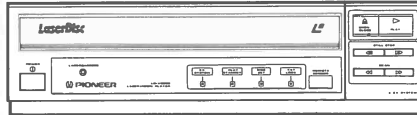


Service Manual



ORDER NO.
ARP 1778

LD PLAYER

LD-V2200

- This service manual is applicable to the KUC type.

CONTENTS

1. SAFETY INFORMATION	2
2. PACKING	3
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1. SAFETY INFORMATION

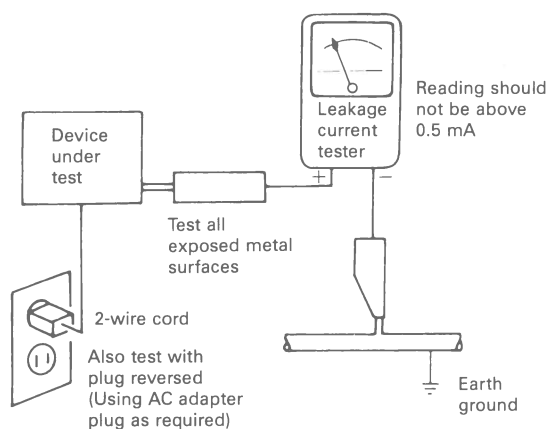
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120 V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a Δ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VAROITUS!

LAITE SISÄLTÄÄ LASERDIODIN, JOKA LÄHETTÄÄ NÄKYMÄTÖNTÄ, SILMILLE VAARALLISTA INFRAPUNASÄTEILYÄ LAITTEEN SISÄLLÄ ON LASERDIODIN LÄHEISYYDESSÄ KUVAN 1. MUKAINEN VAROITUSMERKKI.



LASER
Kuva 1
Lasersäteilyn
varoituserkki

WARNING!

DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.



LASER
Picture 1
Warning sign for
laser radiation

ADVERSEL:

USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGA UDSAETTELSE FOR STRÅLING.

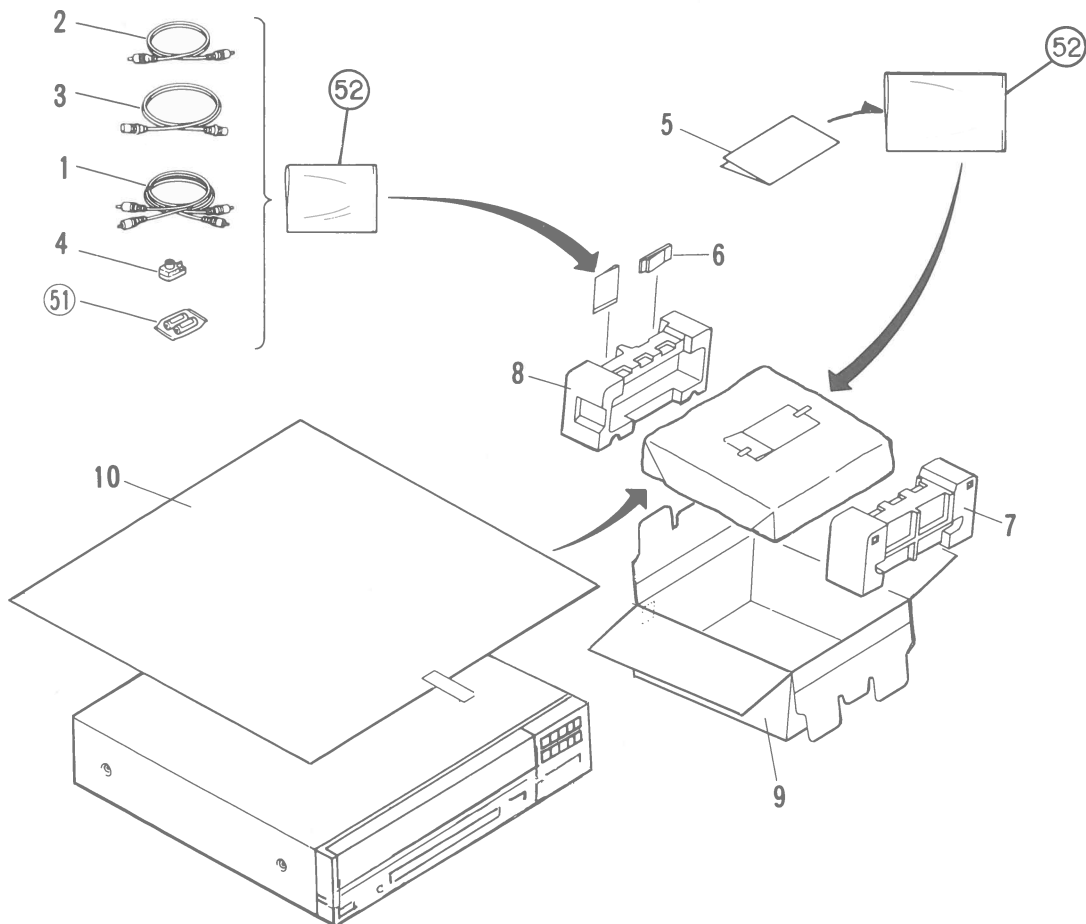
VIKTIGT

APARATEN INNEHÅLLER LASER AV HÖGRE KLASS ÄN 1. INGREPP I APPARATEN BÖR GÖRAS AV SPECIELLT UTBILDAD PERSONAL.

IMPORTANT

THIS PIONEER APPARATUS CONTAINS LASER OF HIGHER CLASS THAN 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

2. PACKING



• Parts List of Packing

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1.	VDE-055	Connection Cord		9.	DHG1104	Packing case
	2.	VDE-056	Video cable		10.	VHL1006	Mirror mat
	3.	VDE1001	RF antenna cable				
	4.	VKX-020	Antenna adaptor		51.		Battery
	5.	DRB1015	Operating instructions		52.		Polyethylene bag
	6.	DXR1006	Remote control unit				
	7.	DHA1066	Pad (F)				
	8.	DHA1065	Pad (R)				

3. EXPLODED VIEWS AND PARTS LIST

3.1 EXTERIOR SECTION

NOTES:

- *Parts without part number cannot be supplied.*
- *The \triangle mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by “ \odot ” are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

• Parts List of Exterior Section

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1.	DNK1163	Carry		101.		Rack holder
	2.	VNL1061	Rack gear (R)		102.		Bottom plate assembly
	3.	VNL1060	Rack gear (L)		103.		Base assembly
	4.	VNL1062	Stopper		104.		Stop plate
	5.	VBH1021	Stopper spring		105.		Container (Y)
	6.	VEC1115	Disc pad		106.		Front panel
	7.	VEB1041	Rack dump rubber		107.		Rubber foot (A)
	8.	VEC1131	Disc pad (Y1)		108.		Insulation sheet
	9.	VEC1132	Disc pad (Y2)		109.		Bottom plate
	10.	IPZ30P080FCU	Screw		110.		JACK assembly
	11.	VXX1132	Container assembly-S		111.		Blind plate (L)
	12.	DAH1285	Display panel		112.		Blind plate (R)
	13.	.....	.....		113.		Caution label
	14.	DXX1229	Front panel assembly-S		114.		Display panel
	15.	BPZ30P080FCU	Screw				
	16.	DXX1230	Bonnet assembly-S				
	17.	BBZ30P050FCC	Screw				
	18.	APZ30P060FBR	Screw				
	19.	BBT30P060FBR	Screw				
	20.	BPZ40P100FBR	Screw				
	21.	VEC1059	Plastic rivet				
	22.	VBK1009	Switch spring				
	23.	VEB1045	Stop dump rubber				
	24.	DAC1134	Power button				
	25.	DBH1026	Power spring				
	26.	DWG1085	KEYB assembly				
	27.	DAC1133	Function button				
	28.	DNK1366	Loading panel				
	29.	VBN-005	Nut				
	30.	PMA40P100FMC	Screw				
	31.	APZ30P080FCU	Screw				

1

2

3

4

5

6

A

A

B

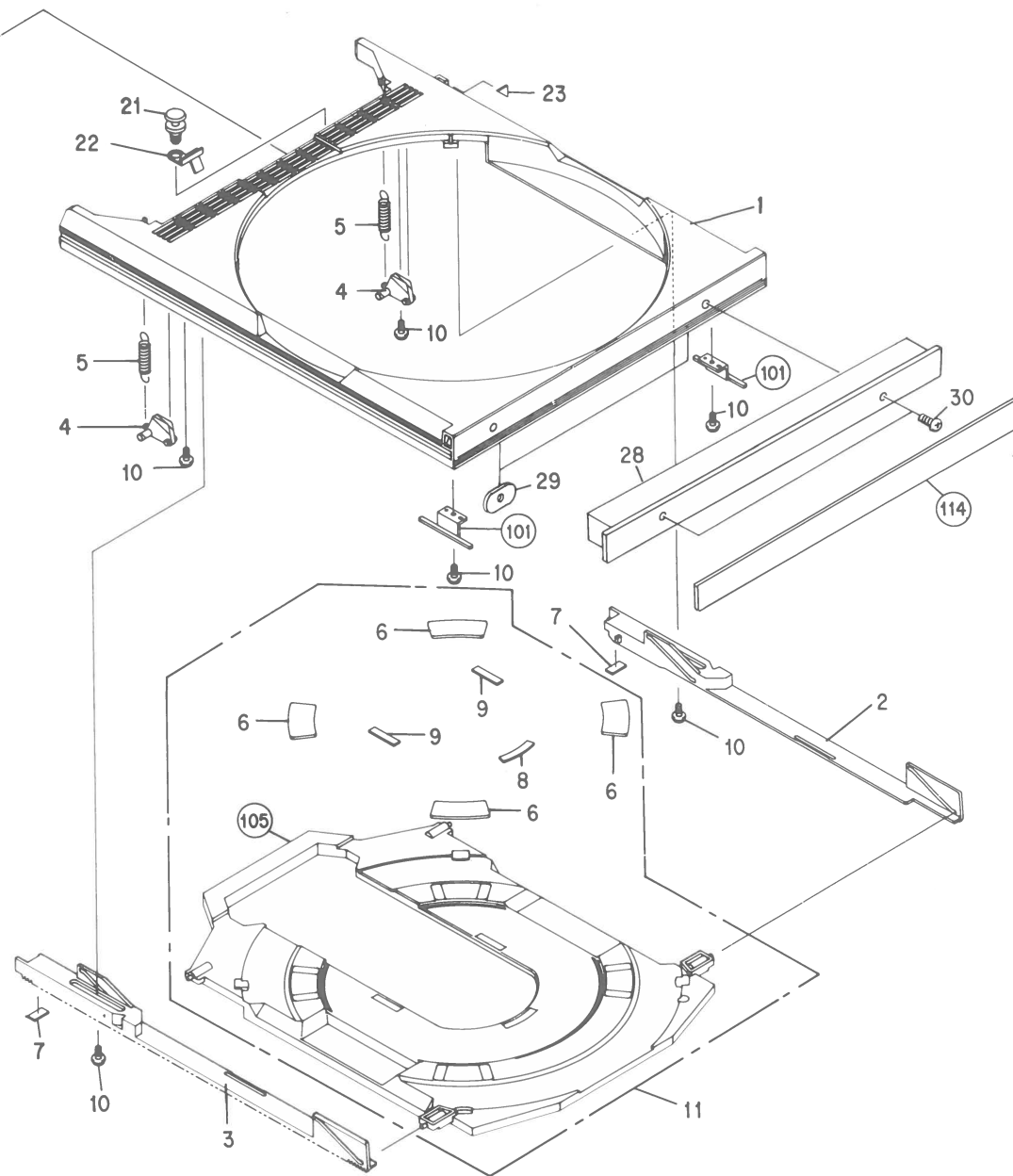
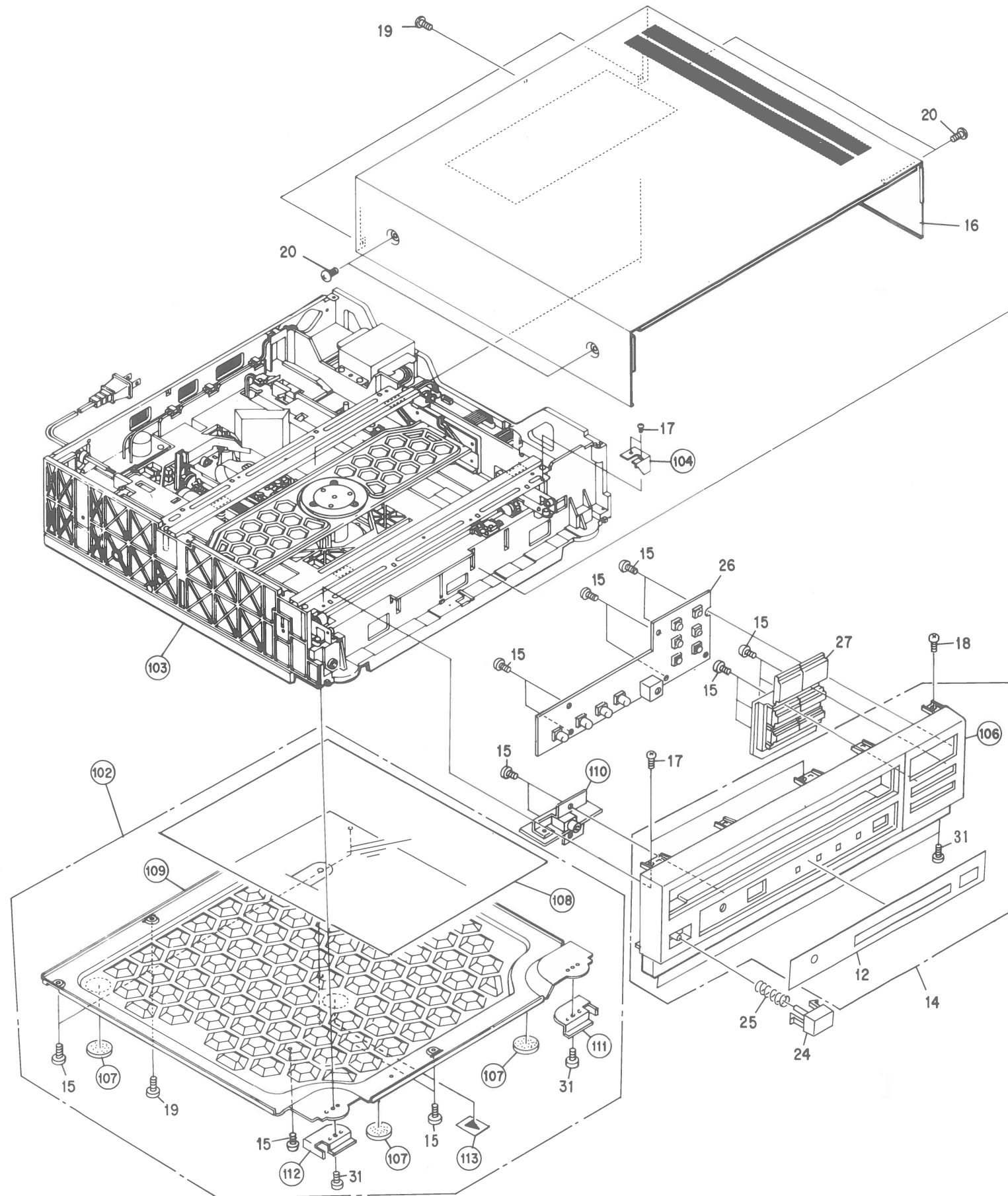
B

C

C

D

D



1

2

3

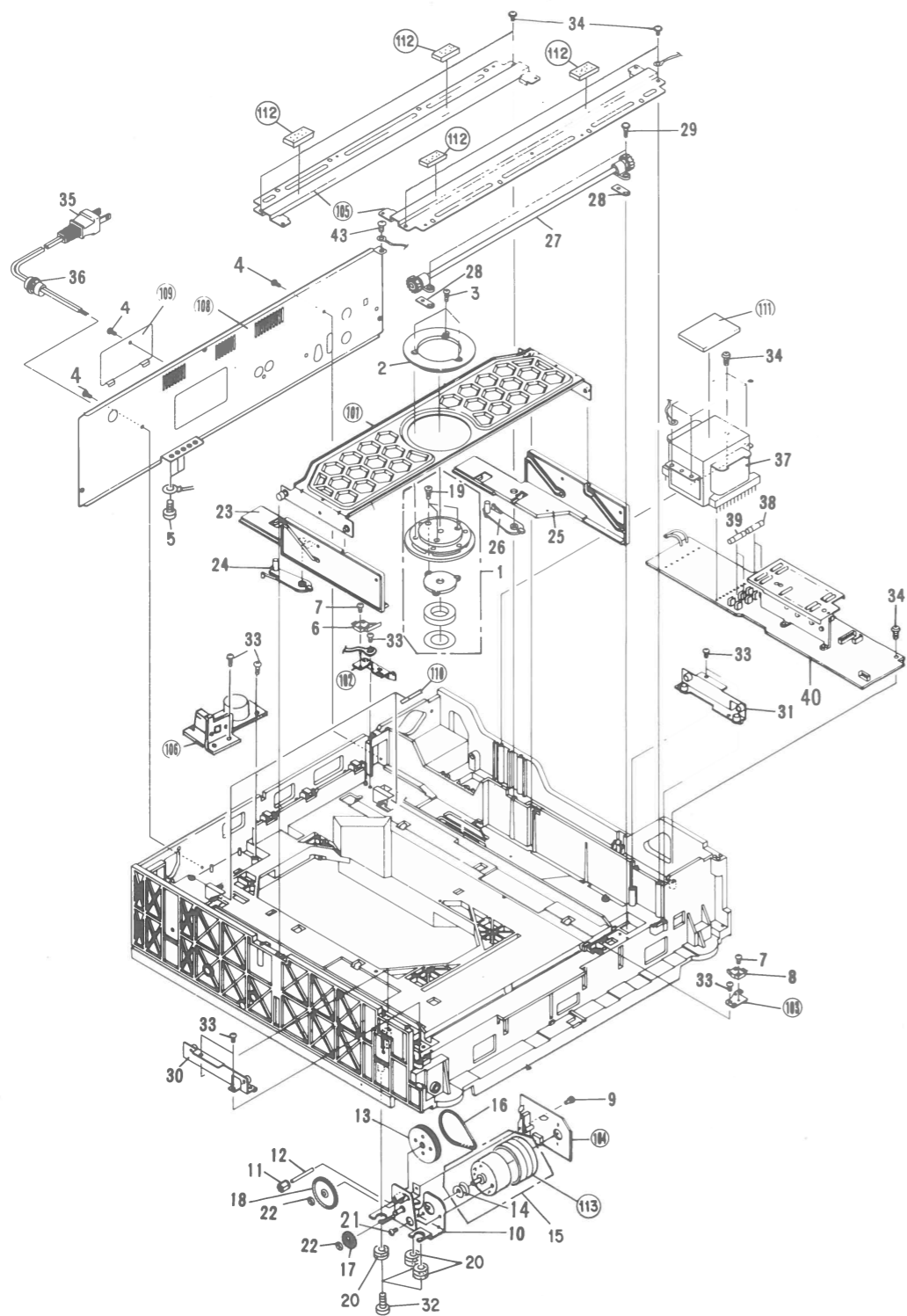
4

5

6

6

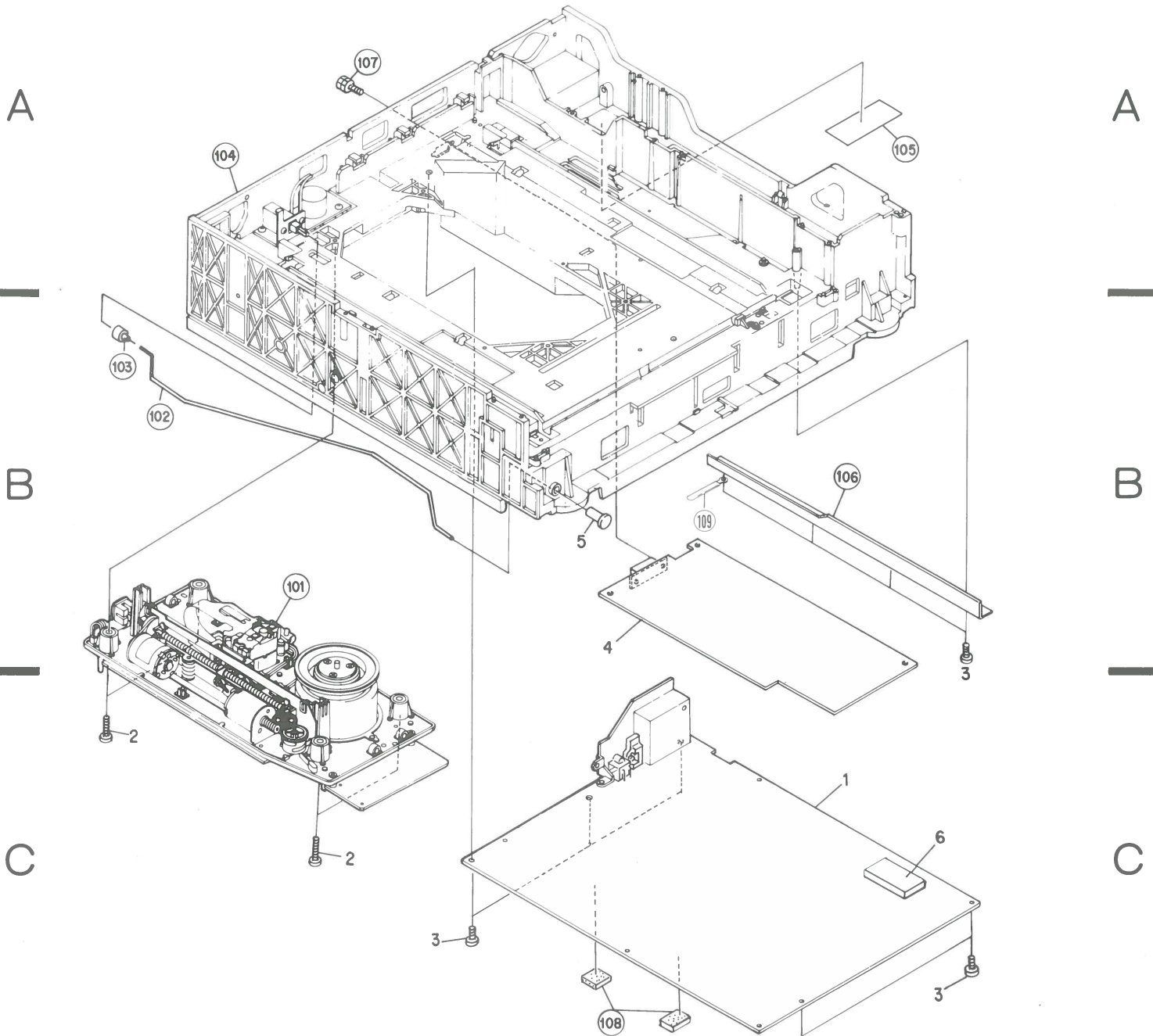
3.2 TOP VIEW



• Parts List of Top View

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1.	VXX1157	Disc clamper assembly-S		31.	VXA1162	Roller plate (R) assembly
	2.	VNL1130	Clamper head		32.	VBA1003	Screw
	3.	BPZ26P060FCU	Screw		33.	BPZ30P080FCU	Screw
	4.	BPZ30P080FBR	Screw		34.	APZ30P080FCU	Screw
	5.	BBZ30P060FCC	Screw	△	35.	VDG1012	AC power cord
	6.	VSK-010	Slide switch (S2) (TABLE/IN)		36.	CM-22C	Strain relief
	7.	BMZ20P080FCU	Screw	△	37.	VTT1027	Power transformer
	8.	VSK-012	Slide switch (S3) (TABLE/OUT)	△	38.	VEK-018	Fuse (3A) (FU1, FU2)
	9.	VEC-143	Plastic rivet	△	39.	VEK-022	Fuse (2A) (FU3, FU4)
	10.	VXA1088	Motor base assembly	⊙	40.	DYR1030	SYPS assembly
	11.	VNL1020	Gear (A)		41.	.....	.....
	12.	VLL1037	Gear (A) shaft		101.		Clamper holder assembly
	13.	VXA-477	Pulley (L) assembly		102.		Switch holder (A)
	14.	VNL1051	Motor pulley		103.		Switch holder (B)
	15.	VXX1084	Loading motor assembly-S		104.		LMCB assembly
	16.	VEB-125	Synchro belt L		105.		Bridge
	17.	VNL1010	Gear (C)		106.		LFSB assembly
	18.	VNL1064	Gear (B)		107.		.....
	19.	CMZ20P050FMC	Screw		108.		Rear panel
	20.	VEB1025	Rubber bush		109.		Rear cover
	21.	PMB26P040FCU	Screw		110.		Base dump rubber
	22.	WT32D060D050	Washer				
	23.	VNL1068	Clamp cam (L)		111.		Transformer cushion
	24.	VNL1070	Lock lever (L)		112.		Cushion
	25.	VNL1069	Clamp cam (R)		113.		Shield
	26.	VNL1071	Lock lever (R)				
	27.	VXA1163	Synchro gear assembly				
	28.	VEB1026	Dumper sheet				
	29.	VBA1002	Screw				
	30.	VXA1161	Roller plate (L) assembly				

3.3 BOTTOM VIEW



• Parts List

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
●	1.	DWS1067	TVCB assembly		101.		Mechanism assembly
	2.	APZ40P120FCU	Screw		102.		PSW joint
	3.	BPZ30P080FCU	Screw		103.		Joint cap
●	4.	DWG1084	ADDS assembly		104.		Base assembly
	5.	VNL1084	PSW cap		105.		Cover
	6.	PD0047A	μ -COM (IC401)		106.		Reinforcement
					107.		Bolt
					108.		Cushion
					109.		Cord holder

