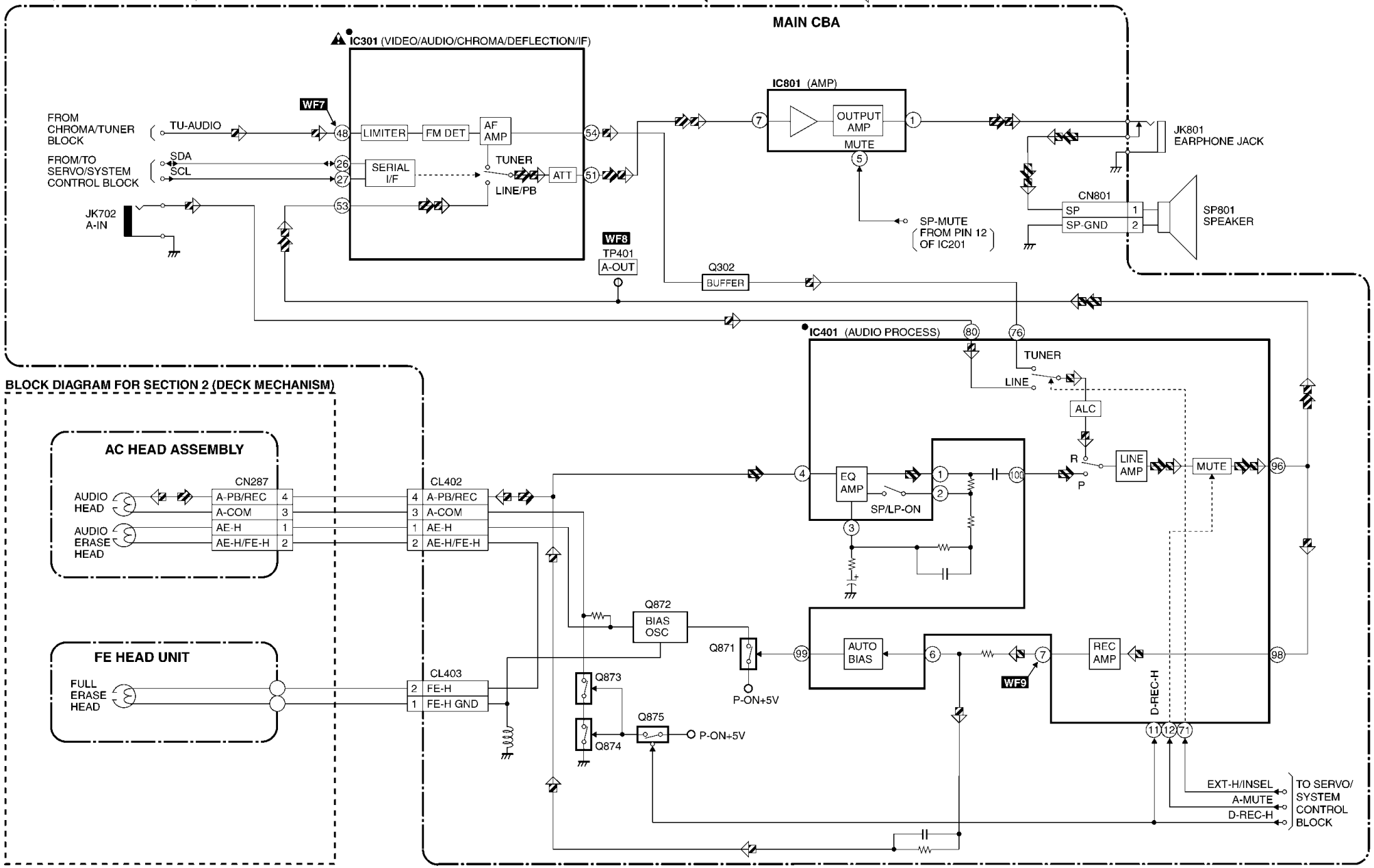
Audio Block Diagram

NOTE FOR WIRE CONNECTORS:
1. PREFIX SYMBOL "CN" MEANS CONNECTOR. (CAN DISCONNECT AND RECONNECT.)
2. PREFIX SYMBOL "CL" MEANS WIRE-SOLDER HOLES OF THE PCB. (WIRE IS SOLDERED DIRECTLY.)

TEST POINT INFORMATION
- ⓘ :INDICATES A TEST POINT WITH A JUMPER WIRE ACROSS A HOLE IN THE PCB.
- ▭→ :USED TO INDICATE A TEST POINT WITH A COMPONENT LEAD ON FOIL SIDE.
- ⊘ :USED TO INDICATE A TEST POINT WITH NO TEST PIN.
- ● :USED TO INDICATE A TEST POINT WITH A TEST PIN.

"● " = SMD

PB-AUDIO SIGNAL REC-AUDIO SIGNAL Mode : SP/REC



Chroma/Tuner Block Diagram

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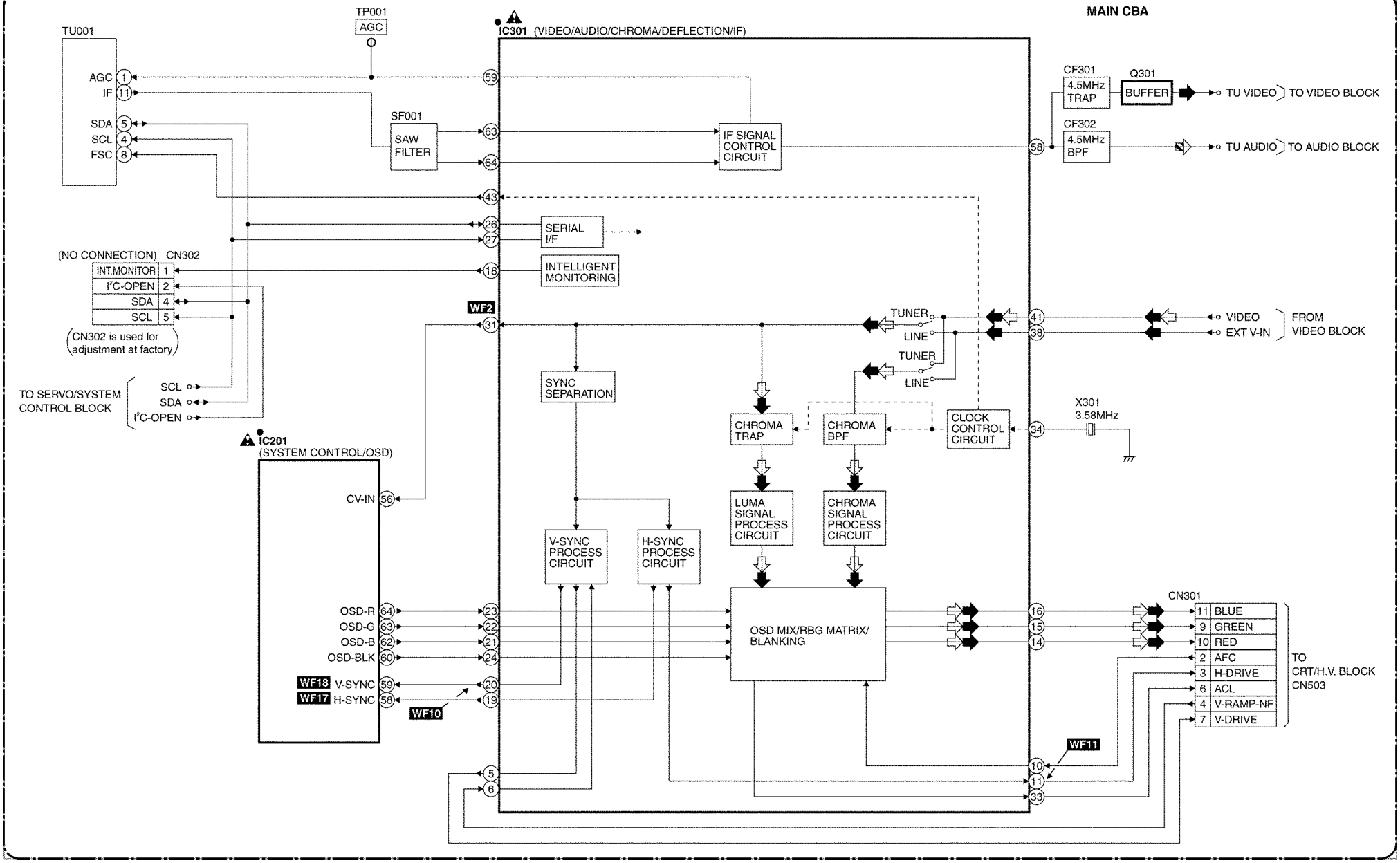
"● " = SMD

