

# **TLS-450PLUS Console**

## **Hardware Replacement Guide**



# Notice

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Contact TLS Systems Technical Support for additional troubleshooting information at 800-323-1799.

## **DAMAGE CLAIMS / LOST EQUIPMENT**

Thoroughly examine all components and units as soon as they are received. If any cartons are damaged or missing, write a complete and detailed description of the damage or shortage on the face of the freight bill. The carrier's agent must verify the inspection and sign the description. Refuse only the damaged product, not the entire shipment.

Veeder-Root must be notified of any damages and/or shortages within 30 days of receipt of the shipment, as stated in our Terms and Conditions.

## **VEEDER-ROOT'S PREFERRED CARRIER**

1. Contact Veeder-Root Customer Service at 800-873-3313 with the specific part numbers and quantities that were missing or received damaged.
2. Fax signed Bill of Lading (BOL) to Veeder-Root Customer Service at 800-234-5350.
3. Veeder-Root will file the claim with the carrier and replace the damaged/missing product at no charge to the customer. Customer Service will work with production facility to have the replacement product shipped as soon as possible.

## **CUSTOMER'S PREFERRED CARRIER**

1. It is the customer's responsibility to file a claim with their carrier.
2. Customer may submit a replacement purchase order. Customer is responsible for all charges and freight associated with replacement order. Customer Service will work with production facility to have the replacement product shipped as soon as possible.
3. If "lost" equipment is delivered at a later date and is not needed, Veeder-Root will allow a Return to Stock without a restocking fee.
4. Veeder-Root will NOT be responsible for any compensation when a customer chooses their own carrier.

## **RETURN SHIPPING**

For the parts return procedure, please follow the appropriate instructions in the "General Returned Goods Policy" pages in the "Policies and Literature" section of the Veeder-Root **North American Environmental Products** price list. Veeder-Root will not accept any return product without a Return Goods Authorization (RGA) number clearly printed on the outside of the package.

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# Introduction

This manual contains instructions for replacing the following TLS-450PLUS console components:

- Display door assembly (P/N 330020-772)
- Acknowledge (Ack) Switch Panel door assembly (P/N 330020-774)
- Printer door assembly (P/N 330020-777)
- Non-printer (blank) door assembly (P/N 330020-775)
- Power supply (P/N 330020-623)

For troubleshooting information, see 577014-078.

## Contractor Certification Requirements

Veeder-Root requires the following minimum training certifications for contractors who will install and set up the equipment discussed in this manual:

**Service Technician Certification (Previously known as Level 2/3):** Contractors holding valid Technician Certifications are approved to perform installation checkout, startup, programming and operations training, system tests, troubleshooting and servicing for all Veeder-Root Series Tank Monitoring Systems, including Line Leak Detection. This certification includes TLS-3xx and TLS4xx certification training.

**In-Station Diagnostics (ISD-PMC) Technician Certification:** ISD PMC Contractors holding a valid ISD/PMC Certification are approved to perform (ISD/PMC) installation checkout, startup, programming, and operations training. This training also includes troubleshooting and service techniques for the Veeder-Root In-Station Diagnostics system. A current Veeder-Root Technician Certification is a prerequisite for the ISD/PMC course.

All service personal on site must comply with all recommended safety practices identified by OSHA and your employer.

Review and comply with all the safety warnings in this and any related documents, and any other Federal, State or Local requirements.

**Warranty Registrations** may only be submitted by selected Distributors.

## Safety Precautions

The following safety symbols may be used throughout this manual to alert you to important safety hazards and precautions

 <p><b>EXPLOSIVE</b> Fuels and their vapors are extremely explosive if ignited.</p>	 <p><b>FLAMMABLE</b> Fuels and their vapors are extremely flammable.</p>
 <p><b>ELECTRICITY</b> High voltage exists in, and is supplied to, the device. A potential shock hazard exists.</p>	 <p><b>TURN POWER OFF</b> Live power to a device creates a potential shock hazard. Turn Off power to the device and associated accessories when servicing the unit.</p>
 <p><b>WARNING</b> indicates a hazardous situation which, if not avoided, could result in death or serious injury.</p>	 <p><b>NOTICE</b> is used to address practices not related to physical injury.</p>

**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.

**STATIC SENSITIVE COMPONENTS**

Wear grounded anti-static wrist strap before handling the printed circuit board and mounted components

