



PDI-P15X

15" Arm Mounted
Hospital Grade
LCD Television

Document Number: PD196-136R3

 Communication Systems, Inc <i>Your Source for Healthcare and Wellness Infotainment™</i>	MODEL NUMBER: PDI-P15X	Document Number: PD196-136R3
	Service Manual	Page 1 of 14

Table of Contents

Copyright, Disclaimer, and Trademarks.....	2
Regulatory Information.....	2
Product Safety Servicing Precautions.....	3
PDI-P15X Specifications	4
Disinfecting and Cleaning	5
Connections	5
Checking Points to Consider.....	5
Product Identification.....	6
Disassembly.....	7
Removing Swivel.....	7
Removing the Rear Housing	7
Removing Mounting Adapter Plate and EMI Shield	8
Power Board/Coax	9
Inverter Board Removal.....	9
Main /Pillow Speaker Board Removal	9
Chassis Removal.....	9
Speakers, Keypad/IR Board, Headphone Board.....	10
Keypad.....	10
LCD Panel and Chassis	11
Basic Troubleshooting Steps	12
Reassembly.....	13
Safety checks.....	14

	MODEL NUMBER: PDI-P15X	Document Number: PD196-136R3
	Service Manual	Page 2 of 14

 <p>This symbol indicates that dangerous voltage constituting a risk of electric shock is present within this unit.</p>	 <table border="1"> <tr> <td style="background-color: black; color: white; text-align: center;">CAUTION</td> <td>  </td> </tr> <tr> <td colspan="2" style="text-align: center;"> RISK OF ELECTRIC SHOCK, DO NOT OPEN! </td> </tr> </table>	CAUTION		RISK OF ELECTRIC SHOCK, DO NOT OPEN!	
CAUTION					
RISK OF ELECTRIC SHOCK, DO NOT OPEN!					
 <p>This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.</p>	<p style="text-align: center;">CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL</p>				

This Service Manual is intended for use by qualified service persons possessing an adequate background in electrical equipment, electronic devices, and mechanical systems. In any attempt to repair a major product, personal injury and property damage can result. The manufacturer or seller maintains no liability for the interpretation of this information, nor can it assume any liability in conjunction with its use. When servicing this product, under no circumstances should the original design be modified or altered without permission from PDi. Unauthorized modifications will not only void the warranty, but may also lead to property damage or user injury.

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PDi is a registered trademark of PDi Communication Systems, Inc., Springboro, Ohio.

Regulatory Information

FCC

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.

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	MODEL NUMBER: PDI-P15X	Document Number: PD196-136R3
	Service Manual	Page 3 of 14

Underwriters Laboratories



The model PDI-P15X TV Hospital Grade TV Receiver is a specialized television. This TV is intended for entertainment and educational purposes for use in a hospital, a nursing home, a medical-care center, or a similar health-care facility in which installation is limited to a non-hazardous area in accordance with the National Electrical Code, ANSI/NFPA 70.

This device is safety tested and listed by the Underwriters Laboratories as a product suitable for use in health care facilities in both the United States and Canada.

ESD Notice (Electrostatic Discharge)



Today's electronics are electrostatic discharge (ESD) sensitive. ESD can weaken or damage the electronics in a manner that renders them inoperative or reduces the time until their next failure. Connect an ESD wrist strap to a ground connection point or unpainted metal in the product. Alternatively, you can touch your finger repeatedly to a ground connection point or unpainted metal in the product. Before removing a replacement part from its package, touch the anti-static bag to a ground connection point or unpainted metal in the product. Handle the electronic control assembly by its edges only. When repackaging a failed electronic control assembly in an anti-static bag, observe these same precautions.

Product Safety Servicing Precautions

1. **POWER SOURCE** Use only a power source indicated for use with this product. This TV will operate on either DC or AC voltage. To avoid personal injury, disconnect the power before servicing this product. If electrical power is required for diagnosis or test purposes, disconnect the power immediately after performing the necessary checks.
2. **REPLACEMENT** Replace only with the part number specified.
3. **VOLTAGE CHECKS** Exercise care when making voltage and waveform checks to prevent costly short circuits from damaging the unit.
4. **METAL OBJECTS** Be cautious of lost screws and other metal objects to prevent a possible short in the circuitry.
5. **SAFETY CHECKS** This hospital grade television requires special safety checks before returning to service. Observe and follow the "Safety Check" section in this service manual.
6. **DANGER: ARM RECOIL HAZARD** The safety brake pin must remain in the SAFETY BRAKE PIN HOLE whenever the television set is removed from the arm or when the arm is removed from the wall bracket to prevent the arm from springing open.



