

2004



Down to 1™

HIGH SPEED TROUBLESHOOTING
V26 CHASSIS

V26	V26+	V26++
WD-52525	WD-52725	WD-52825
WD-62525	WD-62725	WD-62825

Second Edition
Includes PWB Level Troubleshooting



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V26 CHASSIS
Down to 1 - High Speed Troubleshooting

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PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in television receivers have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc.

Replacement parts which have special safety characteristics are identified in this manual.

Electrical components having such features are identified by bold type in the parts list of this manual. **Therefore, the replacement for any safety part should be identical in value and characteristics.**

SAFETY PRECAUTIONS

NOTICE: Observe all cautions and safety related notes located inside the receiver cabinet and on the receiver chassis.

WARNING:

1. Operation of this receiver outside the cabinet or with the cover removed presents a shock hazard from the receiver's power supplies. Work on the receiver should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment.
2. When service is required, observe the original lead dress. Extra precaution should be taken to assure correct lead dress in the high voltage area. Where a short-circuit has occurred, replace those components that indicate evidence of overheating.

WARNING ... RISK OF EYE INJURY
Do not look into the light source, lens or mirror when operating the TV

Leakage current check

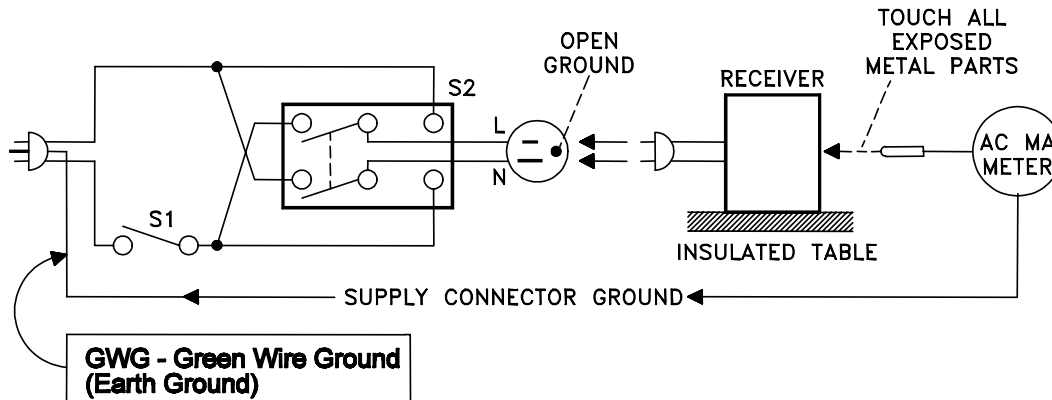
Before returning the receiver to the customer, it is recommended that leakage current be measured according to the following methods.

1. Cold Check

With the alternating current (AC) plug removed from the AC source, place a jumper across the two AC plug prongs. Connect one lead of an ohm meter to the AC plug and touch the other lead to each exposed metal part (i.e. antennas, handle bracket, metal cabinet, screw heads, metal overlay, control shafts, etc.), particularly any exposed metal part that has a return path to the chassis. The resistance of the exposed metal parts having a return path to the chassis **should be a minimum of 1 Meg Ohm**. Any resistance below this value indicates an abnormal condition and requires corrective action.

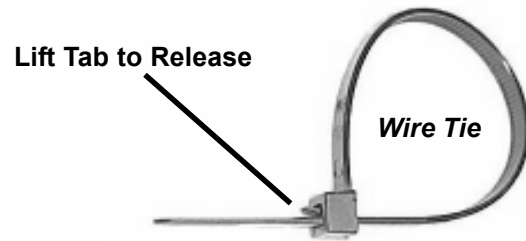
2. Hot Check ...Use the circuit shown below to perform the hot check test.

1. Keep switch S1 open and connect the receiver to the measuring circuit. Immediately after connection, and with the switching devices of the receiver in their operating positions, measure the leakage current for both positions of switch S2.
2. Close switch S1, energizing the receiver. Immediately after closing switch S1, and with the switching devices of the receiver in their operating positions, measure the leakage current for both positions of switch S2. Repeat the current measurements of items 1 and 2 after the receiver has reached thermal stabilization. **The leakage current must not exceed 0.5 milliamper (mA).**



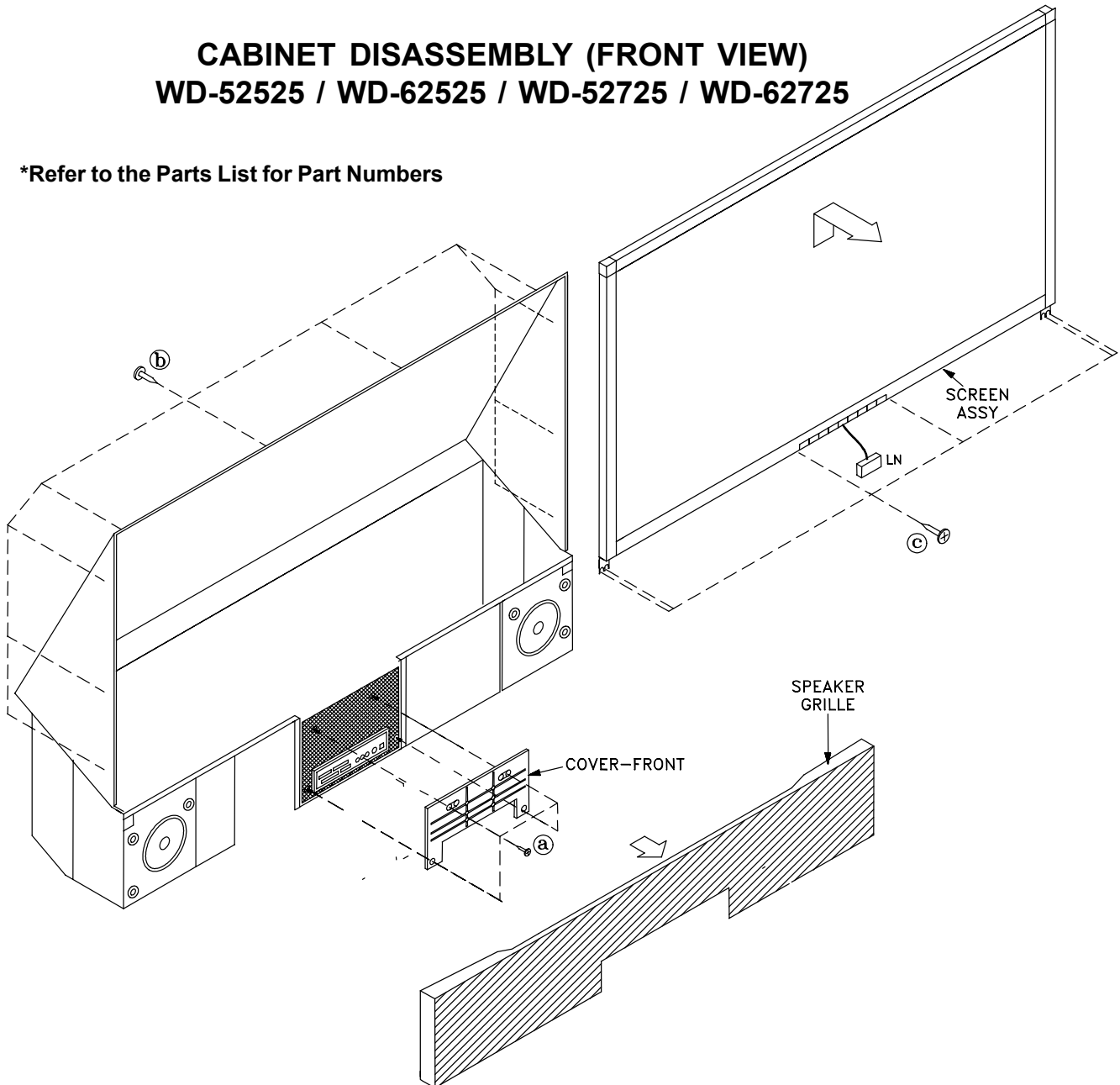
Reusable Wire Ties

Do not cut wire ties during disassembly. Reusable wire ties are used in these models. Lift the tab to release the wire tie. During reassembly, re-use wire ties to ensure all wiring harnesses are properly bundled and dressed.



