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Service Manual

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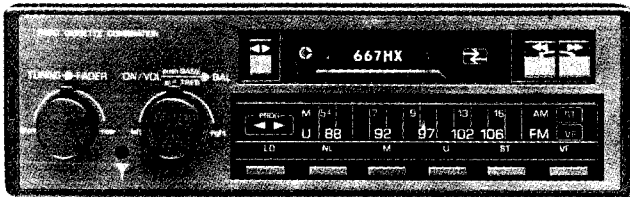
Clarion Shoji (EUROPA) G.m.b.H. Rudolf-Diesel-Strasse 2, 6236 Eschborn 2, West Germany Tel: 06173-61036 Telex: 415414

Clarion (HONG KONG) Co., Ltd. 526, Ocean Centre, Canton Road, Tsimshatsui, Kowloon, Hong Kong Tel: 3-690528 Telex: HX64293 CLAHK

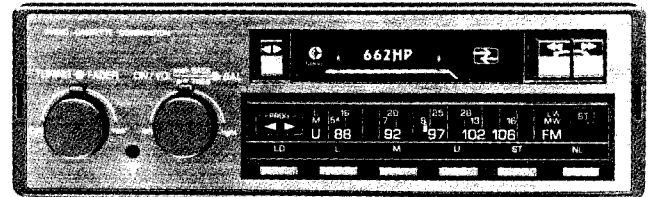
Clarion Canada Inc. 1401 Meyerside Dr. Mississauga, Ontario L5T 1G8, Canada Tel: 416-678-1367 Telex: 216968573 CLARION MSGA

Clarion Shoji (U.K.) Ltd. 4-6, Faraday Road, Dorcan Industrial Estate, Dorcan, Swindon, Wiltshire, SN3 5HQ United Kingdom Tel: (0793) 24081 Telex: 44689

Model 667HX (PE-6049A-A) 662HP (PE-6050A-A)



Model 667HX



Model 662HP

SPECIFICATIONS:

Radio section

Circuit system: Superheterodyne
Tuning system: Manual μ -tuning
Receiving frequency: LW 153kHz to 281kHz
MW 531kHz to 1,602kHz
UKW(FM) 87.5MHz to 106MHz

Intermediate frequency:

LW, MW 459kHz
UKW(FM) 10.7MHz

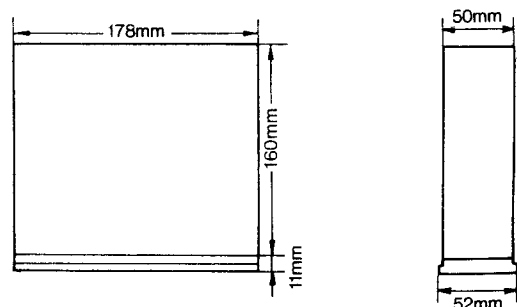
Tape section

Reproduction system: Auto Reverse
4 track, 2 channel,
stereo cassette tape
playback
(Monaural also capable)
Tape speed: 4.76cm/sec. (1 $\frac{7}{8}$ ips)

Composite

Speaker impedance: 4 Ω \times 2, 4 Ω \times 4
Power output: 10W \times 4 (667HX)
(at max. output TYP.)
30W \times 2 (662HP)
(at max. output TYP.)
Power supply voltage: DC 14.4V (10.8V to 15.6V)
Negative ground
Power consumption: Less than 5A (667HX)
Less than 7A (662HP)
(at max. output)

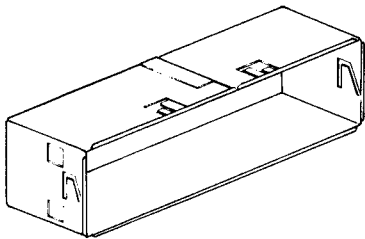
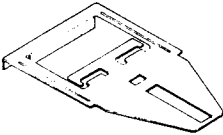
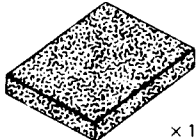




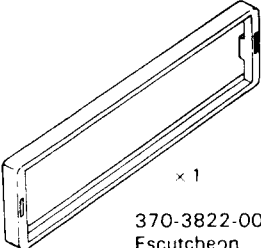
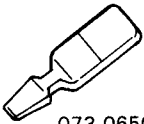
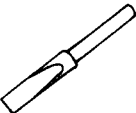
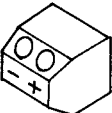

Dimensions:



Weight: 1.65kg

■ COMPONENTS VIEW:

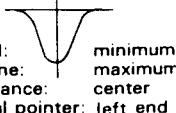
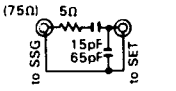