 PDi Communication Systems, Inc. Your Source for Healthcare and Wellness Infotainment™	MODEL NUMBER: PDI-P15X	Document Number: PD196-136R3
	Service Manual	Page 4 of 14

PDI-P15X Specifications

Panel

Screen Size	15"
Aspect Ratio	4:3
Native Resolution	1024 x 768
Brightness	400 cd/m ²
Contrast Ratio	700:1
Viewing Angle	140°H x 125°V
Color Depth	16.2 M
Lamp Life	50k Hours
Response Time	8ms

Inputs

RF	Yes
Composite	Yes
S-Video	Yes
Component	Yes
HDMI	Yes
VGA	Yes
PC Audio In	Yes
CCI	Yes
MTI	Yes
USB	Yes
Pillow Speaker	Yes, 3 conductor 1/4" female (TIP=Audio,RING=Data,SLEEVE=Ground)

Audio

Speakers	2@ 2-watt RMS
Analog	Mono/Stereo/SAP
Digital	Dolby Digital
Earphone	Yes

Regulatory

UL/cUL	Yes
Healthcare Grade UL60065, Annex Q	Yes

Healthcare Specific Features

Antimicrobial Keypad	Yes
Direct Access Keypad	Yes
Min/Max Volume Limiter	Yes
Touch Screen Configuration ¹	Yes
Built In Computer Configuration ²	Yes
Selectable Pillow Speaker	+14VDC, +5VDC, off, -5VDC
Universal Pillow Speaker Recognition	Yes
Auto Power On	Yes
Bed A/B	Yes
Programmable Source Selection	Yes
Direct Access to source from Pillow Sp.	Yes
Channel Enable/Disable	Yes
Parental Control (V-Chip)	Yes
Clone Programmable	Yes, via USB

Video

NTSC Tuner	Air VHF/UHF, CATV, IRC, HRC
ATSC Tuner	Air VHF/UHF, CATV, IRC, HRC
QAM in the Clear	CATV, IRC, HRC
FM Tuner	88.1 – 107.9 MHz
Source	20-34 VAC 60 Hz or 20-32 VDC Diplexed over Coax
Consumption	34w

1. Touch screen optional
2. Computer optional module

	MODEL NUMBER: PDI-P15X	Document Number: PD196-136R3
	Service Manual	Page 5 of 14

Disinfecting and Cleaning

The P15X has an anti microbial keypad, but the unit should be disinfected before performing any service. The following procedure is only a recommendation. Your hospital or company may have a different procedure to follow.



Caution: Before using any cleaning or disinfecting agent on the P15X, perform a spot check by wetting a small area of the cabinet. Verify the agent does not discolor or deteriorate the cabinet.

1. The P15X has been designed to withstand up to a 5% chlorine based disinfectant. Many alcohol and ammonia based disinfectants have also been tested with success. Apply the cleaner or disinfectant per its recommended instructions.

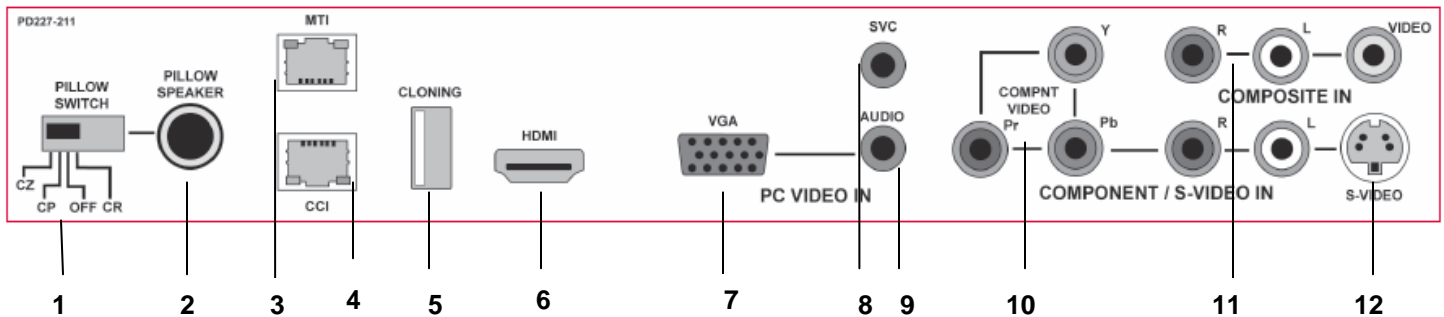
Note: Most disinfectants require a waiting time following application and prior to wipe-down.

2. The manufacturer recommends isopropyl alcohol for the cleaning of the LCD screen.

Connections

Connection Panel

The connection panel is located on the back of the TV and provides connections to external equipment.



1. Pillow Speaker Switch
2. Pillow Speaker Jack
3. MTI Connection
4. CCI Connection
5. Cloning Connection
6. HDMI Connection
7. VGA Connection
8. SVC Connection
9. Audio Connection
10. Component Video
11. Composite Video
12. S-Video

Checking Points to Consider

Dynamic picture adjustments to Brightness, Contrast, Color, and Tint are available using the IR Remote Control, Part number PD108-420, using the SETUP/Picture menu.

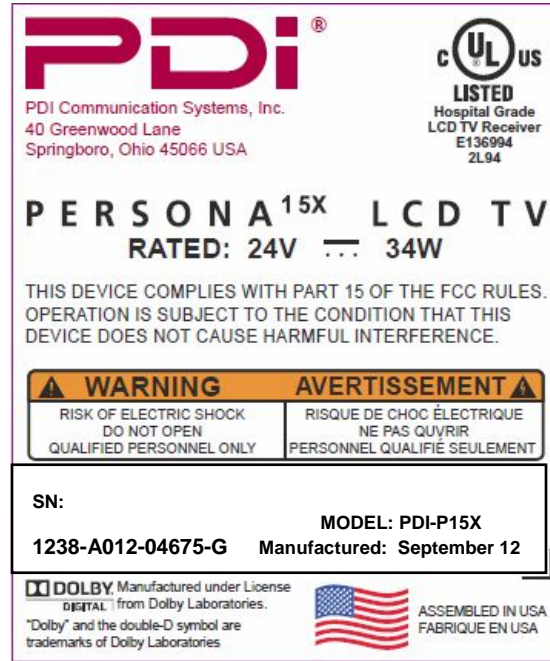
1. Check the appearance of the replacement panel and circuit boards for both physical damage and part number accuracy.
2. Check the model label. Verify model names and board model matches.
3. Check details of defective condition and history. Contact PDi with serial number for details.