CABINET DISASSEMBLY (FRONT VIEW) WD-52525 / WD-62525 / WD-52725 / WD-62725

*Refer to the Parts List for Part Numbers

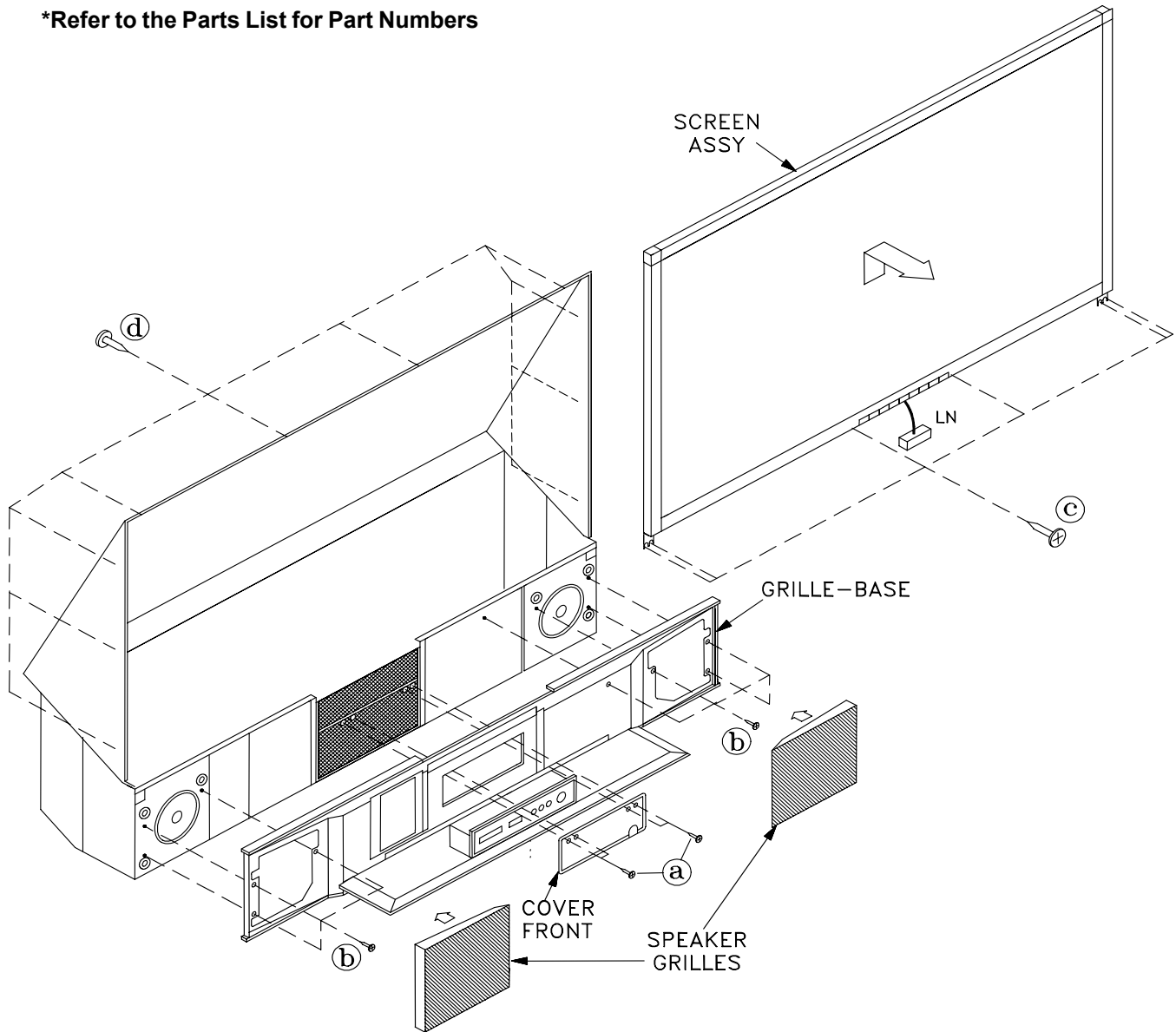


Front Cabinet Disassembly

1. Remove the SPEAKER-GRILLE by pulling forward.
2. Remove screws (a) to remove the COVER-FRONT.
3. Remove screws (b) on the rear of the upper back cover (4 across the top and 3 on each side)..
4. Remove the 4 screws (c) holding the bottom of the Screen Assembly.
5. Unplug connector LN from the Control Panel.
6. Lift the Screen Assembly up slightly then pull towards the front to remove the assembly

CABINET DISASSEMBLY (FRONT VIEW) WD-52825 /WD-62825

*Refer to the Parts List for Part Numbers



Front Cabinet Disassembly

1. Remove the SPEAKER-GRILLES by pulling forward.
2. Remove screws (a) to remove the COVER-FRONT.
3. Remove screws (b) to remove the GRILLE-BASE.
4. Remove screws (d) on the rear of the upper back cover (3 on each side and 4 across the top).
5. Remove the 4 screws (c) holding the bottom of the Screen Assembly.
6. Unplug connector LN from the Control Panel.
7. Lift the Screen Assembly up slightly then pull towards the front to remove the assembly
8. To disconnect the Card Reader and the Front Inputs:
 - Unplug the Card Reader USB connector from the PCB-DM.
 - Unplug the Front 1394 cable from the HDD Module (Hard Drive).
 - Unplug the CC connector from the Front Inputs.

CABINET BACK REMOVAL

FILTER-COVER Removal

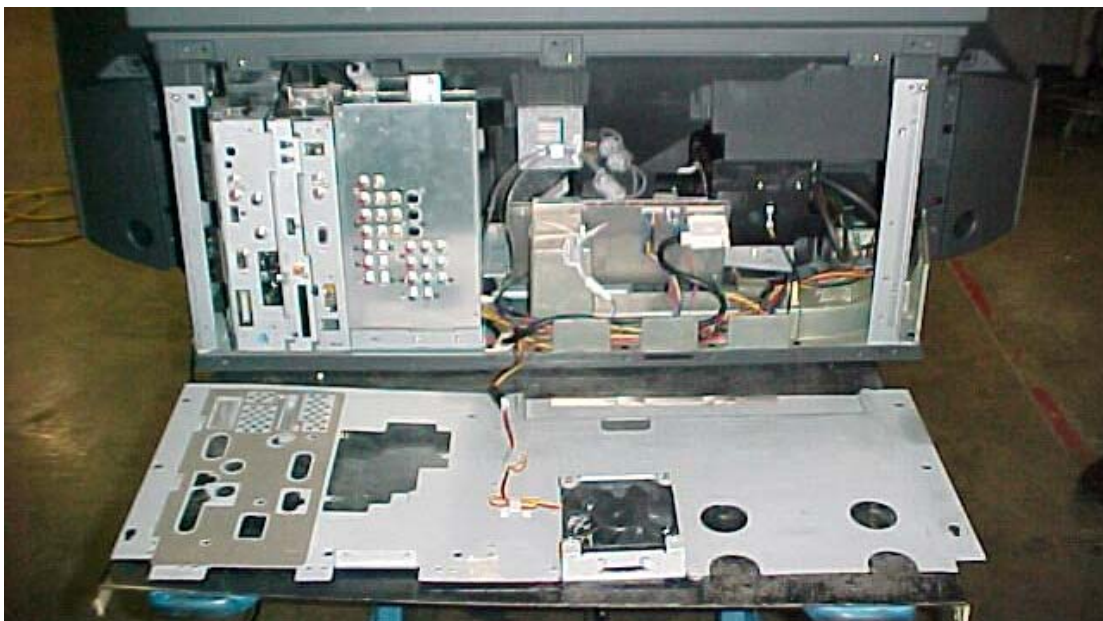
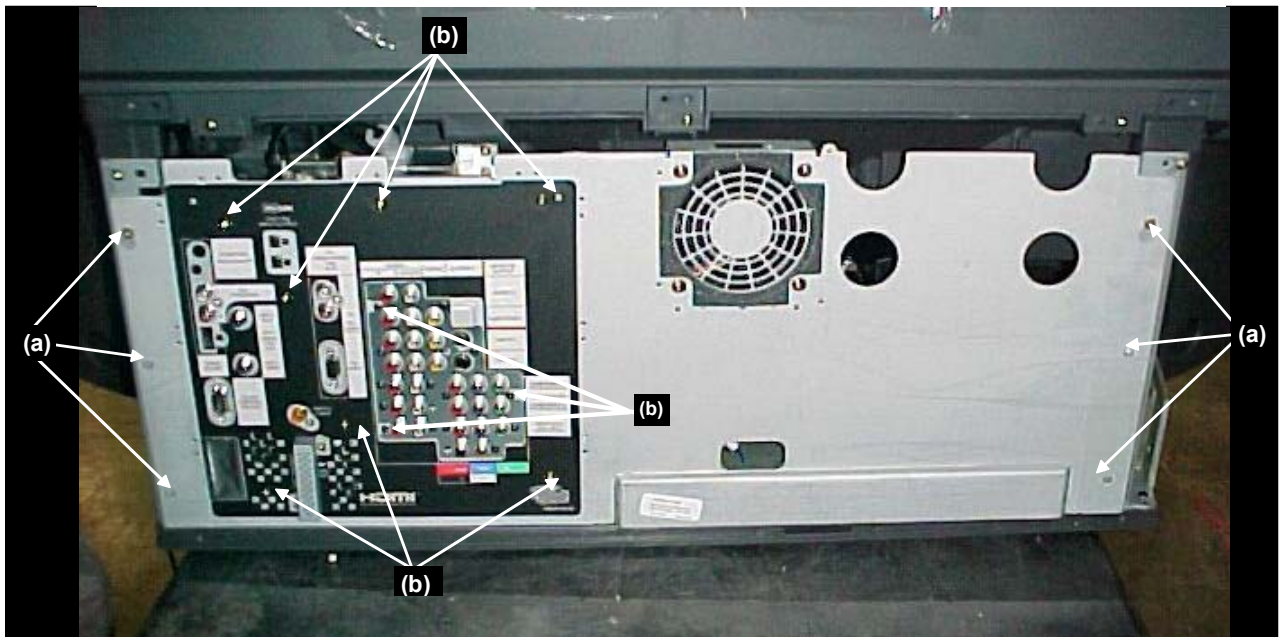
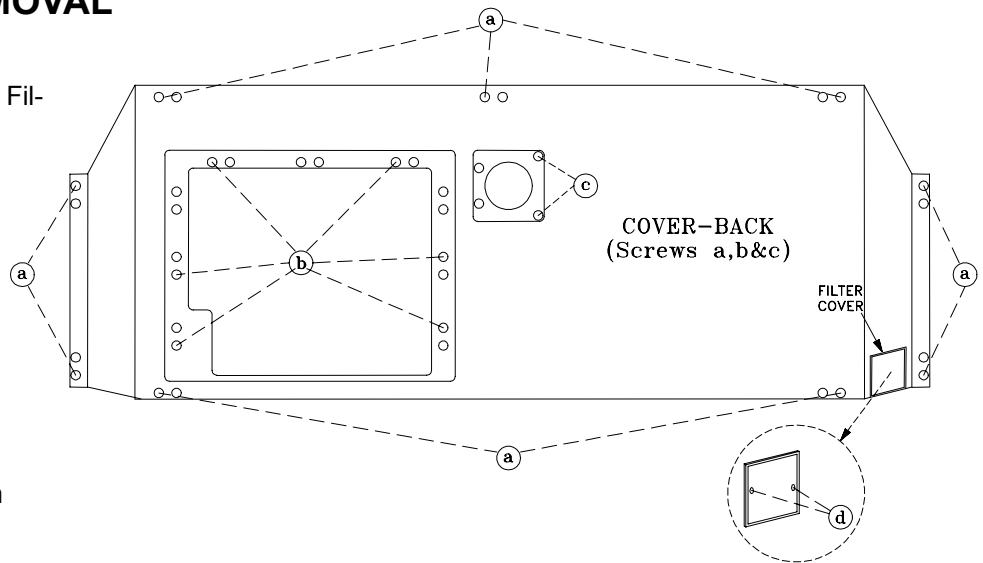
Remove 2 screws (d) to remove the Filter Cover.