3.4 MECHANISM ASSEMBLY

A

A

B

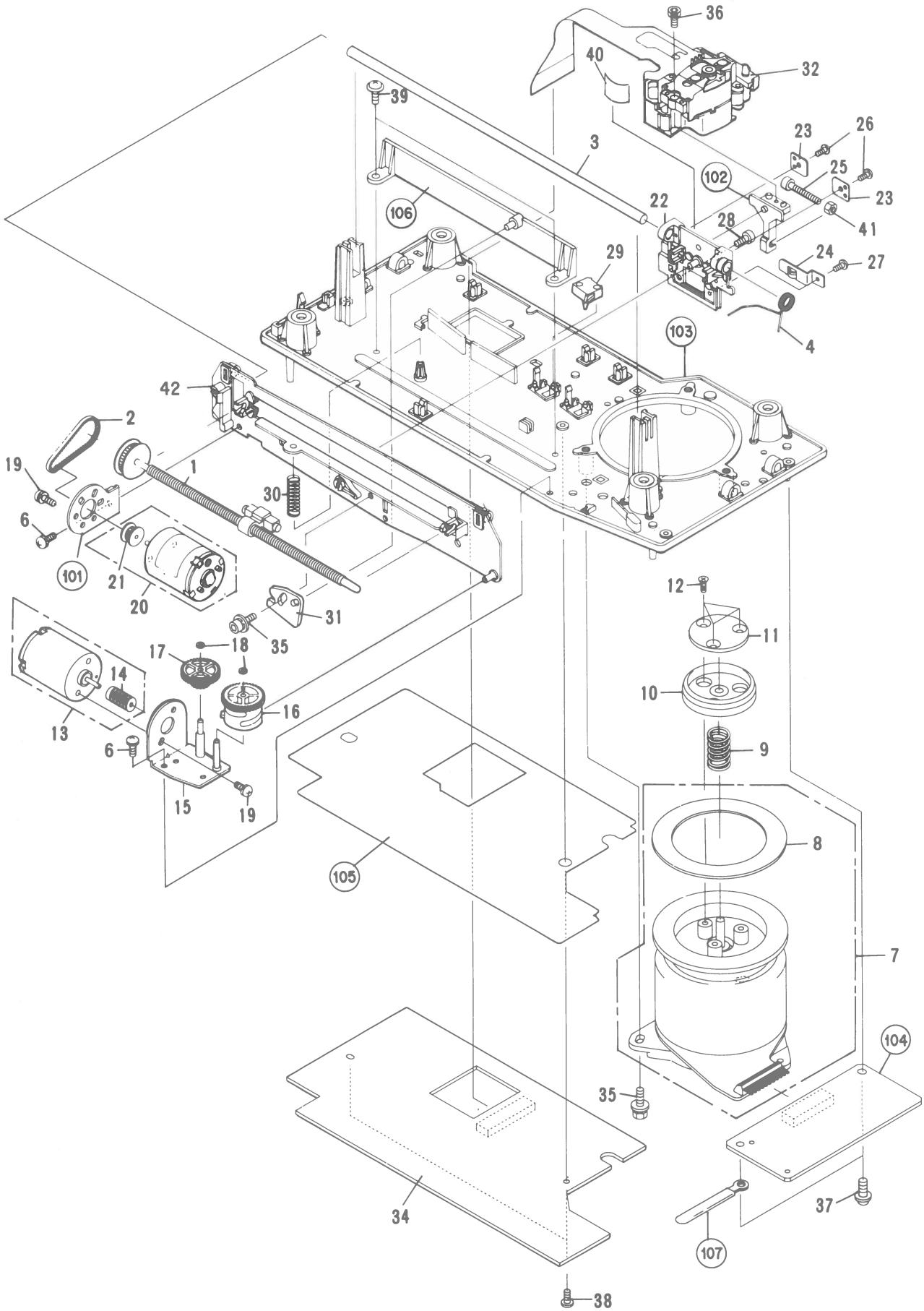
B

C

C

D

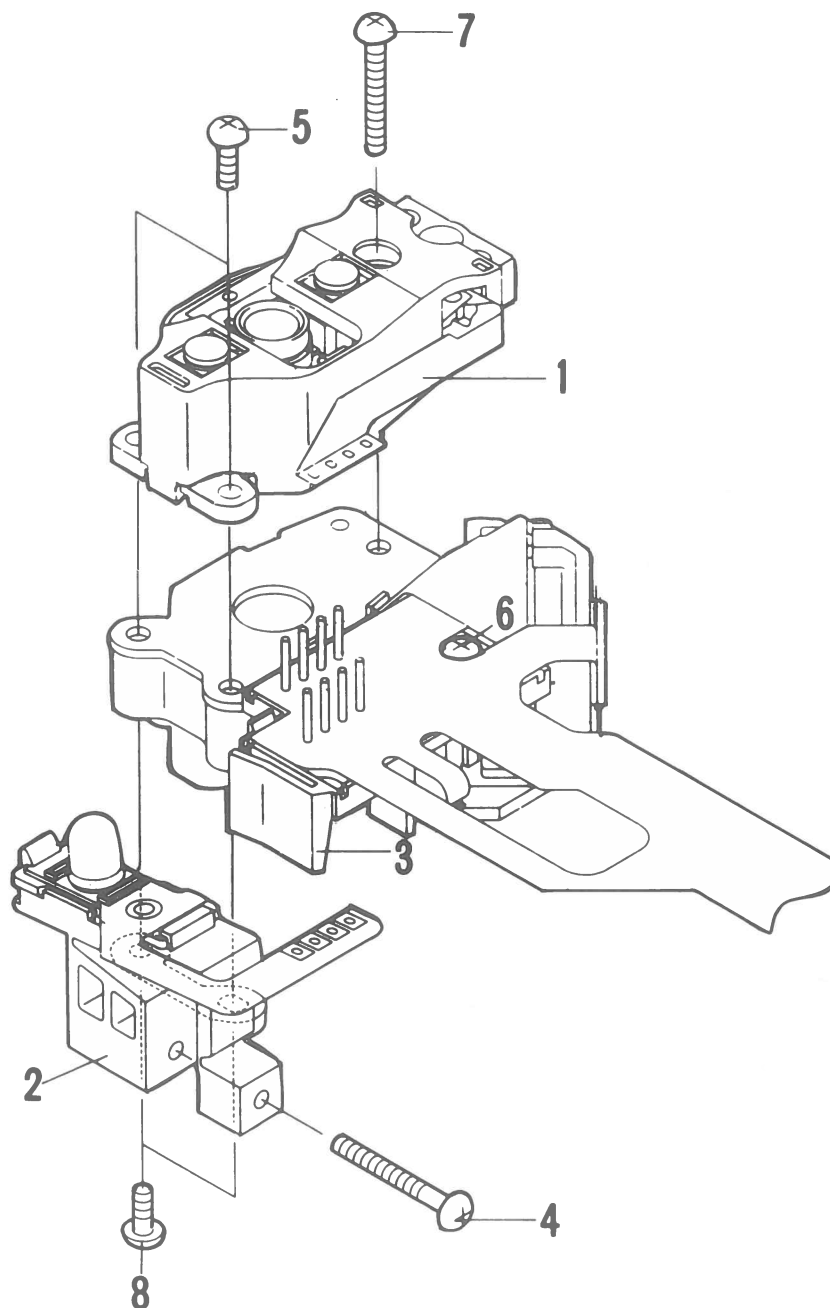
D



• Parts List of Mechanism Assembly

Mark	No.	Part No.	Description
	1.	DXB1119	Screw nut assembly
	2.	VEB1029	Timing belt
	3.	DLA1153	Carriage shaft
	4.	VBH1040	Slider spring
	5.	.....	.....
	6.	PMA30P050FMC	Screw
	7.	VXX1085	Spindle motor assembly-S
	8.	VEB1008	Rubber spacer
	9.	VBH1025	Centering spring
	10.	VLA1002	Centering hab
	11.	VNE1103	Plate
	12.	CBZ30P080FCC	Screw
	13.	VXX1082	Tilt motor assembly-S
	14.	VNL1085	Worm gear
	15.	VXA1106	TL base assembly
	16.	VNL1079	Cam gear
	17.	VNL1078	Gear
	18.	WT21D050D050	Washer
	19.	PMA30P040FCU	Screw
	20.	VXX1083	Slider motor assembly-S
	21.	VNL-635	Motor pulley
	22.	VNL1080	Slider
	23.	VNE1100	Lock plate
	24.	VXA1159	Roller assembly
	25.	SMZ30H250FBT	Screw
	26.	PPZ20P050FMC	Screw
	27.	PMA20P040FCU	Screw
	28.	SMZ30H080FBT	Screw
	29.	VSK1003	Slide switch (S4) (SLIDER/PARK)
	30.	VBH1022	Tilt spring
	31.	VNL1077	Cam
	32.	VWY1011	Pick up assembly
	33.	.....	.....
	34.	DWS1074	FTSB assembly
	35.	VLL-378	Bolt 8
	36.	VLL1107	Bolt 2.6 x 6
	37.	IPZ30P080FCU	Screw
	38.	BPZ30P080FCU	Screw
	39.	PMB30P060FCU	Screw
	40.	VBK1010	SN spring
	41.	NC30FMC	Nut
	42.	VNL1076	Tilt base
	101.		M holder
	102.		PU holder
	103.		Mechanism base
	104.		BLDB assembly
	105.		FTS sheet
	106.		Base plate
	107.		Cord retainer

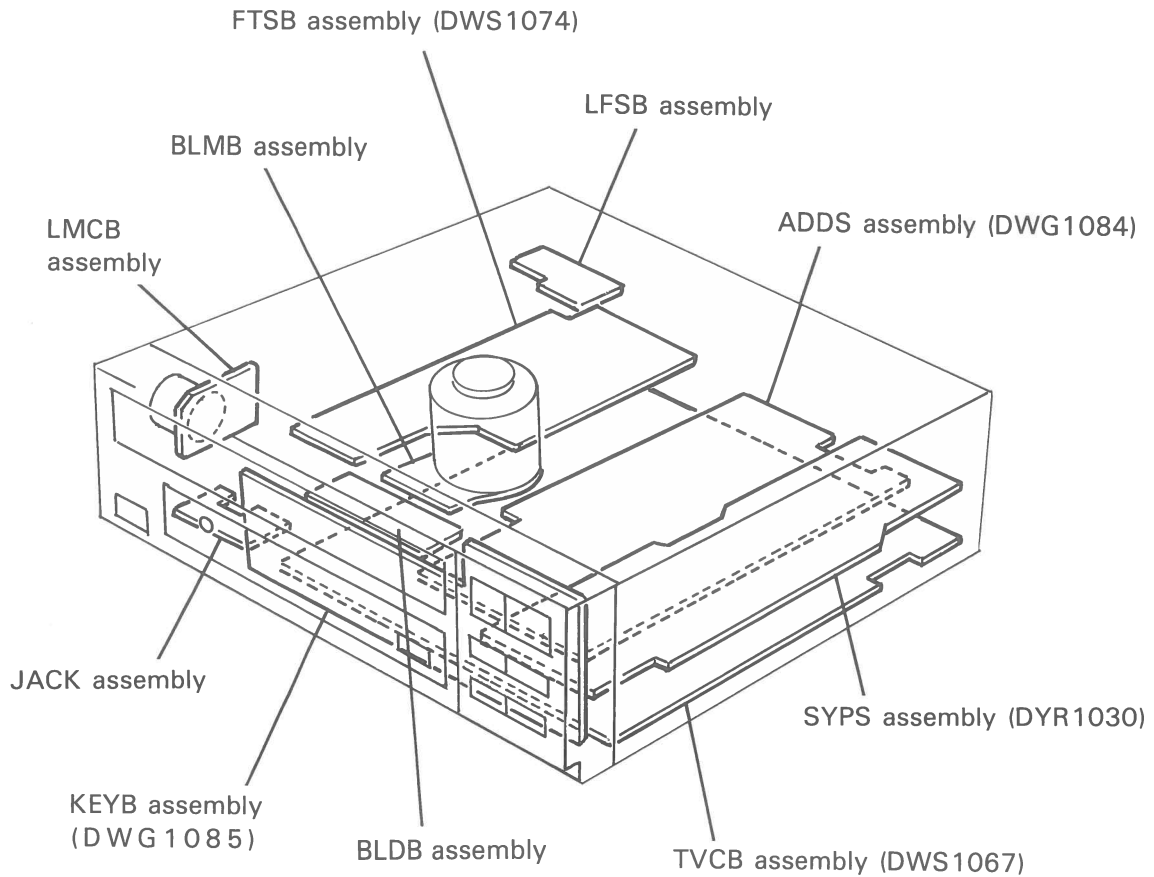
3.5 PICK-UP ASSEMBLY



● Parts List of Pick-up Assembly

Mark	No.	Part No.	Description
	1.	VXX1241	Actuator assembly
	2.	VXX1094	Sensor assembly-S
	3.	VXX1095	Prepick-up assembly
	4.	PBZ20P160FMC	Screw
	5.	PMA20P060FMC	Screw
	6.	PMA20P080FMC	Screw
	7.	PMA20P140FMC	Screw
	8.	PMB20P050FMC	Screw

4. P.C. BOARD LOCATIONS



LFSB	Line Filter & Switch Board
FTSB	Focs Tracking and Slider Board
BLMB	Brushless Motor Board
LMCB	Loading Motor Connection Board
JACK	Jack Board
KEYB	Key Board
TVCB	TBC, Video and Control Board
SYPS	System Power Supply
ADDS	Audio Demodulation and D-sub Connector Board
BLDB	Brushless Motor Drive Board

5. SCHEMATIC DIAGRAM AND P.C. BOARD PATTERNS

SCHEMATIC DIAGRAM

NOTE:

1. RESISTORS.

Indicated in Ω , $\frac{1}{4}W$, $\frac{1}{8}W$, $\pm 5\%$ tolerance unless otherwise noted k; k Ω , M; M Ω , (F); $\pm 1\%$, (G); $\pm 2\%$, (K); $\pm 10\%$, (M); $\pm 20\%$ tolerance

2. CAPACITORS:

Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.


3. VOLTAGE

; DC voltage (V) at no input signal


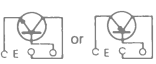






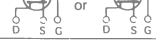








































4. OTHERS:




; Signal route.

; Adjusting point.

The  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

* marked capacitors and resistors have parts numbers.

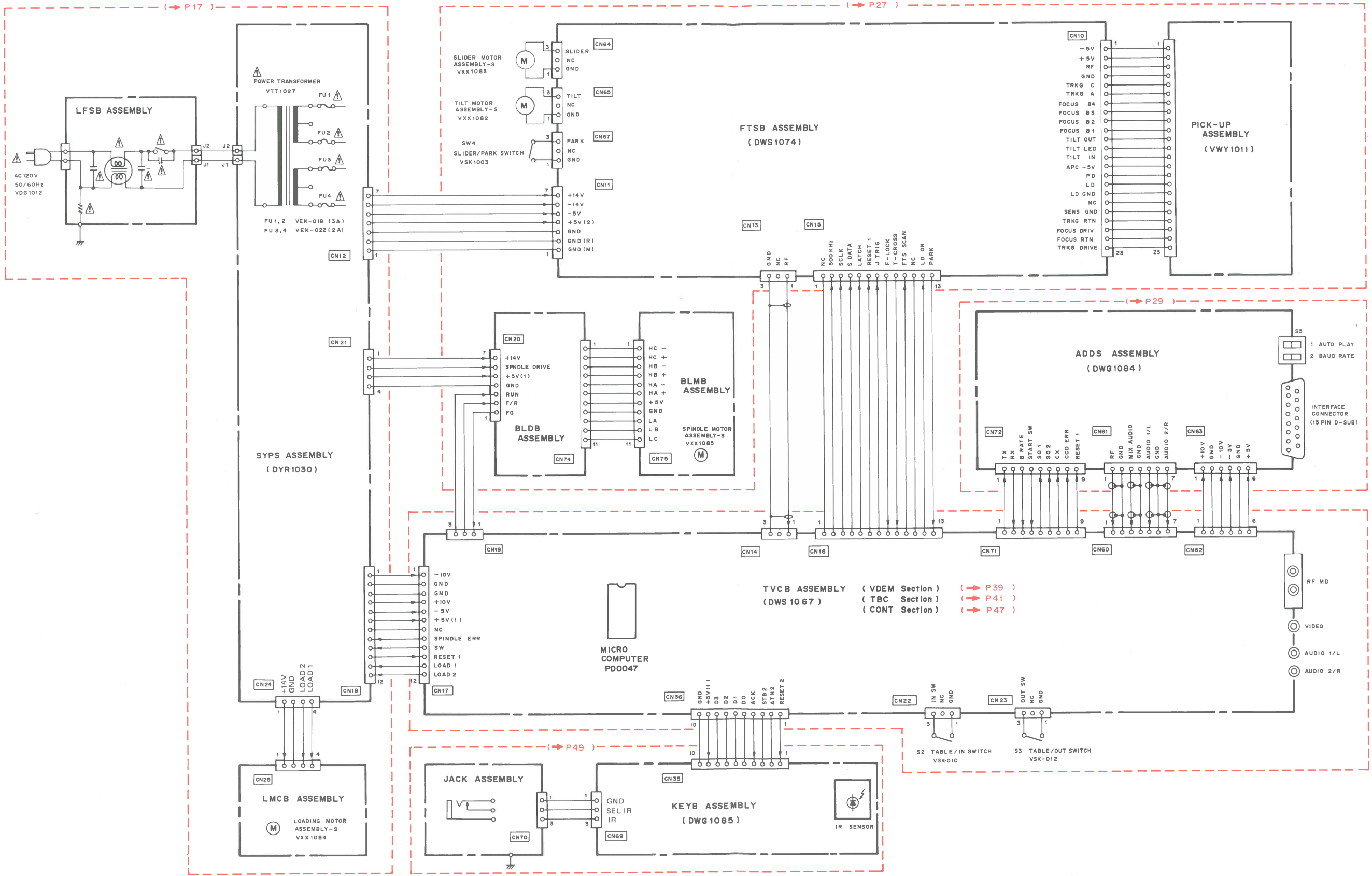
P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name	
		Transistor			Ceramic capacitor	
		FET				Mylar capacitor
		Diode				Styrol capacitor
		Zener diode			Electrolytic capacitor (Non polarized)	
		LED			Electrolytic capacitor (Noiseless)	
		Varactor			Electrolytic capacitor (Polarized)	
		Tact switch			Electrolytic capacitor (Polarized)	
		Resistor			Power capacitor	
		Resistor array			Semi-fixed resistor	
		Inductor			Resistor	
		Coil			Resistor	
		Resonator			Resistor	
		Thermistor			Thermistor	
		Filter			Resistor	

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with  shows negative terminal.
4. The diode marked with  shows cathode side.
5. The transistor terminal marked with  shows emitter.

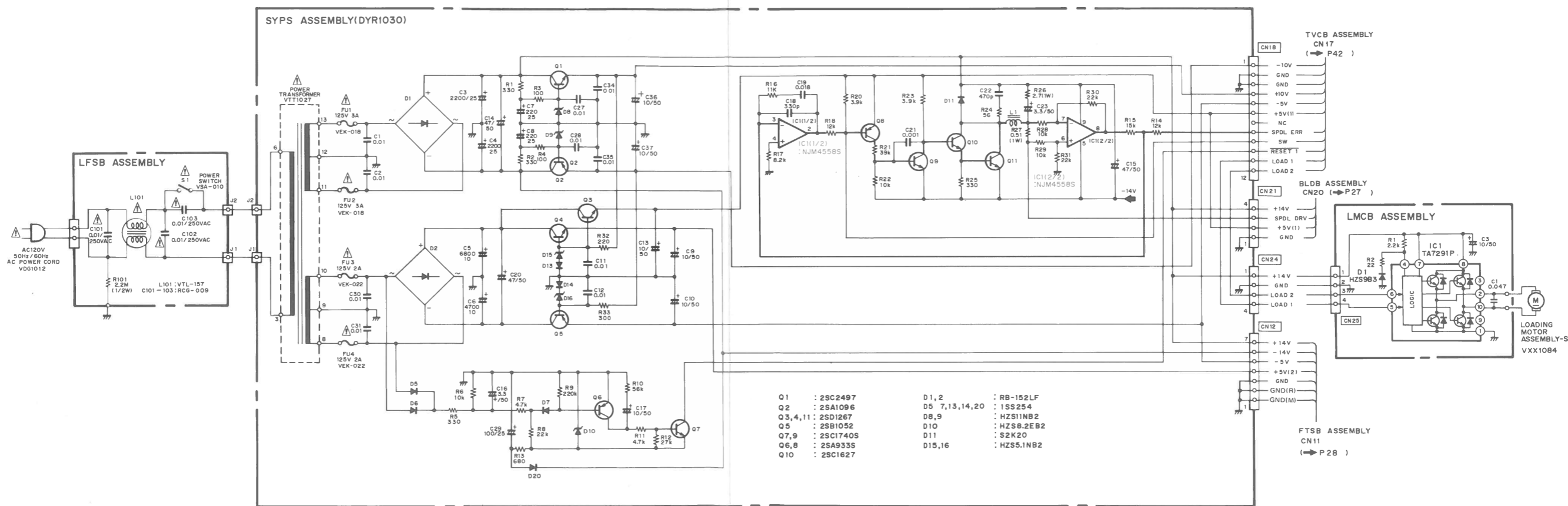
5.1 CONNECTION DIAGRAM

A
B
C
D

A
B
C
D



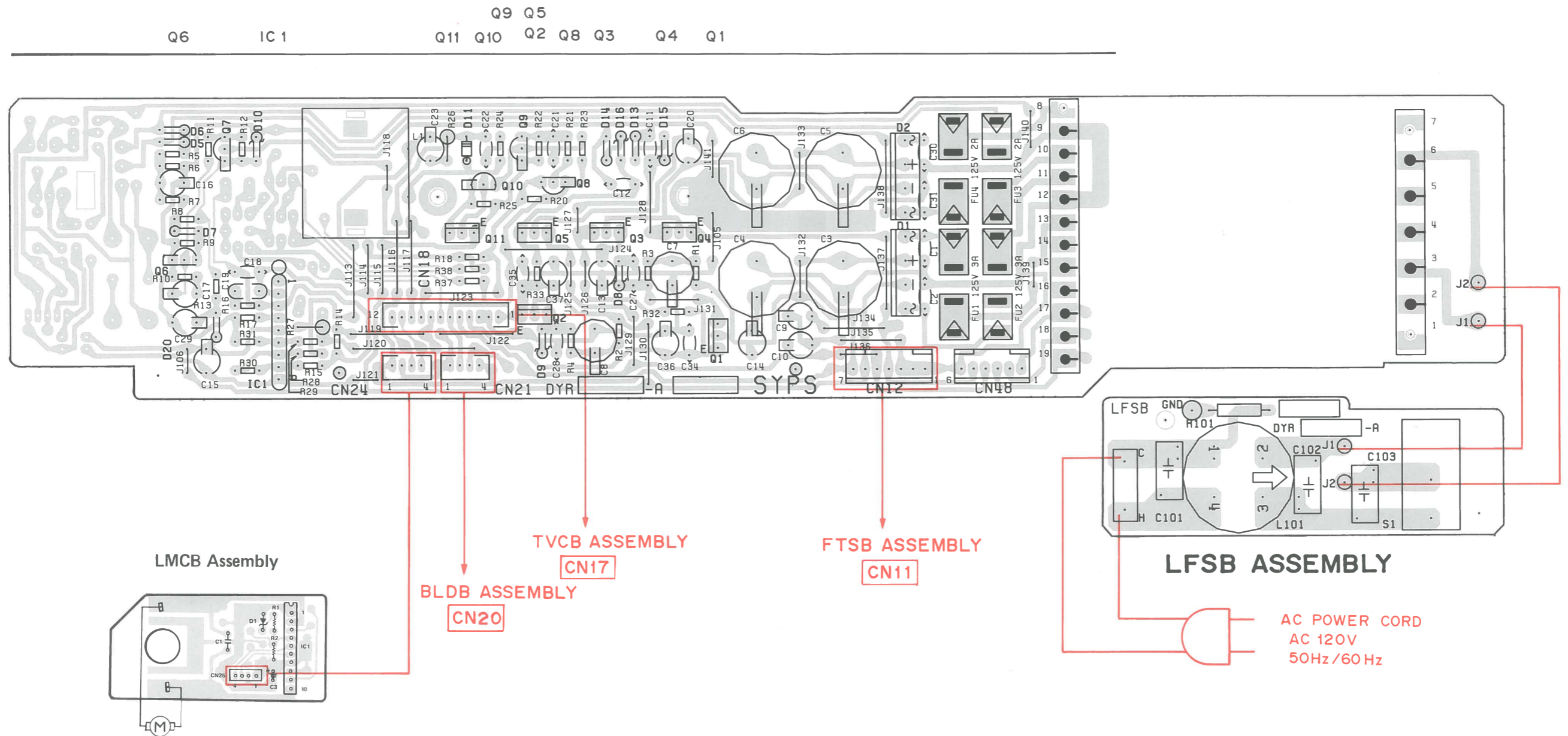
5.2 LFSB, SYPS AND LMCB ASSEMBLIES



- | | | | |
|---------|------------|---------------|-------------|
| Q1 | : 2SC2497 | D1, 2 | : RB-152LF |
| Q2 | : 2SA1096 | D5 7,13,14,20 | : 1SS254 |
| Q3,4,11 | : 2SD1267 | D8,9 | : HZS11NB2 |
| Q5 | : 2SB1052 | D10 | : HZS8.2EB2 |
| Q7,9 | : 2SC1740S | D11 | : S2K20 |
| Q6,8 | : 2SA933S | D15,16 | : HZS5.1NB2 |
| Q10 | : 2SC1627 | | |

This P.C.B. connection diagram is viewed from the parts mounted side.

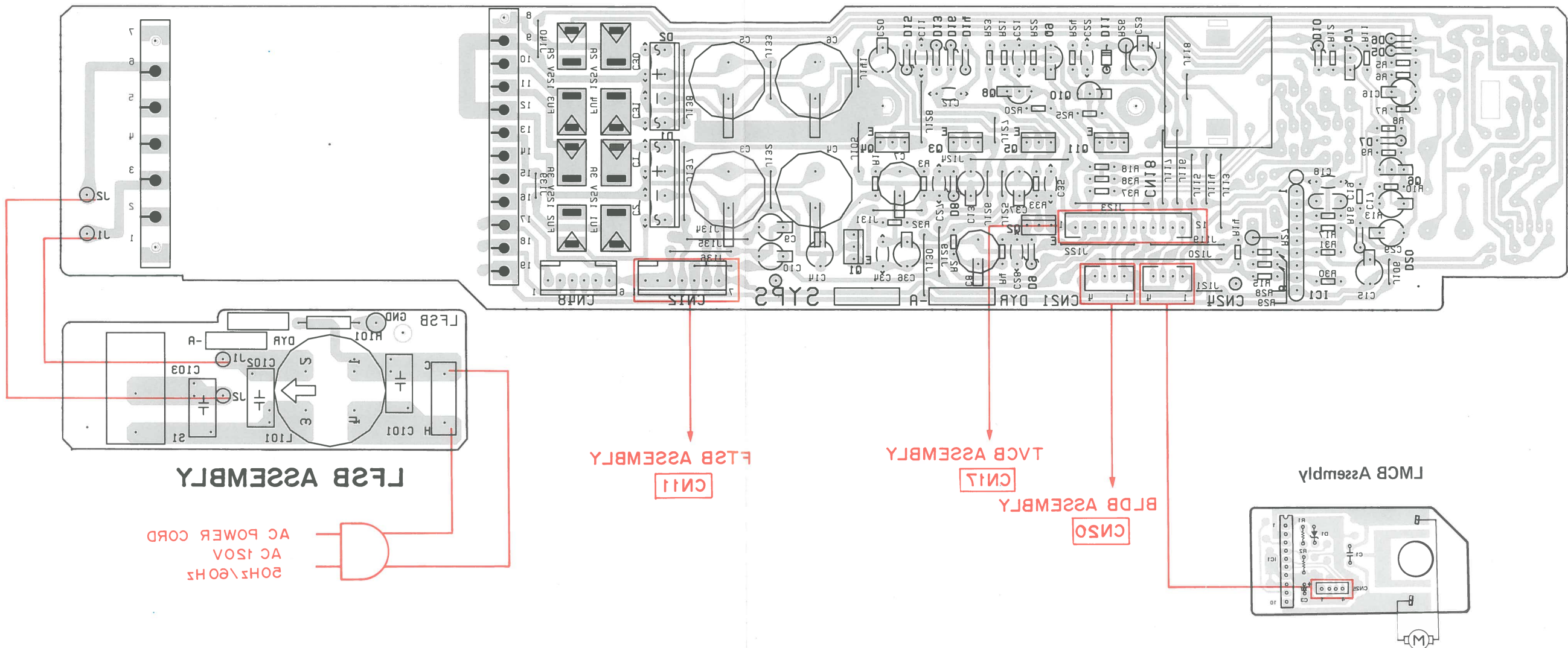
SYPS ASSEMBLY (DYR1030)



This P.C.B. connection diagram is viewed from the foil side.