 Communication Systems, Inc. <i>Your Source for Healthcare and Wellness Infotainment™</i>	MODEL NUMBER: PDI-P15X	Document Number: PD196-136R3
	Service Manual	Page 6 of 14

Product Identification

Product Label

The P15X is easily identified using the product label located on the back cabinet housing.



Serial Number Format Explanation

1. The first two digits compose the year of manufacture. 2012 would be 12.
2. The second two digits compose the week of manufacture. 38 would be week 38.
3. The single alphabetic character represents the place of manufacturing.
4. The next three alphanumeric characters compose the unique model ID.
5. The next five digits compose the serial number starting with the first unit produced in the current year.
6. The last character is the revision level.

Disassembly

Part numbers for the P15X are written in the disassembly instructions. Use these if you must order new parts.

Tools:

- ESD grounding
- Screwdriver (Phillips)
- 3/8" open end wrench
- 7/16" wrench (for coax)
- 1/2" wrench
- Nut driver

⚠ Note: It is not necessary to disassemble the swivel to remove the TV from the arm. Remove the socket head cap screw PD209-002 and make disconnections to remove the TV from the arm.

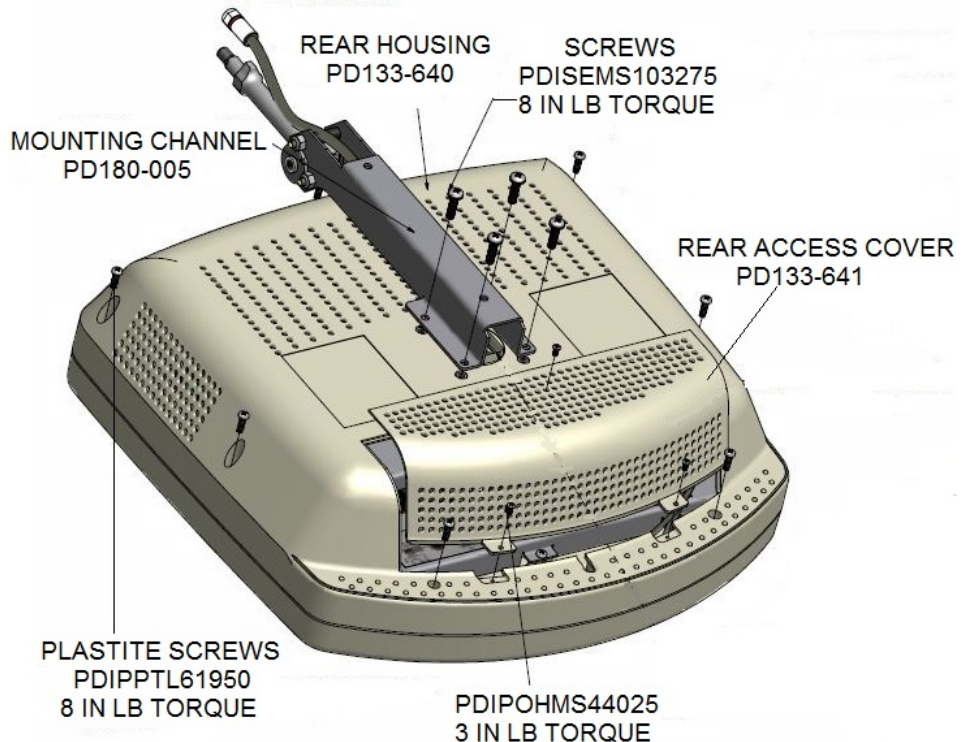
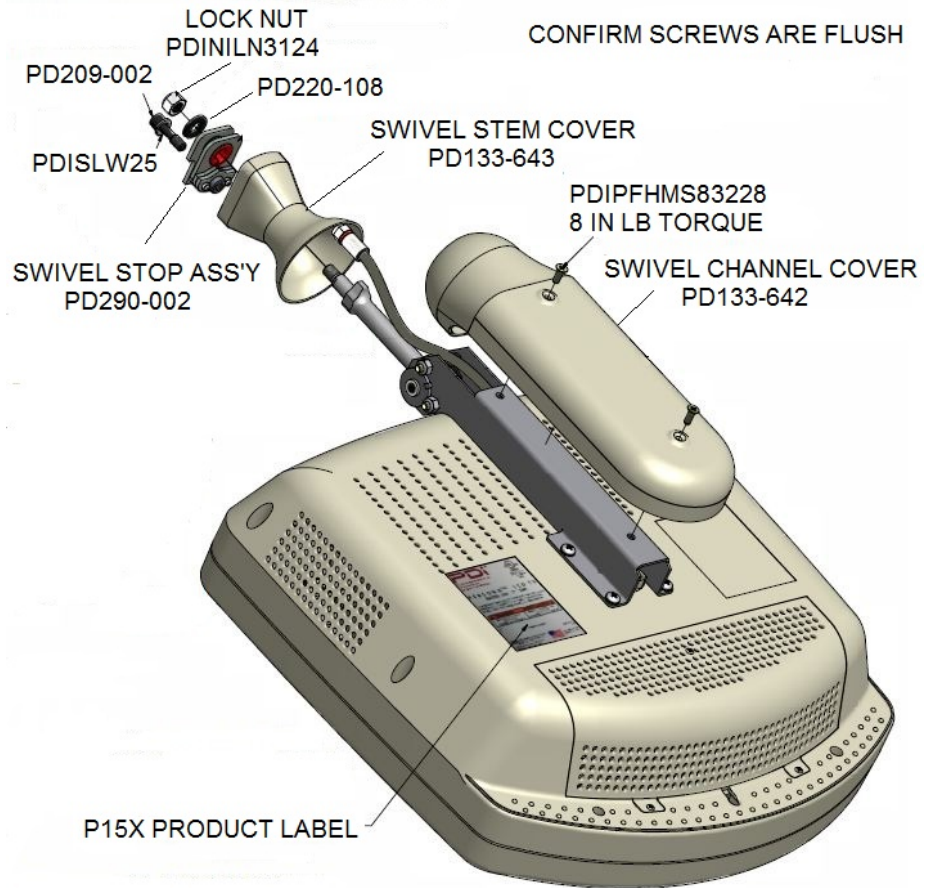
Gaining access to the inside of the TV first requires removal of the swivel assembly.

