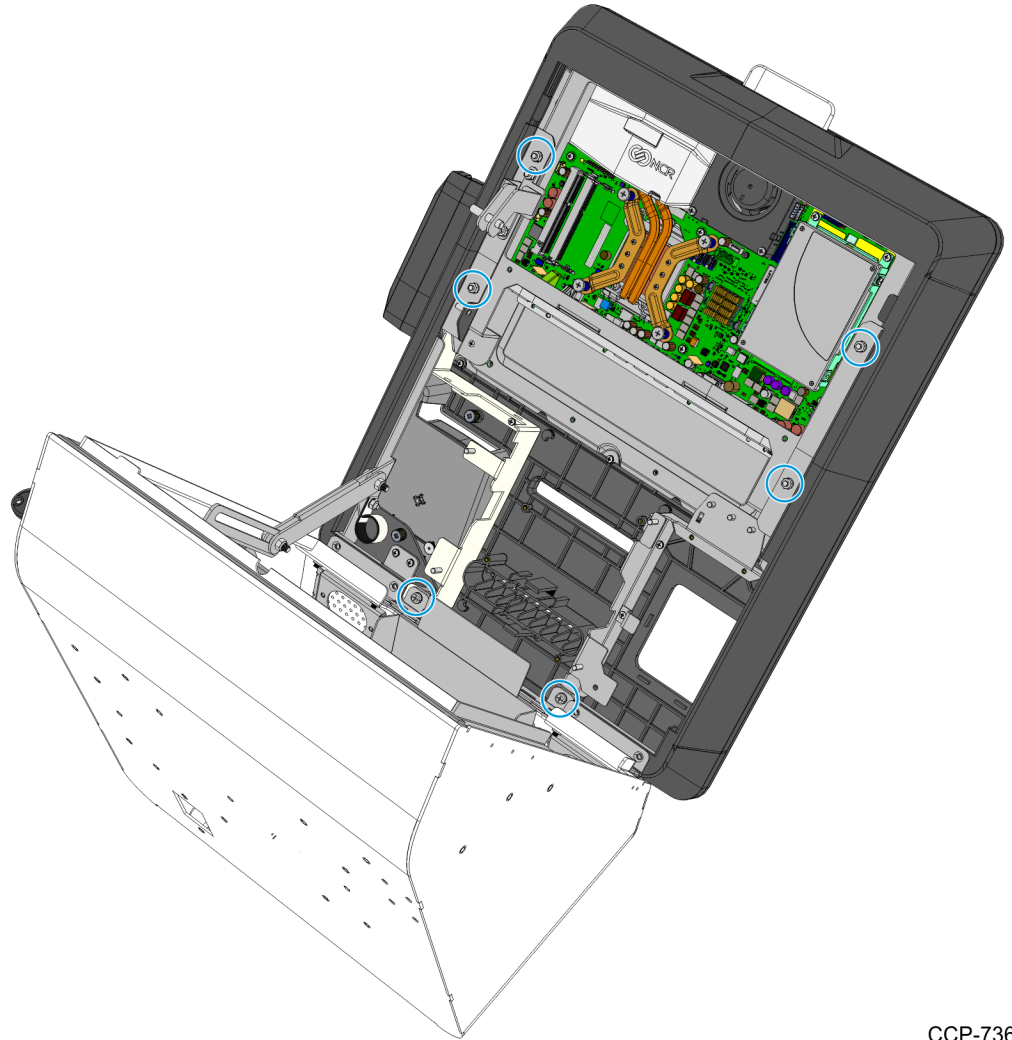
Installing the Display Head

1. Position the Display Head assembly in front of the Display Rear Cover, inserting the MSR cable into the access hole of the Motherboard Bracket.



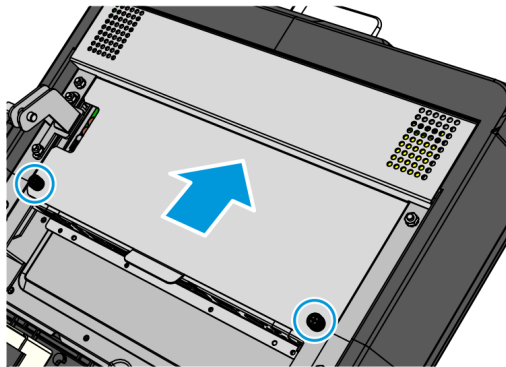
2. Secure the Display Head assembly to the cover using the following:

- two nuts on the right-hand side bracket
- two nuts on the left-hand side bracket
- two screws on the bottom brackets



Installing the Service Cover

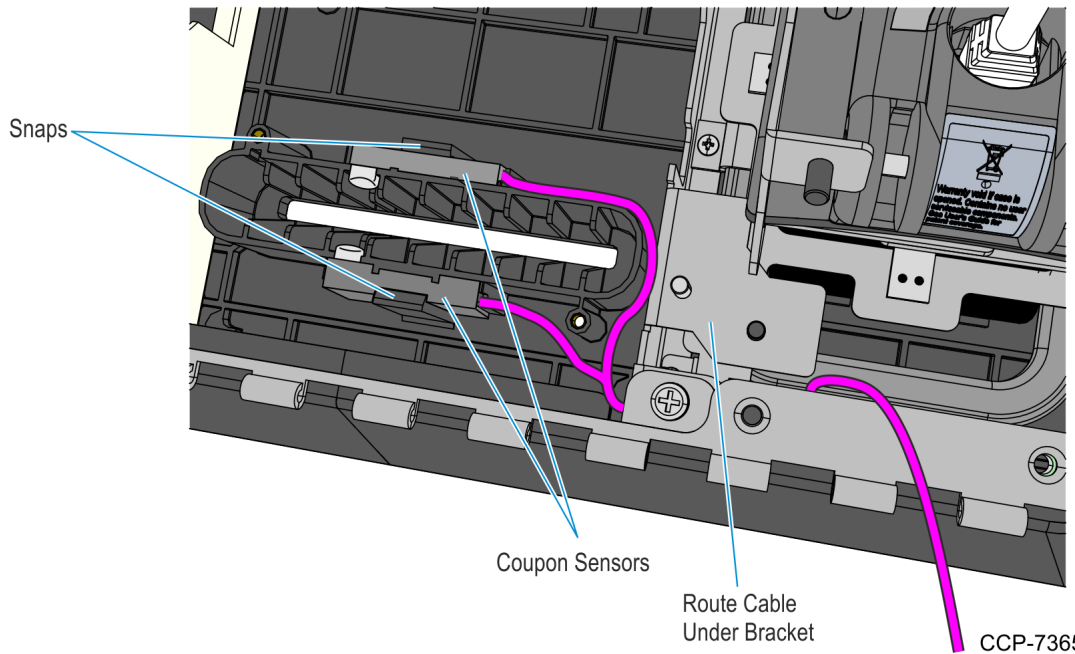
- Slide the cover upward and tighten the two thumbscrews.