REC-AUDIO SIGNAL | REC VIDEO SIGNAL | PB VIDEO SIGNAL | Mode : SP/REC

MAIN CBA



CRT/H.V. Block Diagram

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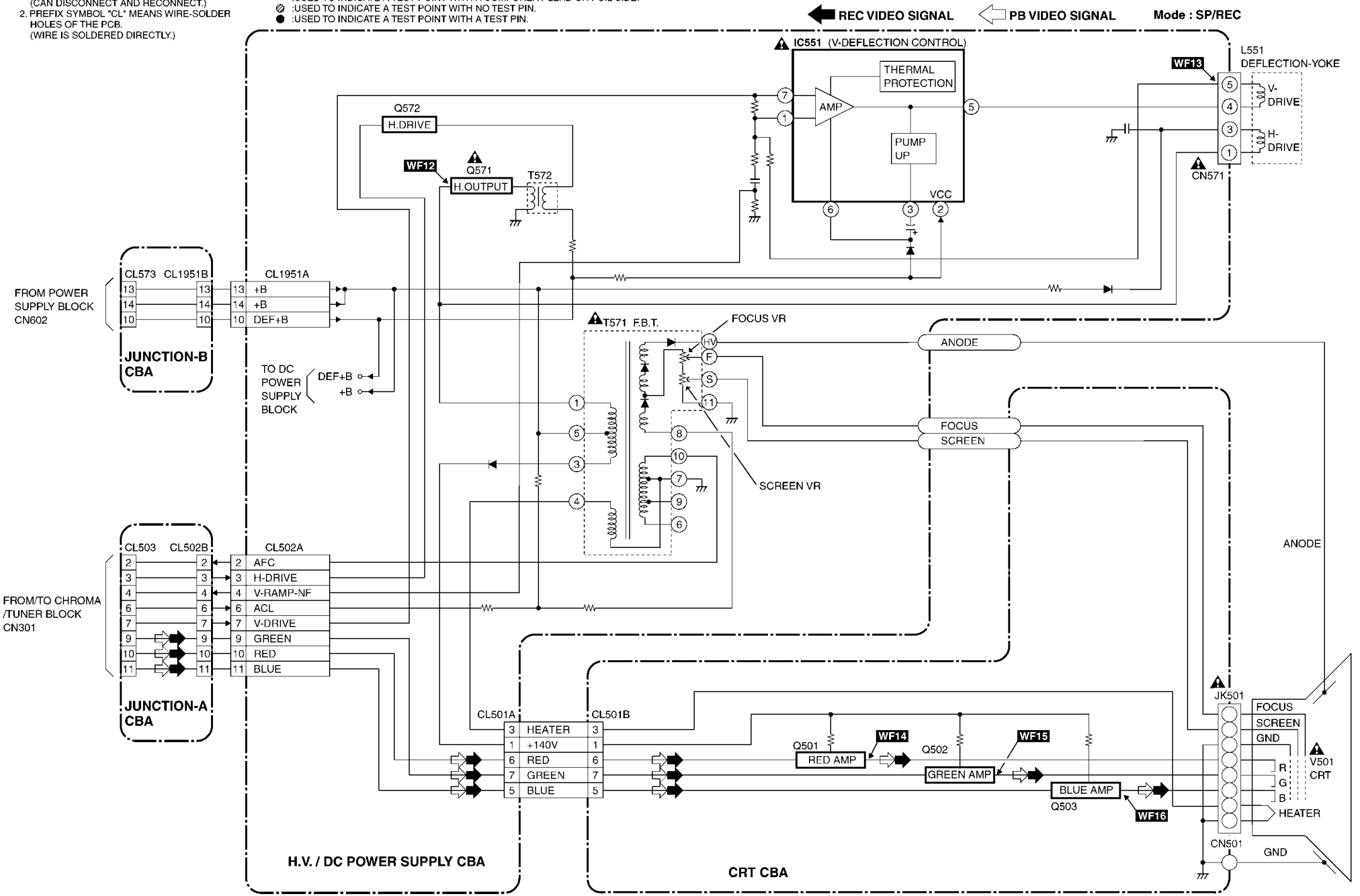
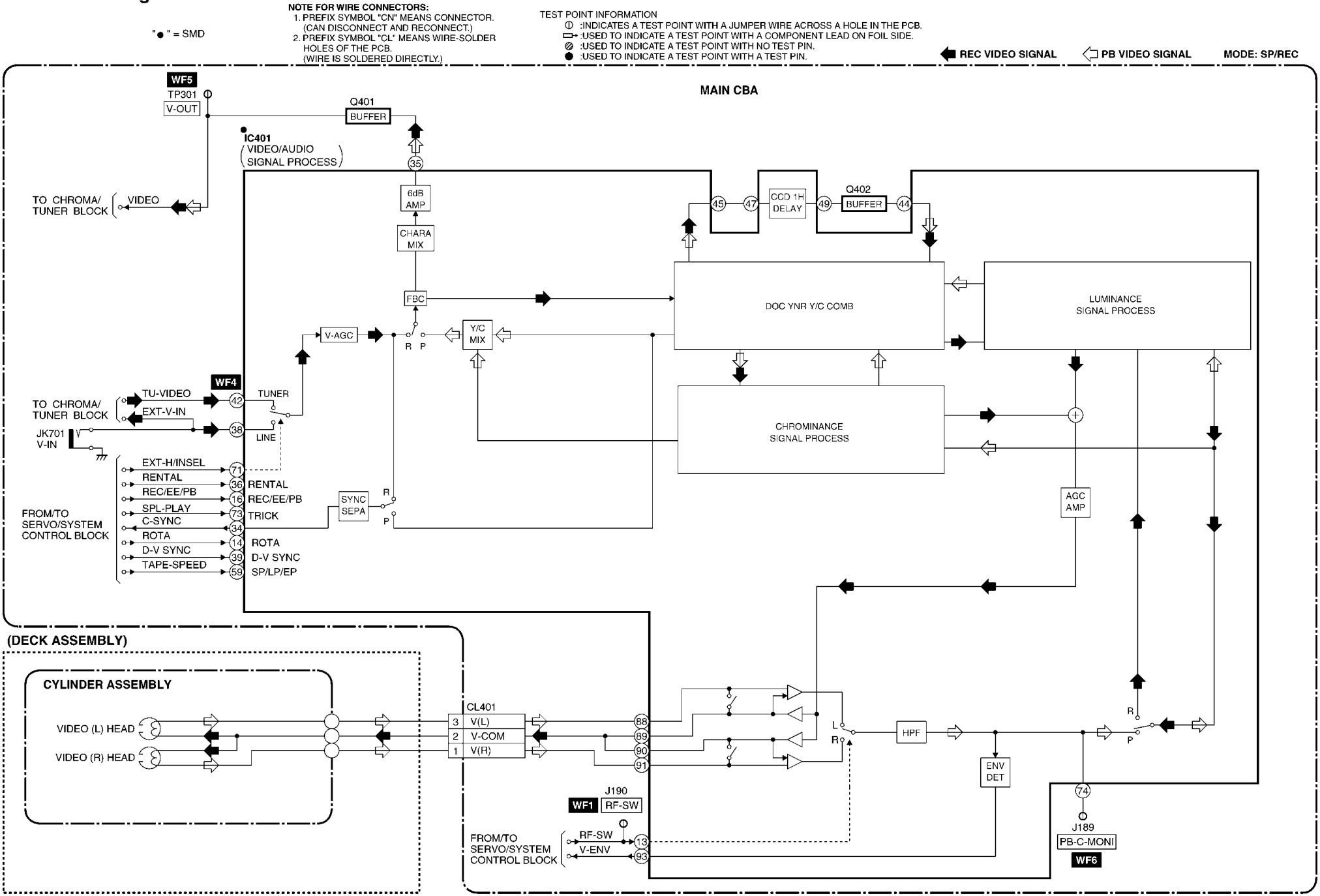


Video Block Diagram



BLOCK DIAGRAMS

Servo/System Control Block Diagram

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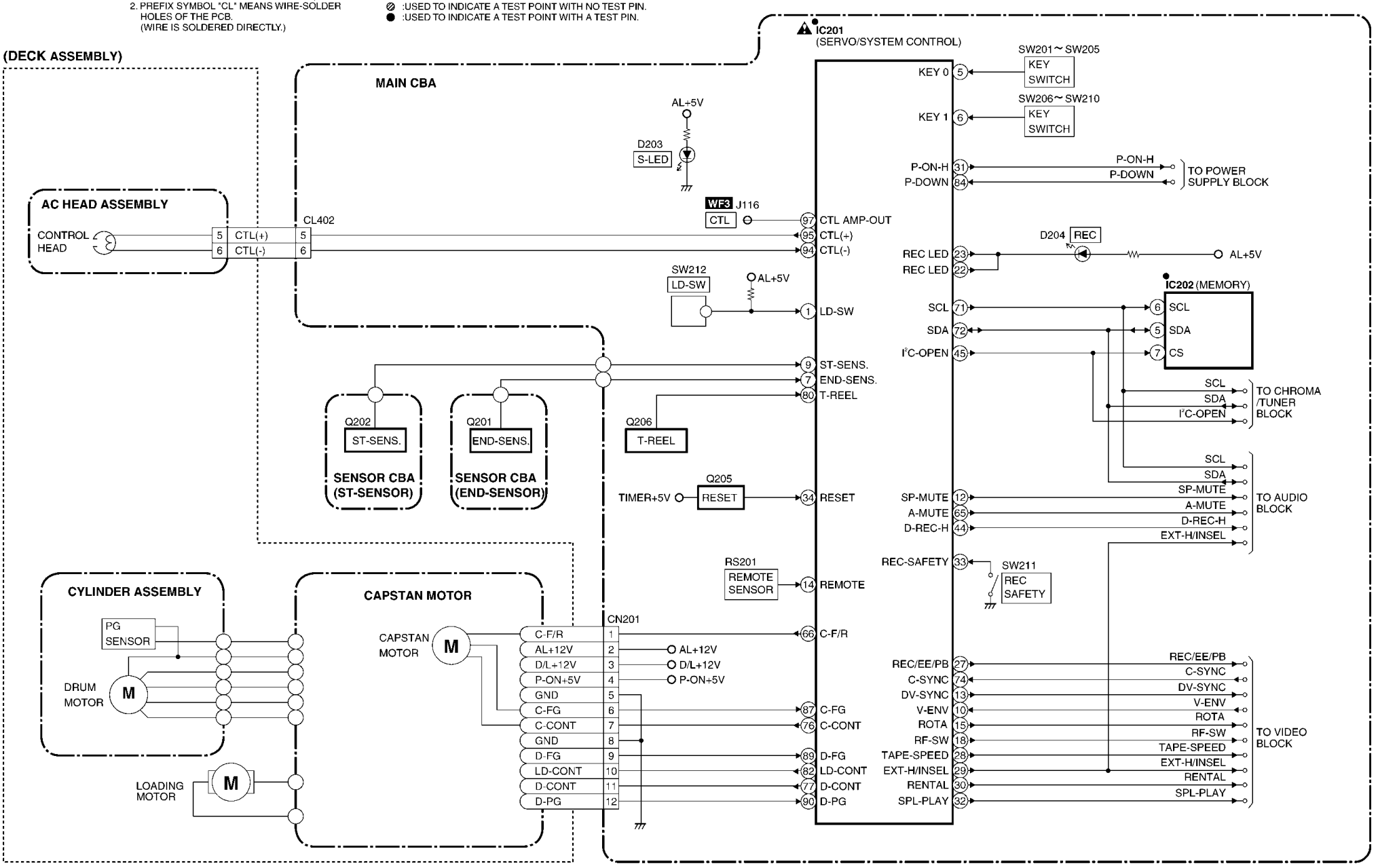

Power Supply Block Diagram

Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

NOTE FOR WIRE CONNECTORS:
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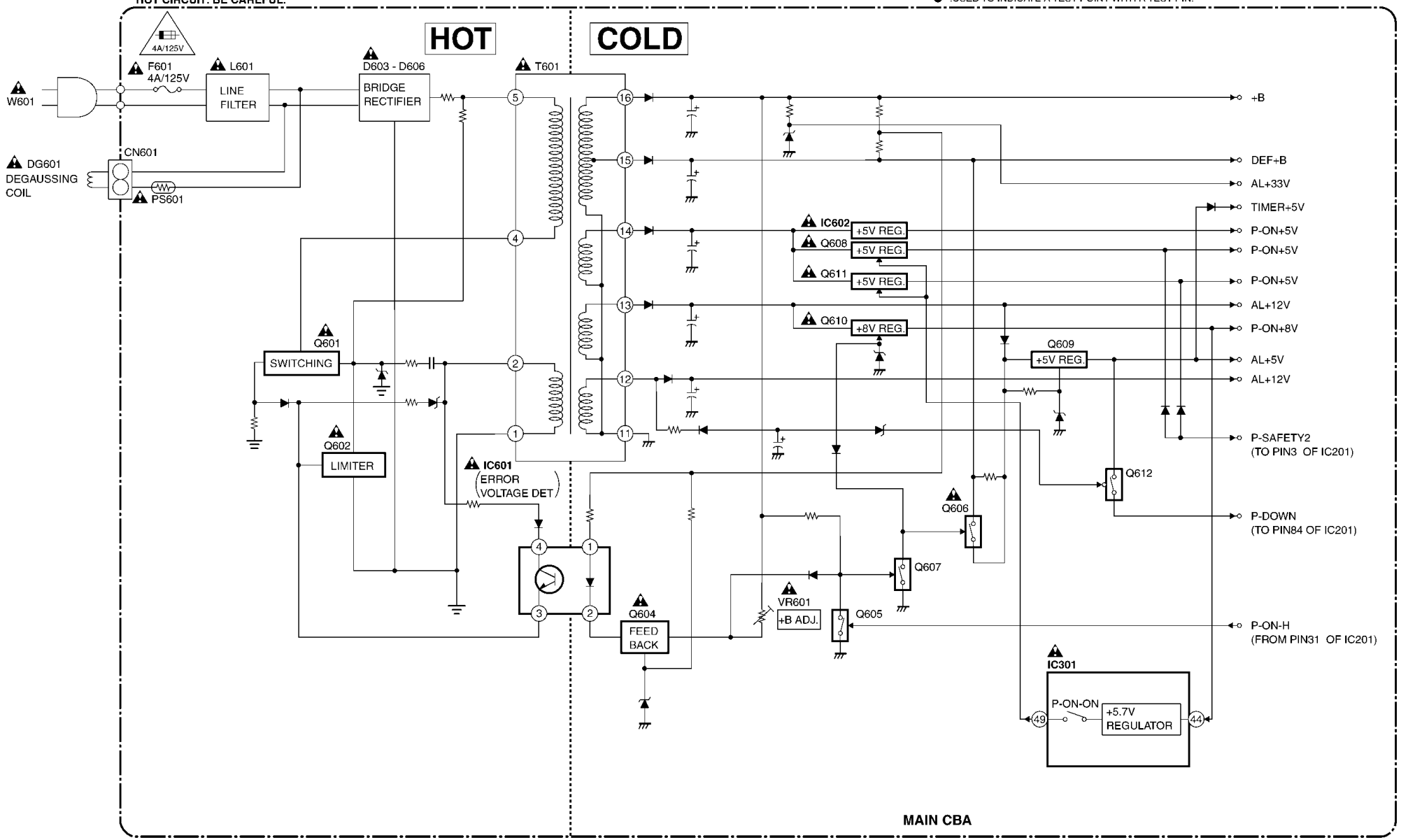
:USED TO INDICATE A TEST POINT WITH NO TEST PIN.
:USED TO INDICATE A TEST POINT WITH A TEST PIN.