Removing Swivel

1. Remove lock nut, spacer PD220-108, and swivel stop PD290-002 in that order.
2. Remove swivel stem cover from swivel assembly and coax cable.
3. Remove swivel channel cover from mounting channel by removing (2) screws.
4. Take off the mounting channel by removing (4) screws.
5. Take off the rear access cover by removing (3) screws.

Removing the Rear Housing

1. Take off cable seal from housing by unthreading the coax.
2. Remove (7) plastite screws and take off rear housing.

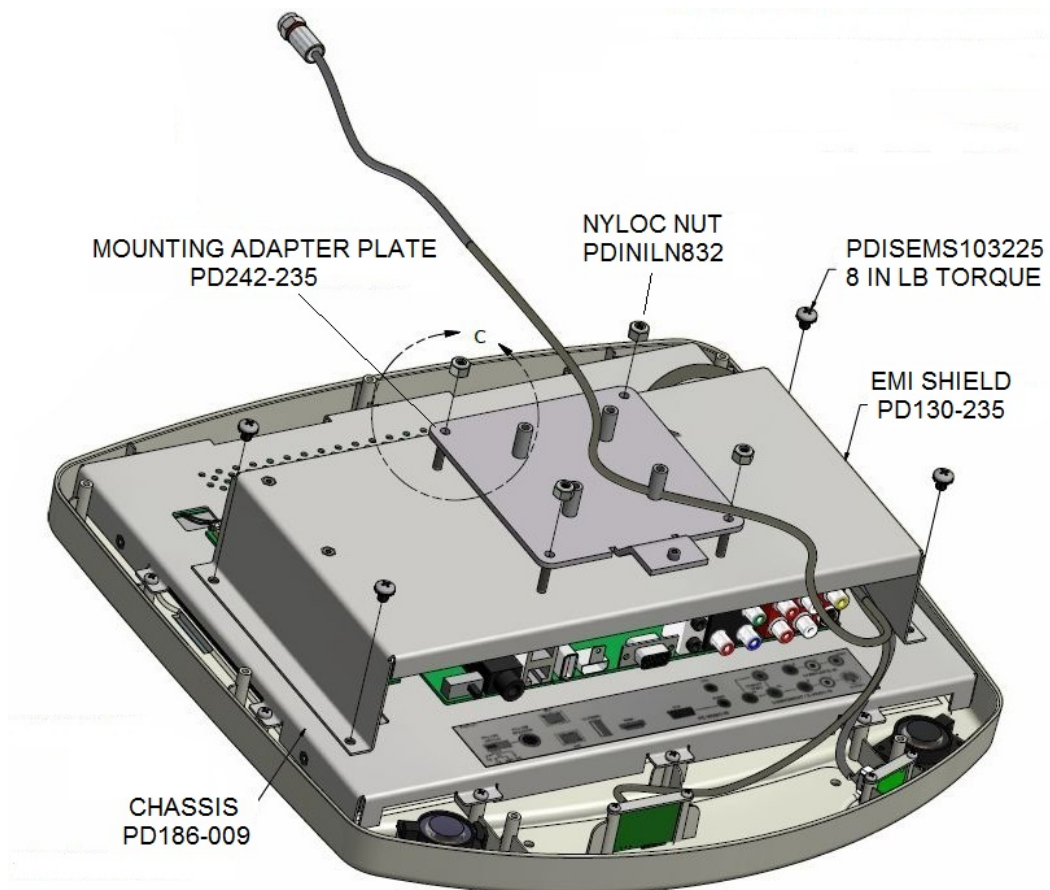


 PDi Communication Systems, Inc. Your Source for Healthcare and Wellness Infotainment™	MODEL NUMBER: PDI-P15X	Document Number: PD196-136R3
	Service Manual	Page 8 of 14

Removing Mounting Adapter Plate and EMI Shield

This picture has the newer **PD130-235 EMI shield. Older model shields will appear slightly different and also have a lower EMI shield that can be removed by taking out (3) screws.