CCP-73683

Installing the Coupon Sensors

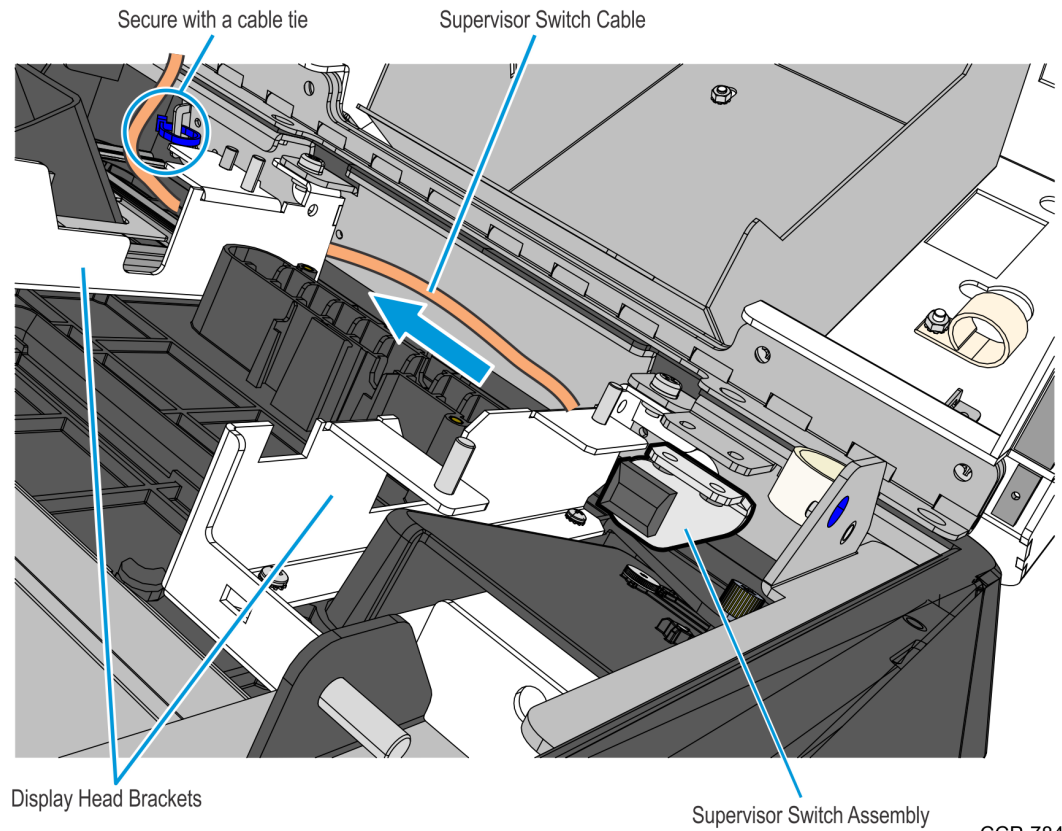
- On the Display Head, route the cable under the Imager Bracket and snap the Coupon Sensors near the coupon entry slot.



CCP-73659

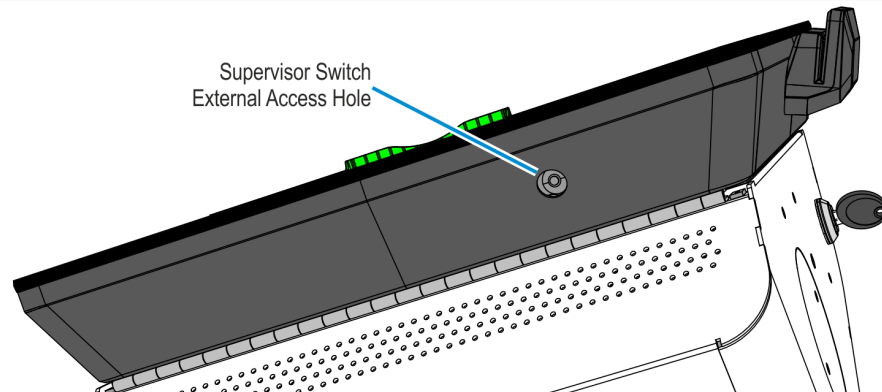
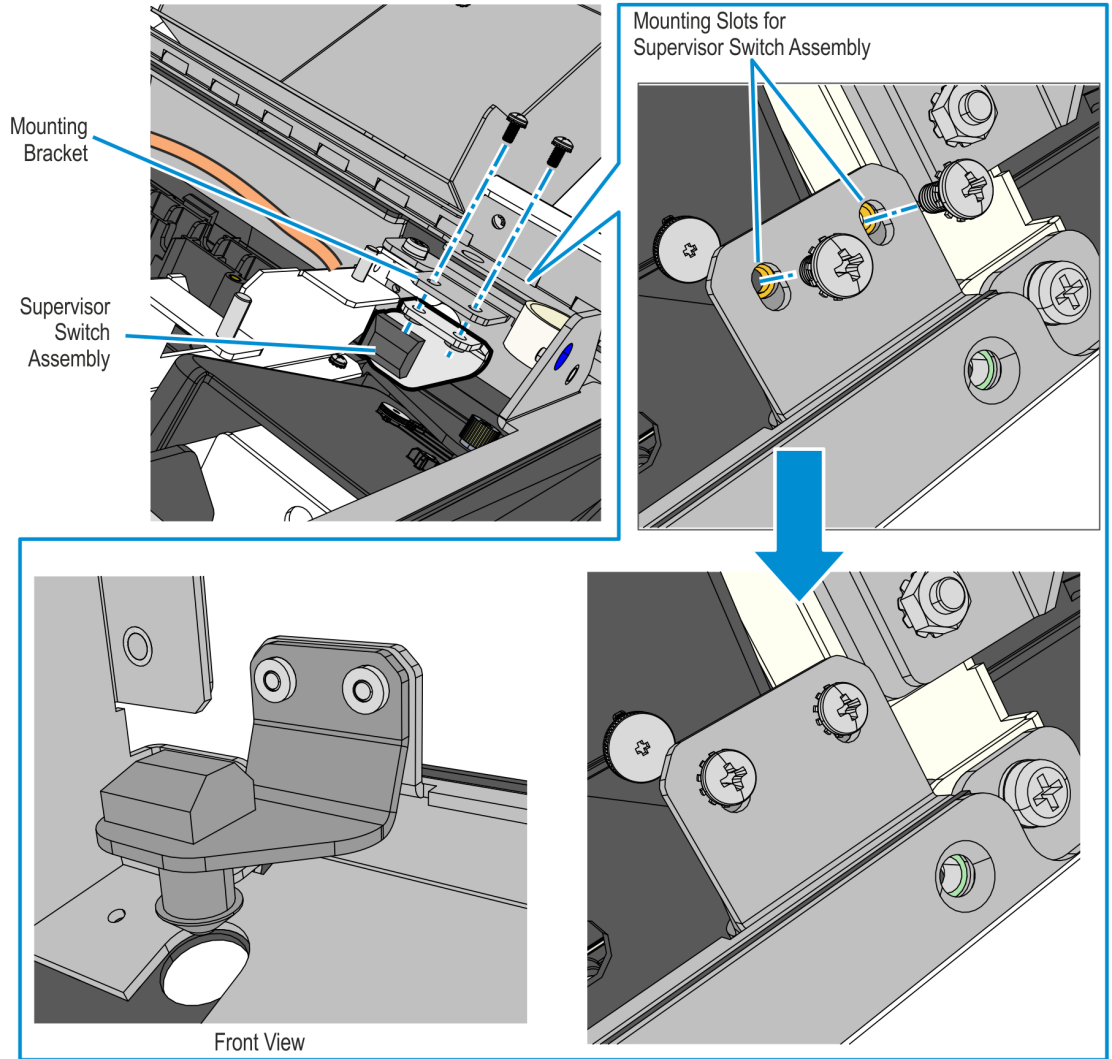
Installing the Supervisor Switch

1. Route the Supervisor Cable from the PIN Pad side towards the Imager side, passing the cable under the two Display Head Brackets shown below. Using a cable tie, secure the Supervisor Switch cable to the Display Head.



