Service Manual

ORIGINAL VERSION

SUPRA®

MODEL : STV 1400N

14" COLOUR TELEVIDEO

Supra (Japan) Ltd.,
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Shinjuku-ku, Tokyo 160, Japan

SAFETY PRECAUTIONS

WARNING : BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTIONS", SAFETY INSTRUCTIONS" AND "PRODUCT SAFETY NOTICE" DESCRIBED BELOW.

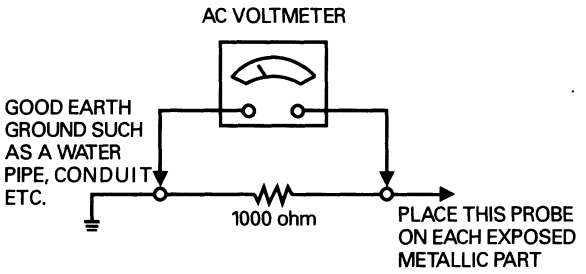
X-RAY RADIATION PRECAUTIONS

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 24KV at Zero beam current (minimum brightness) under specified power source. The high voltage must not, under any circumstances, exceed 25KV. Each time a receiver requires servicing, the high voltage should be checked. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
3. Some parts in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

SAFETY INSTRUCTIONS

1. Potential as high as 20,000-24,000 volts is present when this receiver is operating. Operation of the receiver outside the cabinet or with the back cover removed involves a shock hazard from the receiver.
   (1) Servicing should not be attempted by anyone who don't know the precautions necessary through and through when working on high-voltage equipment.
   (2) Always discharge the picture tube anode to the CHASSIS GROUND to reduce the shock hazard before removing the anode cap.
   (3) Perfectly discharge the high potential of the picture tube before handling.
   (WARNING: Risk of implosion. Handle with care.)
2. If any fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis parts list only.
3. When replacing parts or circuit boards, wind the lead wires around terminals before soldering.
4. When replacing a high wattage resistor (oxide metal film resistor) in circuit board, keep the resistor 10 mm away from circuit board.
5. Keep wires away from high voltage or high temperature components.
6. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as antennas, terminals, screwheads, metal overlays, control shafts, etc., to be sure the set is safe to operate without danger of electrical shock. Since this TV has AVC (Automatic Voltage Control) circuit, it may be operated nonadjustably within the voltage area indicated in the label attached at back cover. (Do not use a line isolation transformer during this check).
   Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner.
   Connect a 1000 ohm resistor between a known good earth ground, (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1000 ohm resistor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 1 volt RMS. This corresponds to 1 mA. AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.

AC Leakage Test

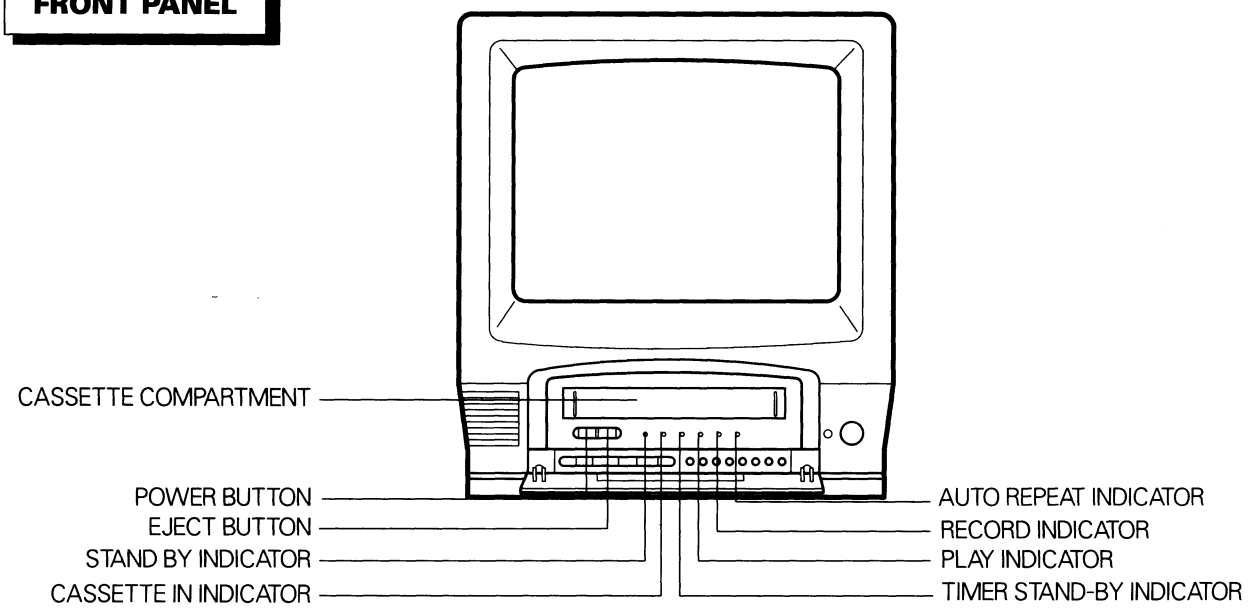


PRODUCT SAFETY NOTICE

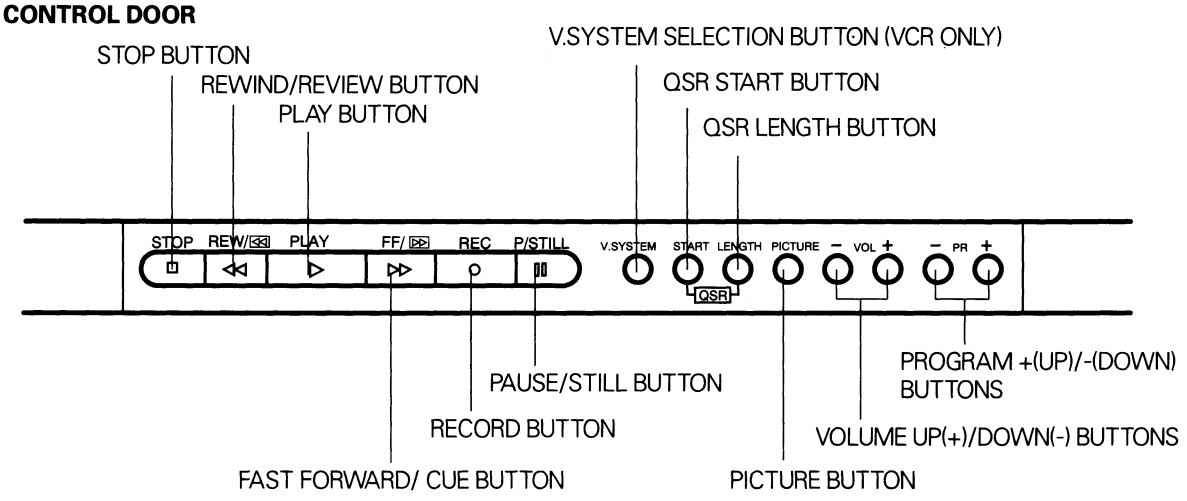
Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed without being noticed by a visual inspection and the X-RAY RADIATION protection afforded by some of them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified by ⚠ marks on the schematic diagram and the replacement parts list.
Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create X-RAY RADIATION.

CONTROLS LOCATION

FRONT PANEL



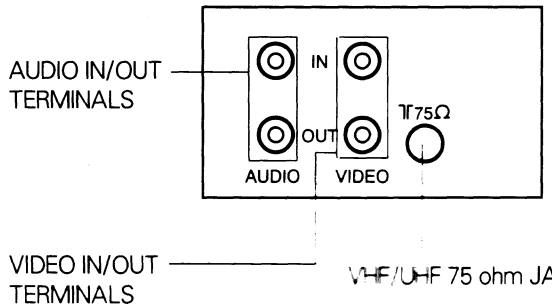
INSIDE CONTROL DOOR



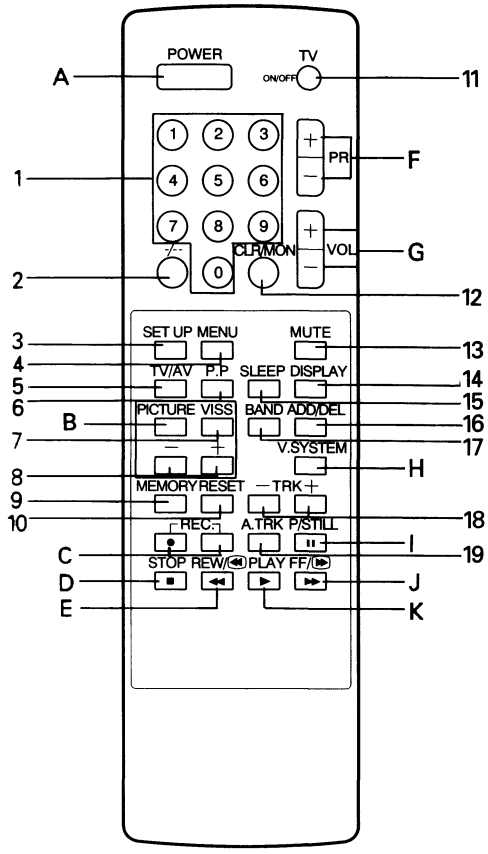
FEATURES

- Television and VCR in One Set
- PAL, MESECAM, NTSC 4.43(VCR Playback only), Auto system
- 8 Event / 1 Month Programmable Timer with everyday Recording
- Quick Start Recording (QSR) with standby
- Voltage Synthesized Tuning
- On-Screen Display shows operation and time
- Playback up to 4 hours with E-240 tape in SP mode
- Full Function Infrared Remote Control
- Automatic Rewind at the end of the video Cassette Tape
- Convenient Front Loading System
- Direct Access Channel Selection from Remote Control
- Freeze Function(STILL Frame)
- 120 Min Sleep Timer
- Auto Operations System

REAR PANEL



REMOTE CONTROL UNIT



CONTROL DESCRIPTIONS

1. NUMERICAL BUTTONS
To select the desired program NO., use these buttons.

2. UNIT BUTTON
To select the one(-) or two(--) digit program No.mode, use this button.

3. SETUP BUTTON
Press this button to select the SETUP mode.

4. MENU BUTTON
Press this button to select the MENU mode.

5. TV/AV MODE SELECTION BUTTON
Press this button to select the TV or AV mode.

6. PP BUTTON
To select the memorized picture states, press this button.

7. VISS (Video Index Search System) BUTTON
To enter the VISS function mode, press this button.

8. +/- BUTTON
To adjust desired level, use this button.

9. MEMORY BUTTON
For setting desired play position, use this button.

10. RESET BUTTON
To reset cassette tape counter to 0:00:00, press this button.

11. TV ON/OFF BUTTON
To turn the unit ON or OFF, press this button.

12. CLEAR/MONITOR BUTTON
During playback, to press this button and then the set is changed to normal TV mode. To enter the playback mode, press this button again.
Also, the CLEAR function is operated with this button.

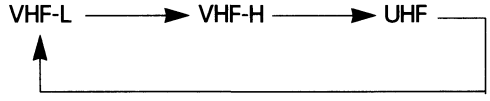
13. MUTE BUTTON
To mute a sound immediately, press this button.
To obtain the former volume level, press it again.

14. DISPLAY BUTTON
Press this button to display the program No., date and clock, tape state.

15. SLEEP BUTTON
To set the sleep time, use this button.

16. ADD/DELETE BUTTON
To store or clear a selected program No., use this button.

17. BAND SELECTION (TV only)
In the manual search mode, press this button repeatedly and then BAND is changed as below.



18. TRACKING CONTROL BUTTONS
To minimize noise in playback.
May also used during visual search to move the noise bars up or down on the screen.

19. AUTO TRACKING BUTTON
When playback is started, the auto tracking function operates normally even if this button is not pressed.
When this button is pressed after tracking has been adjusted manually, auto tracking operates again.

A. POWER BUTTON

This button is sub power button.
This button is used the unit on /off.

NOTE: AUTO POWER ON SYSTEM

Power is turned on automatically when the cassette tape is loaded.
If you load the cassette without the safety tab in place, you can enjoy the video program automatically. (FULL AUTO PLAY)

B. PICTURE BUTTON

To select the desired picture mode, press this button.
And then picture mode is changed as below.

- In PAL/SECAM, MESECAM (TV, VCR) mode
  CONTRAST → BRIGHTNESS → COLOR
  ↑ PICTURE MEMORY ←
  (PUSH + BUTTON)
- In NTSC (VCR only) mode
  CONTRAST → BRIGHTNESS → COLOR → TINT
  ↑ PICTURE MEMORY
  (PUSH + BUTTON)

C. RECORD BUTTON

Press both the RECORD and PLAY buttons at the same time to start video and audio recording.

D. STOP BUTTON

Press this button to stop playback mode.

E. REWIND/REVIEW BUTTON

Press this button to rewind a cassette tape on stop mode.
Press this button to play the unit backward rapidly on playback mode.

F. PROGRAM +(UP)/-(DOWN) BUTTONS (TV ONLY)

Press the program +(up) button to switch one program up.
Press the program -(down) button to switch one program down.

G. VOLUME +(UP)/-(DOWN) BUTTONS

To increase the volume level, press the volume +(up) button.
To decrease the volume level, press the volume -(down) button.

H. VIDEO SYSTEM BUTTON (VCR mode only)

To select the desired system mode, press this button repeatedly and system mode is changed as below.

AUTO → PAL → MESECAM → NTSC4.43
↑

I. PAUSE/STILL BUTTON

- In the record mode, press this button to stop the recording.
  To start recording, press this button again.
- In play mode, press this button to stop the play mode. To enter the playback mode, press the PLAY button.

J. FAST FORWARD/CUE BUTTON

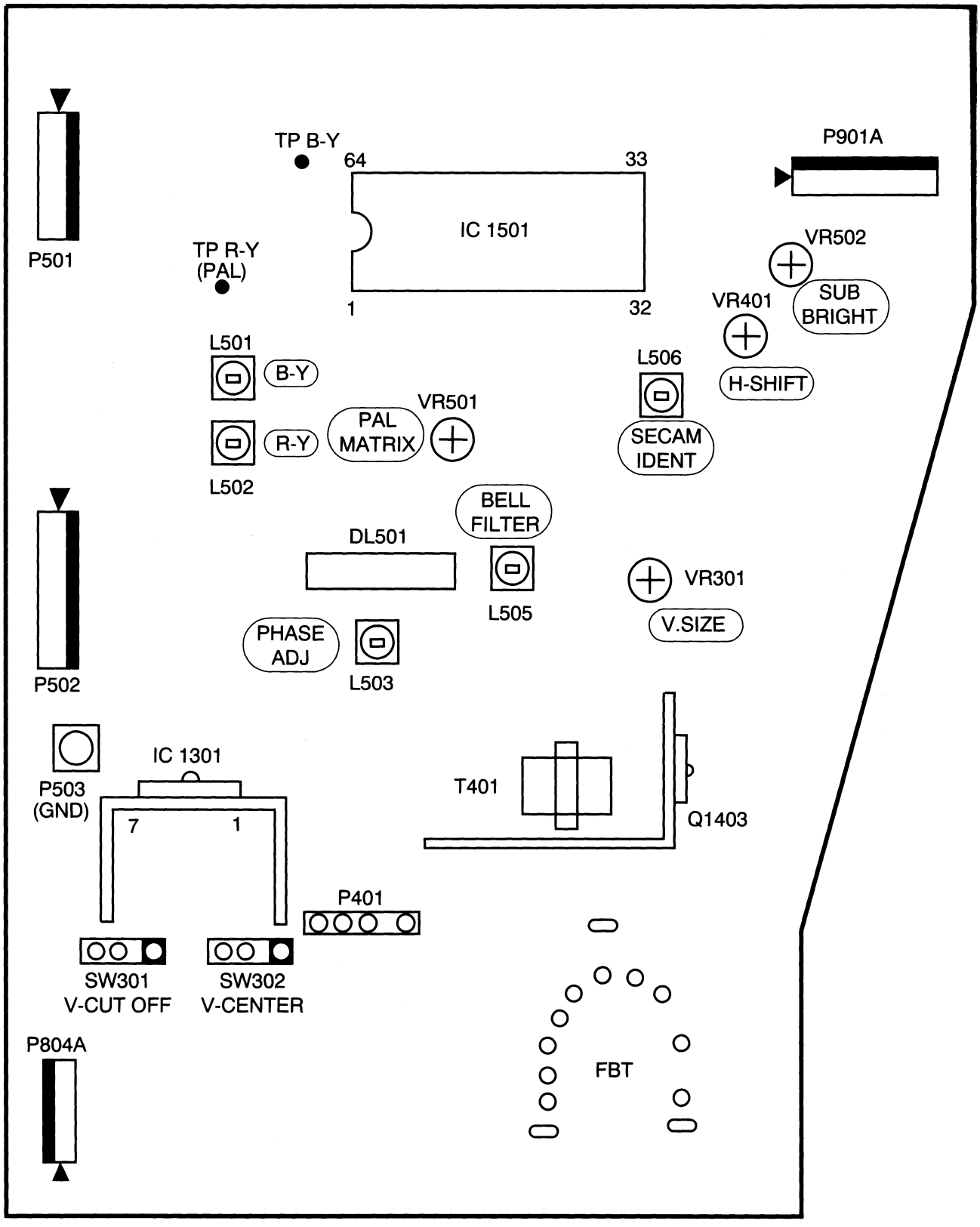
On the stop mode, press this button to wind the video tape forward rapidly. On the playback mode, press this button to paly the unit forward rapidly.

K. PLAY BUTTON

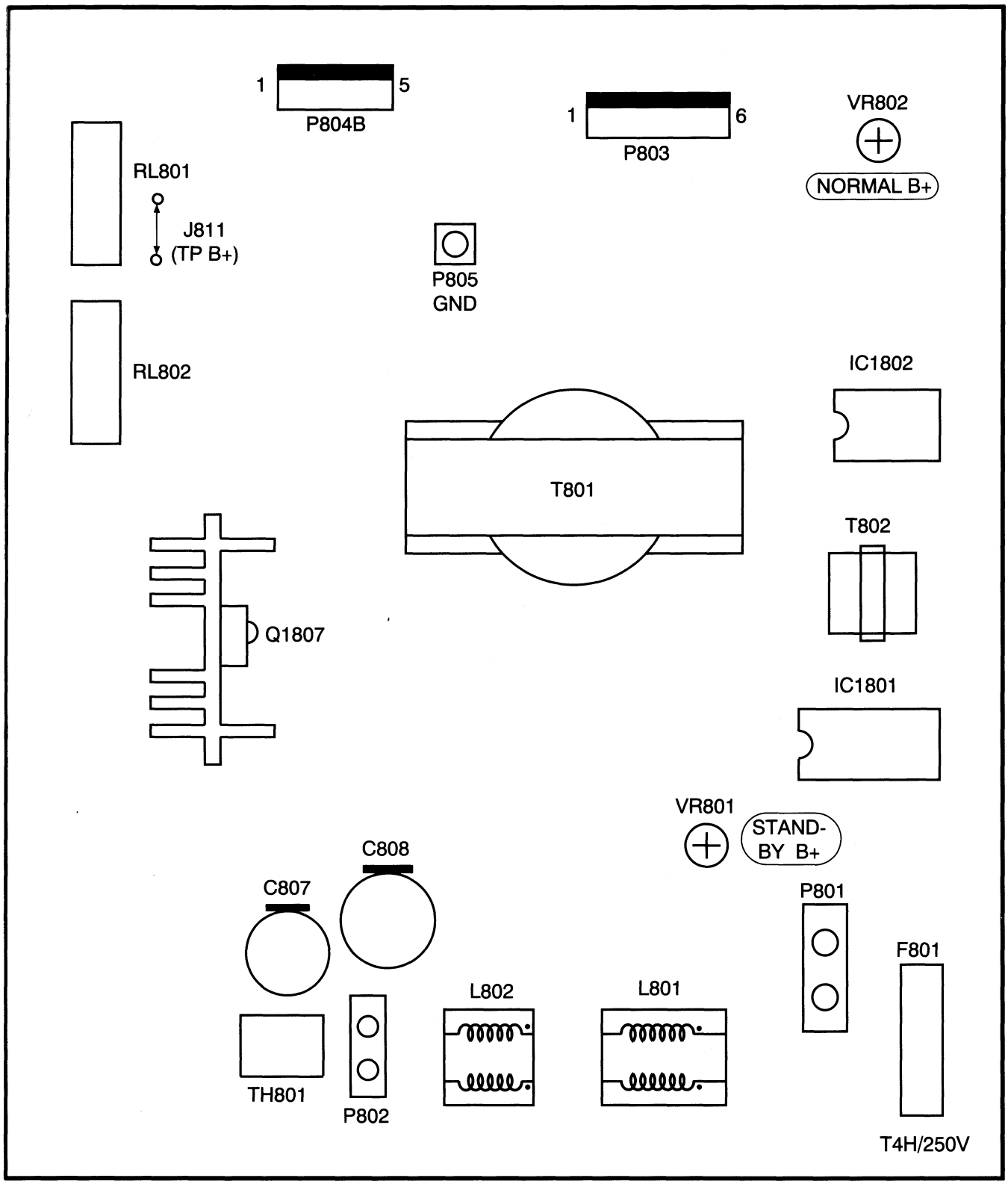
Press this button to make the VCR playback mode.

ALIGNMENT/TEST POINT LOCATION GUIDE

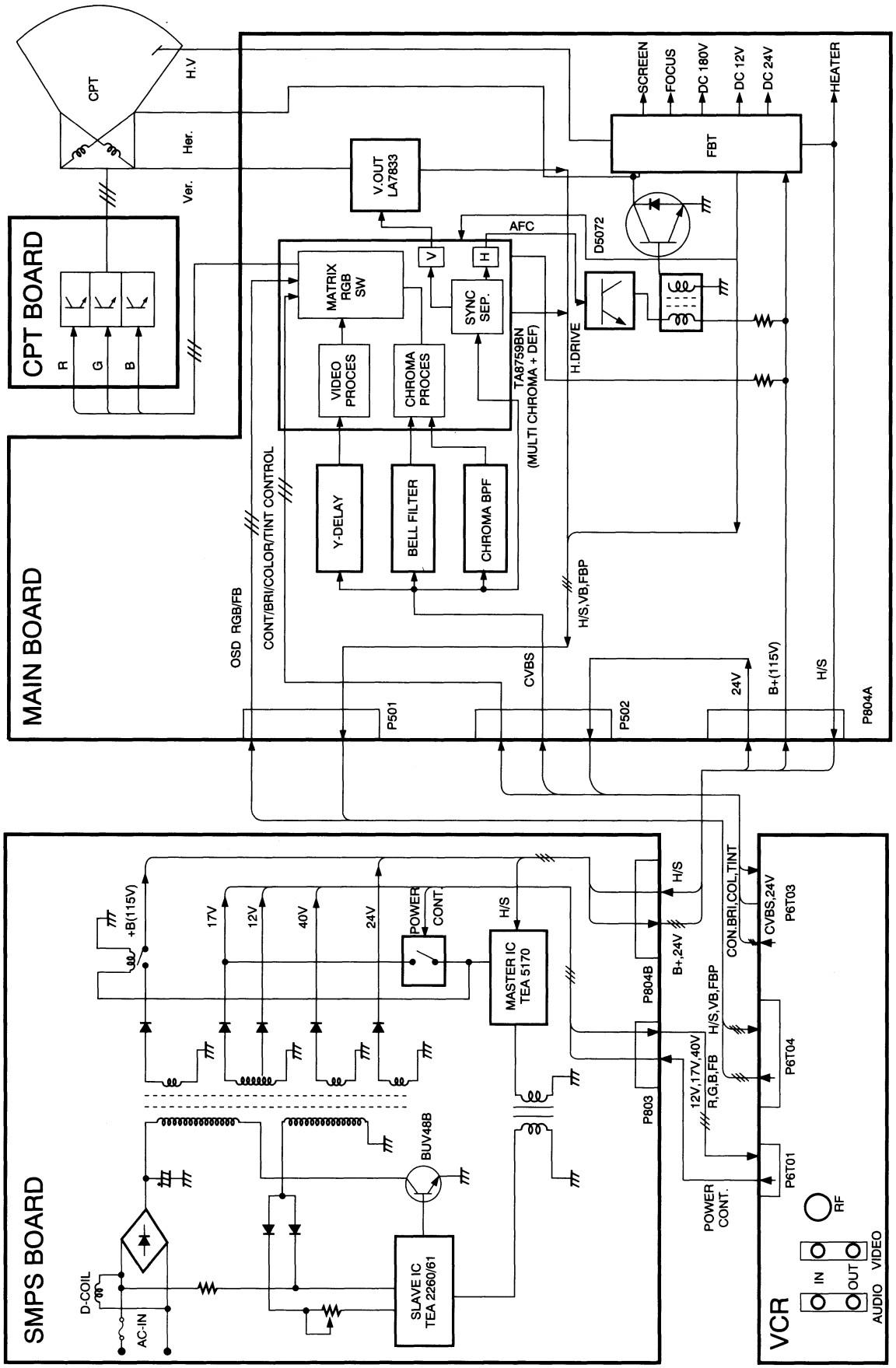
1. Monitor Main Board



2. SMPS Board


1
5
P804B
1
6
P803
VR802
NORMAL B+
RL801
J811
(TP B+)
P805
GND
RL802
IC1802
T801
T802
Q1807
IC1801
VR801
STAND-
BY B+
C808
C807
P801
F801
L802
L801
TH801
P802
T4H/250V