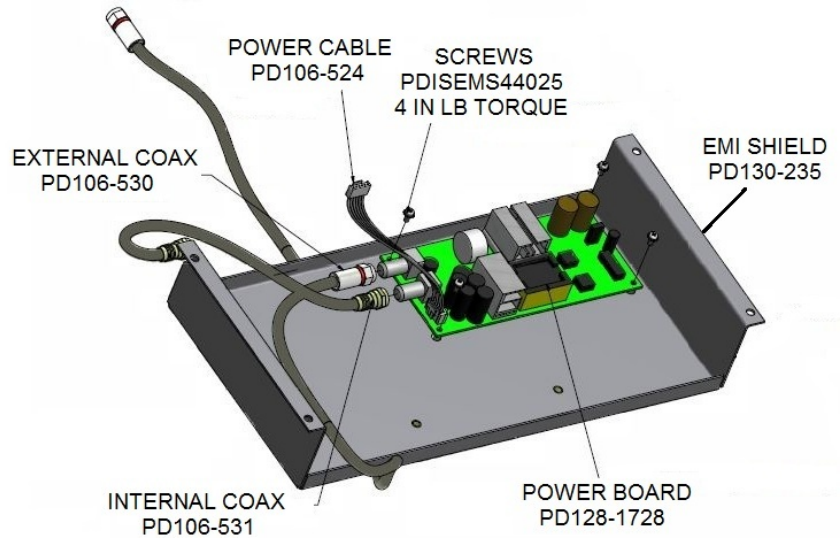
- Remove (4) **PDINILN832** nyloc nuts from adapter plate.
 *An older model P15X will have (8) PDIFSW8M4 fiber washers and (4) flat washers. The fiber washers are assembled with shoulders to adapter plate and flat washers are next to the nyloc nuts.
- Remove (4) screws from the EMI shield for access to the main board.



 PDi Communication Systems, Inc. Your Source for Healthcare and Wellness Infotainment™	MODEL NUMBER: PDI-P15X	Document Number: PD196-136R3
	Service Manual	Page 9 of 14

Power Board/Coax

1. The Power Board is attached to the EMI shield **PD130-235** with (4) screws.
2. The Internal and External coaxes and the power cable are attached to the power board.



Inverter Board Removal

1. Disconnect (2) backlight cables from Inverter board **PD128-1432** and remove (2) screws.

Main /Pillow Speaker Board Removal

If you determine the main board must be replaced, follow these instructions.

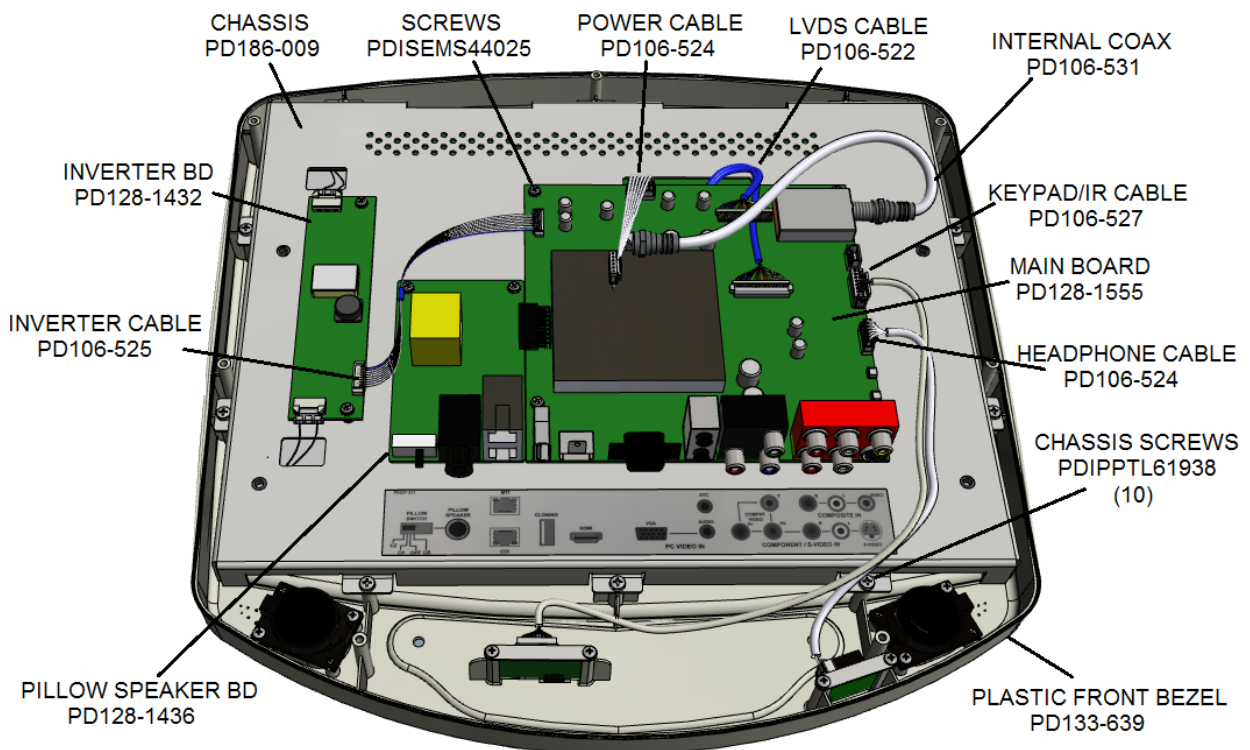
Note: The Main Board of the P15X has been updated from **PD128-1437** to **PD128-1555**. Replace all older defective boards with the new one.