2. Mount and secure the Supervisor Switch assembly to the Display Head using two screws.

! Important: Make sure that the Supervisor assembly is mounted parallel with its mounting bracket and secured to the top side of the mounting slots. This position provides the appropriate space for the assembly and properly aligns the Supervisor Switch to its external access hole.



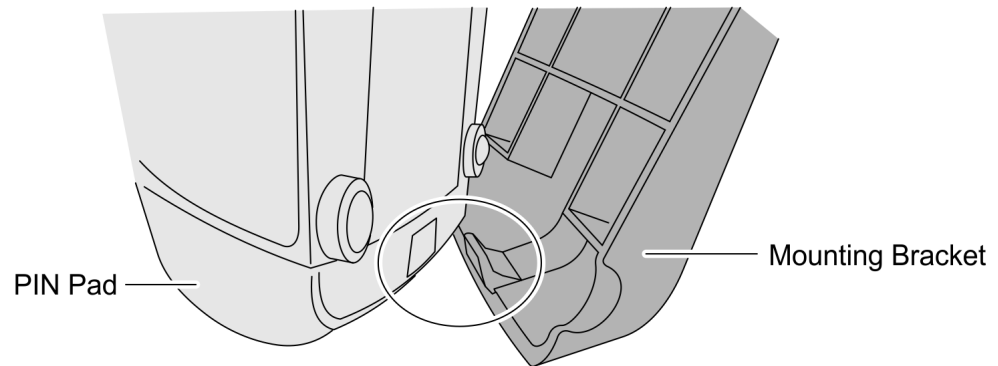
Installing the PIN Pad

Refer to the following sections for procedures in installing the PIN Pad on **NCR 7709 R1.2** units:

- [Installing the Ingenico IPP320/350 PIN Pad](#) below
- [Installing the Verifone VX805/820 PIN Pad](#) on the facing page

Installing the Ingenico IPP320/350 PIN Pad

1. Position the Mounting Bracket onto the screws, and then tighten the screws.
2. Connect the PIN Pad Cable to the PIN Pad.
3. Mount the PIN Pad to the Mounting Bracket by aligning the slot on the lower back of the PIN Pad with the small tab on the lower portion of the Mounting Bracket.

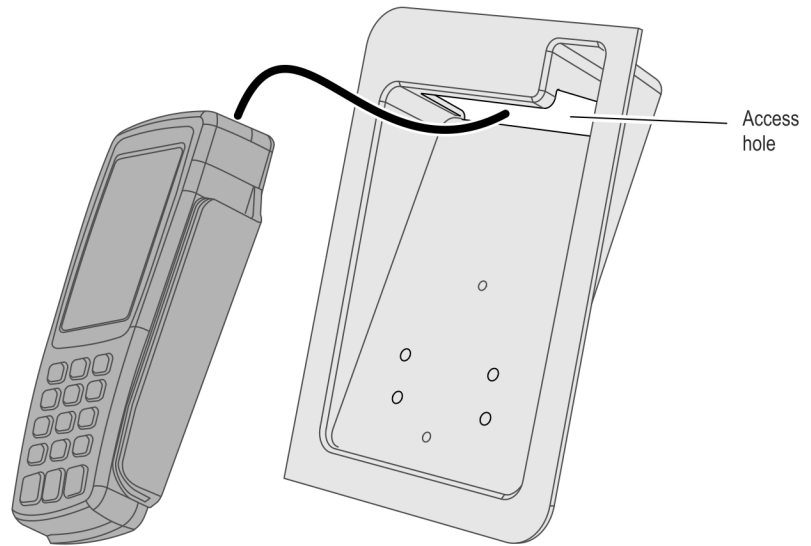


CCP-60071

4. Push the PIN Pad until it snaps to the upper portion of the Mounting Bracket.

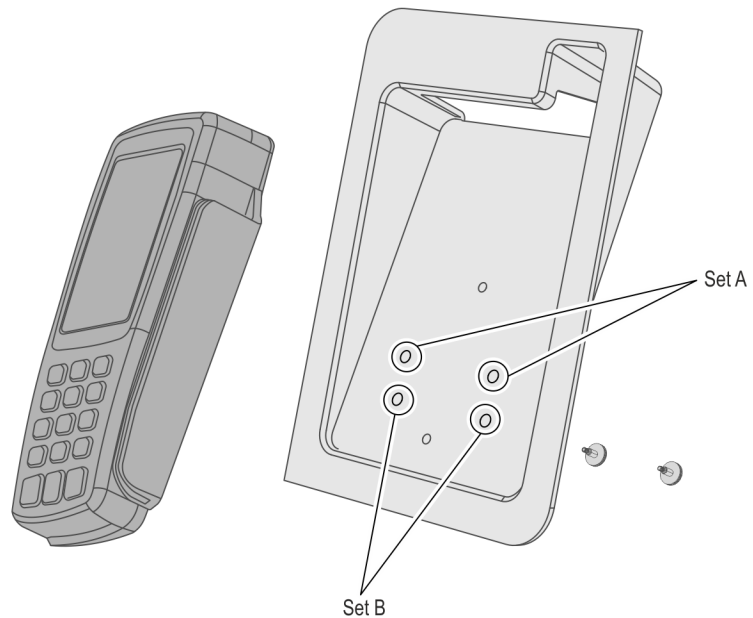
Installing the Verifone VX805/820 PIN Pad