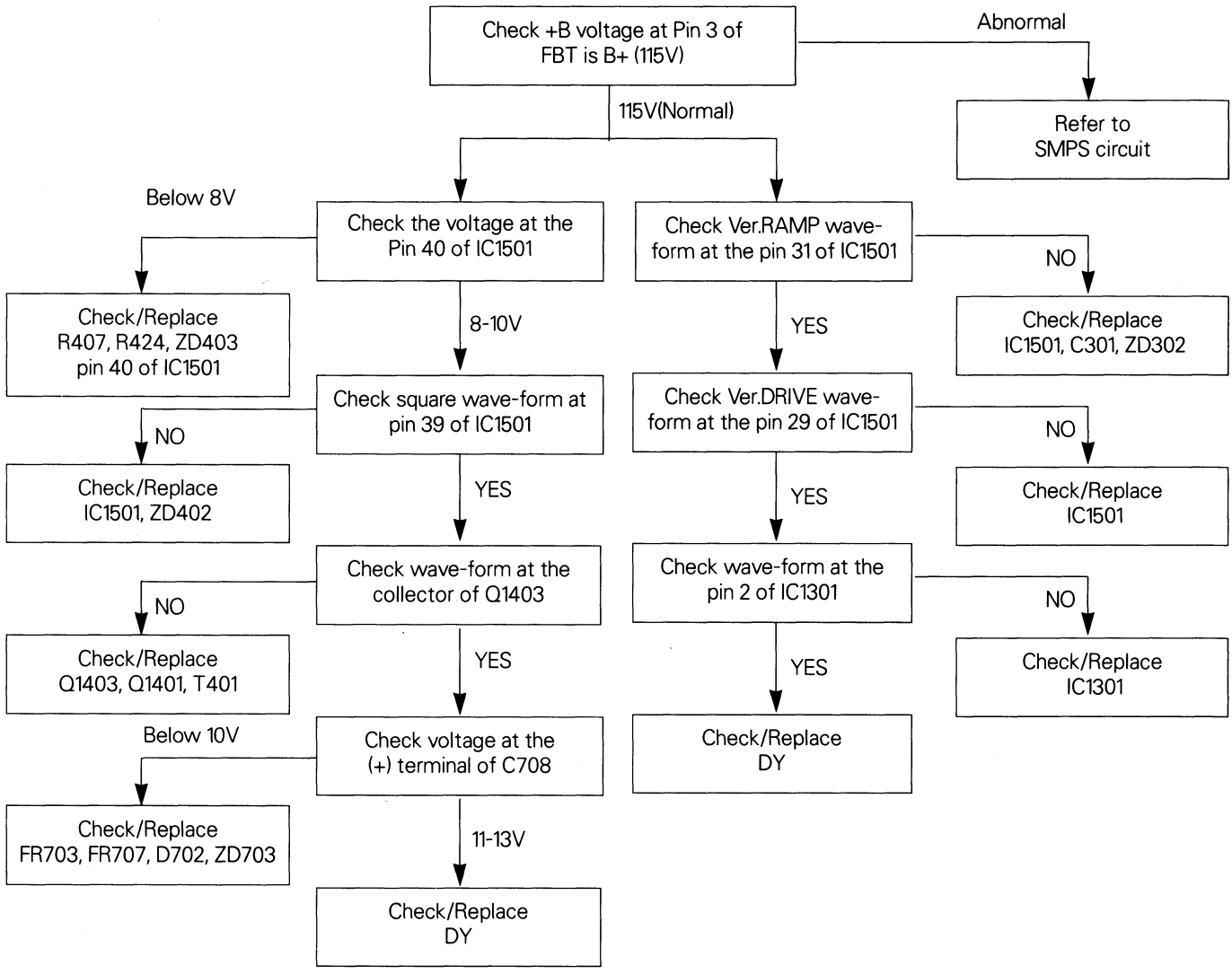
BLOCK DIAGRAM



TROUBLESHOOTING CHARTS

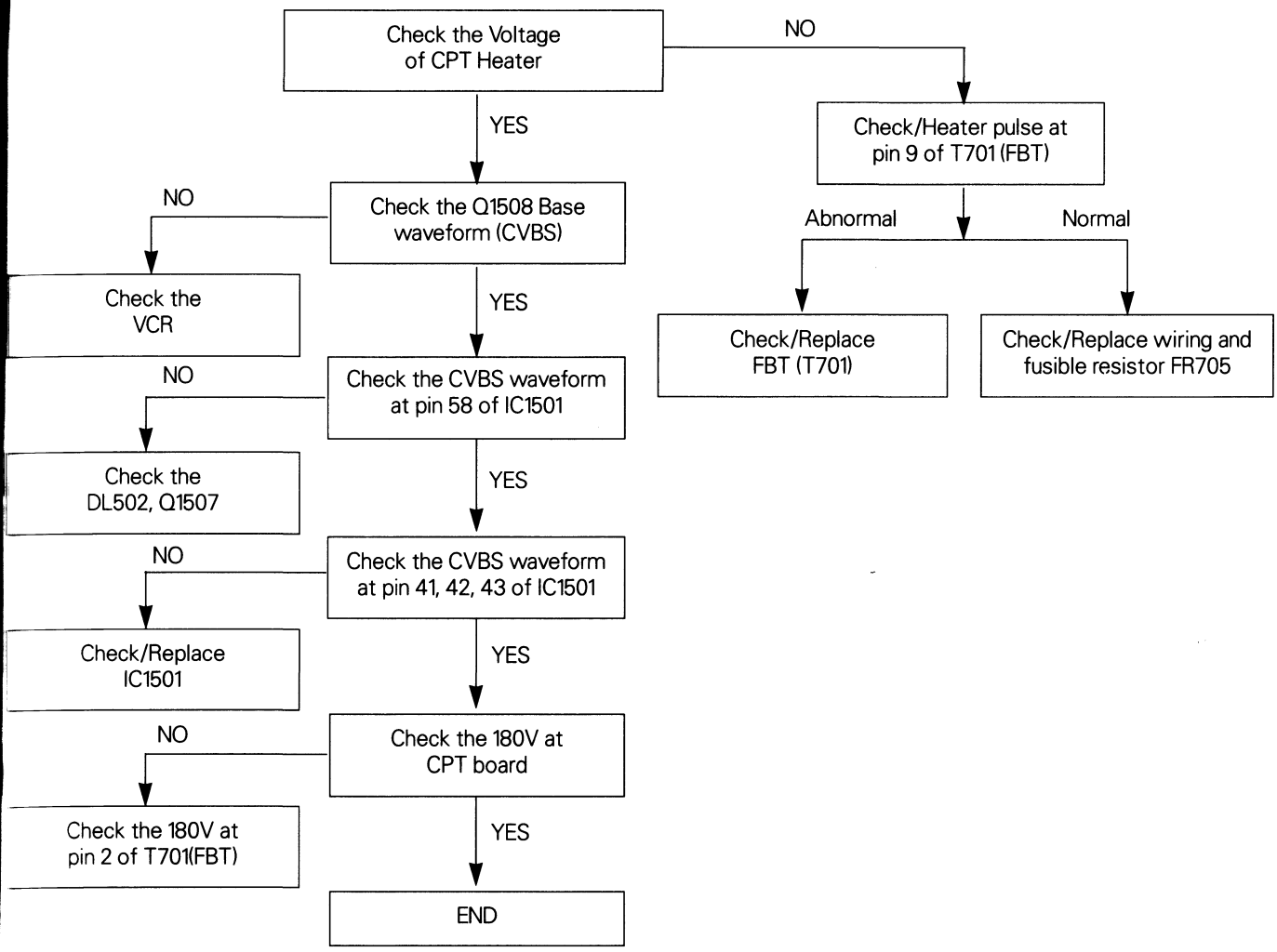
1. Monitor Circuit

A. **DEAD SET (No Raster / No Sound)**

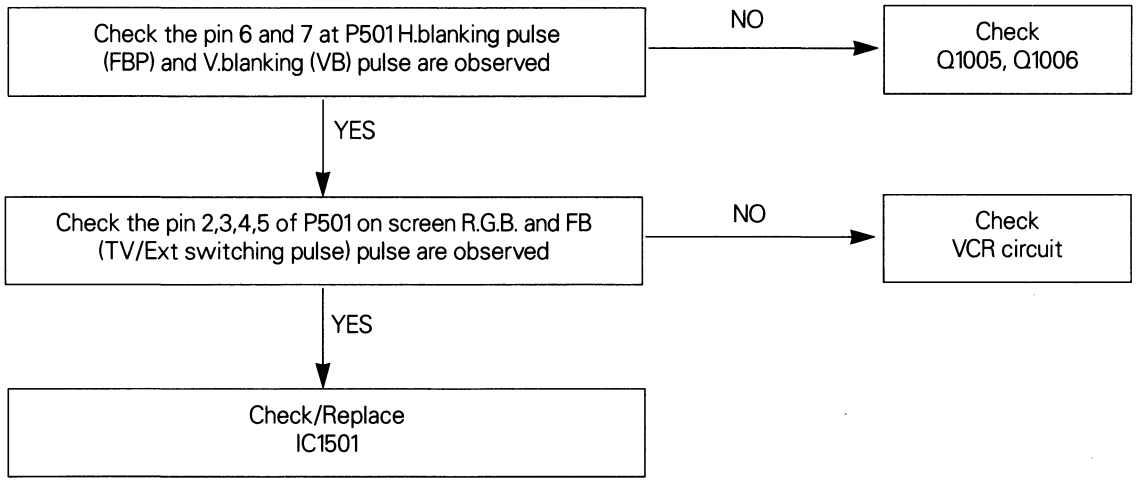


MONITOR

No PICTURE

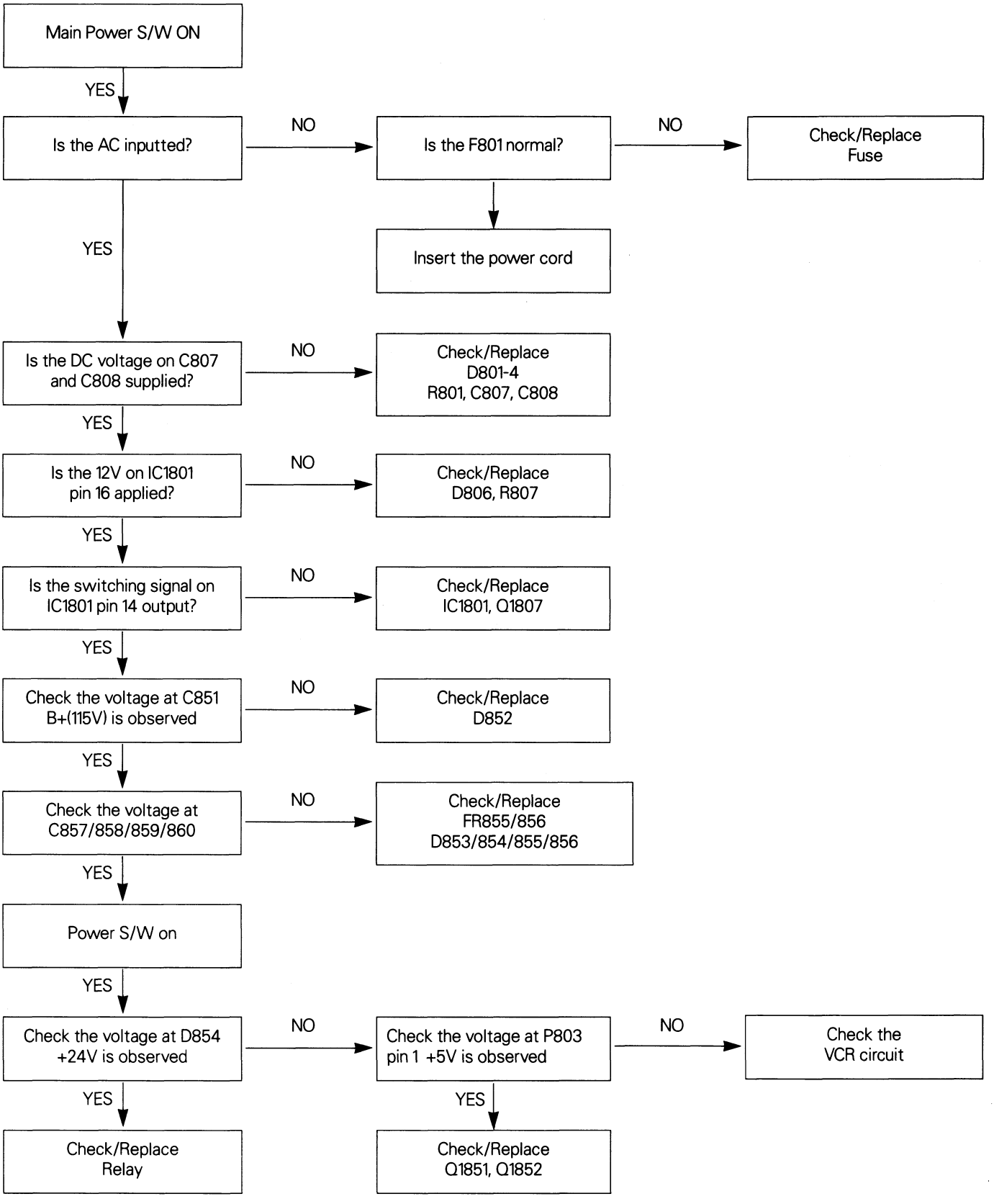


ON SCREEN DISPLAY OPERATION CHECK



2. SMPS Circuit

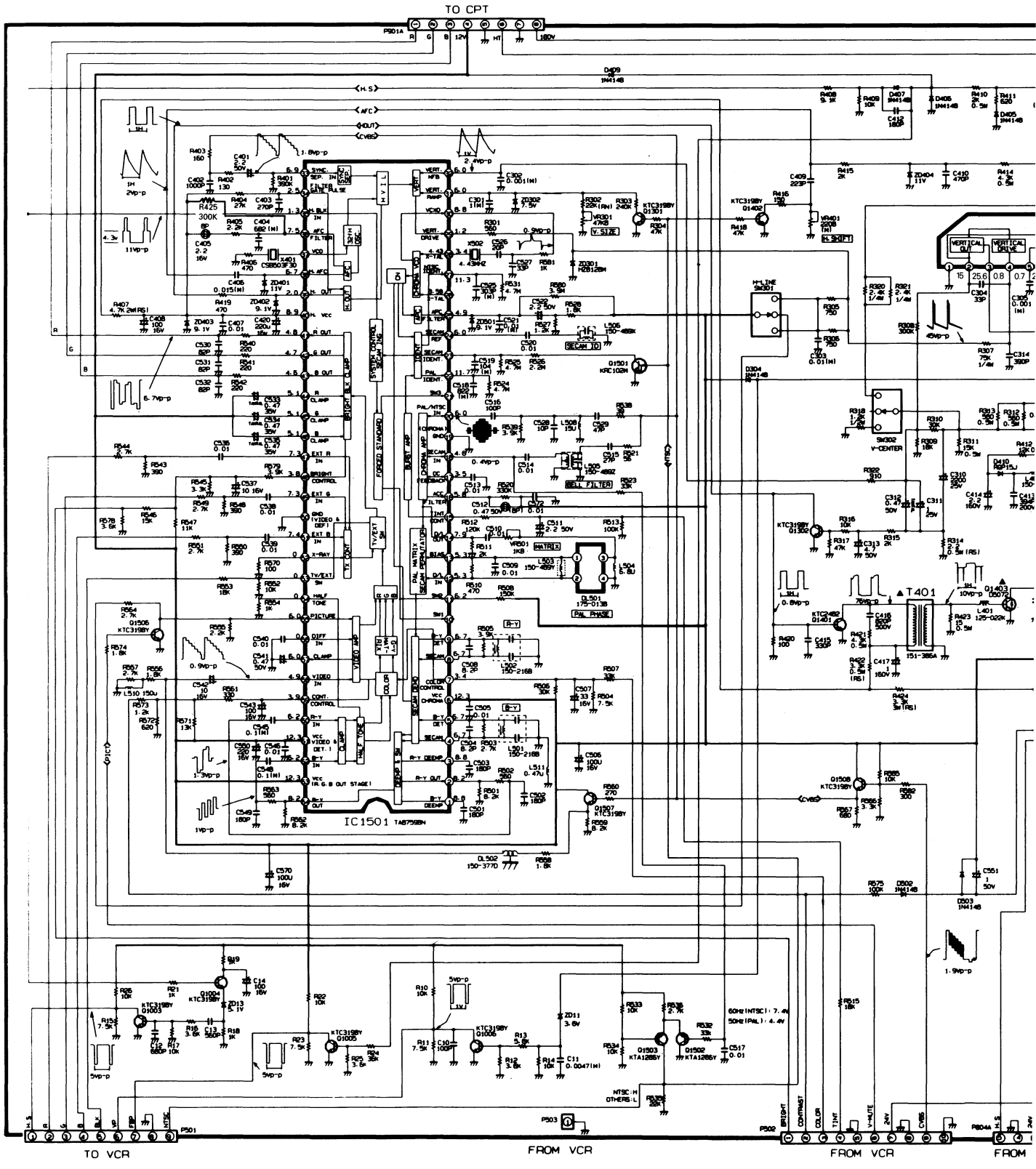
A. NO POWER SUPPLY



MONITOR

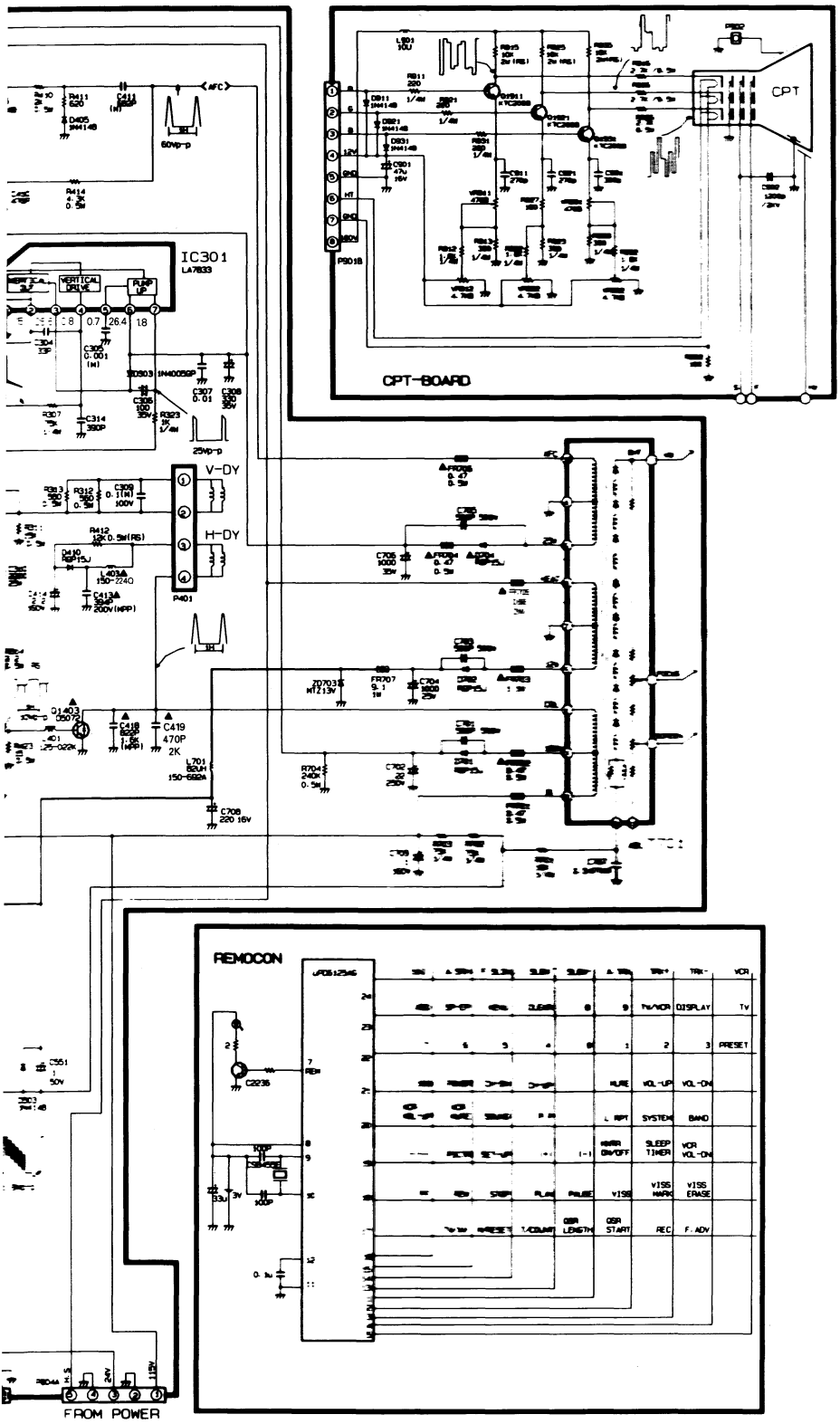
1. Monitor Main Schematic Diagram

PC-32A SCHEMATIC DIAGRA



HEMATIC DIAGRAMS

AGRAM (PAL/SECAM/N4.43)



The components marked ⚠ conform to VDE or IEC guidelines and are essential for safe operation of the set while those marked ⚠ are required for correct operation. Use specified parts only when replacing.

NOTICE
Since this is a basic schematic diagram.
The value of components and some partical connection are subject to change for improvement.

OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltages read with VTVM from point shown to chassis ground. line voltages 220 Volts. colour bar signal.
2. Voltages reading may very ±20%.
3. The schematic shown is representative only.
4. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
5. Check FINE TUNING < AGC < BRIGHTNESS. CONTRAST and COLOUR controls for best picture. make sure that CONTRAST and COLOUR controls are in mid position and BRIGHTNESS controls is almost in maximum position.
6. Waveforms are taken using a standard colour bar signal.

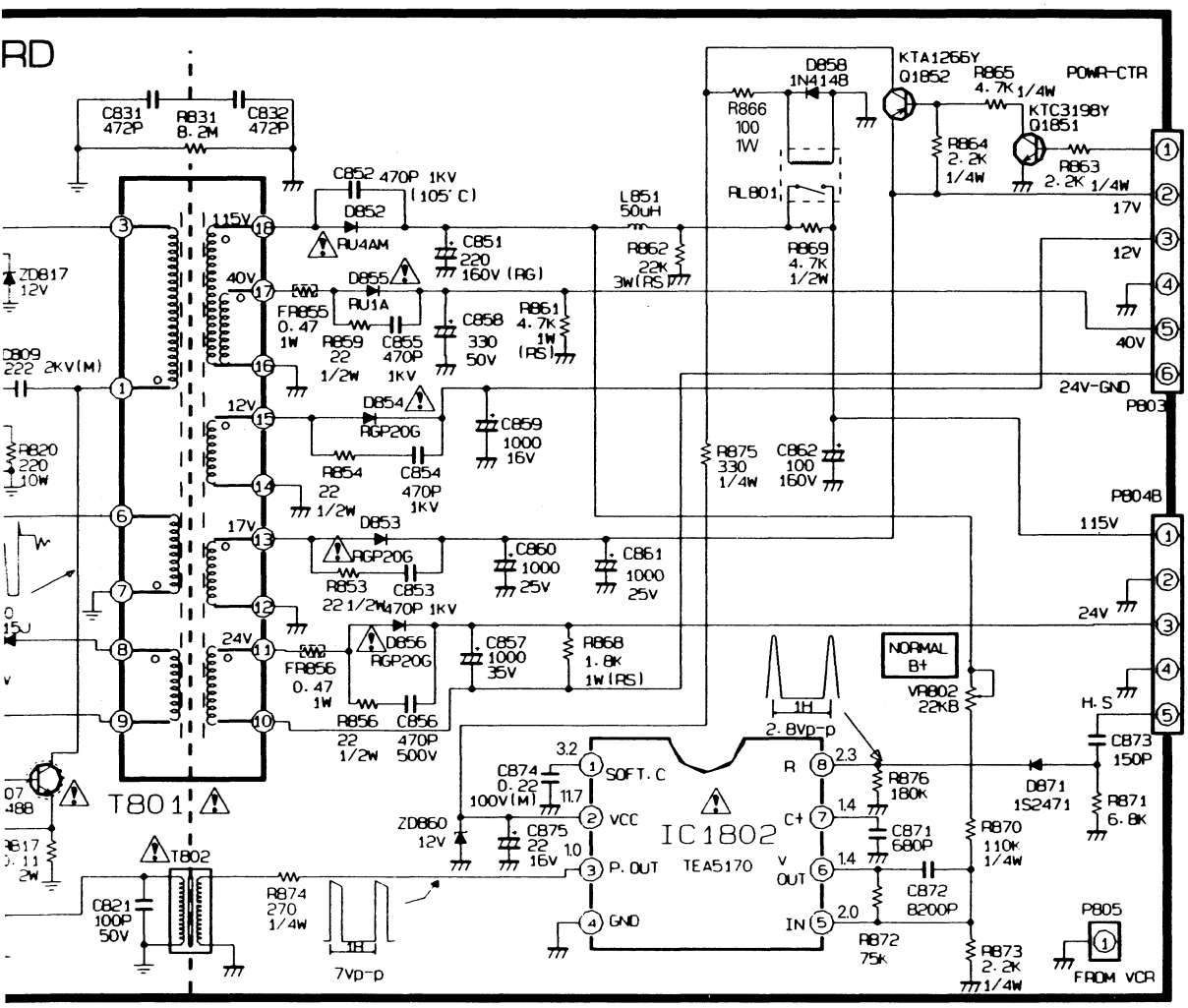
VALUE OF RESISTER. CAPACITOR AND INDUCTOR

1. Resistances are shown in ohm. K = 1,000 M = 1,000,000.
2. Unless otherwise noted in schematic. all capacitor values less than 1 are expresses in mfd and the values more than 1 in pF.
3. Unless otherwise noted in schematic. all coil values more than 1 are expressed in uH. and the values less than 1 in H.

TABLE OF INCH CONVERSION

NO	CIRCUIT NO	14"	19"	21"	REMARKS
1	R572	620		820	RESISTOR. FIX 1/6W
2	R702	75K		36K	RESISTOR. FIXED 1/4W
3	R703	75K		36K	
4	FR705	0.68		1.4	RESISTOR FUSIBLE 2W
5	FR707	9.1		9.1	RESISTOR. FUSIBLE 1W
6	C312	0.47		0.68	CAPACITOR. CE 50V
7	C413	394		624	CAPACITOR. MPP 200V
8	C418	822		822	CAPACITOR. MPP 1.6KV
9	C419	471		-	CAPACITOR. CERAMIC 2KV
10	L403	224Ω		-1590	COIL LINERITY (150-)
11	T701	-207A		-207F	FBT(154-)
12					
13					
14					
15					
16					

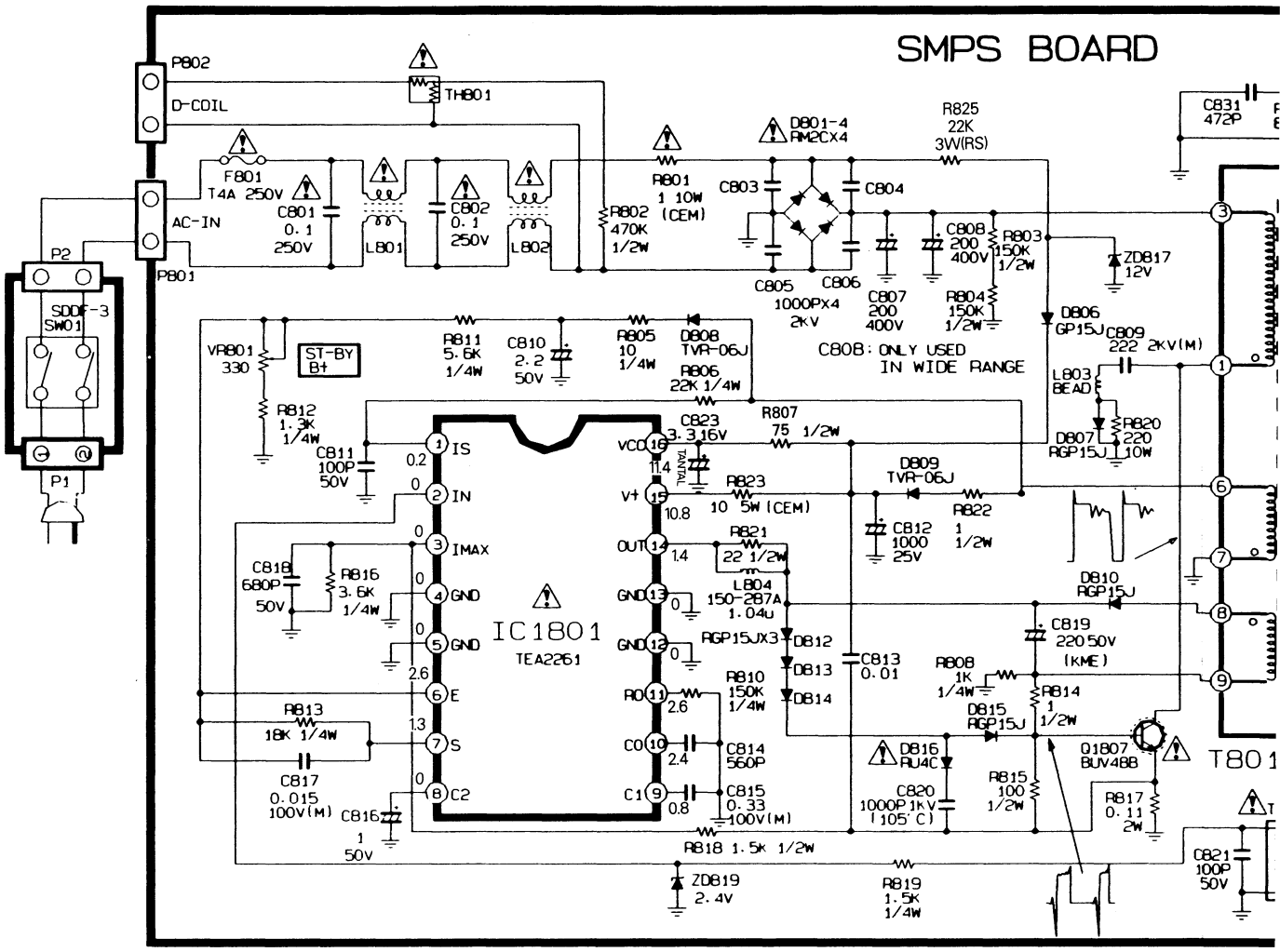
P/N : 484-874A
DATE : JUL. 5, 1993



P/N : 484-874A

DATE: JUL. 5. 1993

2. SMPS Schematic Diagram



1. Front Loading Mechanism Assembly (Fig. A-1-1)

1) Remove the Top and Bottom Covers and the Front panel.
2) Unplug the connector.
3) Remove two screws(A).
4) Lift up the Front Loading Mechanism in the direction of arrow(C).

*** NOTE**

1) When disassembling and reassembling

① Give special attention to removal. because two tabs(D) are engaged.

② Make sure that Bosses of Bracket(L),(R) are properly engaged in the holes of the chassis.

③ To reassemble Front Loading Mechanism, the Drive Gear Assembly should be turned in a counterclockwise as shown in Fig. A-1-2 so that the Rack Gear N.D of Front Loading Mechanism Assembly is meshed into Rack Gear F.L of Deck Mechanism Assembly correctly as shown in Fig. A-1-1.(B).

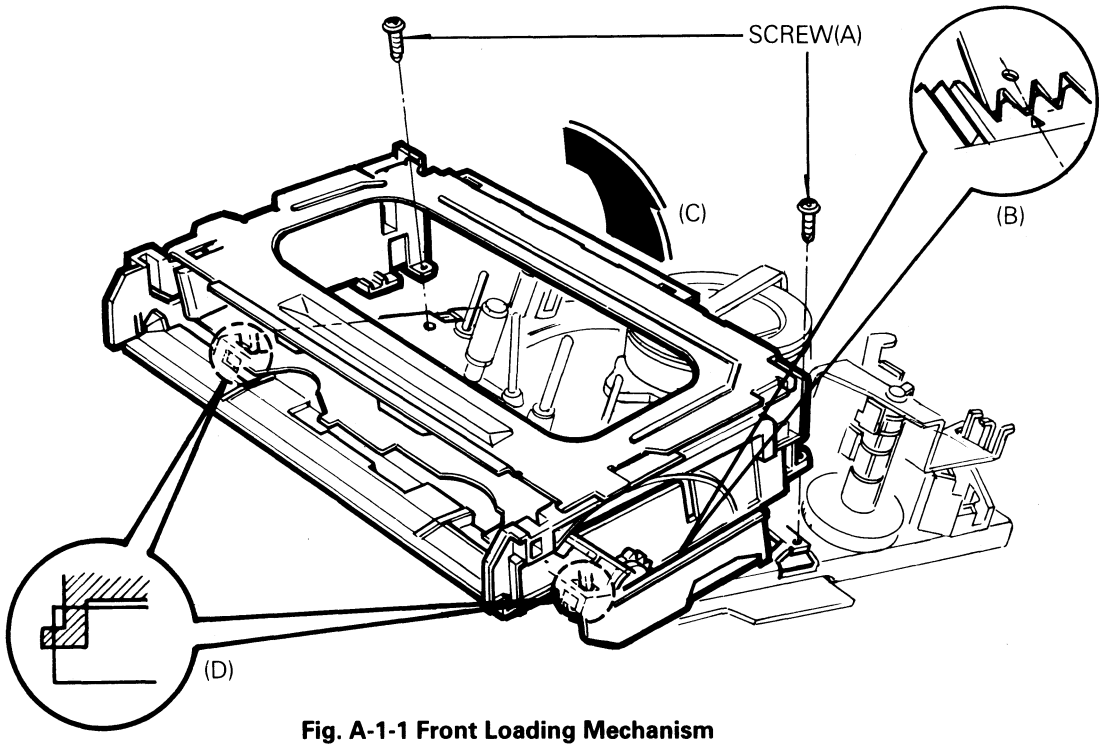
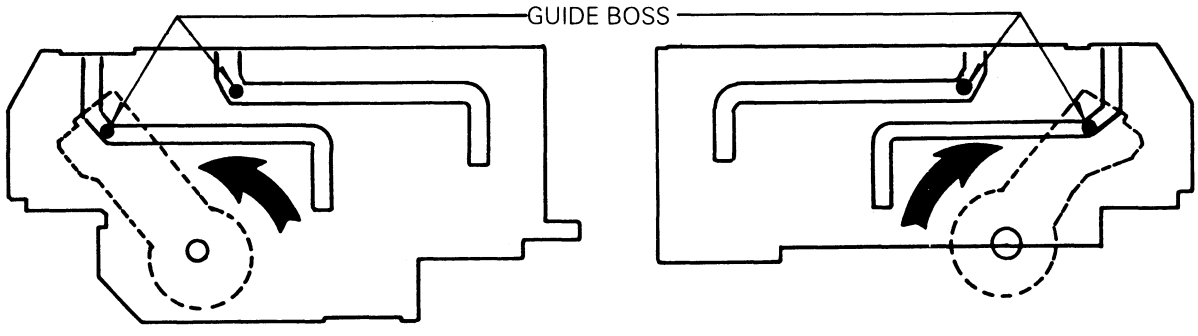


Fig. A-1-1 Front Loading Mechanism



a) Right Side Bracket

b) Left Side Bracket

Fig. A-1-2 Carrier Bracket Assembly

VCR

10. Pinch Gear

1) Remove one Nut(A) and then remove the Dew Bracket.
2) Remove the Pinch Lever Assembly by lifting it up.
3) Remove the Loading Motor Assembly.
4) Remove the Take Up Lever.
5) Remove the Pinch Gear Assembly.

*** NOTE**

1) When reassembling, align the hole(A) of Pinch Gear with the hole of chassis, and the hole(C) of Pinch Gear with the groove(D) of the P.C.Gear. Hole(E) of chassis should be aligned with the hole of P.C.Gear.

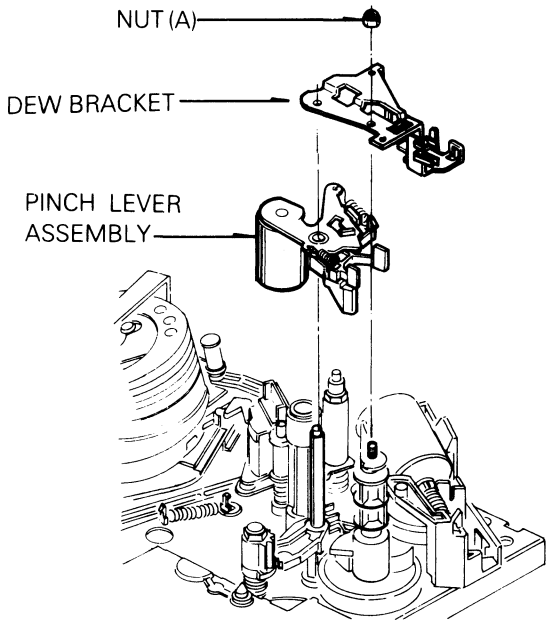


Fig. B-10-1 Pinch Gear Assembly

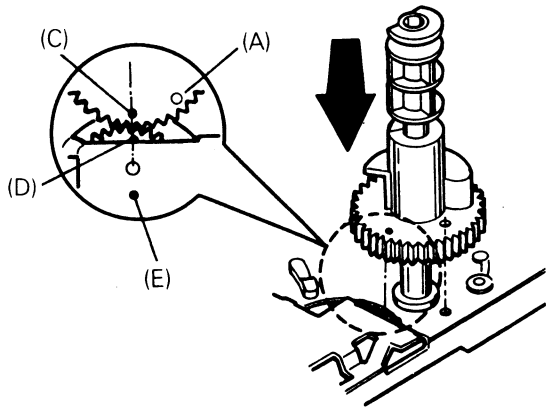


Fig. B-10-2 Pinch Gear

11. FE(Full Erase) Head Assembly(Fig. B-11)

1) Unplug the connector.
2) Remove one screw(A), and then remove the FE Head.

*** NOTE**

1) When disassembling and reassembling
① Do not touch the Video Head Tip with fingers or tools.

12. P1 Assembly(Fig. B-11)

1) Remove the Adjust P1.
2) Remove the Guide 17.
3) Remove the Roller.
4) Remove the Sleeve.
5) Remove the Guide 17.
6) Remove the Spring.

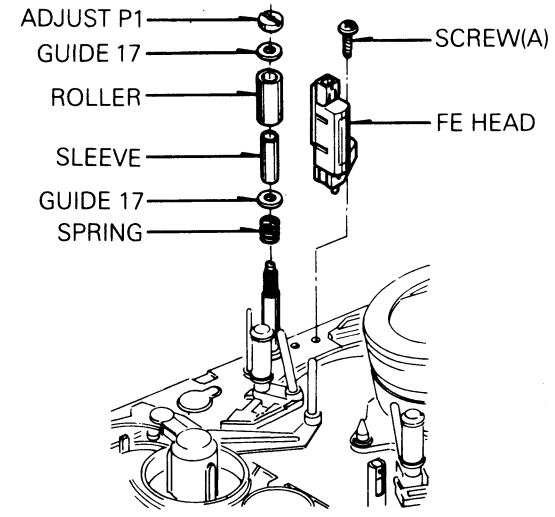


Fig. B-11 FE Head/P1

13. Tension Arm Assembly(Fig. B-13)

1) Remove one screw(C).
2) Remove the Tension Spring.
3) Remove the Tension Arm Assembly by pushing hooks outward with the Deck Mechanism Assembly turned over.
4) Remove the Tension Band Assembly from the Tension Arm by pushing Hooks of Holder(A).

*** NOTE**

1) When disasembling and reassembling, give special attention to the disassembling and reassembling of Tension Arm Assembly, because the Tension Band is interposed between the Supply Reel and the Soft Brake.

VCR

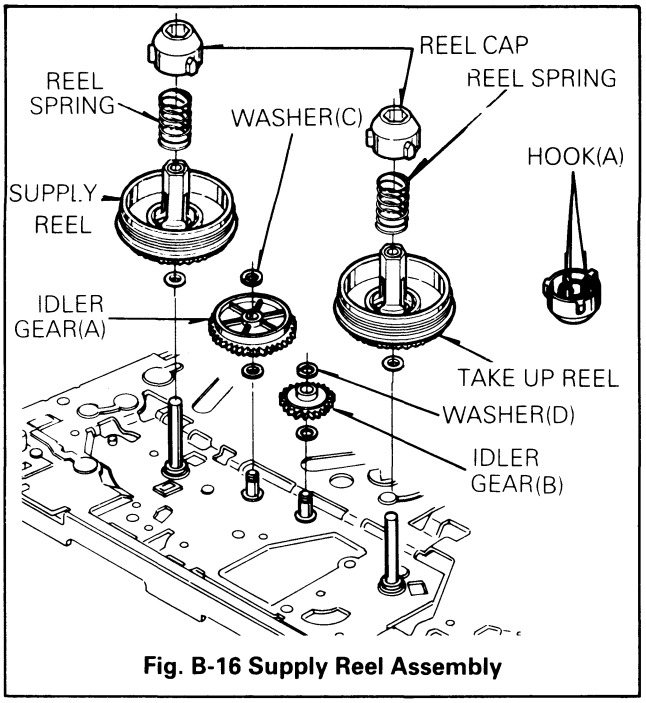


Fig. B-16 Supply Reel Assembly

17. Idler Gear(A), (B)(Fig. B-16)

1) After removing the Supply Reel, and supply Main Brake Assembly, remove the washer(C) and remove the Idler Gear(A).
2) Remove the Washer(D) and remove the Idler Gear(B).

18. Pulley Gear Assembly(Fig. B-18)

1) Turn over the Deck Mechanism Assembly.
2) Remove the Capstan Belt.
3) Remove the washer(A) and lift up the Pulley Gear.

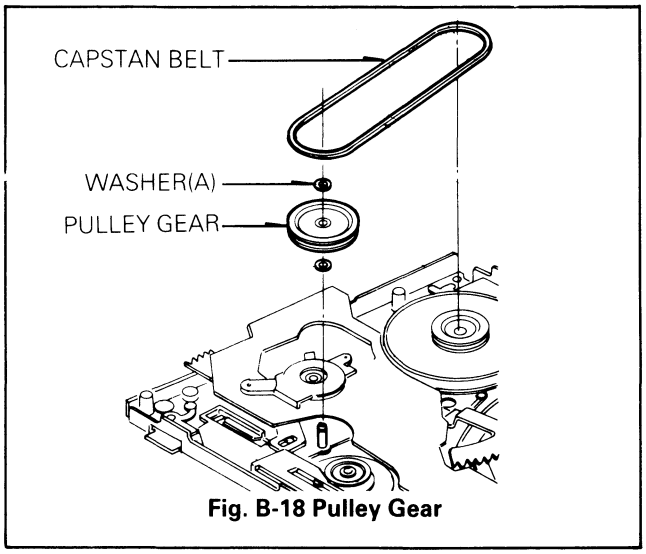


Fig. B-18 Pulley Gear

19. Bracket Bottom Assembly(Fig. B-19)

1) Remove one screw(A).
2) Remove one Hexagonal Nut, and then lift up the Bracket Bottom Assembly.
3) Remove one Washer, and lift up the Ratchet Gear 1.

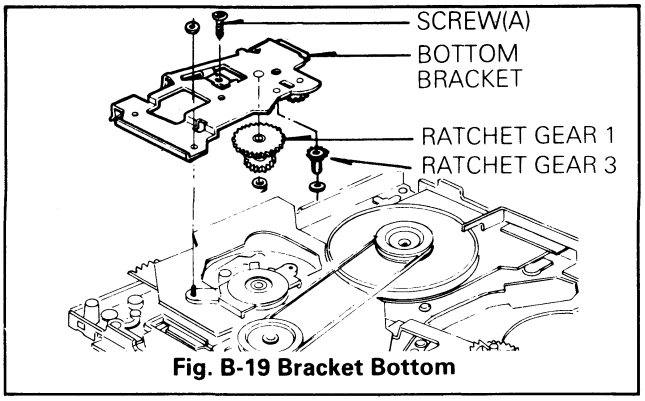


Fig. B-19 Bracket Bottom

4) Remove the washer, and then remove Ratchet Gear 3 from the Bottom Bracket.

20. Junction PCB(Printed Circuit Board) Assembly (Fig. B-20-1)

1) Remove the Bottom Bracket Assembly.
2) Remove two screws(A),(B) and then remove the Junction P.C.B Assembly.
3) Remove the Mode Switch from the Junction P.C.B Assembly.
4) Remove the Reel Sensors, Sensor LEDS and each holder from the Junction P.C.B(Fig. B-20-2).

*** NOTE**

1) When reassembling the Mode Switch, the groove(V) and (U) of Mode Switch should be at their original place in the Eject Mode.

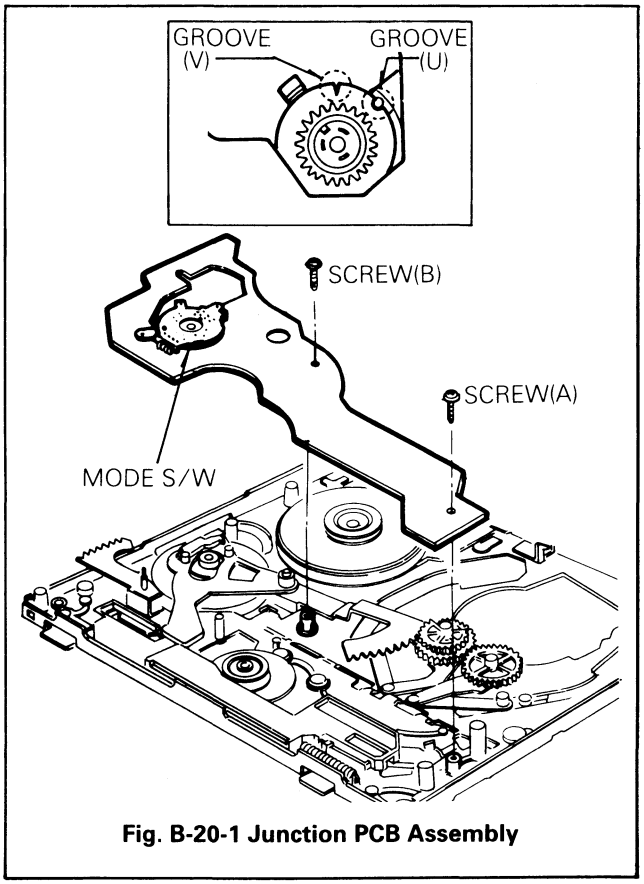


Fig. B-20-1 Junction PCB Assembly

VCR

23. Ratchet Lever Assembly(Fig. B-23)

1) Remove the Function Plate.
2) Remove the Junction P.C.B Assembly.
3) Remove the Washer(A) and then remove the Ratchet Lever Assembly.
4) Remove the Ratchet Spring.
5) Remove the Ratchet Lever from the Ratchet 17 by lifting it up when the hook of it is aligned with the hole of Ratchet 17 while rotating it counterclockwise direction.
6) Remove the Washer(B), and turn over the Ratchet 17 and then remove the Slant Pin, Spring F, Lever.

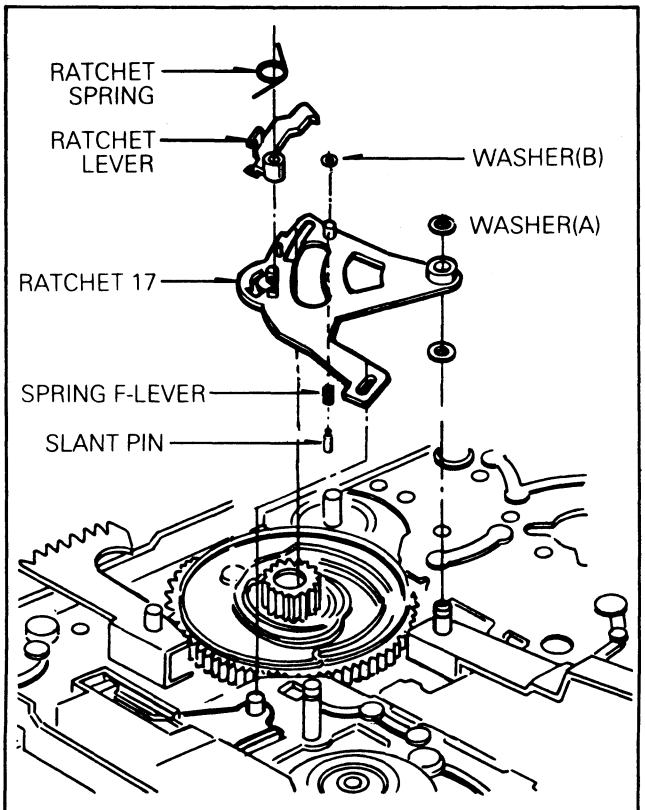


Fig. B-23 Ratchet Lever Assembly

24. Cam Gear/Rack Gear T/Rack Gear FL(Fig. B-24-2)

1) Remove the washer(A) and remove the Ratchet Lever Assembly. (Fig. B-24-1).
2) Remove the washer(B), and then remove the Cam Gear (Fig. B-24-2).
3) Remove the Rack Gear F.L.(Fig. B-24-3)
4) Remove the Rack Gear T.(Fig. B-24-3)

*** NOTE**

1) When reassembling
① Align the Projection of Rack Gear T with the hole of Loading Gear.
② Drive the Rack Gear F.L in the direction of arrow(D).
③ Hole of Cam should be aligned with the hole of chassis, and the groove(■) of Cam Gear should be aligned with the hole of PC Gear(Fig. B-25)

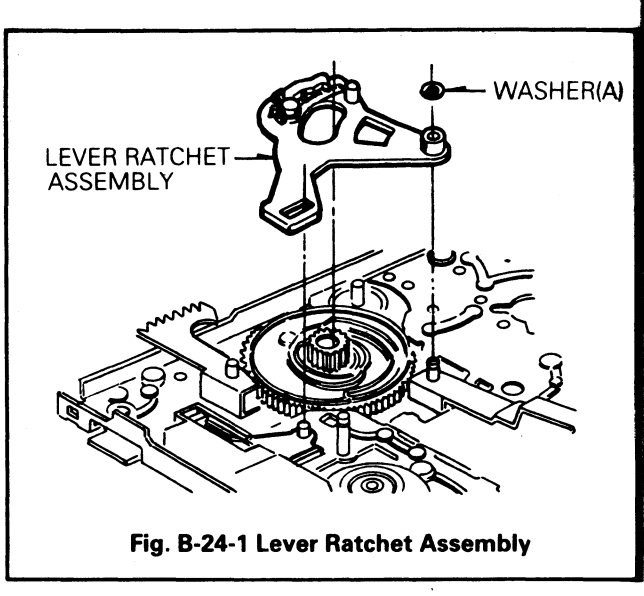


Fig. B-24-1 Lever Ratchet Assembly

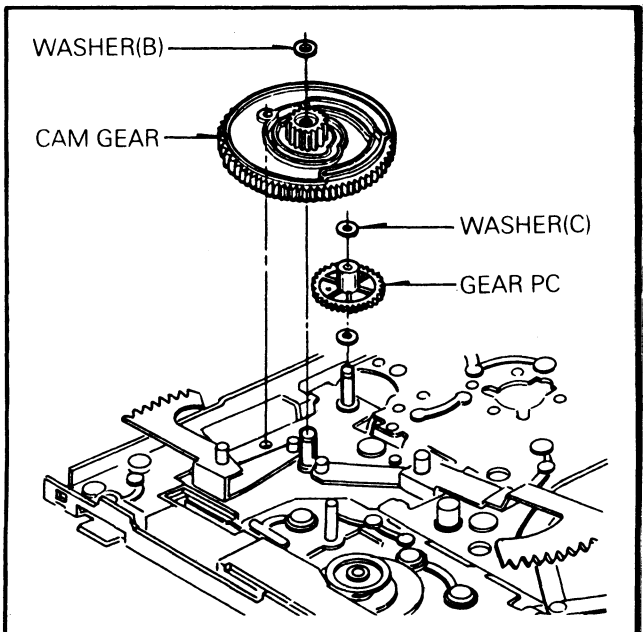


Fig. B-24-2 CAM/PC Gear

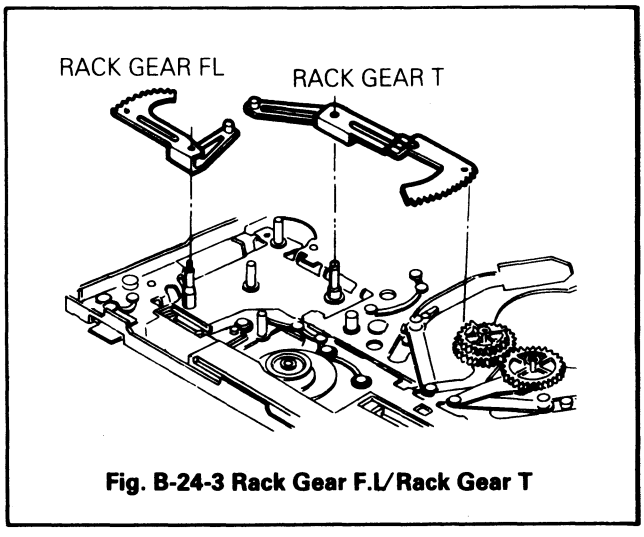


Fig. B-24-3 Rack Gear F.L/Rack Gear T

VCR

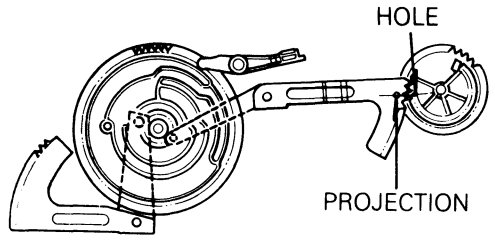


Fig. B-24-4 Rack Gear F.L/Rack Gear T/CAM Gear

25. PC Gear(Fig. B-25)

1) Remove the washer(C).
2) Remove the P.C Gear by lifting it up.

* NOTE
1) When reassembling
① The Groove of PC Gear should be aligned with the groove of Cam Gear, and another hole of it should be aligned with the hole of chassis(Fig. B-25).