## Safety Warnings

<b>! WARNING</b>	
	<p><b>This system operates near highly combustible fuel storage tanks.</b></p> <p><b>FAILURE TO COMPLY WITH THE FOLLOWING WARNINGS AND SAFETY PRECAUTIONS COULD CAUSE DAMAGE TO PROPERTY, ENVIRONMENT, RESULTING IN SERIOUS INJURY OR DEATH.</b></p> <p><b>To ensure proper installation, operation, and continued safe use of this product:</b></p> <ol style="list-style-type: none"> <li><b>1. Read and follow all instructions in this manual, including all safety warnings.</b></li> <li><b>2. Have equipment installed by a contractor trained in its proper installation and in compliance with all applicable codes including: the National Electrical Codes; federal, state, and local codes; and other applicable safety codes.</b></li> <li><b>3. Before working on this console, turn off, tag and lockout power to the console.</b></li> <li><b>4. Substitution of components may impair intrinsic safety.</b></li> <li><b>5. Do not modify or use service parts other than those provided by Veeder-Root.</b></li> </ol>

## Precautions Against Static Electricity

Before removing electronic components from their anti-static bags read the following static electricity precautions.

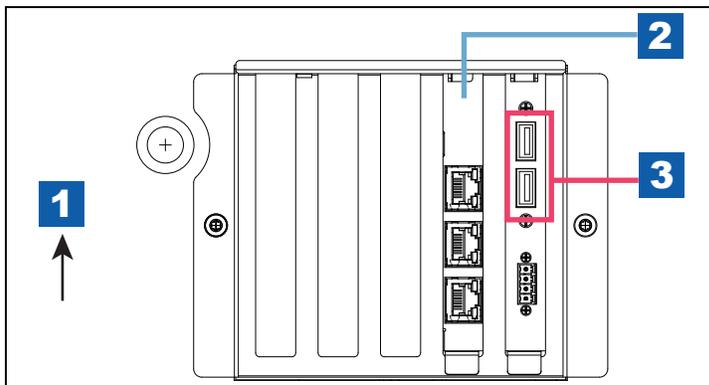
1. Before handling any components, discharge your body's static electric charge by touching a grounded surface.
2. Do not remove parts from their anti-static bags until you are ready to install them.
3. Do not lay parts on the anti-static bags! Only the insides are anti-static.
4. When handling parts, hold them by their edges and their metal mounting brackets.
5. Avoid touching components or edge connectors that plug into slots and wear the anti-static wrist strap (Part No. 576010-908) included in your component replacement kit.
6. Never slide parts over any surface.
7. Avoid plastic, vinyl, and Styrofoam in your work area.



## Before Turning Off Power

Before powering off the console perform a system backup:

1. Beneath the left side of the 450 Plus console, locate the USB Module and insert the V-R Backup thumb drive, minimum 4 GB, (P/N 332970-004) into one of the external USB ports on the USB card, P/N 333477-001 (see item 3 in Figure 1).



### LEGEND FOR NUMBERED BOXES IN Figure 1

1. Front of console
2. Ethernet Interface Module
3. USB Ports on USB Module

Figure 1. USB board - USB ports

2. From the Home Screen touch **Menu > Software Upgrade > DB Backup** to view the Database Backup Screen (see Figure 2). Touch the down arrow in the Destination field to select the Backup thumb drive inserted in Step 1, then follow the on-screen instructions to backup TLS-450PLUS console data.