- 667HX (PE-6049A-A)
- 662HP (PE-6050A-A)

Main unit	Parts bag 921-8022-00 1		
Mounting bracket 300-7110-00 1	  		
Mounting bracket 300-6954-00 1	   		
Parts bag 922-1396-00 1	Parts bag 921-8203-00 (only 667HX)		
	  		
	Extension lead 852-9255-00 (only 662HP)		
			

■ FEATURES:

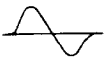
- FM/MW Manual Tuning (667HX)
- FM/MW/LW Manual Tuning (662HP)
- Super SASC II & CZ1...Signal Actuated Stereo Control
- Dual Direction Azimuth
- AutoReverse with FF/REW
- FADER
- LOUDNESS, BASS/TREBLE, NL
- Multi-Pin Connector: 4-Speaker (662HP)
- Provided Radio Traffic Information (VF) (667HX)

ADJUSTMENTS: MW, LW CIRCUIT

Item	Input	Output	Frequency	Method of adjustment		Instruments required	Remarks
IF	TP51	TP52	460kHz	IFT2 and IFT3	Adjust the cores of IFT maximum wave-form height with good symmetry.	<ul style="list-style-type: none"> ● Sweep generator ● Oscilloscope 	IF curve 
Tracking (MW)	Antenna receptacle	Meter across the speaker voice coil	510kHz	L4	Adjust the coil for maximum indication of V.T.V.M.	<ul style="list-style-type: none"> ● S.S.G. ● Dummy load (4Ω) ● Dummy ANT ● V.T.V.M. 	
Tracking (LW) (662HP)			145kHz 320kHz	L5 CT-2	Adjust the coil & trimmer for maximum indication of V.T.V.M.	<ul style="list-style-type: none"> ● S.S.G. ● V.T.V.M. ● Dummy load (4Ω) ● Dummy ANT 	Use dummy antenna between S.S.G. and antenna receptacle.
Antenna trimmer	Receive white noise	Speaker	1,400kHz	TC101	Adjust the trimmer so that the noise output becomes maximum.	● Speaker	

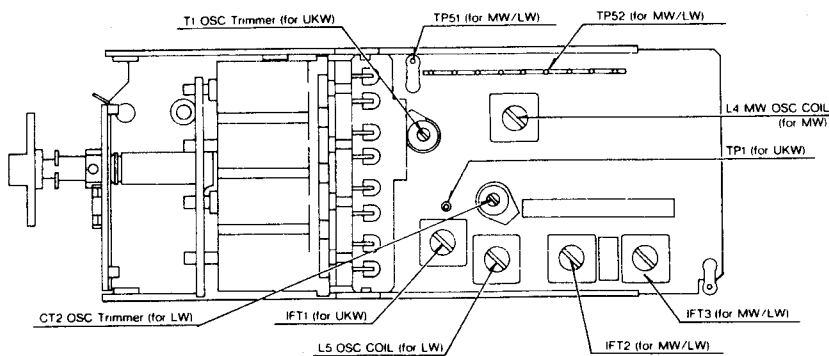
- SPECIFICATION –LIMIT– Quieting sensitivity : MW Less than 33dB (at 20dB S/N)
LW Less than 43dB (at 20dB S/N)

UKW(FM) CIRCUIT

Item	Input	Output	Frequency	Method of adjustment		Instruments required	Remarks
S-curve	TP1 (Tuner pack)	TP2	10.7MHz	IFT1 and IFT103	Adjust the cores for wave-form having good symmetry and good linearity.	<ul style="list-style-type: none"> ● Sweep generator ● Oscilloscope 	
Tracking	Antenna receptacle	Meter across the speaker voice coil	87.5MHz	T-1 (OSC trimmer)	Adjust the trimmer for maximum indication of V.T.V.M.	<ul style="list-style-type: none"> ● Dummy load (4Ω) ● V.T.V.M. ● S.S.G. 	
Separation		Meter across the speaker voice coil	Right or left signal (400Hz)	VR201	Adjust the VR for maximum separation.	<ul style="list-style-type: none"> ● Stereo SG (98MHz, 65dB) ● S.S.G. 	"ST" ON
SASC circuit	Set to the specified modulation (30%), assuming an UKW SSG output 55dB, modulation frequency 7kHz. Set the output level to 0dBm (=0.775V) using the volume control. Set the UKW SSG output to 40dB and adjust VR101 so that the output level is 3dB down. "ST" ON						
DK (667HX)	Connect a frequency counter to TP3 and adjust VR301 to 125Hz.						