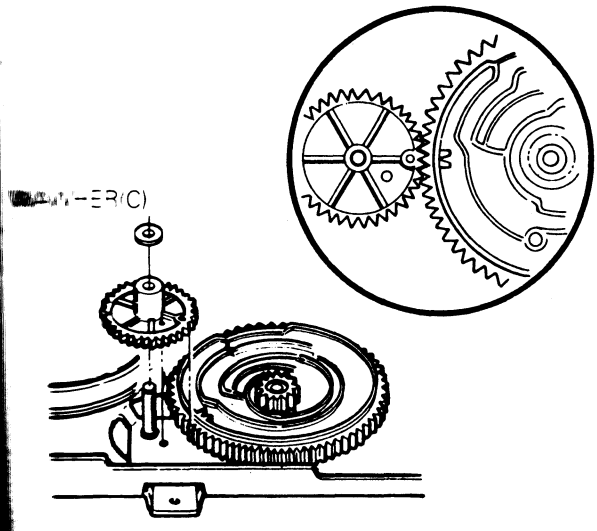


Fig. B-25 PC Gear

26. P2 and P3 Slant Assembly(Fig. B-26)

1) When disassembling the disassembly of Drum Assembly, remove P2 and P3 Slant Assembly by turning the Loading Gear in the clockwise direction.(Loading direction)
2) Remove the set screws.
3) Remove the Roller Guide from the Slant Base.

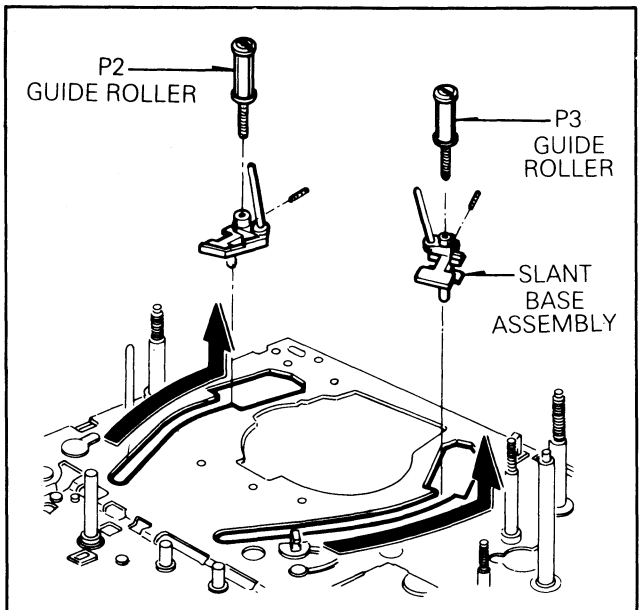


Fig. B-26 Slant Assembly

* NOTE
1) When disassembling and reassembling
① Use a Hexagonal wrehch to remove set screw.
② Take notice that the P2 and P3 Slant Assembly should not be changed from their original place.

27. Loading Gear Assembly(L),(R) (Fig. B-27)

1) Remove the Cam Gear, Rack-T.
2) Remove the P2 and P3 Slant Assembly by turning the Loading Gear(L),(R) in the Loading direction
3) Lift up the Loading Gear Assembly(L),(R) from the Deck Mechanism Assembly.
4) Remove the Spring Load(L),(R).
5) Separate the Loading Gear(L), (R) from Lever Load(L),(R).

* NOTE
1) When reassembling
① Make sure that the Loading Gear(L) and (R) should not be changed from their original place.
② Align the groove of Loading Gear(L),(O) with the groove of Gear(R),(O).

VCR

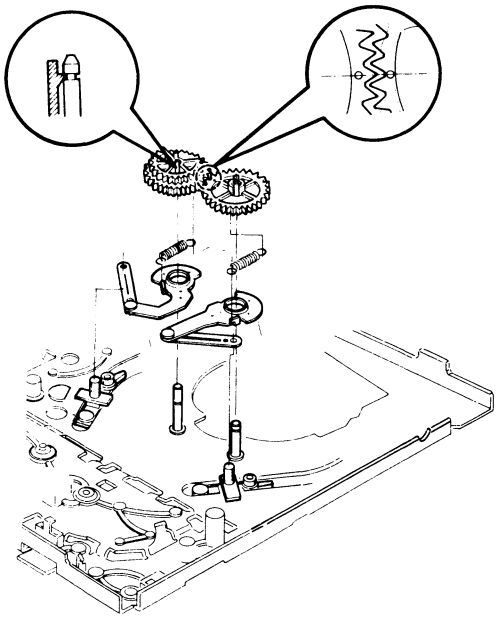


Fig. B-27 Loading Gear Assembly

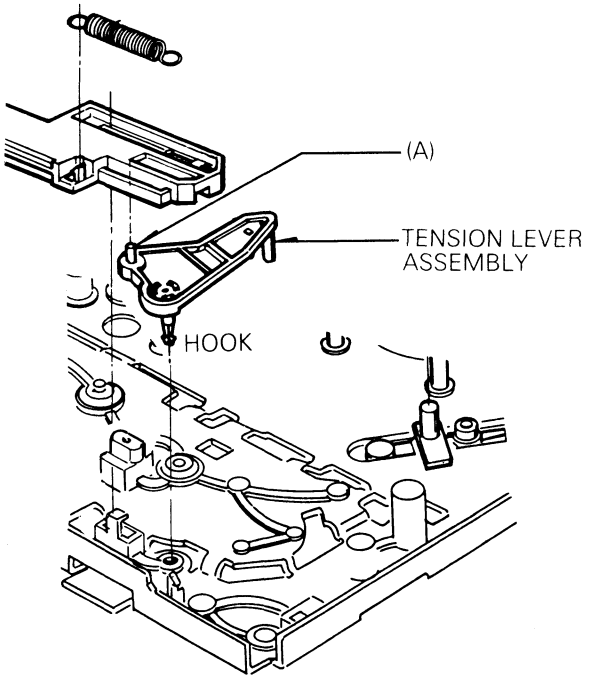


Fig. B-28 Tension Lever Assembly

28. Tension Lever Assembly(Fig. B-28)

1) Remove the Function Plate.
2) Remove the Tension Lever Assembly by pushing hook inward.

*** NOTE**

1) When reassembling

① Set the part(A) of Tension Lever Assembly in the groove of Lower part of Function Plate.

② After reinstalling the Tension Lever Assembly, adjust the Tension Post and the Tension with a Tension Cassette.

29. Clutch Gear Assembly(Fig. B-29)

1) Remove the Pulley Gear.
2) Remove the Plate Function.
3) Remove the washer(A), and then remove the Clutch Gear Assembly.

*** NOTE**

1) When reassembling

① Do not disassemble the Clutch Gear Assembly any further, because Torque adjustment can't be adjustible.

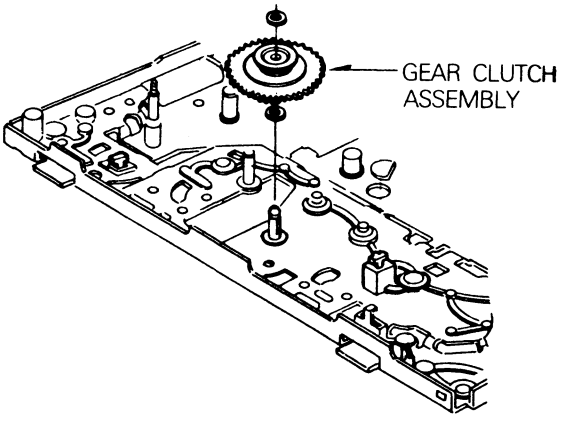


Fig. B-29 Gear Clutch Assembly

30. Take Up Reel Assembly(Fig. B-16)

1) Remove the TMB(Fig. B-14)
2) Lift up the Take-up Reel Assembly from the Deck Mechanism Assembly.
3) Separate the Reel Cap and Spring from the Take-Up Reel by releasing Hooks(S).

VCR

1. Mechanism State Switch(Mode Switch) Check

Purpose: To detect accurately the mechanism state and prevent the mechanism from malfunction.

Test Equipment/Fixture	VCR State	Check Point
● Blank tape	● Eject Mode (with cassette ejected)	● Mechanism state switch (Mode Switch and Cam)

Check Procedure

1) Turn the VCR on and eject the tape by pressing eject button.
2) Remove the Cabinet Top and Main P.C.Board,and then turn the Cam so as to align the hole of chassis with the hole of Cam and Pinch Gear, and Holes of Pinch Gear and P.C Gear with each other.
3) Remove the Bottom Cover and then check that the grooves(V) and (O) of Mode S/W are at their original place.
4) If the above alignment are not obtained, adjust as follows.
   (1) Remove the Bracket Assembly Bottom and the Capstan Belt in the state of power off.
   (2) Remove the P.C.B Assembly,make the grooves (V) and (O) of mode switch at their original place, and then reassemble the P.C.B Assembly.
   (3) Turn the power on and perform the various operations to check that the loading and the unloading are correct.

Check Diagram

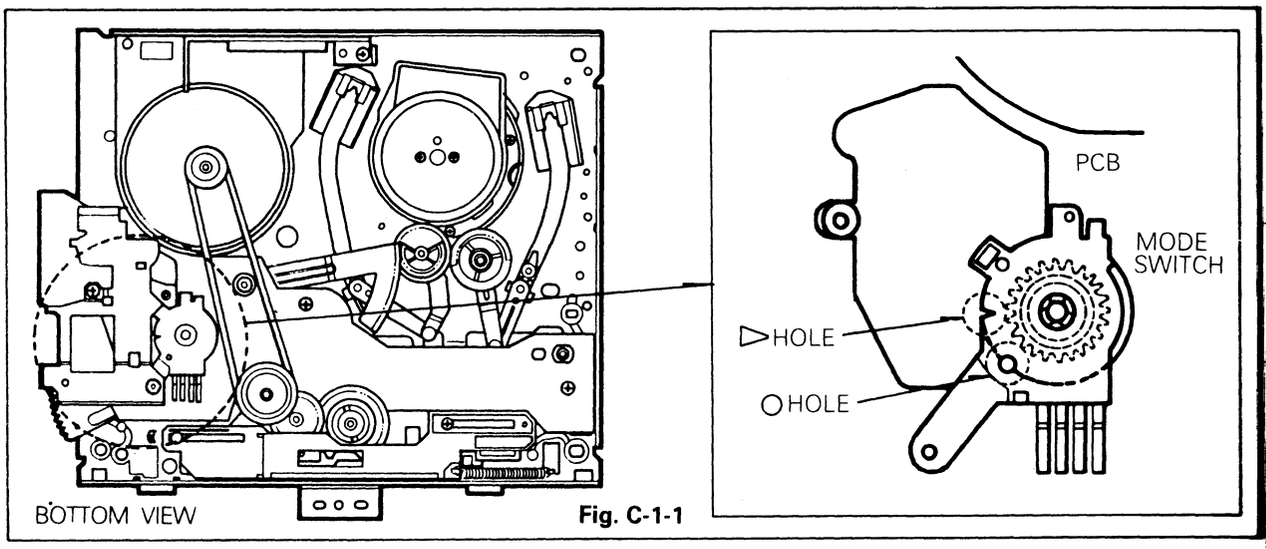


Fig. C-1-1

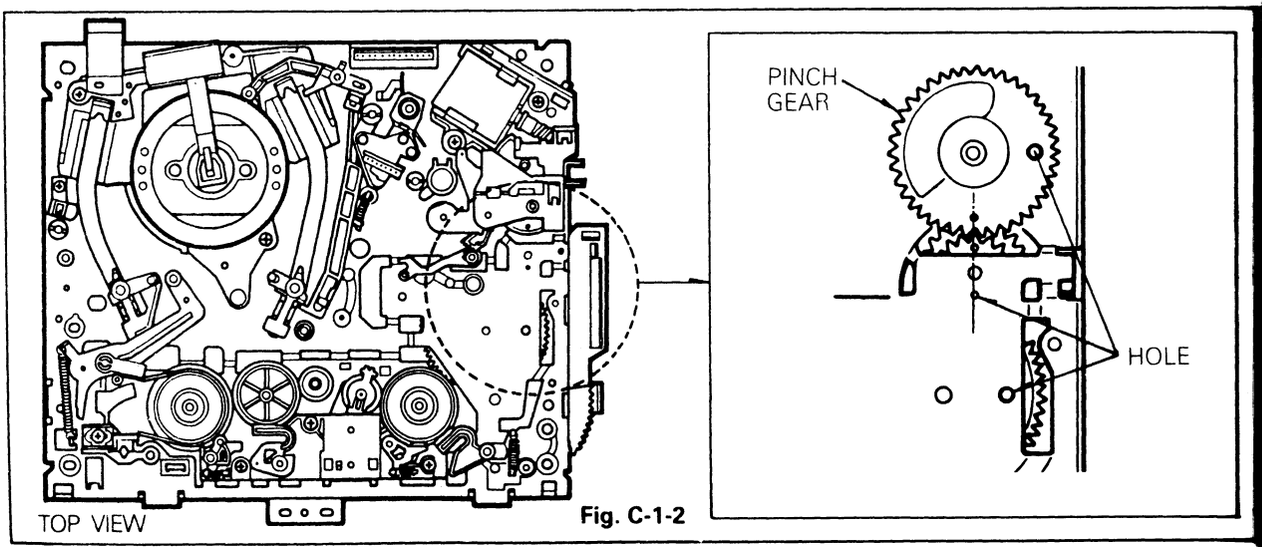
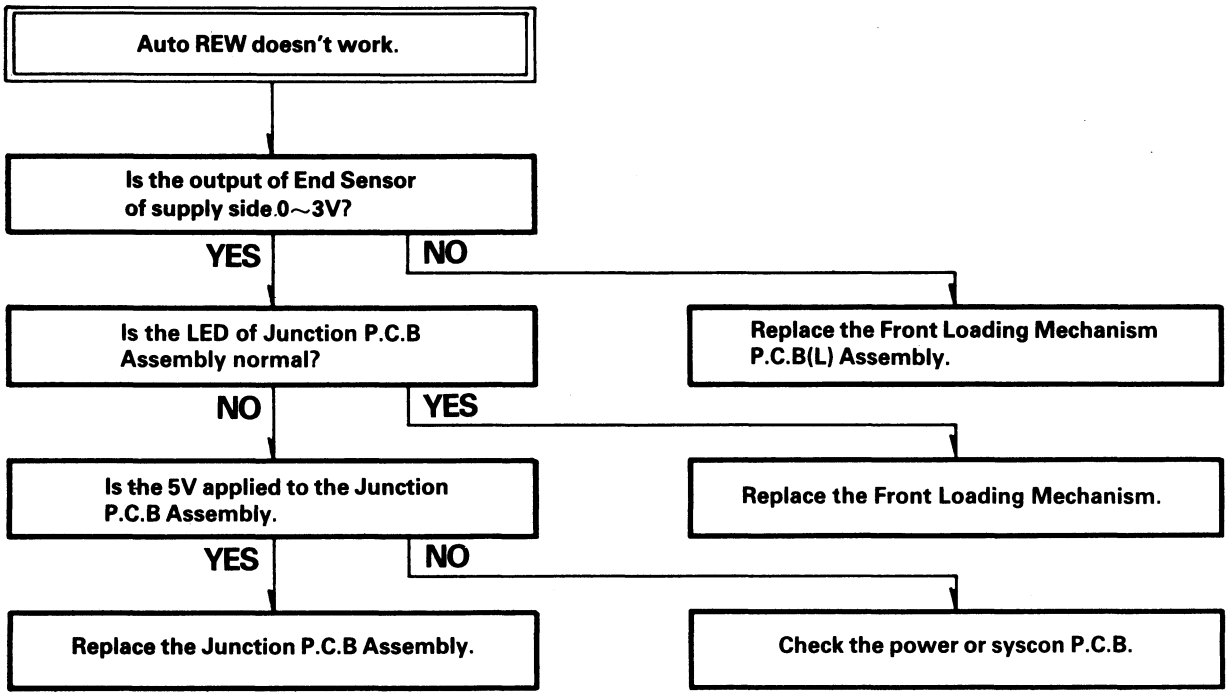


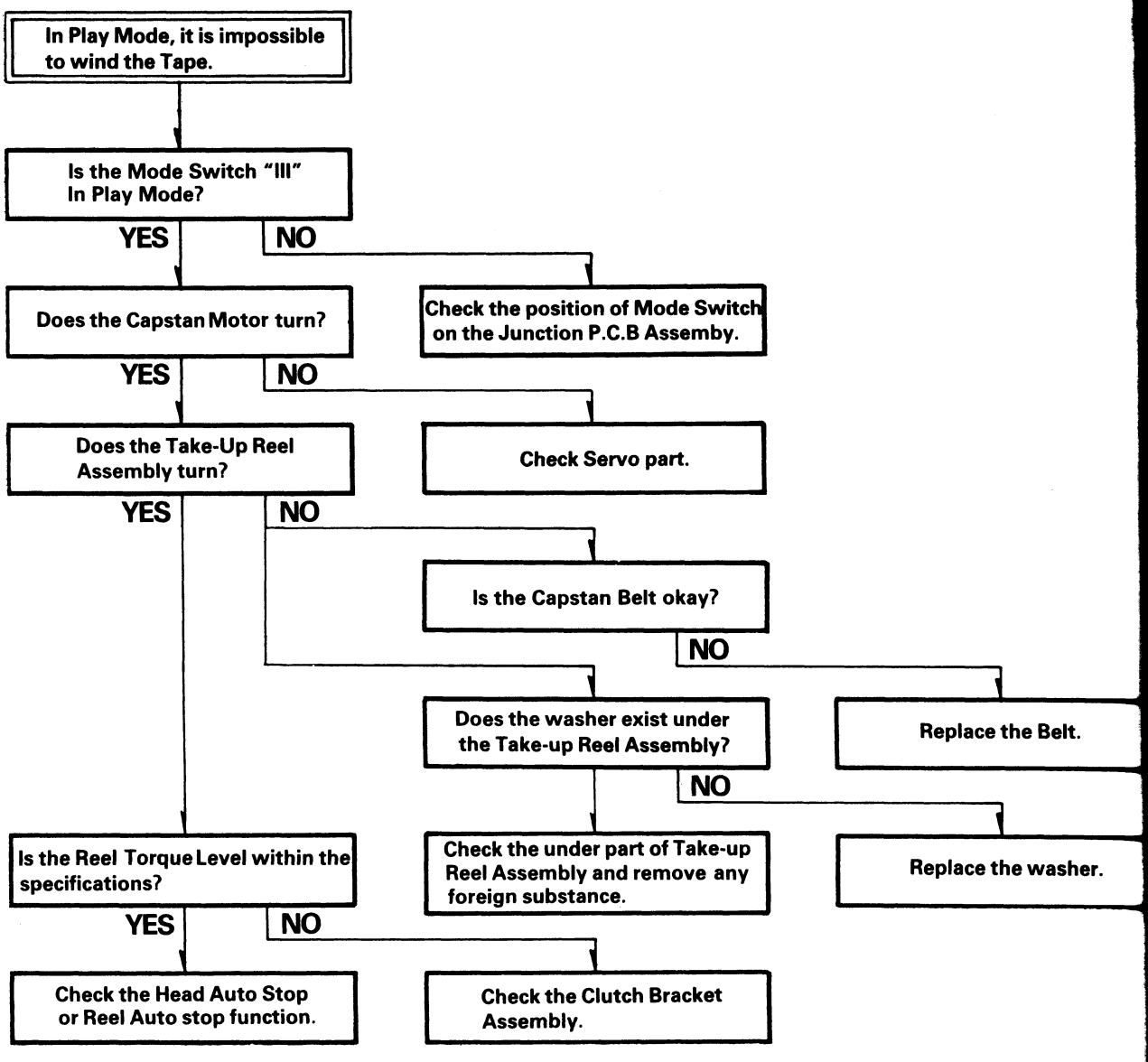
Fig. C-1-2

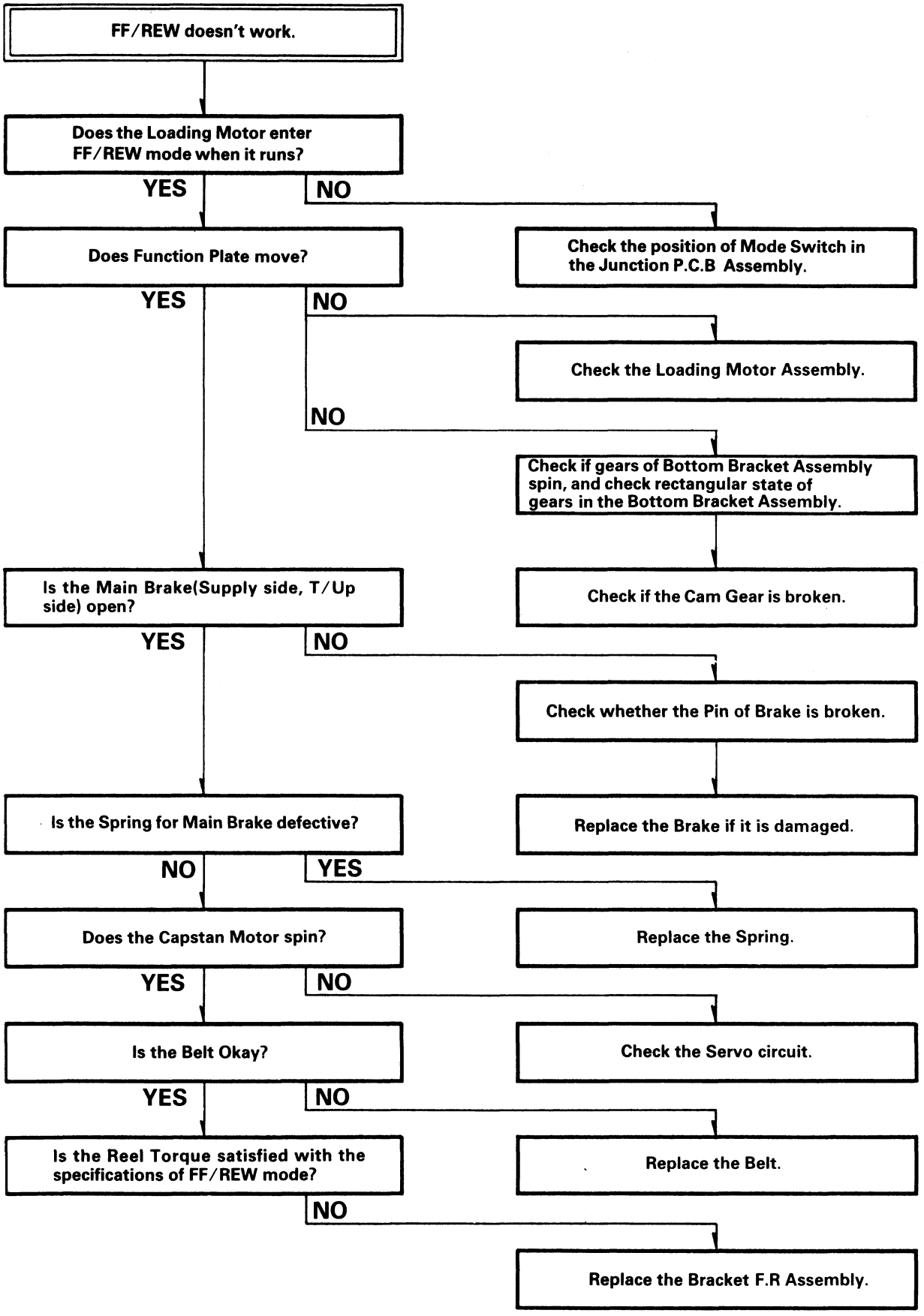
MECHANISM TROUBLESHOOTING GUIDE

1. Deck Mechanism

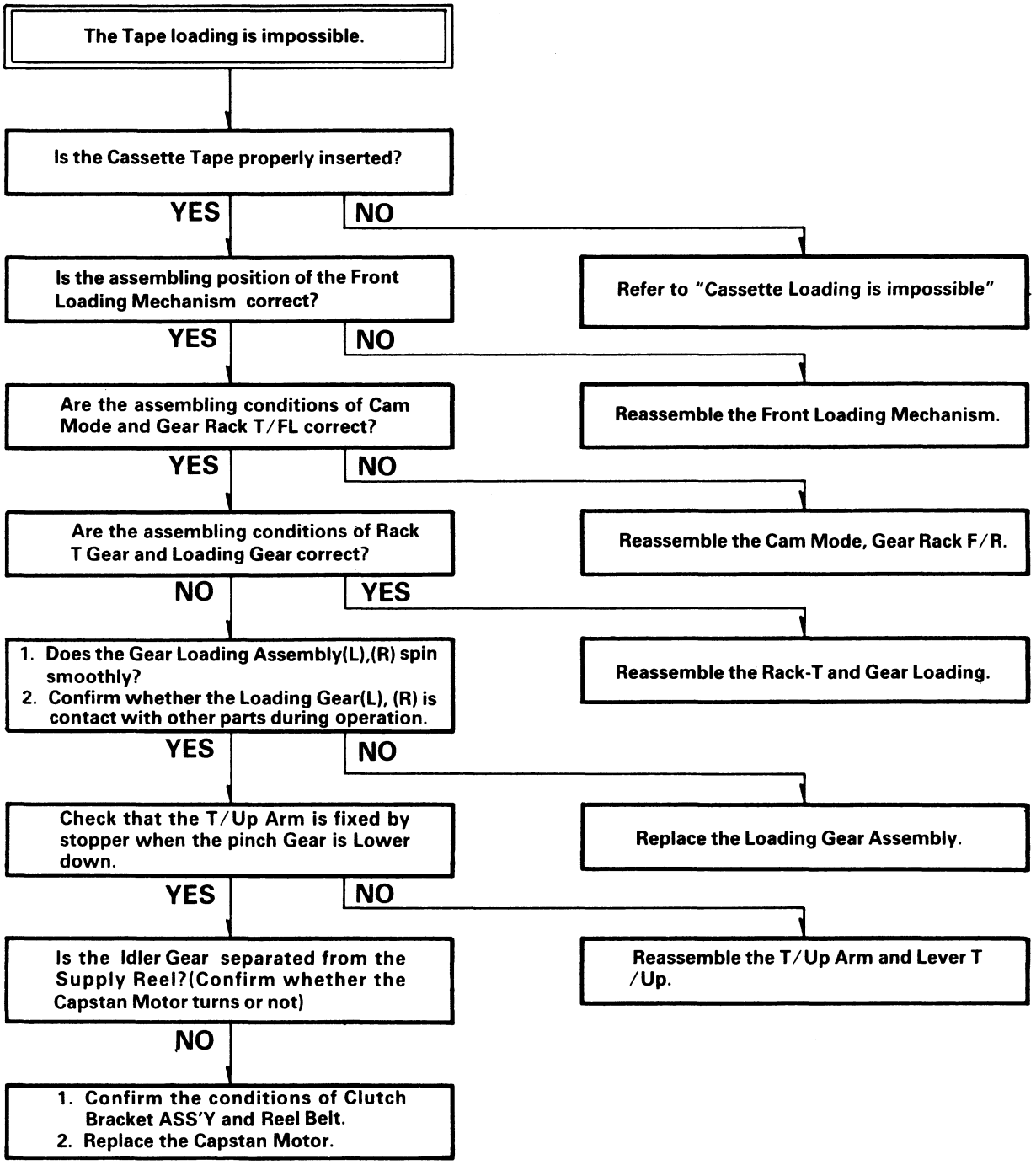


B.


In Play Mode, it is impossible to wind the Tape.
Is the Mode Switch "III" In Play Mode?
YES
NO
Check the position of Mode Switch on the Junction P.C.B Assemby.
Does the Capstan Motor turn?
YES
NO
Check Servo part.
Does the Take-Up Reel Assembly turn?
YES
NO
Is the Capstan Belt okay?
NO
Replace the Belt.
Does the washer exist under the Take-up Reel Assembly?
NO
Replace the washer.
Check the under part of Take-up Reel Assembly and remove any foreign substance.
Is the Reel Torque Level within the specifications?
YES
NO
Check the Head Auto Stop or Reel Auto stop function.
Check the Clutch Bracket Assembly.

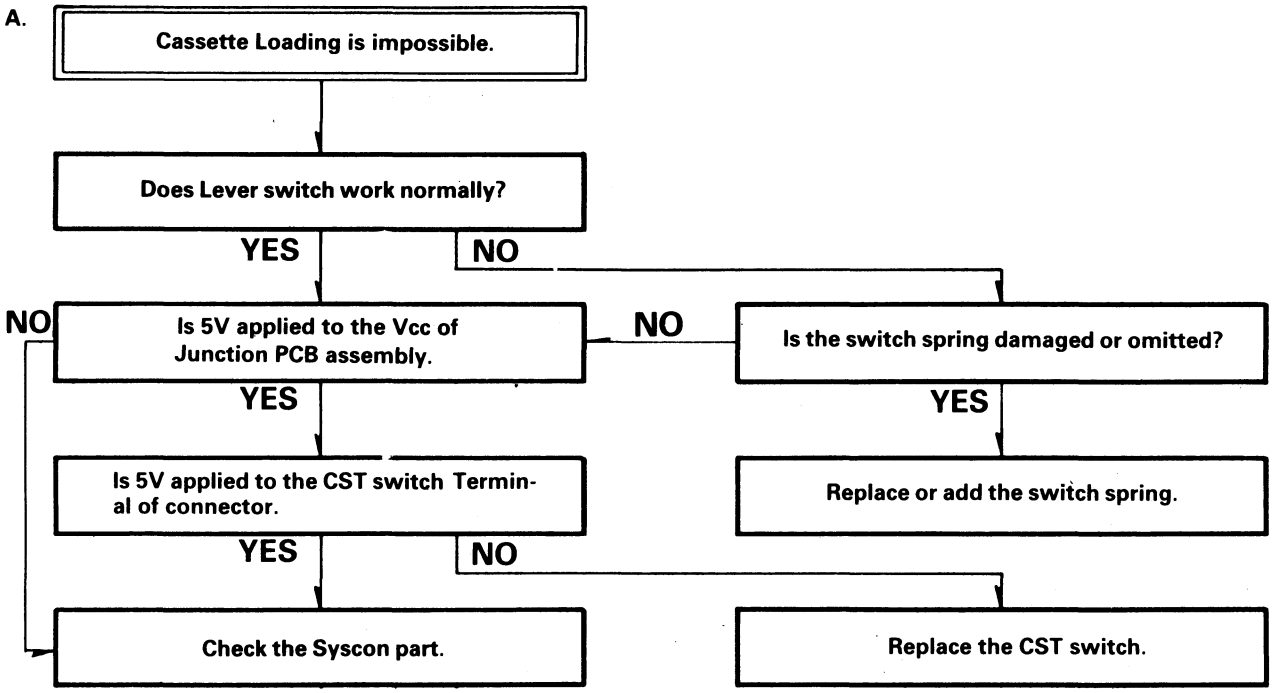

FF/REW doesn't work.
Does the Loading Motor enter FF/REW mode when it runs?
YES
NO
Check the position of Mode Switch in the Junction P.C.B Assembly.
Does Function Plate move?
YES
NO
Check the Loading Motor Assembly.
NO
Check if gears of Bottom Bracket Assembly spin, and check rectangular state of gears in the Bottom Bracket Assembly.
Is the Main Brake(Supply side, T/Up side) open?
YES
NO
Check if the Cam Gear is broken.
Check whether the Pin of Brake is broken.
Is the Spring for Main Brake defective?
NO
YES
Replace the Brake if it is damaged.
Does the Capstan Motor spin?
YES
NO
Replace the Spring.
Is the Belt Okay?
YES
NO
Check the Servo circuit.
Is the Reel Torque satisfied with the specifications of FF/REW mode?
NO
Replace the Belt.
Replace the Bracket F.R Assembly.

D.

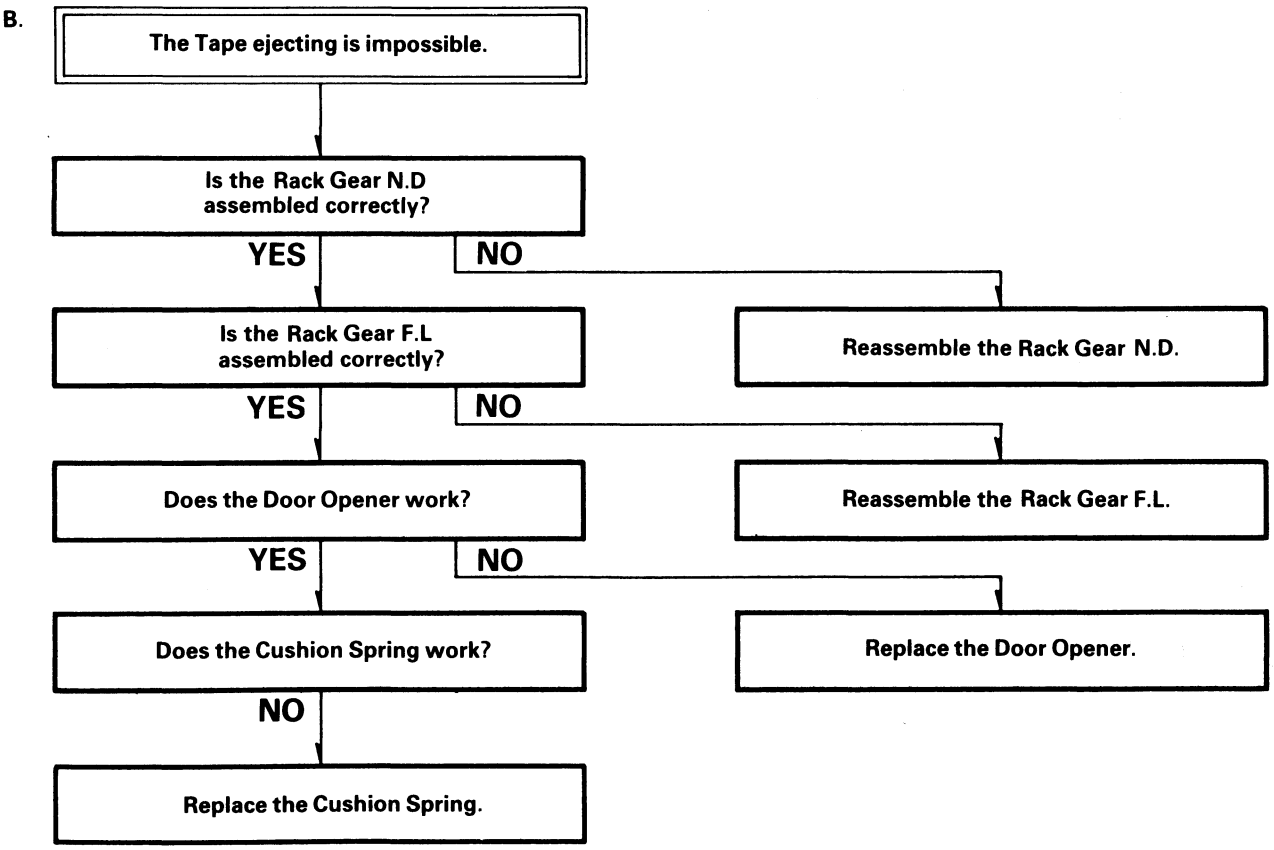

The Tape loading is impossible.
Is the Cassette Tape properly inserted?
YES
NO
Refer to "Cassette Loading is impossible"
Is the assembling position of the Front Loading Mechanism correct?
YES
NO
Reassemble the Front Loading Mechanism.
Are the assembling conditions of Cam Mode and Gear Rack T/FL correct?
YES
NO
Reassemble the Cam Mode, Gear Rack F/R.
Are the assembling conditions of Rack T Gear and Loading Gear correct?
NO
YES
Reassemble the Rack-T and Gear Loading.
1. Does the Gear Loading Assembly(L),(R) spin smoothly?
2. Confirm whether the Loading Gear(L), (R) is contact with other parts during operation.
YES
NO
Replace the Loading Gear Assembly.
Check that the T/Up Arm is fixed by stopper when the pinch Gear is Lower down.
YES
NO
Reassemble the T/Up Arm and Lever T /Up.
Is the Idler Gear separated from the Supply Reel?(Confirm whether the Capstan Motor turns or not)
NO
1. Confirm the conditions of Clutch Bracket ASS'Y and Reel Belt.
2. Replace the Capstan Motor.

2. Front Loading Mechanism

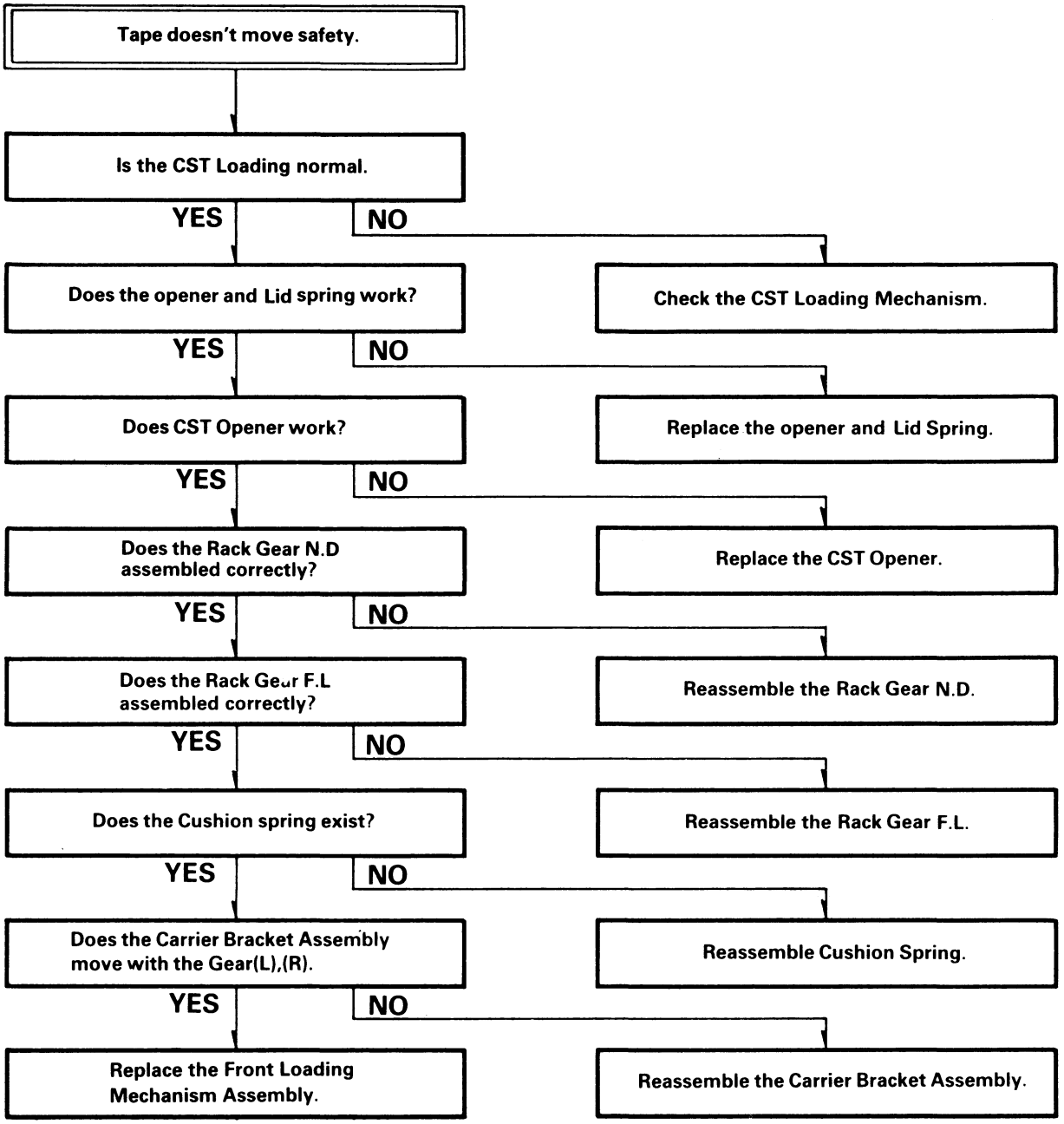
A.



B.



C.