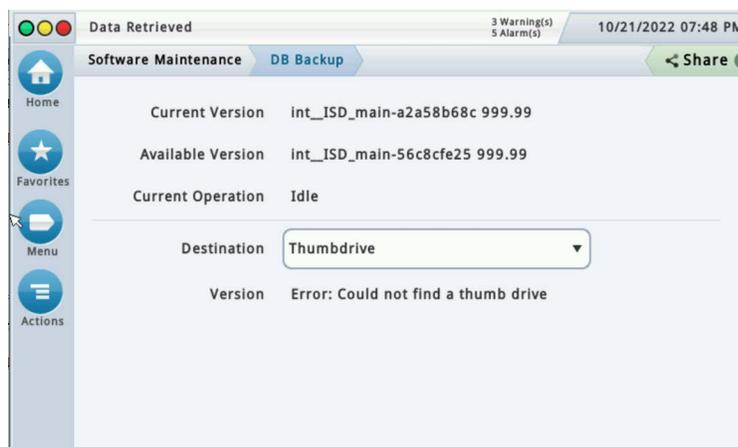


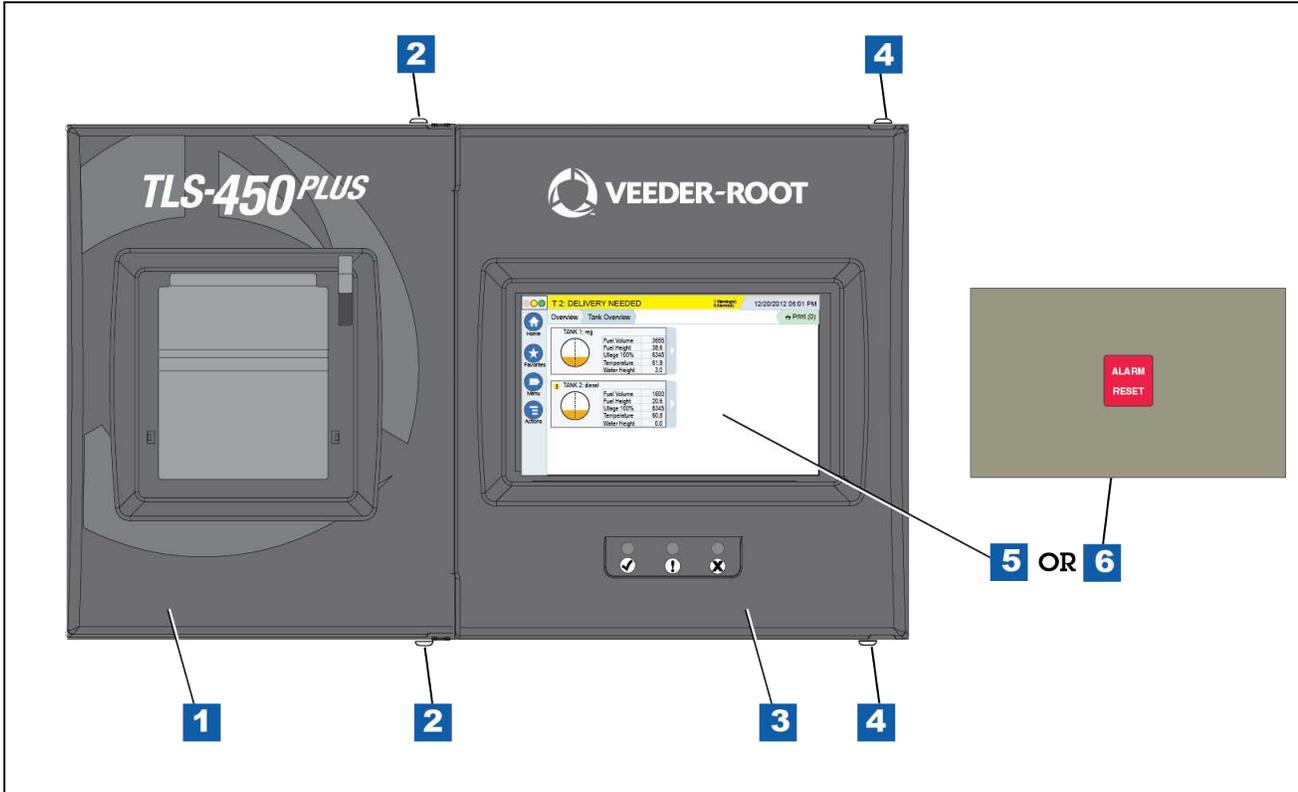
Figure 2. DB Backup Screen



3. Turn off, tag and lockout the breaker that supplies power to the console.

## Replacing Right Door (Ack Switch Panel or Display)

1. Remove the both left and right door screws (with a T-15 Torx screwdriver) and swing open both doors to the left (see Figure 3).



**Figure 3. Opening the TLS-450PLUS Console Doors**

Legend For Figure 3			
Item	Description	Item	Description
1	Left blank door or optional printer door.	4	Remove the top and bottom T15 screws securing left door and swing door to left
2	Remove the top and bottom T15 screws securing left door and swing door to left.	5	Optional Display
3	Right door (with Ack Switch Panel or optional Display).	6	Acknowledge (Ack) Switch Panel

2. For the Ack Switch panel door remove the Ack Switch Panel cable plug from its CPU board connector (item 16 in Figure 4). Remove the LED cable (pointer 2) from CPU board connector (see Figure 5).

For the optional Display door, remove the Display Data cable (pointer 1, Figure 5) from the CPU board connector. Rotate the locking member of the cable's Display connector (1a pointer) up 90° from the connector's fixed base and slide cable end out.