HOT CIRCUIT. BE CAREFUL.



CRT/H.V. Block Diagram

NOTE FOR WIRE CONNECTORS:
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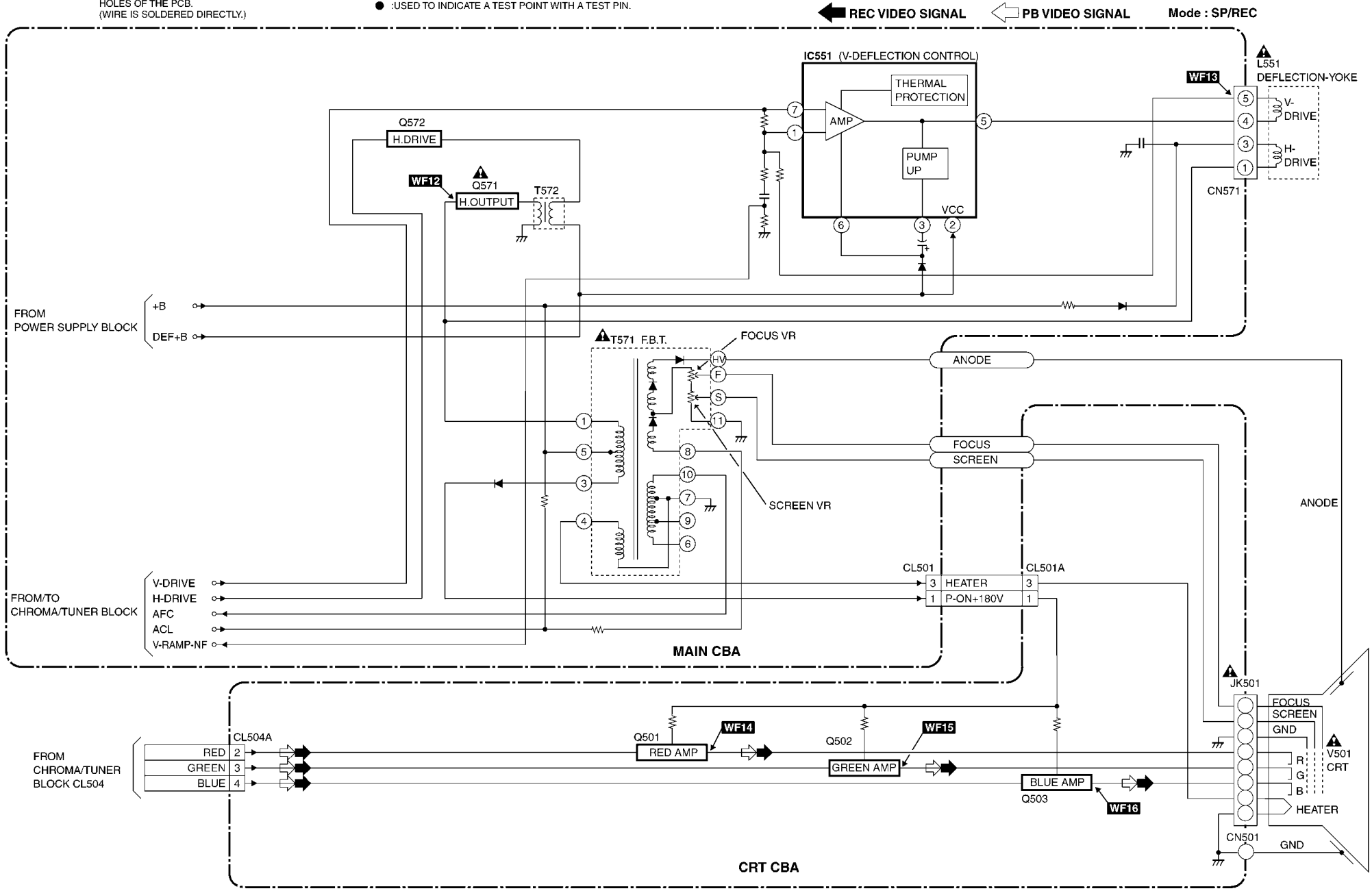

Chroma/Tuner Block Diagram

NOTE FOR WIRE CONNECTORS:
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TEST POINT INFORMATION
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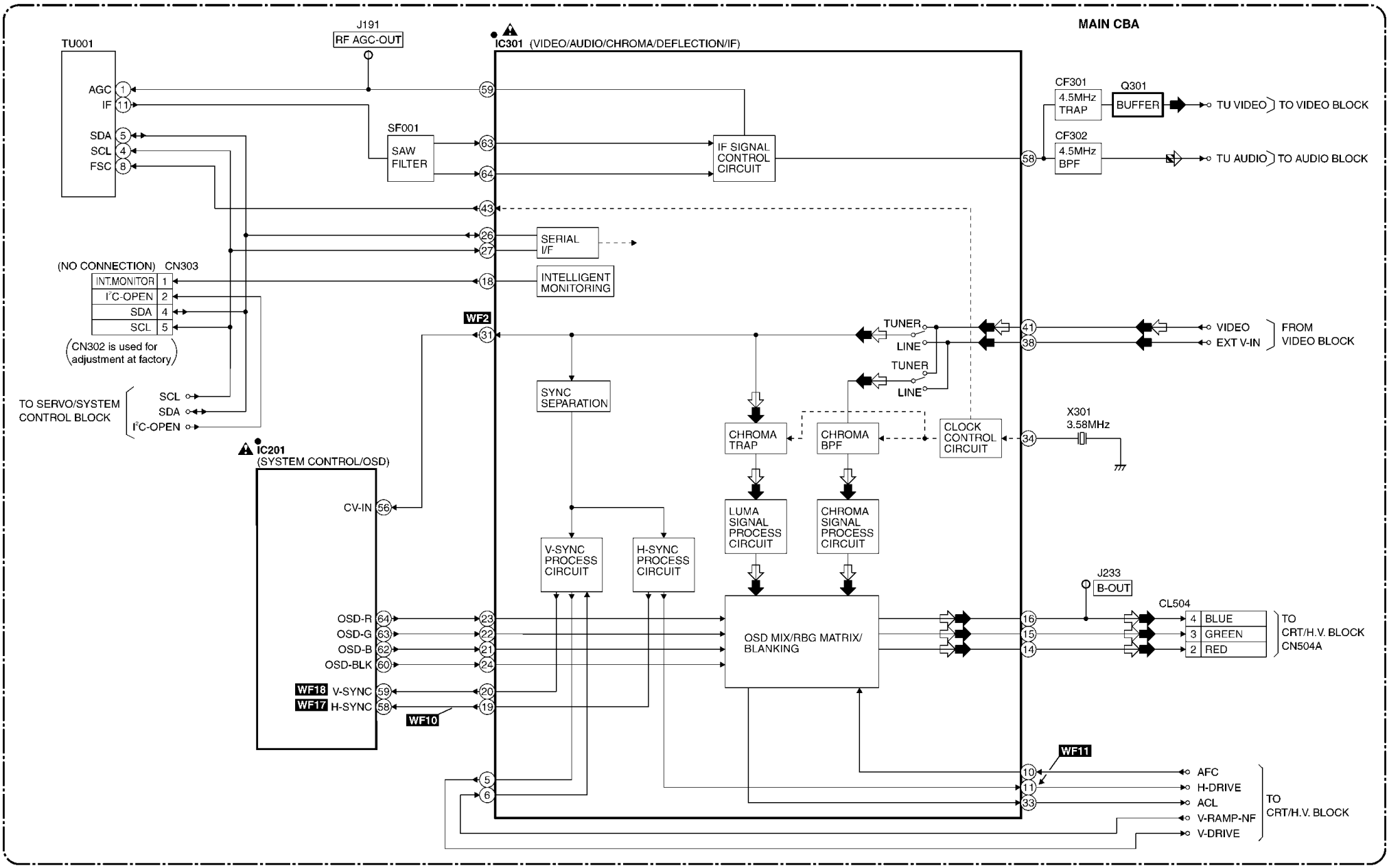
"● " = SMD

REC-AUDIO SIGNAL | REC VIDEO SIGNAL | PB VIDEO SIGNAL | Mode : SP/REC



Audio Block Diagram

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2. PREFIX SYMBOL "CL" MEANS WIRE-SOLDER HOLES OF THE PCB. (WIRE IS SOLDERED DIRECTLY.)