Tape doesn't move safety.
Is the CST Loading normal.
YES
NO
Does the opener and Lid spring work?
Check the CST Loading Mechanism.
YES
NO
Does CST Opener work?
Replace the opener and Lid Spring.
YES
NO
Does the Rack Gear N.D assembled correctly?
Replace the CST Opener.
YES
NO
Does the Rack Gear F.L assembled correctly?
Reassemble the Rack Gear N.D.
YES
NO
Does the Cushion spring exist?
Reassemble the Rack Gear F.L.
YES
NO
Does the Carrier Bracket Assembly move with the Gear(L),(R).
Reassemble Cushion Spring.
YES
NO
Replace the Front Loading Mechanism Assembly.
Reassemble the Carrier Bracket Assembly.

ELECTRIAL ADJUSTMENT INSTRUCTIONS

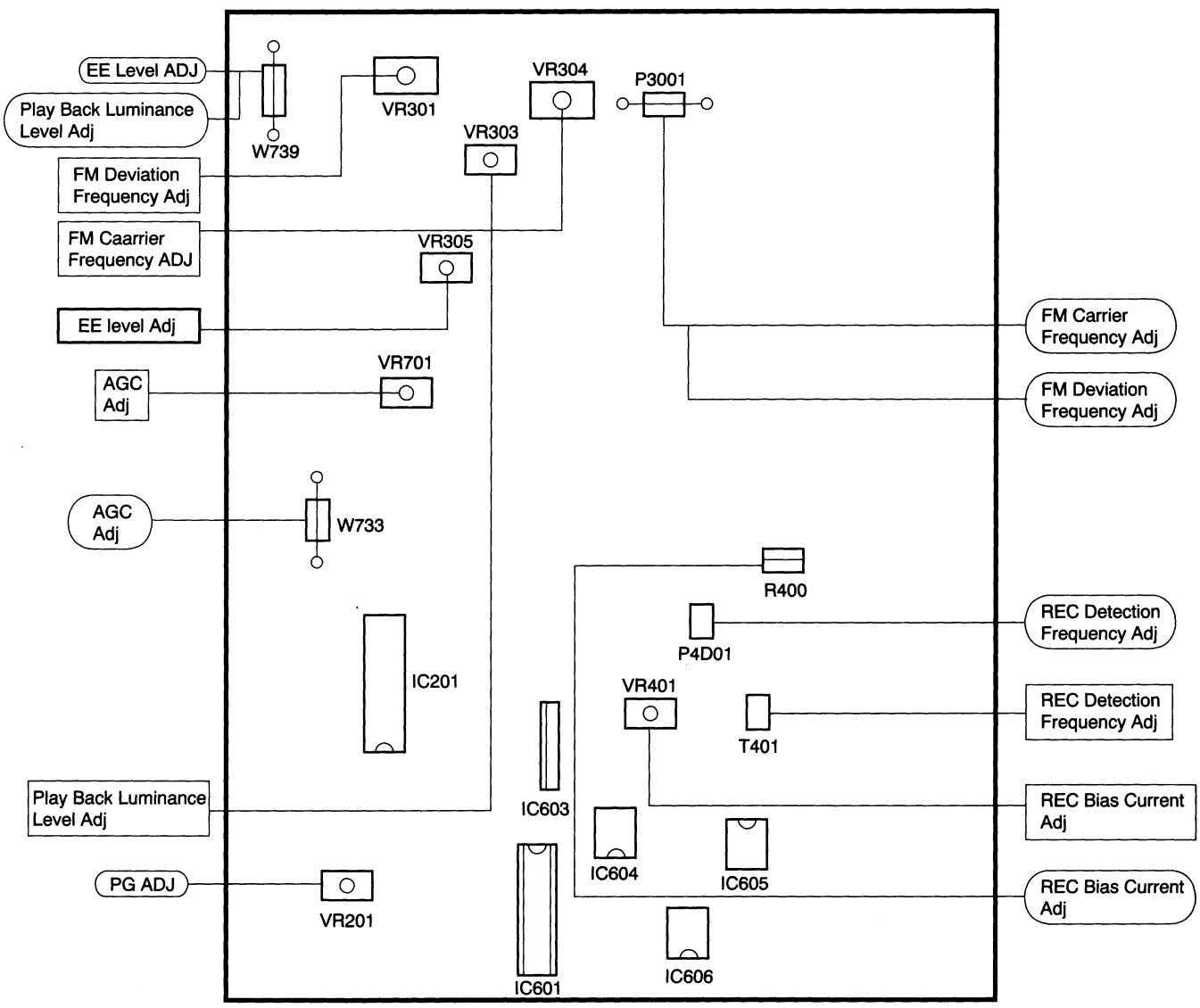
1. Adjustment Parts Location

1-1. Main Board

: Adjustment Point

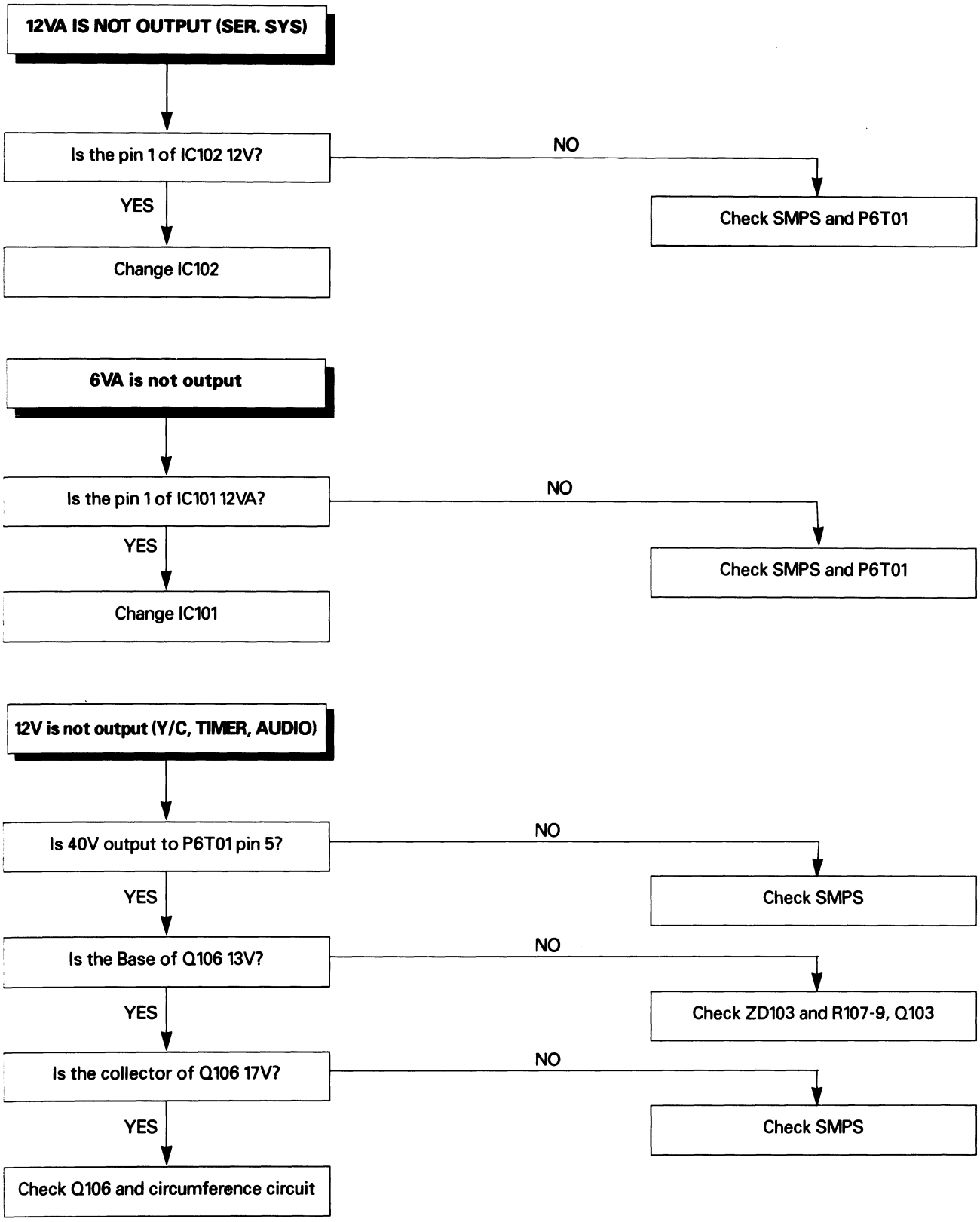
: Measurement Point

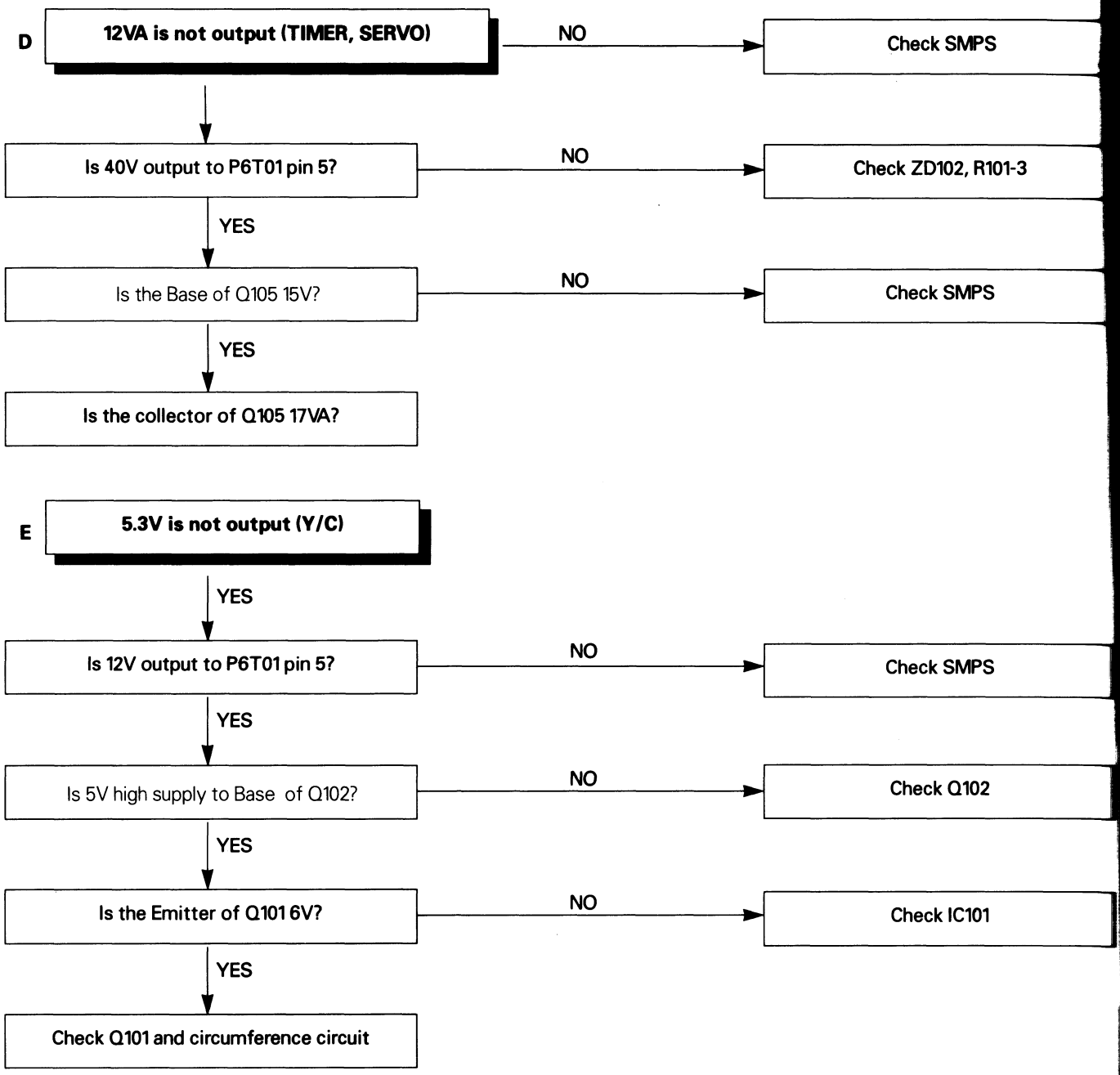
(COMPONENT SIDE)



TROUBLESHOOTING CHARTS

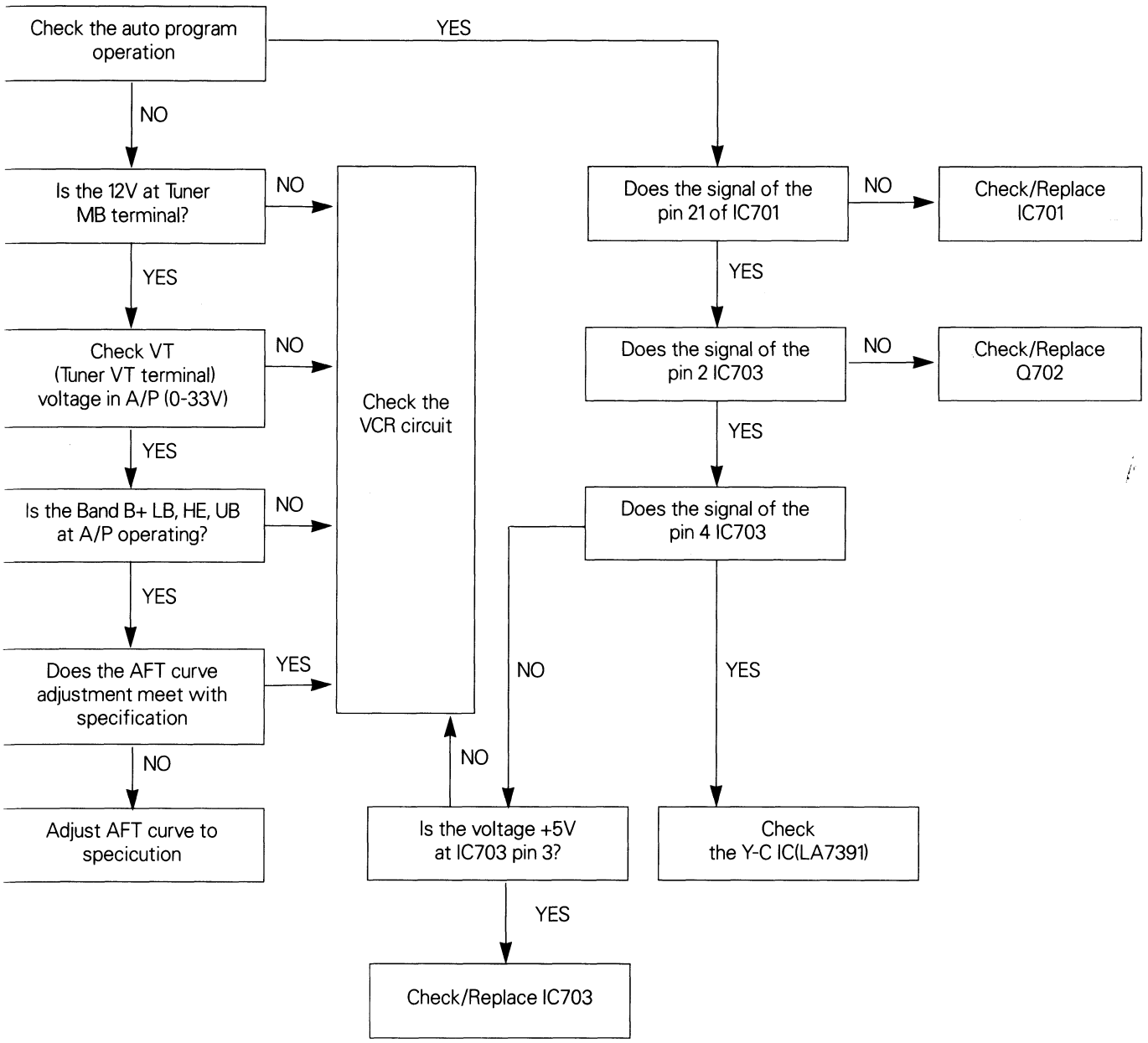
)WER CIRCUIT




D
12VA is not output (TIMER, SERVO)
NO
Check SMPS
Is 40V output to P6T01 pin 5?
NO
Check ZD102, R101-3
YES
Is the Base of Q105 15V?
NO
Check SMPS
YES
Is the collector of Q105 17VA?
E
5.3V is not output (Y/C)
YES
Is 12V output to P6T01 pin 5?
NO
Check SMPS
YES
Is 5V high supply to Base of Q102?
NO
Check Q102
YES
Is the Emitter of Q101 6V?
NO
Check IC101
YES
Check Q101 and circumference circuit

2. IF CIRCUIT

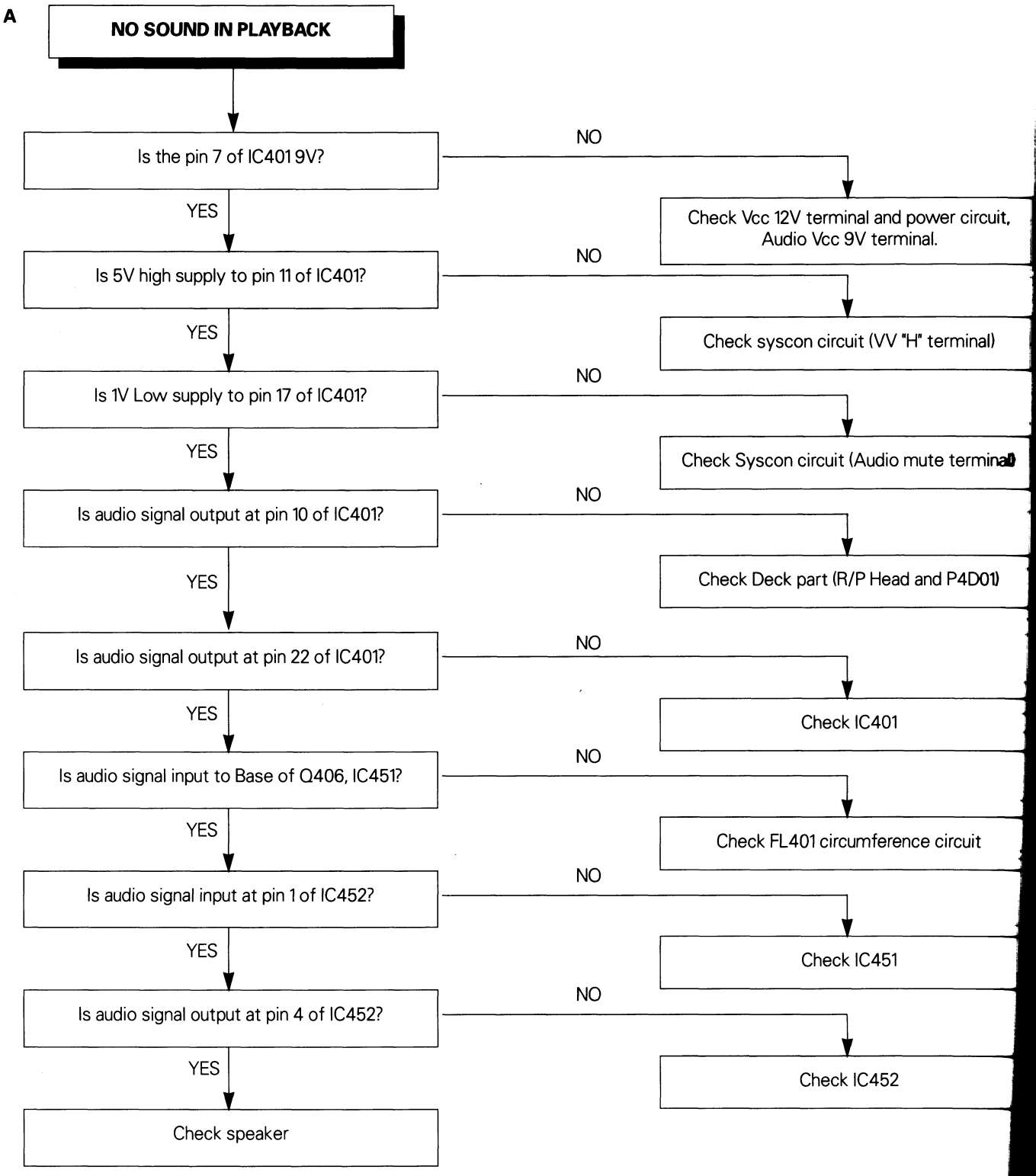
A. **NO SOUND, NO PICTURE (RASTER OK)**

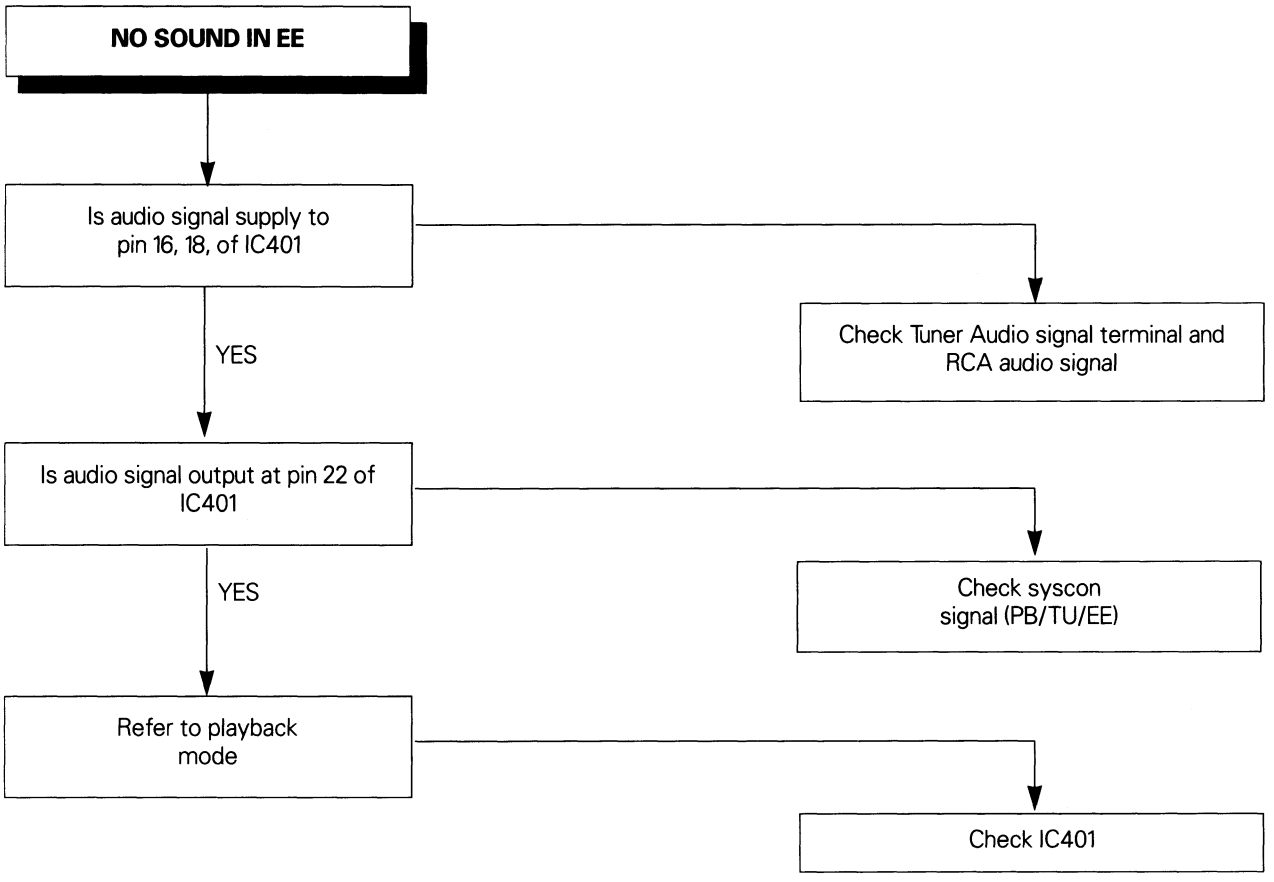


VCR

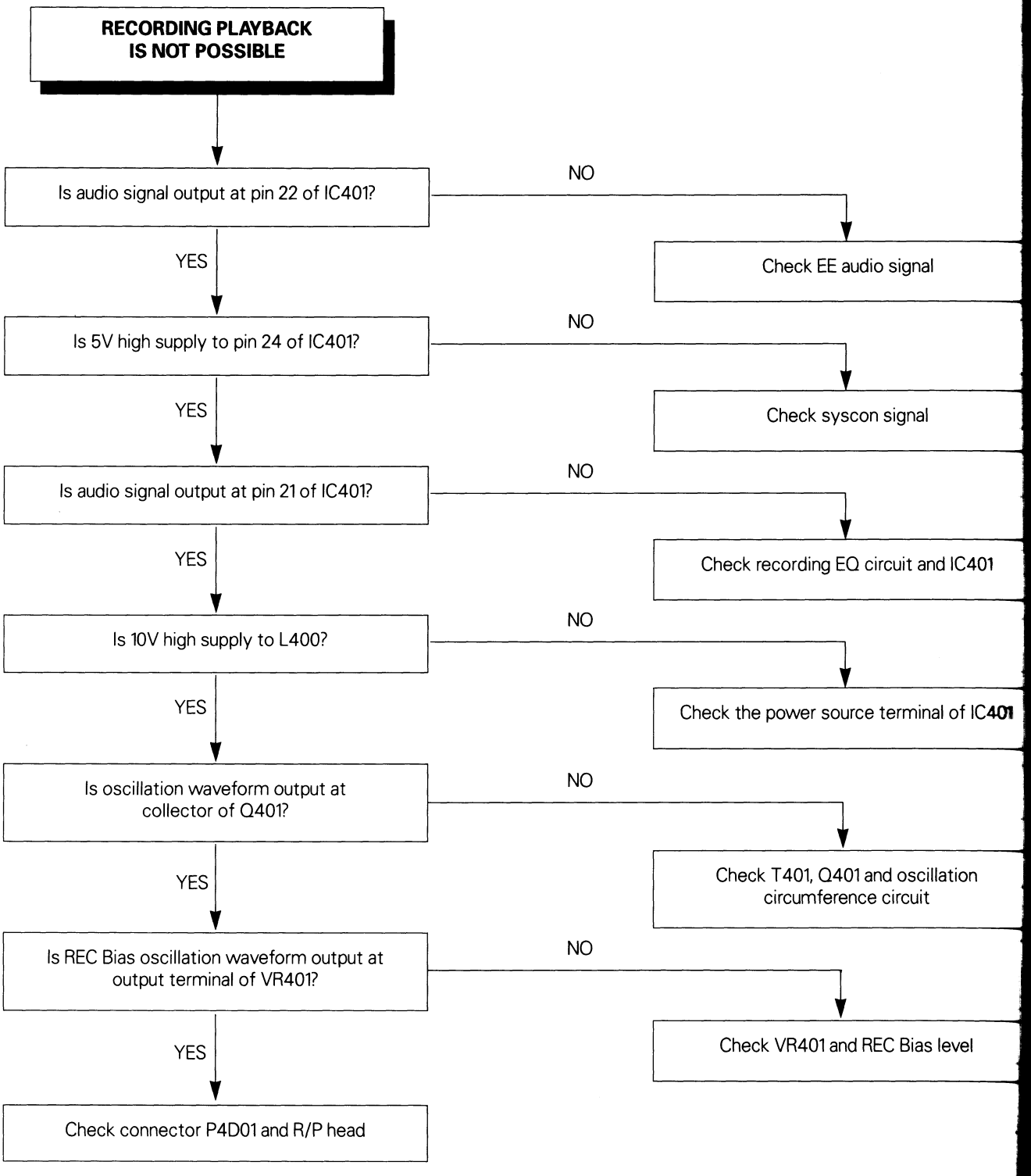
3. AUDIO CIRCUIT

A

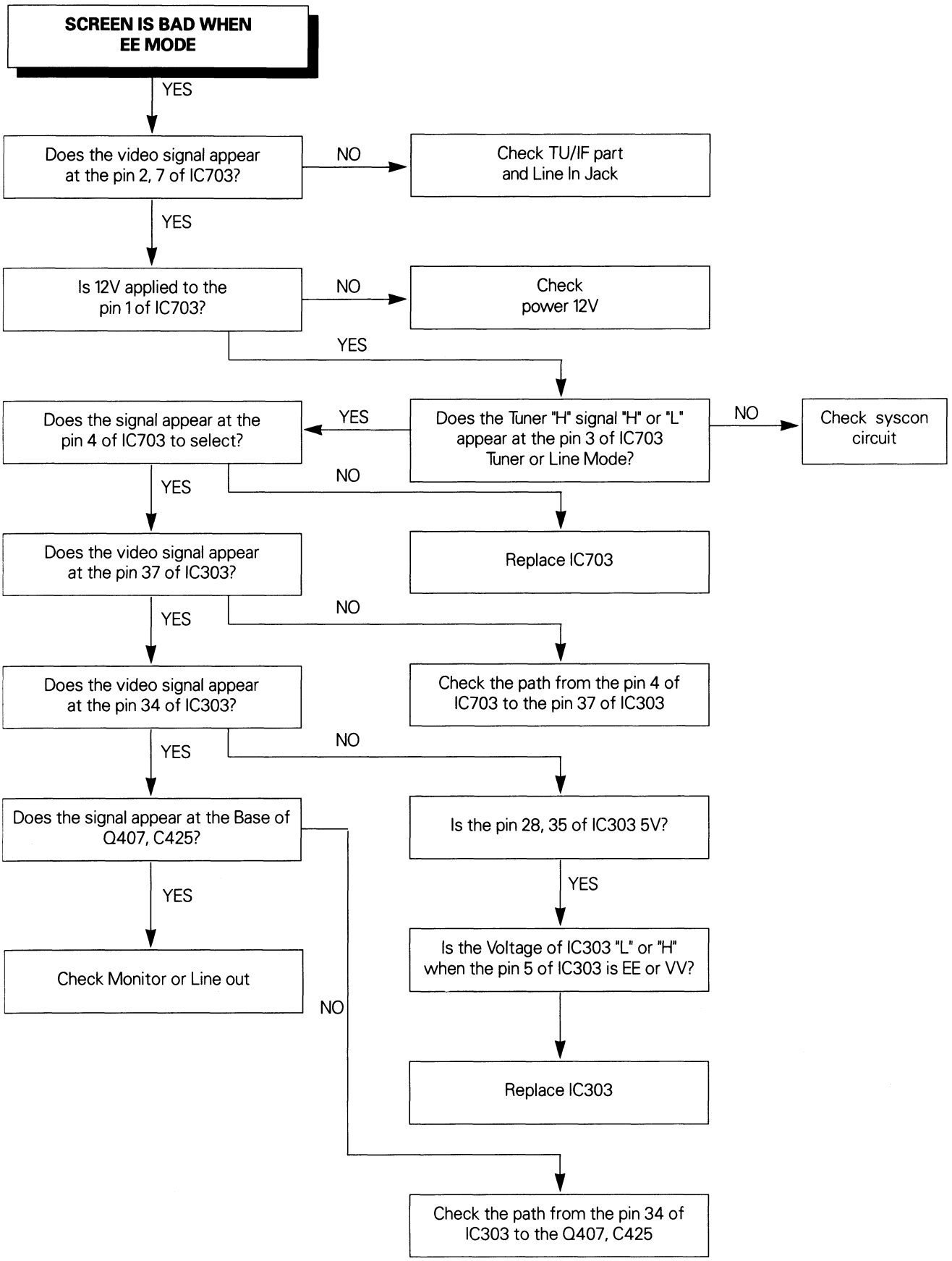



NO SOUND IN EE
Is audio signal supply to pin 16, 18, of IC401
YES
Check Tuner Audio signal terminal and RCA audio signal
Is audio signal output at pin 22 of IC401
YES
Check syscon signal (PB/TU/EE)
Refer to playback mode
Check IC401

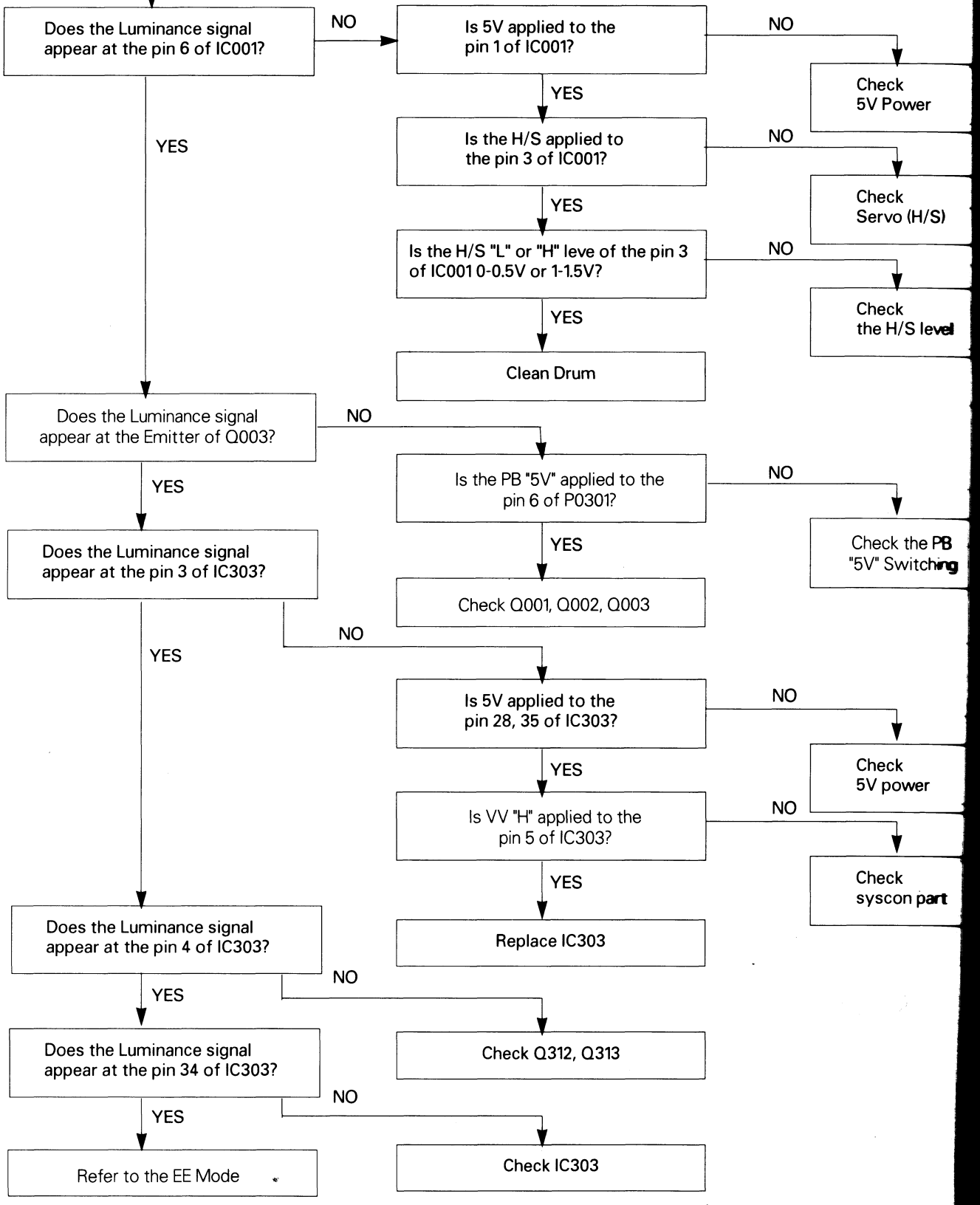
C


RECORDING PLAYBACK IS NOT POSSIBLE
Is audio signal output at pin 22 of IC401?
NO
Check EE audio signal
YES
Is 5V high supply to pin 24 of IC401?
NO
Check syscon signal
YES
Is audio signal output at pin 21 of IC401?
NO
Check recording EQ circuit and IC401
YES
Is 10V high supply to L400?
NO
Check the power source terminal of IC401
YES
Is oscillation waveform output at collector of Q401?
NO
Check T401, Q401 and oscillation circumference circuit
YES
Is REC Bias oscillation waveform output at output terminal of VR401?
NO
Check VR401 and REC Bias level
YES
Check connector P4D01 and R/P head

Y/C CIRCUIT

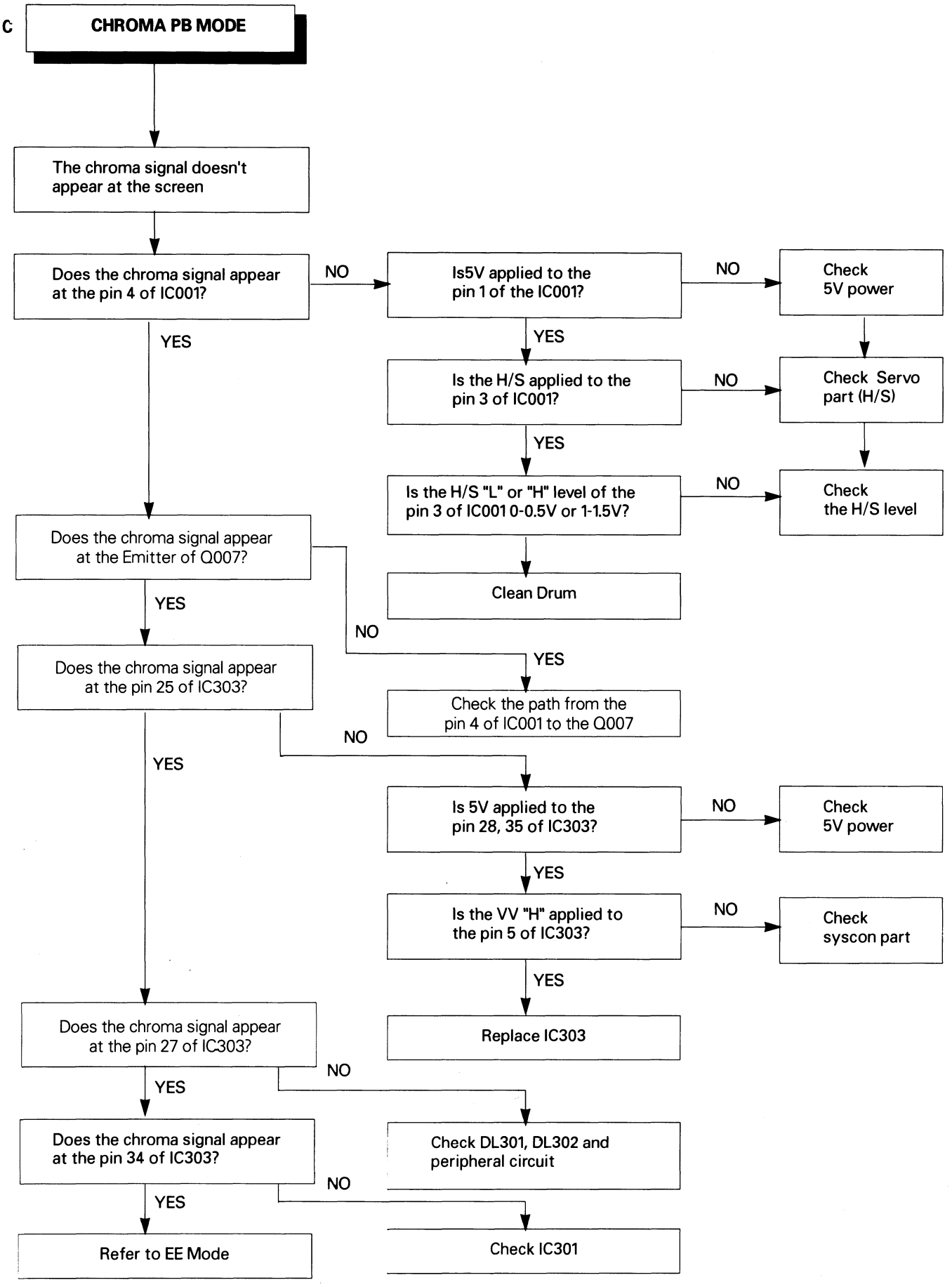

SCREEN IS BAD WHEN EE MODE
YES
Does the video signal appear at the pin 2, 7 of IC703?
NO
Check TU/IF part and Line In Jack
YES
Is 12V applied to the pin 1 of IC703?
NO
Check power 12V
YES
Does the Tuner "H" signal "H" or "L" appear at the pin 3 of IC703 Tuner or Line Mode?
NO
Check syscon circuit
YES
Does the signal appear at the pin 4 of IC703 to select?
NO
YES
Does the video signal appear at the pin 37 of IC303?
Replace IC703
NO
YES
Does the video signal appear at the pin 34 of IC303?
Check the path from the pin 4 of IC703 to the pin 37 of IC303
NO
YES
Does the signal appear at the Base of Q407, C425?
Is the pin 28, 35 of IC303 5V?
YES
YES
Is the Voltage of IC303 "L" or "H" when the pin 5 of IC303 is EE or VV?
Check Monitor or Line out
NO
Replace IC303
Check the path from the pin 34 of IC303 to the Q407, C425