1. Connect the PIN Pad Cable to the PIN pad and route the cable through the access hole on the PIN Pad cradle.



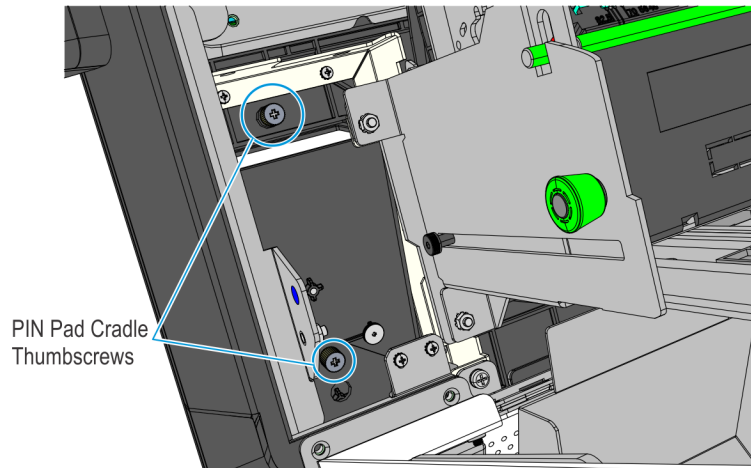
CCP-61344

2. Align the PIN pad mounting holes to the appropriate mounting holes set on the PIN pad cradle as shown below and secure the PIN Pad with two screws.
 - Use Set A mounting holes for VX 805 PIN pad.
 - Use Set B mounting holes for VX820 PIN pad



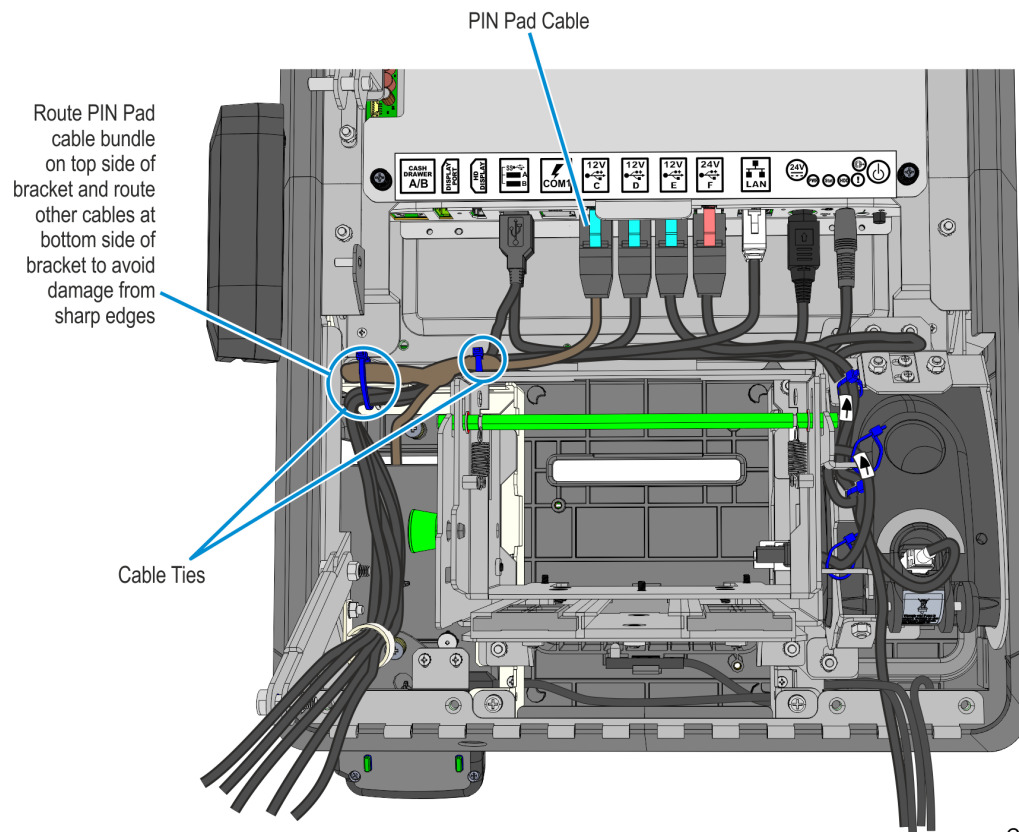
CCP-61346

3. Mount the PIN Pad and Cradle Assembly on the Display head and secure with two thumbscrews.



CCP-78706

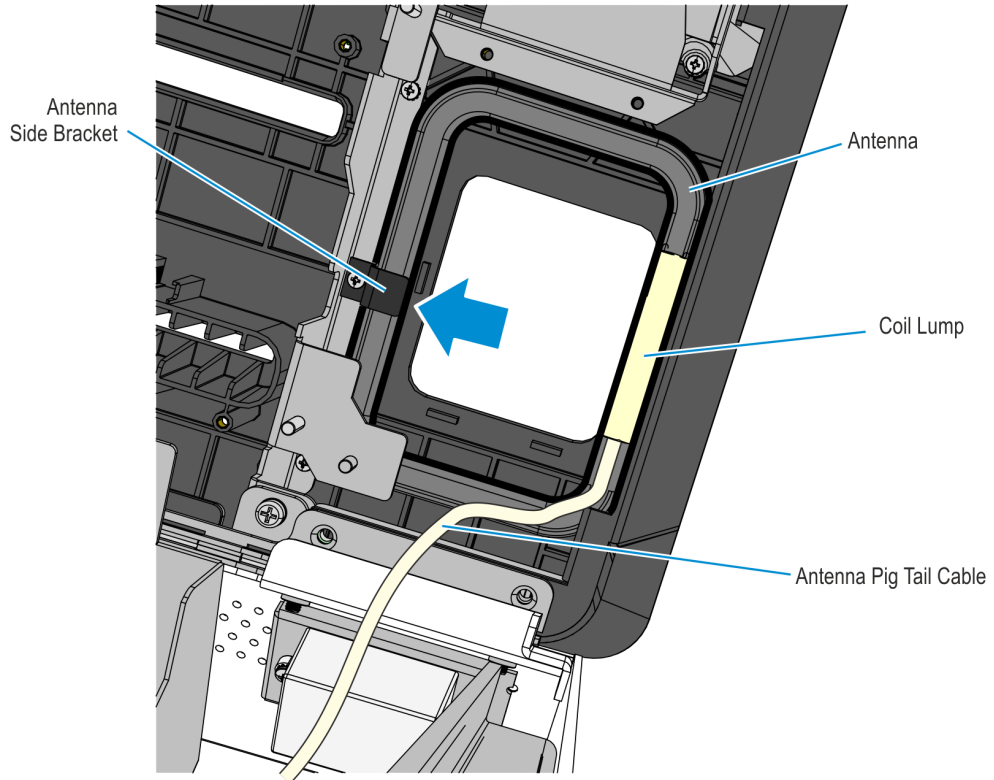
4. Connect the PIN Pad Cable to the PIN Pad. Cable tie the extra length of the cable as shown below.