- [NOTE] After the adjustment of frequency range, be sure that:
- (1) Band edge frequency of LW shall be 148.5kHz –20kHz
 - (2) Band edge frequency of UKW shall be 87.5MHz +100kHz –160kHz at low end. And shall be lower than 108.16MHz at upper end.

- SPECIFICATION –LIMIT– Quieting sensitivity : Less than 12dB (at 30dB S/N)
Stereo separation : More than 20dB



■ ADJUSTMENTS: (TAPE MECHANISM)

1. Head Azimuth Adjustment (See Fig. 1)

○ Improper head azimuth is one of the causes which give rise to poor sound quality, crosstalk, etc. at the time of playback. If azimuth of the head is not proper, adjust as follows. However, to perform this adjustment, load the test tape and use the adjustment use screwdriver, inserting it through the hole in the lever mechanism (frame ass'y).

- 1) Play the test tape (315Hz, -10VU) and adjust the amplifier's volume control and balance control so that the output levels (gains of the playback system) of the left and right channels become equal.
- 2) Then play the test tape (8kHz, -10VU) and adjust the head azimuth adjusting screw so that the output level in both the forward and reverse directions of

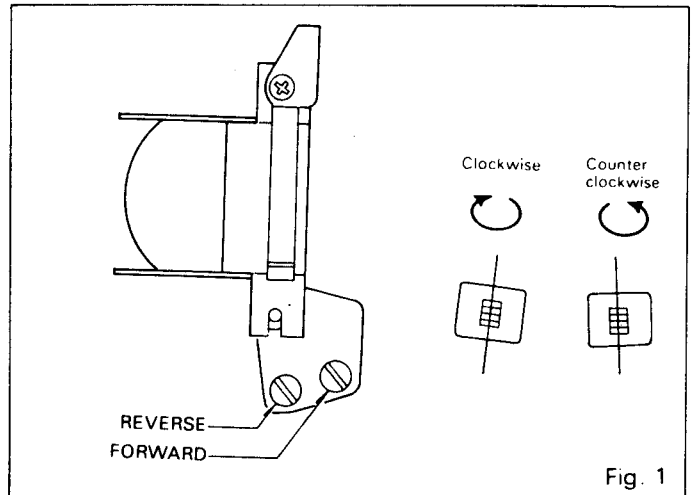


Fig. 1

play becomes close to the respective peak (maximum output level) point. Then lock the head azimuth adjusting screw.

2. Fast Forward, Rewind Gear Alignment (See Fig. 2)

○ If the mechanism does not operate properly and abnormal sound (gear noise) is produced at the time of fast forward and rewind, first of all check whether the sound is produced during fast forward (FF) or rewinding (REW). If it is produced during FF, adjust by bending the claw (A) to the left or right with radio pliers, etc., and if it is produced during REW, adjust by bending the claw (B) in the same manner. Adjust so that the clearance at this time between the flywheel and FF, REW gear becomes about 0.1 to 0.2mm.

- 1) If the gear engagement is loose and the gears produce a large noise, bend the claw away from the center line.

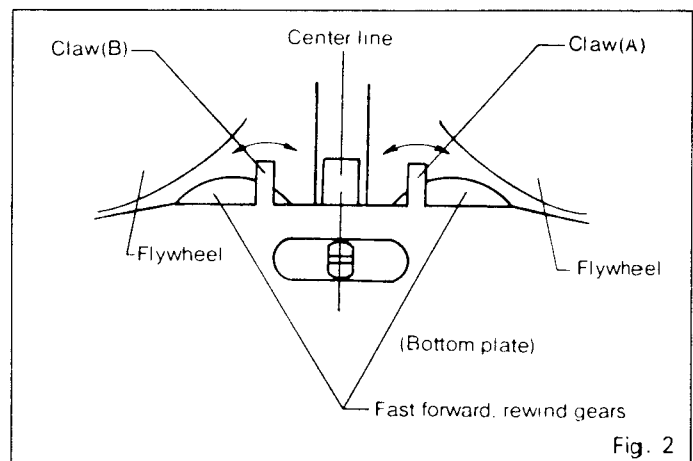


Fig. 2

- 2) If the gear engagement is too hard and there is no clearance between the gears, bend the claw toward the center line.

3. Adjustment of Power Switch (See Fig. 3)

○ If power does not turn on when pack is inserted (loaded), or if power does not turn off after ejecting the pack, and the underlying cause is found to be misadjustment of the power switch, adjust the switch at proper position by bending upward or downward the adjusting claw of the guide arm ass'y by means of radio pliers, etc. However, make sure that at the time of ejecting there is a clearance of at least 0.2mm to 0.3mm between the body of the switch and the switch lever.

- 1) If power does not turn on when loading pack, adjust by bending the adjusting claw downward.