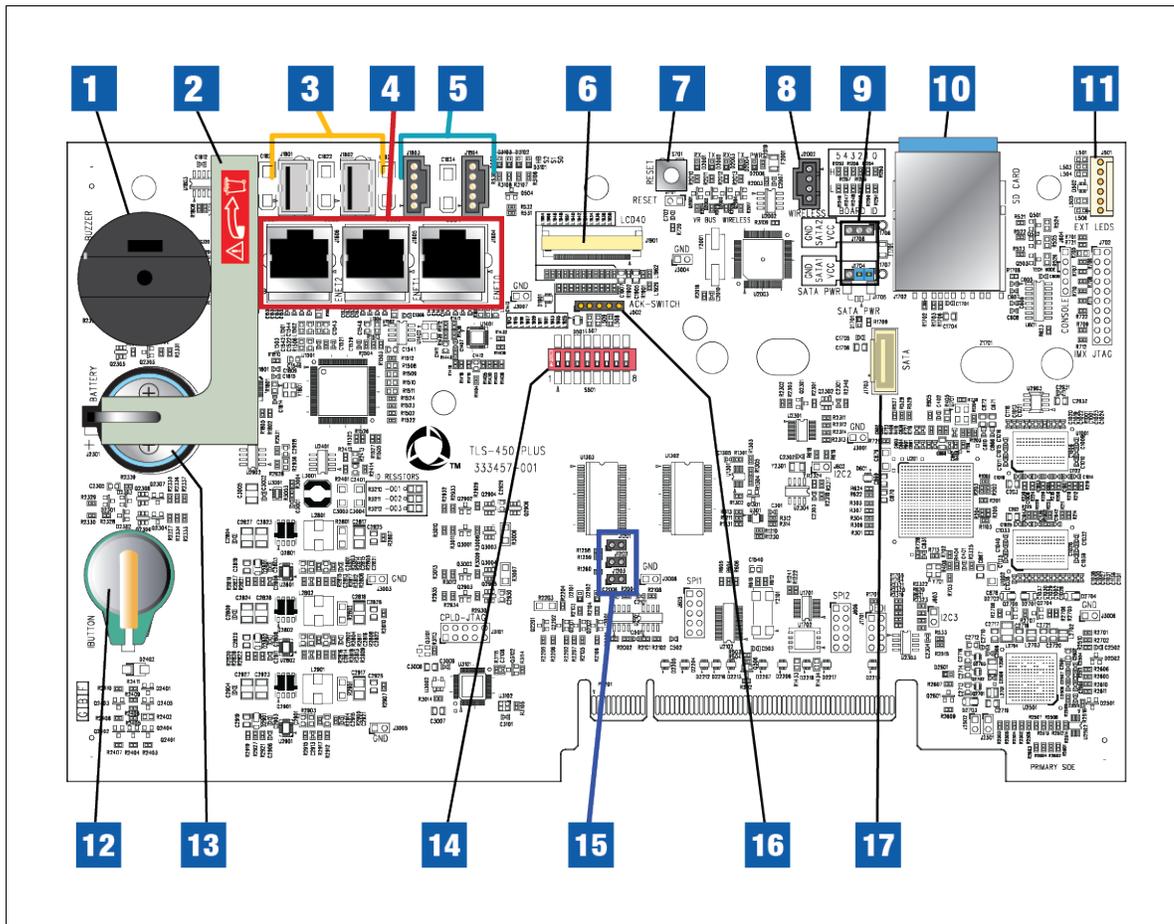


Figure 4. CPU Board

Legend For Figure 4			
Item	Description	Item	Description
1	Console beeper	10	SD Card (in metal enclosure)
2	Battery isolator strip - to be removed prior to startup	11	LED cable connector (optional display)
3	USB Type A connectors (2)	12	Features iButton (Not needed Ver.10.C or later)
4	Ethernet (RJ-45) connectors (3)	13	Backup Battery
5	USB (0.1" pitch header) connectors (2)	14	Configuration DIP switches
6	Display cable connector (optional display)	15	SD card/SATA selection jumpers (J1201, J1202 & J1203)
7	Reset button	16	Acknowledge Switch panel cable connector
8	USB module - wireless cable connector	17	SD/SATA board connector
9	SATA Type Jumpers (J1704 & J1708)		