2YP2 ASSEMBLY (DYR1030)

IC 1 06
Q11 Q10 Q5 Q8 Q3 Q4 Q1 Q2



A

B

C

D

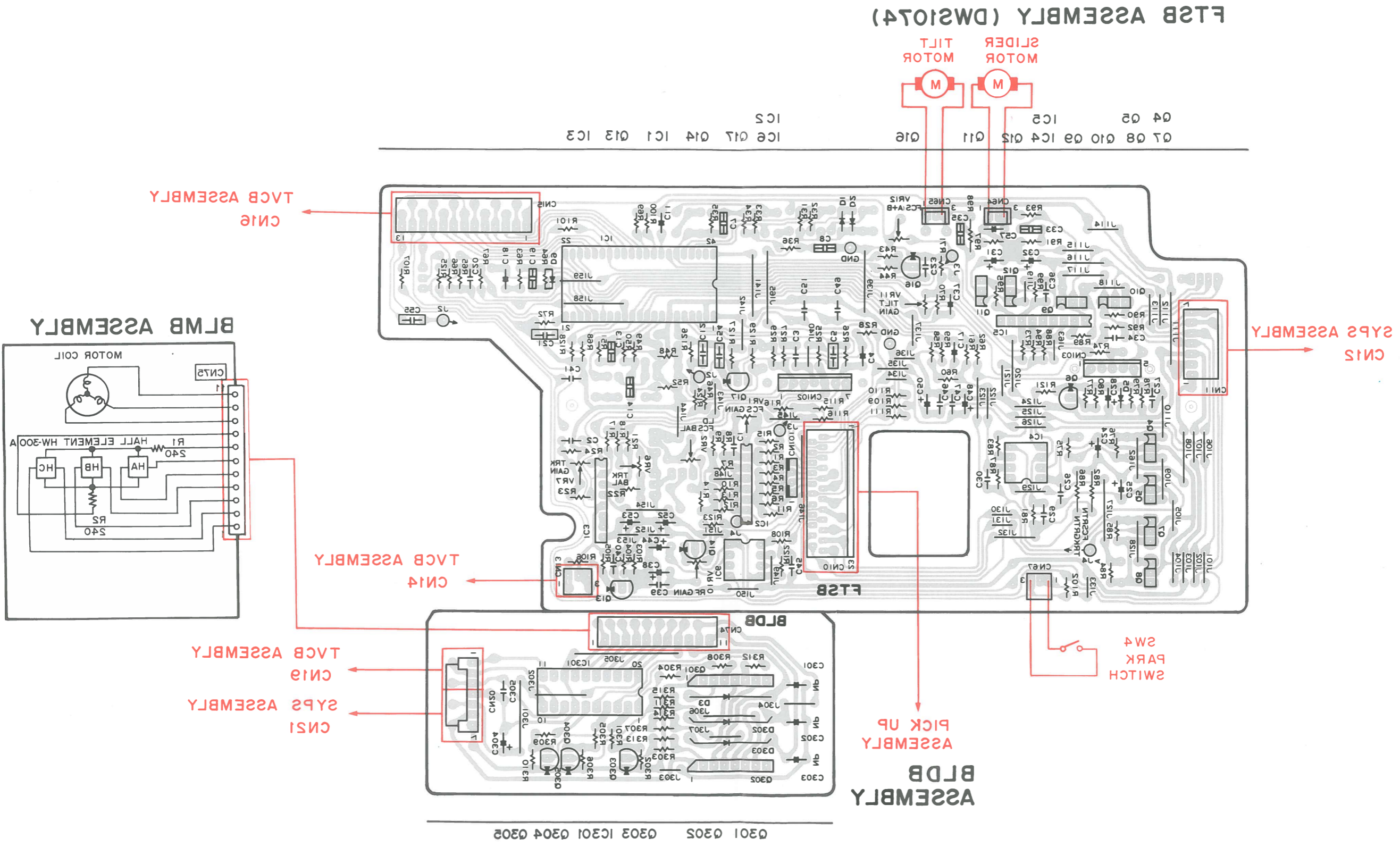
A

B

C

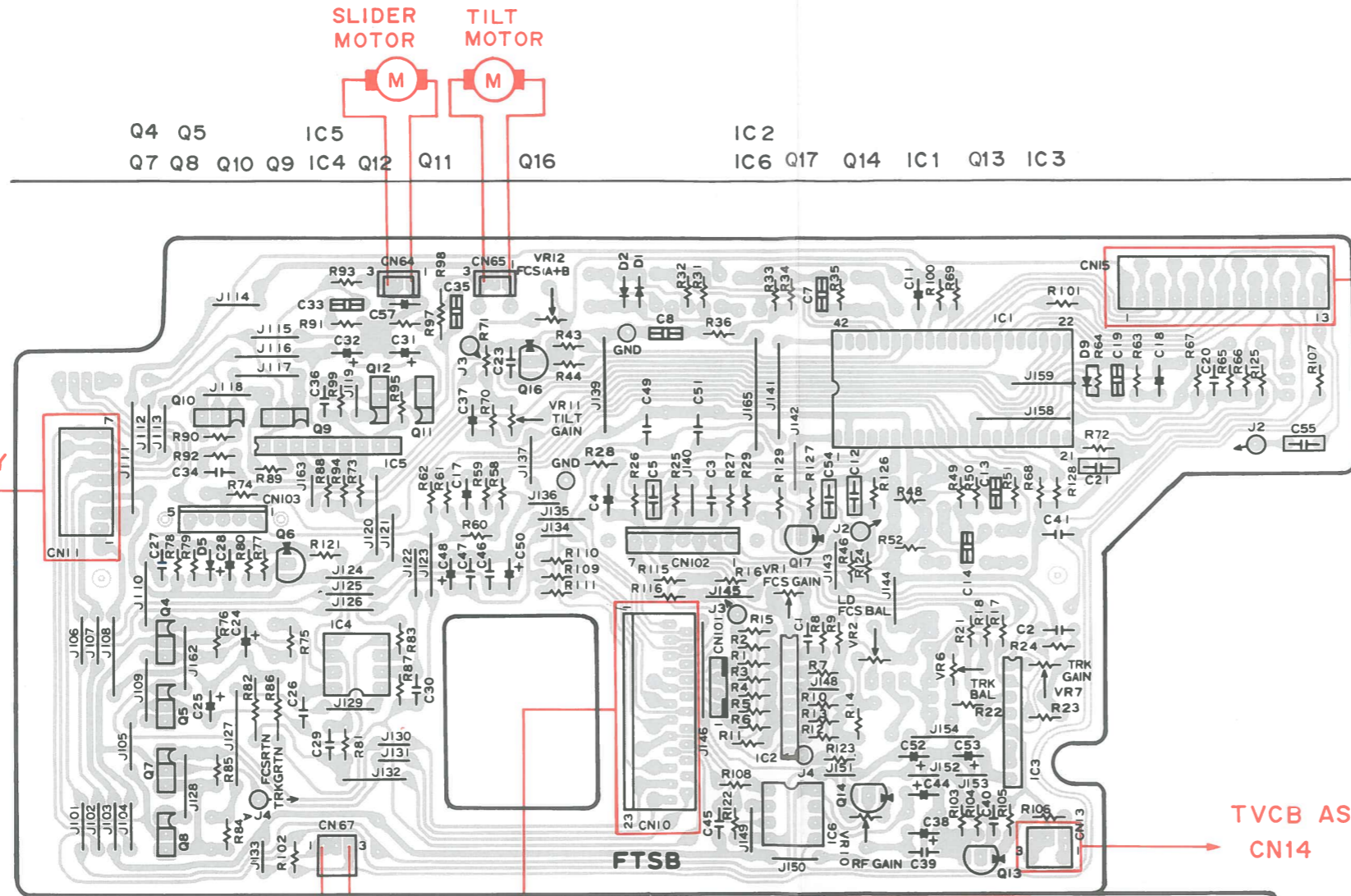
D

This P.C.B. connection diagram is viewed from the foil side.



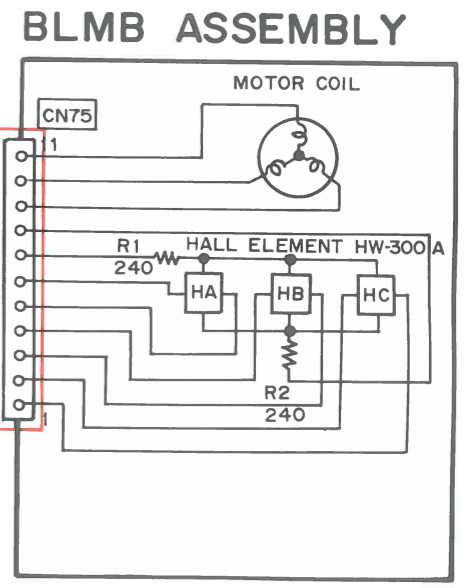
This P.C.B. connection diagram is viewed from the parts mounted side.

FTSB ASSEMBLY (DWS1074)



SYPS ASSEMBLY
CN12

TVCB ASSEMBLY
CN16



TVCB ASSEMBLY
CN14

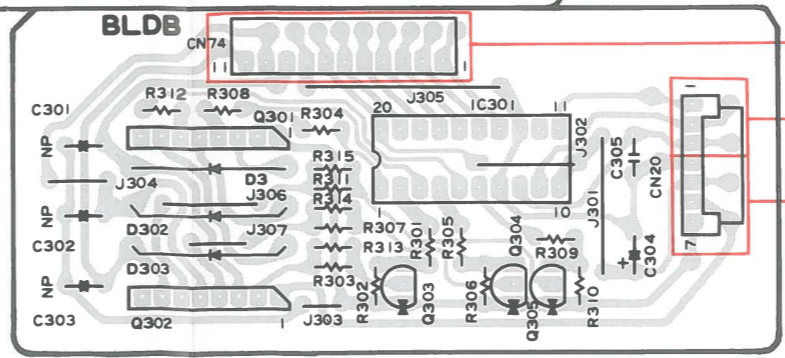
TVCB ASSEMBLY
CN19

SYPS ASSEMBLY
CN21

SW4
PARK
SWITCH

PICK UP
ASSEMBLY

BLDB ASSEMBLY



Q301 Q302 Q303 IC301 Q304 Q305

A

B

C

D

A

B

C

D

5.3 PICK-UP, BLMB, BLDB AND FTSB ASSEMBLIES

A

A

B

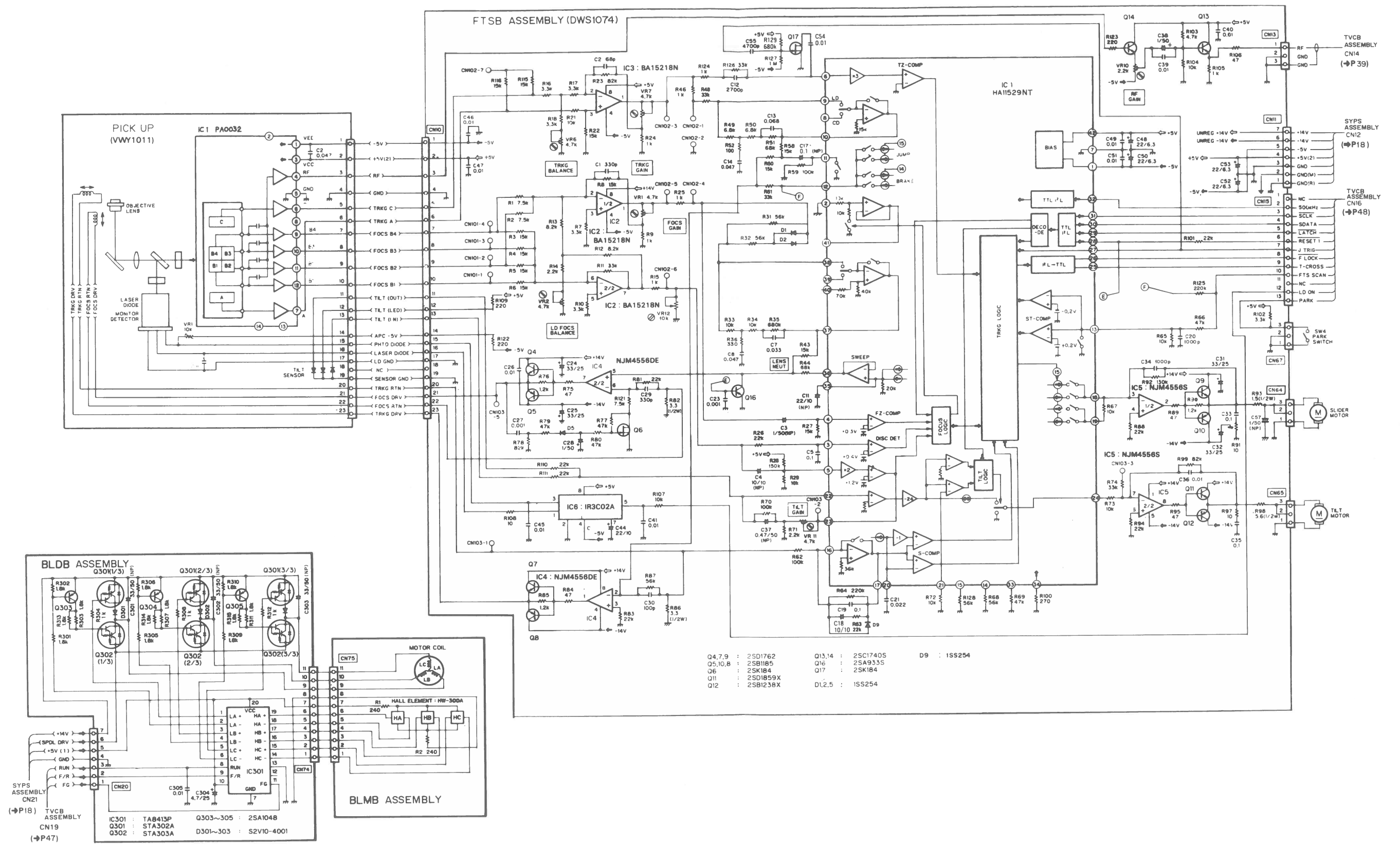
B

C

C

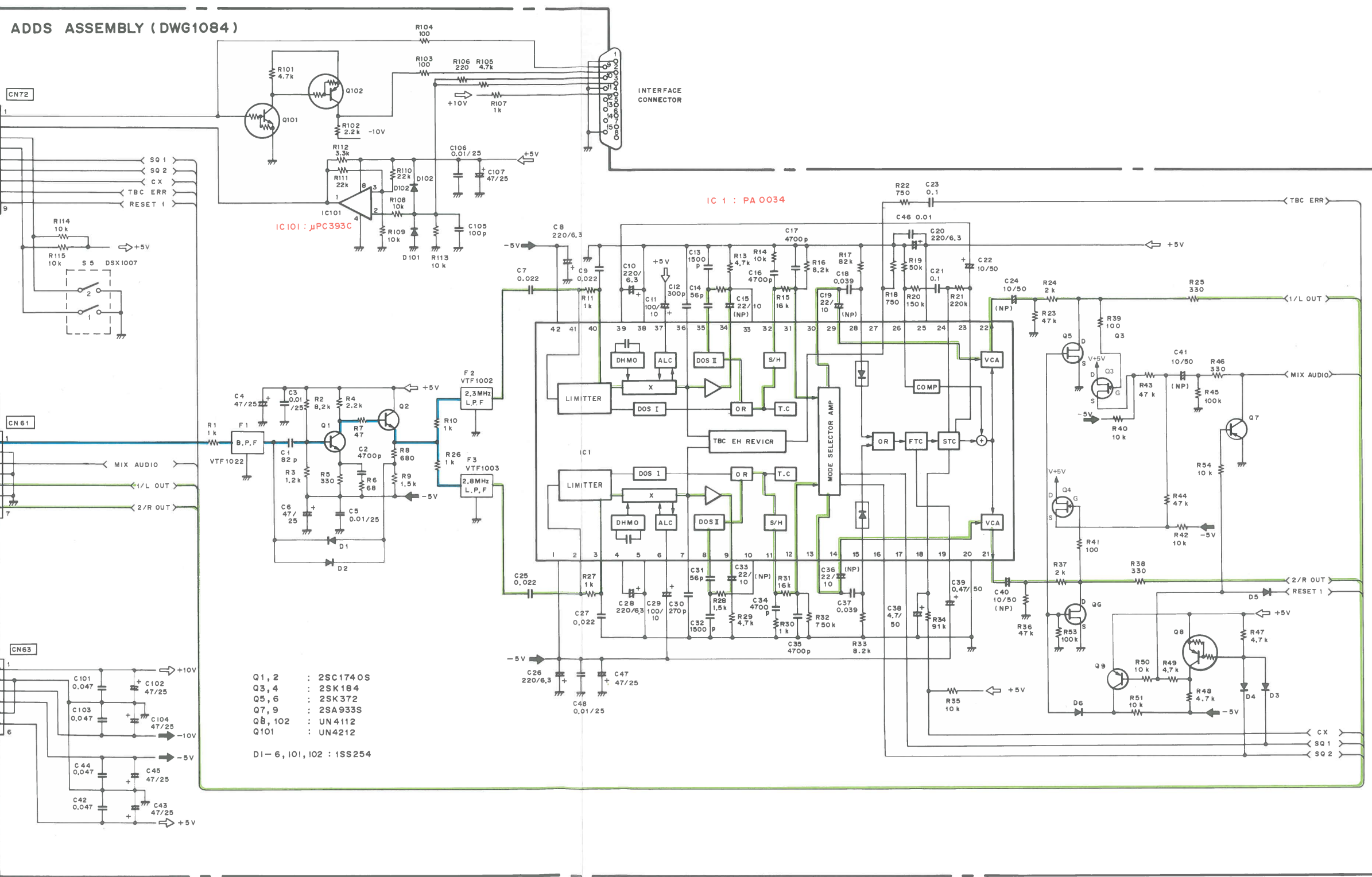
D

D



- Q4,7,9 : 2SD1762
- Q5,10,8 : 2SB1185
- Q6 : 2SK184
- Q11 : 2SD1859X
- Q12 : 2SB1238X
- Q13,14 : 2SC1740S
- Q16 : 2SA933S
- Q17 : 2SK184
- D9 : 1SS254
- DL2,5 : 1SS254

5.4 ADDS ASSEMBLY



1

2

3

4

5

6

A

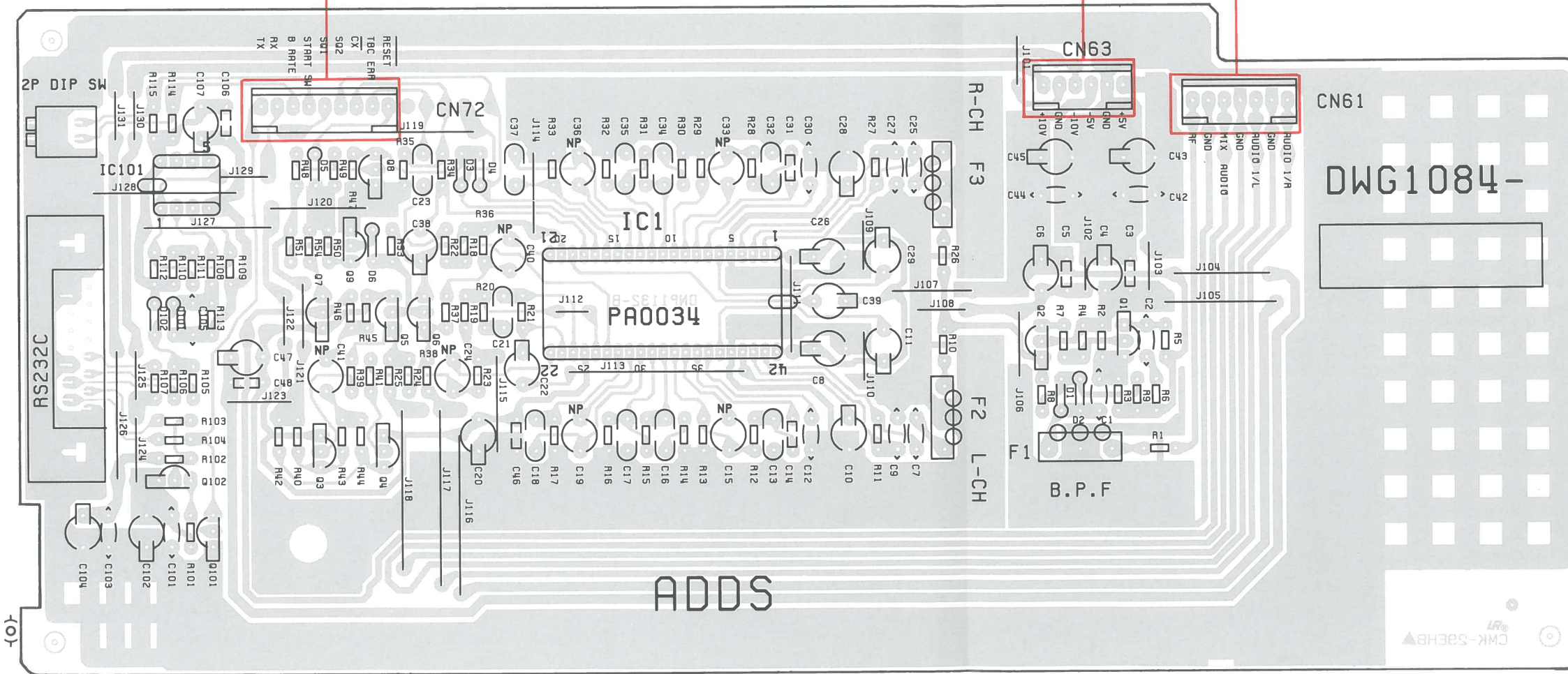
A

ADDS ASSEMBLY (DWG1084)

IC101	Q7	Q9	Q8	Q5	Q6	IC 1	Q2	Q1
Q102	Q101	Q3	Q4					

TVCB ASSEMBLY
CN62 **CN60**

TVCB ASSEMBLY
CN71



B

B

C

C

D

D

This P.C.B. connection diagram is viewed from the parts mounted side.

1

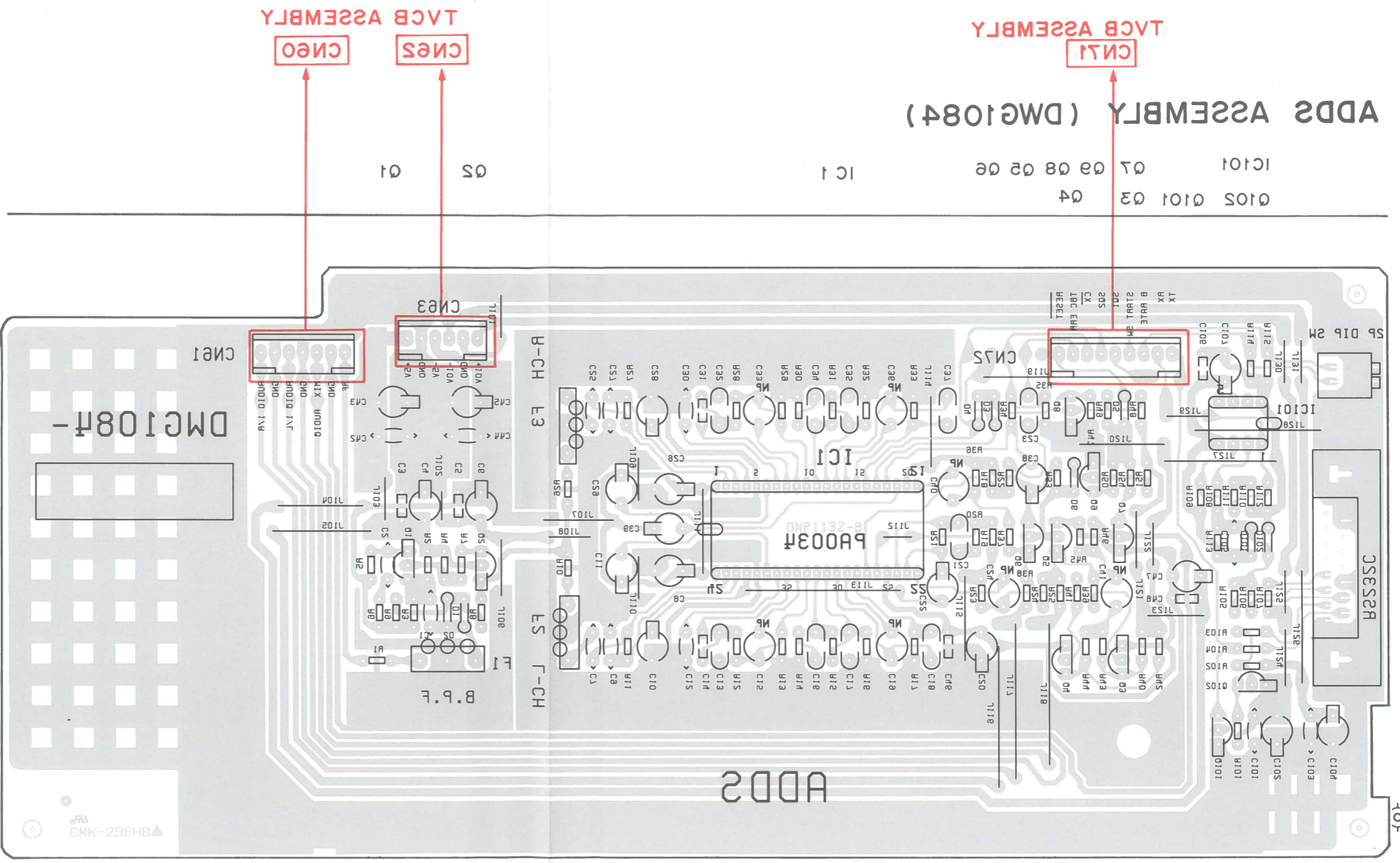
2

3

4

5

6



This P.C.B. connection diagram is viewed from the foil side.