COVER-BACK Removal

- 1) Remove 9 screws (a)
- 2) Remove 5 screws (b)
- 3) Remove 2 screws (c)
- 4) Pull the COVER-BACK from the cabinet.

Inner Cover Removal

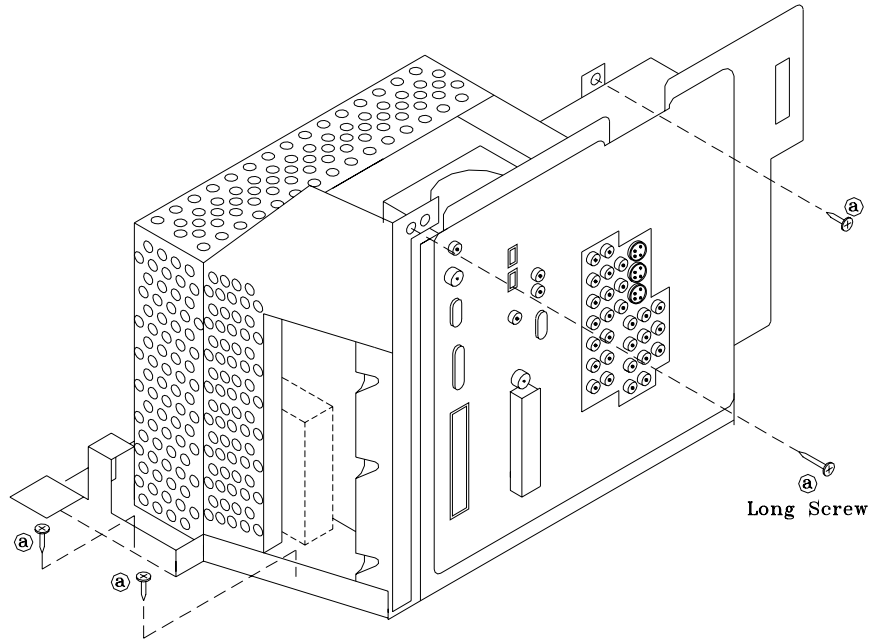
- 1) Remove 6 screws (a)
- 2) Remove 10 screws (b)
- 3) Pull the Inner Cover from the cabinet.



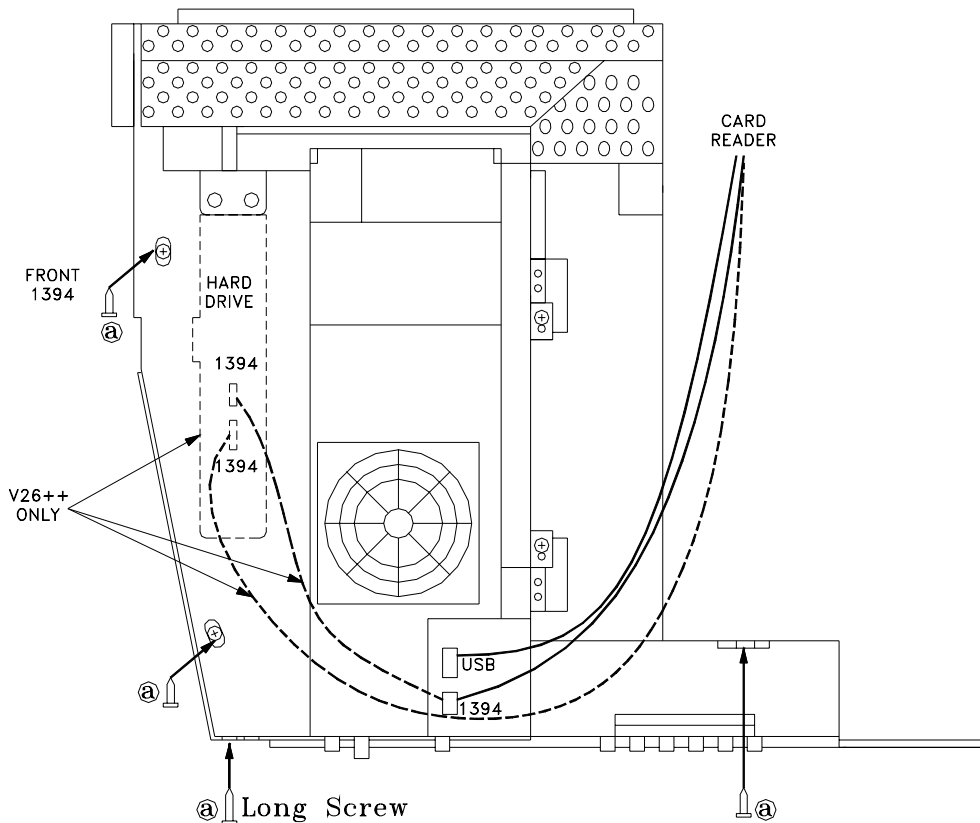
Chassis Removal

- 1) Remove the 4 black screws (a) securing the chassis shown in the two diagrams below.
- 2) Unplug the USB and 1394 connectors from the Card Reader.

NOTE: In the V26++ chassis, the Card Reader 1394 connector plugs into the Hard Drive Module.
- 3) Disconnect all cables to the front of the cabinet, the Optical Engine and the Lamp Ballast (See Page 9).
- 4) Carefully slide the chassis from the cabinet.
- 5) **IMPORTANT:** After Electrical Chassis replacement, perform the Data Copy Procedure described on page 12.