CCP-73740

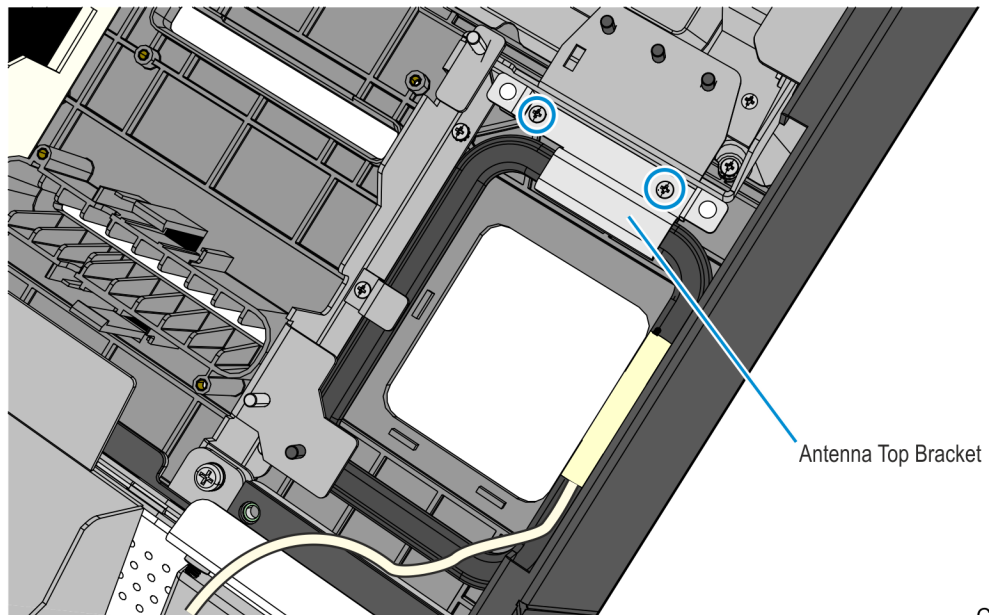
Installing the Sensormatic Antenna

1. Slide the Sensormatic Antenna under the side bracket. The pigtail cable should stick out at the lower right-hand corner of the display head assembly and the coil lump on the right-hand side of the antenna.



CCP-73649

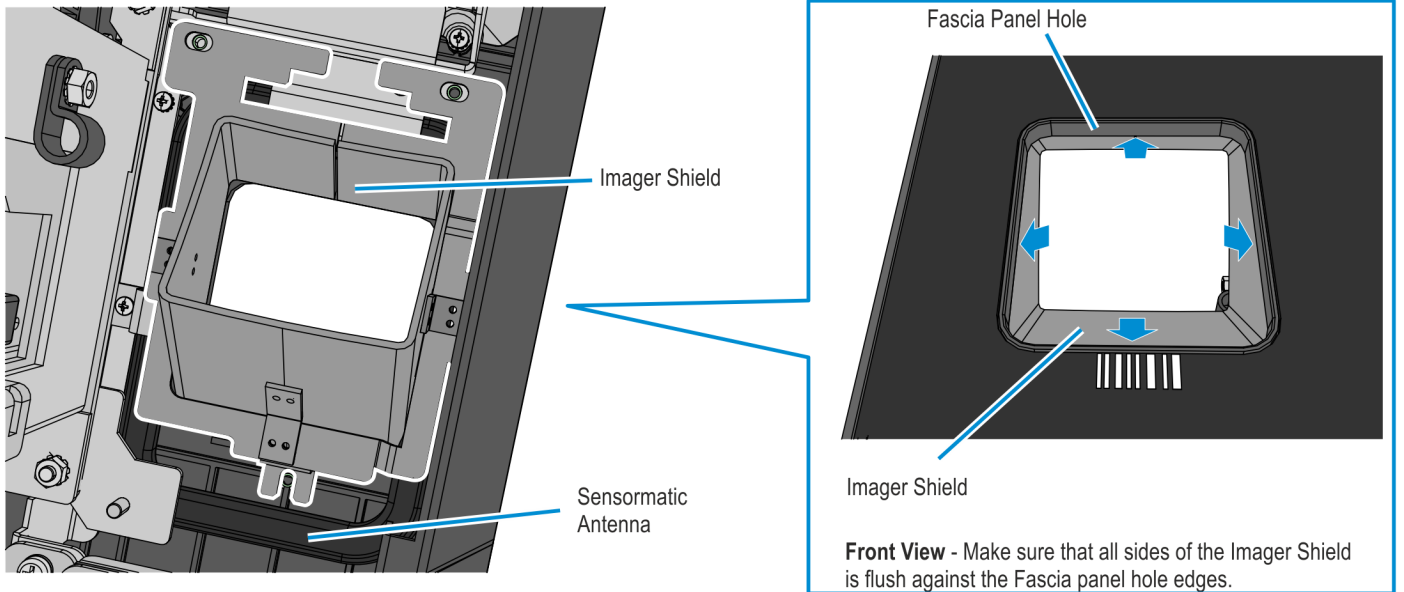
2. Mount and secure the Antenna Top Bracket using two screws.



CCP-73179

3. Install the Imager Shield assembly.
 - a. Mount the Imager Shield assembly over the antenna.

! Important: On the front side of the fascia, make sure that there is no gap between the Imager Shield and Fascia panel. All sides of the Imager Shield should be flush against the Fascia Panel. Adjust the alignment of the Imager Shield accordingly.



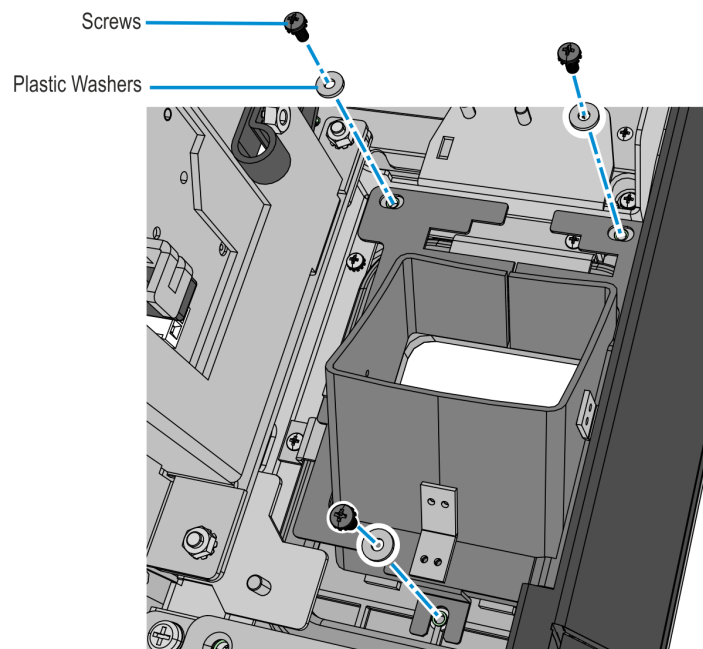
Rear View

CCP-73893

- b. Secure the Imager Shield assembly using three M3 screws and plastic washers.