B **LUMINANCE SIGNAL DOESN'T APPEAR AT THE SCREEN WHEN PB MODE**



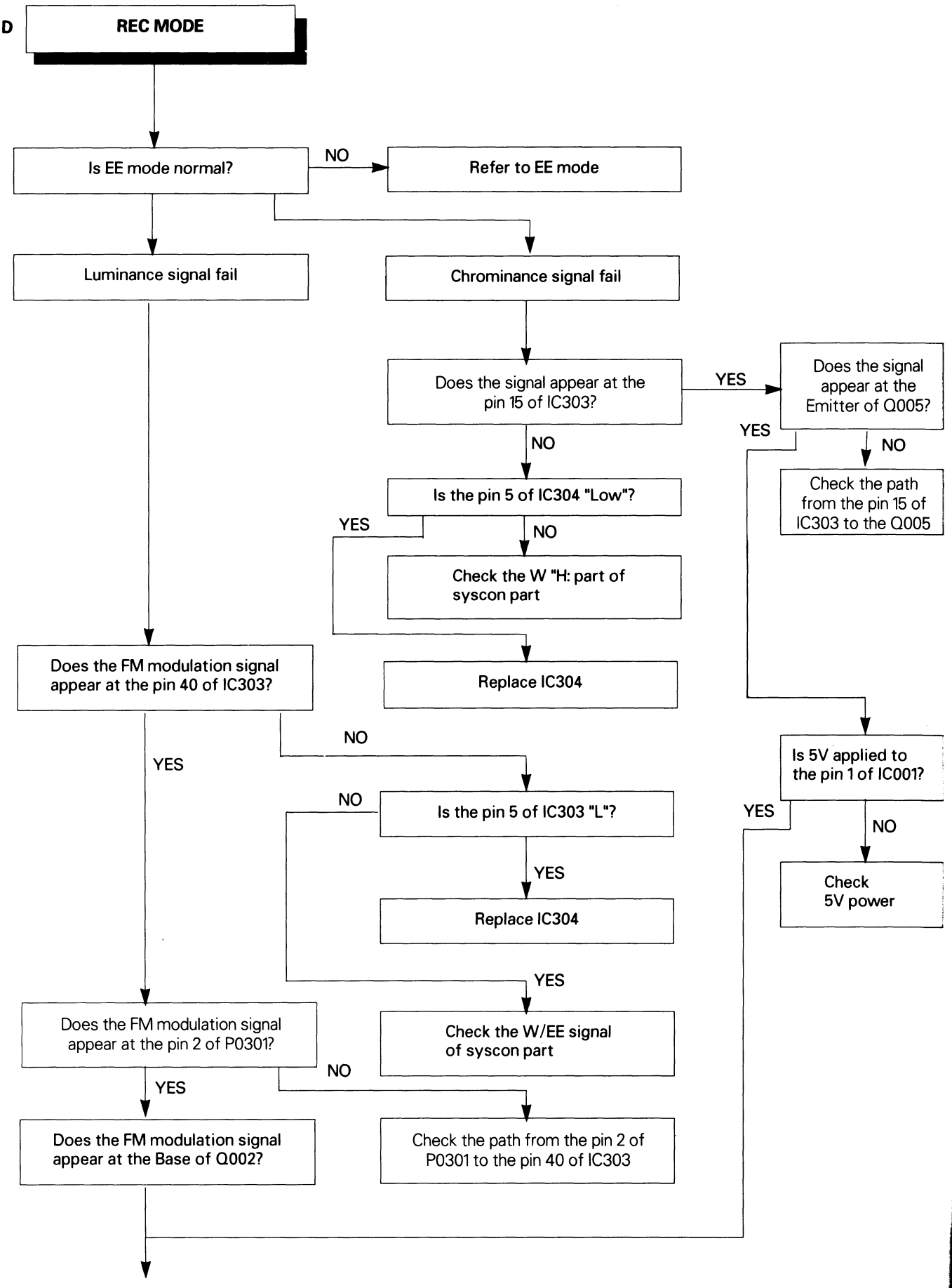
C

CHROMA PB MODE

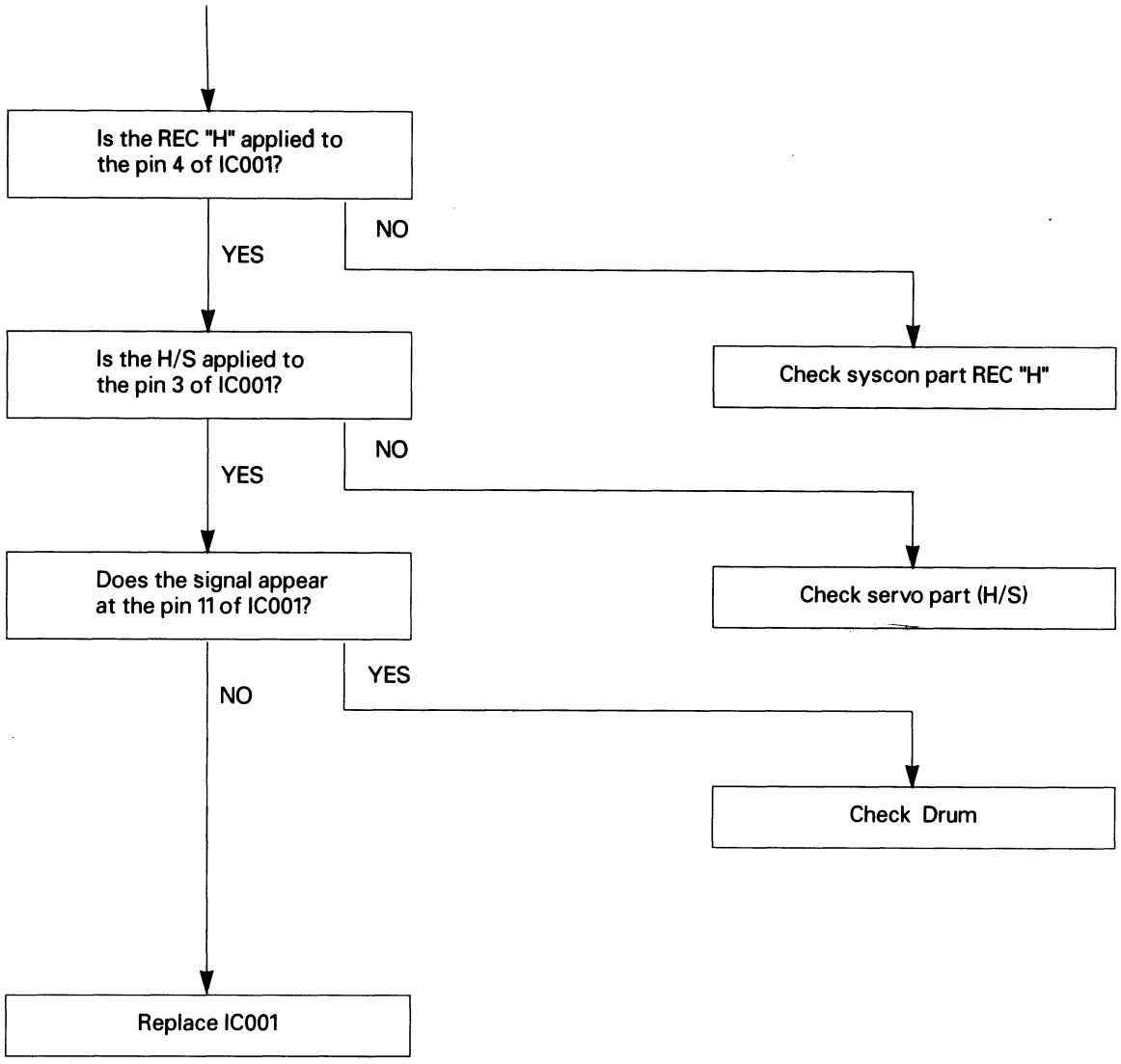


VCR

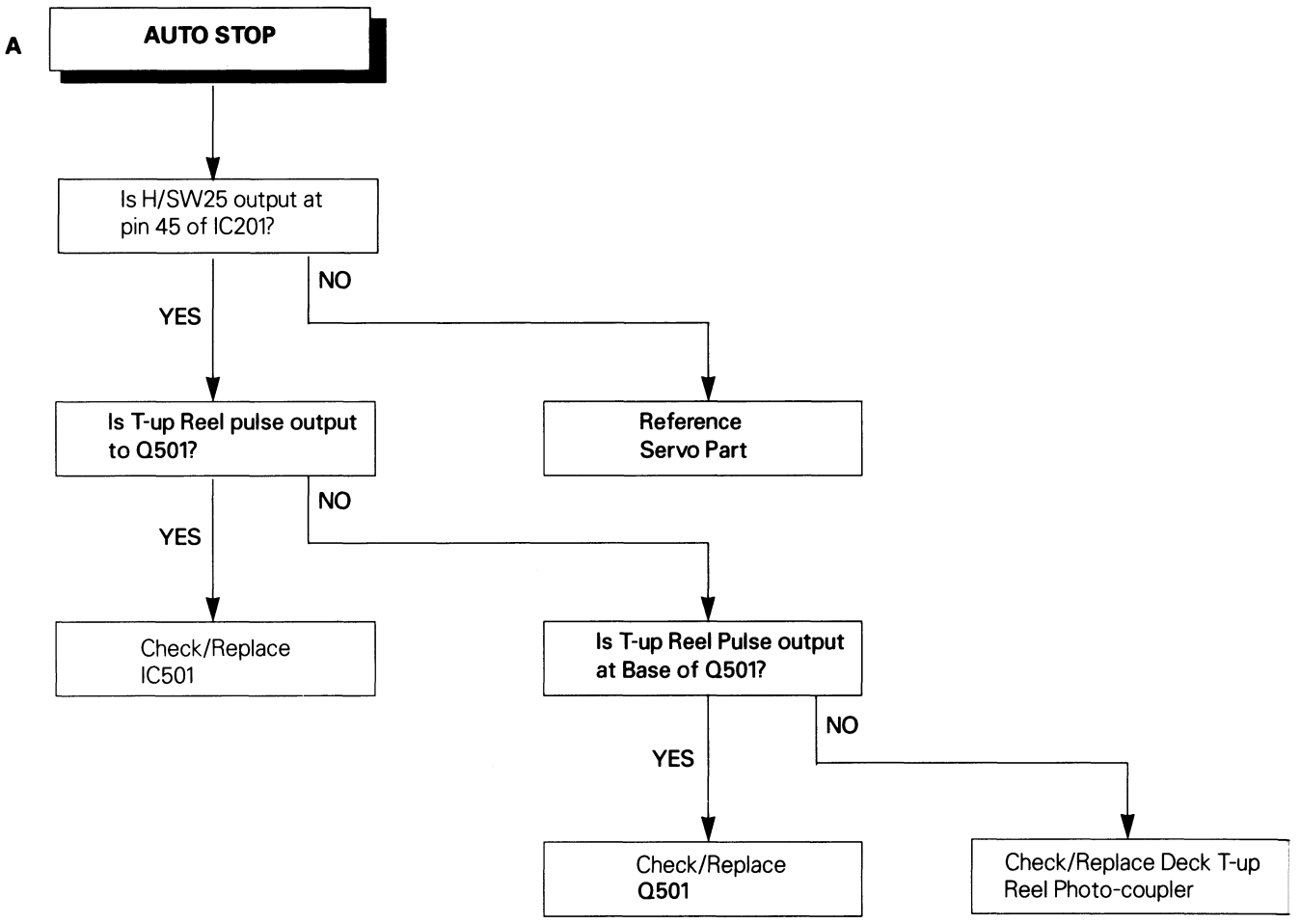
D

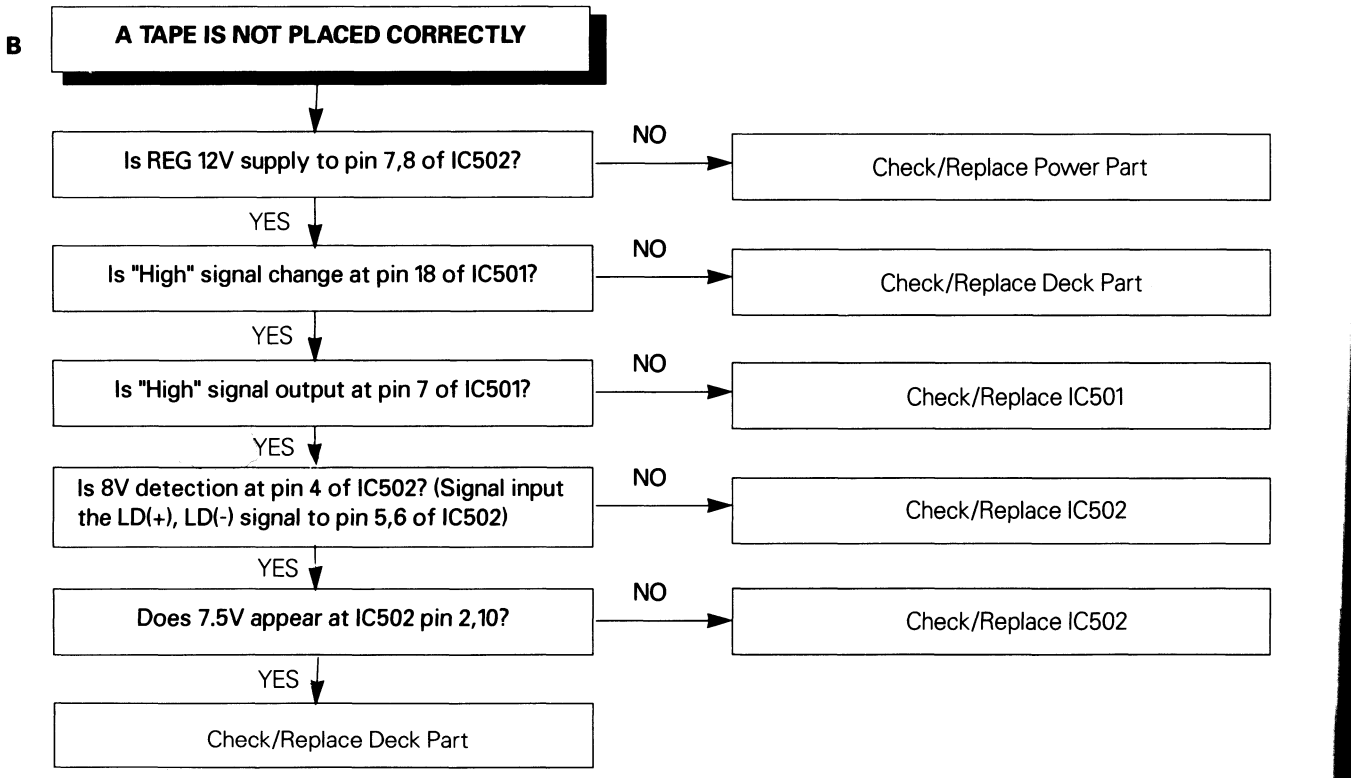

REC MODE
Is EE mode normal?
NO
Refer to EE mode
Luminance signal fail
Chrominance signal fail
Does the signal appear at the pin 15 of IC303?
YES
Does the signal appear at the Emitter of Q005?
YES
NO
Check the path from the pin 15 of IC303 to the Q005
NO
Is the pin 5 of IC304 "Low"?
YES
NO
Check the W "H: part of syscon part
Replace IC304
Does the FM modulation signal appear at the pin 40 of IC303?
NO
YES
Is 5V applied to the pin 1 of IC001?
YES
NO
Check 5V power
NO
Is the pin 5 of IC303 "L"?
YES
Replace IC304
YES
Does the FM modulation signal appear at the pin 2 of P0301?
Check the W/EE signal of syscon part
NO
YES
Does the FM modulation signal appear at the Base of Q002?
Check the path from the pin 2 of P0301 to the pin 40 of IC303

VCR

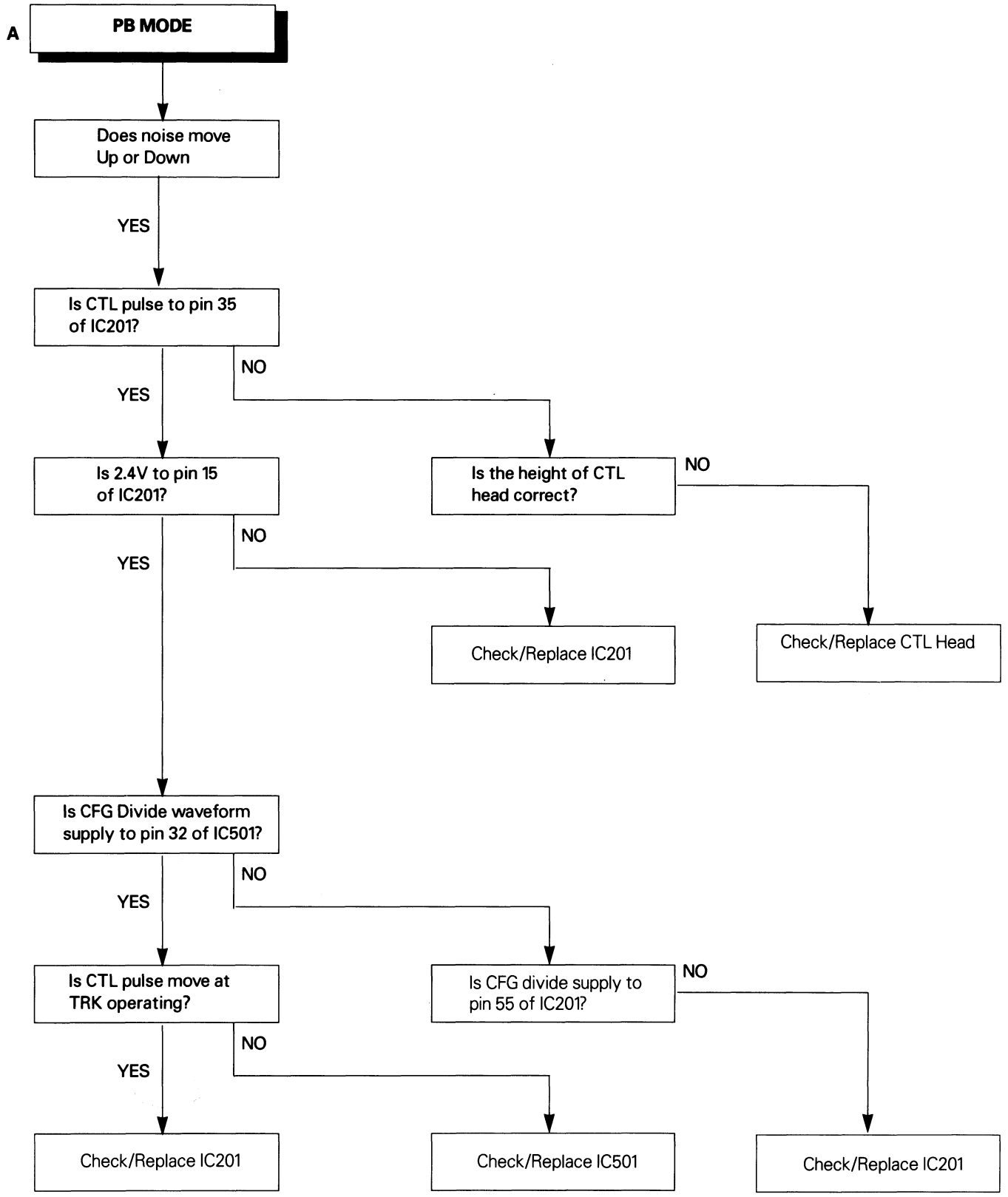

Is the REC "H" applied to the pin 4 of IC001?
NO
YES
Check syscon part REC "H"
Is the H/S applied to the pin 3 of IC001?
NO
YES
Check servo part (H/S)
Does the signal appear at the pin 11 of IC001?
YES
NO
Check Drum
Replace IC001

5. SYSCON CIRCUIT

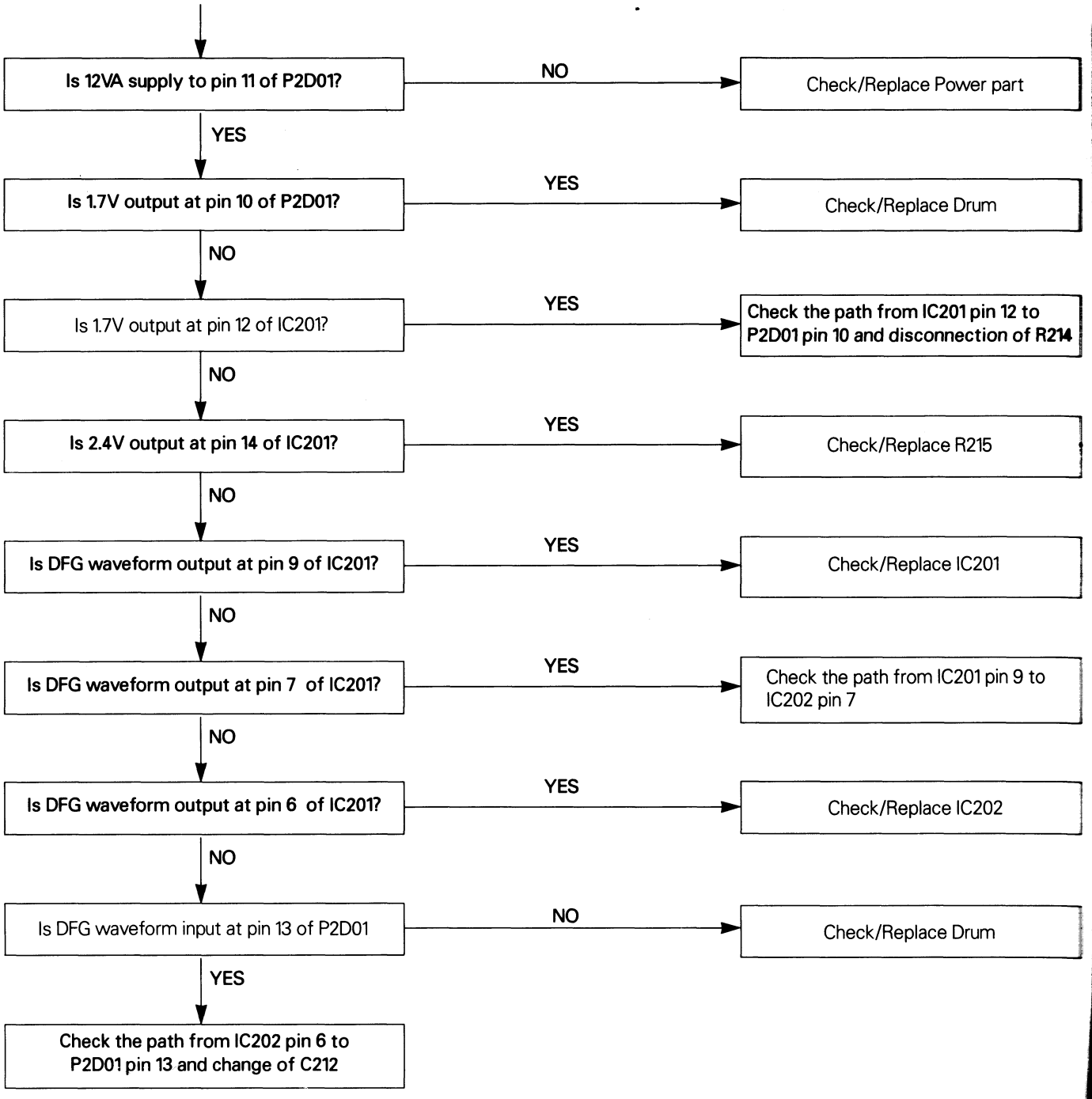




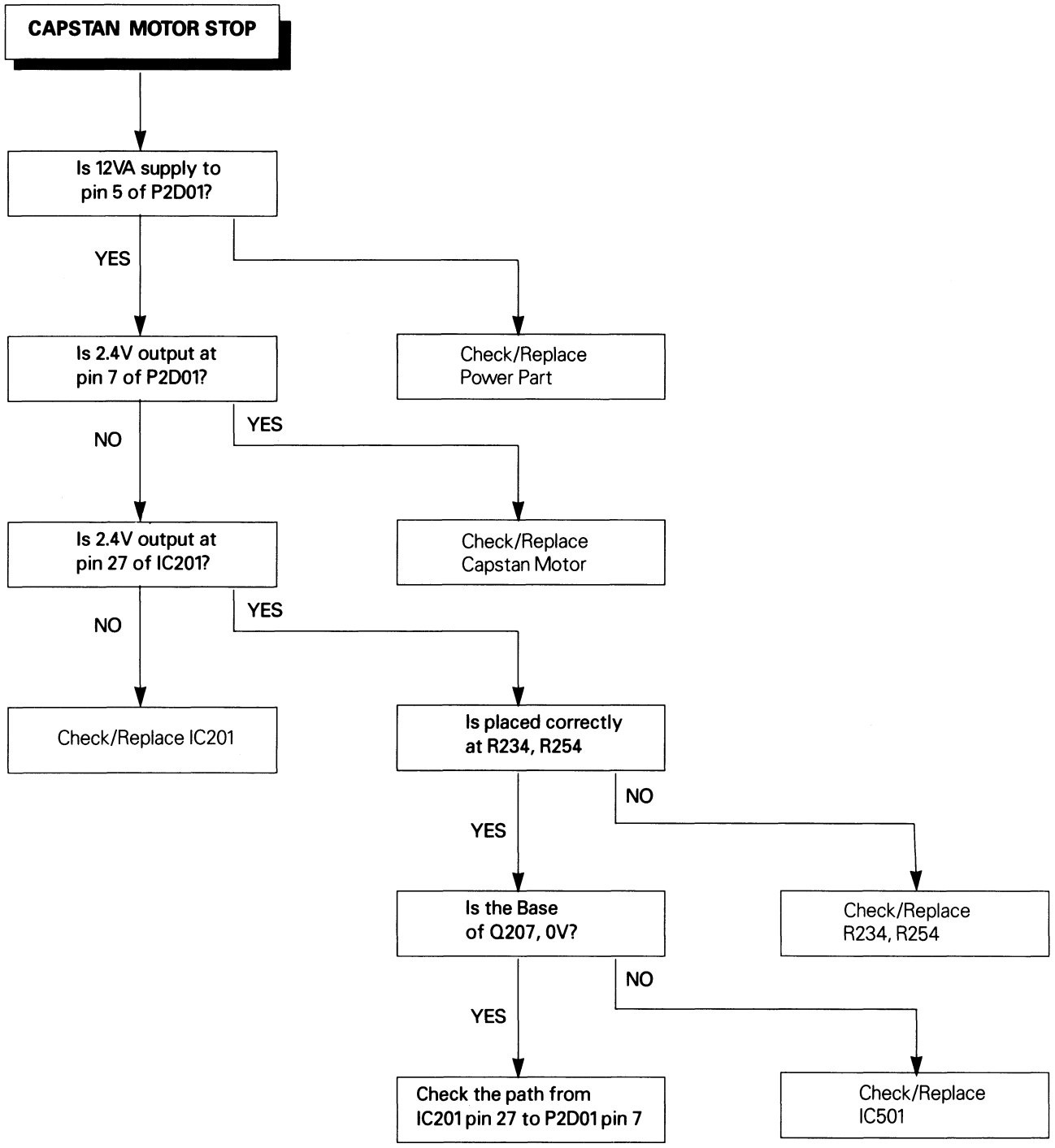
6. SERVO CIRCUIT



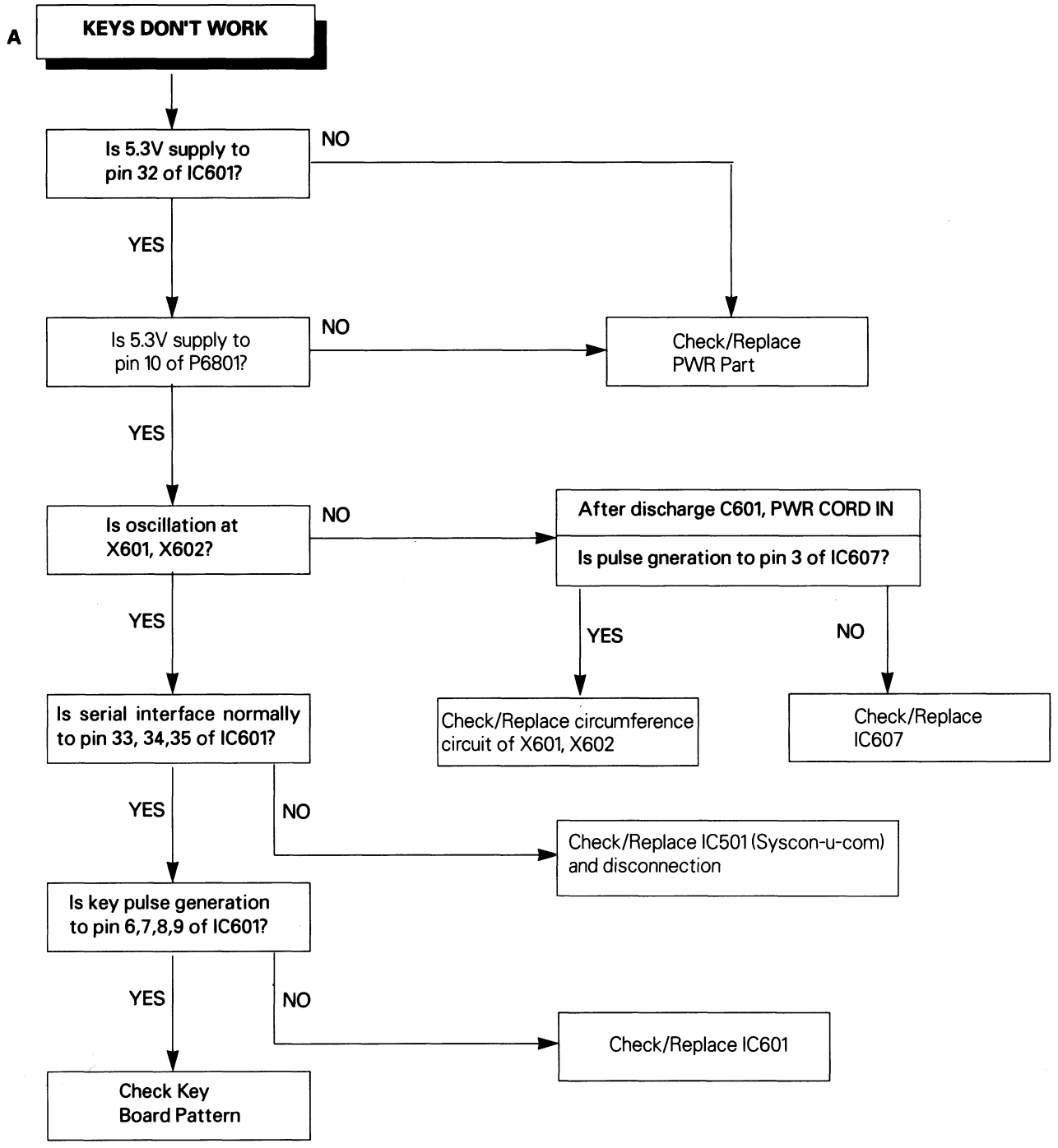
B **DRUM MOTOR STOP**



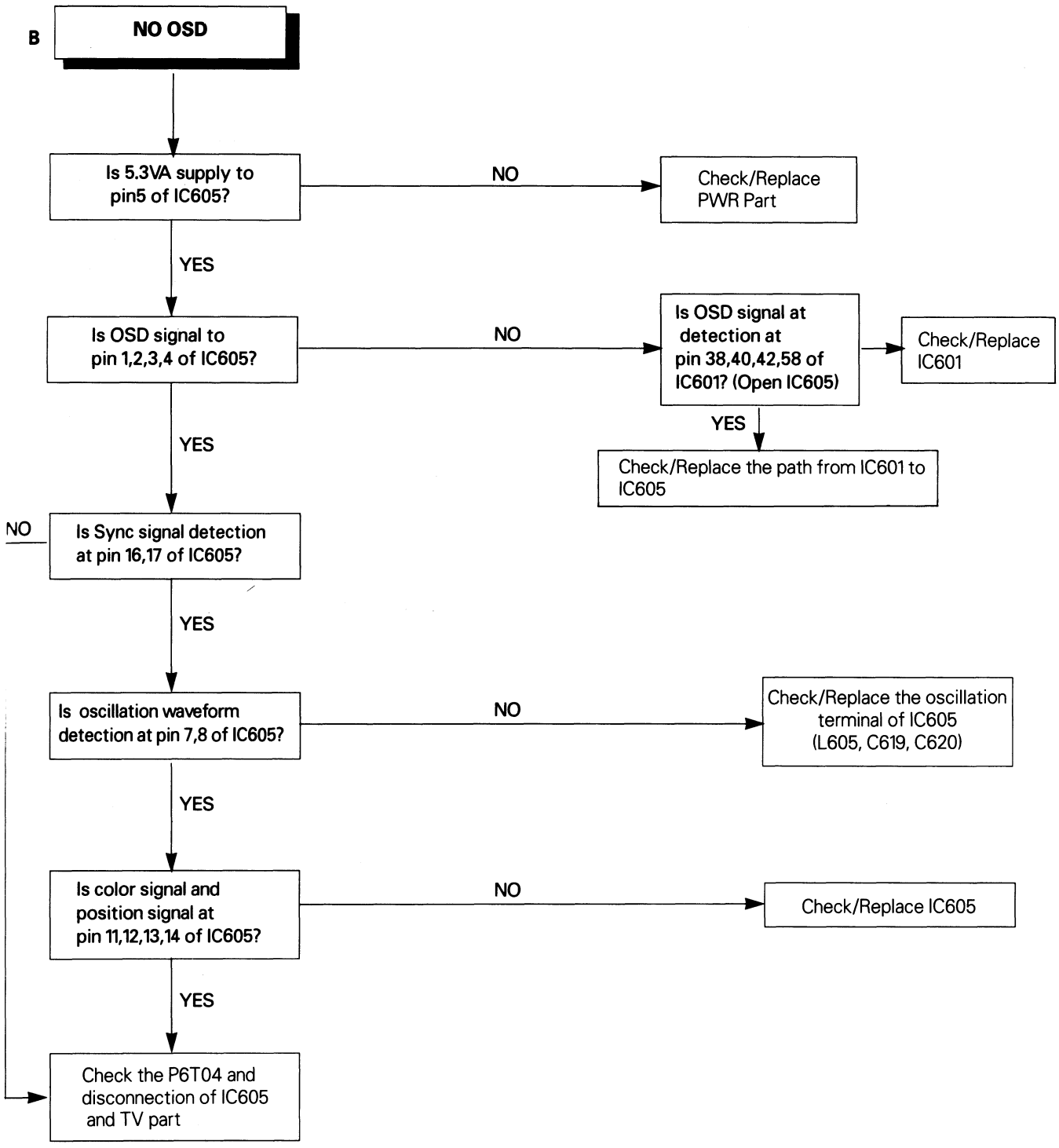
C


CAPSTAN MOTOR STOP
Is 12VA supply to pin 5 of P2D01?
YES
Is 2.4V output at pin 7 of P2D01?
Check/Replace Power Part
NO
YES
Is 2.4V output at pin 27 of IC201?
Check/Replace Capstan Motor
NO
YES
Check/Replace IC201
Is placed correctly at R234, R254
NO
YES
Is the Base of Q207, 0V?
Check/Replace R234, R254
NO
YES
Check the path from IC201 pin 27 to P2D01 pin 7
Check/Replace IC501