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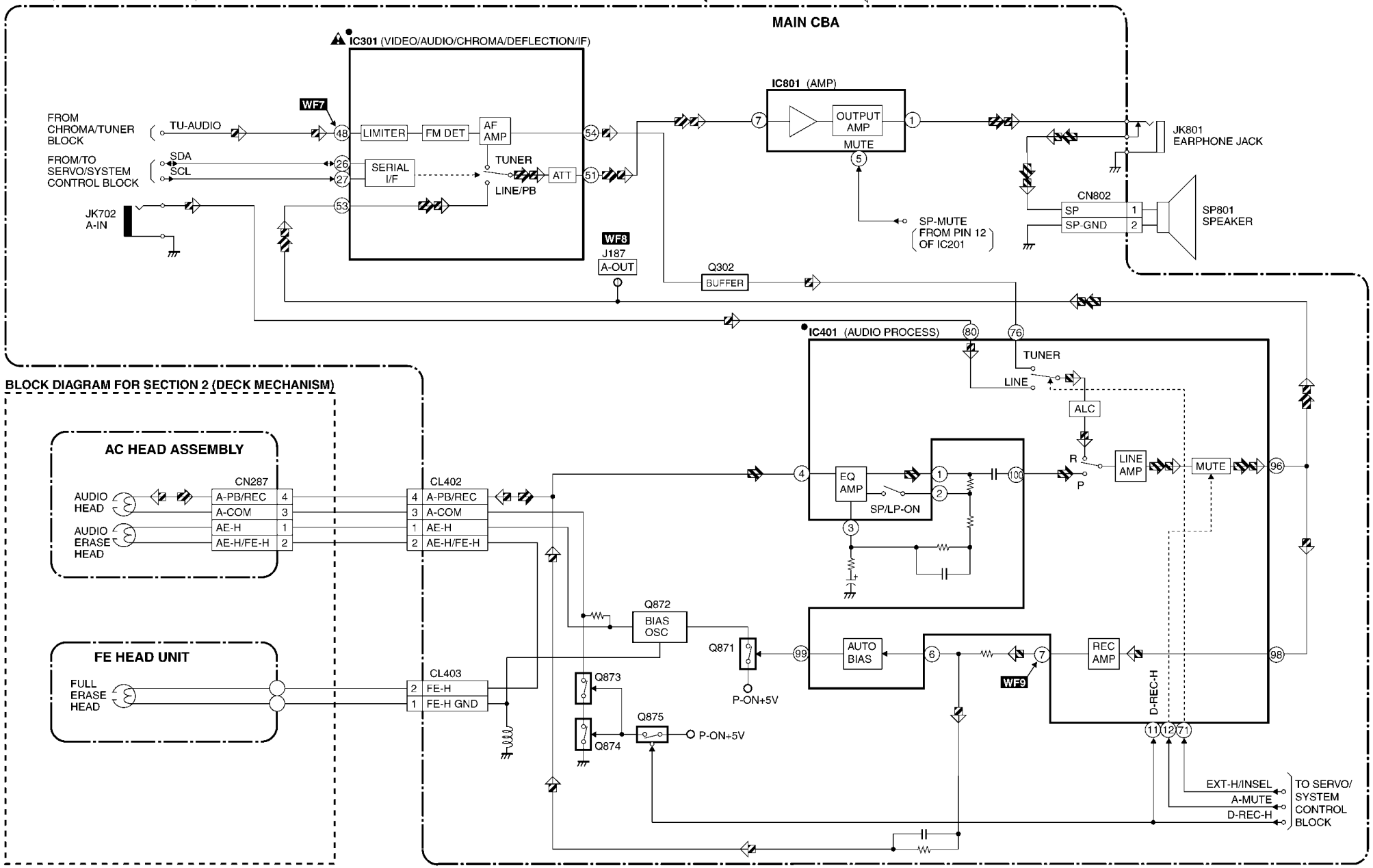
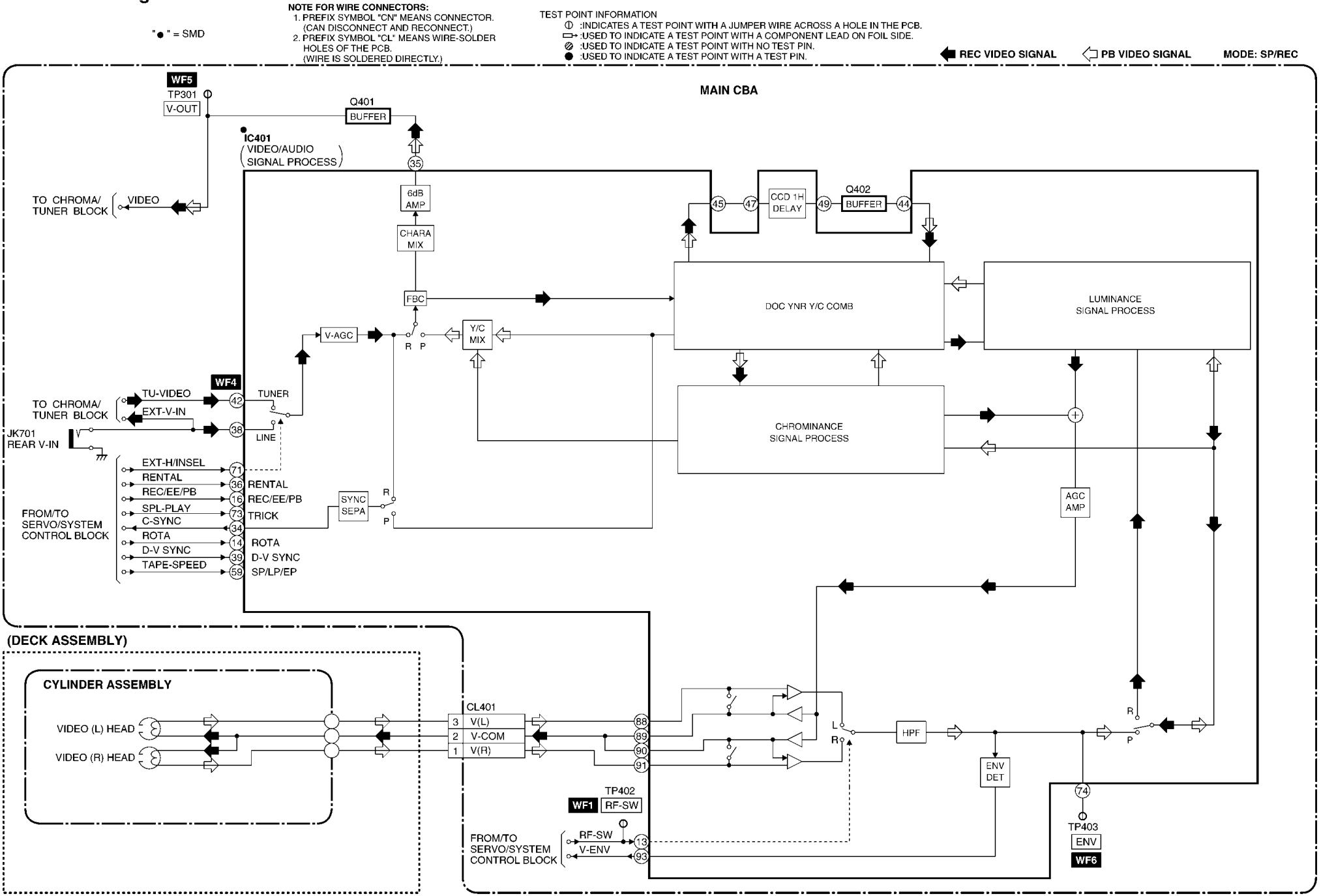
"●" = SMD

PB-AUDIO SIGNAL REC-AUDIO SIGNAL Mode : SP/REC



Video Block Diagram



Servo/System Control Block Diagram

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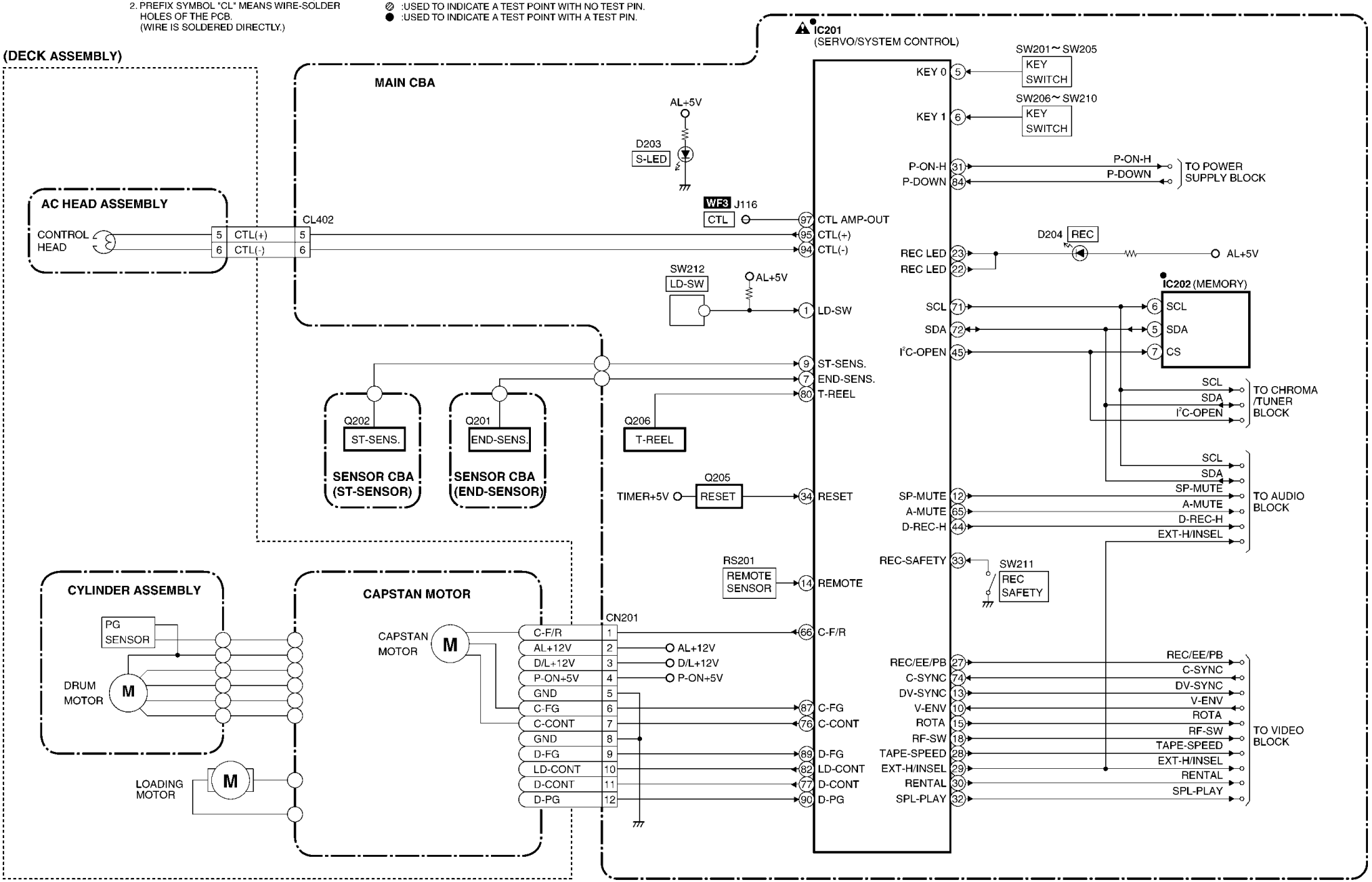
"● " = SMD



Power Supply Block Diagram

CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES
D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
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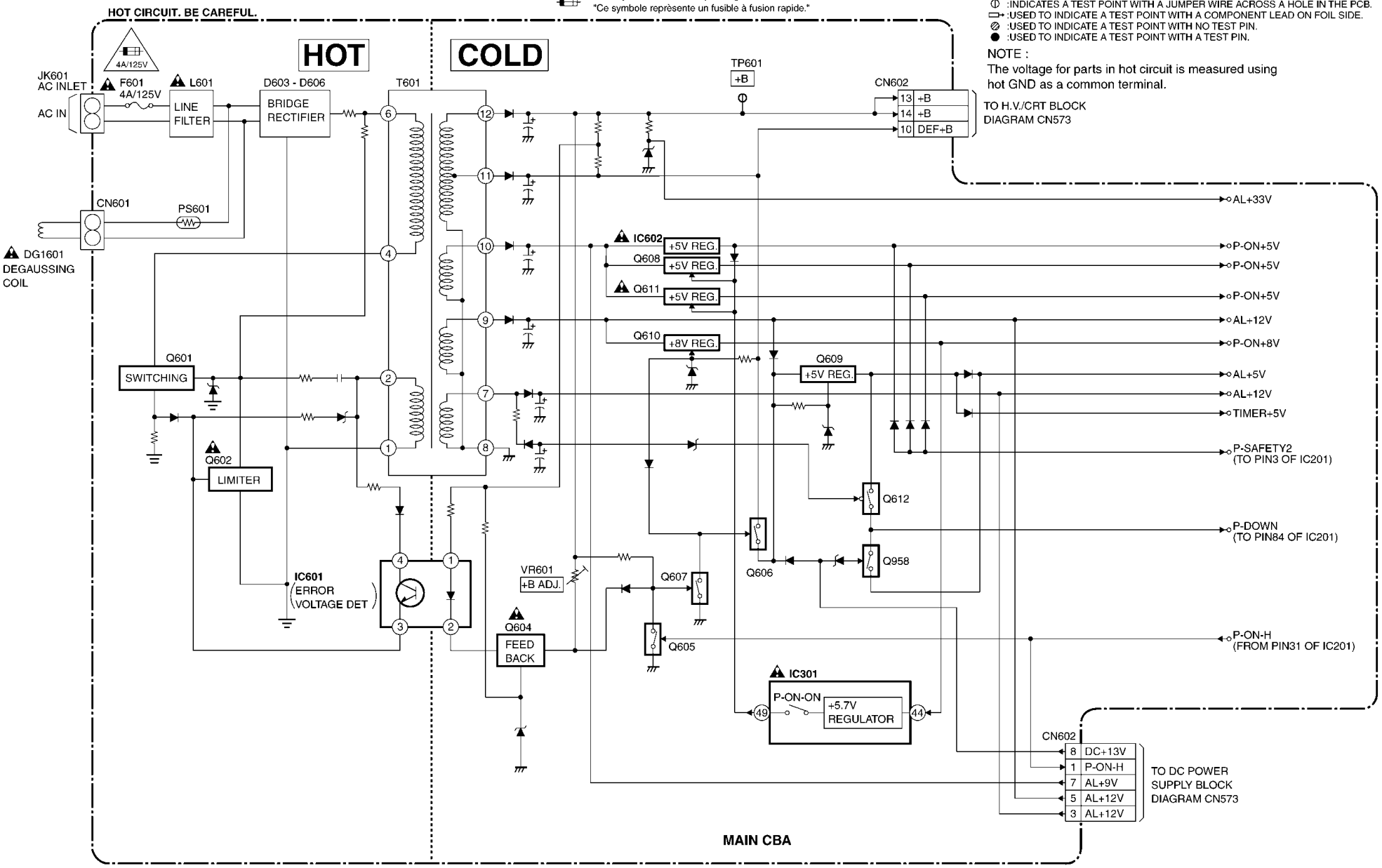
:USED TO INDICATE A TEST POINT WITH NO TEST PIN.
:USED TO INDICATE A TEST POINT WITH A TEST PIN.