3. Remove the LED cable (pointer 2) from CPU board connector (see Figure 5).

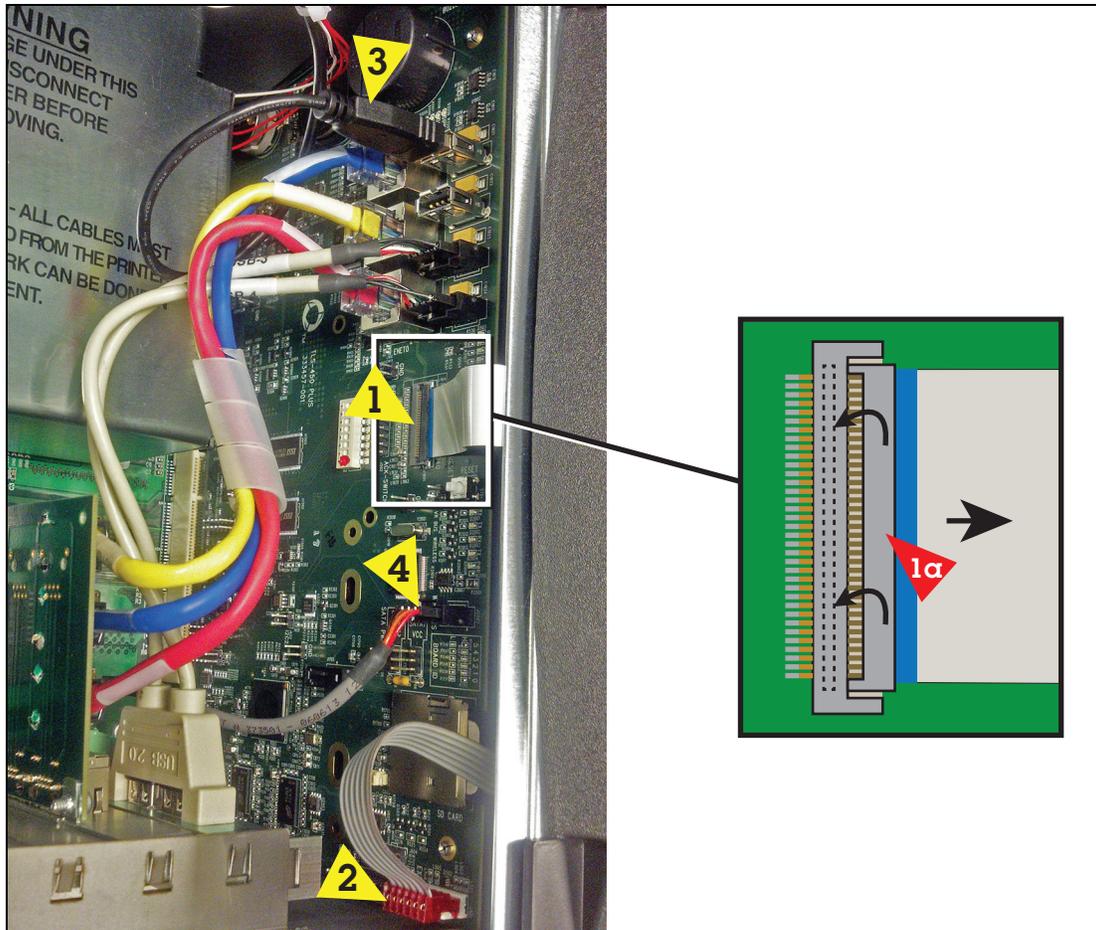


Figure 5. Remove Display Cables from CPU Board

4. Remove the Ground wire at the top of the door (see Figure 6).

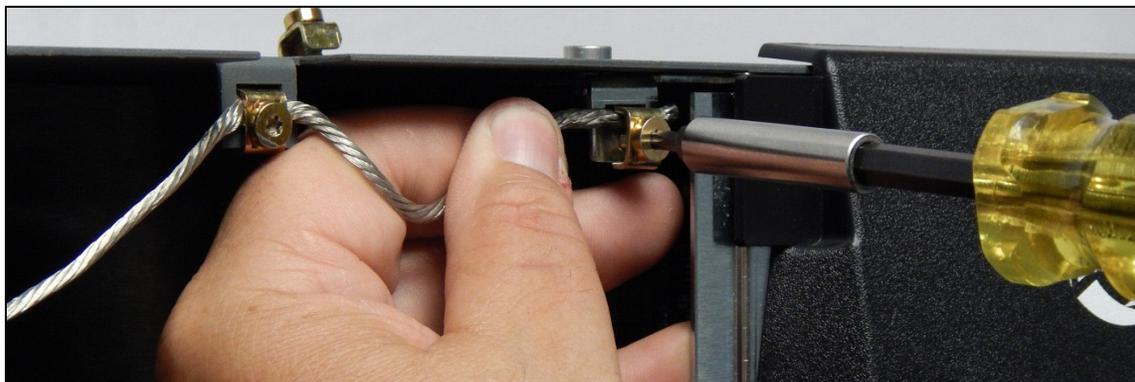
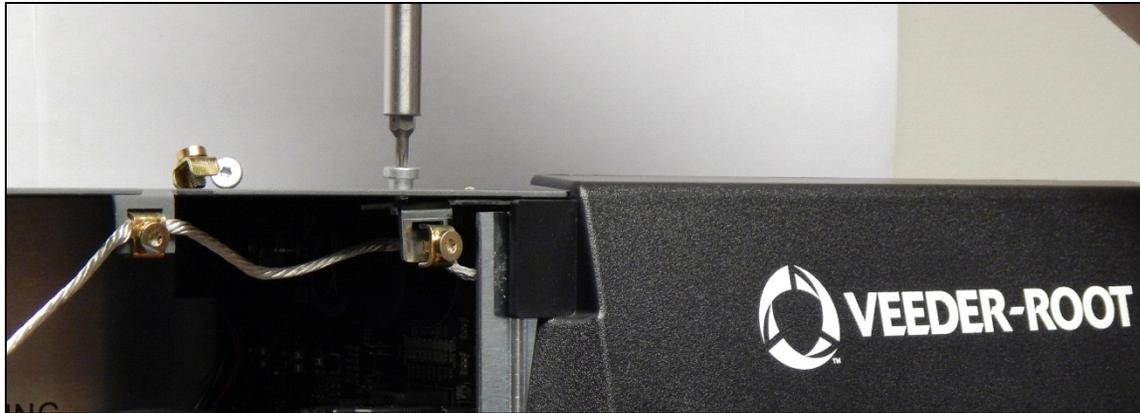


Figure 6. Remove Ground Wire from Ack Switch/Display Door

5. Remove the TLS-450PLUS Ack Switch Panel/Display door by removing the top and bottom hinge shoulder screws (see Figure 7).