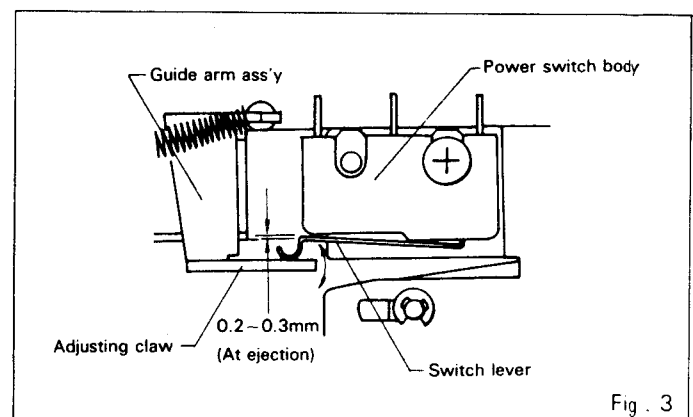


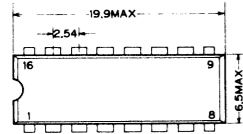
Fig. 3

- 2) If the gear engagement is too hard and there is no clearance between the gears, bend the claw toward the center line.

EXPLANATION OF IC's:

TD62107P 051-0480-00 Darlington transistor array

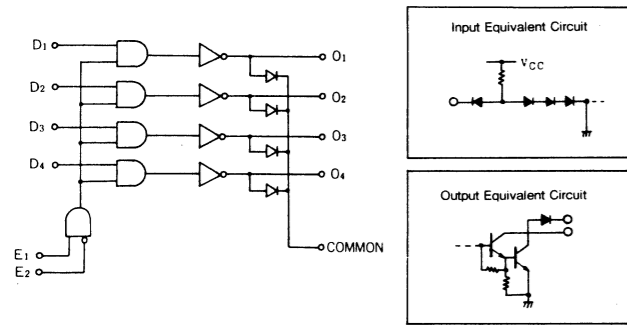
Outward Form



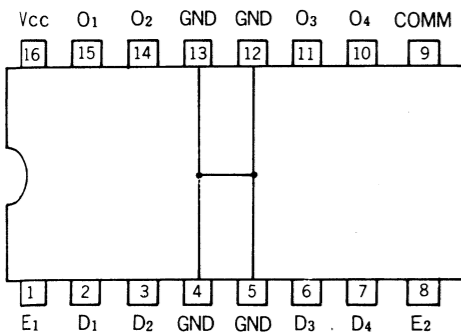
Maximum Ratings

Item	Symbol	Rating	Unit
Output voltage	V_{CEr}	-0.5 ~ 75	V
Collector-emitter voltage	$V_{CE(sus)}$	45	V
Collector current	I_c	750	mA
Input voltage	V_{in}	-0.5 ~ 17	V
Power dissipation	P_D	2.7	W
Clamping diode forward current	$I_{f clamp}$	750	mA

Block Diagram

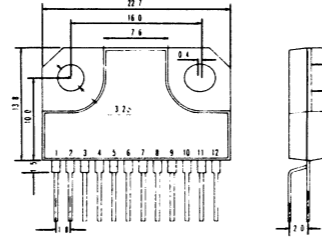


Terminal Connection (TOP VIEW)



TA7280P 051-0784-00 22W BTL Power Amp.
TA7281P 051-0785-00

Outward Form



Maximum Ratings (Ta = 25°C)

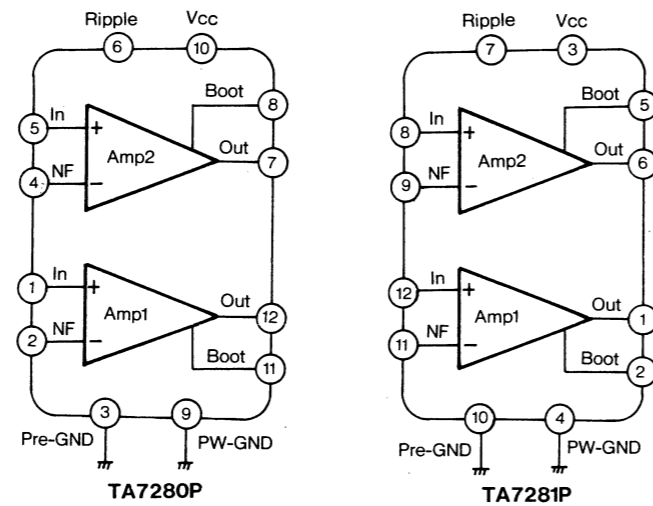
Item	Symbol	Rating	Unit
Momentary supply voltage (0.2sec)	$V_{CC surge}$	45	V
Static supply voltage	$V_{CC DC}$	25	V
Operating power voltage	$V_{CC opr}$	18	V
Output current (Momentary)	$I_o (peak)$	4.5	A
Power dissipation	P_D	25	W