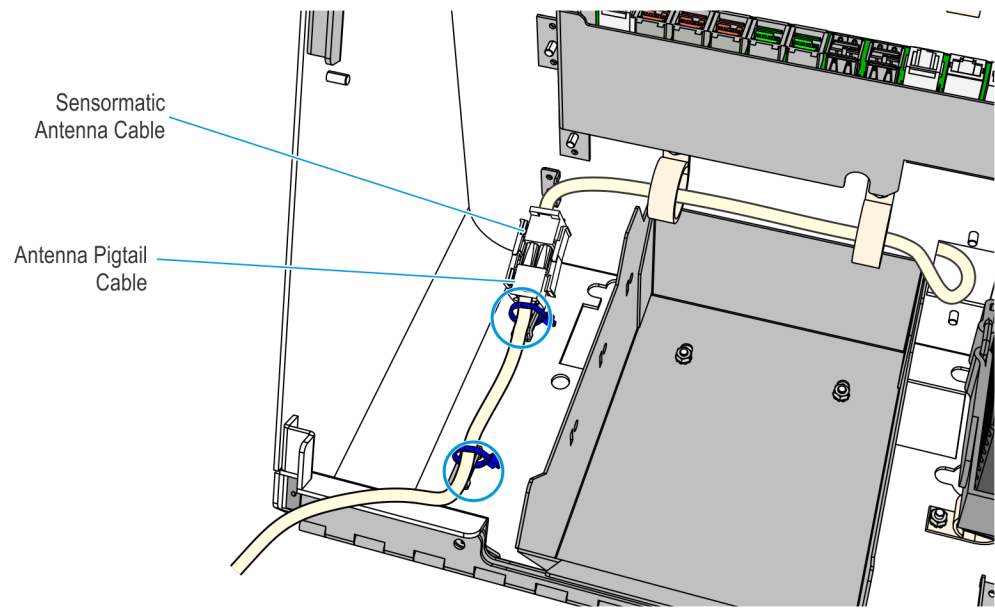


Caution: Make sure that the plastic washers are installed with the screws. These washers help protect the Imager from electromagnetic waves given off by the antenna.



CCP-73894

4. Reconnect the Sensormatic Antenna Pigtail cable to the Antenna Cable, and secure the pigtail cable with two cables ties.