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



DC Power Supply Block Diagram

Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F1951) is blown, check to see that all components in the power supply circuit are not defective before you connect the DC plug to the DC power supply. Otherwise it may cause some components in the power supply circuit to fail.

TEST POINT INFORMATION
- ⓘ :INDICATES A TEST POINT WITH A JUMPER WIRE ACROSS A HOLE IN THE PCB.
- ▭→ :USED TO INDICATE A TEST POINT WITH A COMPONENT LEAD ON FOIL SIDE.
- ⊘ :USED TO INDICATE A TEST POINT WITH NO TEST PIN.
- ● :USED TO INDICATE A TEST POINT WITH A TEST PIN.

6A 125V

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
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NOTE FOR WIRE CONNECTORS:
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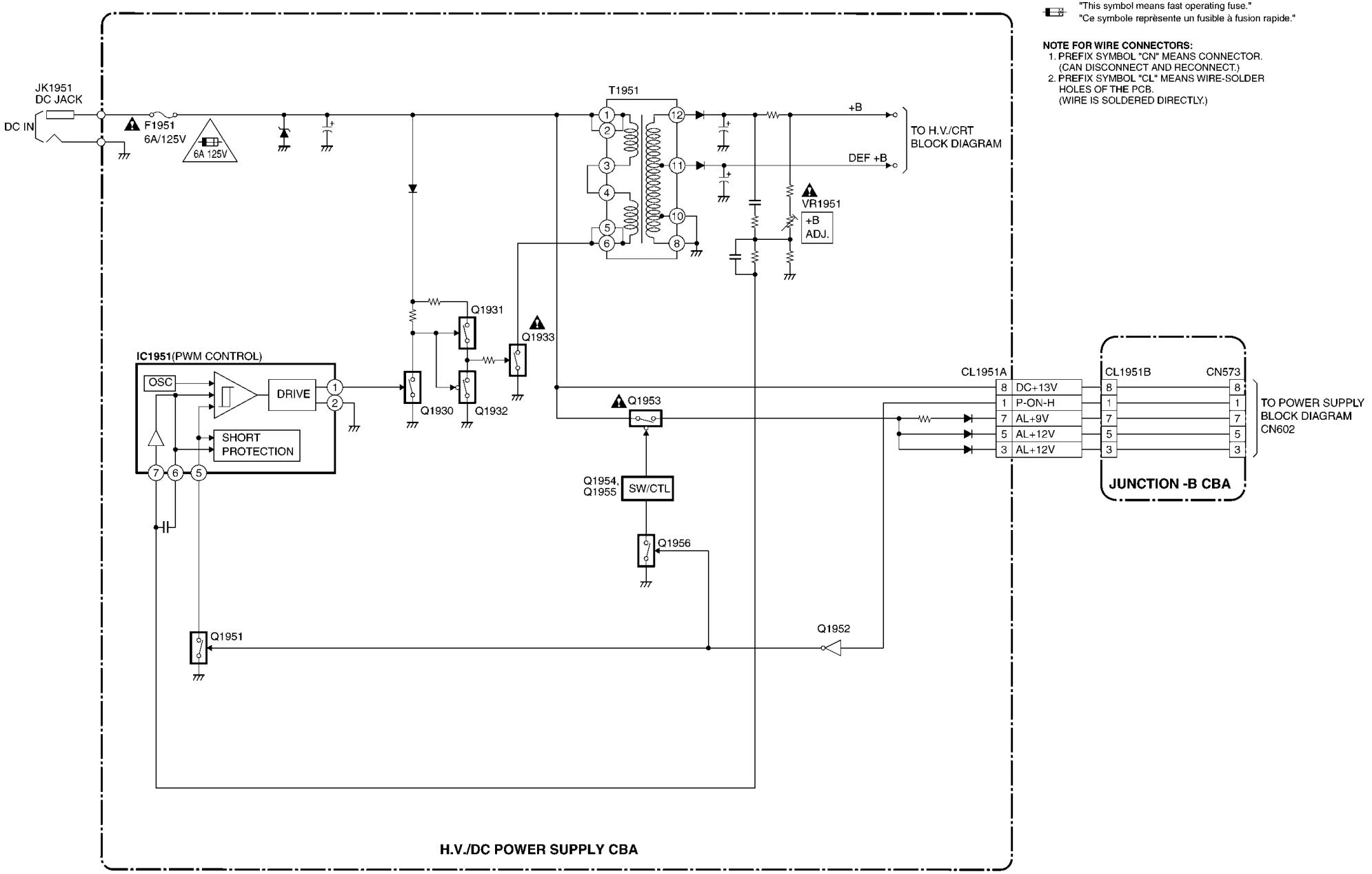
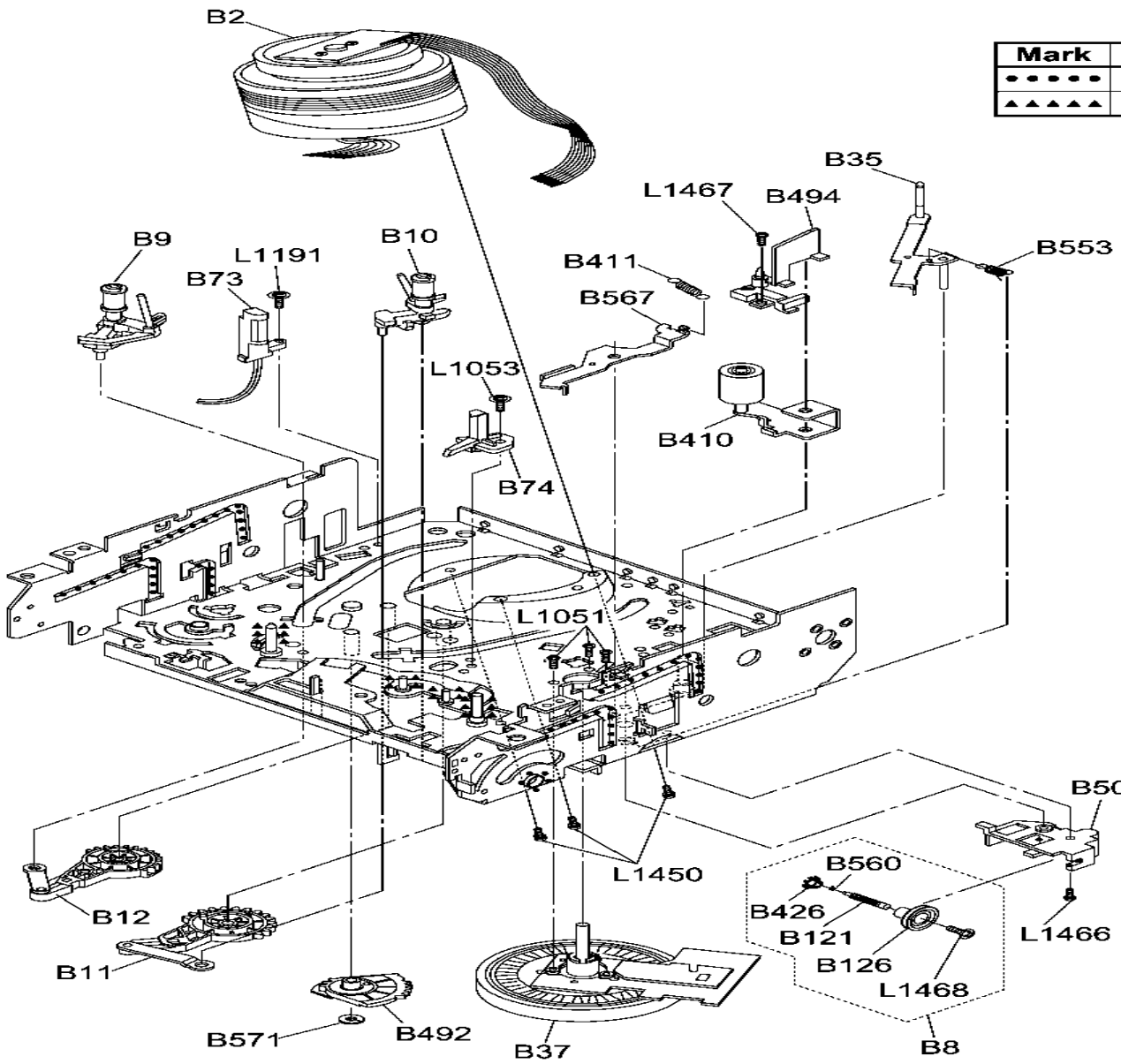
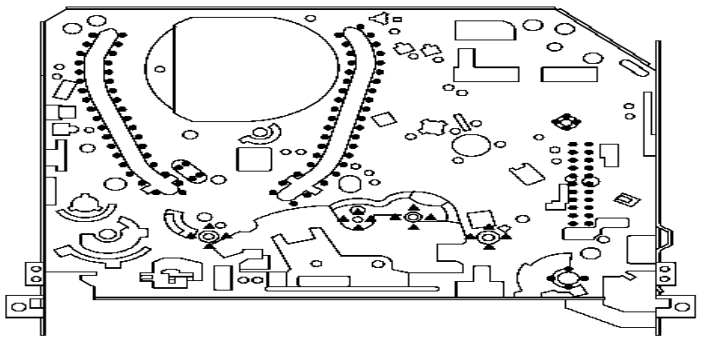