Electrical Characteristics

($V_{CC} = 13.2V$, $R_L = 4\Omega$, $R_g = 600\Omega$, $f = 1kHz$, $T_a = 25^\circ C$)

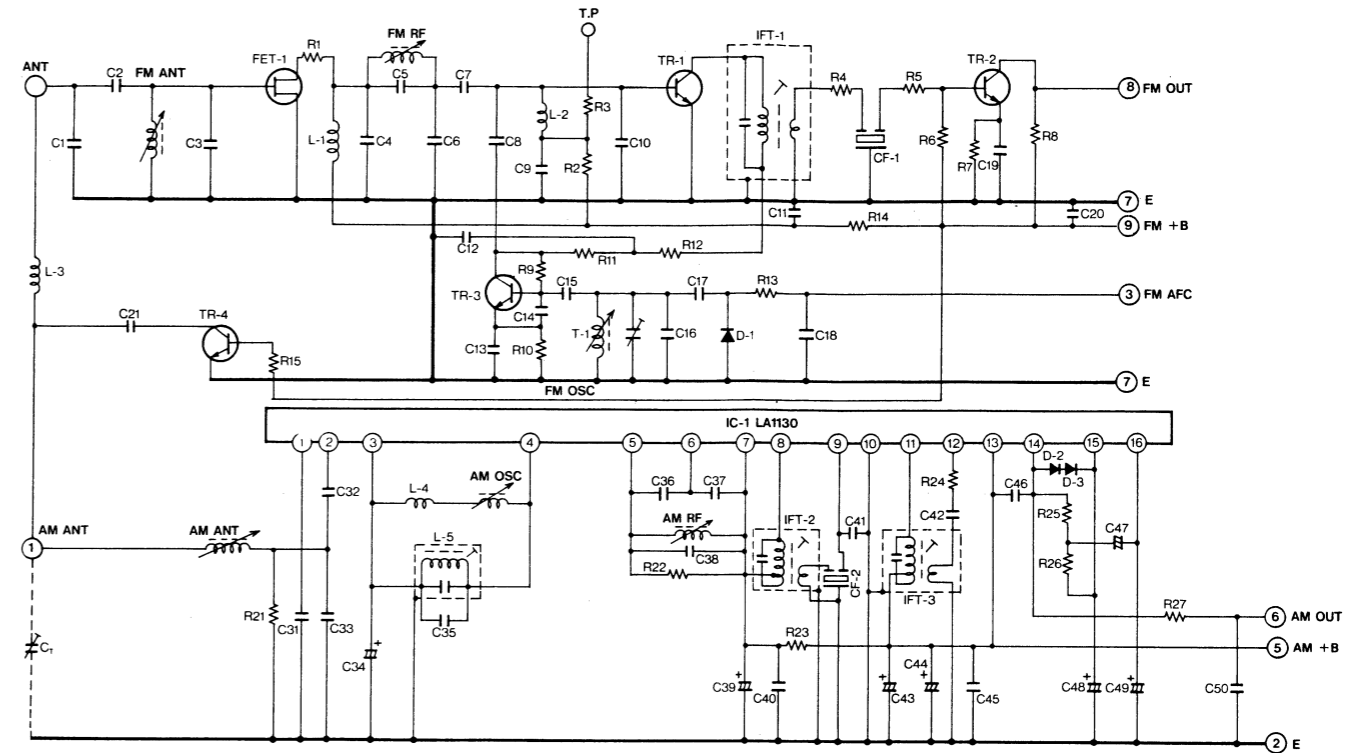
Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Zero signal supply current	I_{CC0}	$V_{in} = 0$	-	80	145	mA
Output power	$P_{OUT(1)}$	THD=10%, $V_{CC} = 14.4V$	-	22	-	W
	$P_{OUT(2)}$	THD=10%	16	19	-	W
	$P_{OUT(3)}$	THD=1%	12	15	-	W
Total harmonic distortion	THD ₍₁₎	$P_{OUT} = 4W$, $G_c = 40dB$	-	0.03	0.25	%
Output offset voltage	V_{OFF}	$V_{in} = 0$	-	0	0.35	V
Voltage gain	$G_{V(1)}$	$V_{OUT} = 0dBm$	-	40	-	dB
Noise output voltage	$V_{NO(1)}$	$R_g = 0$, DIN45405 noise filter	-	0.14	-	mVrms
Ripple reduction ratio	$R \cdot R_{(1)}$	$f_{ripple} = 100Hz$, $V_{ripple} = 0dBm$	-	-52	-40	dB
Output power	$P_{OUT(4)}$	THD=10%	5	5.8	-	W
Total harmonic distortion	THD ₍₂₎	$P_{OUT} = 1W$	-	0.06	0.30	%
Voltage gain	$G_{V(2)}$	$V_{OUT} = 0dBm$	50	52	54	dB
Noise output voltage	$V_{NO(2)}$	$R_g = 10k\Omega$, BW=20Hz-20kHz	-	0.7	1.5	mVrms
Ripple reduction ratio	$R \cdot R_{(2)}$	$f_{ripple} = 100Hz$, $V_{ripple} = 0dBm$	-	-52	-40	dB
Crosstalk	C-T	$V_{OUT} = 0dBm$	-	-57	-	dB
Input resistance	R_{in}	$f = 1kHz$	-	33	-	k Ω