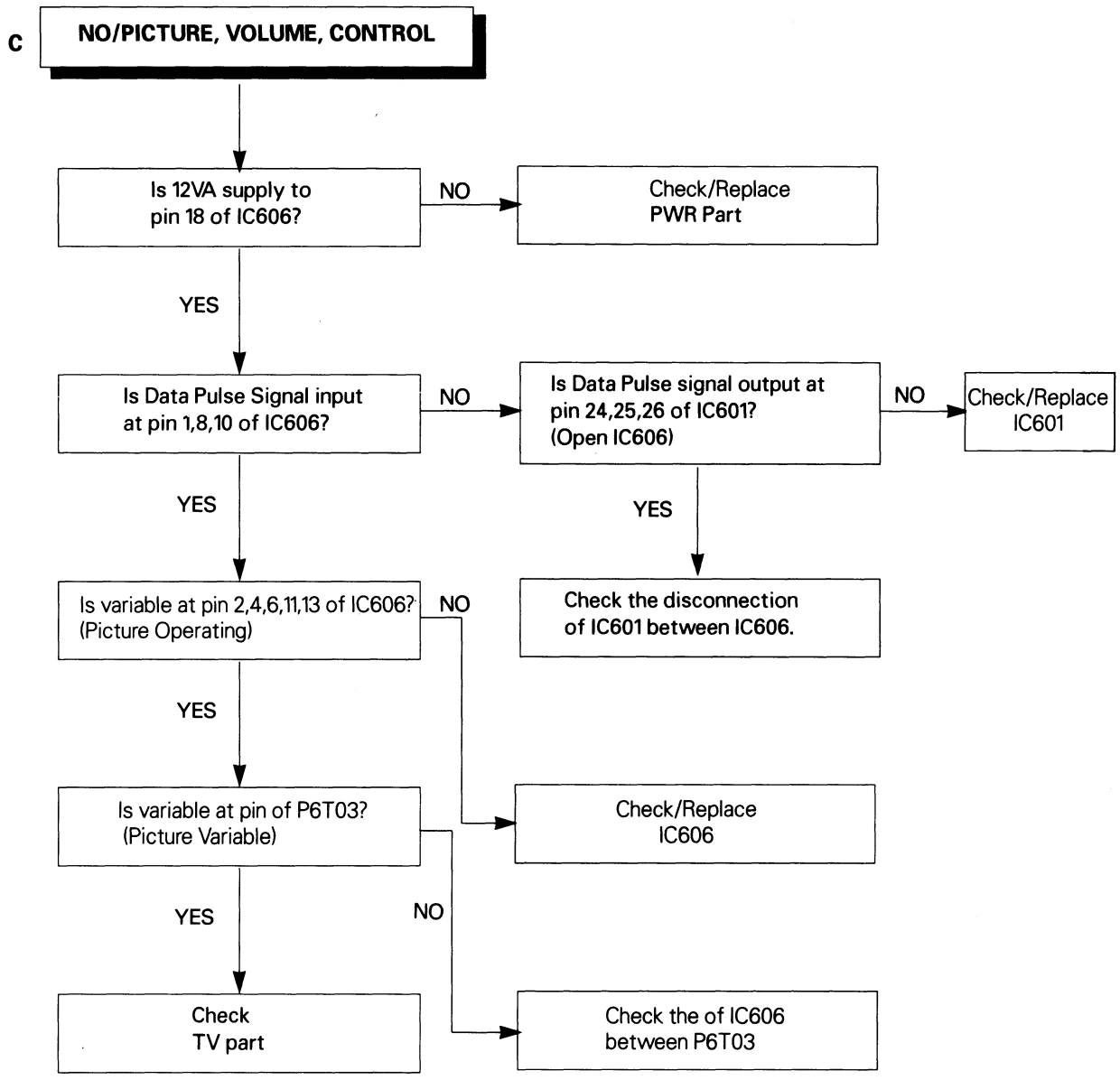
7. TIMER CIRCUIT



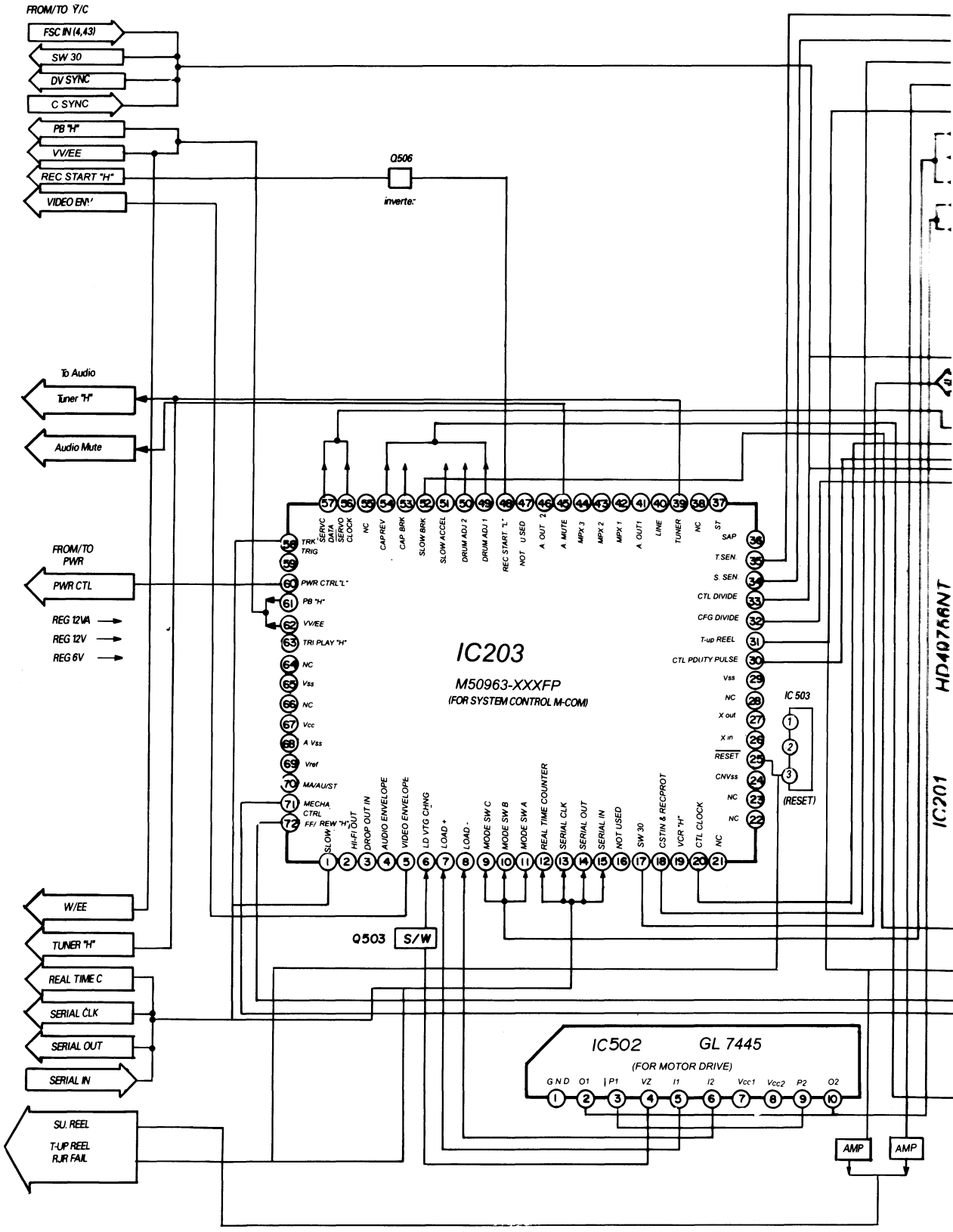
B


NO OSD
Is 5.3VA supply to pin5 of IC605?
NO
Check/Replace PWR Part
YES
Is OSD signal to pin 1,2,3,4 of IC605?
NO
Is OSD signal at detection at pin 38,40,42,58 of IC601? (Open IC605)
Check/Replace IC601
YES
Check/Replace the path from IC601 to IC605
YES
NO
Is Sync signal detection at pin 16,17 of IC605?
YES
Is oscillation waveform detection at pin 7,8 of IC605?
NO
Check/Replace the oscillation terminal of IC605 (L605, C619, C620)
YES
Is color signal and position signal at pin 11,12,13,14 of IC605?
NO
Check/Replace IC605
YES
Check the P6T04 and disconnection of IC605 and TV part

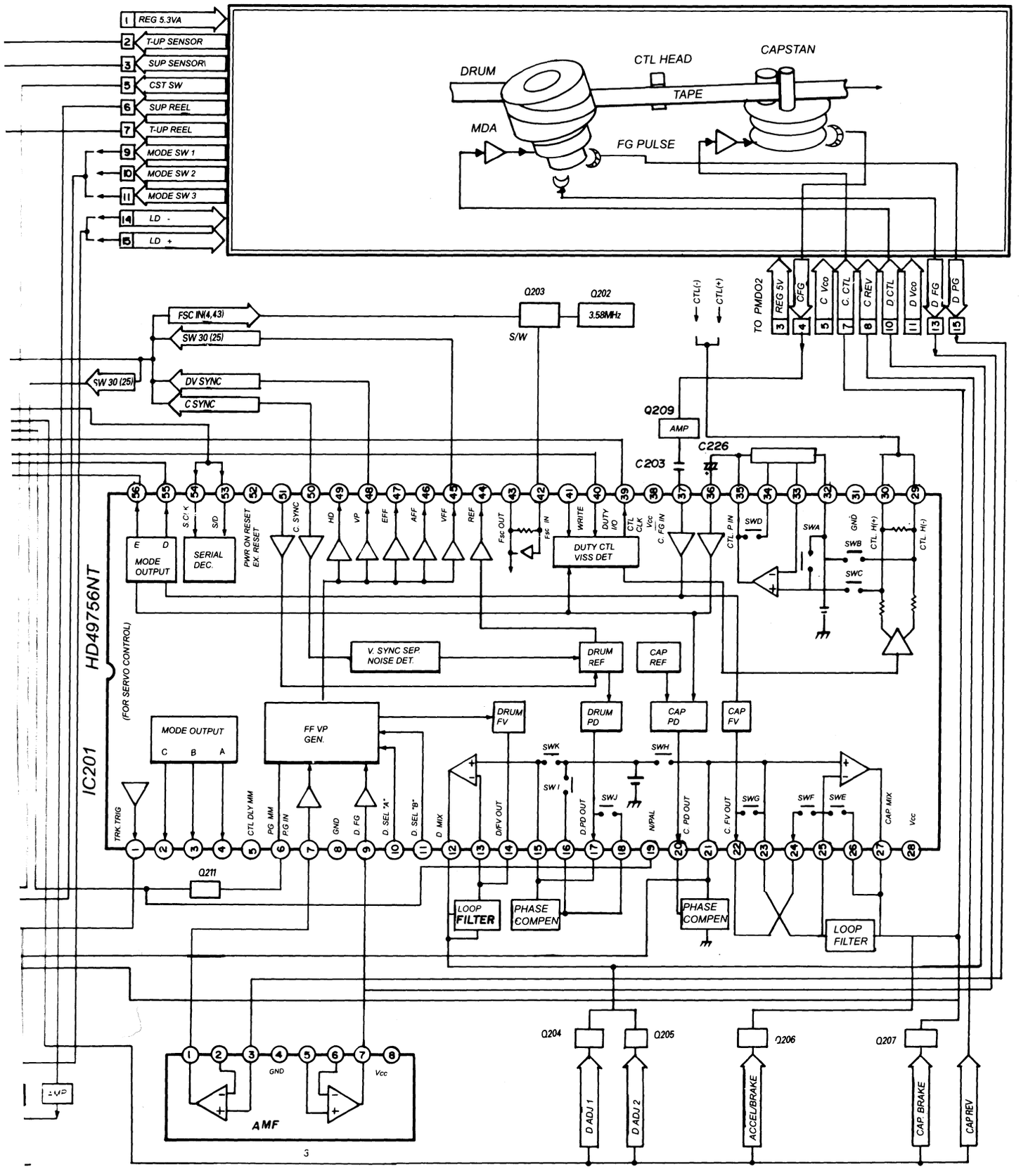
C

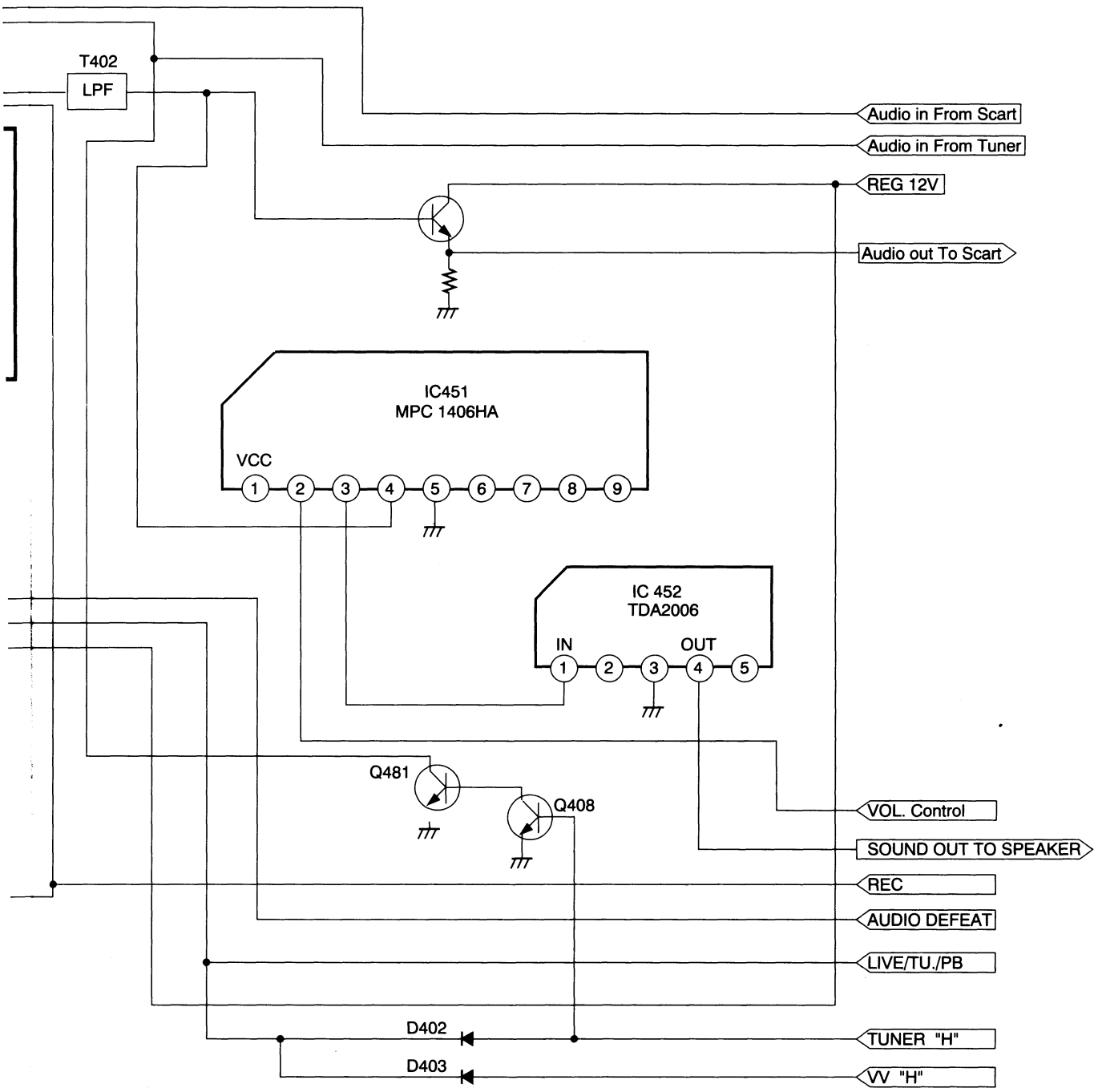

NO/PICTURE, VOLUME, CONTROL
Is 12VA supply to pin 18 of IC606?
NO
Check/Replace PWR Part
YES
Is Data Pulse Signal input at pin 1,8,10 of IC606?
NO
Is Data Pulse signal output at pin 24,25,26 of IC601? (Open IC606)
NO
Check/Replace IC601
YES
YES
Is variable at pin 2,4,6,11,13 of IC606? (Picture Operating)
NO
Check the disconnection of IC601 between IC606.
YES
Is variable at pin of P6T03? (Picture Variable)
Check/Replace IC606
YES
NO
Check TV part
Check the of IC606 between P6T03

1.Main System (System & Servo) Block Diagram

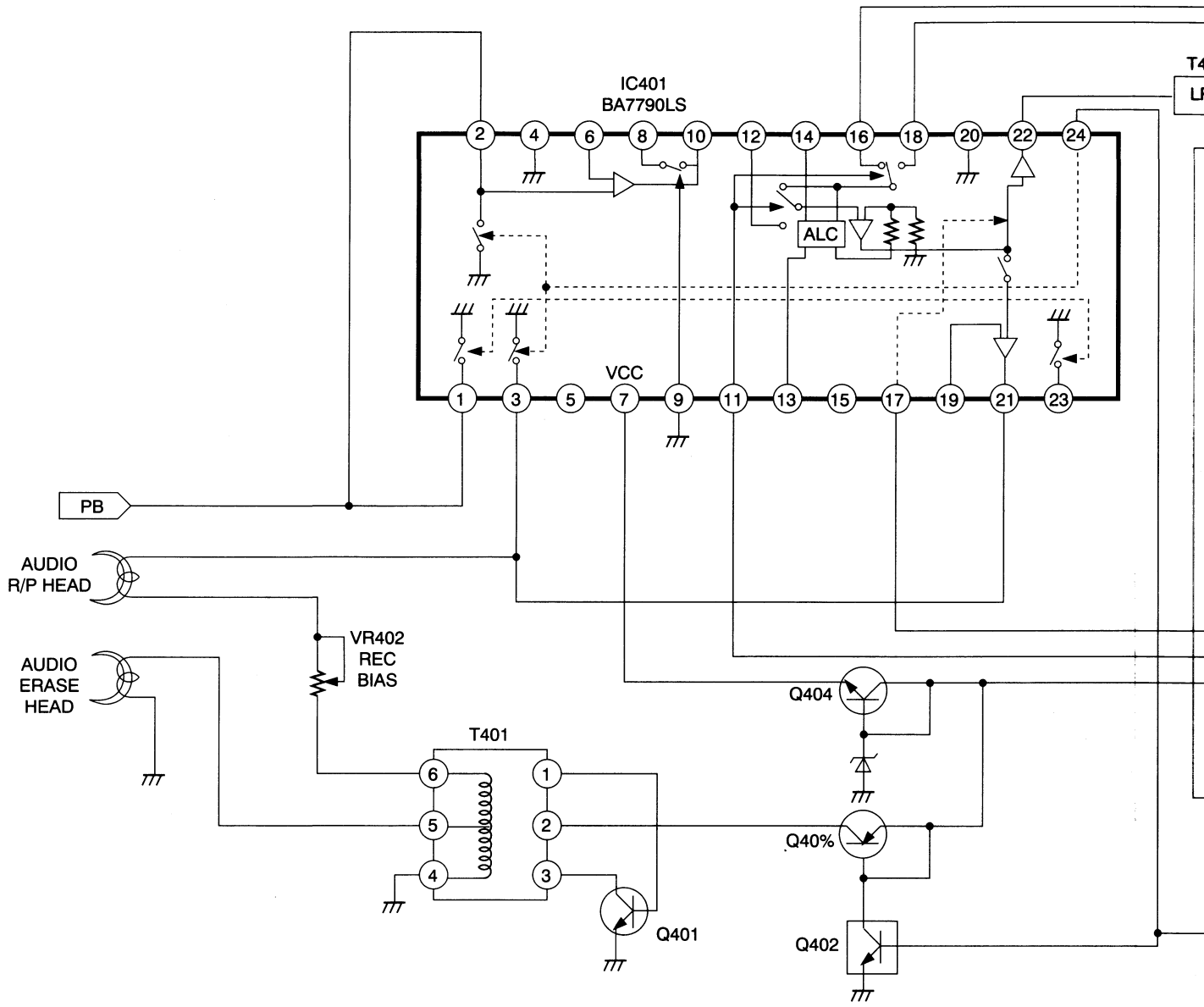


BLOCK DIAGRAM

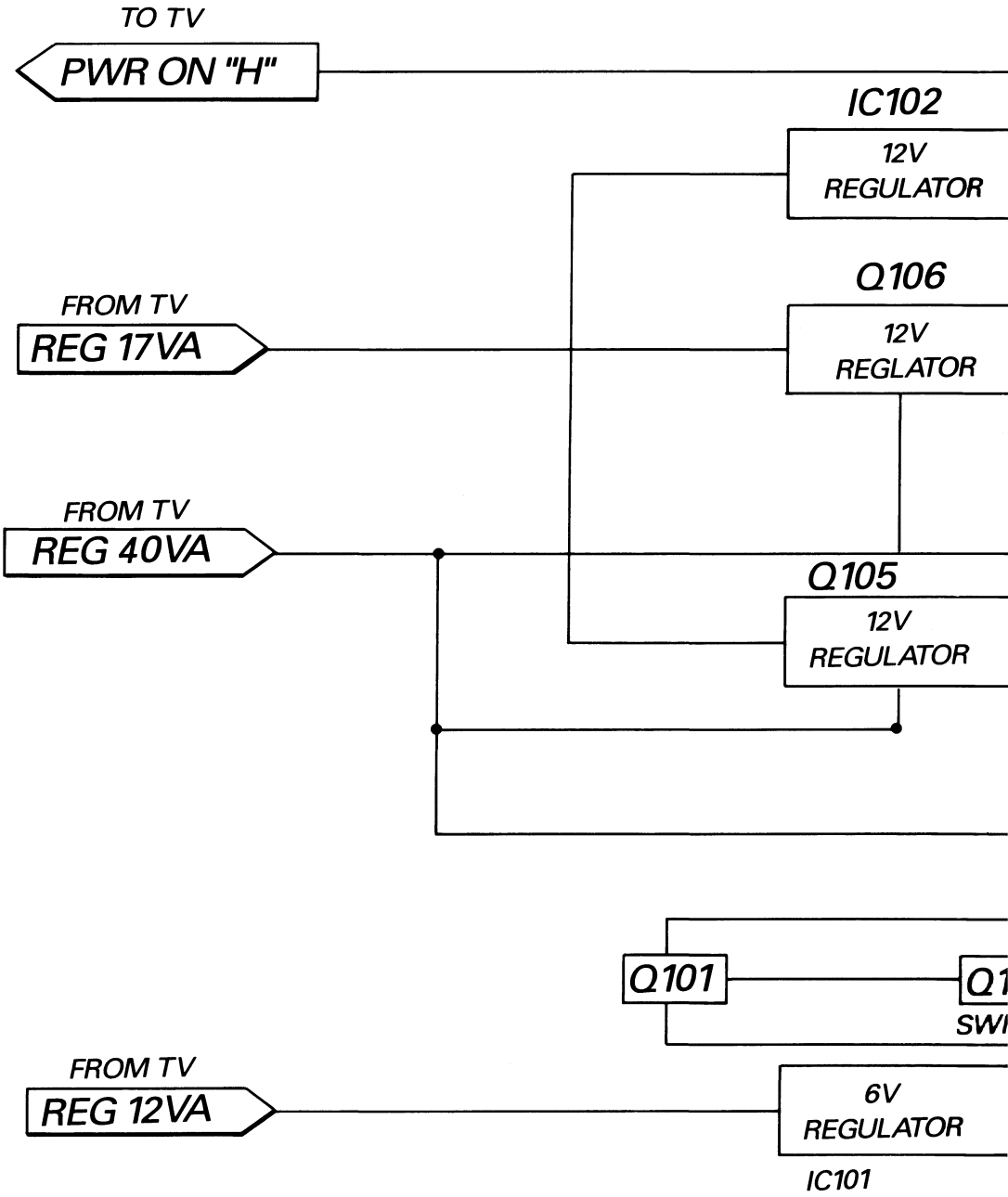


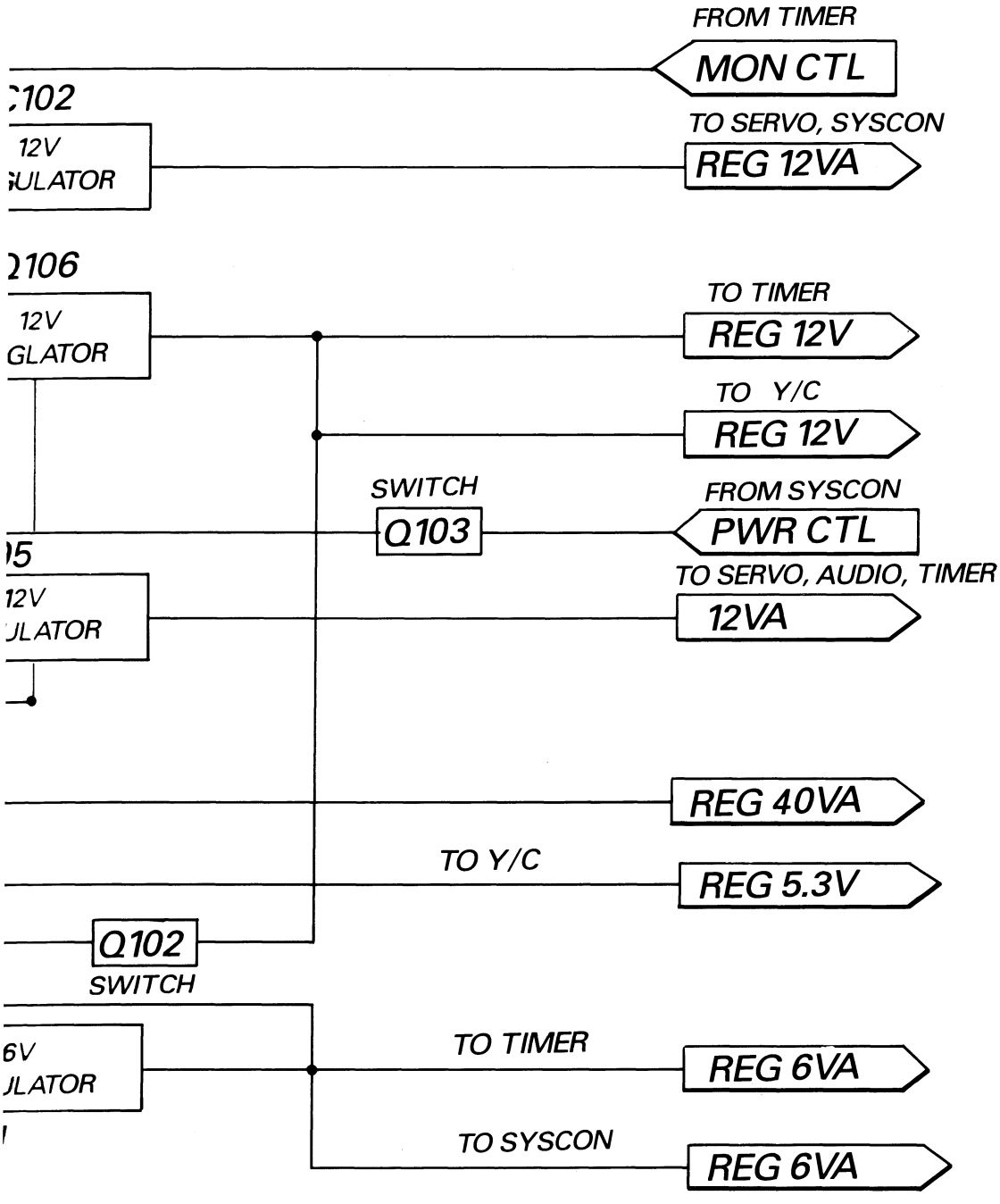

T402
LPF
Audio in From Scart
Audio in From Tuner
REG 12V
Audio out To Scart
IC451
MPC 1406HA
VCC
1
2
3
4
5
6
7
8
9
IC 452
TDA2006
IN
OUT
1
2
3
4
5
Q481
Q408
VOL. Control
SOUND OUT TO SPEAKER
REC
AUDIO DEFEAT
LIVE/TU./PB
D402
D403
TUNER "H"
VV "H"

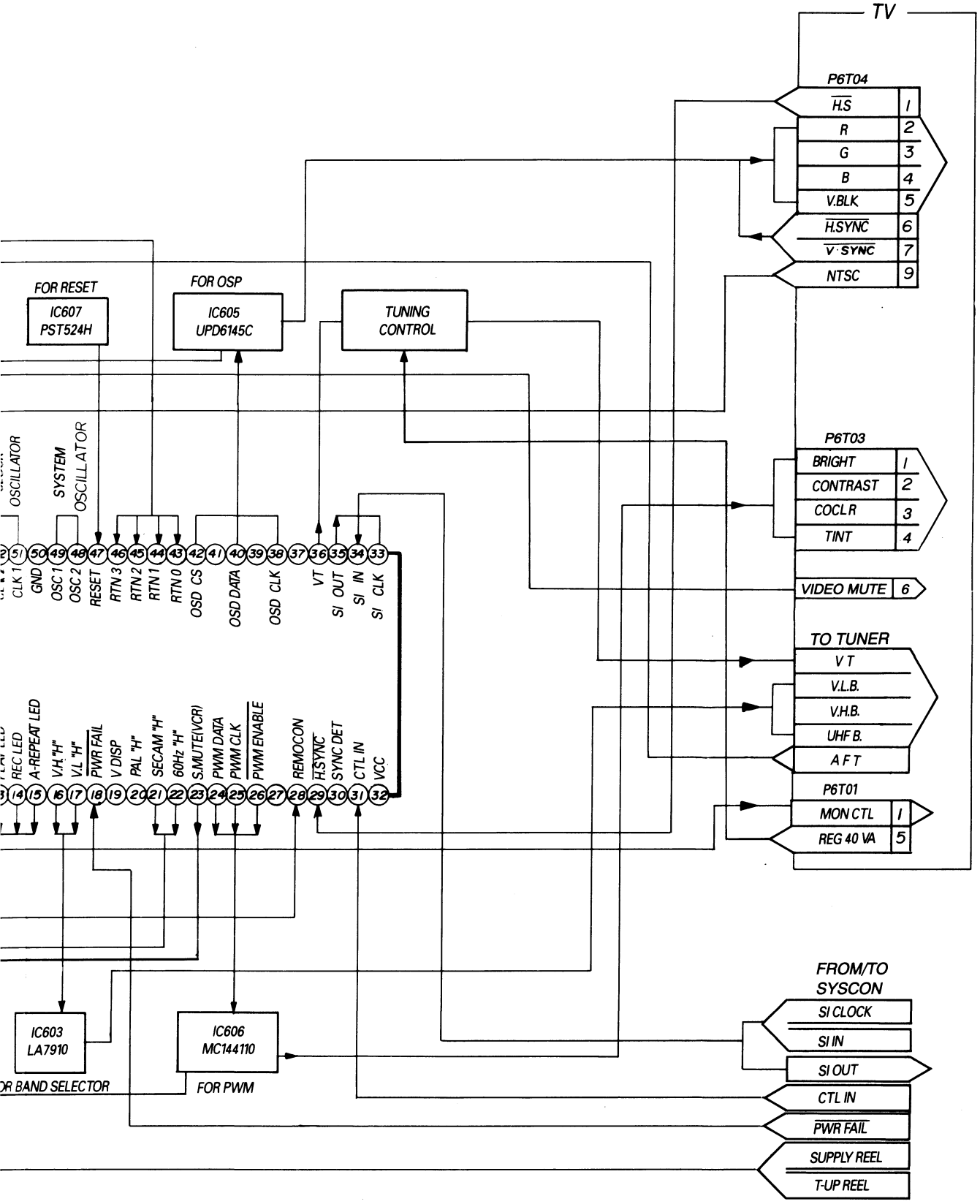
2. Audio Block Diagram



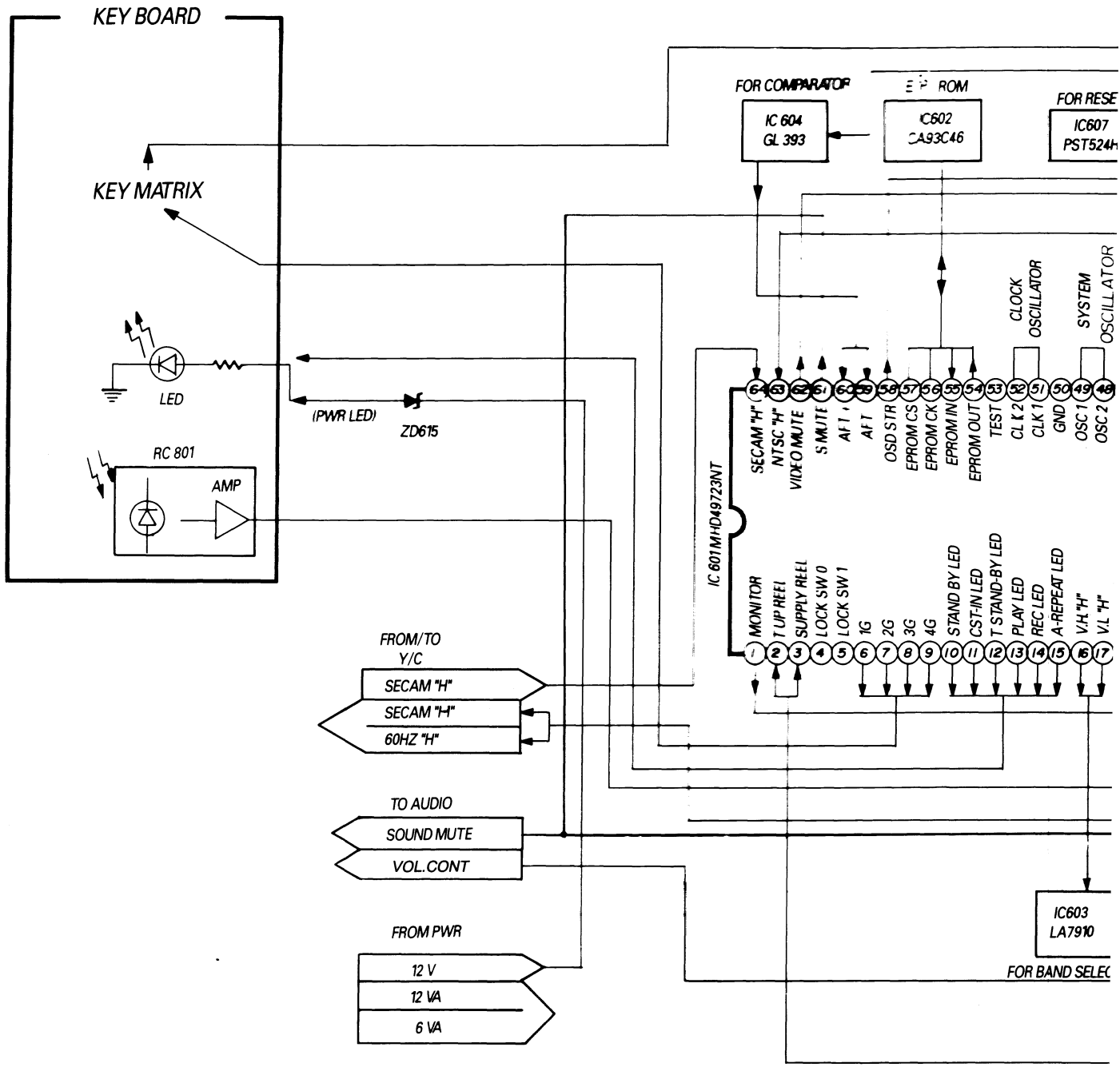
3.Power Block Diagram



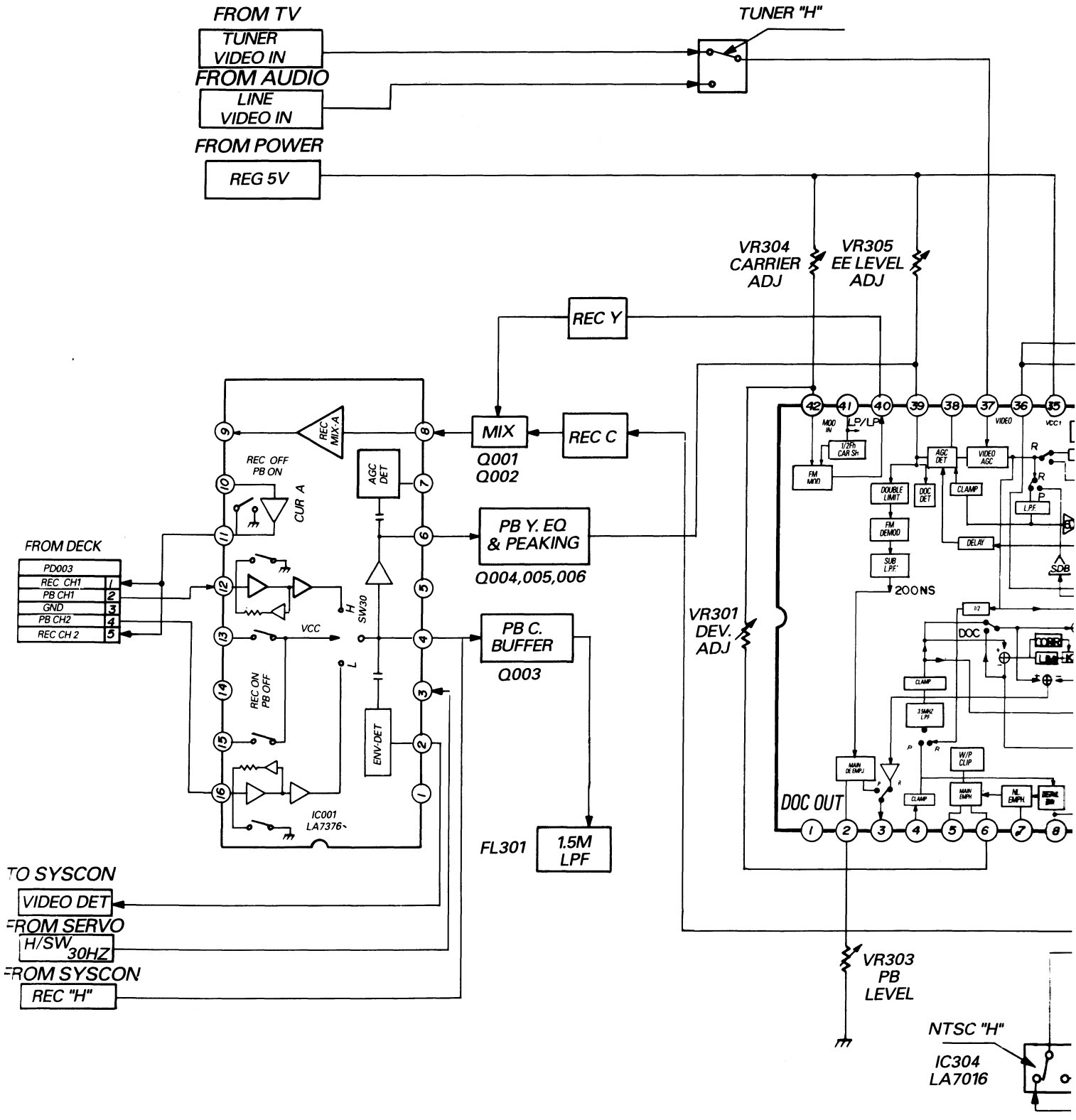

FROM TIMER
MON CTL
TO SERVO, SYSCON
REG 12VA
TO TIMER
REG 12V
TO Y/C
REG 12V
SWITCH
Q103
FROM SYSCON
PWR CTL
TO SERVO, AUDIO, TIMER
12VA
REG 40VA
TO Y/C
REG 5.3V
Q102
SWITCH
TO TIMER
REG 6VA
TO SYSCON
REG 6VA

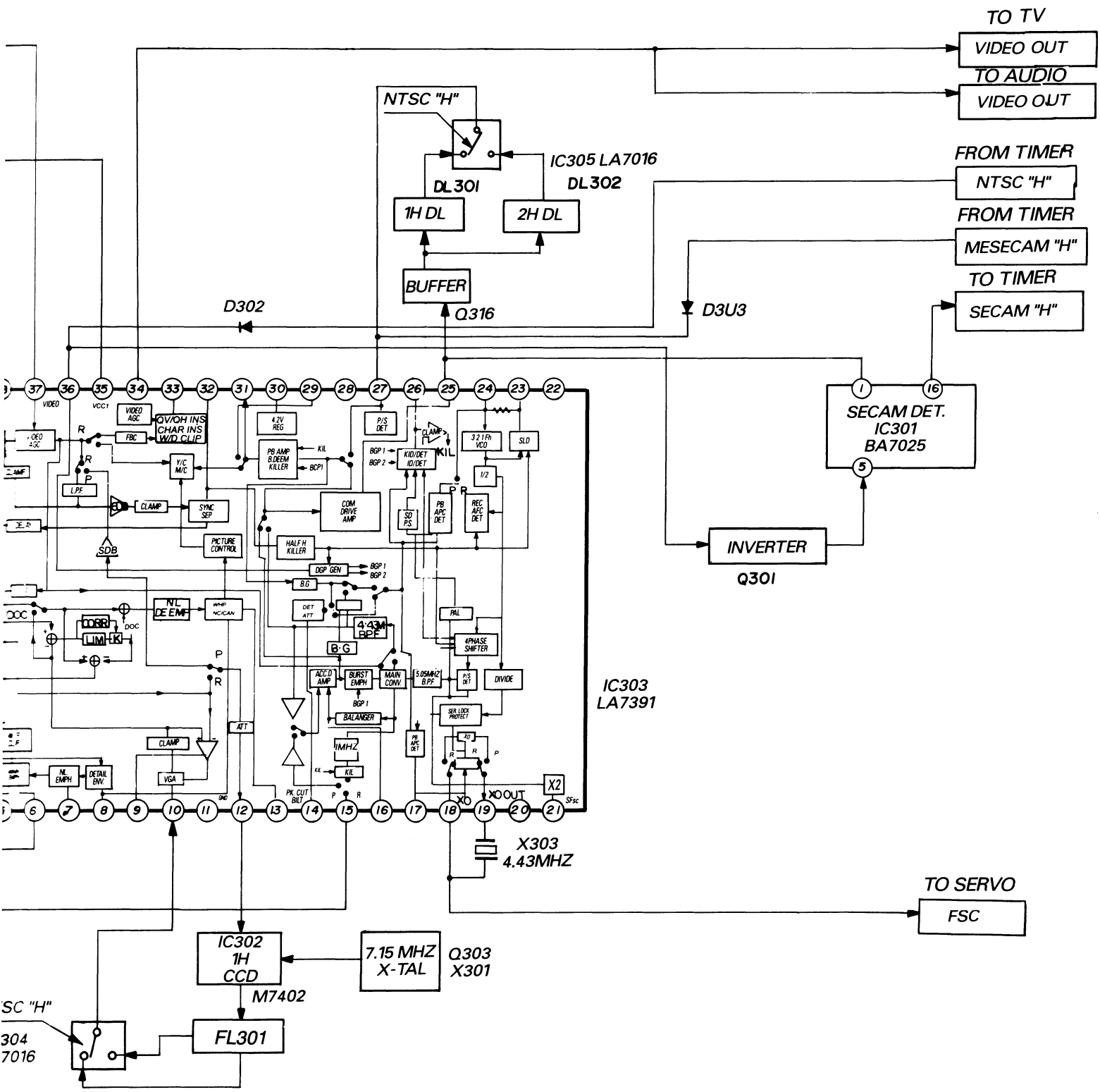

TV
P6T04
H.S 1
R 2
G 3
B 4
V.BLK 5
H.SYNC 6
V SYNC 7
NTSC 9
FOR RESET
IC607
PST524H
FOR OSP
IC605
UPD6145C
TUNING
CONTROL
SYSTEM OSCILLATOR
P6T03
BRIGHT 1
CONTRAST 2
COCLR 3
TINT 4
VIDEO MUTE 6
TO TUNER
V T
V.L.B.
V.H.B.
UHF B.
A F T
P6T01
MON CTL 1
REG 40 VA 5
CLK 1
GND
OSC 1
OSC 2
RESET
RTN 3
RTN 2
RTN 1
RTN 0
OSD CS
OSD DATA
OSD CLK
VT
SI OUT
SI IN
SI CLK
REC LED
A-REPEAT LED
V.H."H"
V.L."H"
PWR FAIL
V DISP
PAL "H"
SECAM "H"
60Hz "H"
S.MUTE(VCR)
PWM DATA
PWM CLK
PWM ENABLE
REMOCON
H.SYNC
SYNC DET
CTL IN
VCC
FROM/TO
SYSCON
SI CLOCK
SI IN
SI OUT
CTL IN
PWR FAIL
SUPPLY REEL
T-UP REEL
IC603
LA7910
OR BAND SELECTOR
IC606
MC144110
FOR PWM