1

2

3

4

R

6

A

B

C

D

A

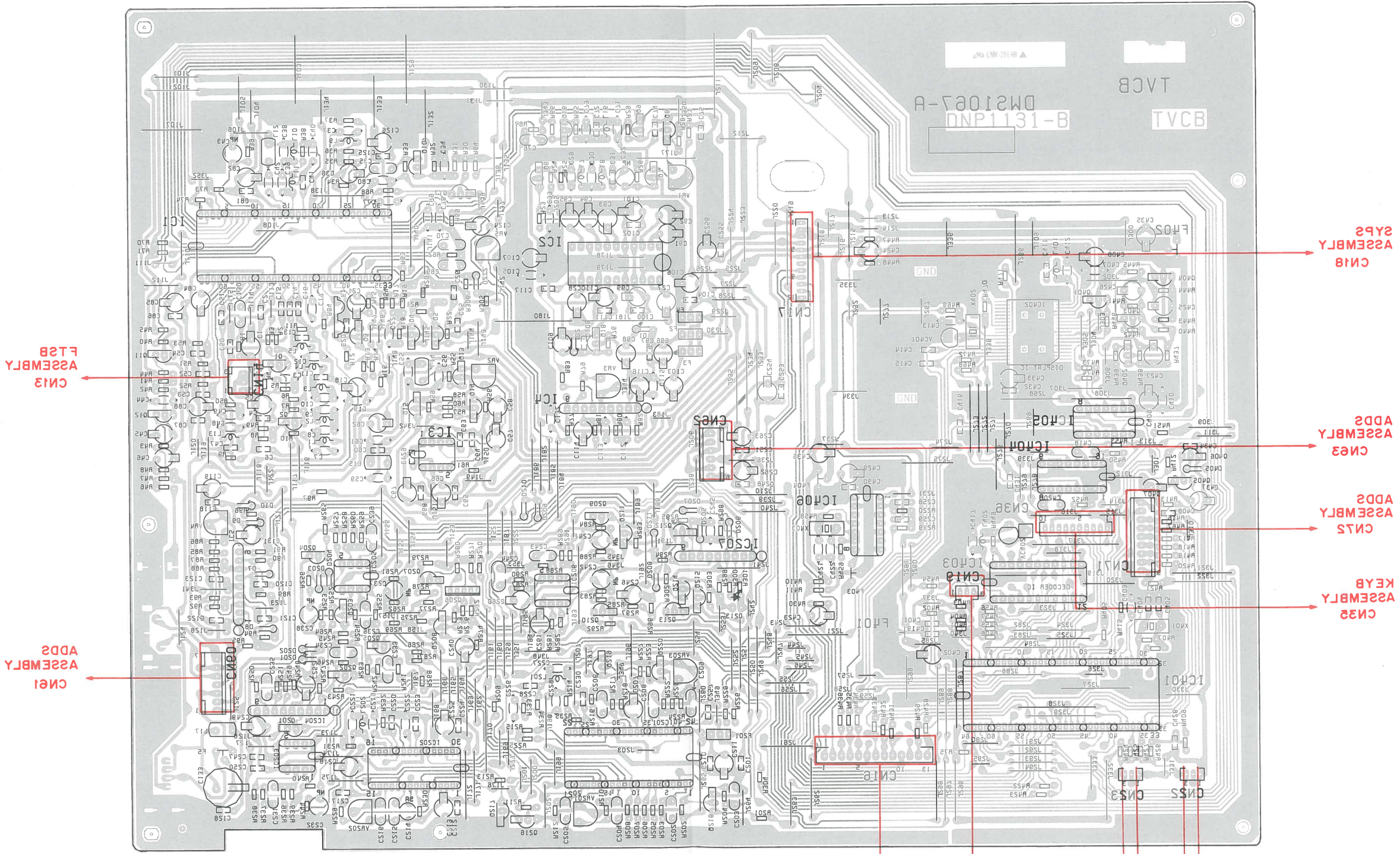
B

C

D

LC408 (CONT Section)
 (TBC Section)
 (VDEM Section)
 TVCB ASSEMBLY (DW210E7)

- 0408 0401 IC404 0408 0403
- 0408 0401 IC403 0408 0403
- 0408 0401 IC402 0408 0403
- 0408 0401 IC401 0408 0403
- 0115 0112 0111 0110 0109 0108 0107 0106 0105 0104 0103 0102 0101 0100 0099 0098 0097 0096 0095 0094 0093 0092 0091 0090 0089 0088 0087 0086 0085 0084 0083 0082 0081 0080 0079 0078 0077 0076 0075 0074 0073 0072 0071 0070 0069 0068 0067 0066 0065 0064 0063 0062 0061 0060 0059 0058 0057 0056 0055 0054 0053 0052 0051 0050 0049 0048 0047 0046 0045 0044 0043 0042 0041 0040 0039 0038 0037 0036 0035 0034 0033 0032 0031 0030 0029 0028 0027 0026 0025 0024 0023 0022 0021 0020 0019 0018 0017 0016 0015 0014 0013 0012 0011 0010 0009 0008 0007 0006 0005 0004 0003 0002 0001 0000



CN18 ASSEMBLY
SAPS

CN3 ASSEMBLY
ADDS

CN2 ASSEMBLY
ADDS

CN5 ASSEMBLY
KEYB

CN13 ASSEMBLY
F2B

CN1 ASSEMBLY
ADDS

CN50
BLDB ASSEMBLY
F2B ASSEMBLY

SWITCH
TABL\IN
SWITCH
23

This P.C.B. connection diagram is viewed from the foil side.

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3

4

R

6

TVCB ASSEMBLY (DWS1067) (VDEM Section)
(TBC Section)
(CONT Section)

Q404 Q403 IC402
Q406 Q402 Q401 IC403
Q405 Q407 IC405 IC404 IC401

IC 406

Q8 Q9 IC2 Q18
Q213 Q7 IC4 Q209 Q16
Q212 Q220 Q211 Q210 Q6 Q216 Q17
IC207 Q218 Q215 Q214 IC201 Q219 IC206 Q217 Q13
Q5 Q3 IC205 IC1 IC204
IC3 Q10 Q205 IC203 Q1 Q201
Q207 Q4 Q202 Q2 Q203
Q208 Q15 IC202 Q204 IC5 Q11
Q12

A

A

B

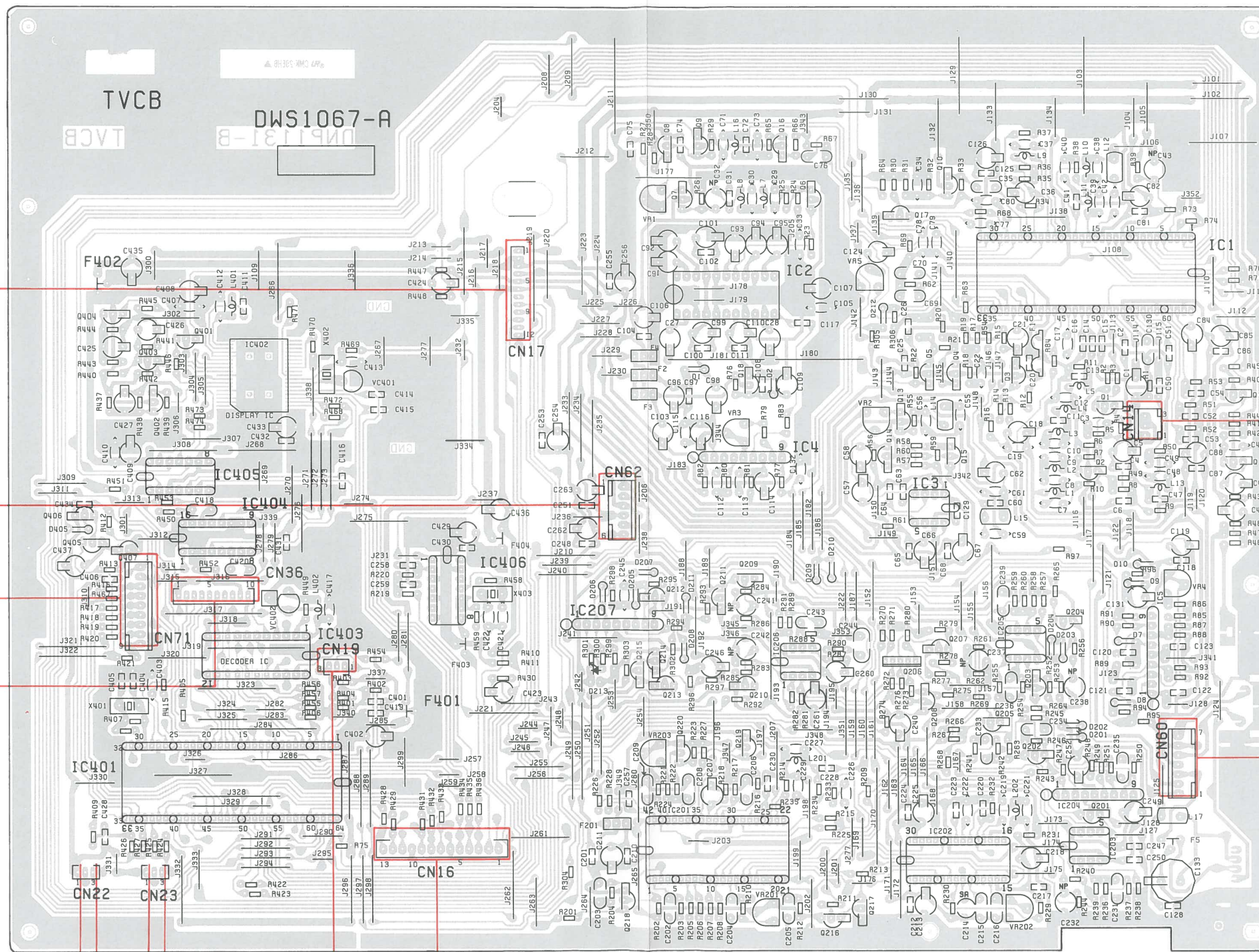
B

C

C

D

D



SYPS ASSEMBLY CN18

ADDS ASSEMBLY CN63

ADDS ASSEMBLY CN72

KEYB ASSEMBLY CN35

FTSB ASSEMBLY CN13

ADDS ASSEMBLY CN61

S2 TABL/IN SWITCH
S3 TABL/OUT SWITCH

BLDB ASSEMBLY CN20
FTSB ASSEMBLY CN15

This P.C.B. connection diagram is viewed from the parts mounted side.

5.5 TVCB (VDEM SECTION) ASSEMBLY

A

A

B

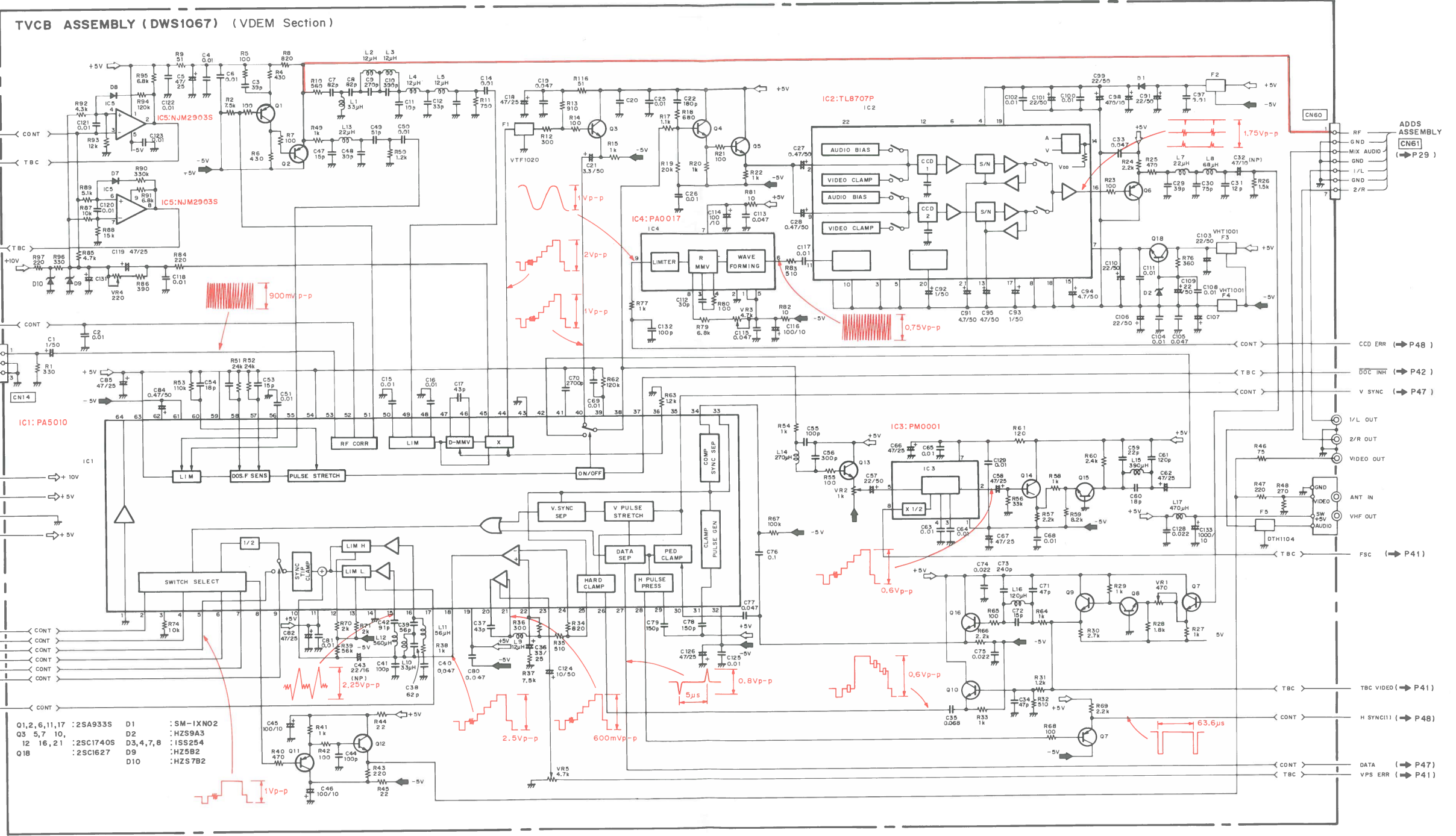
B

C

C

D

D



TVCB ASSEMBLY (DWS1067) (VDEM Section)

Q1,2,6,11,17	: 2SA933S	D1	: SM-1XN02
Q3,5,7,10,	12,16,21	D2	: HZS9A3
		D3,4,7,8	: ISS254
		D9	: HZS5B2
Q18	: 2SC1627	D10	: HZS7B2

5.6 TVCB (TBC SECTION) ASSEMBLY

A

A

B

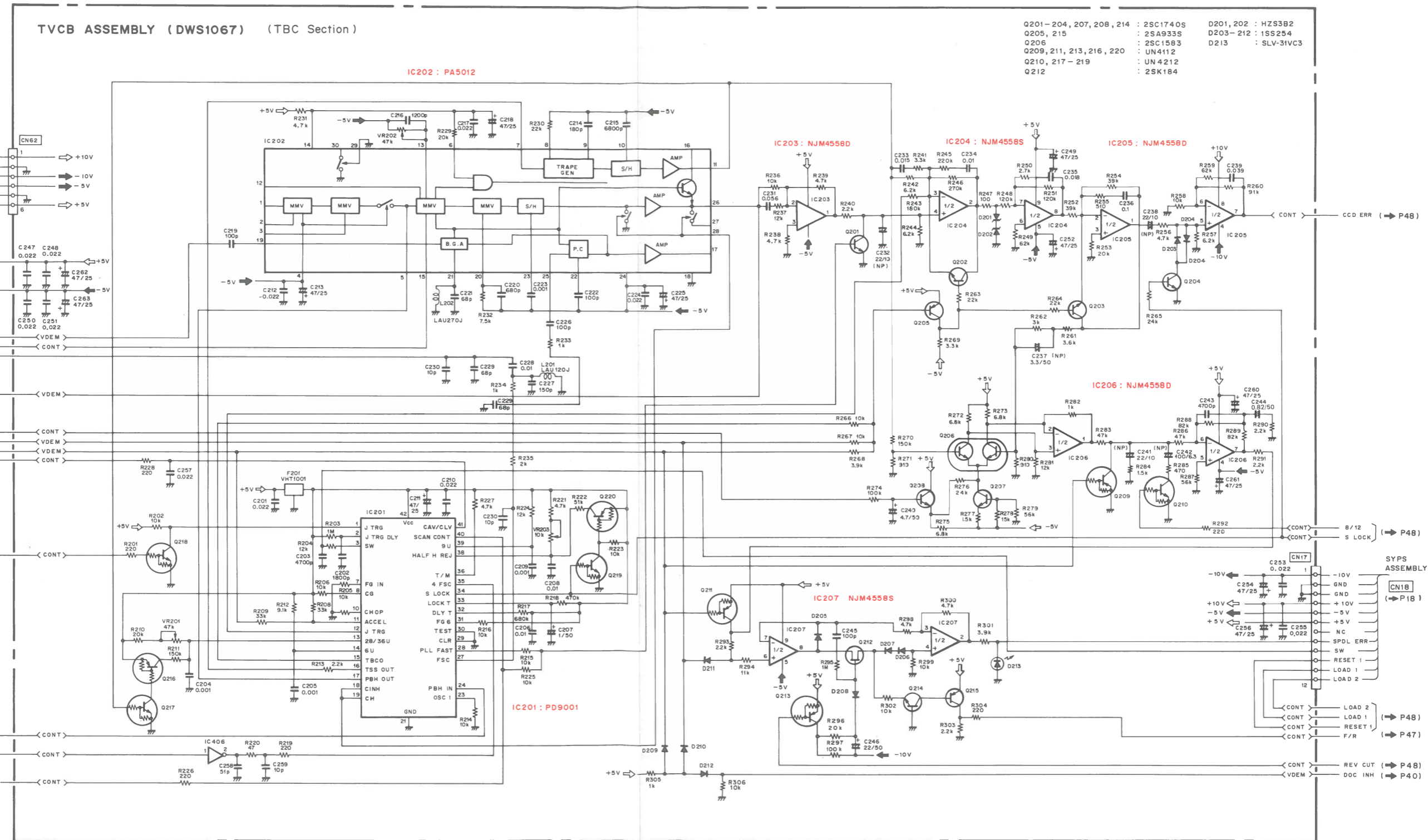
B

C

C

D

D



- | | | | |
|--------------------------|------------|-----------|-------------|
| Q201-204, 207, 208, 214 | : 2SC1740S | D201, 202 | : HZS3B2 |
| Q205, 215 | : 2SA933S | D203-212 | : 1SS254 |
| Q206 | : 2SC1583 | D213 | : SLV-31VC3 |
| Q209, 211, 213, 216, 220 | : UN4112 | | |
| Q210, 217-219 | : UN4212 | | |
| Q212 | : 2SK184 | | |

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TVCB ASSEMBLY (DWS1067) (VDEM Section)

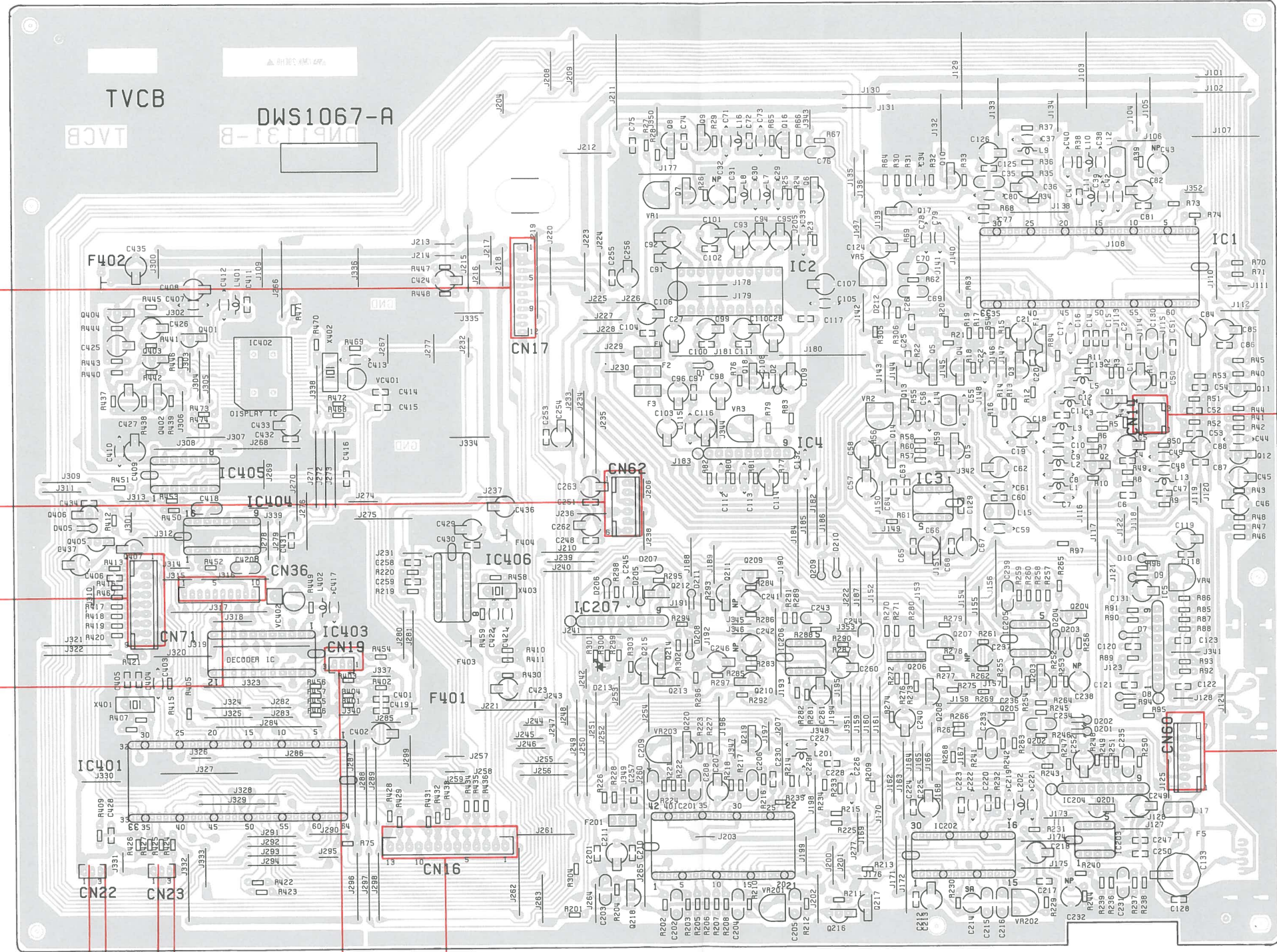
Q404 Q403
Q406 Q402 Q401
Q405 Q407 IC405 IC404

IC402
IC403
IC401

(TBC Section)
(CONT Section)

IC406

Q8 Q9 IC2 Q18
Q213 Q7 IC4 Q209 Q16
Q212 Q220 Q211 Q210 Q6 Q216 Q17
IC207 Q218 Q215 Q214 IC201 Q219 IC206 Q217 Q13
Q5 Q3 IC205 IC1 IC204
IC3 Q10 Q205 Q203 Q1
Q207 Q4 Q202 Q2 Q201
Q208 Q15 IC202 Q204 IC5 Q11
Q12



SYPS ASSEMBLY CN18

ADDS ASSEMBLY CN63

ADDS ASSEMBLY CN72

KEYB ASSEMBLY CN35

FTSB ASSEMBLY CN13

ADDS ASSEMBLY CN61

S2 TABL/IN SWITCH
S3 TABL/OUT SWITCH

BLDB ASSEMBLY CN20
FTSB ASSEMBLY CN15

This P.C.B. connection diagram is viewed from the parts mounted side.