Block Diagram



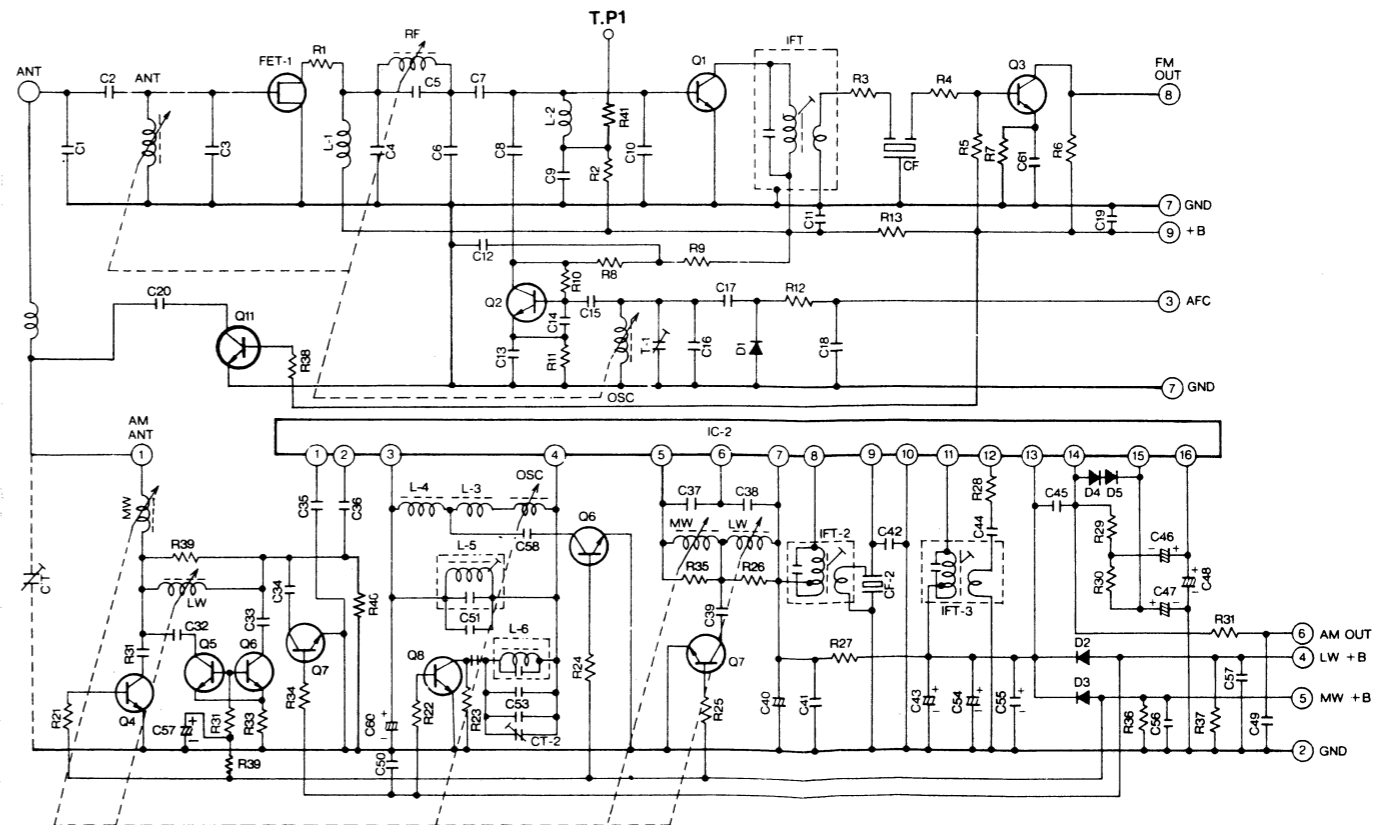
TUNER PACK: (INNER CIRCUIT)