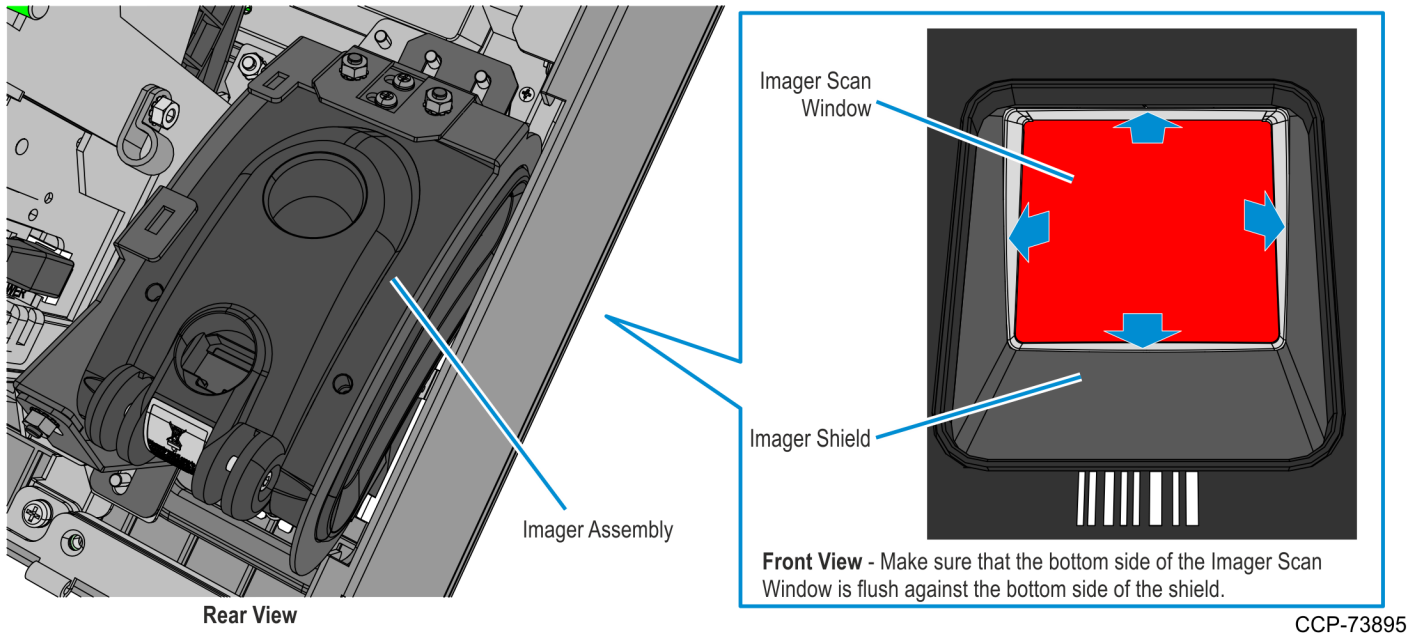


CCP-79150

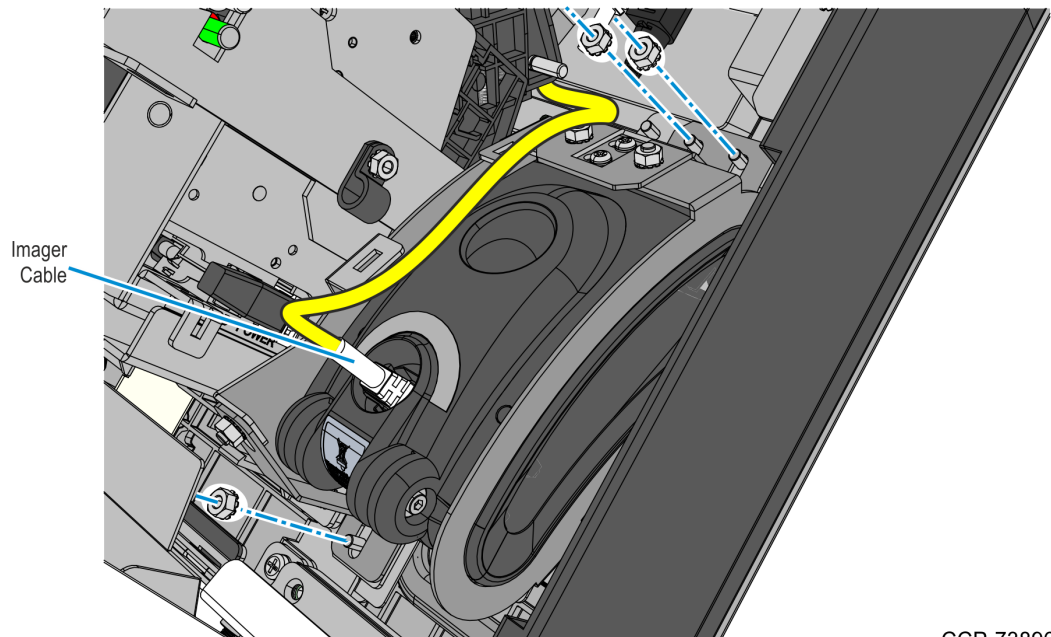
Installing the Imager Scanner

1. Mount the Imager assembly over the Imager Shield.

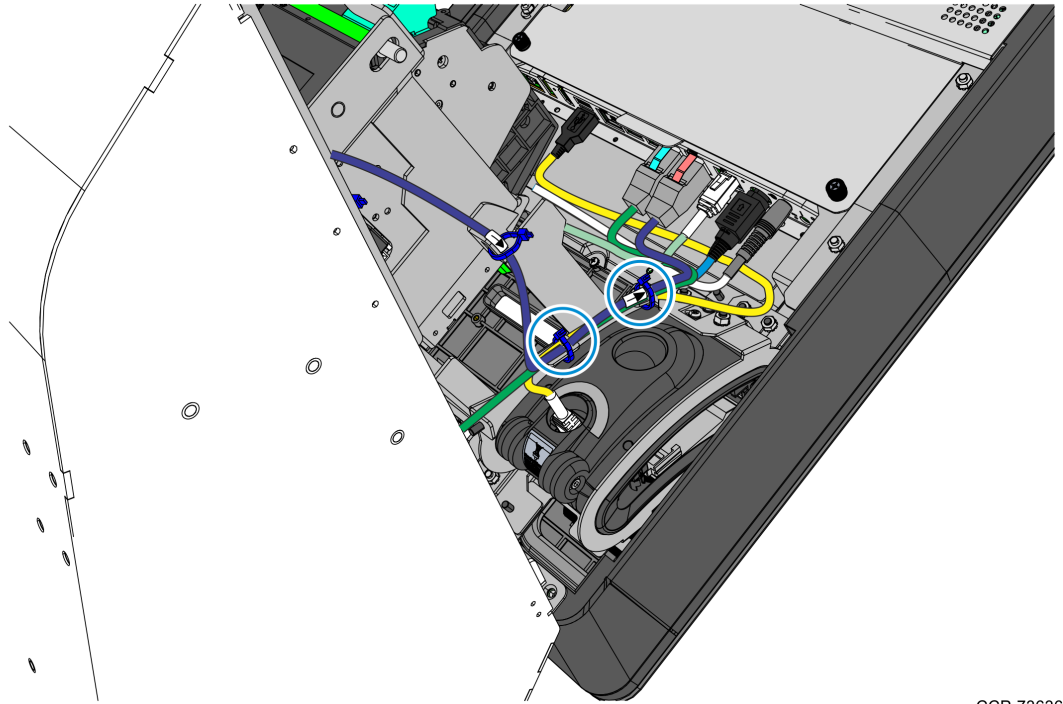
! Important: On the front side of the fascia, make sure that the bottom side of the Imager Scan Window is flush against the bottom side of the Imager Shield. Adjust the alignment of the Imager accordingly.



2. Secure the Imager assembly to the kiosk using three nuts.




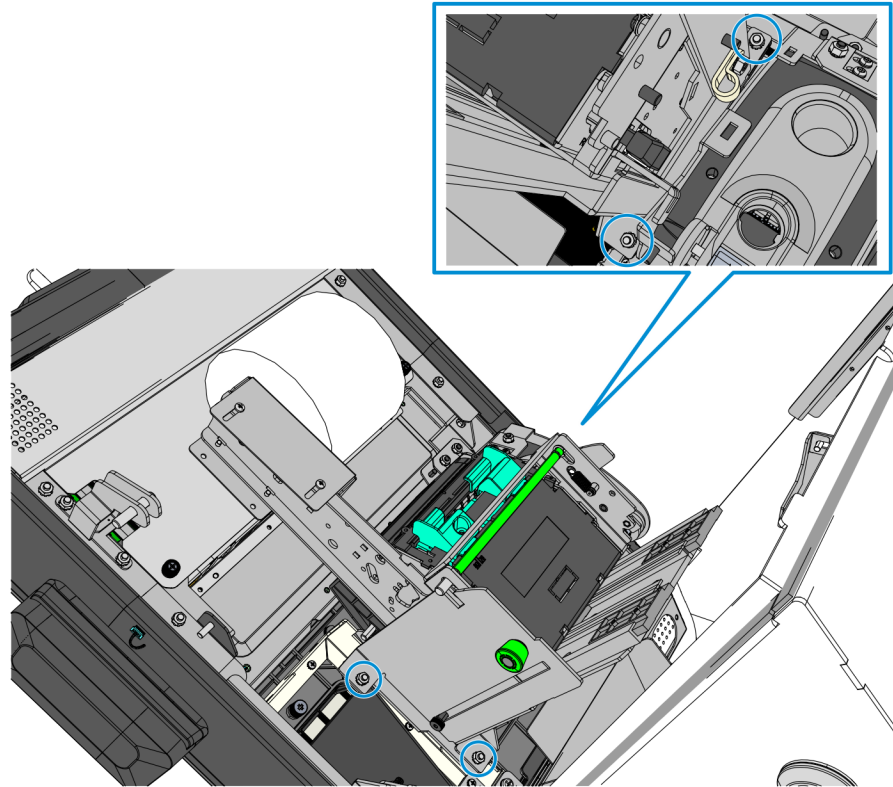
3. Bundle the following cables together and secure them to the Imager bracket using two cable ties:
 - Imager USB cable
 - Printer USB and Power cable
 - I/O Daughter Card Power cable



Installing the Receipt Printer

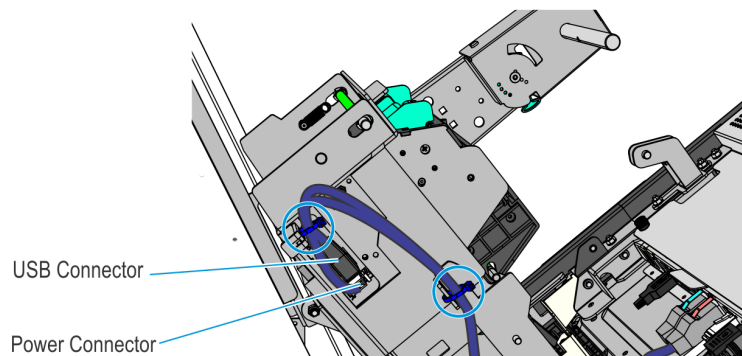
1. Mount the Receipt Printer assembly to the kiosk and secure using four nuts.

 **Caution:** Be careful not to damage the Printer Chute and the areas around the Printer Opening.



CCP-73169


2. Slide the assembly upward, connect the Power and USB cables to the printer, and secure the cables with cables ties as shown in the following image.