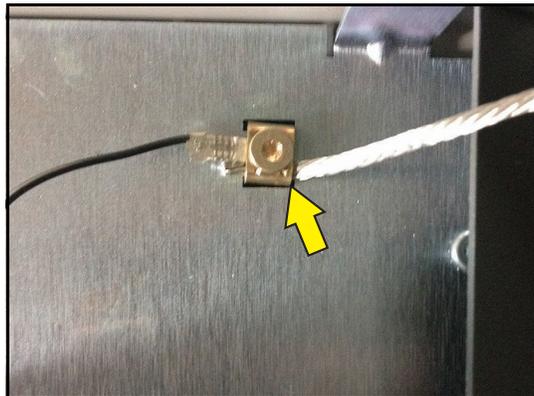


**Figure 7. Remove Top and Bottom Optional Display Door Hinge Screws**

6. Replace the Ack Switch Panel/Display door by reversing the appropriate steps above.

## Replacing Left Door (with or without Printer)

1. Perform all of the Steps in the section entitled “Before Turning Off Power” on page 3.
2. Remove both left door screws (with a T-15 Torx screwdriver) and swing open the door to the left.
3. If a printer is installed, remove the printer's USB cable (pointer 3 in Figure 5) from the top USB connector (USB 1).
4. Loosen the T-15 ground clamp screw securing the ground wire at the top of the printer door and slide it free of the clamp (see Figure 8).



**Figure 8. Removing Printer Door Ground Wire**

5. If a printer is installed, unplug the two printer cable plugs from the back of the printer (see item 4, Figure 10).
6. Remove the TLS-450PLUS printer door by removing the top and bottom hinge shoulder T-15 screws (identical to the Ack Switch Panel/Display Door shoulder screws (item 2, Figure 3)).
7. Replace door reversing appropriate steps above.

## Replacing AC Input Filter and/or Power Supply Board

1. Perform all of the steps in the section entitled “Before Turning Off Power” on page 3.
2. Open the console left door as described in Step 2 of the section entitled “Replacing Left Door (with or without Printer)” on page 8.

### Removing AC Input Filter Assembly

1. Remove the two T-15 screws from the AC Channel cover and put the cover and screws aside (see Figure 9).



Figure 9. Remove AC Channel Cover

Legend For Figure 9			
Item	Description	Item	Description
1	AC Channel cover.	2	T-15 screws (2).

2. Unplug the AC power and relay connectors from the AC Input Filter assembly (item 5, Figure 10), then remove the three T-15 screws in the AC Input Filter (item 1 in Figure 10).
3. Lift the Power Supply shield up to disengage the two retention snap pins in its right side flange and remove it from the console (item 2 in Figure 12).
4. Grasp the AC Input Filter handle (see item 3 in Figure 10) and slowly pull it away from the Power Supply board until the two AC Input Filter plugs disconnect from the Power Supply board connectors (items 4 and 5, Figure 11). Remove the two T-15 screws that secure the AC Input board to the AC input board bracket. Place fingers under the AC Input board near each of the two retention pins and pull the board out, off of the pins.
5. To replace the AC Input Filter reverse the above steps.