667HX



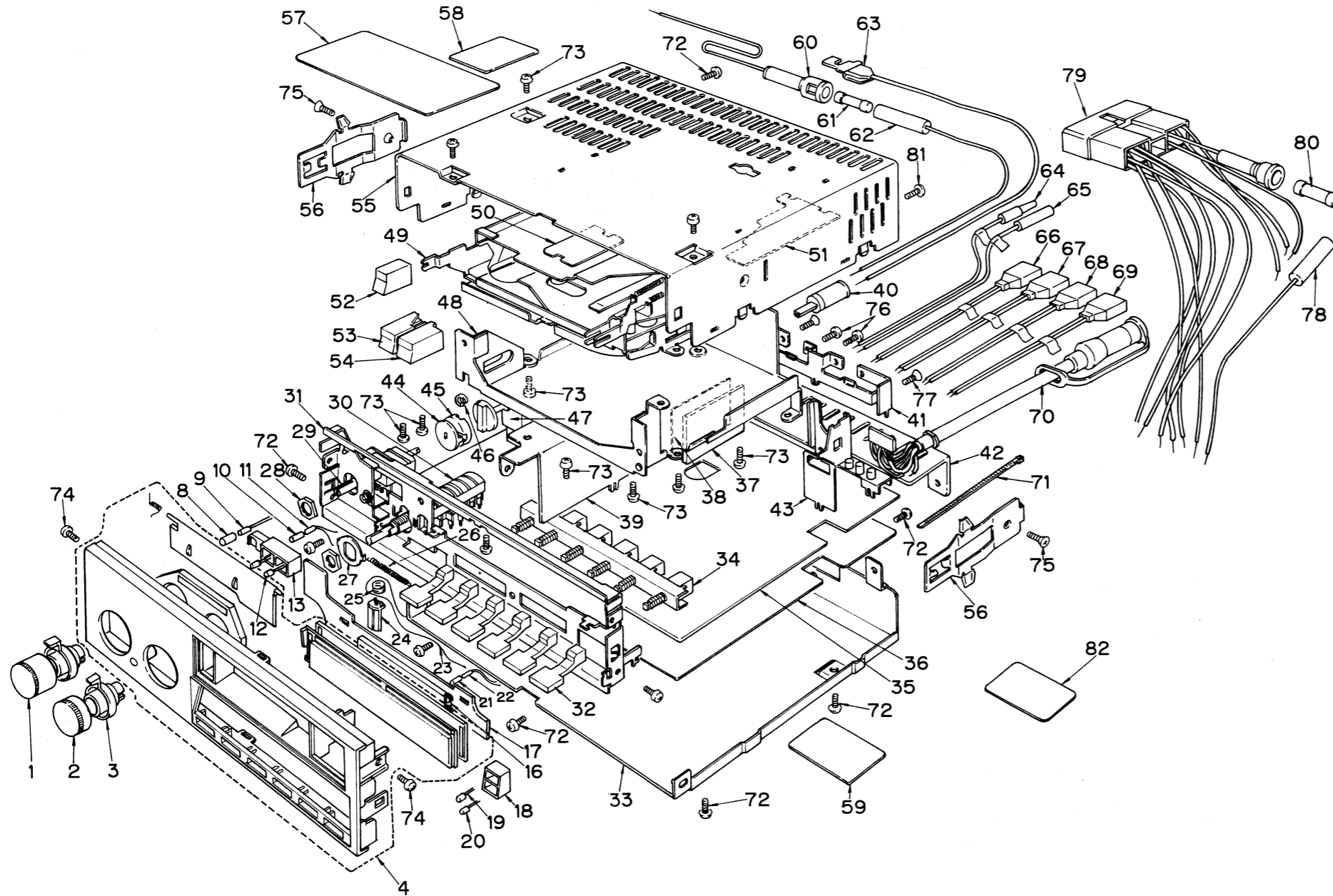
TUNER PACK: (INNER CIRCUIT)

662HP



EXPLODED VIEW • PARTS LIST:

© Main section



REF. NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
1	380-4773-00	Knob (TUN)	1
2	380-4772-00	Knob (VOL)	1
3	380-4774-00	Knob (FAD/BAL)	2
4	940-0619A	Escutcheon ass'y (PE-6049A)	1
	940-0620A	Escutcheon ass'y (PE-6050A)	1
8	345-3007-01	P.L cap	1
9	017-0346-04	Pilot lamp	1
10	345-3337-14	P.L cap	1
11	017-0337-05	Pilot lamp	1
12	001-0369-01	LED (GREEN)	2
13	345-4249-00	LED holder	1
16	374-0889-00	Back plate	1