1. The main board **PD128-1555** is attached to the pillow speaker board **PD128-1436** and they are secured to the chassis with (7) **PDISEMS44025** screws.
2. Disconnect cables prior to board removal.

Chassis Removal

Removal of the chassis is required to reach the LED panel.

1. The chassis is secured with (10) **PDIPPTL61938** screws

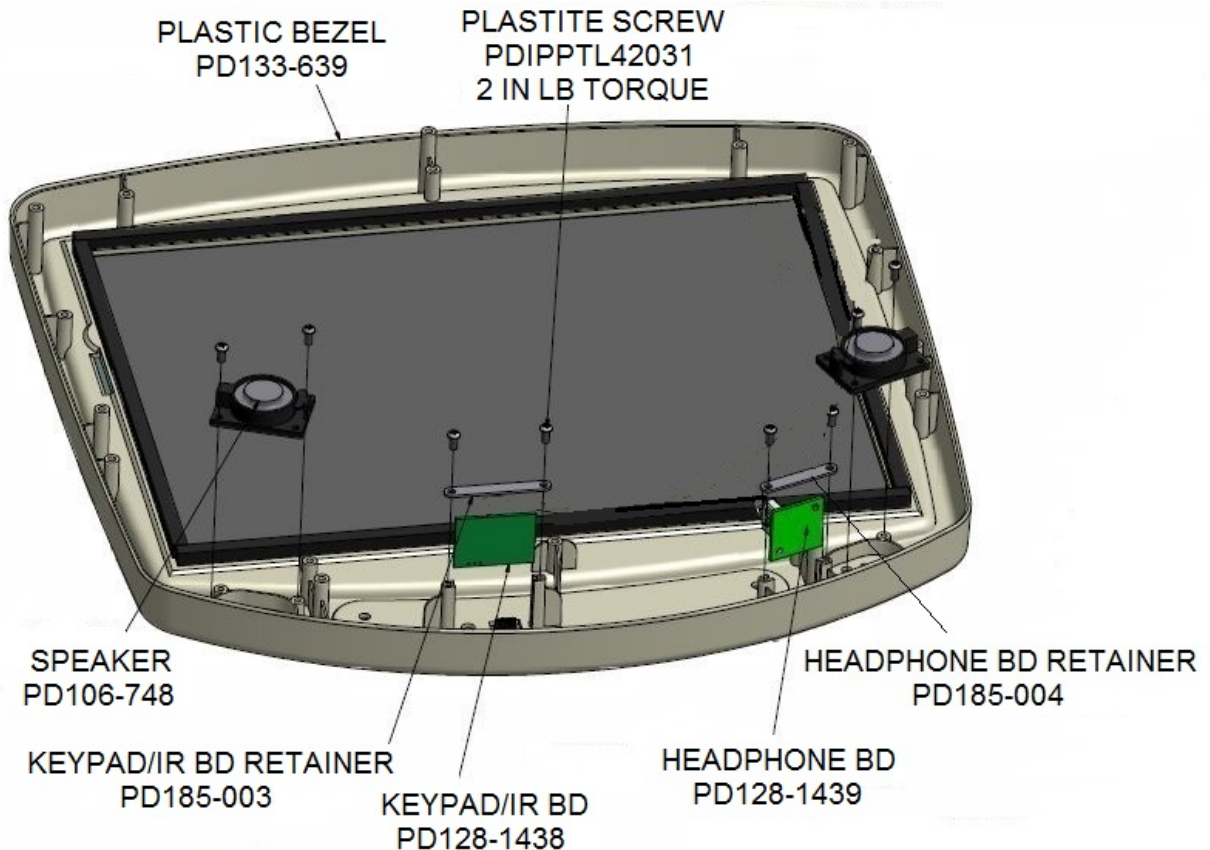


 PDi Communication Systems, Inc. Your Source for Healthcare and Wellness Infotainment™	MODEL NUMBER: PDI-P15X	Document Number: PD196-136R3
	Service Manual	Page 10 of 14

Speakers, Keypad/IR Board, Headphone Board

(Individual speaker wires not shown)

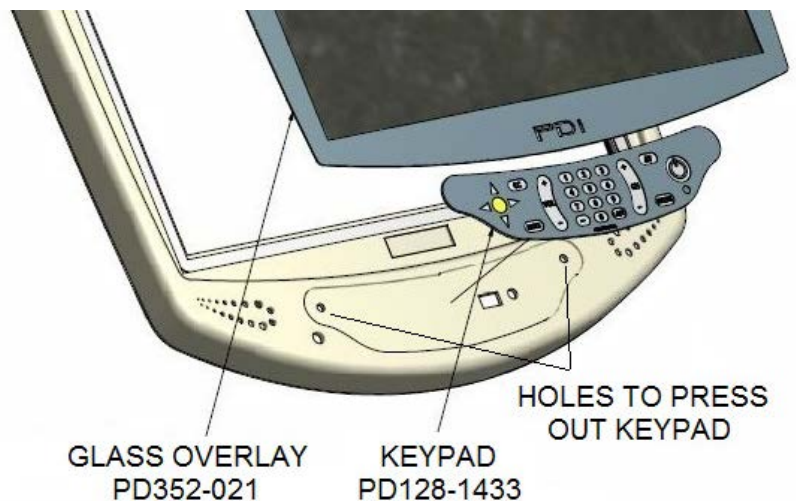
- Each speaker **PD106-748** is secured with (2) screws.