(TOP VIEW)

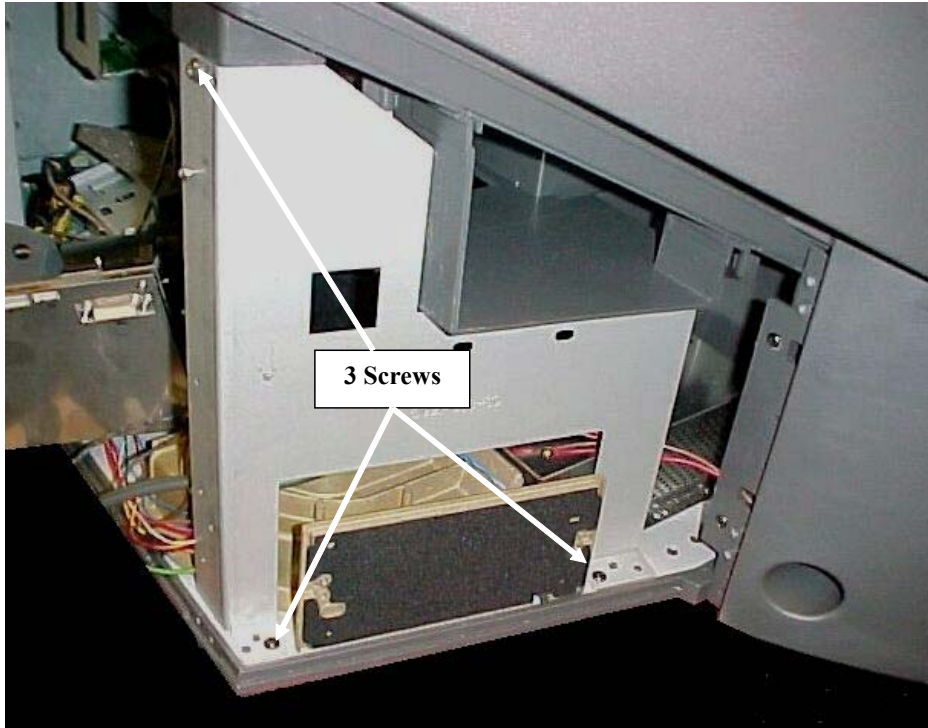


NOTE: To remove the chassis, the two connectors to the Lamp Ballast must be disconnected at the Lamp Ballast.

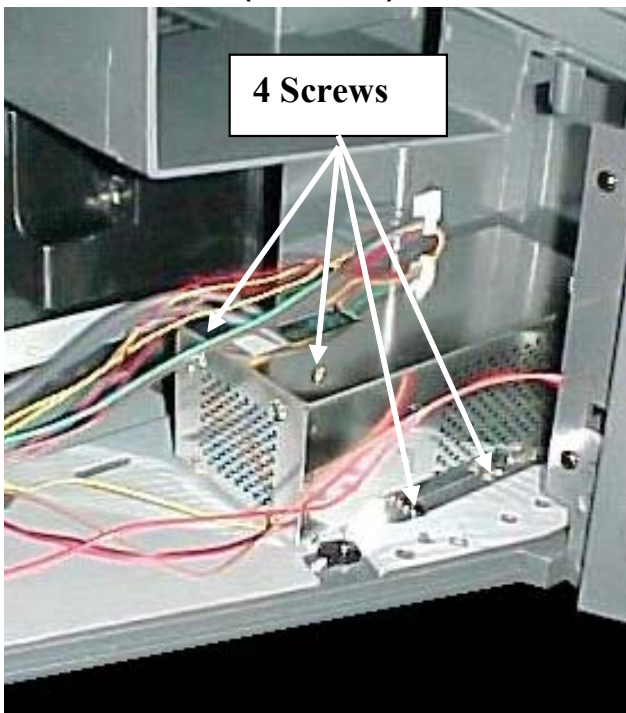
Accessing & Disconnecting The Lamp Ballast

Removing the Right Support

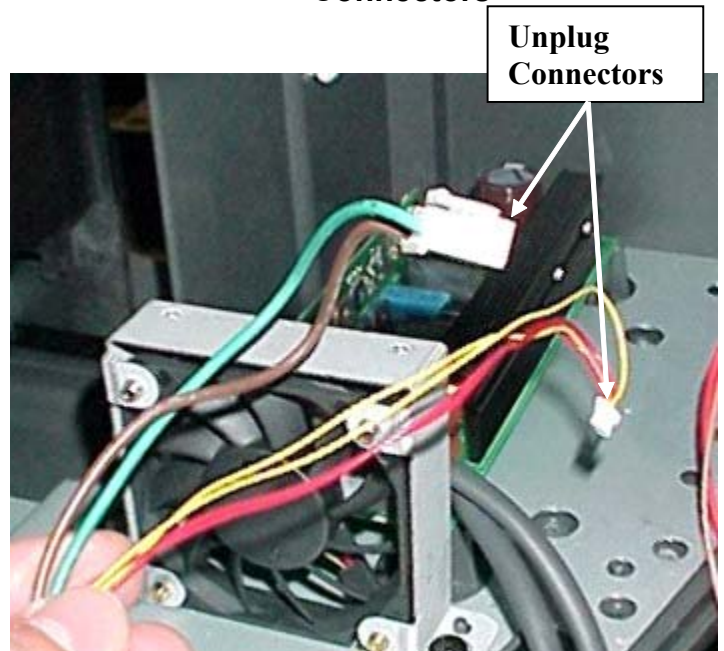
Remove the 3 screws shown below.



Removing the Lamp Ballast Shield (4 screws)

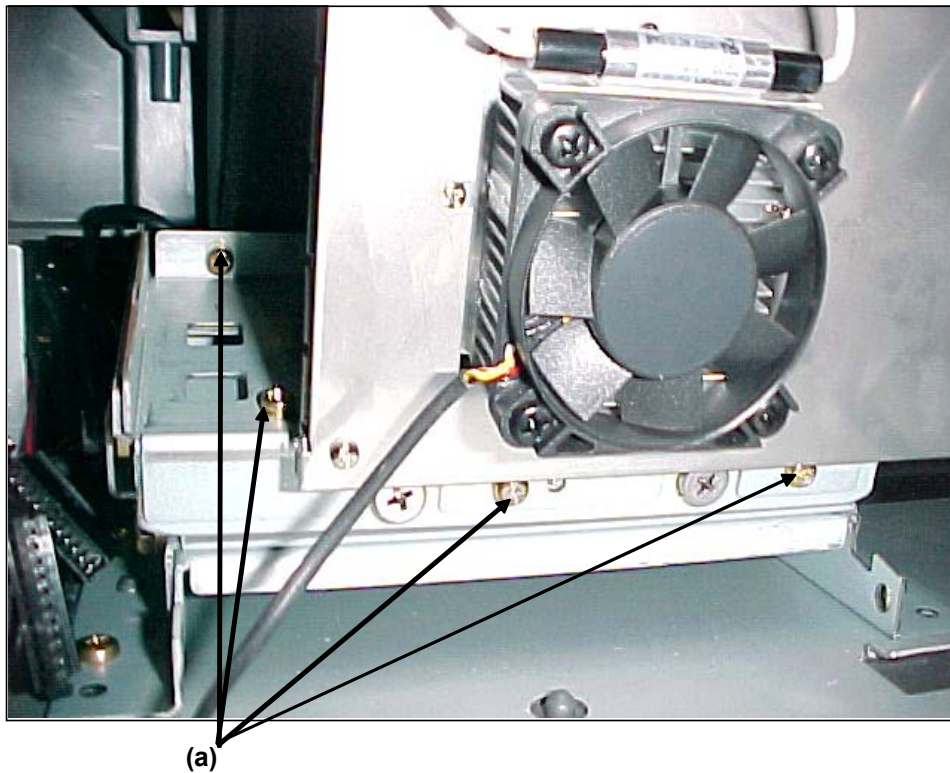
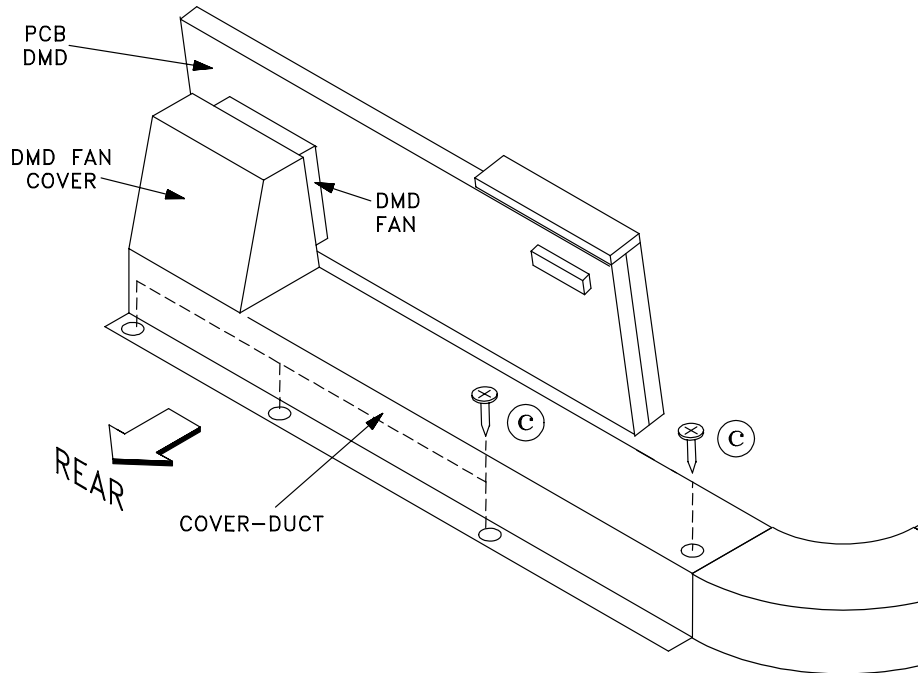