4.Timer & Key Block Diagram

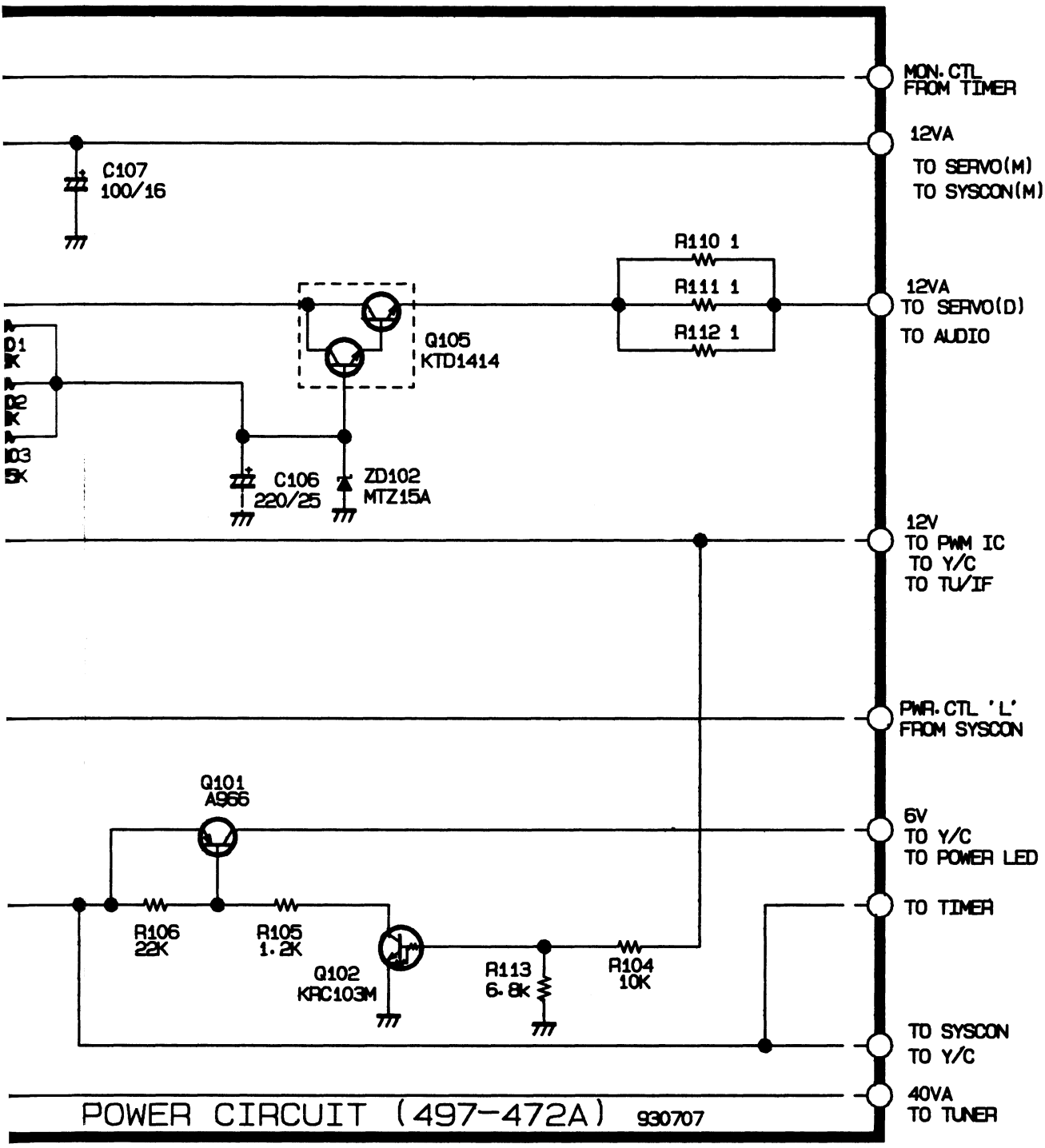


5.Y/C Block Diagram

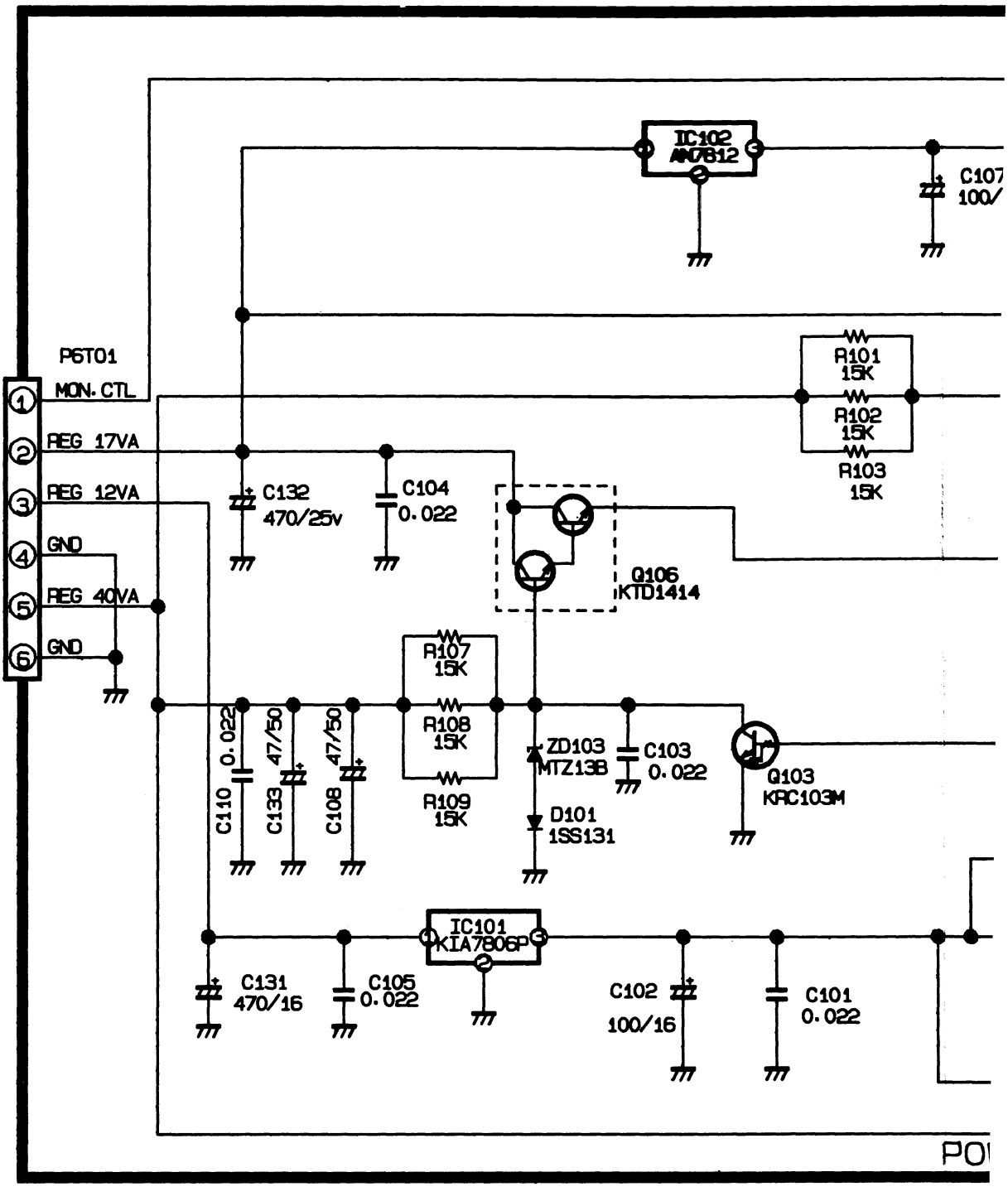



TO TV
VIDEO OUT
TO AUDIO
VIDEO OUT
NTSC "H"
IC305 LA7016
DL301
DL302
1H DL
2H DL
BUFFER
Q316
D302
D3U3
FROM TIMER
NTSC "H"
FROM TIMER
MESECAM "H"
TO TIMER
SECAM "H"
SECAM DET.
IC301
BA7025
INVERTER
Q301
IC303
LA7391
X303
4.43MHZ
TO SERVO
FSC
IC302
1H
CCD
M7402
7.15 MHZ
X-TAL
Q303
X301
FL301

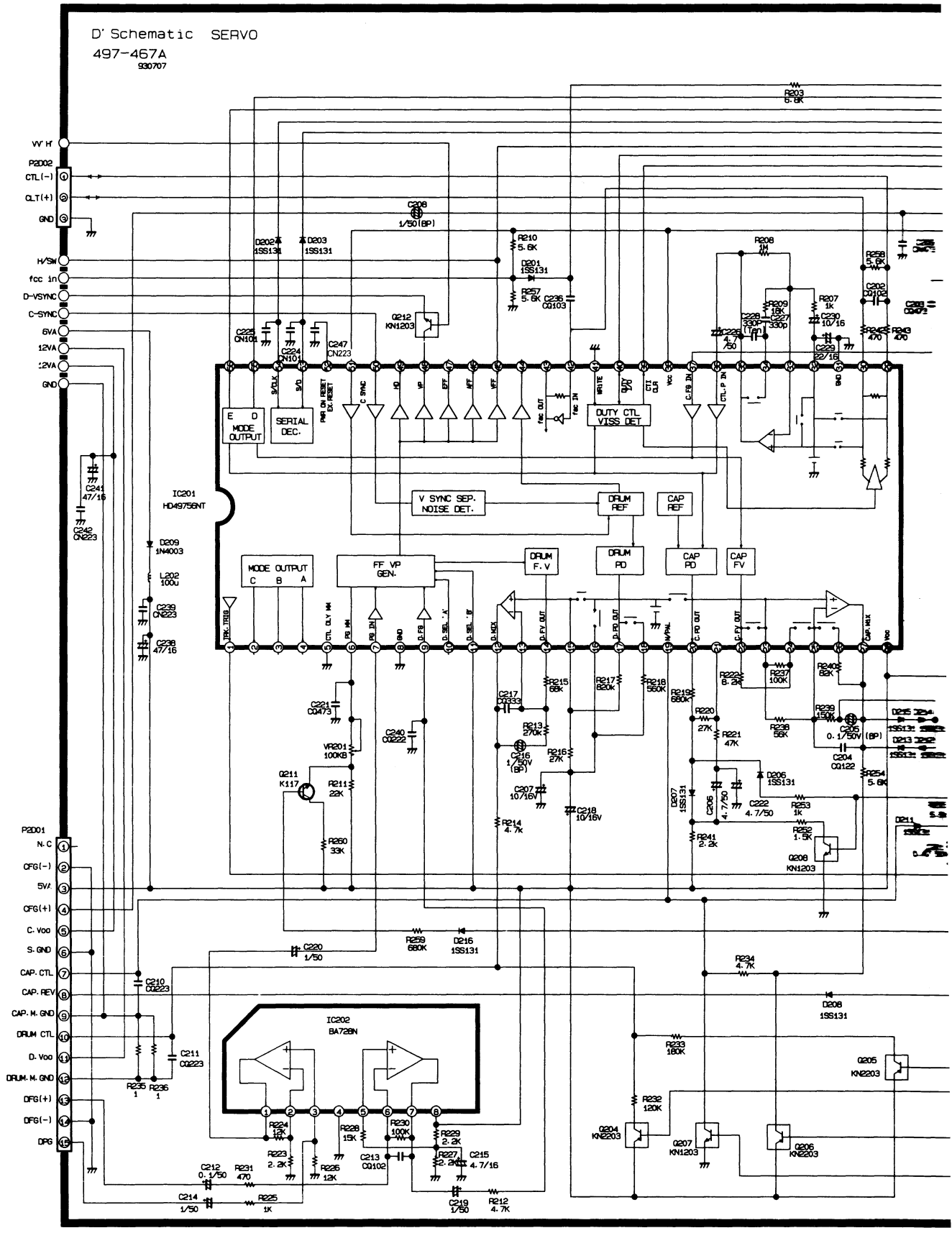
CHEMATIC DIAGRAM

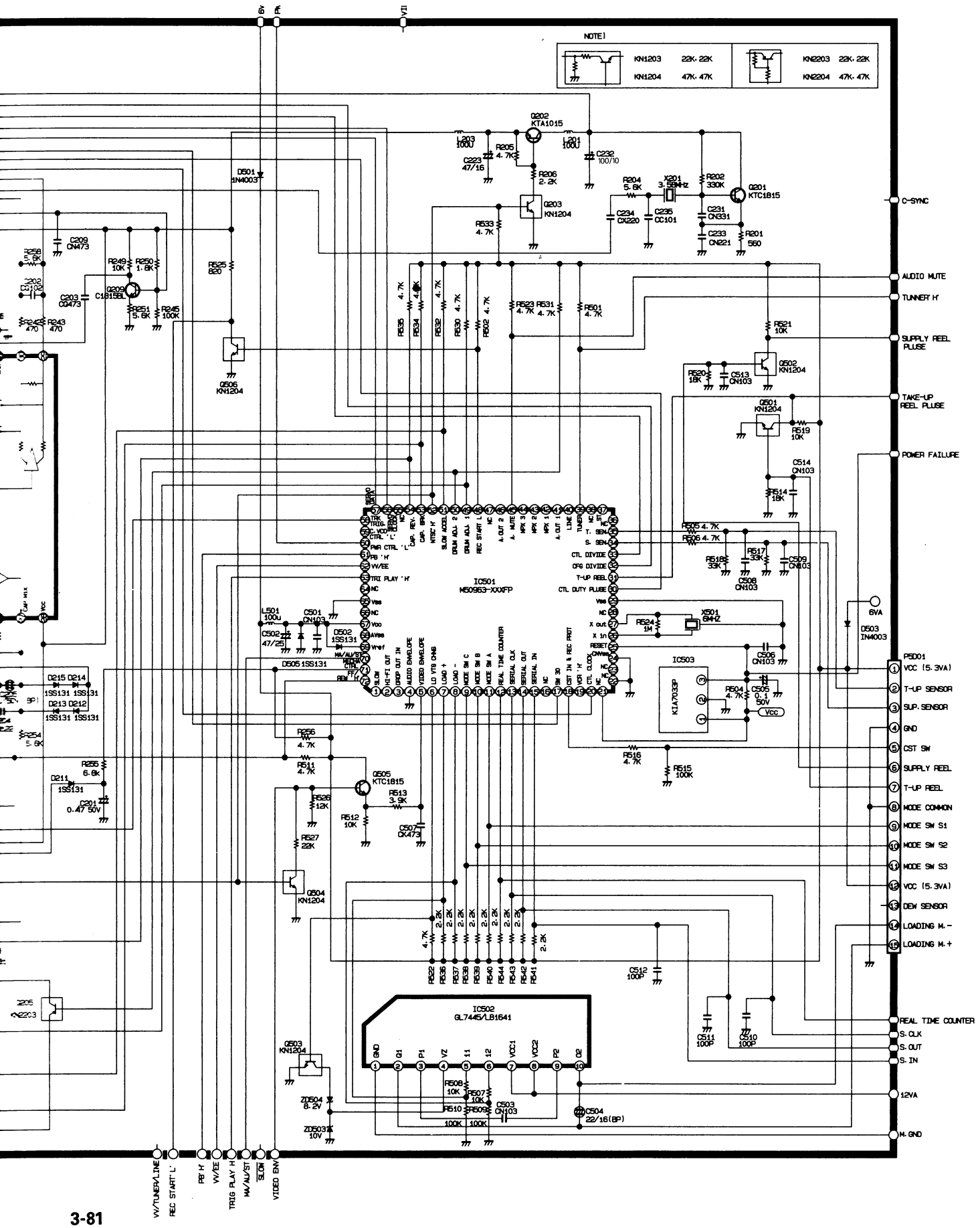


1. Power Schematic Diagram

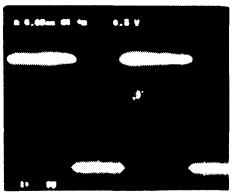


2. Servo Schematic Diagram

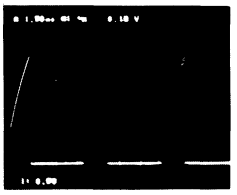



NOTE)
KN1203 22K, 22K
KN1204 47K, 47K
KN2203 22K, 22K
KN2204 47K, 47K
IC501
M50963-XXXFP
IC502
GL7445/LB1641
IC503
KIA7033P
C-SYNC
AUDIO MUTE
TUNNER 'H'
SUPPLY REEL PLUSE
TAKE-UP REEL PLUSE
POWER FAILURE
P5001
VCC (5.3VA)
T-UP SENSOR
SUP. SENSOR
GND
CST SW
SUPPLY REEL
T-UP REEL
MODE COMMON
MODE SW S1
MODE SW S2
MODE SW S3
VCC (5.3VA)
DEW SENSOR
LOADING M.-
LOADING M.+
REAL TIME COUNTER
S. CLK
S. OUT
S. IN
12VA
M. GND
6VA
VV/TUNER/LINE
REC START 'L'
PB 'H'
VV/EE
TRIG PLAY 'H'
HA/ALV/ST
SLOW
VIDEO ENV

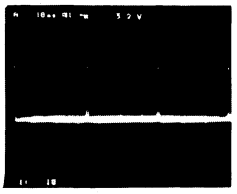
2-1. Servo Oscilloscope Waveform

① 

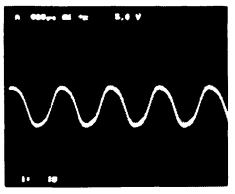
IC201 Pin①
TRK TRIGGER

② 

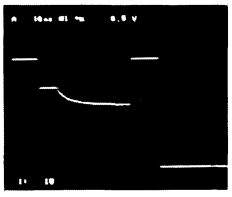
IC201 Pin⑥
PG M.M

③ 

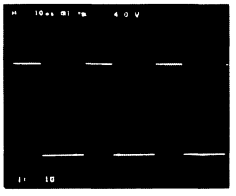
IC201 Pin⑦
DRUM P.G

④ 

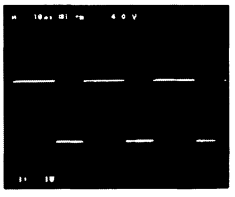
IC201 Pin⑨
DRUM F.G

⑤ 

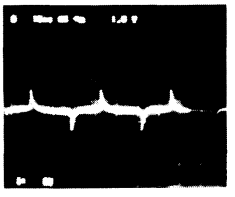
IC201 Pin㉗
SLOW CONTROL

⑥ 

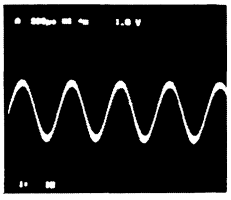
IC201 Pin㉙
REC CTL

⑦ 

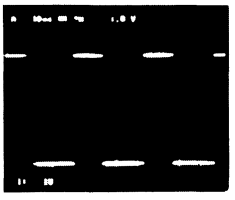
IC201 Pin㉚
REC CTOL

⑧ 

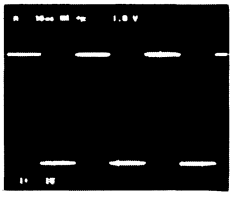
IC201 Pin㉟
REC CTL

⑨ 

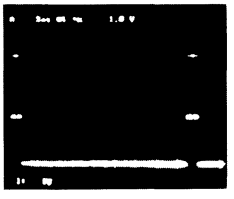
IC201 Pin㊲
CAPSTAN F.G

⑩ 

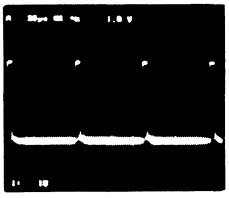
IC201 Pin㊴
CLOCK CTL

⑪ 

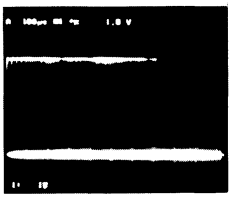
IC201 Pin㊺
SW30

⑫ 

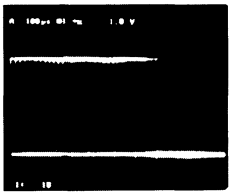
IC201 Pin㊽
DV. SYNC

⑬ 

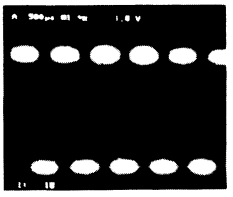
IC201 Pin㊿
COMPOSITE SYNC

⑭ 

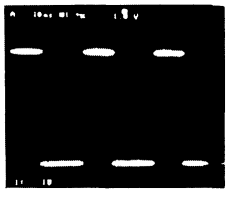
IC201 Pin㊸90
SERIAL DATA

⑮ 

IC201 Pin㊹
SERIAL CLOCK

⑯ 

IC201 Pin㊺
CFG C.D

⑰ 

IC201 Pin㊻
CTL C.D

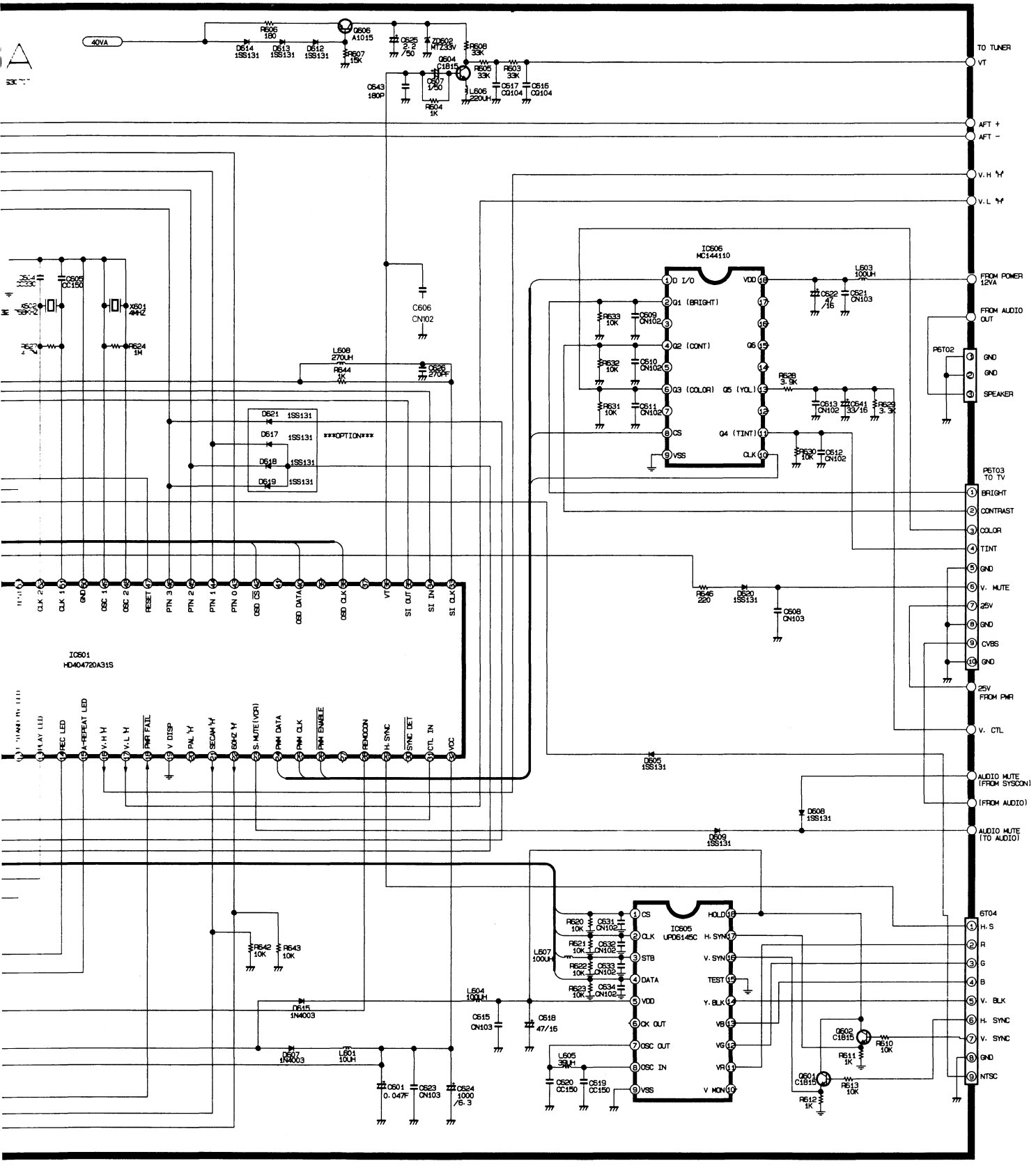
* Servo IC voltage sheet

IC201

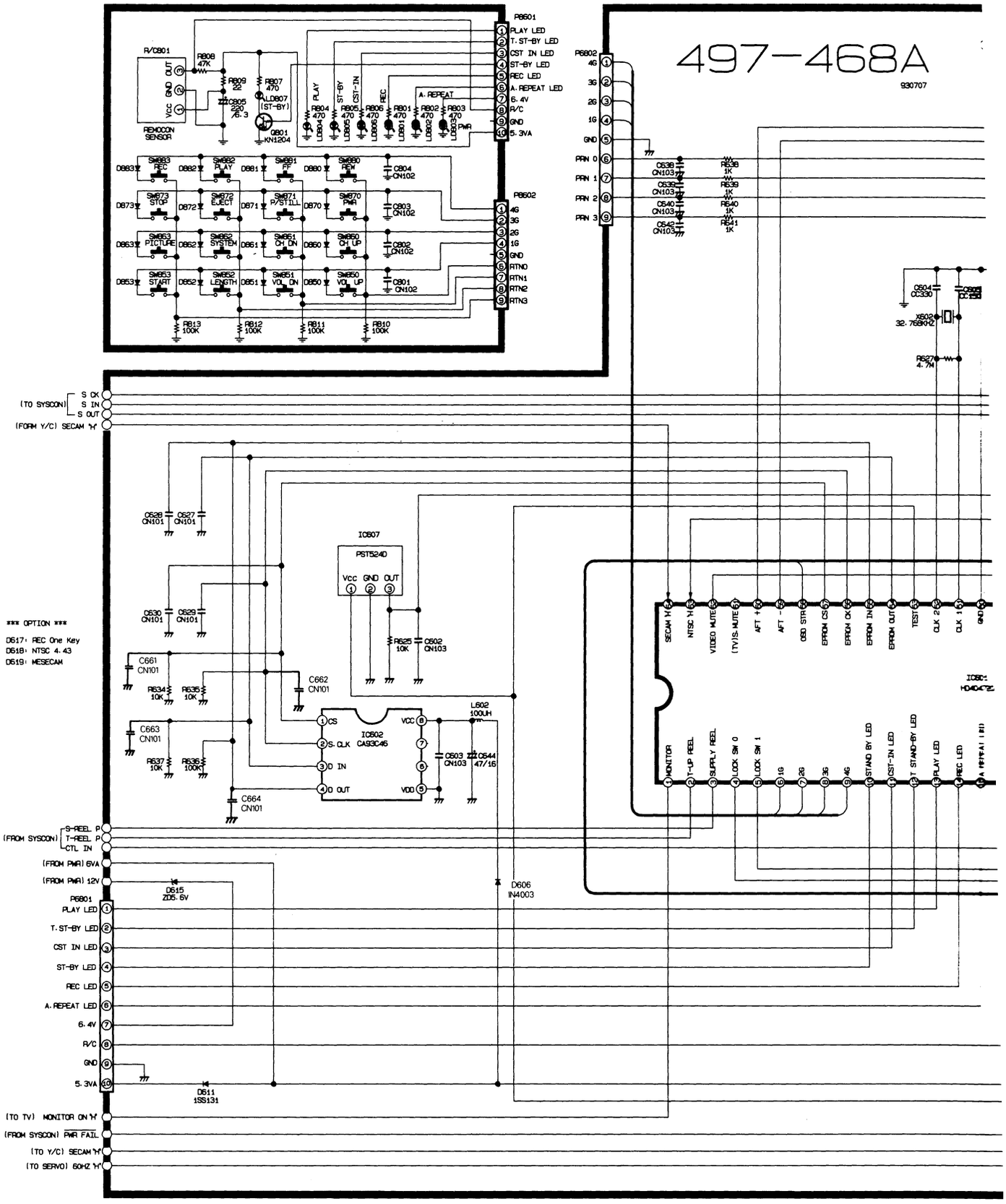
1	2.5	3.8
2	0	0
3	0	0
4	5	5
5	0	0
6	0	0
7	2	2
8	0	0
9	2.8	2.8
10	2.7	2.7
11	5	5
12	1.4	1.4
13	2.5	2.5
14	2.5	2.5
15	2.5	2.5
16	2.5	2.5
17	2.5	2.5
18	2.5	2.5
19	0	0
20	2.5	2.5
21	2.5	2.5
22	2.5	2.5
23	2.5	2.5
24	2.5	2.5
25	2.5	2.5
26	2.8	2.8
27	2.8	2.8
28	5	5
29	2.5	2.2
30	2.5	3.0
31	0	0
32	2.5	2.5
33	2.5	2.5
34	2.5	2.5
35	2.5	2.5
36	2.5	2.5
37	2.8	2.8
38	5	5
39	0	3.8
40	5	5
41	0	0
42	2.6	2.6
43	2.6	2.6
44	0	2.6
45	2.6	2.6
46	2.6	0
47	2.6	2.6
48	0	0
49	0	0
50	0.6	0.6
51	5	5
52	5	5
53	0.8	0.8
54	1.0	1.0
55	2.5	2.6
56	2.2	5

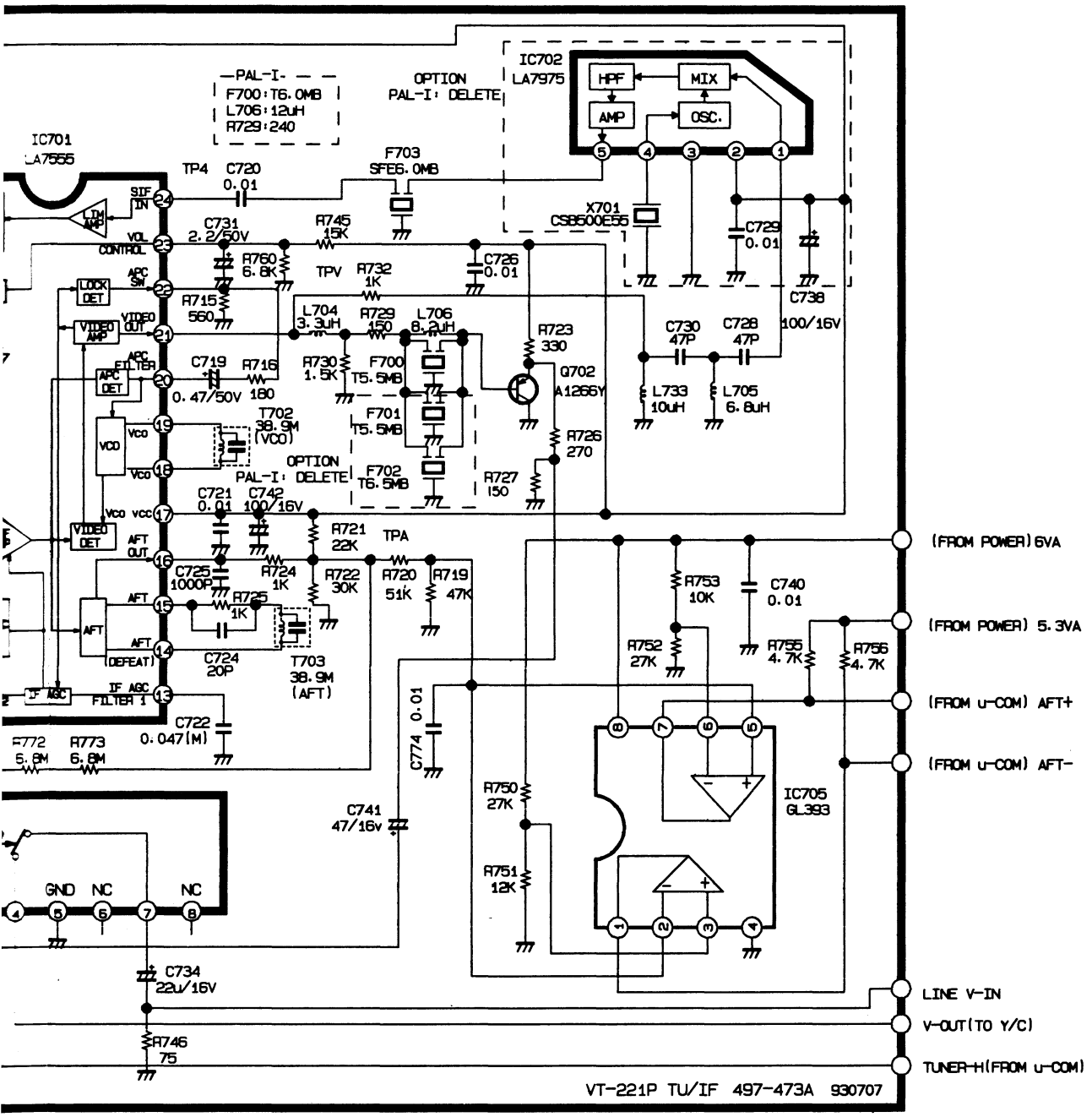
IC202

	PB	REC
1	0	0
2	0	0
3	0	0
4	0	0
5	2.5	2.5
6	2.5	2.5
7	2.5	2.5
8	5	5

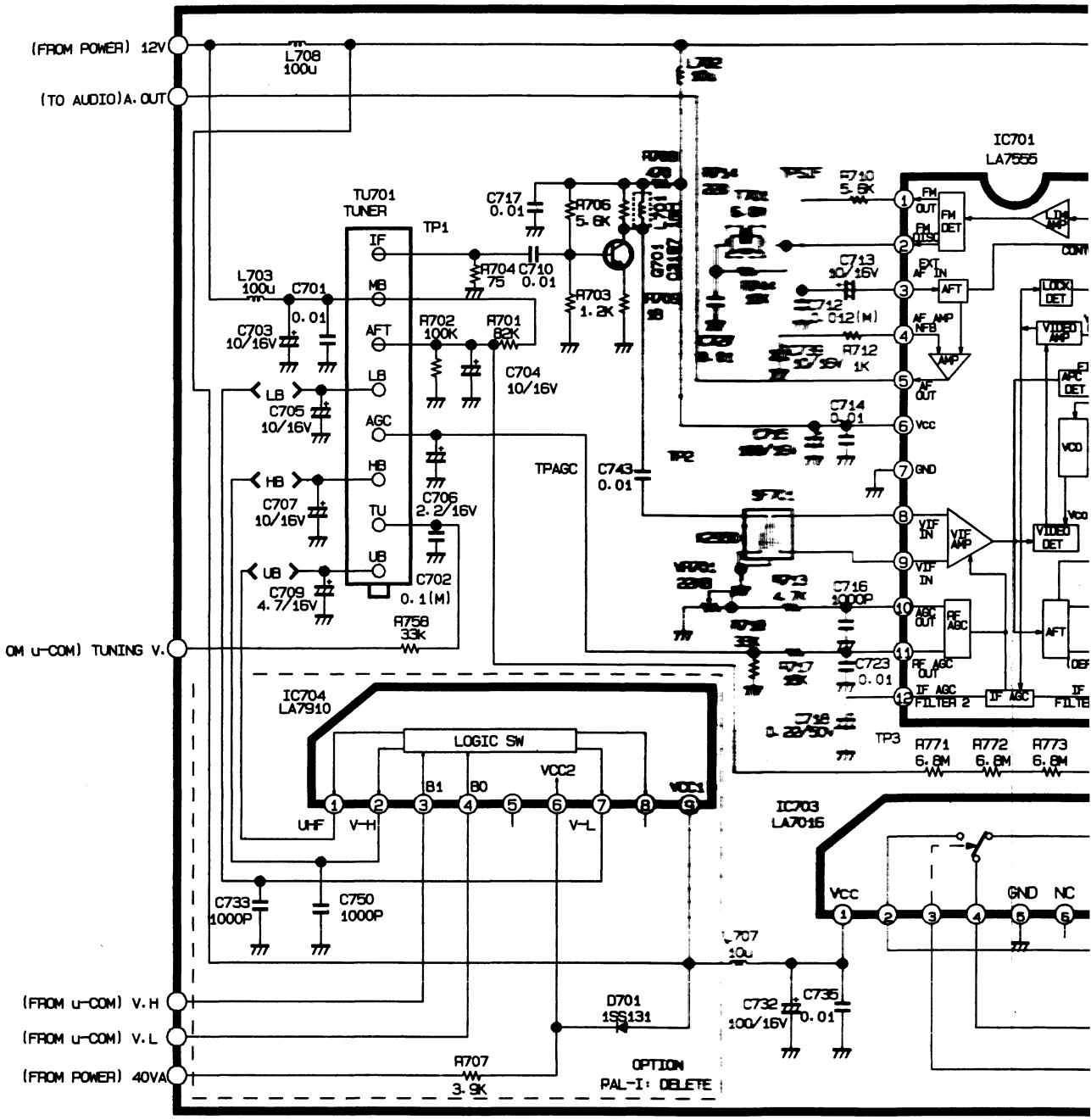

40VA
TO TUNER
VT
AFT +
AFT -
V.H
V.L
FROM POWER
12VA
FROM AUDIO
OUT
P6T02
GND
GND
SPEAKER
IC506
MC144110
D I/O
Q1 (BRIGHT)
Q2 (CONT)
Q3 (COLOR)
Q4 (TINT)
Q5 (YOL)
CS
VSS
CLK
VDD
P6T03
TO TV
BRIGHT
CONTRAST
COLOR
TINT
GND
V. MUTE
25V
GND
CVBS
GND
25V
FROM PWR
V. CTL
AUDIO MUTE
(FROM SYSCON)
(FROM AUDIO)
AUDIO MUTE
(TO AUDIO)
OPTION
IC501
HD404720A31S
REC LED
A-REPEAT LED
V.H
V.L
PWR FAIL
V DISP
PAL
SECAM
60HZ
S.MUTE(VCR)
PWM DATA
PWM CLK
PWM ENABLE
REMOCON
H.SYNC
SYNC DET
CTL IN
VCC
IC505
UPD61145C
CS
CLK
STB
DATA
VDD
OK OUT
OSC OUT
OSC IN
VSS
HOLD
H. SYN
V. SYN
TEST
Y. BLK
VB
VG
VR
V MON
6T04
H.S
R
G
B
V. BLK
H. SYNC
V. SYNC
GND
NTSC