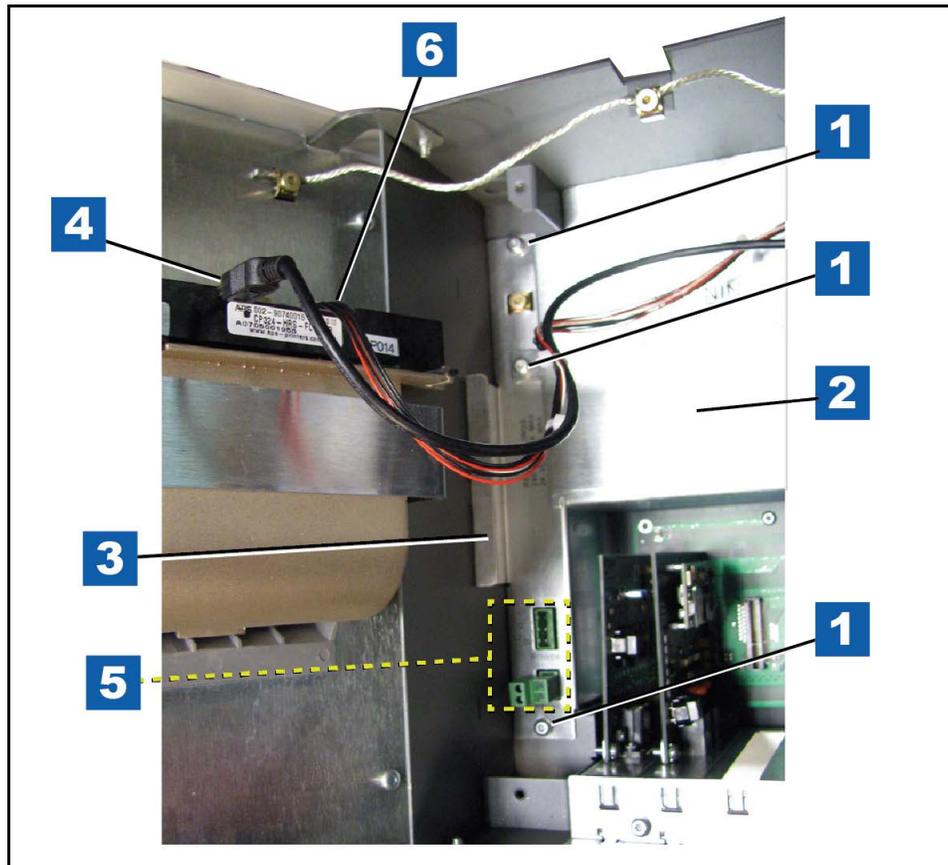


Figure 10. Removing AC Input Filter

Legend For Figure 10			
Item	Description	Item	Description
1	T15 screws (the middle one secures the Power Supply shield to the AC Input Filter bracket)	4	Printer USB cable
2	Power Supply shield	5	AC Input Filter - AC Power and Relay connectors
3	AC Input Filter handle	6	Printer power cable

## Removing Power Supply Board

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1. Remove the two T15 screws (item 1 in Figure 11) that secure the Power Supply board to the console housing.

**▲WARNING**

**Shock hazard. Do not touch underside of Power Supply board beneath the capacitors (identified by item 3 in Figure 11).**

2. Place a finger under the edges of the Power Supply board near the upper right and lower left edges of the board and lift the board up until it is free of the three snap pins (item 2 in Figure 11).
3. Disconnect the printer power cable from the printer door group. (item 6, Figure 10).
4. While securing the backplane board, carefully pull the board out of the console by its edges since there is still undischarged high voltage in the item 3 capacitors.
5. Get the new Power Supply board and attach the old printer power supply cable to its connector (J1) in the upper right corner of the replacement Power Supply board (item 6, Figure 11).
6. Lower the Power Supply board into the console, lining up the three holes in the board (see item 2 in Figure 11) with the three retention pins in the back of the console housing and with the connector on the backplane board. Push down on the Power Supply board until the pins snap into holes.
7. Install the two T15 screws (item 1 in Figure 11) and tighten them.
8. Notice that there are two male connectors on the bottom of the AC Input Filter board that plug into two female connectors on the Power Supply board (items 4 and 5, Figure 11). With the handle (item 3 of Figure 10) of the AC Input Filter against the left side of the console housing, line up the two AC Input Filter bottom connectors over the two female connectors on the Power Supply board and push down on the AC Input Filter until the connectors are firmly seated.
9. Reattach the Relay and AC power plugs to their respective AC Input Filter connectors (item 5, Figure 10). Place the Power Supply shield (item 2 in Figure 10) over the Power Supply board and lower it down onto its two retention pins (see item 2 in Figure 12) and snap it into place.
10. Install the three T15 screws in the AC Input Filter (see item 1 in Figure 10).
11. Replace the AC Channel cover and install the two T15 screws (see Figure 9).