Unplug CN1 & CN2 Connectors



Removing the Optical Engine

- 1) Remove the Cover-Back and Rear Metal Cover (refer to Cabinet Back Removal).
- 2) Disconnect all connectors from the Optical Engine, Lamp Cartridge Housing and the PCB-DMD.
- 3) From the rear of the TV, remove the 4 screws (c), to remove the COVER-DUCT and DMD Fan cover.
- 4) From the rear of the TV, remove the 4 brass colored screws (a), shown below, securing the bottom plate to the Adjuster assembly.
- 5) Slide the Optical Engine/Lamp Cartridge Housing towards the rear to remove the unit from the TV.



Optical Engine (Rear View / Airduct & DMD Fan Cover Removed)

Removing the following parts from the Optical Engine

- DMD Heat Sensor
- The Optical Engine bottom plate and black bracket

DMD Thermal (Heat) Sensor Removal (*Figure 1*)

- 1) Remove screw (a) on the top of the DMD Fan.
- 2) Set the Thermal Sensor aside to install on the replacement Optical Engine.

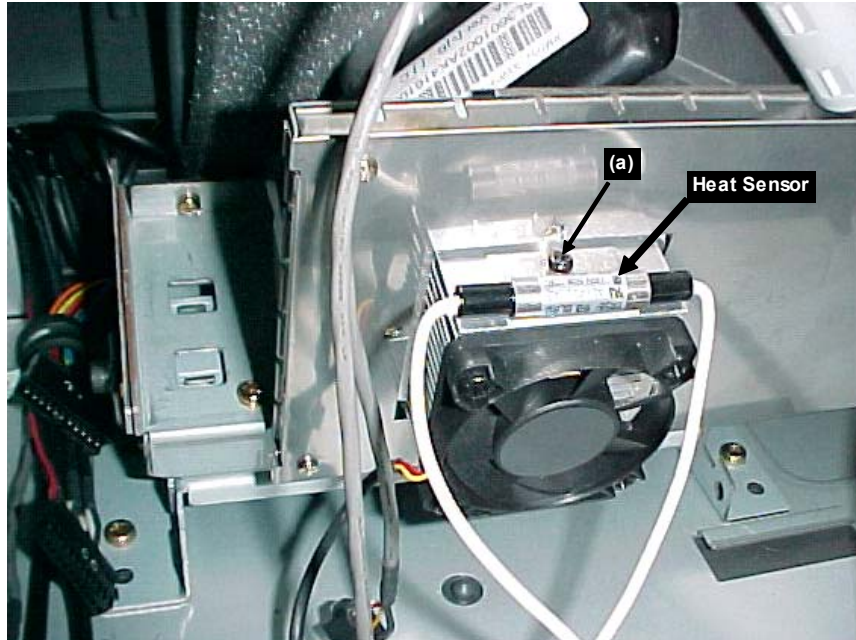


Figure 1: DMD Thermal Sensor

Bottom Plate & Black Bracket Removal

- 1) Remove the 4 screws (B) from the Bottom Plate (*Figure 2*)
- 2) Remove the two screws (c), holding the Black Bracket to the Lamp Box. (*Figure 3*)

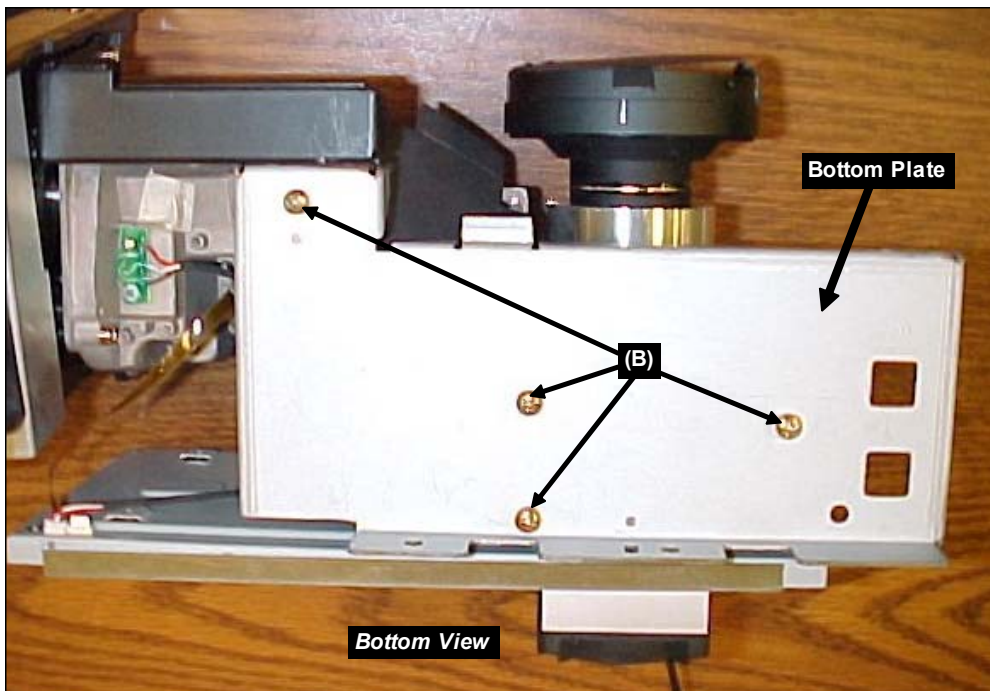


Figure 2: Bottom Plate

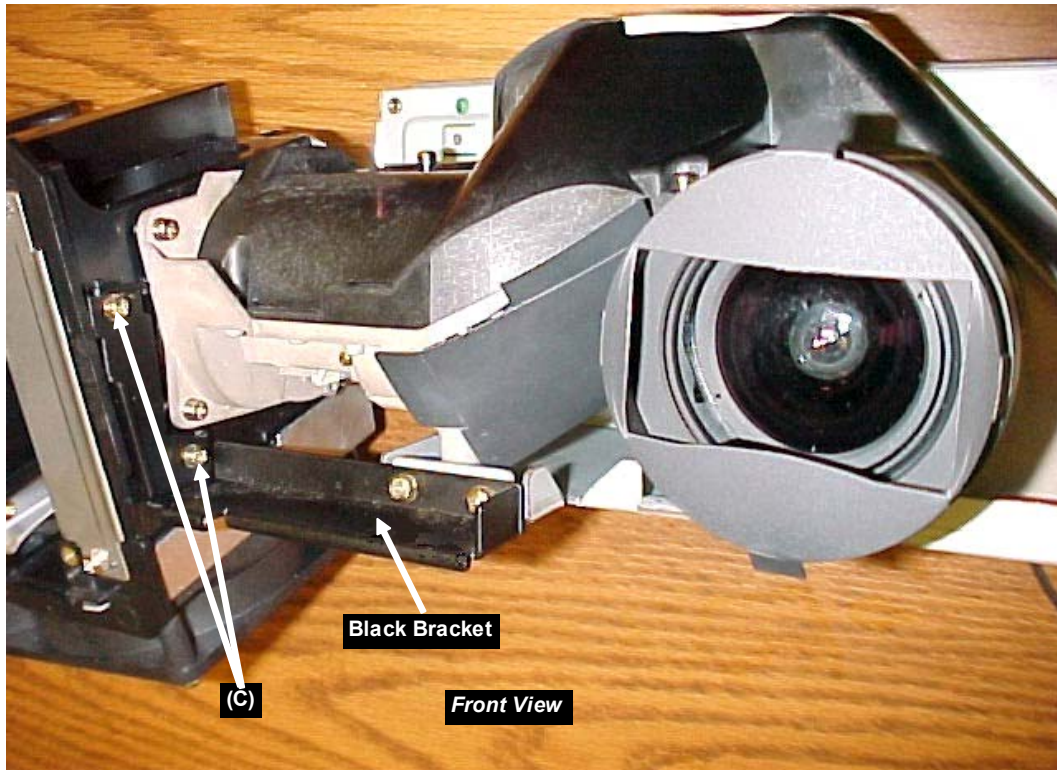


Figure 3: Black Support Bracket

Installing the Optical Engine

- 1) Install the Bottom Plate, Black Support Bracket and the Heat Sensor, removed from the original Optical Engine, on the replacement Engine.
- 2) Reverse the removal procedure to install the replacement Optical Engine in the cabinet.
- 3) The following adjustments may have to be performed after the installation. (See Service Manual)
 - Horizontal and Vertical Electrical Centering Adjustment.
 - Optical Unit Rotation Adjustment
 - Optical Unit Keystone Distortion Adjustments.
- 4) **IMPORTANT:** After Optical Engine replacement, perform the Data Copy Procedure described on below.