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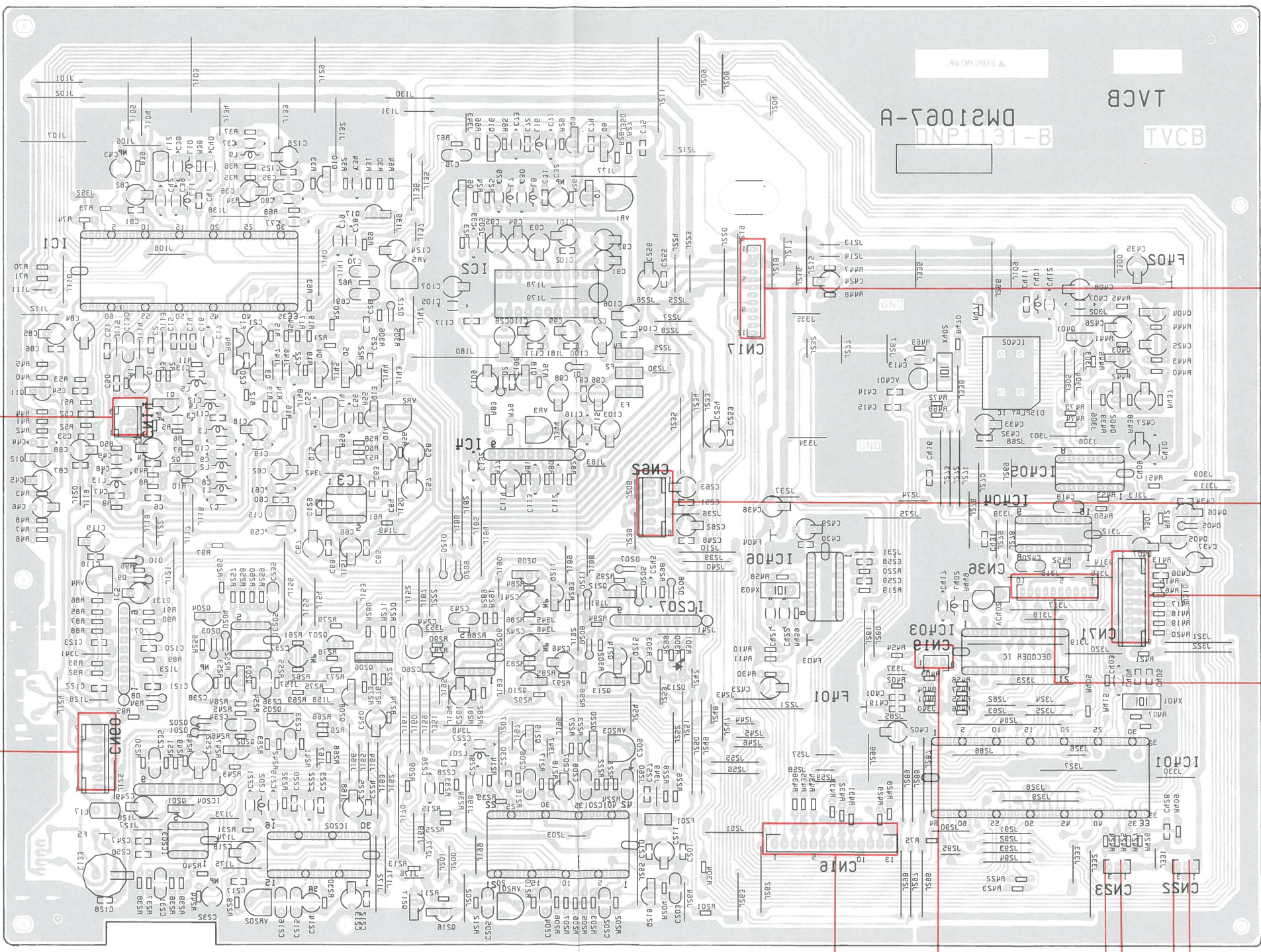
6

A

B

C

D



ASSEMBLY
ADDS
CNE1

ASSEMBLY
ADDS
CNI3

ASSEMBLY
ADDS
CNI8

SWITCH
TABL'IN
23

SWITCH
TABL'IN
23

ASSEMBLY
KEYB
CNS3

ASSEMBLY
ADDS
CNT5

ASSEMBLY
ADDS
CNE3

ASSEMBLY
ADDS
CNI8

IC402 0407 IC408 IC404 IC401
 0408 0405 0401 IC403
 0404 0403

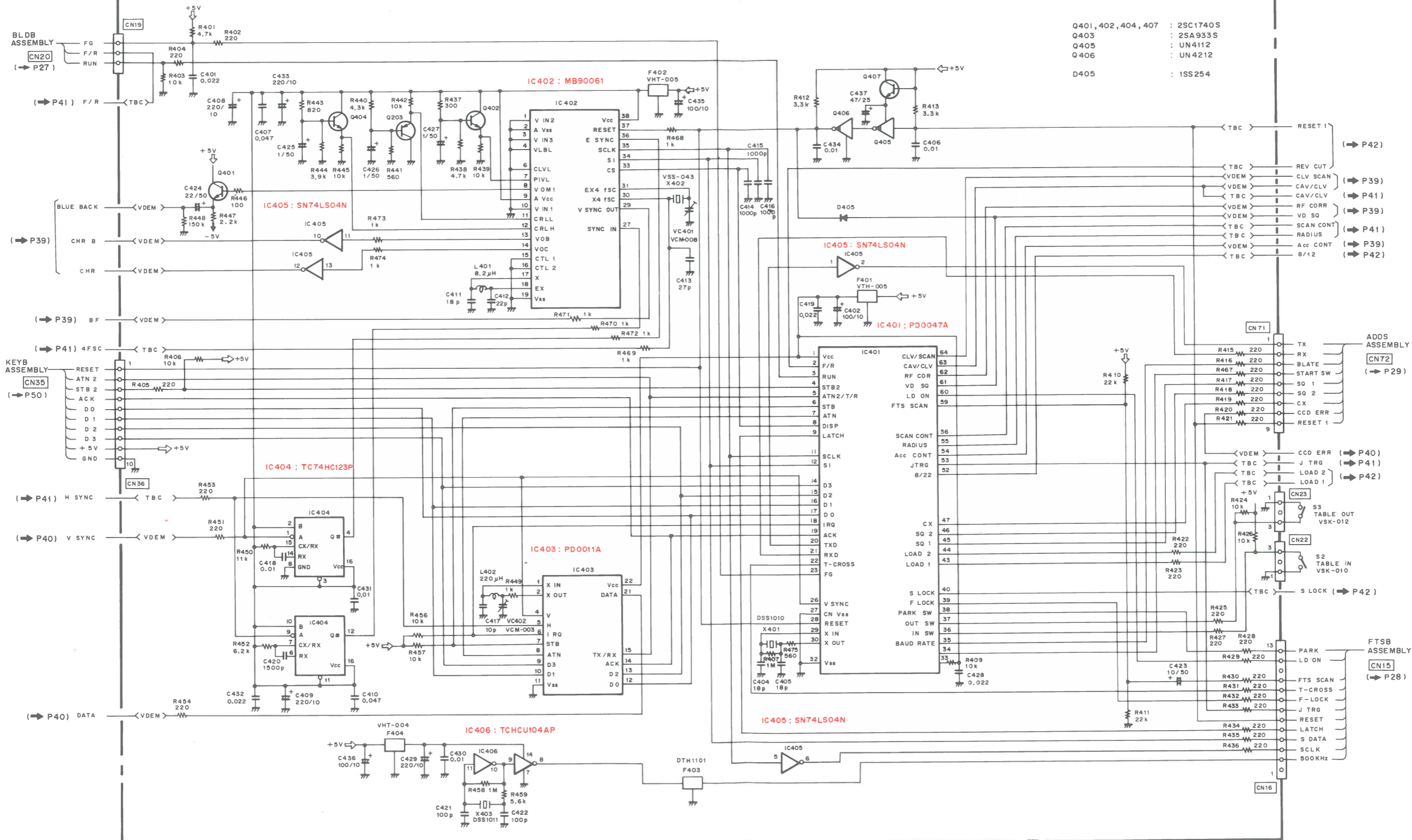
(CONT Section)
 (TBC Section)
 (VDEM Section)

IC406
 IC501 0518 0519 0514 IC501 0518 IC506 0514 013
 0508 012 IC505 0505 011
 0504 01 IC502 011
 0504 01 IC504

This P.C.B. connection diagram is viewed from the foil side.

5.7 TVCB (CONT SECTION) ASSEMBLY

TVCB ASSEMBLY (DWS1067) (CONT Section)



- Q401, 402, 404, 407 : 2SC1740S
- Q403 : 2SA933S
- Q405 : UN4112
- Q406 : UN4212
- D405 : 1SS254

A

A

B

B

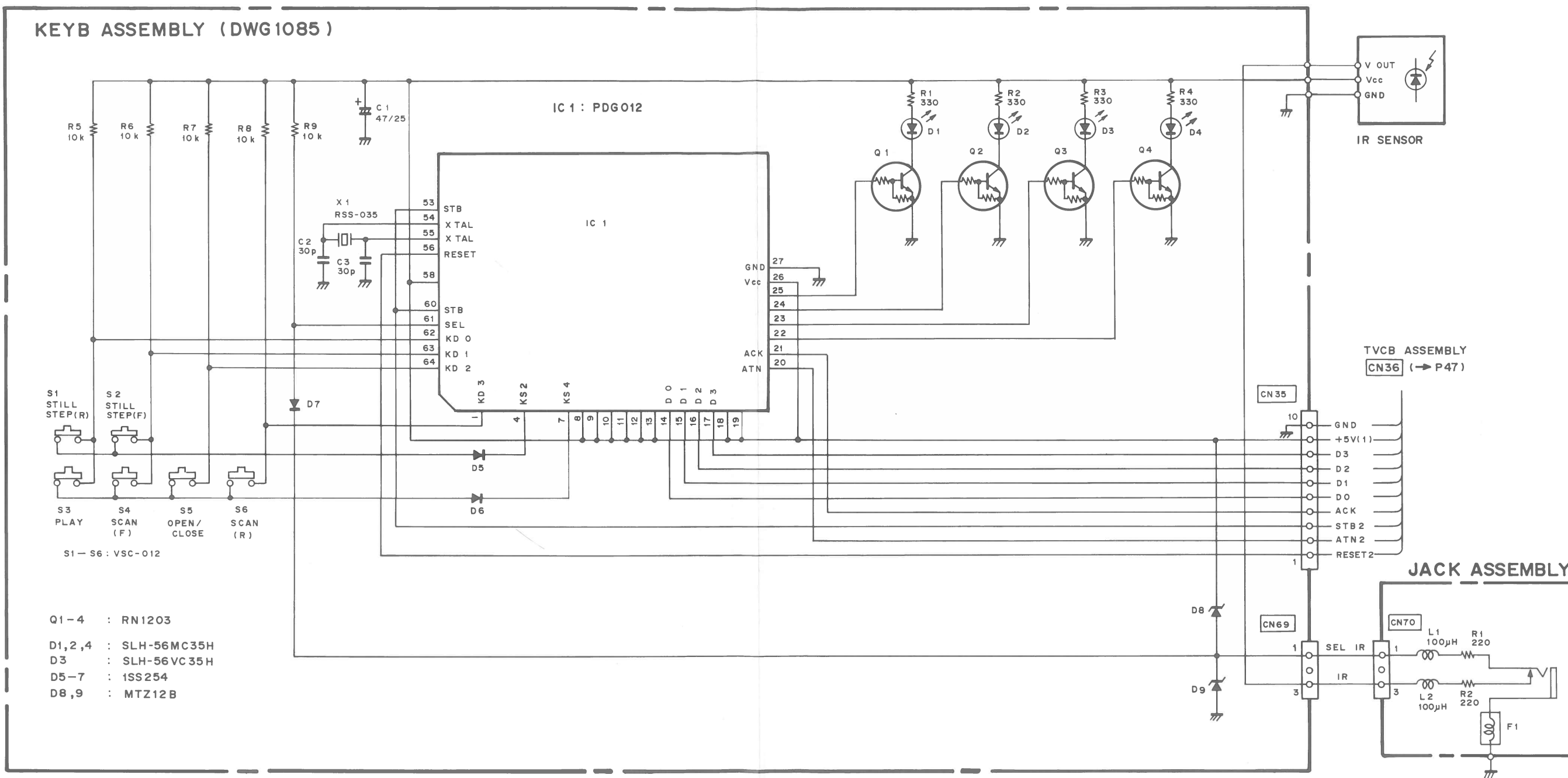
C

C

D

D

5.8 KEYB AND JACK ASSEMBLY



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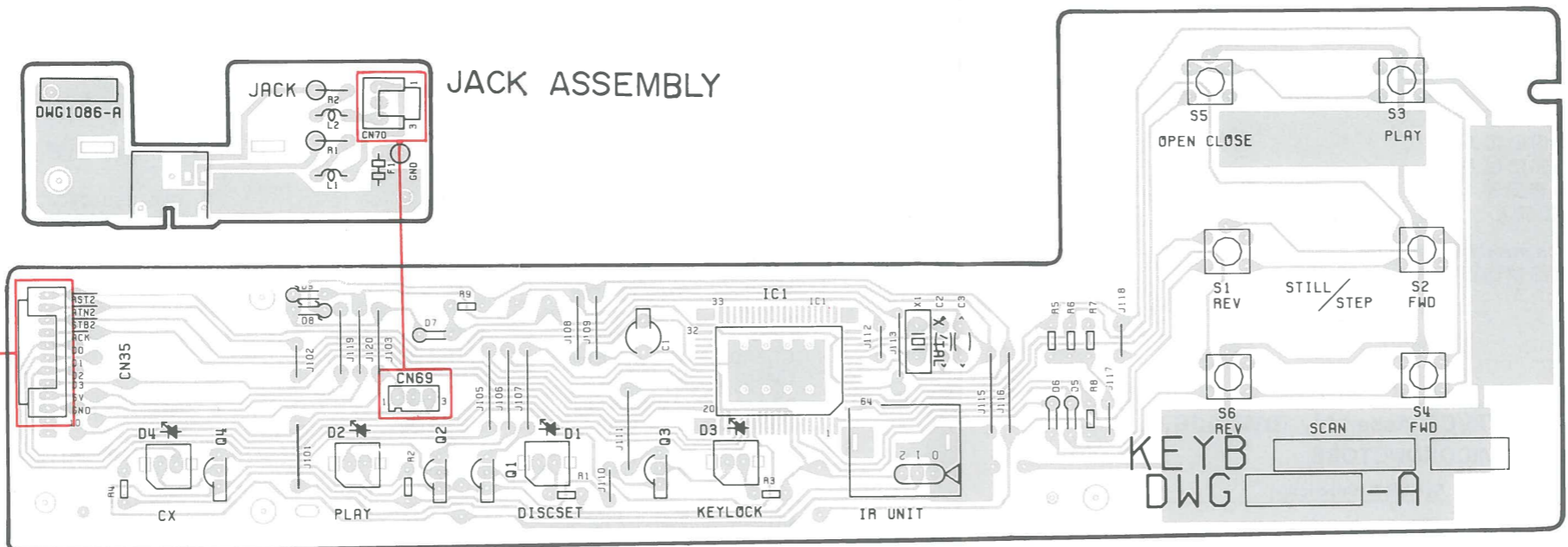
5

6

KEYB ASSEMBLY (DWG1085)

This P.C.B. connection diagram is viewed from the parts mounted side.

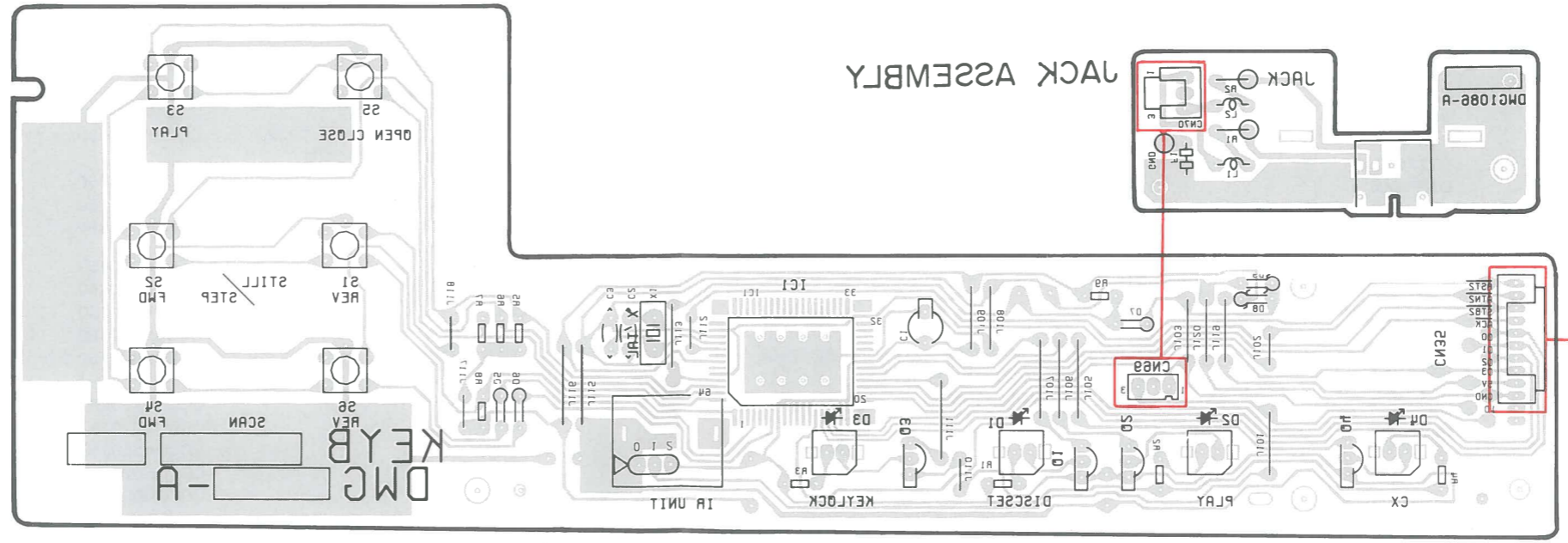
Q4 Q2 Q1 Q3 IC1



TVCB ASSEMBLY
CN36

KEYB ASSEMBLY (DWG1085)

Q4 Q5 Q1 Q3 IC1



TVCB ASSEMBLY
CN36

This P.C.B. connection diagram is viewed from the foil side.

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6. ELECTRICAL PARTS LIST

NOTES:

- Parts without part number cannot be supplied.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560 Ω	56×10^1	561.....	RD1/4PS	\square	\square	\square	J
47k Ω	47×10^3	473.....	RD1/4PS	\square	\square	\square	J
0.5 Ω	0R5.....		RN2H	\square	\square	\square	K
1 Ω	010.....		RS1P	\square	\square	\square	K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω	562×10^1	5621.....	RN1/4SR	\square	\square	\square	F
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Miscellaneous Parts

P.C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
⊙	TVCB assembly	DWS1067
⊙	FTSB assembly	DWS1074
	BLDB assembly	
⊙	SYPS assembly	DYR1030
	LFSB assembly	
⊙	ADDS assembly	DWG1084
	KEYB assembly	DWG1085
	JACK assembly	
	LMCB assembly	
	BLMB assembly	

OTHERS

Mark	Symbol & Description	Part No.
Δ	AC power code	VDG1012
Δ	Fuse (FU1, FU2) (3A)	VEK-018
Δ	Fuse (FU3, FU4) (2A)	VEK-022
Δ	Power transformer	VTT1027
Δ	Remote control unit	DXR1006
	Slide switch (S2) (TABLE/IN)	VSK-010
	Slide switch (S3) (TABLE/OUT)	VSK-012
	Loading motor assembly-S	VXX1084
	Slide switch (S4) (SLIDER/PARK)	VSK1003
	Tilt motor assembly-S	VXX1082
	Slider motor assembly-S	VXX1083
	Spindle motor assembly-S	VXX1085
	Pick-up assembly	VWY1011
	μ COM (IC401)	PD0047A

⊙ TVCB Assembly (DWS1067)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC402	MB90061-101
	IC5	NJM2903S
	IC203, IC205, IC206	NJM4558D
	IC204, IC207	NJM4558S
	IC4	PA0017
	IC1	PA5010
	IC202	PA5012
	IC403	PD0011A
	IC201	PD9001
	IC3	PM0001
	IC405	SN74LS04N
	IC406	TC74HCU04AP
	IC404	TC74HC123P
	IC2	TL8707P
	IC401	PD0047
	Q209, Q211, Q213, Q216, Q220, Q405	UN4112
	Q210, Q217 - Q219, Q406	UN4212
	Q1, Q2, Q6, Q11, Q17, Q205, Q215, Q403	2SA933S
	Q206	2SC1583
	Q18	2SC1627
	Q3 - Q5, Q7 - Q10, Q12 - Q16, Q201 - Q204, Q207, Q208, Q214, Q401, Q402, Q404, Q407	2SC1740S
	Q212	2SK184

Mark	Symbol & Description	Part No.
	D10	HZS7B2
	D2	HZS9A3
	D9	HZ5B2
	D213	SLV-31VC3
	D1	SM-1XN02
	D201, D202	HZS3B2
	D7, D8, D203 - D212, D405	1SS254

COILS AND FILTERS

Mark	Symbol & Description	Part No.
	L2 - L5, L9, L201 Axial inductor	LAU120J
	L16 Axial inductor	LAU121J
	L7, L13 Axial inductor	LAU220J
	L402 Axial inductor	LAU221J
	L202 Axial inductor	LAU270J
	L1, L10 Axial inductor	LAU330J
	L11 Axial inductor	LAU560J
	L8 Axial inductor	LAU680J
	L401 Axial inductor	LAU8R2K
	L14 Radial inductor	LFA271K
	L15 Radial inductor	LFA391K
	L17 Radial inductor	LRA471K
	L12 Radial inductor	LRA561K
	F403 3 terminal filter	DTH1101
	F5 3 terminal filter	DTH1104
	F1 Video L.P.F.	VTF1020
	F401, F402, F404 3 terminal filter	VTH-005
	F2 - F4, F201 3 terminal filter	VTH1001

CAPACITORS

Mark	Symbol & Description	Part No.
	C44, C55, C132, C219, C222, C226, C245, C421, C422	CCCCH101J50
	C61	CCCCH121J50
	C78, C79, C227	CCCCH151J50
	C59, C412, C417	CCCCH220J50
	C413	CCCCH270J50
	C48, C112	CCCCH300J50
	C12	CCCCH330J50
	C3, C29	CCCCH390J50
	C17, C37	CCCCH430J50
	C34, C71	CCCCH470J50
	C49	CCCCH510J50
	C39	CCCCH560J50
	C38	CCCCH620J50
	C221, C229	CCCCH680J50

Mark	Symbol & Description	Part No.
	C30	CCCCH750J50
	C7, C8	CCCCH820J50
	C42	CCCCH910J50
	C22	CCCCH181J50
	C73	CCCCH241J50
	C9	CCCCH271J50
	C56	CCCCH301J50
	C10, C403	CCCCH391J50
	C11, C13, C230, C259	CCPUCH100J50
	C31	CCPUCH120J50
	C47, C52, C53, C72	CCPUCH150J50
	C54, C60, C404, C405, C411	CCPUCH180J50
	C258	CCPUSL510J50
	C43	CEALNP220M16
	C244	CFTXA824J50
	C242	CEANP101M6R3
	C232, C238, C241	CEANP220M10
	C237	CEANP3R3M50
	C32	CEANP470M10
	C27, C28, C84	CEASR47M50
	C1, C92, C93, C207, C425 - C427	CEAS010M50
	C124, C423	CEAS100M50
	C45, C46, C114, C116, C402, C435, C436	CEAS101M10
	C133	CEAS102M10
	C57, C96, C99, C101, C103, C106, C107, C109, C110, C246, C424	CEAS220M50
	C408, C409, C429, C433	CEAS221M10
	C21	CEAS3R3M50
	C36	CEAS330M25
	C91, C94, C95, C240	CEAS4R7M50
	C5, C18, C58, C62, C66, C67, C82, C85, C88, C119, C126, C131, C211, C213, C218, C225, C249, C252, C254, C256, C260 - C263, C437	CEAS470M25
	C98,	CEAS471M10
	C76, C130, C236	CFTXA104J50
	C239	CFTXA393J50
	C19, C33, C40, C77, C80, C105, C113, C115, C407, C410	CGCYX473M25
	C41	CKPUYB101K50
	C223, C414 - C416	CKPUYB102K50
	C220	CKPUYB681K50
	C2, C4, C6, C14 - C16, C25, C26, C50, C51, C63 - C65, C68, C81, C86, C87, C97, C100, C102, C104, C108, C111, C117, C118, C120 - C123, C125, C129, C228, C406, C430, C431, C434	CKPUYF103Z25
	C20, C74, C75, C128, C201, C210, C212, C217, C224, C247, C248, C250, C251, C253, C255, C257, C401, C419, C428, C432	CKPUYF223Z25
	C204, C205, C209	CQMA102J50

Mark	Symbol & Description	Part No.
C69, C206, C208, C234, C418 C216 C420 C233 C202		CQMA103J50 CQMA122J50 CQMA152J50 CQMA153J50 CQMA182J50
C235 C70 C203, C243 C231 C215		CQMA183J50 CQMA272J50 CQMA472J50 CQMA563J50 CQMA682J50
C35 C214		CQMA683J50 CQSA181J50

RESISTORS

Mark	Symbol & Description	Part No.
R74, R87, R53, R63, R62, R88, R272, R273, R51, R52, R93, R281, R282, R13, R92		RN1/6PQ□□□□F
VR2 VR203 VR4 VR1 VR3	Semi-fixed (1kΩ) Semi-fixed (10kΩ) Semi-fixed (220Ω) Semi-fixed (470Ω) Semi-fixed (4.7kΩ)	VRTB6VS102 VRTB6VS103 VRTB6VS221 VRTB6VS471 VRTB6VS472
VR201, VR202 VR5	Semi-fixed (47kΩ) Semi-fixed (4.7kΩ)	VRTB6VS473 VRTG6VS472
	Other resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
X401 X403	Crystal resonator Ceramic resonator (500kHz)	DSS1010 DSS1011
X402	Crystal resonator	VSS-043
VC402 VC401	Ceramic trimmer Ceramic trimmer (20p)	VCM-003 VCM-008
JA1	2P Pin jack 1P Pin jack IC socket RFMD	VKB-006 VKB-026 VKH-029 VWL1008

● FTSB Assembly (DWS1074)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
IC2, IC3 IC1 IC6 IC4 IC5		BA15218N HA11529NT IR3C02A NJM4556DE NJM4556S

Mark	Symbol & Description	Part No.
Q16 Q5, Q8, Q10 Q12 Q13, Q14 Q4, Q7, Q9		2SA933S 2SB1185 2SB1238X 2SC1740S 2SD1762
Q11 Q6, Q17		2SD1859X 2SK184
D9, D1, D2, D5		1SS254

CAPACITORS

Mark	Symbol & Description	Part No.
C2 C38 C52, C53 C24, C25 C37		CCPUSL680J50 CEAL010M50 CEAL220M6R3 CEAL330M25 CEJANPR47M50
C3, C57 C4, C18 C11 C28 C48, C50		CEJANP010M50 CEJANP100M10 CEJANP220M10 CEJA010M50 CEJA220M6R3
C31, C32 C54 C5, C17, C19, C33, C35 C21 C7		CEJA330M25 CFTXA103J50 CFTXA104J50 CFTXA223J50 CFTXA333J50
C8, C14 C13 C26 C30 C20, C23, C27, C34		CFTXA473J50 CFTXA683J50 CKCYF103Z50 CKPUYB101K50 CKPUYB102K50
C1, C29 C36, C39 — C41, C45 — C47, C49, C51 C12 C55 C44		CKPUYB331K50 CKPUYF103Z25 CQMA272J50 CQMA472J50 CSZA220M10

RESISTORS

Mark	Symbol & Description	Part No.
R84 R82, R86, R93, R98 R128	Fuse resistor	DCN1001 RD1/2PMF□□□J RN1/6PQ5602F
VR12 VR10 VR1, VR2, VR6, VR7, VR11	Semi-fixed (10kΩ) Semi-fixed (2.2kΩ) Semi-fixed (4.7kΩ)	VRTB6VS103 VRTB6VS222 VRTB6VS472
	Other resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
CN103 CN10	5P top post 23P side connector	B5P-SHF-1AA VKN1013

**BLDB Assembly
SEMICONDUCTORS**

Mark	Symbol & Description	Part No.
	IC301	TA8413P
	Q301	STA302A
	Q302	STA303A
	Q303 – Q305	2SA1048
	D301 – D303	S2V20-4001

CAPACITORS

Mark	Symbol & Description	Part No.
	C304	CEAS4R7M50
	C305	CKCYF103Z50
	C301 – C303 (33/50)	VCH1034

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/6PM□□□J

**● SYPS Assembly (DYR1030)
SEMICONDUCTORS**

Mark	Symbol & Description	Part No.
	IC1	NJM4558S
	Q2	2SA1096
	Q6, Q8	2SA933S
	Q5	2SB1052
	Q10	2SC1627
	Q7, Q9	2SC1740S
	Q1	2SC2497
	Q3, Q4, Q11	2SD1267
	D8, D9	HZS11NB2
	D15, D16	HZS5.1NB2
	D10	HZS8.2EB2
	D1, D2	RB-152LF
	D11	S2K20
	D5 – D7, D13, D14, D20	1SS254