DECK EXPLODED VIEWS

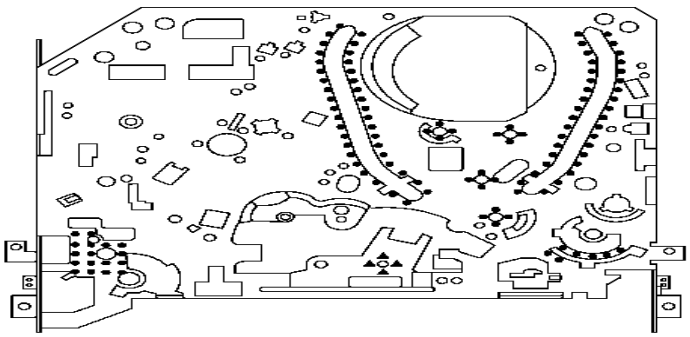
Deck Mechanism View 1

Mark	Description
●●●●●	Floil G-374G (Blue grease)
▲▲▲▲▲	SLIDUS OIL #150





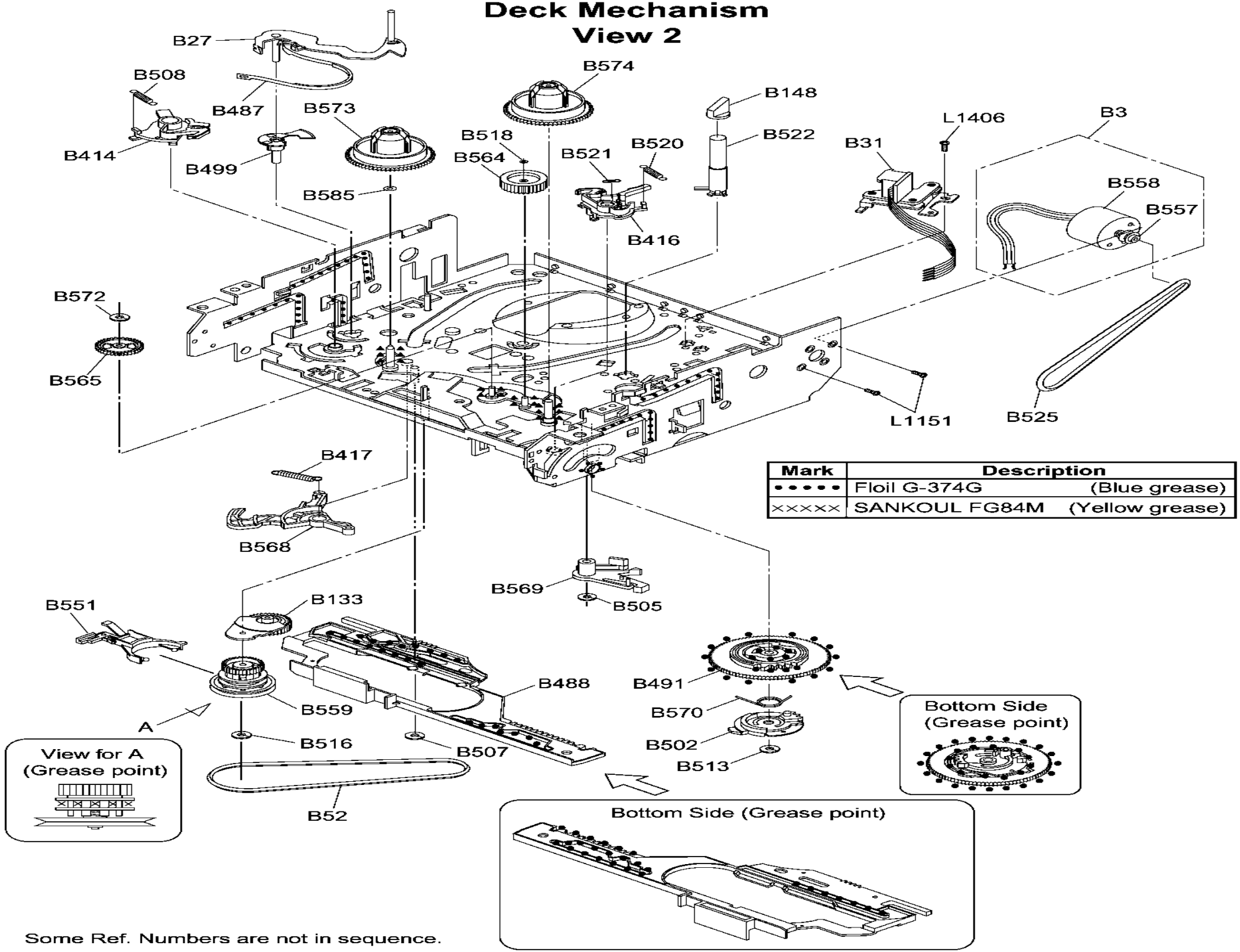
Chassis Assembly
Top View (Lubricating Point)



Chassis Assembly
Bottom View (Lubricating Point)

Some Ref. Numbers are not in sequence.

Deck Mechanism
View 2



Mark	Description
• • • • •	Floil G-374G (Blue grease)
× × × × ×	SANKOUL FG84M (Yellow grease)

Some Ref. Numbers are not in sequence.

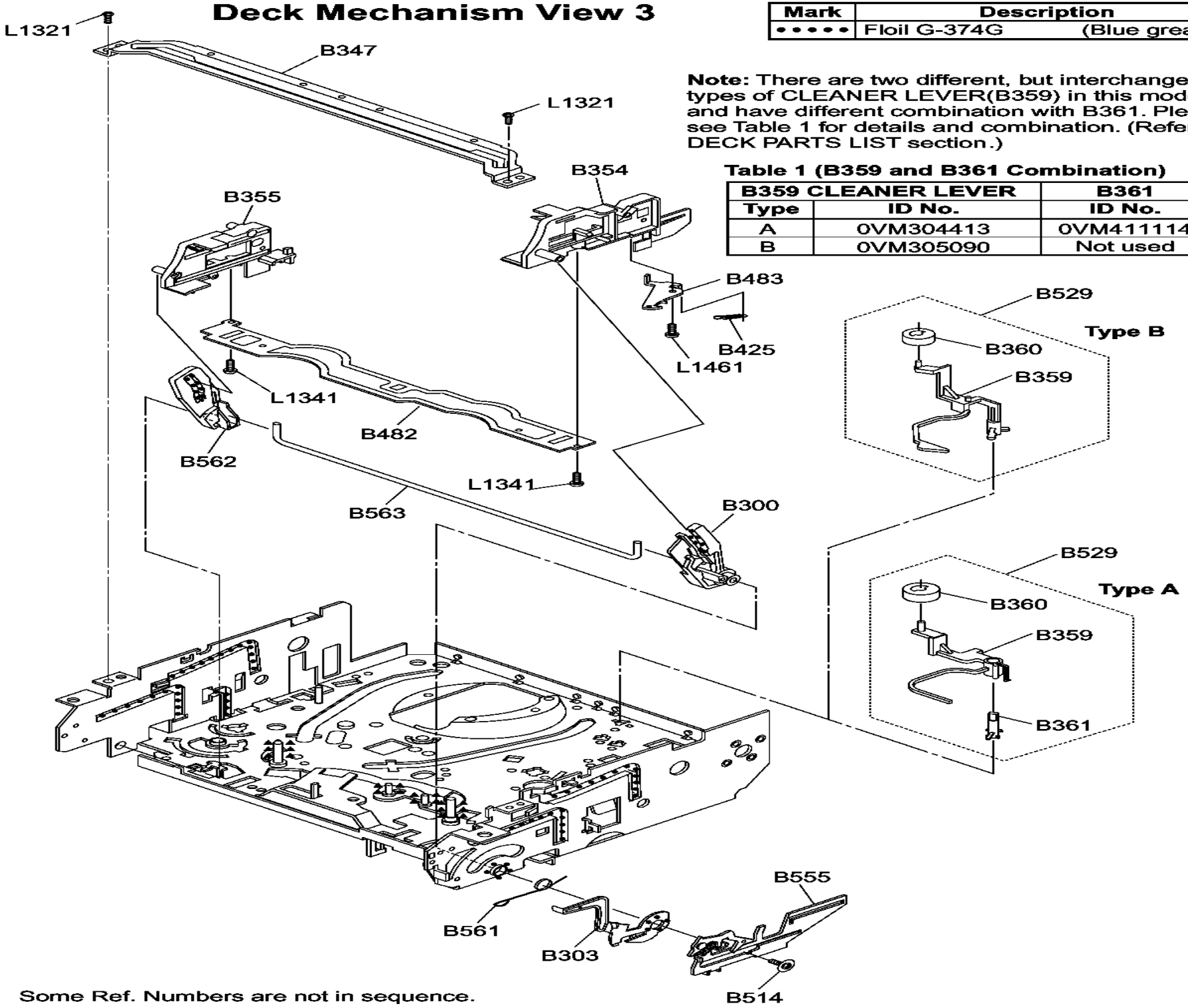
Deck Mechanism View 3

Mark	Description
●●●●●	Floil G-374G (Blue grease)

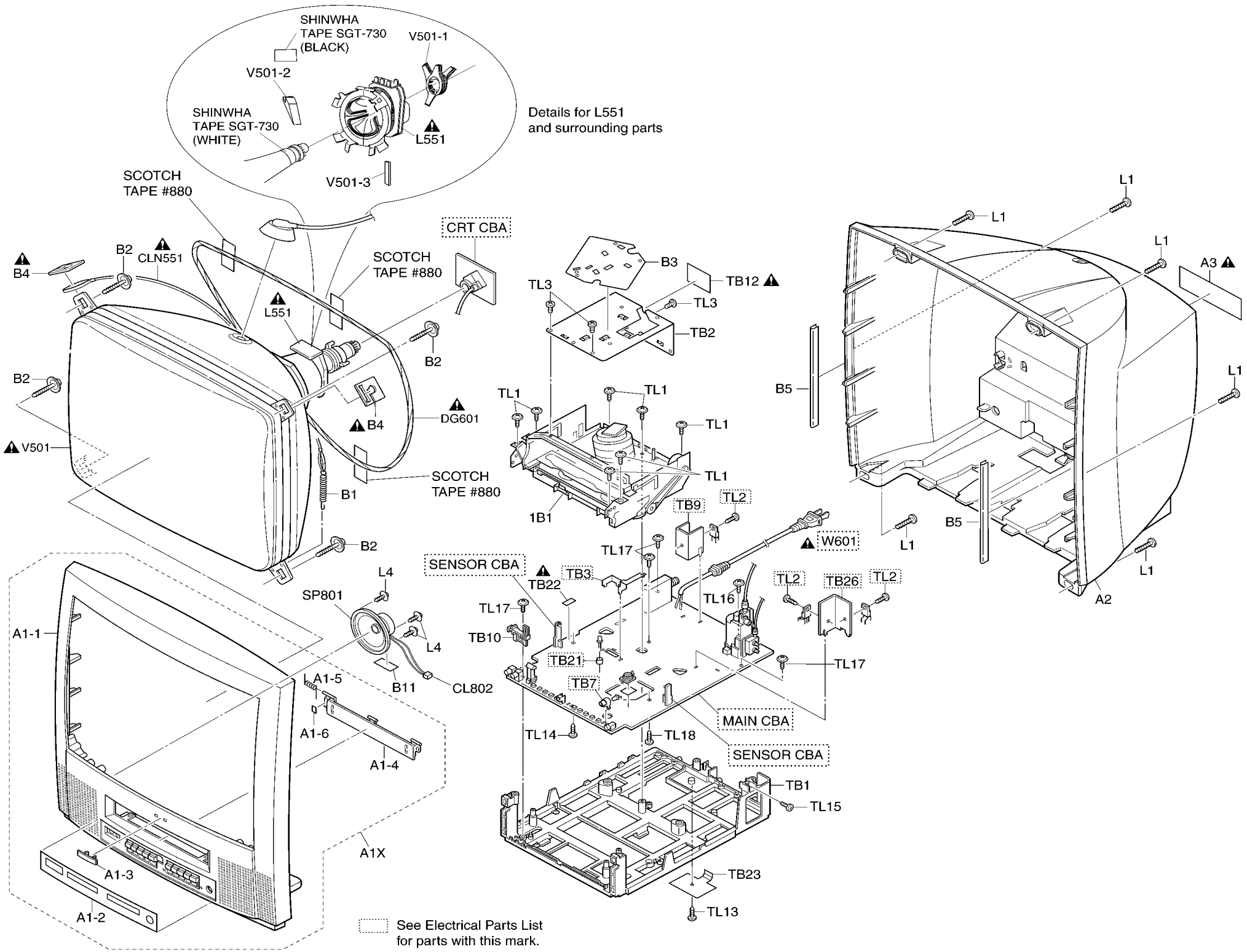
Note: There are two different, but interchangeable types of CLEANER LEVER(B359) in this model, and have different combination with B361. Please see Table 1 for details and combination. (Refer to DECK PARTS LIST section.)

Table 1 (B359 and B361 Combination)

B359 CLEANER LEVER		B361
Type	ID No.	ID No.
A	0VM304413	0VM411114
B	0VM305090	Not used



Some Ref. Numbers are not in sequence.


SHINWHA
TAPE SGT-730
(BLACK)
V501-1
V501-2
SHINWHA
TAPE SGT-730
(WHITE)
L551
V501-3
Details for L551
and surrounding parts
SCOTCH
TAPE #880
CRT CBA
B4
B2
CLN551
L551
SCOTCH
TAPE #880
B2
B2
DG601
B4
V501
B1
SCOTCH
TAPE #880
B2
B3
TB12
TL3
TL3
TB2
TL1
TL1
TL1
TL1
1B1
TB9
TL2
TL17
W601
SENSOR CBA
TB3
TB22
TL17
TB10
TB21
TB7
TL16
TL2
TB26
TL2
TL17
MAIN CBA
TL14
TL18
SENSOR CBA
TB1
TL15
TB23
TL13
L1
L1
L1
A3
L1
B5
B5
L1
L1
A2
L4
SP801
L4
B11
CL802
A1-1
A1-5
A1-6
A1-4
A1-3
A1-2
A1X
See Electrical Parts List
for parts with this mark.

ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note:

"CBA" is abbreviation for "Circuit Board Assembly."

NOTE:

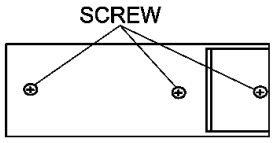
Electrical adjustments are required after replacing circuit components and certain mechanical parts.
It is important to perform these adjustments only after all repairs and replacements have been completed.
Also, do not attempt these adjustments unless the proper equipment is available.

Test Equipment Required

1. NTSC Pattern Generator (Color Bar W/White Window, Red Color, Dot Pattern, Gray Scale, Monoscope, Multi-Burst)
2. AC Milli Voltmeter (RMS)
3. Alignment Tape (VFMS0001H6), Blank Tape
4. DC Voltmeter
5. Oscilloscope: Dual-trace with 10:1 probe,
   V-Range: 0.001~50V/Div,
   F-Range: DC~AC-60MHz
6. Frequency Counter
7. Plastic Tip Driver

How to make service remote control unit:

1. Prepare normal remote control unit. (ID No. NE001UD, Part No. 4835 218 37336) Remove 3 screws from the back lid. (Fig. 1)
2. Cut off pin 10 of the remote control microprocessor and short circuit pins 10 and 17 of the microprocessor with a jumper wire.



Remote control unit (Bottom) **Fig. 1**

How to Set Up the Service Mode:

Service Mode:

1. Use the service remote control unit.
2. Turn the power on.
3. Press "WAKE-UP/SLEEP" button on the service remote control unit.

1a. DC 117V (+B) Adjustment (AC Power)

Purpose: To obtain correct operation.

Symptom of Misadjustment: The picture is dark and unit does not operate correctly.

Test Point	Adj. Point
TP601(+B) TP602(GND)	VR601
M. EQ.	Spec.
DC Voltmeter Plastic Tip Driver	+117±0.5V DC

Note: TP601(+B), TP602(GND), VR601 --- Main CBA

1. Connect the unit to AC power outlet.
2. Connect DC Volt Meter to TP601(+B) and TP602(GND).
3. Adjust VR601 so that the voltage of TP601(+B) becomes +117±0.5V DC.

1b. DC 117V (+B) Adjustment (DC Power)

Purpose: To obtain correct operation.

Symptom of Misadjustment: The picture is dark and unit does not operate correctly.

Test Point	Adj. Point
J1015 (+B), J1027 (GND)	VR1951
M. EQ.	Spec.
DC Voltmeter, Plastic Tip Driver	+117±0.5V DC

Note: J1015(+B), J1027(GND), VR1951 --- HV/DC Power Supply CBA

1. Input 13.2V DC to DC Jack.
2. Connect DC Volt Meter to J1015(+B) and J1027(GND).
3. Adjust VR1951 so that the voltage of J1015(+B) becomes +117±0.5V DC.

2. Auto AFT (VCO) Adjustment

Purpose: To operate AFT correctly.

Symptom of Misadjustment: AFT does not work correctly and/or synchronization is faulty.

1. Set the unit to the Video mode with no signal input.
2. Enter the Service Mode. (See page 1-7-1.) Then press number "3" button on the service remote control unit.
3. If the screen color changes to "Green" then this adjustment is finished.
4. If the screen color changes to "Red" then this adjustment is failed. Repeat steps 1 and 2 or check relative circuit or parts (IC).

3. TV AGC Adjustment

Purpose: Set AGC (Auto Gain Control) Level.

Symptom of Misadjustment: AGC does not synchronize correctly when RF input level is too weak and picture distortion may occur if it is too strong.

Test Point	Adj. Point	Input
TP001 (AGC) TP602 (GND)	CH. ▲ / ▼ buttons	Color Bar 67.25MHz 60dBμV
M. EQ.		Spec.
Pattern Generator DC Voltmeter		+2.8±0.3V DC

Note: TP001 (AGC) --- Main CBA

1. Enter the Service Mode. (See page 1-7-1.) Then press number "2" button on the service remote control unit.
2. Receive the Color Bar signal for channel 4 (67.25MHz). (RF Input Level: 60dBμV)
3. Press CH. ▲ / ▼ buttons so that the voltage of TP001 (AGC) becomes +2.8V±0.3V DC.
4. Turn the power off and on again.

4-1. H Adjustment

Purpose: To get correct horizontal position and size of screen image.

Symptom of Misadjustment: Horizontal position and size of screen image may not be properly displayed.

Test Point	Adj. Point	Mode
D302 CATHODE	CH ▲ / ▼ buttons	Video
M. EQ.		Spec.
Frequency Counter		15.734kHz±300Hz

Note: D302 CATHODE --- Main CBA

1. Connect frequency counter to D302 CATHODE.
2. Set the unit to the VIDEO mode and no input is necessary. Enter the Service Mode. (See page 1-7-1.)
3. Operate the unit for at least 20 minutes.
4. Press "2" button on the service remote control unit and select H-Adj Mode. (Press "2" button, then display will change H-Adj. and AGC.)
5. Press CH ▲ / ▼ buttons on the service remote control unit so that the display will change "0" to "7." At this moment, choose display "0" to "7" when the frequency counter display is closest to 15.734kHz±300Hz.
6. Turn the power off and on again.

4-2. C-Trap Adjustment

Purpose: To get minimum leakage of the color signal carrier.

Symptom of Misadjustment: If C-Trap Adjustment is incorrect, stripes will appear on the screen.

Test Point	Adj. Point	Input
D304 CATHODE (B-OUT)	CH ▲ / ▼ buttons	Color Bar
M. EQ.		
Oscilloscope, Pattern Generator		
Figure		

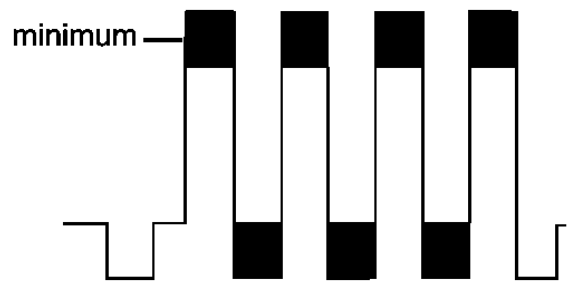


Fig. 1

Note: D304 CATHODE (B-Out)—- Main CBA

1. Connect Oscilloscope to D304 CATHODE.
2. Input a color bar signal from RF input.
   Enter the Service Mode. (See page 1-7-1.)
3. Press "0" button on the service remote control unit and select C-TRAP Mode.
4. Press CH ▲ / ▼ buttons on the service remote control unit so that the carrier leakage B-Out (3.58MHz) value becomes minimum on the oscilloscope.
5. Turn the power off and on again.

4-3. Y DL Time Adjustment

Purpose: To get minimum leakage of the color signal carrier.

Symptom of Misadjustment: If Y DL Time Adjustment is incorrect, stripes will appear on the screen.

1. Enter the Service Mode. (See page 1-7-1.)
2. Press "0" button on the service remote control unit twice to show "D-T" on the display.
3. Select "2" by pressing CH ▲ / ▼ buttons on the service remote control to enter Y DL Time Adjustment mode.
4. If needed, perform the following.

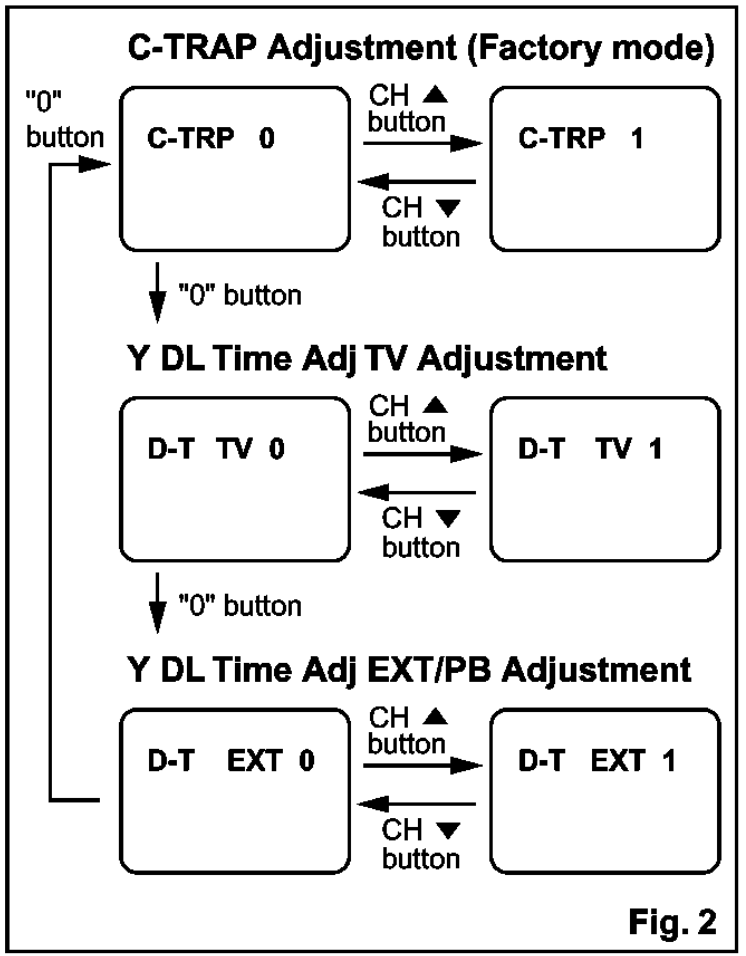


Fig. 2

5. V. Size Adjustment

Purpose: To obtain correct vertical height of screen image.

Symptom of Misadjustment: If V. Size is incorrect, vertical height of image on the screen may not be properly displayed.

Adj. Point	Input
CH ▲ / ▼ buttons	Monoscope
M. EQ.	Spec.
Pattern Generator	90±5%

1. Enter the Service Mode. (See page 1-7-1.)
   Press "9" button on the service remote control unit and select V-S Mode. (Press "9" button then display will change to V-P and V-S.)
2. Input monoscope pattern.
3. Press CH ▲ / ▼ buttons on the service remote control unit so that the monoscope pattern is 90±5% of display size and the circle is round.

6. V. Shift Adjustment

Purpose: To obtain correct vertical position of screen image.

Symptom of Misadjustment: If V. shift is incorrect, vertical position of image on the screen may not be properly displayed.

Adj. Point	Input
CH ▲ / ▼ buttons	Monoscope
M. EQ.	Spec.
Pattern Generator	90±5%

1. Enter the Service Mode. (See page 1-7-1.)
   Press "9" button on the service remote control unit and select V-P Mode. (Press "9" button then display will change to V-P and V-S.)
2. Input monoscope pattern.
3. Press CH ▲ / ▼ buttons on the service remote control unit so that the top and bottom of the monoscope pattern become equal to each other.

7. H. Shift Adjustment

Purpose: To obtain correct horizontal position and size of screen image.

Symptom of Misadjustment: Horizontal position and size of screen image may not be properly displayed.

Adj. Point	Input
CH ▲ / ▼ buttons	Monoscope
M. EQ.	Spec.
Pattern Generator	90±5%

1. Enter the Service Mode. (See page 1-7-1.)
   Press "8" button on the service remote control unit and select H-P Mode.
2. Input monoscope pattern.
3. Press CH ▲ / ▼ buttons on the service remote control unit so that the left and right side of the monoscope pattern are equal to each other.
4. Turn the power off and on again.

8. Cut-off Adjustment

Purpose: To adjust the beam current of R, G, B, and screen voltage.

Symptom of Misadjustment: White color may be reddish, greenish or bluish.