Data Copy Procedure

This procedure must be performed after replacing either the Electrical Chassis or Optical Engine.

- 1) To display the data copy menu press <TV MENU> <2-4-5-7> <0>
- 2) Use the cursor keys to yellow highlight "Copy Light Engine EEPROM to DM"
- 3) Press <ENTER>
- 4) After the copy procedure has been completed, exit the menu by pressing <HOME>

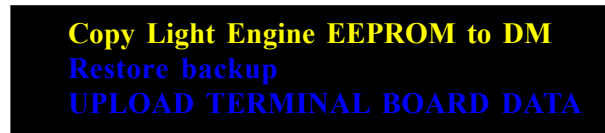
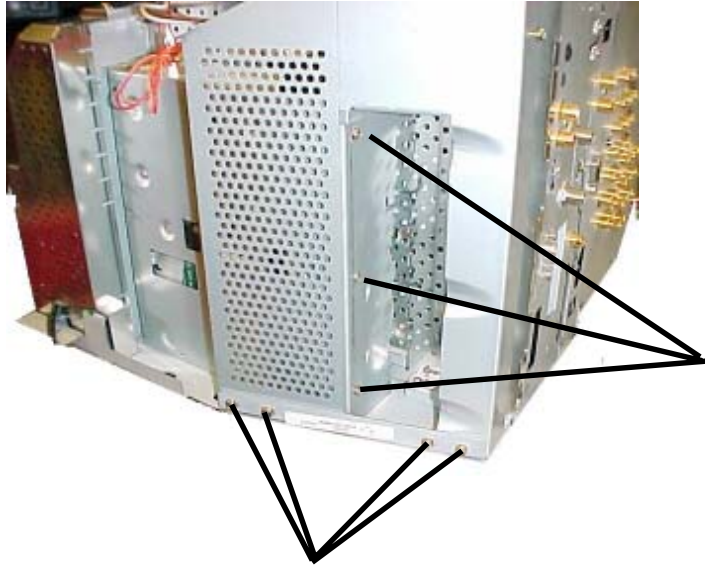


Figure 4: Data Copy Menu

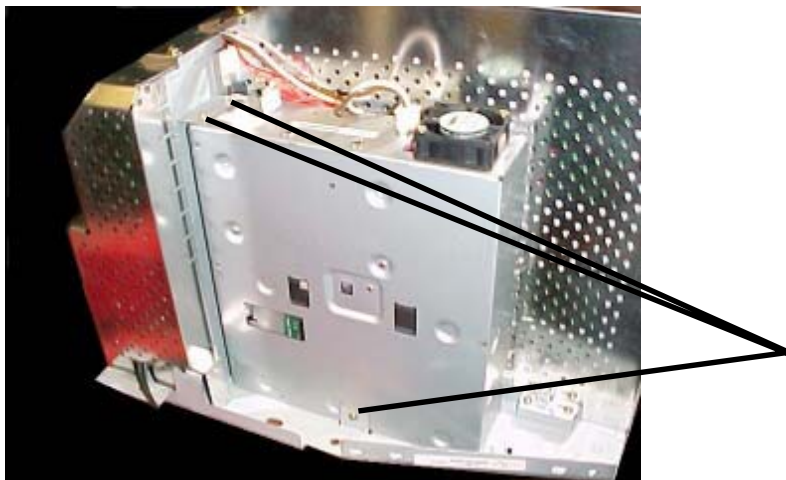
Hard Disk Drive (HDD) Replacement (V26++ Models)

Perform this procedure if the HDD (PVR feature) is replaced, or if the HDD is transferred when the Electrical Chassis is replaced.

- 1) Prior to replacement, perform the following procedure:
 - a. Disconnect any external 1394 devices.
 - b. With the remote, press <DEVICE MENU><2-4-7-0>
 - c. Select **“TV Disc: OK. Press ENTER to replace”** and press ENTER.
 - d. After receiving the confirmation **“TV Disc: Press ENTER again to replace”** press ENTER again.
- 2) Slide out the Electrical Chassis by performing steps 1, 2 and 4 of the Chassis Removal Procedure on page 5.
- 3) Remove the Left Side Support by removing the (7) screws shown below.



- 3) Disconnect the wiring harnesses and remove the (3) screws shown below. Then remove the HDD



Troubleshooting the V26 Chassis

The V26 Chassis uses Digital Light Processing™ technology. Troubleshooting this chassis only requires the service technician to make a determination of failure down to the following components:

- **Lamp Cartridge**
Note: The Lamp Cartridge is customer replaceable. Warranty claims for labor will not be accepted.
- **Lamp Ballast** (Lamp Power Supply)
- **Optical Engine** (Includes the Optics, DMD™ PCB, Lamp Cartridge Housing, Lamp Thermal Sensor, Lamp Fan and DMD Fan)
- **Hard Disk Drive** (V26++ Models use this for the Personal Video Recorder feature)
- **Electrical Chassis** (Includes all other electronics other than peripheral components.)
- **PWB's:** POWER, SIGNAL, FORMATTER, DM, TERMINAL-1, TERMINAL-2
- **Peripheral Components** - Includes 5 Fans (Chassis, DMD, Exhaust, Lamp and Lamp Ballast), Memory Card Reader, IR Receiver, L & R Speaker PCBs, Control PCB, Front PCB, Lamp Cover Detect Switch, Filter Cover Detect Switch, DMD Thermal Sensor.)

Adjustments:

The nature of DLP™ technology eliminates the need for routine service adjustments. For instance, Focus is preset and should never require touch up. If a focus symptom does exist, look for causes other than adjustment such as physical damage or a dirty lens, screen or mirror. When replacing the Optical Engine, the adjust procedures provided in the Service Manual may be used for precise geometry adjustments.

Troubleshooting Steps:

1. If the Power LED is continuously flashing or if other TV controls seem locked, perform a **System Reset** by pressing the front panel button or by removing and re-applying AC power.
2. If the sets Status, Lamp or Power LEDs are abnormal, use the chart on the following page to determine the abnormal condition. Perform the **Error Code Operational Check** to further determine if a problem is with a peripheral component.
3. If the problem is not the Lamp Ballast or Peripheral Component, always suspect the Electrical Chassis first.
4. Other Problems:
 - For picture and/or audio complaints that may be related an improper customer setting or adjustment, use the **A/V Memory Reset** feature to restore factory default settings. Press <TV MENU> select "Audio Video" and the Device Input to be reset. Then press <ENTER>.
 - For other feature complaints, reset all user controlled functions by pressing <TV MENU><1-2-3>. Then at the **Reset System Defaults** screen, press <ENTER>. Note: All customer settings, including NetCommand will be reset.
 - If the cable company is requesting information to enable CableCARD™ service, press <TV MENU> <9-9-9> to display the host and CableCARD identification. (CableCARD must be installed)
 - To place the remote in the NetCommand™ mode, hold the <POWER> button & press <9-3-5>.
 - To place the remote back into the standard mode, hold the <POWER> button & press <0-0-0>.

Digital Light Processing™, DLP™, Digital Micromirror Device™ and DMD™ are trademarks of Texas Instruments. CableCARD™ is a trademark of Cable Television Laboratories, Inc.

I. Front Panel LED Designations (Abnormal Conditions)

Abnormal Conditions	LEDs		
	POWER	STATUS	LAMP
Continuous Blinking over 1 minute (Perform <i>System Reset</i> before replacing Chassis)	Green (Blinking)		
Temperature Hot (Check Air Filter)	Off	Yellow	Off
Lamp usage over 4000 hours	-	Off	Yellow
Lamp Cover is open	Off	Off	Yellow (blinking)
Lamp Failed to turn On (Turn set off for 2 minutes and try again before replacing Lamp) See Lamp Troubleshooting Procedure	Off	Off	Red
Filter Cover is open	Off	Yellow (blinking)	Off
Chassis Fan stopped	Off	Red Blink 1 Long - 1 Short	Off
Ballast or Exhaust Fan stopped	Off	Red Blink 1 Long - 2 Short	Off
DMD or Lamp Fan stopped	Off	Red Blink 1 Long - 3 Short	Off
Circuit Failure (short problem) or DVI Cable (between Chassis and Engine) disconnected	Off	Red	Off

System Reset by front panel button or by removing and re-applying AC Power.