COIL

Mark	Symbol & Description	Part No.
	L1 Chork coil	VTT-070

CAPACITORS


Mark	Symbol & Description	Part No.
	C18	CCCSL331J50
	C22	CCSL471J50
	C9, C10, C13, C17, C36, C37	CEAS100M50
	C29	CEAS101M25
	C7, C8	CEAS221M25

Mark	Symbol & Description	Part No.
	C3, C4	CEAS222M25
	C16, C23	CEAS3R3M50
	C14, C15, C20	CEAS470M50
	C21	CKCYB102K50
	C1, C2, C11, C12, C27, C28, C30, C31, C34, C35	CKCYF103Z50
	C19	CQMA183J50
	C6 (4700/10)	VCH1003
	C5 (6800/10)	VCH1041

RESISTORS

Mark	Symbol & Description	Part No.
	R28 – R31	RN1/6PQ□□□□F
	R26, R27	RS1PMF□□□J
	Other resitors	RD1/6PM□□□J

**LFSB Assemble
SWITCH**

Mark	Symbol & Description	Part No.
	 S1 Power switch	VSA-010

FILTER

Mark	Symbol & Description	Part No.
	 L101 Line filter	VTL-157

CAPACITORS

Mark	Symbol & Description	Part No.
	 C101 – C103	RCG-009

RESISTOR

Mark	Symbol & Description	Part No.
	 R101	RD1/2PM225J

**ADDS Assemble (DWG1084)
SEMICONDUCTORS**

Mark	Symbol & Description	Part No.
	IC1	PA0034
	IC101	μPC393C
	Q8, Q102	UN4112
	Q101	UN4212
	Q7, Q9	2SA933S
	Q1, Q2	2SC1740S
	Q5, Q6	2SK372
	Q3, Q4	2SK184
	D1 – D6, D101, D102	1SS254

SWITCH

Mark	Symbol & Description	Part No.
S1	2P Dip switch	DSX1007

FILTERS

Mark	Symbol & Description	Part No.
F2	2.3MHz B.P.F.	VTF1002
F3	2.8MHz B.P.F.	VTF1003
F1	Audio B.P.F.	VTF1022

CAPACITORS

Mark	Symbol & Description	Part No.
C105		CCCCH101J50
C1		CCCCH820J50
C30		CCCCL271J50
C12		CCCCL301J50
C14, C31		CCPUSL560J50
C24, C40		CEALNP100M16
C39		CEANLR47M50
C41		CEANP100M50
C15, C19, C33, C36		CEANP220M10
C22		CEAS100M50
C11, C29		CEAS101M10
C8, C10, C20, C26, C28		CEAS221M10
C38		CEAS4R7M50
C4, C6, C43, C45, C47, C102, C104, C107		CEAS470M25
C21, C23		CFTXA104J50
C42, C44, C101, C103		CGCYX473M25
C2		CKCYB472K50
C7, C9, C25, C27		CKCYF223Z50
C3, C5, C46, C48, C106		CKPUYF103Z25
C13, C32		CQMA152J50
C18, C37		CQMA393J50
C16, C17, C34, C35		CQMA472J50

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	15P D-SUB Connector Assembly	DXX1031

◎ KEYB Assembly (DWG1085)**SEMICONDUCTORS**

Mark	Symbol & Description	Part No.
IC1		PDG012A
Q1 – Q4		RN1203
D8, D9		MTZ12B
D1, D2, D4		SLH-56MC 35H
D3		SLH-56VC 35H
D5 – D7		1SS254

SWITCHES

Mark	Symbol & Description	Part No.
S1 – S6	Tact switch (STILL STEP (F), (R), OPEN/ CLOSE, SCAN (F), (R), PLAY)	VSC-012

CAPACITORS

Mark	Symbol & Description	Part No.
C2, C3		CCCCH300J50
C1		CEAS470M25

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/6PM□□□J

OTHER

Mark	Symbol & Description	Part No.
X1	Ceramic resonator IR sensor	RSS-035 GP1U50X

**JACK Assembly
COILS AND FILTER**

Mark	Symbol & Description	Part No.
L1, L2	Axial inductor	LAU101J
F1		DTF1003

RESISTORS

Mark	Symbol & Description	Part No.
	R1, R2	RD1/4VM221J

OTHER

Mark	Symbol & Description	Part No.
	Mini jack	DKN1017

**LMCB Assembly
SEMICONDUCTORS**

Mark	Symbol & Description	Part No.
IC1		TA7291P
D1		HZS9B3

CAPACITORS

Mark	Symbol & Description	Part No.
C3		CEAS100M50
C1		CGDYX473M25

RESISTORS

Mark	Symbol & Description	Part No.
	R1, R2	RD1/4 VM□□□J

7. ADJUSTMENT PROCEDURES

7.1 JIGS AND INSTRUMENTS REQUIRED FOR ADJUSTMENTS

- Small screwdriver (about 7cm long axis)
- Small Philips head screwdriver (at least 15cm long axis)
- Hexagonal wrench (2.00mm and 2.5mm)
- L-shaped eccentric driver (GGV-129)
- 1.5V battery with lead wires
- Low-pass filter (100k Ω + 1 μ F)
- Dual-trace oscilloscope (with delay)
- AF generator
- Frequency counter
- LD test disc (N or F series)
- Shorting clips
- Digital voltmeter
- Remote control Unit

7.2 ADJUSTMENT PREPARATIONS AND PRECAUTIONS

1. Player settings

For most adjustment procedures, the player should be stood on its side with the power transformer at the Bottom and the TVCB assembly open.

2. Test Mode

1) Activating the Test Mode

Press the **TEST** + **ESC** keys on the remote control unit.

2) Releasing the Test Mode

Press the **CX** + **9** keys on the remote control unit, or turn the power switch OFF.

3) Functions

Checking the LED display **CX** + **0**

TRKG servo OPEN/CLOSE.... **CX** + **3**

Tilt servo OPEN/CLOSE **CX** + **4**

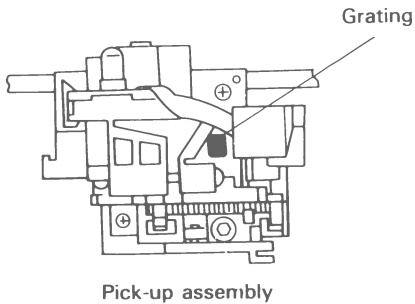
Releasing the Test Mode **CX** + **9**

3MHz oscillation Mode Retract the disc tray into the unit without disc.

Note 1. The player can still be used in the normal way during test mode.

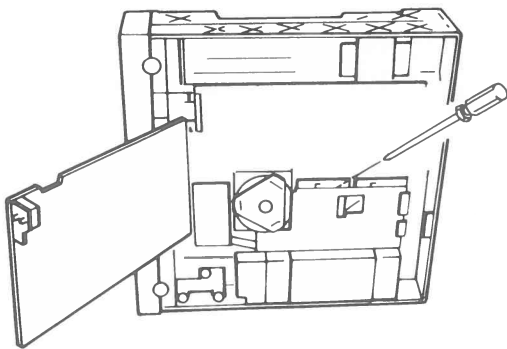
3. Grating adjustment

Stand the player on its side as shown in Fig.2. The grating can be adjusted by inserting a small screwdriver through the gap between the mechanical assembly and the ADDS assembly. (Figs.1 and 2)



Grating position

Fig. 1



Screwdriver insertion position

Fig. 2

4. Test discs

The LD test discs used in these adjustments may be either N series or F series. The frame numbers given in the text are N series numbers while those enclosed in parentheses are F series numbers.

5. Unless specified otherwise, all oscilloscope settings shown in the connection diagrams are values obtained by using a 10:1 probe.

7.3 MECHANICAL ADJUSTMENTS

1. ROUGH GRATING AND TRACKING (TRKG) BALANCE ADJUSTMENTS 7.3 Mechanical Adjustments

- Purpose: Adjust the laser beam (divided into 3 beams by grating) to the optimum position on the playback tracks. Adjust TRKG servo offset voltage to 0V.
- Symptoms indicating need for adjustment: Improper tracking (Jumping, Skipping etc.)

- | | |
|--|--|
| <ul style="list-style-type: none"> ● Measuring instruments and jigs ● Measuring position ● Test disc and player mode ● Adjustment position | <ul style="list-style-type: none"> ● Small screwdriver • Oscilloscope ● FTSB assembly CN102-3 (TRKG error) ● LD test disc # 16,000 (# 15,000) • Test mode (TRKG servo open) ● Grating • FTSB assembly VR6 (TRKG balance) |
|--|--|

Connection diagrams

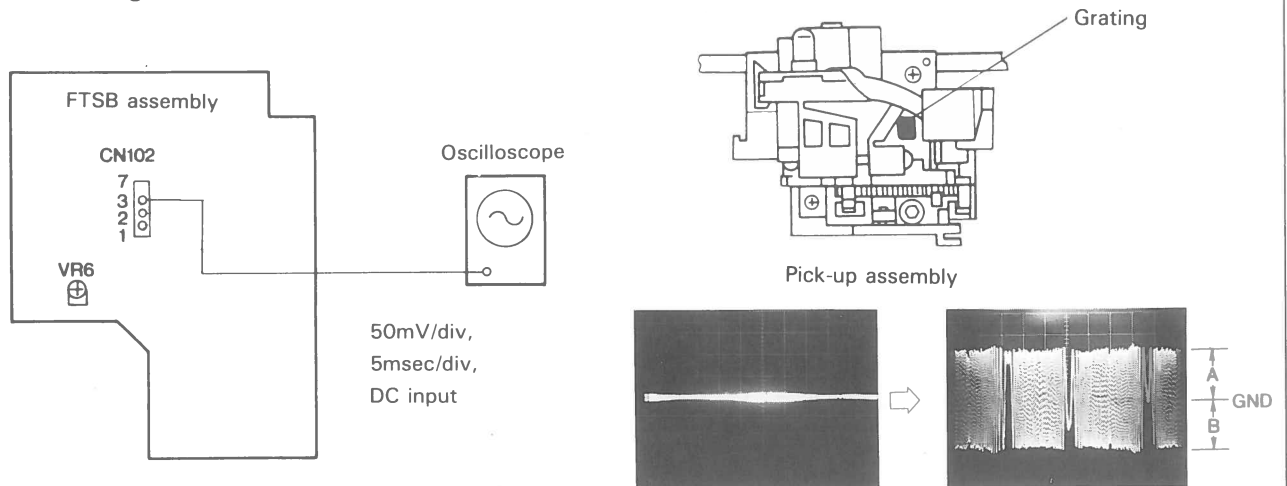


Photo 1. On-track position Photo 2. Maximum amplitude

Adjustment Procedure

<Rough Grating Adjustment >

1. Play an LD test disc.
2. Press the DISPLAY key to display the frame No. on the TV screen.
3. Move the pick-up to frame # 16,000 (# 15,000) by scanning or searching.
4. Open the TRKG servo in the test mode. (See p.58.)
5. Connect the oscilloscope to CN102-3 of the FTSB assembly and observe the waveform.
6. Insert a small screwdriver into the grating adjustment hole (See p.59) and turn the grating so that the amplitude of the TRKG error signal varies large and small alternately. Find the position where the waveform amplitude reaches a minimum with a smooth waveform envelope. (See Photo 1.) (This condition indicates that the 3-way split laser beam is directed onto a single track. This is called the "on-track" position.)

7. Slowly turn the grating counterclockwise from the on-track position until the gradually increasing TRKG error waveform amplitude reaches a maximum. (See Photo 2.)

8. Close the TRKG servo and check that a normal picture is displayed on the TV screen.

<TRKG Balance Adjustment >

1. Align the oscilloscope GND with the center of the oscilloscope screen.
2. Adjust VR6 in the FTSB assembly to a position where the positive and negative halves of the TRKG error waveform are equal. (See Photo 2.)

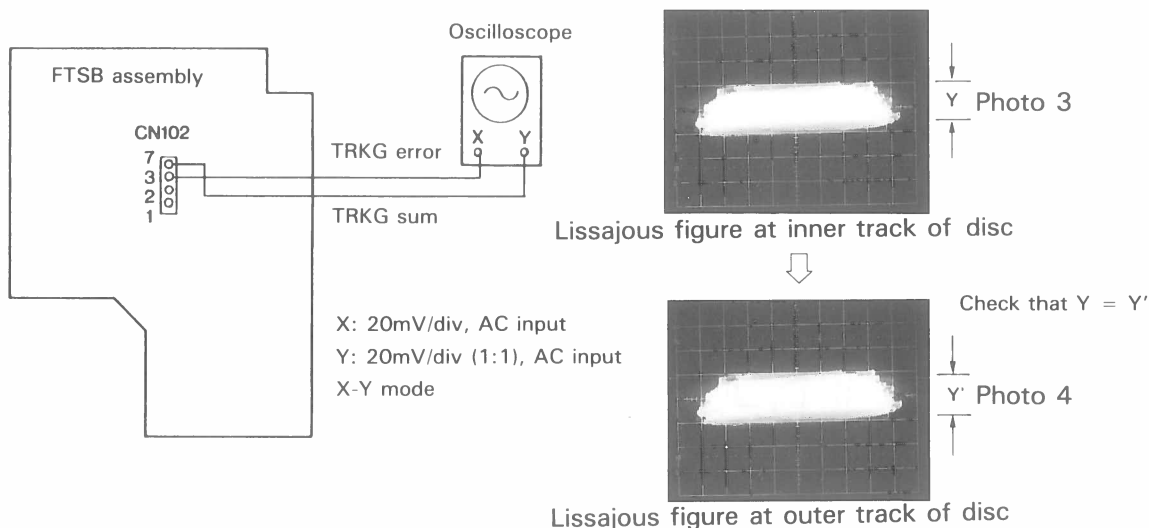
2. SPINDLE MOTOR CENTERING CHECK

7.3 Mechanical Adjustments

- Purpose: Check that the spindle motor is centered on the locus traced by the laser beam.

- | | |
|--|---|
| <ul style="list-style-type: none"> • Measuring instruments and jigs • Measuring position • Test disc and player mode • Adjustment position | <ul style="list-style-type: none"> • Oscilloscope • FTSB assembly CN102-3 (TRKG error) and CN102-7 (TRKG sum) • Test mode (TRKG servo: open) • Lissajous figure check |
|--|---|

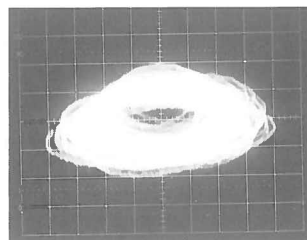
Connection diagrams



Check Procedure

1. Play a test disc.
2. Move the pick-up to the inner tracks of the disc by scanning or searching, and then open the TRKG servo in the test mode. (→P.58)
3. Connect the oscilloscope X input (CH-1) to CN102-3 of the FTSB assembly, and the Y input (CH-2) to CN102-7. Switch the oscilloscope to X-Y mode and observe the Lissajous figures of the TRKG error and TRKG sum signals.
4. Record the amplitude of the Lissajous figures along the Y axis.
5. Close the TRKG servo, and move the pick-up to the outer tracks of the disc by scanning or searching. Open the TRKG servo again and observe the Lissajous figure.
Check that the amplitude of the Lissajous figures along the Y axis is the same as that recorded in step 4 above.

If it is not the same, proceed to the "Spindle Motor Centering Adjustment" procedure.



Lissajous figure indicating need for adjustment

Photo 5.

3. SPINDLE MOTOR CENTERING ADJUSTMENT

7.3 Mechanical Adjustments

- Purpose: Position the spindle motor center on the production of laser beam locus.
- Symptoms indicating need for adjustment: Track jumping. Long search times.

- | | |
|--|--|
| <ul style="list-style-type: none"> ● Measuring instruments and jigs ● Measuring position ● Test disc and player mode ● Adjustment position | <ul style="list-style-type: none"> ● L-shaped eccentric driver (GGV-129) • 2.5mm hexagonal wrench ● Oscilloscope ● FTSB assembly CN102-3 (TRKG error) and CN102-7 (TRKG sum) ● Test mode (TRKG servo: open/close) ● Spindle motor centering adjustment hole • Grating |
|--|--|

Connection diagrams

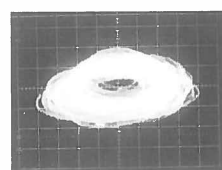
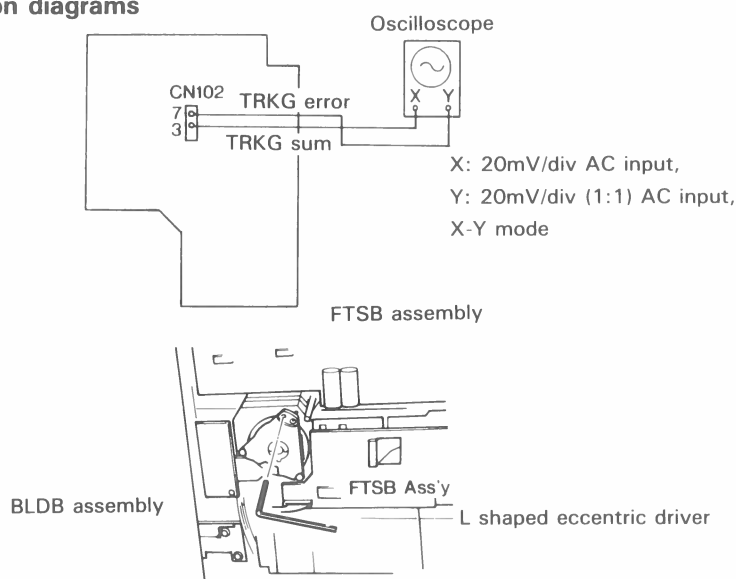


Photo 6

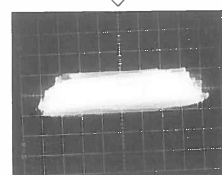


Photo 7

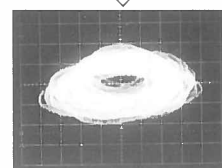


Photo 8

Adjustment Procedure

Note: This adjustment is necessary only when indicated by the Spindle Motor Centering Check.

- Loosen the three spindle motor setscrews by turning each about half a turn.
- Connect the oscilloscope X input (CH-1) to CN102-3 of the FTSB assembly, and the Y input (CH-2) to CN102-7.
- Play a test disc, and move the pick-up to the outer tracks of the disc by scanning or searching.
- Open the TRKG servo in the test mode (→P.58), and observe the Lissajous figures of the TRKG error and TRKG sum signals.
- Fine adjust the grating until the amplitude of the Lissajous figures along the Y axis reaches a minimum. (See Photo 7.)
- Close the TRKG servo, and move the pick-up to the inner tracks of the disc by scanning or searching.
- Open the TRKG servo again and observe the Lissajous figures. Record the amplitude on the Y axis.
- Insert the L-shaped eccentric screwdriver into the adjustment hole, and slowly turn in the direction which reduces the Lissajous figures amplitude on the Y axis. After reaching the minimum amplitude, continue turning the eccentric driver to the same direction until the same amplitude as that recorded in step 7 is reached. (See Photos 6 thru 8.)
- Close the TRKG servo, and move the pick-up to the outer tracks of the disc by scanning or searching.
- Repeat steps 4, 5, and 6.
- Open the TRKG servo again and observe the Lissajous figures. Check that the amplitude along X axis has reached a minimum. If the Lissajous figures are still inflated in the Y axis direction, repeat 8 thru 11.

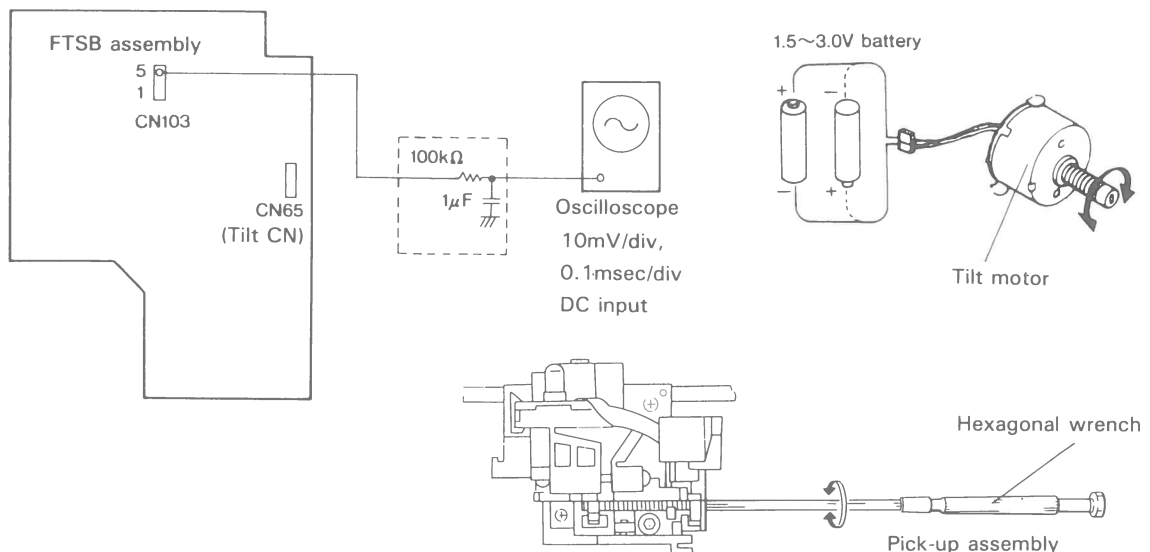
4. PICK-UP TRACKING DIRECTION INCLINATION ADJUSTMENT

7.3 Mechanical Adjustments

- Purpose: Adjustment of slider shaft inclination to ensure that the pick-up assembly moves parallel to the disc surface, and adjustment of the pick-up assembly tracking direction angle to ensure that the laser beam is beamed perpendicularly at the disc.
- Symptoms indicating need for adjustment: Crosstalk

- | | |
|--|--|
| <ul style="list-style-type: none"> ● Measuring instruments and jigs ● Measuring position ● Test disc and player mode ● Adjustment position | <ul style="list-style-type: none"> ● Oscilloscope ● Battery with lead wires ● Low-pass filter ● 2.5mm hexagonal wrench ● FTSB assembly CN103-5 (FOCS drive) ● LD test disc #4760 (#4760), #46,135 (#42,314), #115 (#104) ● Pick-up tracking direction angle adjustment screw ● Adjust slider shaft angle with tilt motor |
|--|--|

Connection diagrams



Adjustment Procedure

1. Disconnect the FTSB assembly CN65 (tilt motor) connector, and do not connect it again until the "Tilt Sensor Angle Adjustment" has been completed.
2. Play an LD test disc, and search to frame #4,760 (#4,760) where the tilt fulcrum is located.
3. Connect the oscilloscope to CN103-5 of the FTSB assembly via a low-pass filter, and observe the focus drive voltage. The oscilloscope GND level does not have to be aligned in the center of the screen at this stage.
4. Adjust the Y axis position adjustment knob on the oscilloscope to position the focus drive voltage waveform in the center of the oscilloscope screen.
5. If the focus drive voltage measured when searching for frame #46,135 (#42,314) differs from that obtained in step 4 above, connect a battery (1.5 to 3V) to the tilt motor connector, and turn the motor until the focus drive voltage is within $\pm 50\text{mV}$ of the step 4 voltage.
6. Insert the hexagonal wrench into the adjustment hole in the rear panel, and adjust the pick-up tracking direction inclination adjustment screw to minimize the crosstalk on the left and right hand sides of the TV screen.
7. Search to frame #115 (#104) and check that crosstalk on the left and right hand sides of the TV screen has been minimized, and that it is about equal on both sides. If the level of crosstalk on the TV screen is still too high, repeat steps 6 and 7.

5. LD FOCS ERROR BALANCE ADJUSTMENT

7.3 Mechanical Adjustments

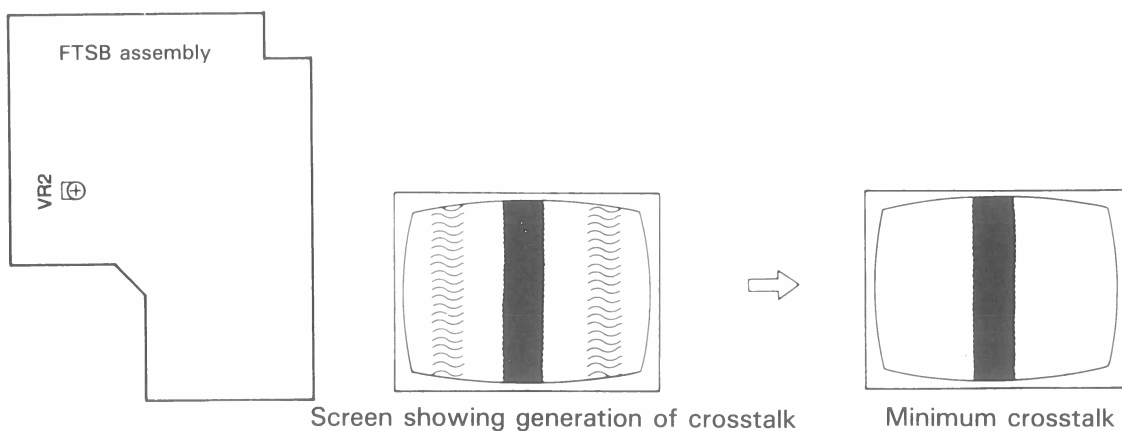
- Purpose: To ensure that the FOCS servo maintains the objective lens at the optimum distance from disc during LD playback.

- Symptoms indicating need for adjustment: Crosstalk

- Measuring instruments and jigs
- Measuring position
- Test disc and player mode
- Adjustment position

- TV monitor
- Player video output terminals
- LD test disc #115 (#104)
- FTSB assembly VR2

Connection diagrams

**Adjustment Procedure**

1. Play an LD test disc, and search to frame #115 (#104).
2. Adjust VR2 on the FTSB assembly to minimize crosstalk in the left and right hand sides of the TV screen. If this adjustment fails to reduce crosstalk down to the allowable level, go to the "Pick-up Tangential Direction Angle Adjustment" procedure.