3. Key/Timer Schematic Diagram

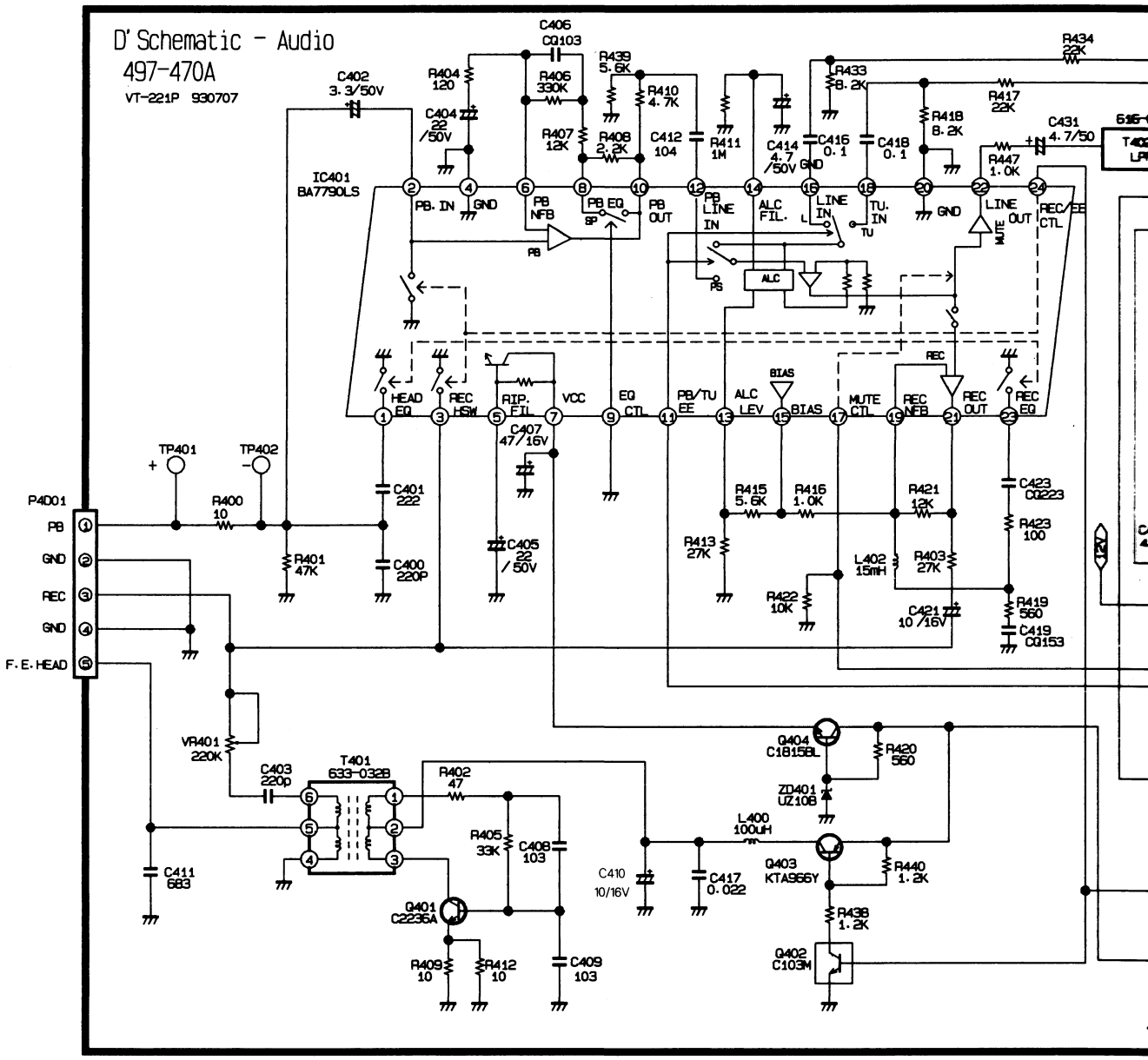



—PAL-I-
F700:T6.0MB
L706:12uH
R729:240
OPTION
PAL-I: DELETE
IC702
LA7975
HPF
MIX
AMP
OSC.
IC701
LA7555
TP4
C720
0.01
F703
SFE6.0MB
X701
CSB500E55
C729
0.01
C738
100/16V
C731
2.2/50V
R745
15K
R760
6.8K
TPV
R732
1K
C726
0.01
R715
560
L704
3.3uH
R729
150
L706
8.2uH
R723
330
C730
47P
C728
47P
C719
R716
R730
1.5K
F700
T5.5MB
Q702
A1266Y
L733
10uH
L705
6.8uH
0.47/50V
180
T702
38.9M
(VCO)
F701
T5.5MB
R726
270
OPTION
PAL-I: DELETE
F702
T6.5MB
R727
150
C721
0.01
C742
100/16V
R721
22K
TPA
R724
1K
R722
30K
R720
51K
R719
47K
C725
1000P
R725
1K
C724
20P
T703
38.9M
(AFT)
C722
0.047(M)
R772
5.6M
R773
6.6M
C774
0.01
R753
10K
C740
0.01
R752
27K
R755
4.7K
R756
4.7K
R750
27K
R751
12K
C741
47/16v
IC705
GL393
GND
NC
NC
C734
22u/16V
R746
75
(FROM POWER)6VA
(FROM POWER) 5.3VA
(FROM u-COM) AFT+
(FROM u-COM) AFT-
LINE V-IN
V-OUT(TO Y/C)
TUNER-H(FROM u-COM)
VT-221P TU/IF 497-473A 930707

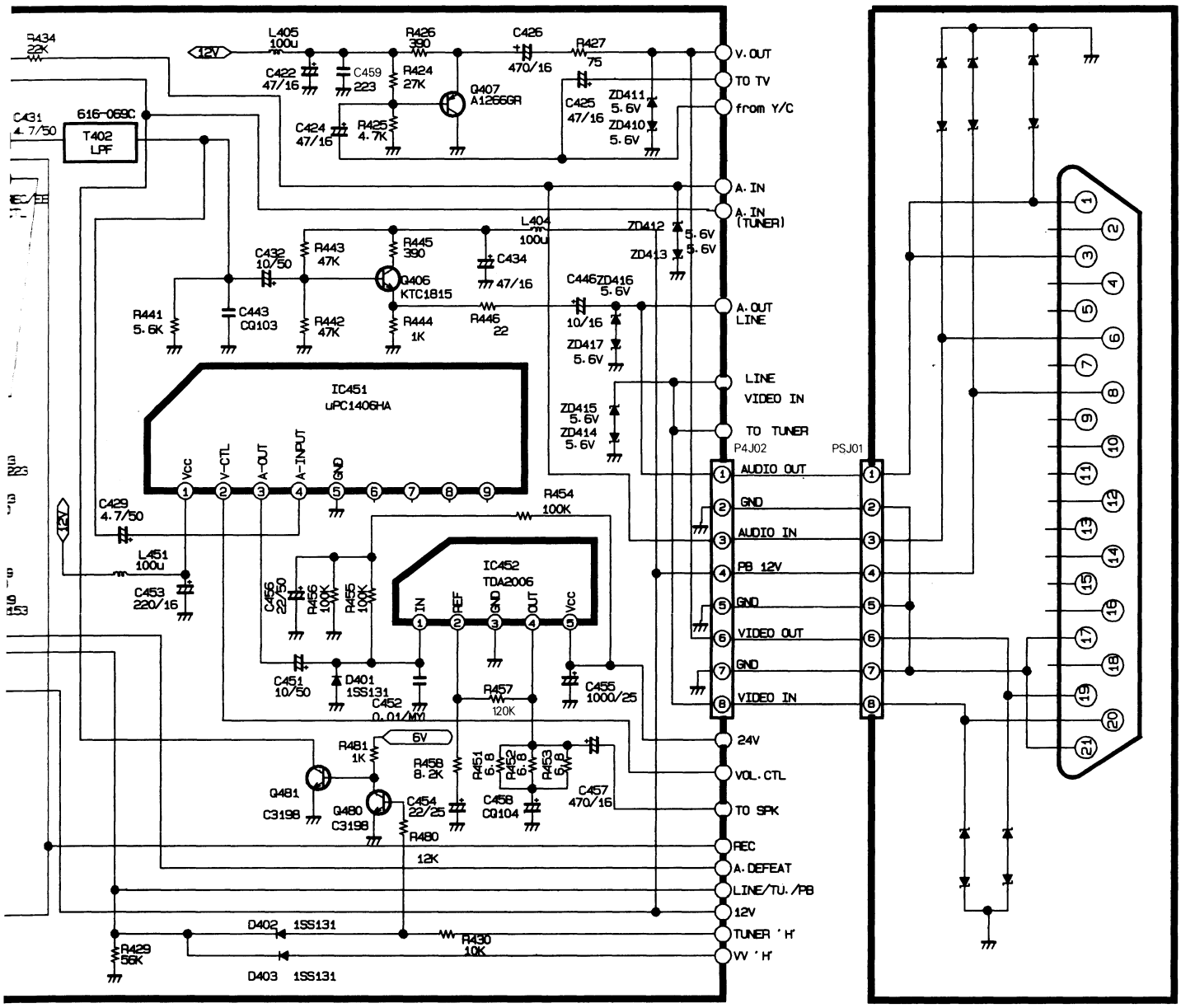
4. Tuner/IF Schematic Diagram

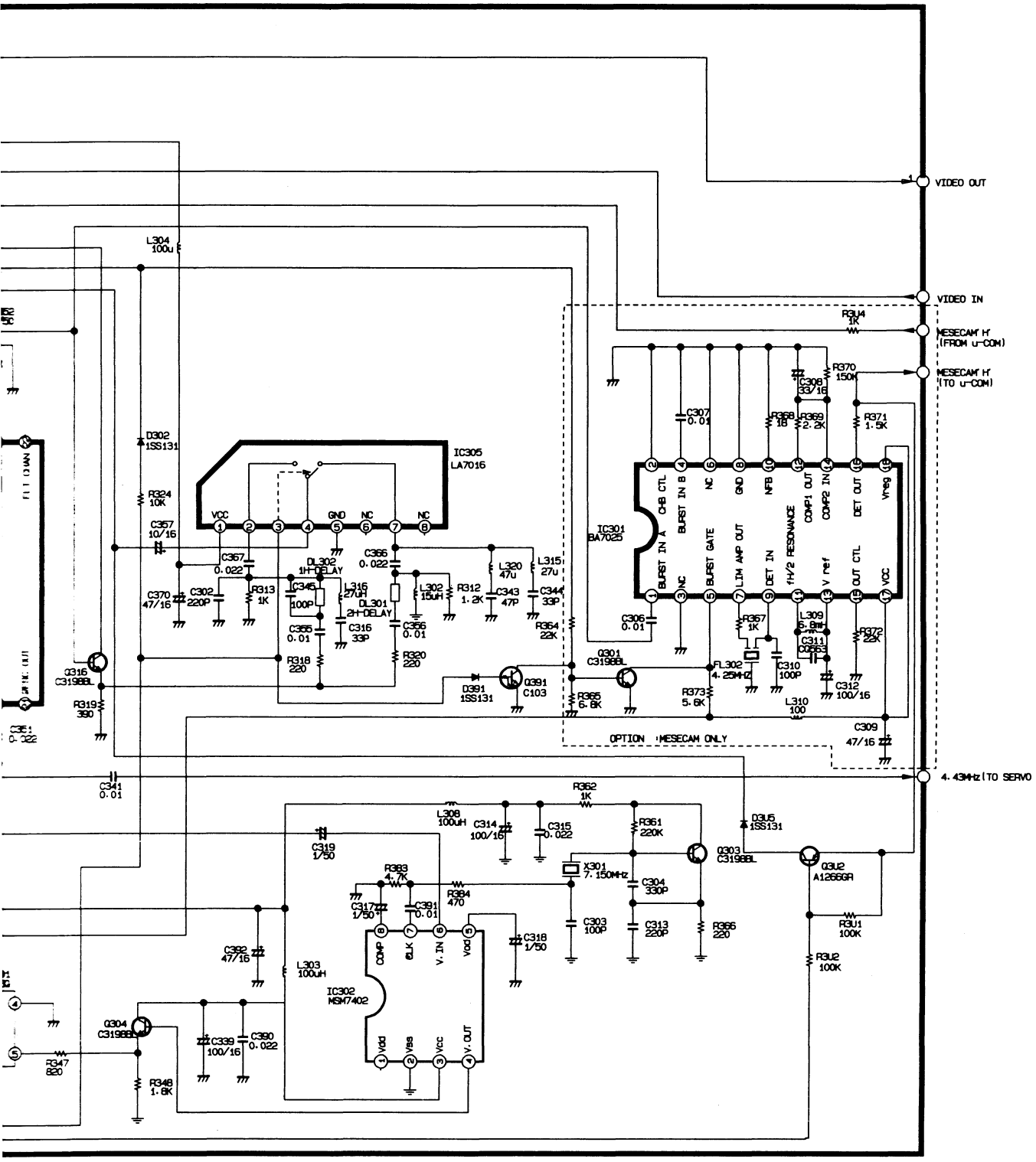


5. Audio Schematic Diagram



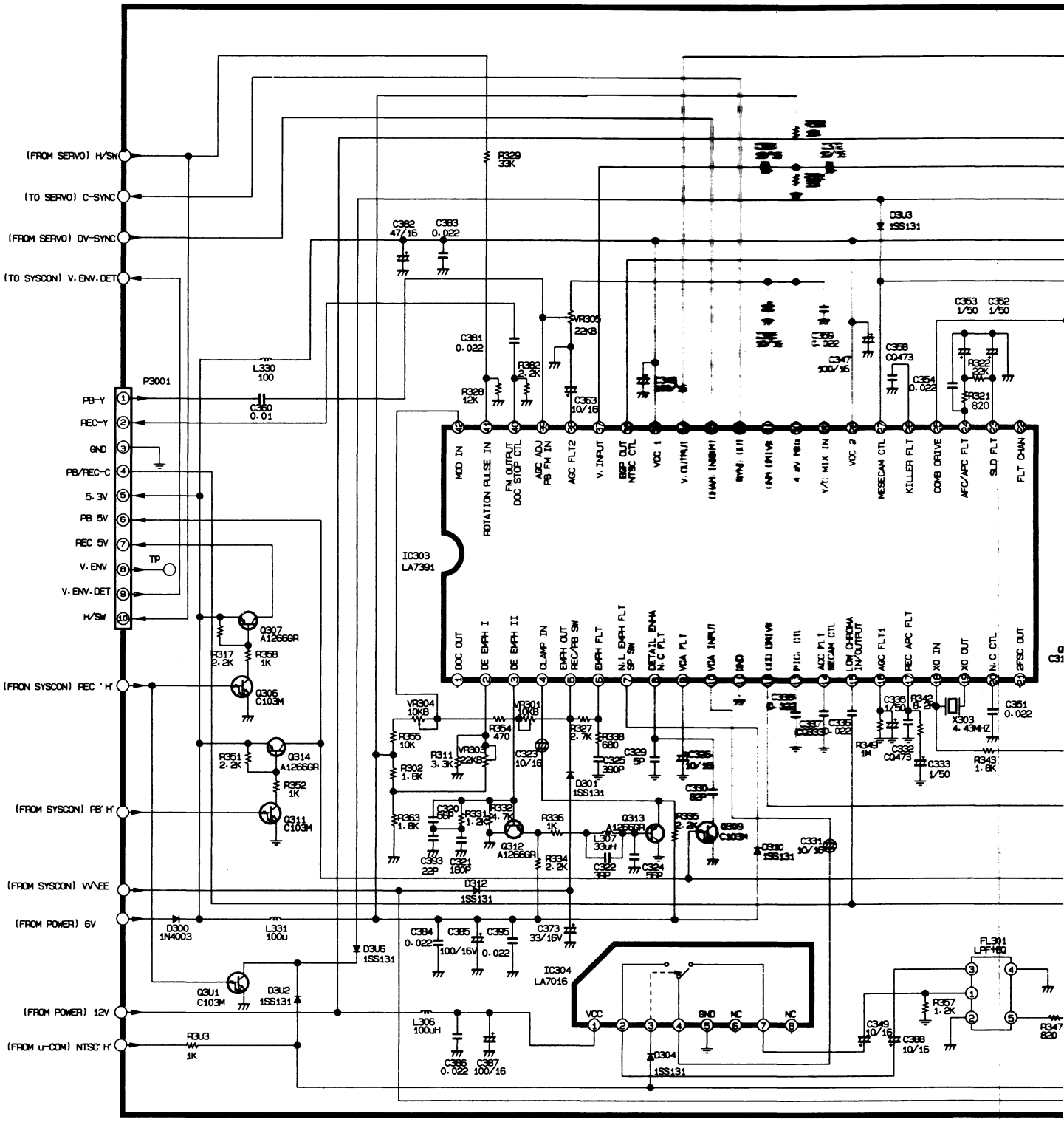
IC PIN	11	17	24
0 - 1	LINE	MUTE	EE
2.2-2.7	TUNER		
4.3-7.0	PB	MUTE	REC


12V
L405 100u
R426 390
C426 470/16
R427 75
V. OUT
TO TV
from Y/C
C422 47/16
C459 223
R424 27K
Q407 A1266GR
C425 47/16
ZD411 5.6V
ZD410 5.6V
C424 47/16
R425 4.7K
C431 4.7/50
616-069C
T402 LPF
A. IN
A. IN (TUNER)
L404 100u
ZD412 5.6V
ZD413 5.6V
C432 10/50
R443 47K
R445 390
C434 47/16
Q406 KTC1815
C446 10/16
ZD416 5.6V
A. OUT LINE
R441 5.6K
C443 CQ103
R442 47K
R444 1K
R446 22
ZD417 5.6V
IC451 uPC1406HA
Vcc V-CTL A-OUT A-INPUT GND
LINE VIDEO IN
ZD415 5.6V
ZD414 5.6V
TO TUNER
P4J02
PSJ01
AUDIO OUT
GND
AUDIO IN
PB 12V
GND
VIDEO OUT
GND
VIDEO IN
C429 4.7/50
R454 100K
L451 100u
C453 220/16
IC452 TDA2006
IN REF GND OUT Vcc
C456 22/50
R456 100K
R455 100K
C451 10/50
D401 1SS131
C452 0.01/MYL
R457 120K
C455 1000/25
6V
R481 1K
R458 8.2K
R451 6.8Ω
R452 6.8Ω
R453 6.8Ω
Q481 C3198
Q480 C3198
C454 22/25
C458 CQ104
C457 470/16
24V
VOL. CTL
TO SPK
R480 12K
REC
A. DEFEAT
LINE/TU./PB
12V
D402 1SS131
R430 10K
TUNER 'H'
VV 'H'
R429 56K
D403 1SS131



497-469A (VT-221P) 930707

6. Y/C Schematic Diagram



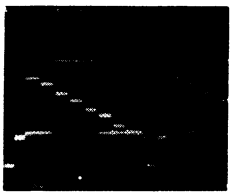
6-1. Main Analog(Y/C, Audio, Pre-Amp & Transcorder) Waveform

① 

IC 303 Pin 37
EE/REC MODE
VIDEO SIGNAL

② 

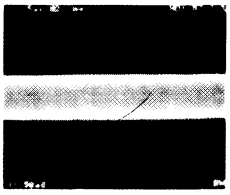
IC 303 Pin 3
EE/REC MODE
7MHz LPF OUTPUT
SIGNAL

③ 

IC303 Pin 4
EE/REC MODE
3MHz LPF OUTPUT
SIGNAL

④ 

IC303 Pin 5
EE/REC MODE
MAIN EMPHASIS
OUTPUT SIGNAL

⑤ 

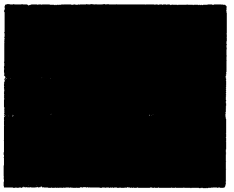
IC303 Pin 40
EE/REC MODE
VIDEO FM OUTPUT
SIGNAL

⑥ 

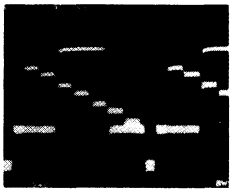
IC303 Pin 34
EE/REC MODE
VIDEO OUTPUT
SIGNAL

⑦ 

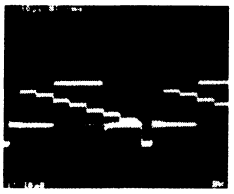
IC303 Pin 15
EE/REC 3.58MHz
MAIN CONVERTER
OUTPUT SIGNAL

⑧ 

IC303 Pin 39
PB MODE FM AGC
OUTPUT SIGNAL

⑨ 

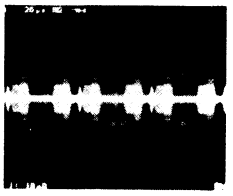
IC303 Pin 3
PB MODE 3M LPF
OUTPUT SIGNAL

⑩ 

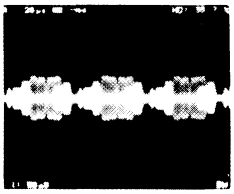
IC303 Pin 10
PB MODE 1H DELAY
OUTPUT SIGNAL

⑪ 

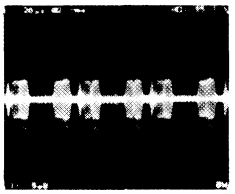
IC303 Pin 34
PB MODE VIDEO
OUTPUT SIGNAL

⑫ 

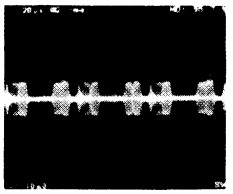
IC303 Pin 15
PB MODE 629KHz
COLOR INPUT
SIGNAL

⑬ 

IC303 Pin 25
PB MODE 3.5MHz
MAIN CONVERTER
OUTPUT SIGNAL

⑭ 

IC303 Pin 27
PB MODE COMB
FILTER OUTPUT
SINAL

⑮ 

IC303 Pin 29
PB MODE 3.58MHz
COLOR SIGNAL

* Y/C, pre-Amp Transsorder Voltage sheet.

IC 304

Mode / Pin No.	STOP	PB	REC
1	0	0.08	0.04
2	0.5	2.22	0.58
3	2.35	2.89	2.36
4	2.74	2.43	2.72
5	2.67	4.55	2.65
6	2.67	4.55	2.65
7	4.59	4.56	4.57
8	2.30	2.43	2.32
9	2.20	3.09	2.23
10	2.20	2.22	2.23
11	0	0.00	0.0
12	2.04	2.01	2.04
13	2.55	2.51	2.54
14	1.26	2.30	1.64
15	3.06	2.97	3.06
16	2.47	2.26	2.46
17	2.16	2.13	2.15
18	3.72	3.66	3.71
19	2.53	2.50	3.27
20	1.19	2.29	1.18
21	4.57	4.52	4.57
22	0.03	0.03	0
23	3.26	3.26	3.26
24	3.26	3.27	3.27
25	2.46	2.44	2.45
26	1.88	1.99	2.01
27	4.65	1.96	1.97
28	5.02	4.96	4.99
29	0.04	0.04	0.04
30	4.14	4.14	4.14
31	2.59	2.65	2.59
32	0.52	0.53	0.52
33	0.05	0.06	0.06
34	0.01	0.01	1.96
35	5.02	4.97	4.99
36	0.54	0.54	0.54
37	3.21	3.20	3.19
38	1.37	1.44	1.36
39	3.29	3.28	3.29
40	3.13	3.67	3.11
41	0.09	0.72	0.73
42	2.43	2.73	2.40

IC301

Mode / Pin No.	STOP	PB	REC
1	3.67	3.64	3.65
2	0	0	0
3	0	0	0
4	3.67	3.64	3.65
5	4.60	4.58	4.59
6	0	0	0.0
7	4.48	4.45	4.46
8	0	0	0
9	3.11	3.09	3.10
10	0.01	0.01	0.01
11	3.58	3.60	3.57
12	0	0.24	0.01
13	0.02	3.61	3.58
14	0	0.22	0
15	0	0	0
16	0	0	0
17	5.09	5.06	5.07
18	5.09	5.06	5.07

IC302

Mode / Pin No.	STOP	PB	REC
1	0.04	4.98	0.04
2	0.00	0.00	0.00
3	0.04	4.98	0.04
4	0.05	3.48	0.05
5	0.15	2.09	0.25
6	0.55	2.03	1.3
7	0.00	2.54	0.0
8	0.04	8.63	0.04

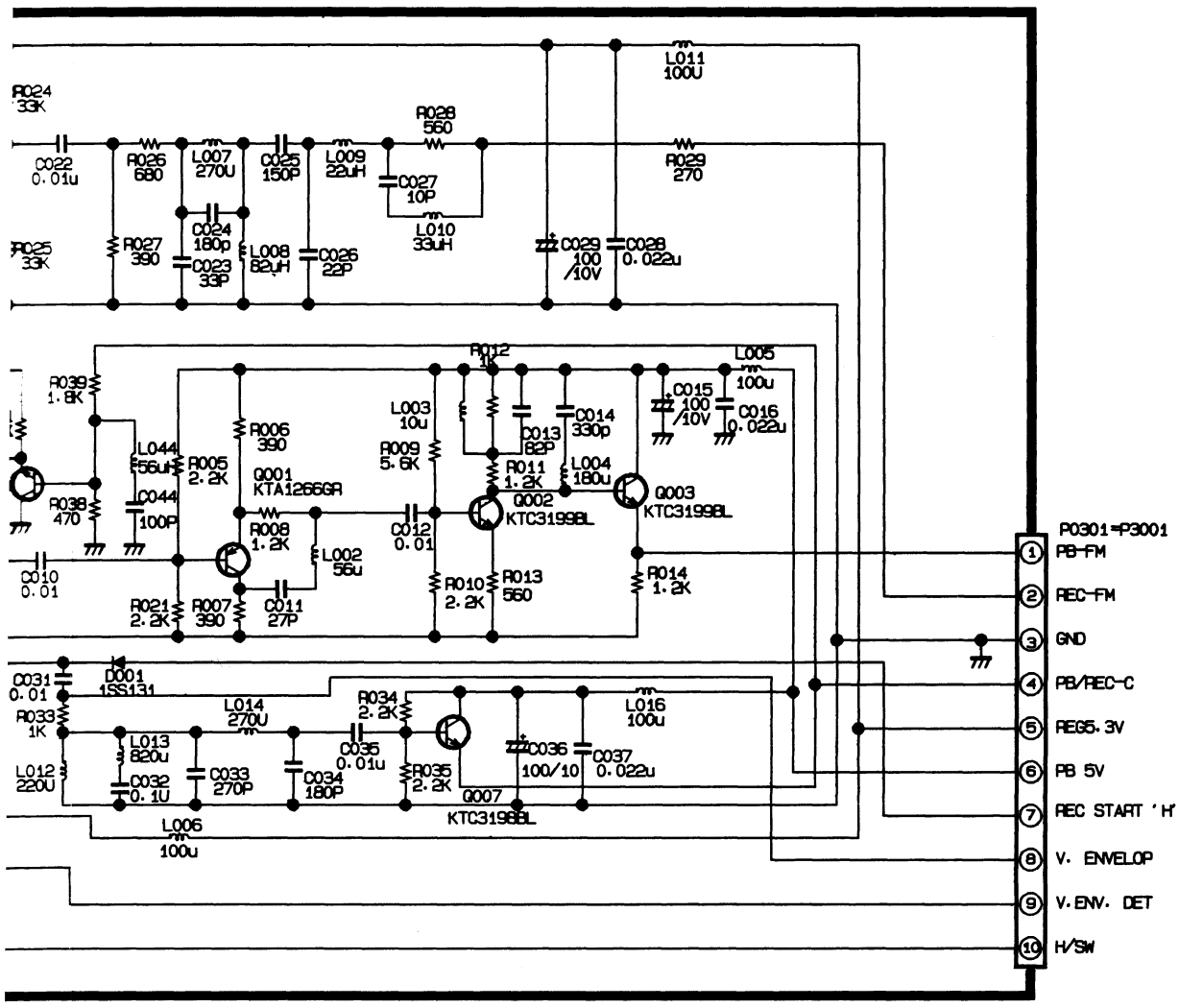
IC304

Mode / Pin No.	STOP	PB	REC
1	12.41	12.41	12.40
2	8.16	8.15	8.15
3	0.07	0	0
4	7.47	7.46	7.45
5	0	0	0
6	0	0	0
7	8.11	8.11	8.11
8	0	0	0

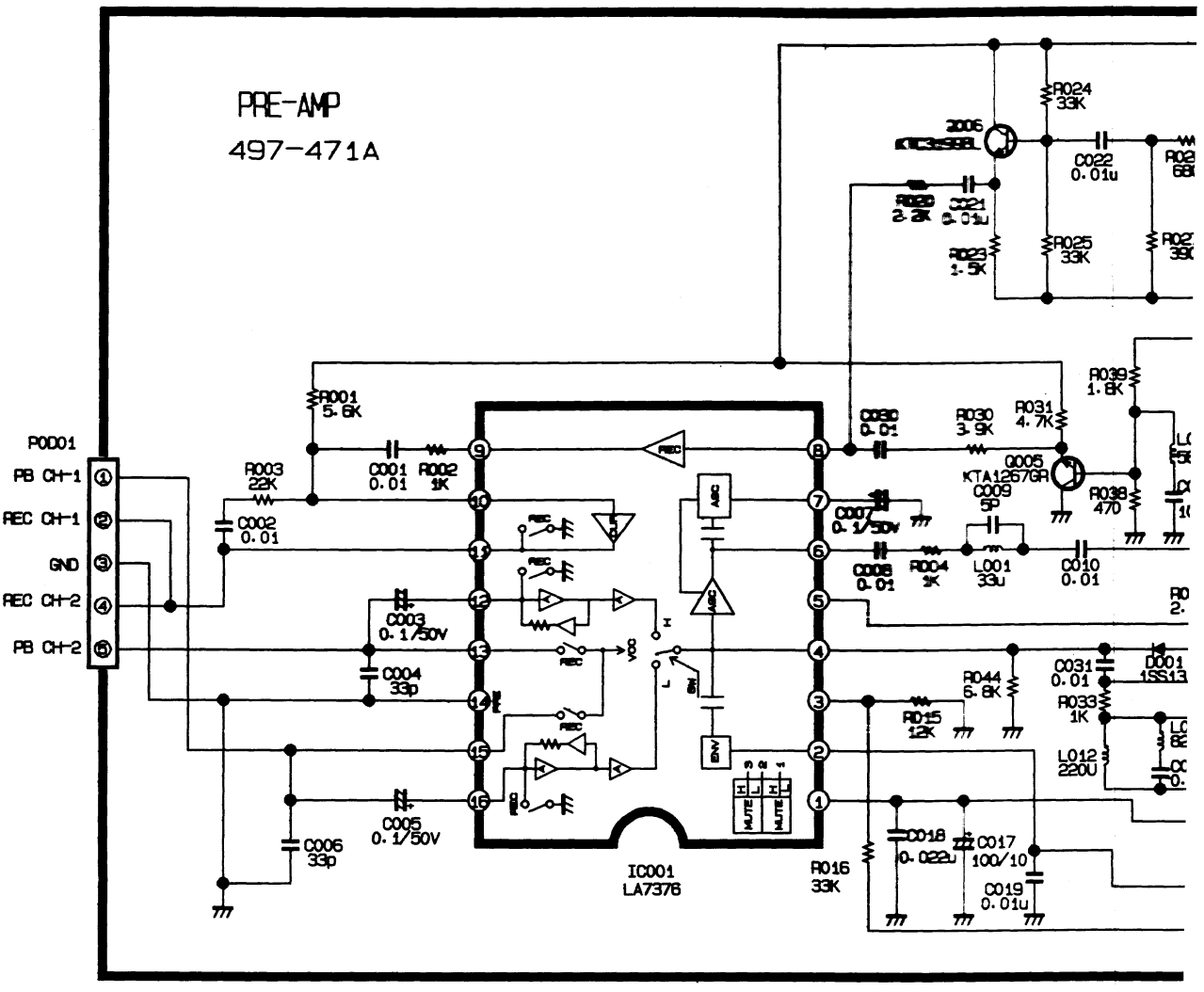
* Audio Circuit Voltage Sheet

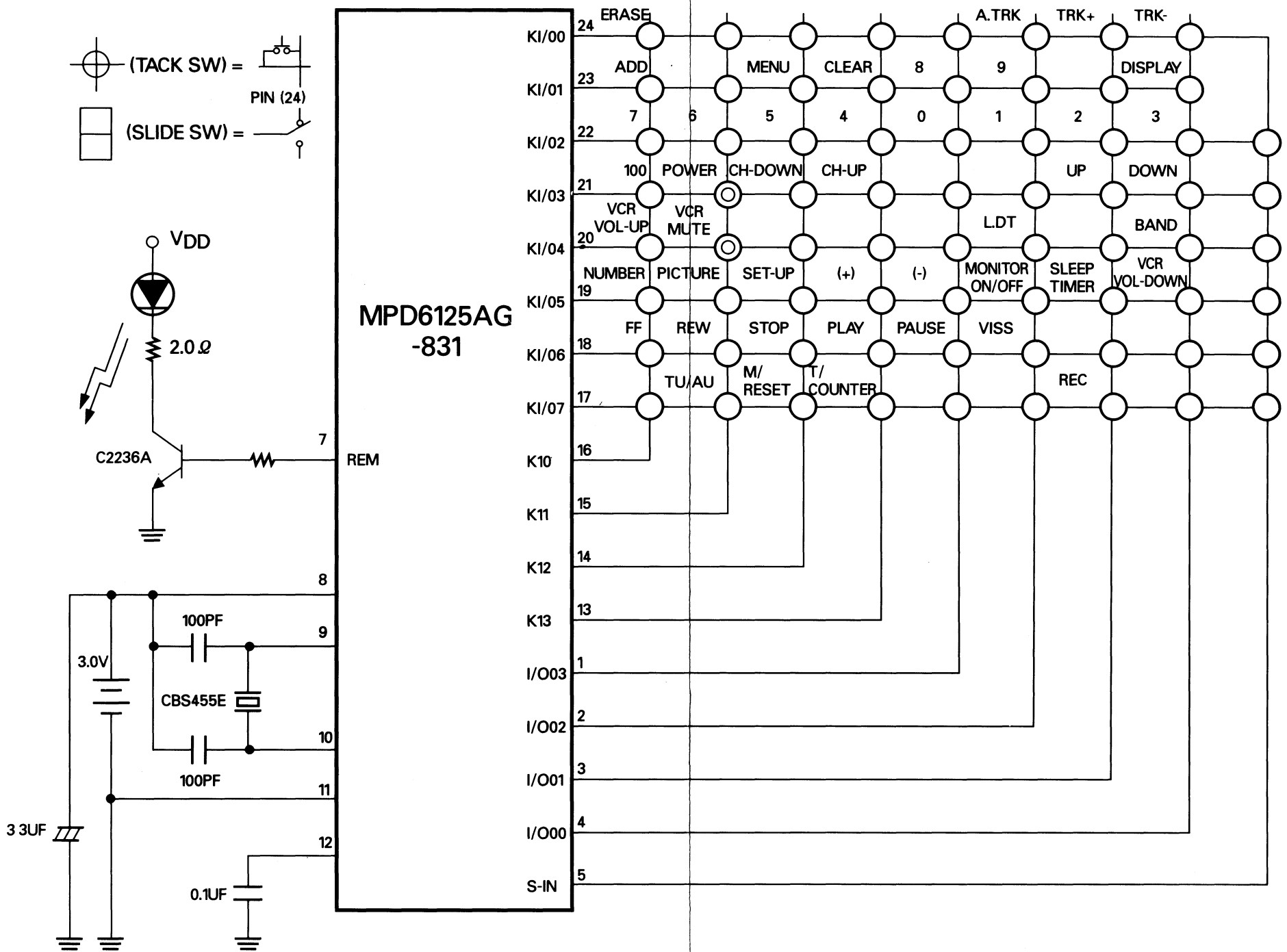
IC401

Mode / Pin No	EE	REC	PB	EE	REC	PB
1	0	0	0	0	0	0
2	8.5	11.2	11.2	11.4	8.5	9
3	0	0	0	0	0	0
4	2	2	2	2	2	2
5	2	2	2	2	2	2
6	0	0	0	0	0	0
7	2	2	2	2	2	2
8	2	2	2	2	2	2
9	0	0	0	0	0	0
10	0	0	0	0	4.8	4.6
11	0	0	0	0	0	0
12	0.4	0.4	0.3	0.4	0	0
13	9.5	9.6	9.6	10	9.5	9.5
14	6	6	6	6	6	5.8
15	6	6	6	6	6	5.8
16	6	6	5.8	6	6	5.8
17	6	6	6	6	6	5.8
18	0	0	0	0	0	0
19	0	0	0	5	0	5
20	0	0	0	0	0	0
21	0	0	0	0	0	0
22	0	0	0	0	0	0
23	0.5	0.6	0.6	0.6	0.5	0.5
24	0	0	5	0	5	5
25	5.5	5.8	5.8	5.8	5.8	5.8
26	0	5	5	5	5	5
27	0	12	12	12	12	12
28	0	11.5	11.5	11.5	11.5	11.5
29	12	12	12	12	12.4	12.2
30	12	12	12	12	12.2	12.1
31	11.4	11.4	11.4	11.4	11.4	11.5
32	0	0	0	0	0	0


R024 33K
C022 0.01u
R026 680
L007 270U
C025 150P
L009 22uH
R028 560
C027 10P
L010 33uH
L011 100U
R029 270
R025 33K
R027 390
C024 180p
C023 33P
L008 82uH
C026 22P
C029 100 /10V
C028 0.022u
R012 1K
L005 100u
R039 1.8K
L003 10u
C013 82P
C014 330p
C015 100 /10V
C016 0.022u
R006 390
R009 5.6K
R011 1.2K
L004 180u
L044 56uH
R005 2.2K
Q001 KTA1266GR
Q002 KTC3199BL
Q003 KTC3199BL
R038 470
L044 100P
C012 0.01
R008 1.2K
L002 56u
C010 0.01
R021 2.2K
R007 390
C011 27P
R010 2.2K
R013 560
R014 1.2K
C031 0.01
D001 1SS131
R033 1K
L014 270U
R034 2.2K
L016 100u
L013 820u
C035 0.01u
C036 100/10
C037 0.022u
L012 220U
C032 0.1U
C033 270P
C034 180P
R035 2.2K
Q007 KTC3198BL
L006 100u
P0301=P3001
1 PB-FM
2 REC-FM
3 GND
4 PB/REC-C
5 REG5.3V
6 PB 5V
7 REC START 'H'
8 V. ENVELOP
9 V.ENV. DET
10 H/SW

7. Pre-Amp Schematic Diagram




(TACK SW) =
PIN (24)
(SLIDE SW) =
VDD
2.0Ω
C2236A
7
REM
8
100PF
9
3.0V
CBS455E
10
100PF
11
3 3UF
12
0.1UF
MPD6125AG
-831
KI/00
KI/01
KI/02
KI/03
KI/04
KI/05
KI/06
KI/07
K10
K11
K12
K13
I/O03
I/O02
I/O01
I/O00
S-IN
24
23
22
21
20
19
18
17
16
15
14
13
1
2
3
4
5
ERASE
A.TRK
TRK+
TRK-
ADD
MENU
CLEAR
8
9
DISPLAY
7
6
5
4
0
1
2
3
100
POWER
CH-DOWN
CH-UP
UP
DOWN
VCR
VOL-UP
VCR
MUTE
L.DT
BAND
NUMBER
PICTURE
SET-UP
(+)
(-)
MONITOR
ON/OFF
SLEEP
TIMER
VCR
VOL-DOWN
FF
REW
STOP
PLAY
PAUSE
VISS
TU/AU
M/
RESET
T/
COUNTER
REC