II. Error Code Operational Check

Note: The TV must be in "Shut Down" and not manually switched Off, to perform the Error Code Operational Check. When the TV is switched Off, the code automatically resets to "12" No Error.

Press the front panel "DEVICE" and "MENU" buttons at the same time, and hold for 5 seconds to activate the Error Code Operational Check. The LED will then flash denoting a two digit Code.

Note: The front panel buttons must be used, NOT those on the Remote Control.

- The number of flashes indicates the value of the MSD (tens digit) of the Error Code.
- The flashing then pauses for approximately 1/2 second.
- The LED then flashes indicating the value of the LSD (ones digit) of the Error Code.
Example: If the Error Code is "32", the LED will flash three times, pause, and then flash two times.
- The Error Code is repeated a total of 5 times.

ERROR CODES

Press and Hold "DEVICE" and "MENU" FOR 5 SECONDS

Error Code	Probable Cause
12	No error detected
22	Recovery from momentary Reset
32	Lamp Cover open
33	Air Filter Cover open
34	Lamp abnormality (See Lamp Troubleshooting)
35	Chassis Fan failure
36	Exhaust (Back Cover) or Lamp Ballast Fan failure
37	Engine (DMD or Lamp) Fan failure
38	Excess Lamp Temperature
39	Excess DMD Temperature
41	Short Detected
44	DVI Cable (between Chassis and Engine) disconnected

Note: To operate the set with the back cover removed, the Filter Cover must be installed and the Exhaust Fan must be connected.

III. Lamp Troubleshooting Procedure

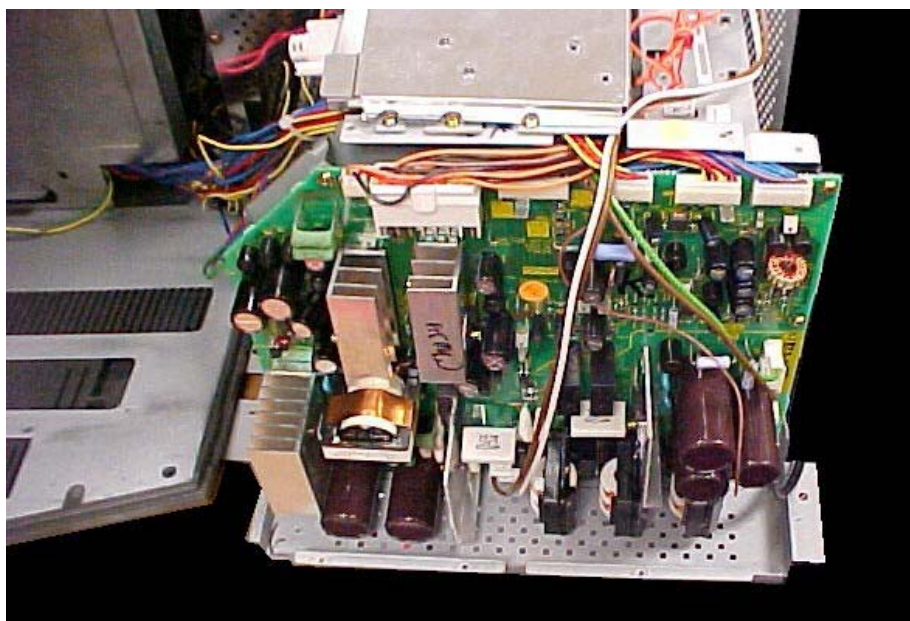
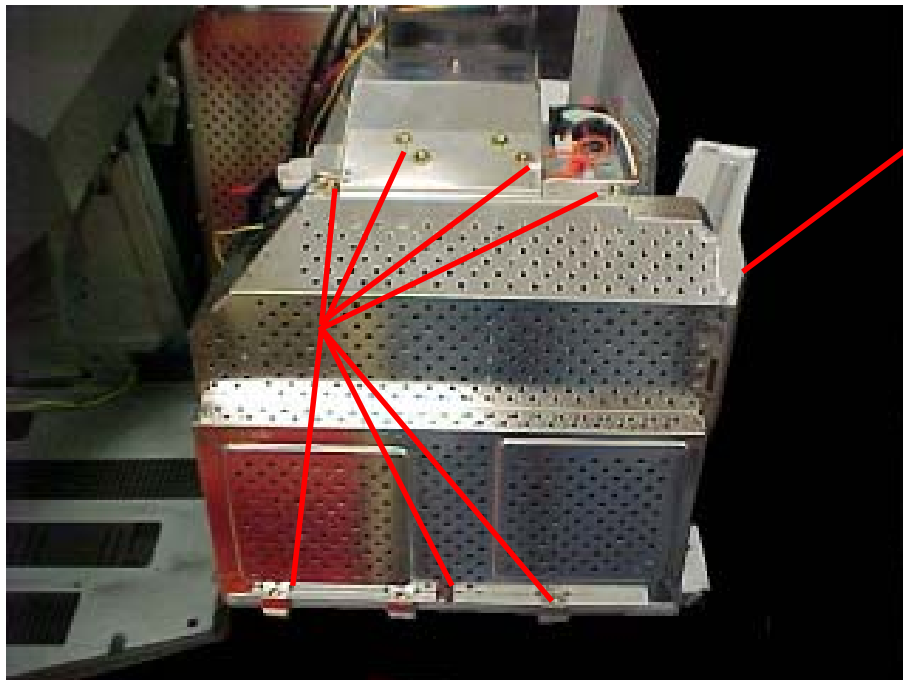
If a Lamp Abnormality is indicated and a replacement Lamp Cartridge does not correct the problem, the problem can be due to either the Lamp Ballast or the Electrical Chassis.

- Connect a DVM across pins 1 and 3 of connector CN2 on the Lamp Ballast (See Page 9).
- When the set is first powered On, check for 340 VDC.
- If voltage is good, suspect the Lamp Ballast
- If the voltage is bad, suspect the POWER PWB in the Electrical Chassis.

IV. Power PWB Troubleshooting

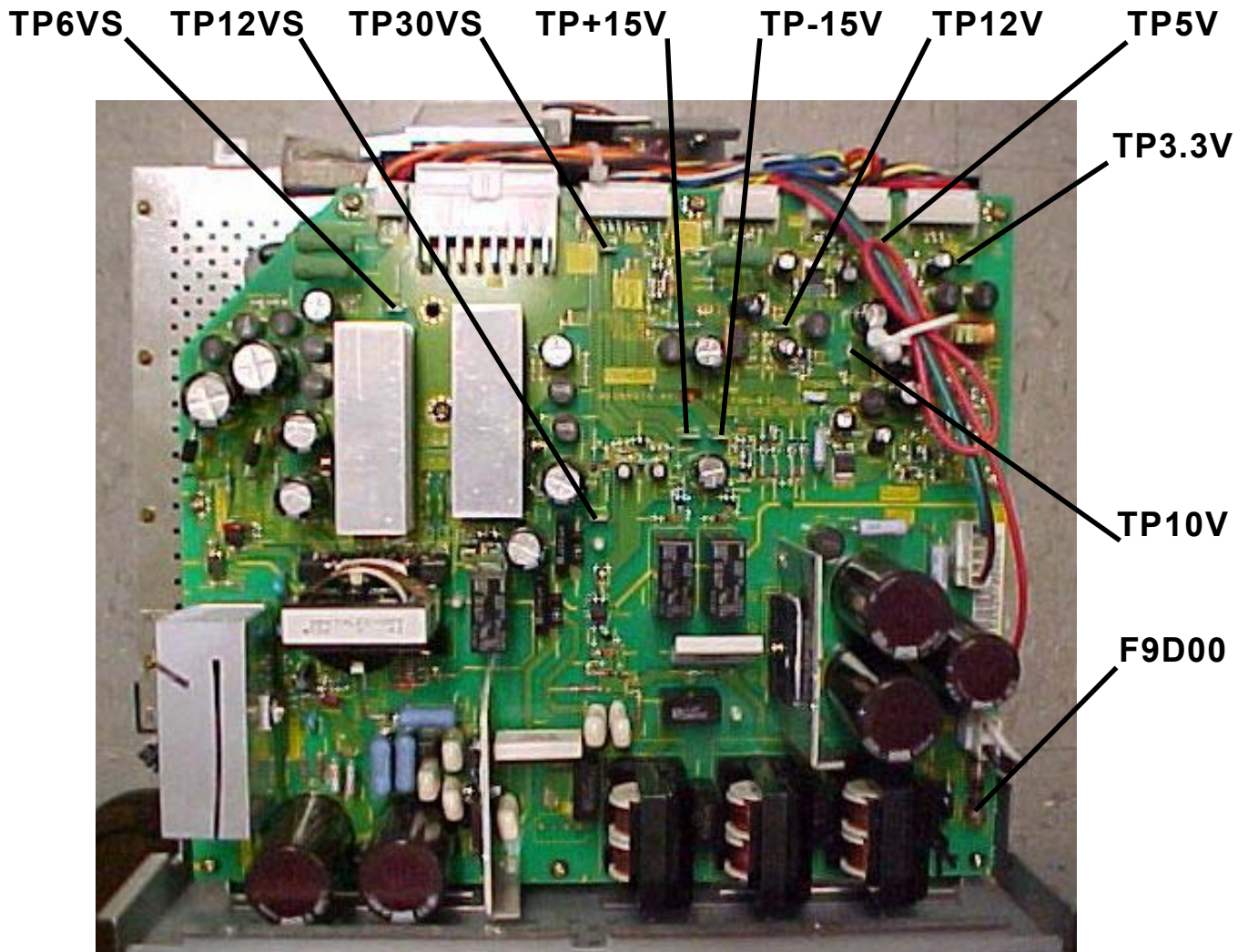
To access the Power PWB in the Electrical Chassis:

1. Slide out the Electrical Chassis by performing steps 1, 2 and 4 of the Chassis Removal Procedure on Page 8.
2. Remove the screws indicated below and remove the Power PWB Shield.



Use the chart and diagram below to check for abnormal voltages.
 If all voltages are missing, check the AC line fuse, F9D00, 10A, 125V.
 Other abnormal voltages indicate a failure of the Power PCB.

Test Point	Approximate DC Voltage	Bootup/ Standby Mode	Power On Mode
TP6VS	7	Yes	Yes
TP12VS	12	Yes	Yes
TP+15V	+15 ~ +20	Yes	Yes
TP-15V	-15 ~ -20	Yes	Yes
TP30VS	30	Yes	Yes
TP3.3V	3.3	No	Yes
TP5V	5	No	Yes
TP10V	10	No	Yes
TP12V	12	No	Yes



V. PWB Level Troubleshooting

Use the Symptom/Cause information below to aid troubleshooting to the PCB level. While this method will not be 100% accurate, checking all items listed in the Symptom column will increase the probability of a successful diagnosis. Symptoms can also be caused by poor or mis-seated connections between the related PWB's.

Symptom	Most Likely	Other Possibility
Video Problems. All signals bad except PC Input is OK	PWB-DM	PWB-Terminal-1 or 2 PWB-FMT
Video Problems, all Inputs & Menu bad. Audio OK	PWB-FMT	
Analog Tuning problems. External Inputs & Digital OK	PWB-SIGNAL	PWB-TERMINAL-2
Analog Tuning & External Inputs Problems. Digital OK	PWB-FMT	
Digital Tuning problems. Analog OK	PWB-SIGNAL	PWB-DM
Analog & Digital Tuning Problems. External Inputs OK	PWB-SIGNAL	
External Input Problems. Tuning OK	PWB-TERMINAL-1	PWB-TERMINAL-2
No Sync	PWB-FMT	
Digital noise, lines or artifacts in picture	PWB-FMT	Optical Engine
Card Reader Problems	Memory Card Reader	PWB-DM
1394 Problems	PWB-DM	
Audio Problems. Speakers, Monitor A/V 1 & Audio 2 Bad	PWB-SIGNAL	
Audio Problems. Speakers, Monitor A/V 1 Bad. Audio 2 Good	PWB-DM	PWB-SIGNAL
Audio Problems. Speakers Bad. Monitor A/V 1 & Audio 2 Good	PWB-SIGNAL	PWB-SPEAKER<L><R> PWB-DM
Power LED blinking constantly. Won't power on.	PWB-DM	
Control problems	PWB-DM	
Control problems (Front Panel)	PWB-Control	
Control problems (Remote)	Remote or PWB-Preamp	PWB-Preamp connectors reversed.
IR Output problems, both jacks	PWB-TERMINAL-2	PWB-DM
No Power. Status LED Red. Error Code 41	PWB-POWER	DVI connection between Chassis & Engine

V26 Chassis - Parts Quick Reference

Customer Replaceable Parts

Part Name	Description	WD-52525	WD-62525	WD-52725	WD-62725	WD-52825	WD-62825
Lamp Cartridge	LAMP - CARTRIDGE	915P020010	915P020010	915P020010	915P020010	915P020010	915P020010
Dust Filter	FILTER - DUST	620D144010	620D144010	620D144010	620D144010	620D144010	620D144010
Remote Control	REMOTE	290P123010	290P123010	290P123020	290P123020	290P123020	290P123020

Service Parts

Part Name	Description	WD-52525	WD-62525	WD-52725	WD-62725	WD-52825	WD-62825
Optical Engine	OPTICAL-ENGINE	939P977010	939P977020	939P977010	939P977020	939P977010	939P977020
Electrical Chassis (Complete)	ASSY-CHASSIS	955B298001	955B298001	955B298002	955B298002	955B298003	955B298003
Lamp Ballast PCB	UNIT-POWER-LAMP	939P978010	939P978010	939P978010	939P978010	939P978010	939P978010
Memory Card PCB	MEMORY-CARD-READER-PWB	299P271010	299P271010	299P271010	299P271010	299P271010	299P271010
Preamp PCB	ASSY-PWB-PREAMP	935D774001	935D774001	935D774001	935D774001	935D774001	935D774001
Front PCB	ASSY-PWB-FRONT	935D775001	935D775001	935D775001	935D775001	935D779001	935D779001
Control PCB	ASSY-PWB-CONTROL	935D776001	935D776001	935D776001	935D776001	935D776001	935D776001
Right Speaker PCB	ASSY-PWB-SPEAKER-R	935D806001	935D806001	935D806001	935D806001	935D806001	935D806001
Left Speaker PCB	ASSY-PWB-SPEAKER-L	935D807001	935D807001	935D807001	935D807001	935D807001	935D807001
Hard Disk Drive	ASSY-HDD-UNIT	-	-	-	-	939P989010	939P989010
Lamp Ballast Fan	FAN-BALLAST	299P278020	299P278020	299P278020	299P278020	299P278020	299P278020
Lamp Fan	FAN-LAMP	299P282010	299P282010	299P282010	299P282010	299P282010	299P282010
DMD Fan	FAN-DMD	299P283010	299P283010	299P283010	299P283010	299P283010	299P283010
Chassis Fan	FAN-COOLING	299P103050	299P103050	299P103050	299P103050	299P103050	299P103050
Exhaust Fan	FAN-COOLING	299P103050	299P103050	299P103050	299P103050	299P103050	299P103050
Lamp Cover Detect Switch	SW-MICRO	436P021010	436P021010	436P021010	436P021010	436P021010	436P021010
Filter Cover Detect Switch	SW-MICRO	436P021010	436P021010	436P021010	436P021010	436P021010	436P021010
DMD Thermal Sensor	SENSOR - THERMAL	299P280010	299P280010	299P280010	299P280010	299P280010	299P280010
Lamp Thermal Sensor	SENSOR-THERMAL (LAMP)	299P285010	299P285010	299P285010	299P285010	299P285010	299P285010

Bold Type = Safety Critical

Screen Parts

Part Name	Description	WD-52525	WD-62525	WD-52725	WD-62725	WD-52825	WD-62825
DiamondShield	DIAMOND - SHIELD	KIT-WD52525 DS	KIT-WD62525 DS	KIT-WD52725 DS	KIT-WD62725 DS	KIT-WD52825 DS	KIT-WD62825 DS
Lenticular Screen	LENS - LENTICULAR	491P178020	491P174020	491P178020	491P176020	491P178020	491P176020
Fresnel Lens	LENS - FRESNEL	491P177020	491P173020	491P177020	491P175020	491P177020	491P175020

Chassis PWBs

PWB Name	Description	WD-52525	WD-62525	WD-52725	WD-62725	WD-52825	WD-62825
Power	PWB-POWER	930B921002	930B921002	930B921002	930B921002	930B921001	930B921001
Signal	PWB-SIGNAL	930B923002	930B923002	930B923001	930B923001	930B923003	930B923003
Format	PWB-FMT	930B924002	930B924002	930B924003	930B924003	930B924001	930B924001
DM	PWB-DM	934C116002	934C116002	934C116003	934C116003	934C116001	934C116001
Terminal-1	PWB-TERMINAL 1	934C117001	934C117001	934C117001	934C117001	934C117002	934C117002
Terminal-2	PWG-TERMINAL-2	934C118001	934C118001	934C118001	934C118001	934C118001	934C118001