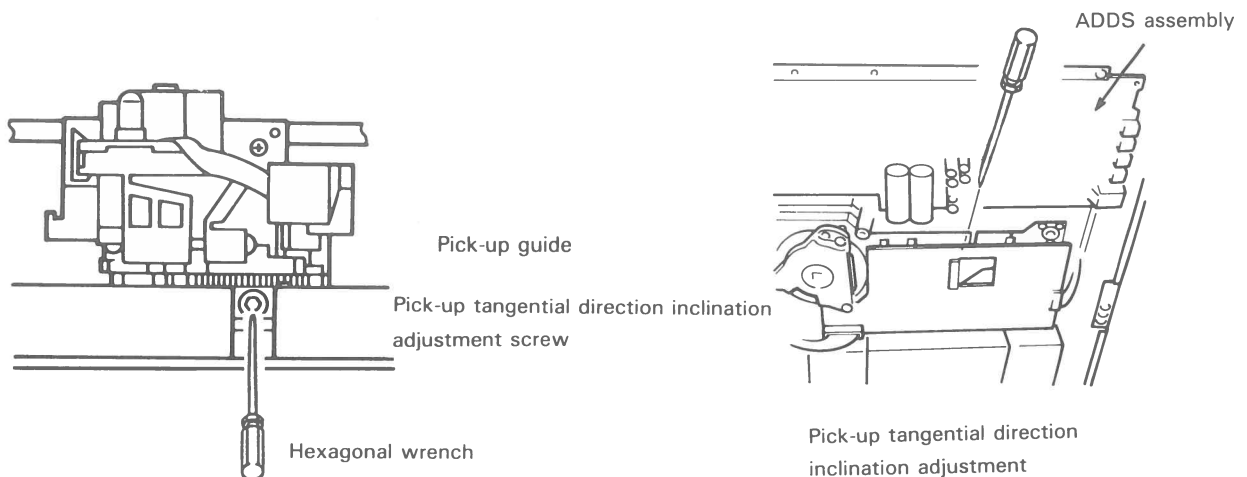
6. PICK-UP TANGENTIAL DIRECTION ANGLE ADJUSTMENT

7.3 Mechanical Adjustments

- Purpose: Adjustment of pick-up tangential direction inclination to minimize crosstalk.
- Symptoms indicating need for adjustment: Conspicuous crosstalk

- | | |
|--|---|
| <ul style="list-style-type: none"> • Measuring instruments and jigs • Measuring position • Test disc and player mode • Adjustment position | <ul style="list-style-type: none"> • TV monitor • Oscilloscope • Hexagonal wrench • Crosstalk on the screen • FTSB assembly CN102-3 (TRKG error) • LD test disc #28,600 (#27,000), #115 (#104) • Test mode (TRKG servo: open/close) • Pick-up tangential direction inclination adjustment screw |
|--|---|

Connection diagrams (For the connection diagrams, refer to page 60.)

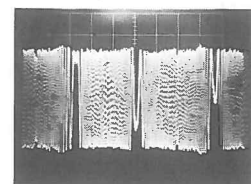
**Adjustment Procedure**

Note: This adjustment is necessary only if crosstalk remains conspicuous after completing the "Pick-up Tracking Direction Inclination Adjustment" and "LD FOCUS Error Balance Adjustment" procedures.

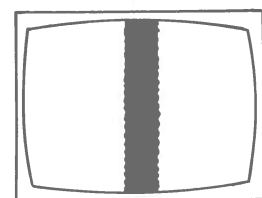
1. Play an LD test disc, search to frame #28,600 (#27,000), and open the TRKG servo in the test mode (→P.58).
2. Connect the oscilloscope to CN102-3 of the FTSB assembly and observe the TRKG error waveform.
3. Insert the hexagonal wrench through the gap between the ADDS assembly and mechanical assembly to the pick-up tangential direction inclination adjustment screw.
4. Adjust this screw until the TRKG error waveform reaches maximum amplitude.
5. Remove the hexagonal wrench, then search to frame #115 (#104) and check that crosstalk on the left and right hand sides of the TV screen has been minimized,

and that it is about equal on both sides. Repeat steps 4 and 5 if considered necessary.

Oscilloscope range
50mV/div,
5msec/div,
DC input



TRKG error waveform (Maximum)



Minimum crosstalk

7. TILT SENSOR INCLINATION ADJUSTMENT

7.3 Mechanical Adjustments

- Purpose: Adjustment of the tilt servo offset voltage to 0V by adjustment of tilt sensor inclination.
- Symptoms indicating need for adjustment: Crosstalk

- | | |
|--|---|
| <ul style="list-style-type: none"> • Measuring instruments and jigs • Measuring position • Test disc and player mode • Adjustment position | <ul style="list-style-type: none"> • Oscilloscope • Philips head screwdriver • FTSB assembly CN103-2 (tilt error) • LD test disc #4,760 (#4,760) (TRKG servo: closed) • Tilt sensor inclination adjustment screw • FTSB assembly VR11 (tilt gain) |
|--|---|

Connection diagrams

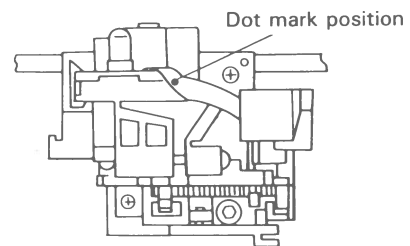
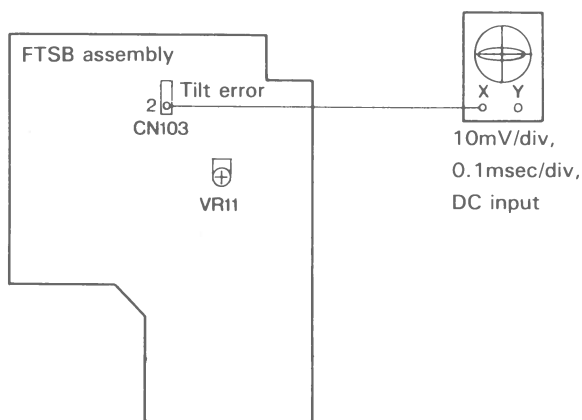


Fig. 1

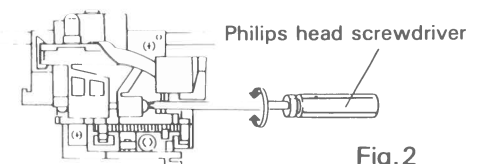


Fig. 2

Tilt sensor inclination adjustment

Adjustment Procedure

1. Check the color of the dot marked on the flexible cable of the pick-up assembly next to the tilt sensor. (Fig.1)
There are three types of dots. Adjust VR11 on the FTSB assembly accordingly.
Red dot ... Turn VR11 fully clockwise.
Blue dot ... Turn VR11 fully counter clockwise.
No dot (no mark) ... Adjust VR11 to center position.
2. Play an LD test disc, and search to frame #4,760.
3. Connect the oscilloscope to CN103-2 of the FTSB assembly, and observe the tilt error DC voltage.
4. Insert a Philips head screwdriver with a long shaft through the rear panel and adjust the tilt sensor inclination adjustment screw until the tilt error DC voltage reads 0V. (See Fig.2.)
During this step, it does not matter if the pick-up is displaced a little from the designated frame by the screwdriver.
5. Connect the tilt motor connector CN65 disconnected during the "Pick-up Tracking Direction Inclination Adjustment".
6. Search to frame #115 (#104) and check that crosstalk on the left and right hand sides of the TV screen has been minimized, and that it is about equal on both sides.

8. FINE GRATING ADJUSTMENT AND TRKG BALANCE ADJUSTMENT CHECK

7.3 Mechanical Adjustments

- Purpose:
 - Fine adjustment of the grating to ensure that the two beams for TRKG servo are directed to the optimum positions in the disc track.
 - Adjustment of TRKG servo loop offset voltage to 0V.
- Symptoms indicating need for adjustment: Improper Tracking (Skip. Jump etc)

- | | |
|--|--|
| <ul style="list-style-type: none"> • Measuring instruments and jigs • Measuring position • Test disc and player mode • Adjustment position | <ul style="list-style-type: none"> • Oscilloscope • Screwdriver • FTSB assembly CN102-3 (TRKG error), CN102-7 (TRKG sum) • LD test disc # 16,000 (# 15,000) • Test mode (TRKG servo: open) • Grating • FTSB assembly VR6 |
|--|--|

Connection diagrams

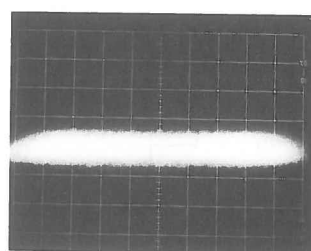
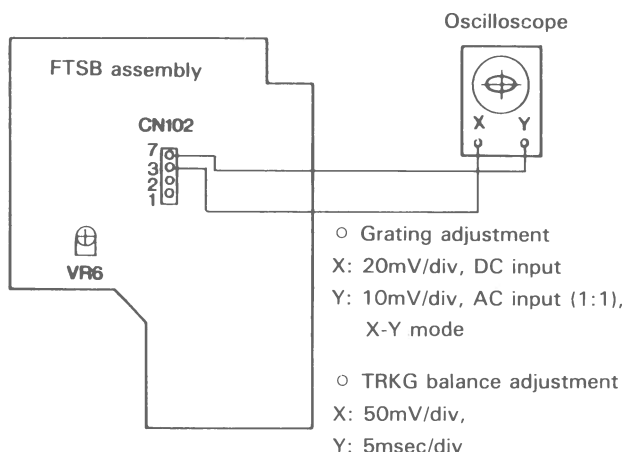


Photo 9.
Fine grating adjustment

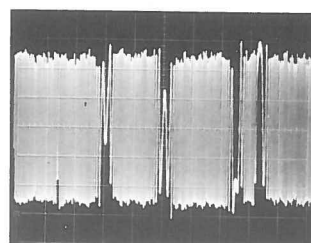


Photo 10.
TRKG balance adjustment

Adjustment procedure

1. Play an LD test disc, search to frame #16,000 (# 15,000), and open the TRKG servo in the test mode (→P.58).
2. Connect the oscilloscope X input (CH-1) to CN102-3 of the FTSB assembly, and the Y input (CH-2) to CN102-7.
Switch the oscilloscope to X-Y mode, and observe the Lissajous figures for the TRKG error and TRKG sum signals.
3. Insert a small screwdriver into the grating adjustment hole (see p.58), and fine adjust the grating until the amplitude of the Lissajous figures along the Y axis reaches a minimum. (Photo 9.)
If the grating is turned too far and the optimum position can no longer be found, repeat the "Rough Grating Adjustment".
4. Using the X input (CH-1) of the oscilloscope, check that the positive and negative amplitudes of the TRKG error signal are equal. (Photo 10.) If they are not equal, repeat the "Tracking Balance Adjustment".
5. Close the TRKG servo, and check that a normal picture is shown on the TV screen.

7.4 FTSB ASSEMBLY ADJUSTMENTS

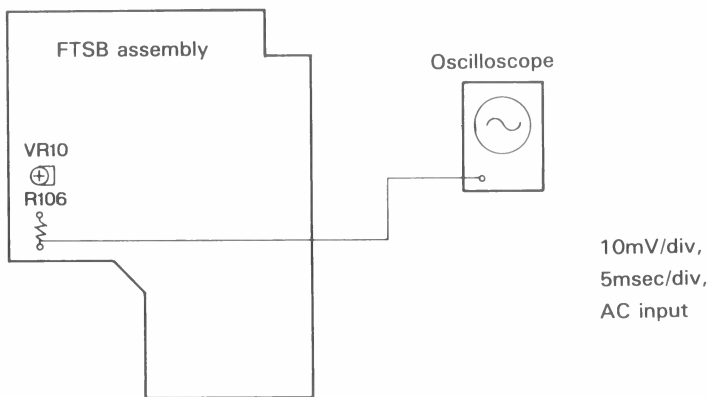
1. RF GAIN ADJUSTMENT

7.4 FTSB Assembly Adjustments

- Purpose: Adjustment of RF signal amplitude to the optimum value.
- Symptoms indicating need for adjustment: Frequent drop-out

- | | |
|--|--|
| <ul style="list-style-type: none"> • Measuring instruments and jigs • Measuring position • Test disc and player mode • Adjustment position | <ul style="list-style-type: none"> • Oscilloscope • Lead of R106 on FTSB assembly (RF signal) • LD test disc # 16,000 (# 15,000) (TRKG servo: closed) • FTSB assembly VR10 (RF gain) |
|--|--|

Connection diagrams



Adjustment procedure

1. Play an LD test disc and search to frame # 16,000 (# 15,000).
2. Connect the oscilloscope to the lead of R106 on the FTSB assembly and observe the RF signal.
3. Adjust VR10 on the FTSB assembly to obtain an RF signal amplitude of $300\text{mV} \pm 50\text{mV}$. (Photo 11.)

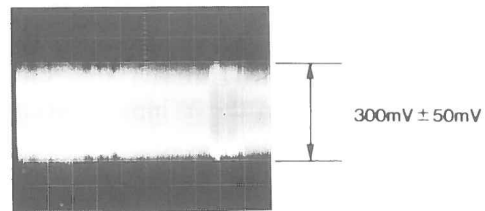


Photo 11 RF signal

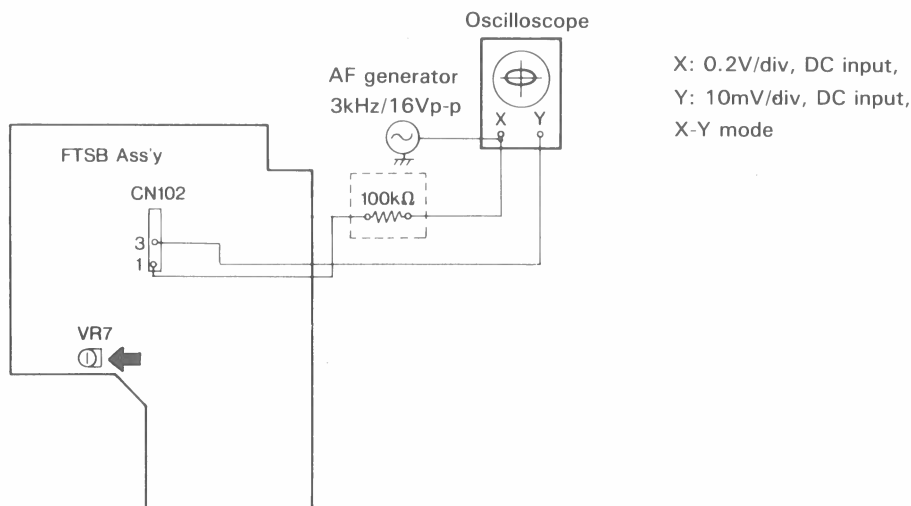
2. TRKG SERVO LOOP GAIN ADJUSTMENT

7.4 FTSB Assembly Adjustments

- Purpose: Adjustment of TRKG servo loop gain to the optimum value.
- Symptoms indicating need for adjustment: Improper tracking (Skip, Jump, etc)

- | | |
|--|--|
| <ul style="list-style-type: none"> • Measuring instruments and jigs • Measuring position • Test disc and player mode • Adjustment position | <ul style="list-style-type: none"> • Oscilloscope • Resistor (100kΩ) • AF generator • FTSB assembly CN102-1 (TRKG error), CN102-3 (TRKG gain) • LD test disc # 16,000 (# 15,000) (TRKG servo: close) • FTSB assembly VR7 |
|--|--|

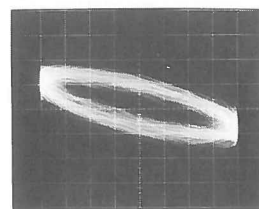
Connection diagrams



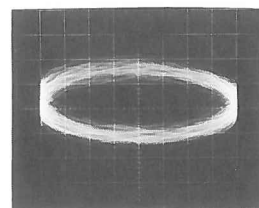
Adjustment procedure

1. Play an LD test disc and search to frame # 16,000 (# 15,000).
2. Connect the resistor, AF generator, and oscilloscope to CN102 on the FTSB assembly as shown in the diagram.
3. Set the AF generator output to 3kHz/16Vp-p.
4. Put the oscilloscope into X-Y mode, and observe the Lissajous figures.
5. Adjust VR7 on the FTSB assembly until the Lissajous figures become symmetrical along the respective X and Y axes of the oscilloscope. (Photo 12.)

Note: If the AF generator output does not exceed 16Vp-p, decrease the value of the above resistor (100k Ω) until the Lissajous figures become easy to observe. (33k Ω limit.)



Out of adjustment
↓



After adjustment Photo 12

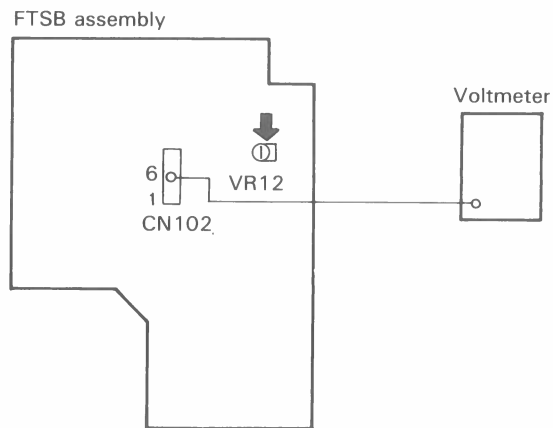
3. FOCS SUM LEVEL ADJUSTMENT

7.4 FTSB Assembly Adjustments

- Purpose: Adjustment of FOCS (A + B) level to the optimum value.
- Symptoms indicating need for adjustment: Tracking jumping

- | | |
|---|--|
| <ul style="list-style-type: none"> • Measuring instrument and jigs • Measuring position • Test disc and player mode • Adjustment position | <ul style="list-style-type: none"> • Voltmeter • CN102-6 (FOCS (A + B)) • LD test disc #4,760 (#4,760) • STILL • FTSB assembly VR12 |
|---|--|

Connection diagram



Adjustment Procedure

1. Play an LD test disc and search to frame #4,760 (#4,760).
2. Measure the voltage of CN102-6 (FOCS (A + B)).
3. Adjust VR12 on the FTSB assembly to obtain a CN102-6 voltage of $2V \pm 200mV$.

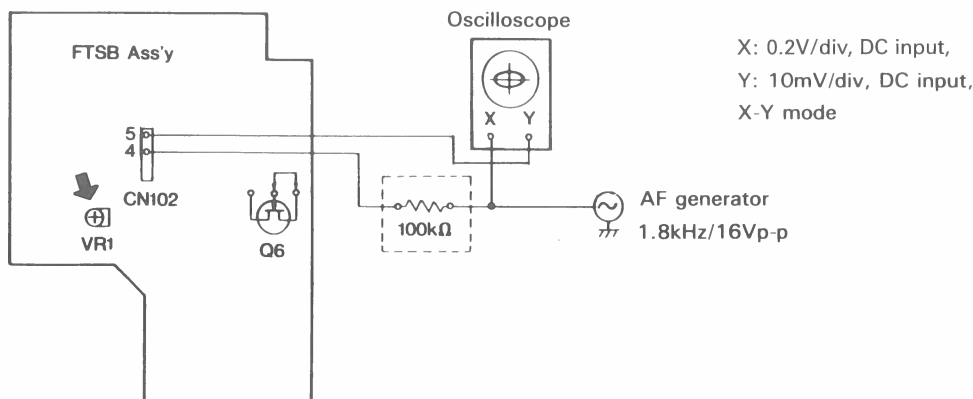
4. FOCS SERVO LOOP GAIN ADJUSTMENT

7.4 FTSB Assembly Adjustments

- Purpose: Adjustment of FOCS servo loop gain to the optimum value.
- Symptoms indicating need for adjustment: Can not to play
Improper focusing. (No initial focusing, intermittent play etc)

- | | |
|--|--|
| <ul style="list-style-type: none"> • Measuring instruments and jigs • Measuring position • Test disc and player mode • Adjustment position | <ul style="list-style-type: none"> • Oscilloscope • Resistor (100kΩ) • AF generator • FTSB assembly CN102-5 (FOCS error), CN102-4 (FOCS gain) • Suspend FOCS motor protector circuit function. • LD test disc # 16,000 (# 15,000) • FTSB assembly VR1 |
|--|--|

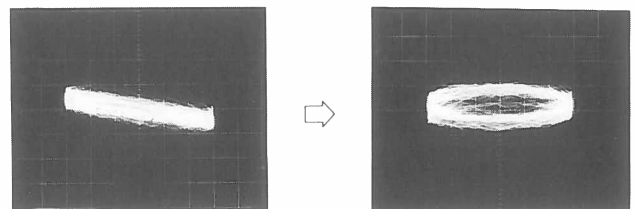
Connection diagrams



Adjustment Procedure

1. Connect the gate of Q6 (2SK184) on FTSB assembly to ground to suspend the focus motor protector circuit function.
2. Connect the resistor, AF generator, and oscilloscope to CN102 on the FTSB assembly as shown in the diagram.
3. Set the AF generator output to 1.8kHz/16Vp-p.
4. Put the oscilloscope into X-Y mode, and observe the Lissajous figures.
5. Adjust VR1 on the FTSB assembly until the Lissajous figures become symmetrical along the respective X and Y axes of the oscilloscope. (Photo 13.)
6. Disconnect the gate of FTSB assembly Q6 from ground.

Note: If the AF generator output does not exceed 16Vp-p, decrease the value of the above resistor (100k Ω) until the Lissajous figures become easy to observe. (33k Ω limit.)



Out of adjustment

After adjustment

Photo 13

7.5 TVCB ASSEMBLY ADJUSTMENTS

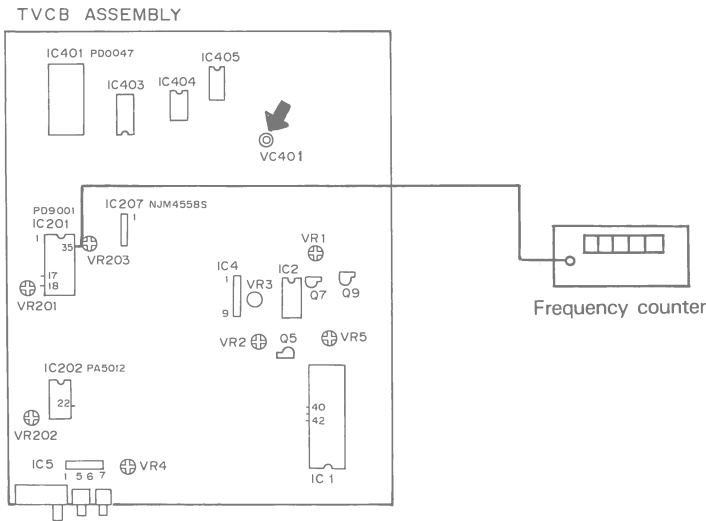
1. 14.31818MHz Adjustment

7.5 TVCB Assembly Adjustments

- Purpose: Reference clock frequency adjustment
- Symptoms indicating need for adjustment: Color aberration, spindle servo lock failure.

- | | |
|---|---|
| <ul style="list-style-type: none"> • Measuring instruments and jigs • Measuring position • Test disc and player mode • Adjustment point | <ul style="list-style-type: none"> • Frequency counter • TVCB assembly IC201 35 pin • Test mode • TVCB assembly VC401 |
|---|---|

Connection diagrams



Adjustment Procedure

1. Connect a frequency counter to pin 35 of IC201 and adjust to 14.31818MHz \pm 100Hz using VC401.

2. REFERENCE SHIFT ADJUSTMENT

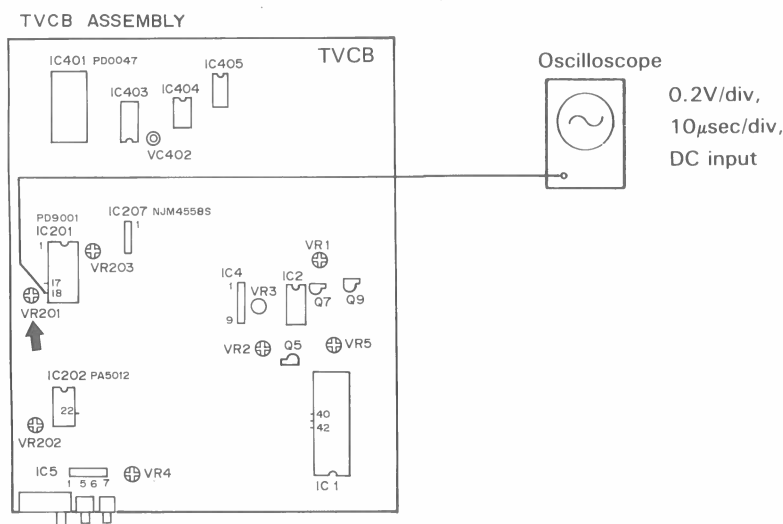
7.5 TVCB Assembly Adjustment

- Purpose: Adjustment of the amount of the reference shift required for detecting spindle servo frequency error.
- Symptoms indicating need for adjustment: Spindle servo locking failure

- Measuring instruments and jigs
- Measuring position
- Test disc and player mode
- Adjustment position

- Oscilloscope
- TVCB (TBC, CONT) assembly IC201 (PD9001) pin 18 (C INH)
- Power switch on
- TVCB assembly VR201

Connection diagrams



Adjustment Procedure

1. As simply switch the player power on, connect the oscilloscope to pin 18 of IC201 (PD9001) on the TVCB assembly.
2. Adjust the oscilloscope trigger knob to stabilize the pulse waveform as shown in Photo 14.
3. Adjust VR201 on the TVCB assembly until the width of the HIGH interval up to the start of the LOW interval in the pulse waveform is 28 μ sec.

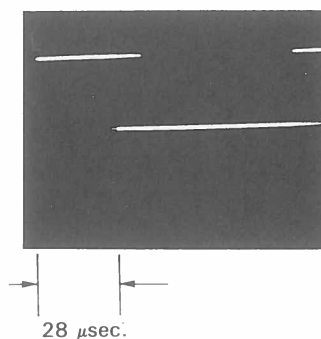


Photo 14.

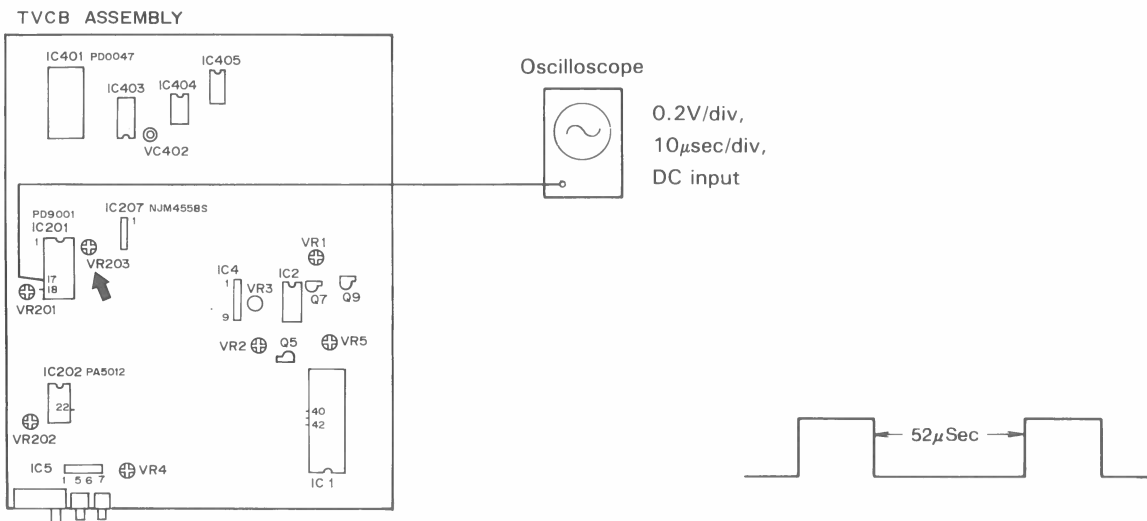
3. HALF H REJECTION

7.5 TVCB Assembly Adjustments

- Purpose: Adjustment of MMV (Monostable Multi-Vibrator) pulse width for half H rejection.
- Symptoms indicating need for adjustment: Picture aberration (spindle lock failure)

- | | |
|--|--|
| <ul style="list-style-type: none"> • Measuring instruments and jigs • Measuring position • Test disc and player mode • Adjustment position | <ul style="list-style-type: none"> • Oscilloscope • TVCB assembly IC201 (PD9001) pin 17 (PBH) • LD test disc • TVCB assembly VR203 |
|--|--|

Connection diagrams



Adjustment Procedure

1. Play an LD test disc.
2. Connect the oscilloscope to pin 17 of IC201 (PD9001) on the TVCB assembly.
3. Adjust VR203 on the TVCB assembly until the width of the LOW interval of the pulse waveform is 52 µsec.