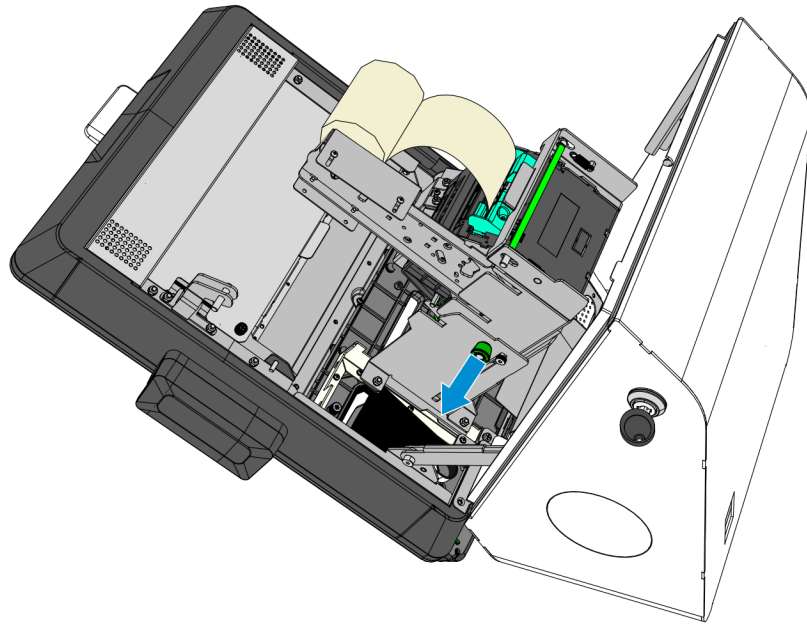


CCP-78447

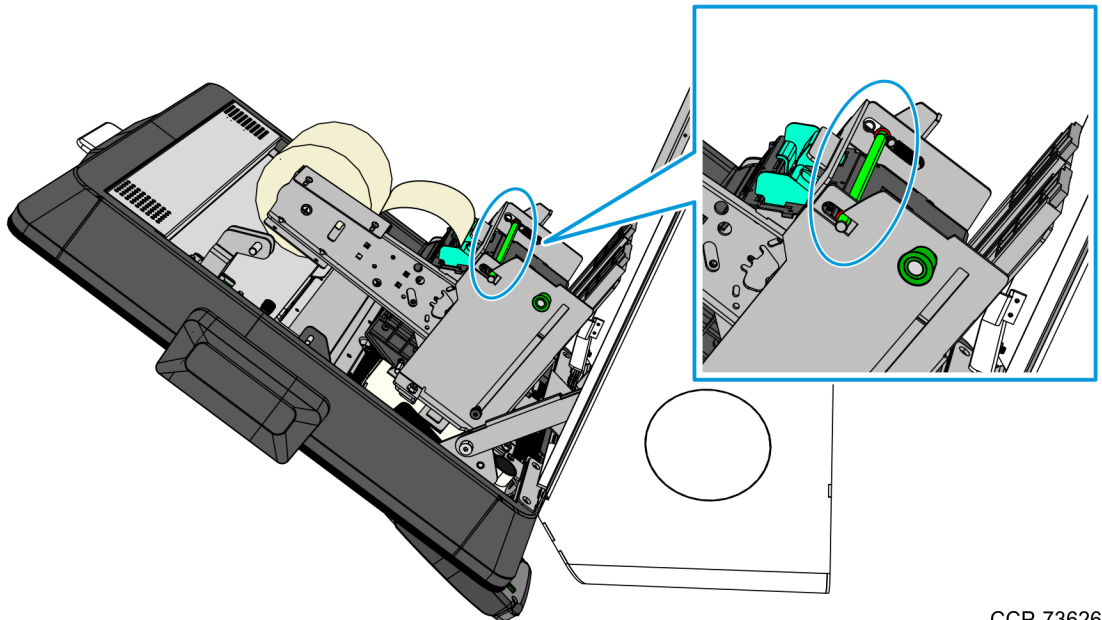
3. Slide the Receipt Printer downward into operating position.

Pull the green plunger and slowly slide the printer assembly downward until the green release rod latches to the printer tray.

 **Caution:** Do not abruptly release the printer assembly when pulling out the green plunger. Hold and guide the printer assembly downward until fully seated in the printer tray.



CCP-73625

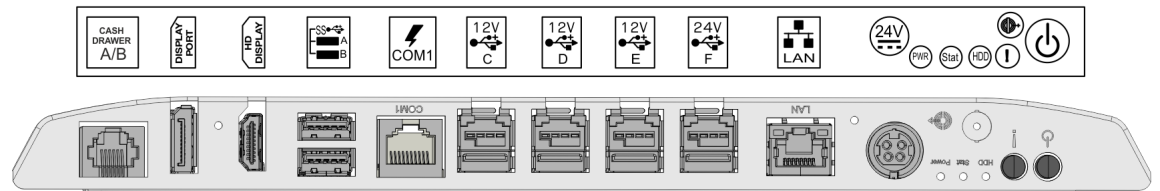


CCP-73626

Connecting Cables

The NCR SelfServ™ 90 (7709) Kiosk provides labels that show the connectors of the Motherboard and the Adapter. The tables below indicate the type of device or of cable for each connector.

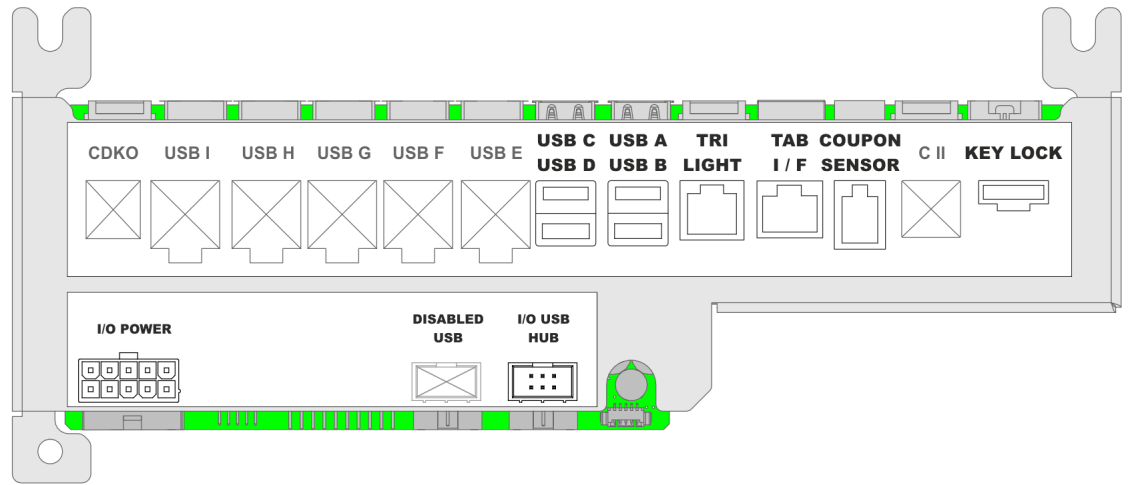
I/O Motherboard



CCP-61343

Connector	Device/Cable
COM 1	Ingenico IPP350 PIN Pad
LAN	LAN Ethernet Cable
24V	Power Supply Cable
Line Out	Dual Speaker
USB A	Sensormatic Controller
USB B	Imaging Scanner
USB C	Verifone VX805, VX820, or MX915 PIN Pad
USB D	Security Scale
USB E	I/O Adapter
USB F	Receipt Printer

I/O Adapter



CCP-61349

Connector	Device/Cable
USB A	Handheld Scanner
Tri Light	Indicator Light
TAB I/F	Checkpoint Signal Cable
Coupon Sensor	Coupon Sensor Cable
I/O Power	P2 of the I/O Cable
I/O USB Hub	P3 of the I/O Cable