Keypad

- The keypad is removed from the front bezel by pushing a small tool through two holes to push the keypad off the bezel.

*When replacing the keypad **PD128-1433**, be sure to line up pins with the keypad/IR board and headphone boards.



	MODEL NUMBER: PDI-P15X	Document Number: PD196-136R3
	Service Manual	Page 11 of 14

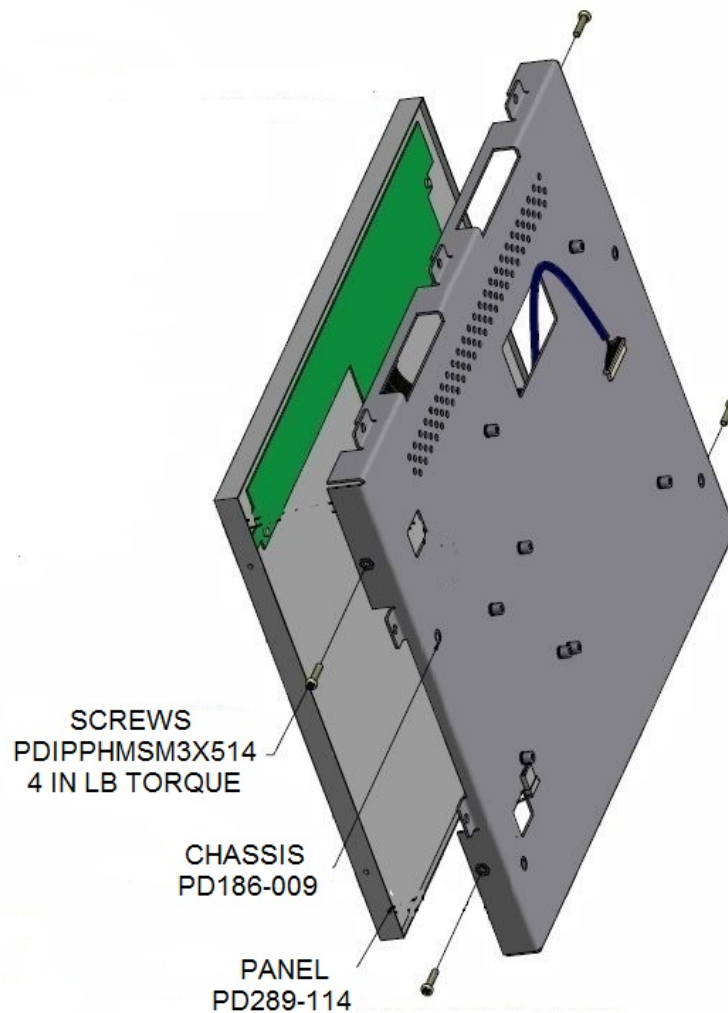
LCD Panel and Chassis

Separate the panel from the chassis by removing (4) screws as shown.



The P15X has had a panel change from **PD289-114** to **PD289-144**. If you have a P15X with a serial number of **1429-A012-06536-M** or later, please contact the PDi service department for special instructions on repair of this unit.

P15X SERIAL NUMBER	USE PANEL NUMBER
1429-A012-06536-M OR EARLIER	PD289-114
1429-A012-06536-M OR LATER	PD289-144 (CONTACT PDI FOR SPECIAL REPAIR INSTRUCTIONS)



*CONTACT PDI FOR REPLACEMENT
INFORMATION ON NEW PANEL PD289-144

 PDi Communication Systems, Inc. <i>Your Source for Healthcare and Wellness Infotainment™</i>	MODEL NUMBER: PDI-P15X	Document Number: PD196-136R3
	Service Manual	Page 12 of 14

Basic Troubleshooting Steps

Many times issues can be resolved by performing a factory reset on the TV. Press and hold down “CC” button on TV and press and hold down “Last” on the remote. Hold both simultaneously until TV displays a reset message on screen.