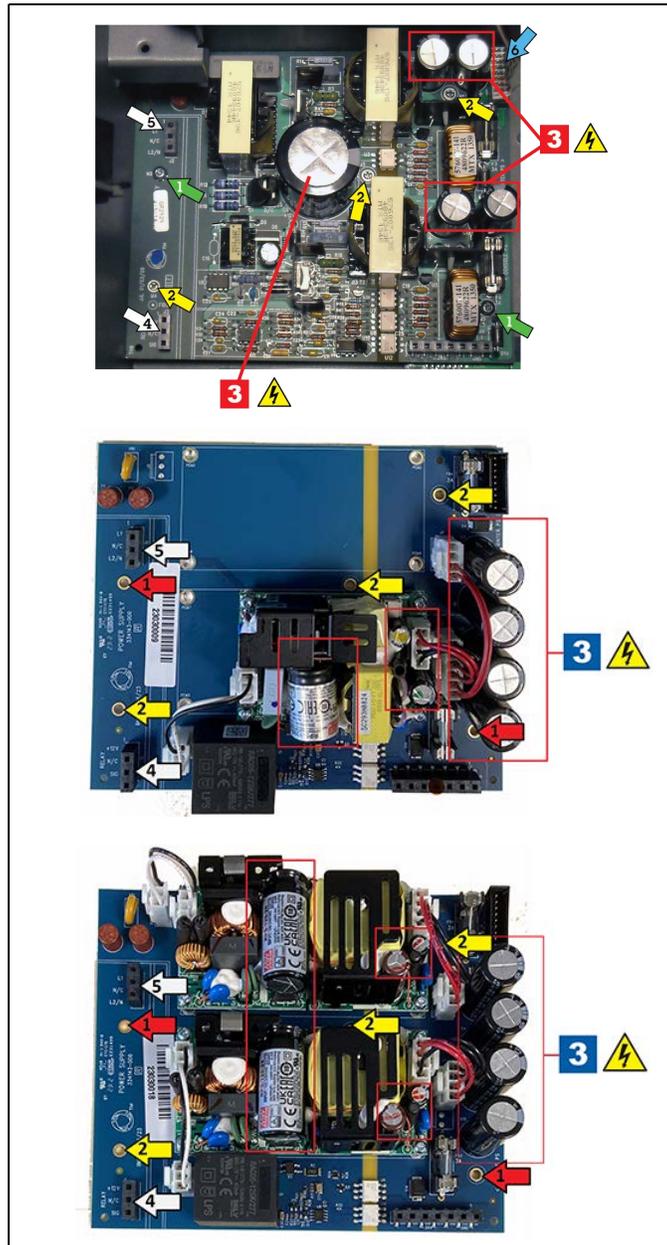


Figure 11. Removing One of the Three Possible Power Supply Board Configurations

Legend For Figure 11			
Item	Description	Item	Description
1	Power Supply Board T15 securing screws	3	Power Supply Board capacitors <b>⚠ WARNING</b> The five capacitors identified by pointer 3, can hold a high charge, do not touch underside of board where these caps are soldered to board.
2	Power Supply Board retention snap pins		

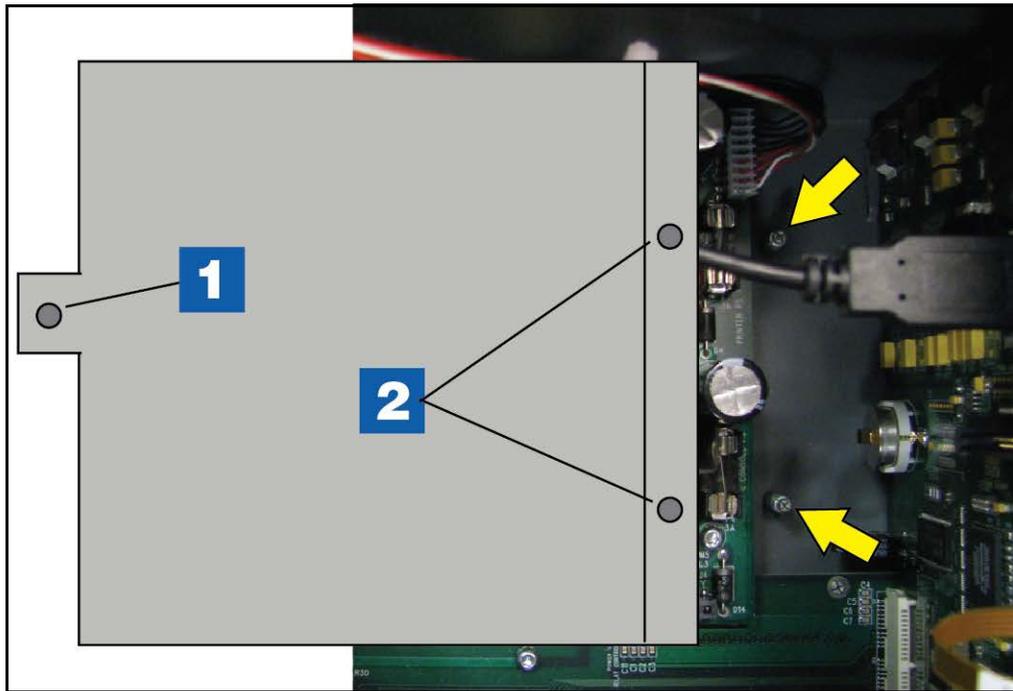


Figure 12. Replacing Power Supply shield Over Power Supply board

Legend For Figure 12			
Item	Description	Item	Description
1	Hole for T-15 screw securing AC Input Filter (item 1, Figure 10)	2	Board retention snap pins



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other assistance, please visit:  
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