Adj. Point	Mode	Input
Screen-Control	Ext.	Black Raster / White Raster
M. EQ.	Spec.	
Pattern Generator	See Reference Notes below	

Figure

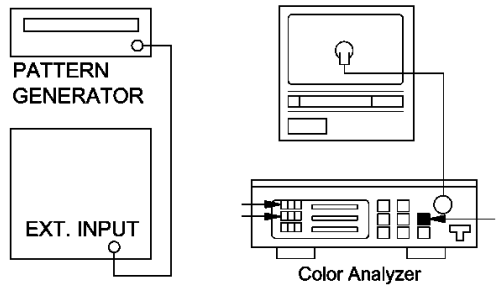


Fig. 3

Notes: Screen Control FBT --- HV/DC Power Supply CBA

F.B.T= Fly Back Transformer

Use the service remote control unit

1. Degauss the CRT and allow CRT to operate for 20 minutes before starting the alignment.
2. Input the Black raster signal from EXT. input.
3. Enter the Service Mode. (See page 1-7-1.)
4. Press the "VOL ▼" button.
   (Press "VOL ▼" then display will change CUT OFF/ DRIVE, VCO adjustment, Analog OSD adjustment.)
5. Choose CUT OFF/DRIVE Mode then press "1" button. This adjustment mode is CUT OFF (R). Now there should be a horizontal line across the center of the picture tube. If needed gradually turn the screen control on the flyback clockwise until the horizontal line appears.
6. Press the "CH ▲ / ▼" button until the horizontal line becomes white.
7. Choose CUT OFF/DRIVE Mode then press "2" button. This adjustment mode is CUT OFF (G). Press "CH ▲ / ▼" until the horizontal line becomes white.
8. Choose CUT OFF/DRIVE Mode then press "3" button. This adjustment mode is CUT OFF (B). Press "CH ▲ / ▼" until the horizontal line becomes white.
9. Input the White Raster Signal from Video In.
10. Set the color analyzer to the CHROMA mode and after zero point calibration, bring the optical receptor to the center on the tube surface (CRT).
11. Choose CUT OFF/DRIVE Mode then press "4" button on the Service remote control unit for Red adjustment. Press "5" button on the Service remote control unit for Blue adjustment.
12. In each color mode, press "CH ▲ / ▼" buttons to adjust the values of color.
13. Adjust Red and Blue color so that the temperature becomes 9200K (x : 286 / y : 294)±3%.
14. At this time, re-check that horizontal line is white. If not, re-adjust Cut-off Adjustment until the horizontal line becomes pure white.
15. Turn the power off and on again.

9. Sub-Brightness Adjustment

Purpose: To get proper brightness.

Symptom of Misadjustment: If Sub-Brightness is incorrect, proper brightness cannot be obtained by adjusting the Brightness Control.

Adj. Point	Input
CH ▲ / ▼ buttons	SYMPTE 7.5 IRE
M. EQ.	Spec.
Pattern Generator	See below

Figure

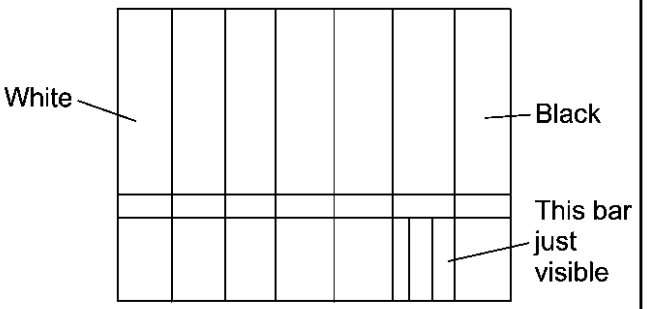


Fig. 4

Note: SYMPTE Setup level --- 7 IRE

1. Enter the Service Mode. (See page 1-7-1.) Then input SYMPTE signal from RF input.
2. Press "MENU" button. (Press "MENU" button then display will change BRT, CNT, COL, TNT, V-T and SHP.) Select BRT and press CH ▲ / ▼ buttons so that the bar is just visible (see above figure.)
3. Turn the power off and on again.

10. Focus Adjustment

Purpose: Set the optimum Focus.

Symptom of Misadjustment: If Focus Adjustment is incorrect, blurred images are shown on the display.

Adj. Point	Input
Focus Control	Monoscope
M. EQ.	Spec.
Pattern Generator	See below.

Note: Focus VR (FBT) --- MAIN CBA

FBT= Fly Back Transformer

1. Operate the unit more than 30 minutes.
2. Face the unit to the East and degauss the CRT using a degaussing coil.
3. Input the monoscope pattern.
4. Adjust the Focus Control on the FBT to obtain a clear picture.

11. Head Switching Position Adjustment

Purpose: Determine the Head Switching Point during Playback.

Symptom of Misadjustment: May cause Head Switching Noise or Vertical Jitter in the picture.

Note: Unit reads Head Switching Position automatically and displays it on the screen (Upper Left Corner.)

1. Playback test tape (VFMS0001H6).
2. Enter the Service Mode. (See page 1-7-1.)
   Then press the "5" button on the service remote control unit.
3. The Head Switching position will display on the screen; if adjustment is necessary follow step 4. 6.5H(412.7µs) is preferable.
4. Press "CH ▲" or "CH ▼" button on the service remote control unit if necessary. The value will be changed in 0.5H steps up or down. Adjustable range is up to 9.5H. If the value is beyond adjustable range, the display will change as:
   Lower out of range: 0.0H
   Upper out of range: -.-H
5. Turn the power off and on again.

12. CCS Text Box Location

When replacing the CRT, the CCS Box might not stay in the appropriate position. Then, replace the microcomputer.

Note: This adjustment automatically done by the microcomputer.

The following 2 adjustments normally are not attempted in the field. They should be done only when replacing the CRT, then adjust as a preparation.

13. Purity Adjustment

Purpose: To obtain pure color.

Symptom of Misadjustment: If Color Purity Adjustment is incorrect, large areas of color may not be properly displayed.

Adj. Point	Input
Deflection Yoke Purity Magnet	Red Color
M. EQ.	Spec.
Pattern Generator	See below.
Figure	

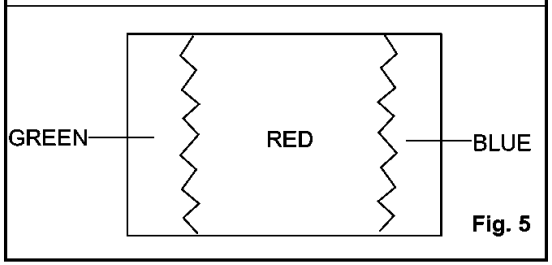


Fig. 5

1. Set the unit facing East.
2. Operate the unit for over 30 minutes before adjusting.
3. Fully degauss the unit using an external degaussing coil.
4. Set the unit to the AUX Mode, which is located before CH2, then input a red raster from video in.
5. Loosen the screw on the Deflection Yoke Clamper and pull the Deflection Yoke back away from the screen. (See Fig. 6.)
6. Loosen the Ring Lock and adjust the Purity Magnets so that a red field is obtained at the center of the screen. Tighten Ring Lock. (See Fig. 5,6.)
7. Slowly push the Deflection Yoke toward the bell of the CRT and set it where a uniform red field is obtained.
8. Tighten the clamp screw on the Deflection Yoke.

14. Convergence Adjustment

Purpose: To obtain proper convergence of red, green and blue beams.

Symptom of Misadjustment: If Convergence Adjustment is incorrect, the edge of white letters may have color edges.

Adj. Point	Input
C.P. Magnet (RB), C.P. Magnet (RB-G), Deflection Yoke	Dot Pattern or Crosshatch
M. EQ.	Spec.
Pattern Generator	See below.

Figure

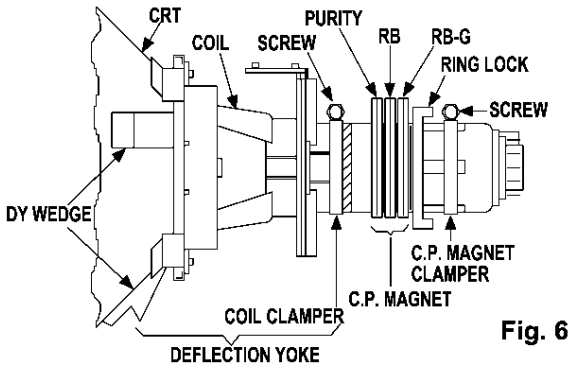


Fig. 6

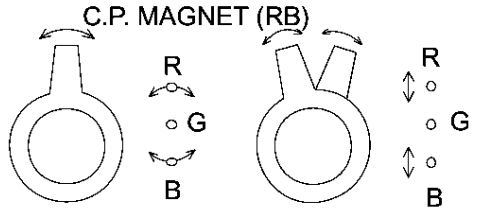


Fig. 7

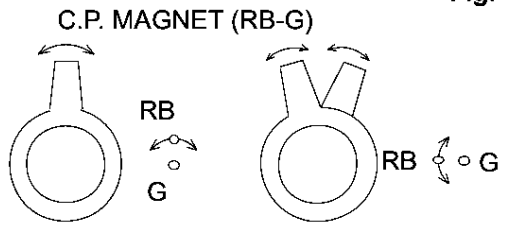
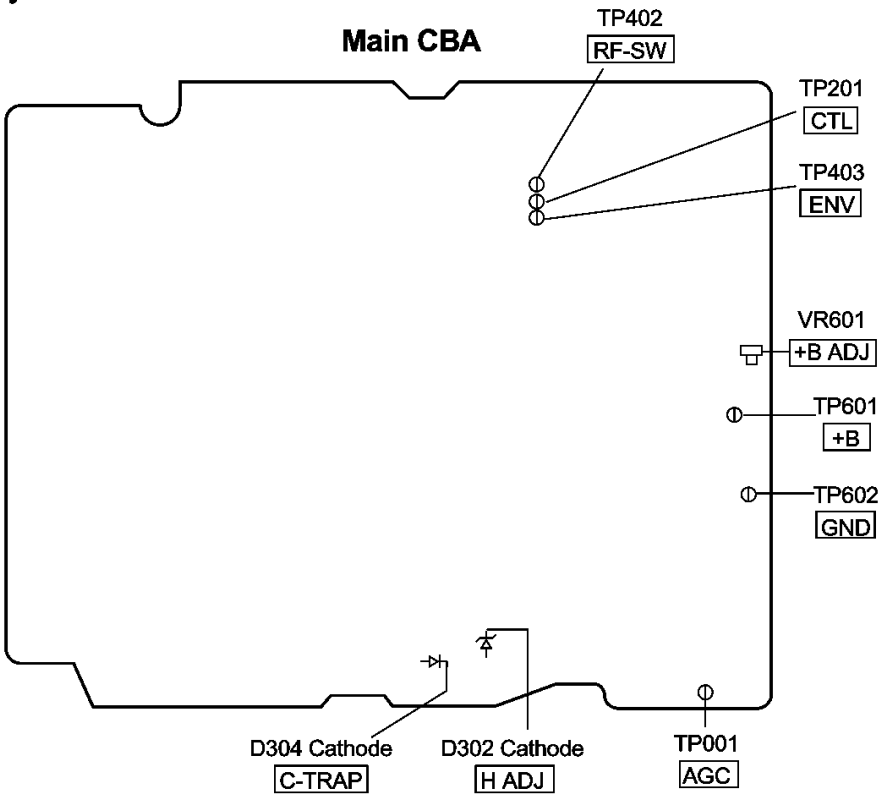


Fig. 8

1. Set the unit to the AUX Mode which is located before CH2 then input a dot or crosshatch pattern.
2. Loosen the Ring Lock and align red with blue dots or crosshatch at the center of the screen by rotating (RB) C.P. Magnets. (See Fig. 7.)
3. Align red / blue with green dots at the center of the screen by rotating (RB-G) C.P. Magnet. (See Fig. 8.)
4. Fix the C.P. Magnets by tightening the Ring Lock.
5. Remove the DY Wedges and slightly tilt the Deflection Yoke horizontally and vertically to obtain the best overall convergence.
6. Fix the Deflection Yoke by carefully inserting the DY Wedges between CRT and Deflection Yoke.

Adjustment Points and Test Points

Main CBA



H.V./DC Power Supply CBA