Symptom	Check
TV DEAD (No Power)	<ul style="list-style-type: none"> • Verify TV is connected to a coaxial powered cable • Verify coaxial cable is securely connected to F-connector • Check Power cable for voltage. • Replace power supply board (PD128-1660) • Replace main board (PD128-1555) if red LDC is lit.
NO COLOR	<ul style="list-style-type: none"> • Tune TV to another channel. Check for color • Adjust color settings in Setup/Picture menu • Verify correct voltage is used to power TV • Verify correct signal type is set in Setup/Channels menu • Perform Auto Program • Replace LVDS cable (PD106-509) • Replace main board (PD128-1555) • Replace panel (PD289-114) *Contact PDi for more information
CANNOT TUNE TO A DESIRED CHANNEL	<ul style="list-style-type: none"> • Verify TV is connected to a coax cable that has RF signal • Verify channel is programmed into current service level • Tune to channel with remote • Tune to channel with TV keypad • Verify correct Signal type is set in Setup/Channels menu • Verify Channel Memory Override is enabled in Setup/Channels. • Verify Channel Lock is disabled • Replace main board (PD128-1555)
TV KEYPAD INOPERATIVE	<ul style="list-style-type: none"> • Verify TV is powered • Check TV operation with remote control • Verify that LVDS cable is seated correctly to main chassis connector • Replace keypad (PD128-1433) • Replace main board (PD128-1555)
SNOWY PICTURE	<ul style="list-style-type: none"> • Verify TV RF signal level is (0 to+10dbmv at the TV) • Tune to another channel • Verify correct Signal type is set in Setup/Channels Manual • Replace LVDS cable (PD106-509) • Replace main board (PD128-1555)
NOISY PICTURE	<ul style="list-style-type: none"> • Verify TV RF signal level is (0 to+10dbmv at the TV) • Tune to another channel • Turn off nearby equipment if possible and isolate noise source • Move TV and cables to minimize or eliminate noise. • Replace main board (PD128-1555)

 PDi Communication Systems, Inc. <i>Your Source for Healthcare and Wellness Infotainment™</i>	MODEL NUMBER: PDI-P15X	Document Number: PD196-136R3
	Service Manual	Page 13 of 14

PICTURE OK, NO EARPHONE SOUND	<ul style="list-style-type: none"> • Verify earphone is fully inserted into TV's earphone jack • Try a different earphone • Verify TV is not muted. Adjust for maximum volume • Replace head phone jack board (PD128-1439) • Replace main board (PD128-1555)
BLACK PICTURE SOUND OK	<ul style="list-style-type: none"> • Check for on-screen menu and adjust for maximum brightness • Verify LVDS connector is seated on main board • Verify Backlight connectors are plugged in and secure • Replace inverter board (PD128-1432) • Replace LVDS cable (PD106-509) • Replace main board • Replace panel (PD289-114) *Contact PDi for more information
PICTURE OK, NO SPEAKER SOUND	<ul style="list-style-type: none"> • Verify TV is not muted. Verify cable is seated into main chassis and into IR board • Verify earphone is not being used • Verify TV speaker has not been disabled for the current Service Level in the Sound/Internal Speaker Enable menu • Replace speaker (PD106-431) • Replace headphone jack board (PD128-1439) • Check sound. If there is still no sound, replace the main board
LOW VOLUME OR VIBRATION IN SPEAKER	<ul style="list-style-type: none"> • Check for missing or loose screw in speaker

Reassembly

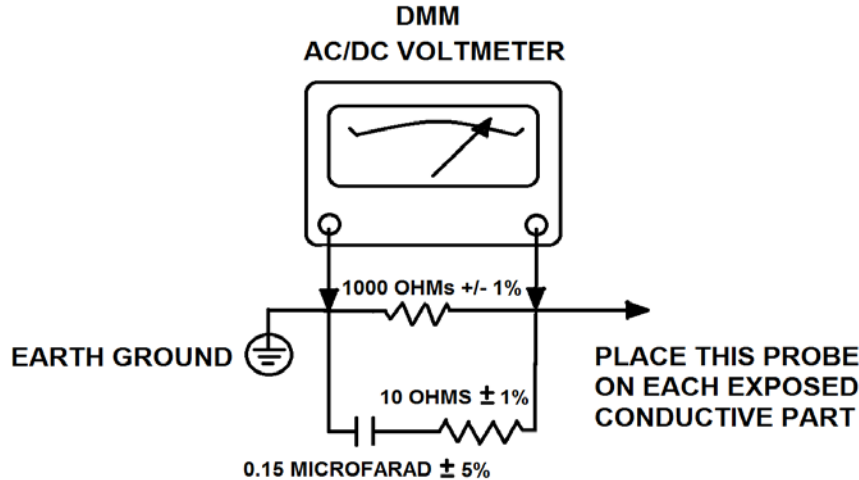
Reassemble the unit in reverse manner as the disassembly paying special attention to:

- All parts removed in the repair of the TV are reassembled in original manner.
- When replacing the keypad **PD128-1433**, be sure to line up pins with the keypad/IR board and headphone boards.
- Be careful to keep enough coax cable through the swivel stem to make proper connections.
- If replacing an LCD panel, be sure to remove all dust and debris from panel before reassembling TV.
- Make sure screws are flush and seated.

Safety checks

After re-assembly of the unit, always perform a leakage test on all exposed conductive parts such as metal connectors, chassis, and mount.

With the unit powered, the following circuit should be connected from earth ground to each exposed conductive part on the repaired unit. A DMM is placed in parallel with this circuit to measure AC rms or DC voltage. If leakage currents are greater than the maximum allowed, inspect the TV for insulation or component breakdowns.



The maximum allowed leakage current depends on the type of power the unit receives and whether the unit is within reach of the patient bed/chair.

TV Type	Max Leakage Current	Max DMM Voltage Reading
Footwall TV (120VAC grounded wall outlet)	500µA AC rms	500mV AC rms
12VDC Arm Mount TV (PDI-750XL power supply)	100µA DC	100mV DC
28VAC Arm Mount TV (PDI-750A 750B or 772HE power supply)	50µA AC rms	50mV AC rms



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