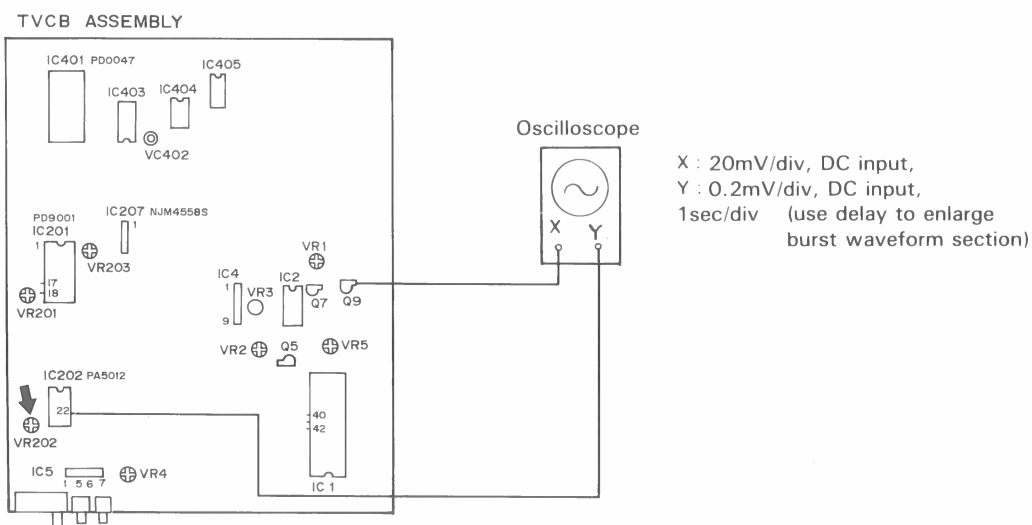
4. BURST GATE POSITION ADJUSTMENT

7.5 TVCB Assembly Adjustments

- Purpose: Adjustment of the burst gate position.
- Symptoms indicating need for adjustment: Playback commenced from intermediate position (not from start of disc), missing or irregular color, fine stripes

- | | |
|--|--|
| <ul style="list-style-type: none"> • Measuring instruments and jigs • Measuring position • Test disc and player mode • Adjustment position | <ul style="list-style-type: none"> • Oscilloscope • TVCB assembly Q9 (emitter), IC202 (PA5012) pin 22 • LD test disc • TVCB assembly VR202 |
|--|--|

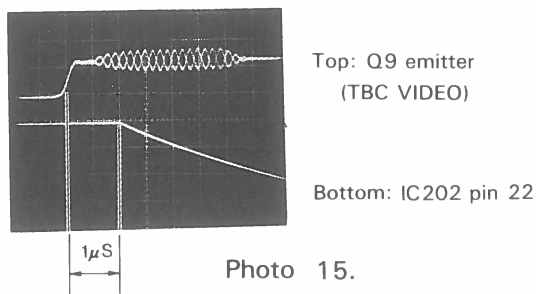
Connection diagrams



Adjustment Procedure

1. Play an LD test disc.
2. Connect the oscilloscope X input (CH-1) to the emitter of Q9 on the TVCB assembly, and the Y input (CH-2) to pin 22 of IC202 (PA5012).
3. Adjust VR202 on the TVCB assembly until the trailing edge of the MMV output is delayed by about $1\mu\text{sec}$ in respect to the leading edge of the video signal. (Photo 15.)

MMV: Monostable Multi-Vibrator



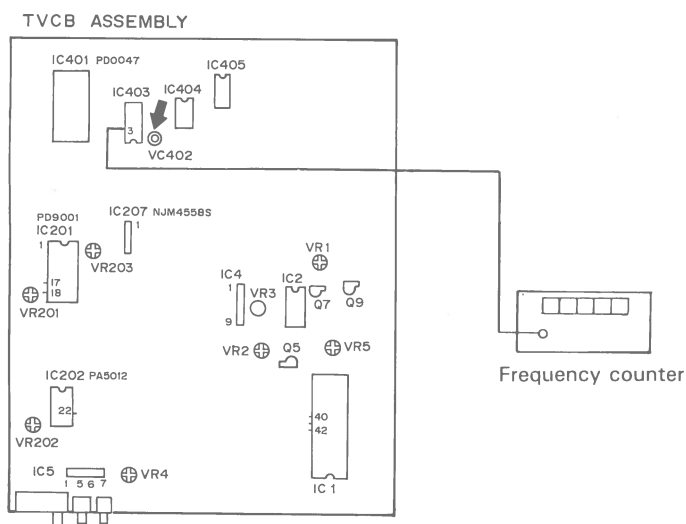
5. 3MHz OSCILLATION ADJUST

7.5 TVCB Assembly Adjustments

- Purpose: Set the frequency of the Decoder clock to its optimum level.
- Symptoms indicating need for adjustment: Long search times.

- | | |
|--|---|
| <ul style="list-style-type: none"> • Measuring instruments and jigs • Measuring position • Test disc and player mode • Adjustment position | <ul style="list-style-type: none"> • Frequency counter • TVCB assembly IC403 (PD0011A) pin 3 • Test mode, 3MHz oscillation mode • TVCB assembly VC402 |
|--|---|

Connection diagrams



Adjustment Procedure

1. In the test mode, retract the disc tray into the unit without loading a disc.
This operation makes pin 3 of IC403 activated into the oscillation mode.
2. Connect the pin 3 of IC403 to the Resistor (10k Ω) for pulling up +5V.
3. After pin 3 of IC403 is connected to the frequency counter, adjust the frequency into 3MHz \pm 100kHz by VC402.
4. Disconnect the resistor.

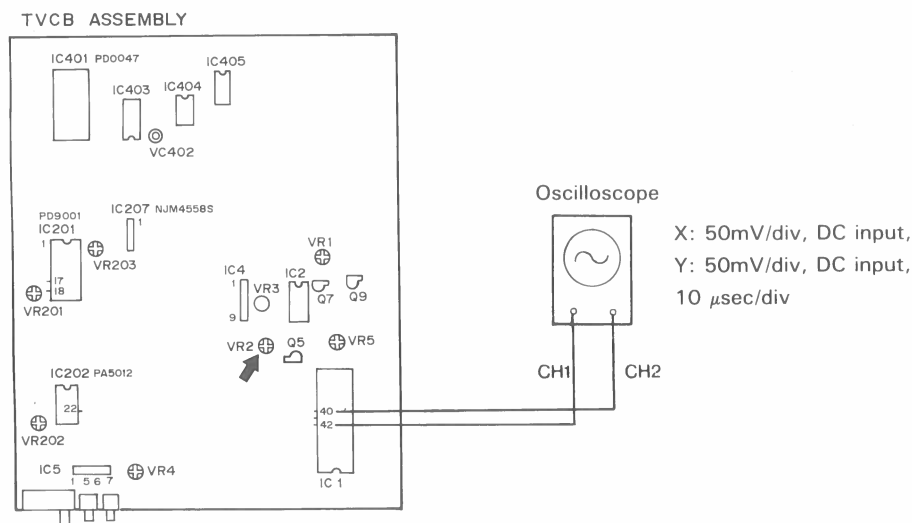
6. 1H DELAYED VIDEO LEVEL ADJUSTMENT

7.5 TVCB Assembly Adjustments

- Purpose: Adjustment of the amplitude of the 1H delayed video signal to the same amplitude as the main video signal.
- Symptoms indicating need for adjustment: Considerable white drop-out and H displacement (horizontal lines on the screen) when 1H level is large, and considerable black drop-out when 1H level is small.

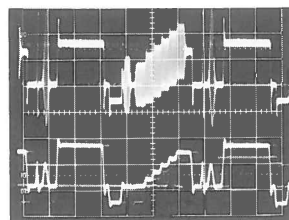
- | | |
|--|--|
| <ul style="list-style-type: none"> • Measuring instruments and jigs • Measuring position • Test disc and player mode • Adjustment position | <ul style="list-style-type: none"> • Dual-trace oscilloscope • TVCB assembly • IC1 (PA5010) pin 42 and pin 40 • LD test disc #19,801 (#19,801) • TVCB assembly VR2 |
|--|--|

Connection diagrams



Adjustment Procedure

1. Play an LD test disc, and search to frame #19,801 (#19,801).
2. Connect the oscilloscope X input (CH-1) to pin 40 of IC1 (PA5010) on the TVCB assembly, and the Y input (CH-2) to pin 42. Observe the main video signal and the 1H delayed video signal waveforms simultaneously.
3. Adjust VR2 on the TVCB assembly until the amplitude from the sync tip to the white level in the 1H delayed video signal (CH-2) is the same as the amplitude of the main video signal (CH-1). (Photo 16.)



Main video signal TVCB assembly

1H delayed video signal

Photo 16

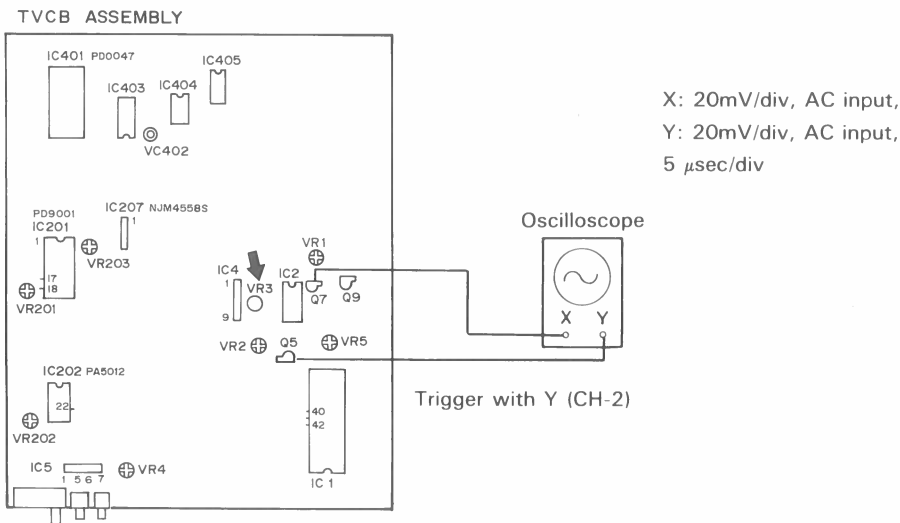
7. VCO CENTER FREQUENCY ADJUSTMENT

7.5 TVCB Assembly Adjustments

- Purpose: Optimization of the CCD delay time for time base error compensation purposes.
- Symptoms indicating need for adjustment: Color lock failure. Slow color lock after a search.

- | | |
|--|---|
| <ul style="list-style-type: none"> • Measuring instruments and jigs • Measuring position • Test disc and player mode • Adjustment position | <ul style="list-style-type: none"> • Dual-trace oscilloscope • TVCB assembly Q5 emitter and Q7 emitter • LD test disc #19,801 (#19,801) • TVCB assembly VR3 |
|--|---|

Connection diagrams



Adjustment Procedure

1. Play an LD test disc, and search to frame #19,801 (#19,801).
2. Connect the oscilloscope X input (CH-1) to the emitter of Q7 on the TVCB assembly, and the Y input (CH-2) to the emitter of Q5. Trigger with CH-2, and observe the video signal waveforms before and after time base error compensation simultaneously.
3. The video signal of following time base error compensation in CH-1 contains jitter. Adjust VR3 on the TVCB assembly to delay the center of that jitter by $70.6 \mu\text{sec}$ ($1H + 7.3 \mu\text{sec}$) from the trailing edge of the horizontal synchronizing signal (H-sync) in the video signal prior to time base error compensation at CH-2. (Photo 17.)

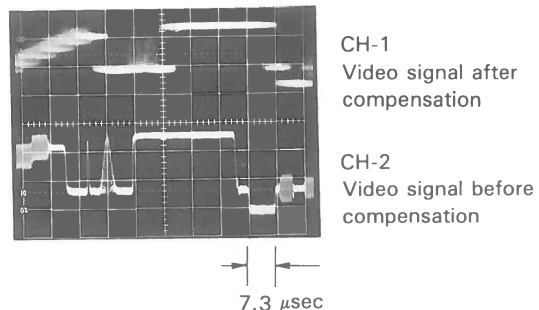


Photo 17

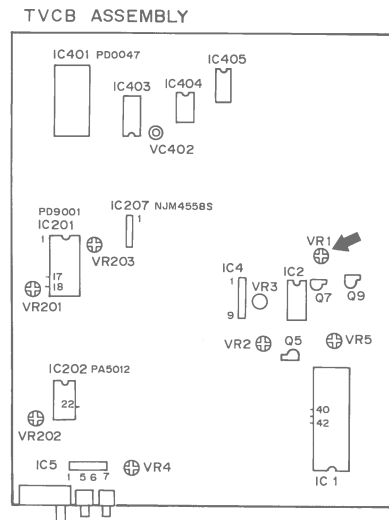
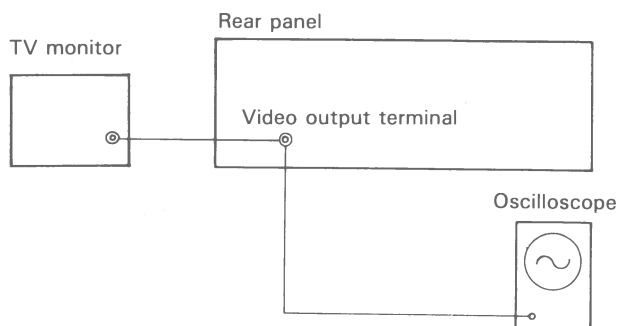
8. OUTPUT VIDEO LEVEL ADJUSTMENT

7.5 TVCB Assembly Adjustments

- Purpose: Adjustment of the amplitude of the output video signal (pedestal \leftrightarrow 100% white) to 0.71Vp-p.
- Symptoms indicating need for adjustment: Replay started from intermediate position due to misreading data.
Screen too bright or too dark.

- | | |
|--|---|
| <ul style="list-style-type: none"> • Measuring instruments and jigs • Measuring position • Test disc and player mode • Adjustment position | <ul style="list-style-type: none"> • Oscilloscope • Video output terminals • LD test disc #19,801 (#19,801) • TVCB assembly VR1 |
|--|---|

Connection diagrams



Adjustment Procedure

Note: Connect the player video output terminal to a video monitor, and terminate the monitor internally with 75 ohms. If using a TV set with no video input terminal, terminate the player video output terminal with 75 ohms.

1. Play an LD test disc and search to frame #19,801 (#19,801)
2. Connect the oscilloscope to the player video output terminal, and observe the playback video signal waveform.
3. Adjust VR1 on the TVCB assembly until the amplitude from the pedestal level to the white level of the playback video signal waveform reaches $0.71V \pm 5\%$. (Photo 18.)

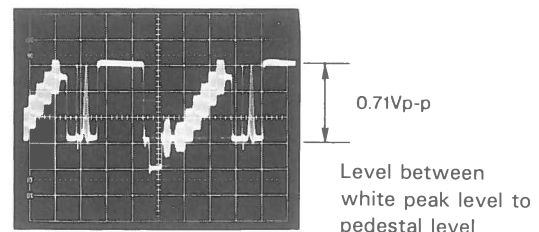


Photo 18

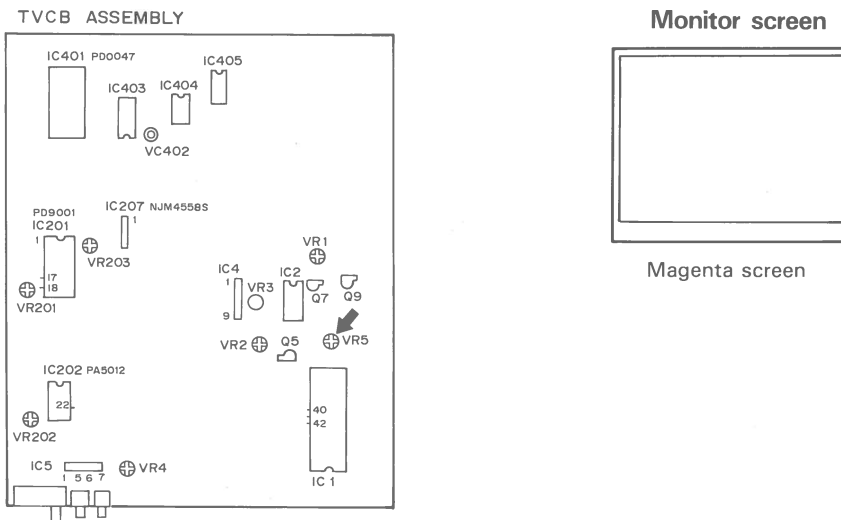
9. COLOR PHASE ERROR SIGNAL LEVEL ADJUSTMENT

7.5 VTCB Assembly Adjustments

- Purpose: Optimization of the amount of color phase error signal to be applied to the color phase compensation stage.
- Symptoms indicating need for adjustment: Conspicuous color irregularities

- | | |
|--|---|
| <ul style="list-style-type: none"> • Measuring instruments and jigs • Measuring position • Test disc and player mode • Adjustment position | <ul style="list-style-type: none"> • TV monitor • Adjust while watching the monitor screen. • LD test disc #7,201 (#26,101) • TVCB assembly VR5 |
|--|---|

Connection diagrams



Adjustment Procedure

1. Play an LD test disc and search to frame #7,201 (#26,101)
2. Adjust VR5 on the TVCB assembly to minimize magenta screen color irregularities.

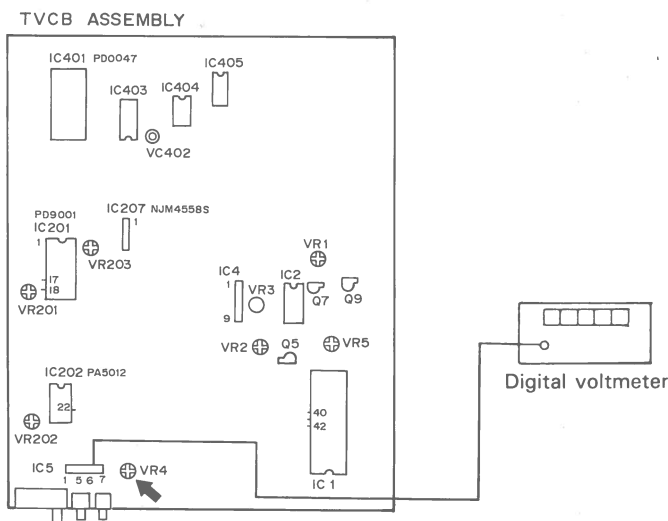
10. DETECTOR LEVEL ADJUSTMENT

7.5 TVCB Assembly Adjustments

- Purpose: Optimization of the input voltage applied to the spindle motor speed detector comparator.
- Symptoms indicating need for adjustment: Spindle servo lock failure. Picture aberration.

- | | |
|--|---|
| <ul style="list-style-type: none"> • Measuring instruments and jigs • Measuring position • Test disc and player mode • Adjustment position | <ul style="list-style-type: none"> • Digital voltmeter • TVCB assembly IC5 (NJM2903S) pins 6 and 7 • Test disc #4,801 (#5,401) • TVCB assembly (VDEM, ADEM) VR4 |
|--|---|

Connection diagrams



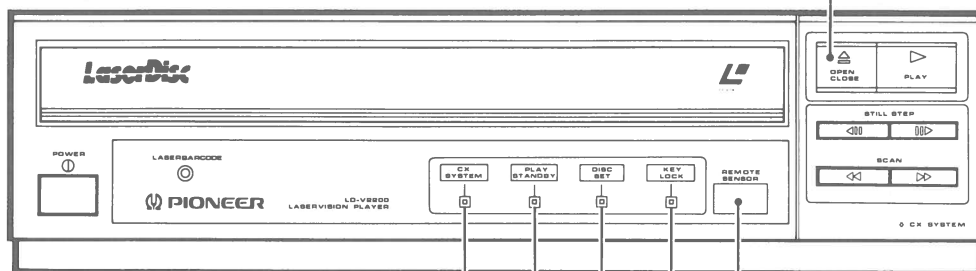
Adjustment Procedure

1. Play an LD test disc and search to frame #4,801 (#5,401).
2. Connect the digital voltmeter to pin 7 of IC5 (NJM2903S) on the TVCB assembly. Measure and record the reference voltage of the spindle motor speed detector comparator.
3. Also connect the digital voltmeter to pin 6 of the same IC and measure the speed detector output voltage. Adjust VR4 on the TVCB assembly to obtain a voltage $+330\text{mV} \pm 20\text{mV}$ higher at pin 6 than at pin 7.

8. PANEL FACILITIES

OPEN/CLOSE (▲) button

This button is used to open and close the disc table. Setting a disc on the disc table then pressing this button retracts the disc table into the player. Pressing this button during play stops play. When pressed again, the table will be extended from the player.



CX SYSTEM indicator

Lights when the internal CX noise reduction system is operating.
Lights when the power is turned on.

PLAY/STANDBY indicator

- Lights during playback in the play mode (PLAY).
- At the beginning of playback or during a search operation, the PLAY indicator flashes until the picture appears (STANDBY).

DISC SET indicator

This indicates that a disc has been loaded in the player.

REMOTE SENSOR window

When using the remote control unit or video disc bar-code reader in the wireless format, the infrared commands from the unit are received here.

KEY LOCK indicator

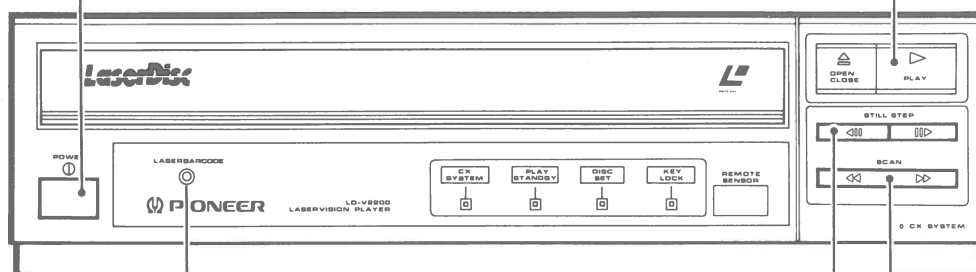
Lit when the KEY LOCK command is entered from the external control unit.
When this indicator is lit, entries are not accepted from operation keys other than the power switch. Also, entries are not accepted from the operation keys of the control unit.

POWER switch

Press this button to turn the power on and off.

PLAY button (▶)

Used to start playback or to return to ordinary playback from still image or pause.

**LASERBARCODE jack**

Connect the optical barcode reader.

STILL/STEP buttons

Effective only during standard play disc playback. After one of the following buttons are pressed, still image playback occurs. After this, when one of these buttons are pressed, the following occurs.

- ▶▶: Step forward
- ◀◀: Step reverse

SCAN buttons

Function only when one of the following buttons are pressed.

- ▶▶: Forward direction
- ◀◀: Reverse direction

FART # ARP1778 998-01- 2
 S/M LD-V2200
 G05H30 1 INV: 018744811
 2002A

9. SPECIFICATIONS

1. General

System and Disc spec. . . LaserVision Videodisc System

- *1 Maximum playing time
- 12-inch standard play disc: 30 min/side
- 12-inch extended play disc: 60 min/side
- 8-inch standard play disc: 14 min/side
- 8-inch extended play disc: 20 min/side

Spindle motor speed
 Standard play disc 1,800 RPM
 Extended play disc 1,800 RPM
 (inner circumference)
 to 600 RPM (outer circumference)
 [When using 12-inch disc]

Power requirements 120 V AC, 50/60 Hz
 Max. power consumption 72 W
 Dimensions . 420 (W) × 433 (D) × 111 (H) mm
 16-17/32 (W) 17-3/64 (D) X 4-25/64 (H) in
 Net weight (without package) . 9.5 kg (20.9 lb)
 Operating temperature +5 to +35°C
 (+41 to 95°F)
 Operating humidity 5 to 90 %
 (There should be no condensation.)

2. Video characteristics (two systems)

Format NTSC color system
 Video output
 Level 1 Vp-p nominal, sync. negative, terminated
 Impedance 75Ω unbalanced
 Terminal RCA jack
 VHF output Channel
 Channel 3 or 4 (switchable)
 Impedance 75Ω unbalanced
 Terminal F-type jack

3. Audio characteristics

Audio output
 Level 500mVrms (1 kHz 100 % mod.)
 Impedance 2 kΩ less
 Terminal Both RCA jacks
 Number of channel 2

4. Other Terminals

LASERBARCODE (front panel)
 Miniature phone jack
 INTERFACE CONNECTOR 15 pin, D-SUB
 connector (rear panel)

5. Furnished accessories

Wireless remote control unit 1
 Size "AA" (IEC R6) dry cell battery 2
 Audio connecting cord with RCA-plugs (1.5m)
 1
 RF antenna cable with F-type plugs (1.5 m) . . 1
 Antenna adaptor 1
 Video connecting cord with RCA-plugs (1.5m)
 1
 Operating instructions 1

6. Functions

	CAV	CLV
Play (Normal play mode with sound) .	YES	YES
STILL/STEP	YES	NO
SCAN	YES	YES

7. Functions with the remote control unit

	CAV	CLV
Play (Normal play mode with sound) .	YES	YES
Stop	YES	YES
Step forward/reverse	YES	NO
Multi-speed play forward/reverse . . .	YES	NO
Multi-speed set	YES	NO
Scan forward/reverse	YES	YES
Frame number search	YES	NO
Time number search	NO	YES
Chapter number search	YES	YES
Frame number display	YES	NO
Elapsed time number display	NO	YES
Chapter number display	YES	YES

NOTES:
 Specifications and design subject to possible modifications without notice, due to improvements.
 *1 Actual playback time differs for each disc.