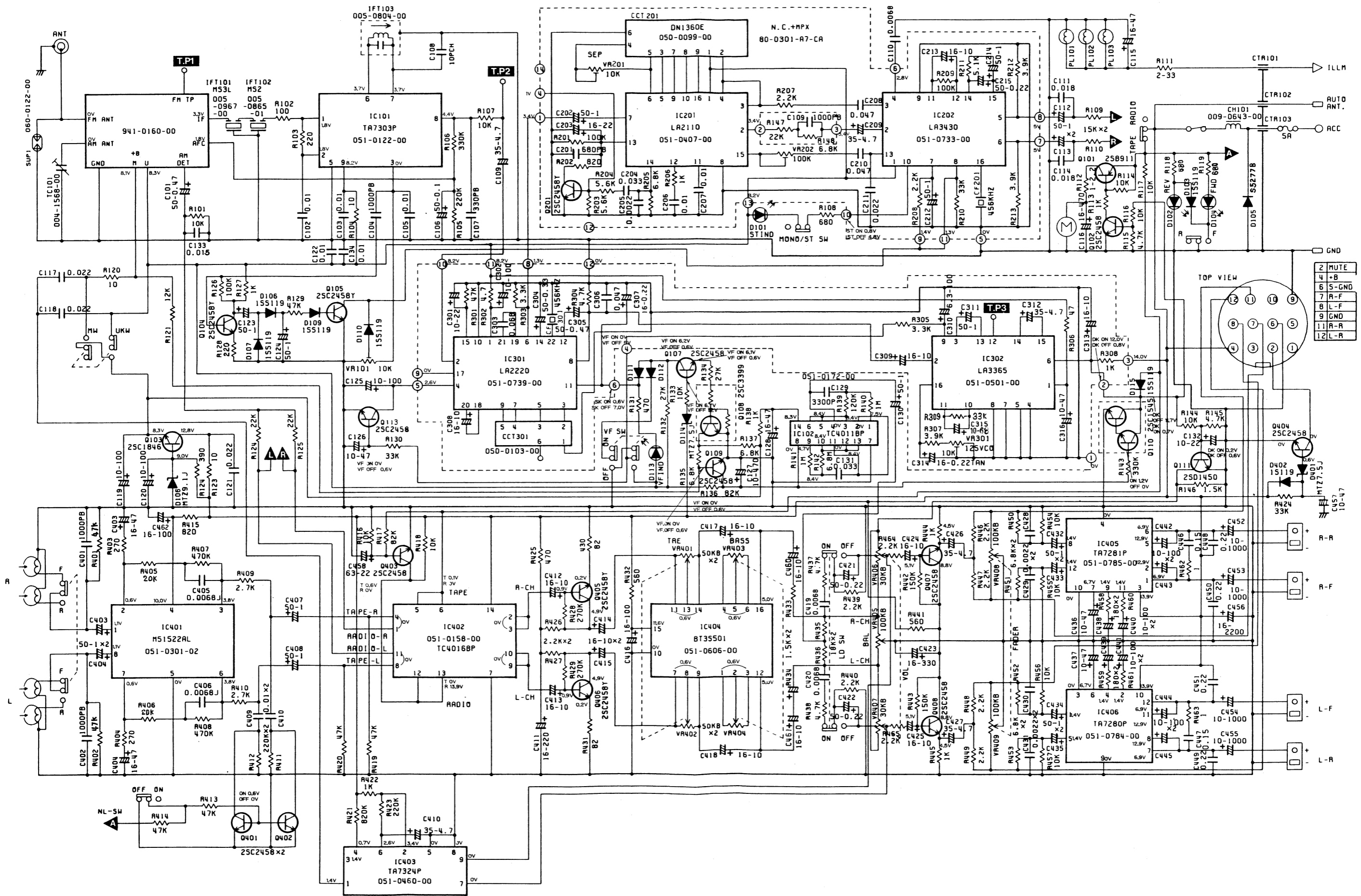
REF. NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
17	099-7753-00	P.W.B	1
18	345-4250-00	LED holder	1
19	001-0369-00	LED (RED)	1
20	001-0369-02	LED (YELLOW) (PE-6049A)	1
21	345-3436-10	P.L cap	1
22	017-0338-14	Pilot lamp	1
23	830-0600-83	Dial cord	1
24	376-0907-00	Dial pointer	1
25	335-0894-00	Pulley	1
26	750-1894-00	Spring	1
27	745-0688-00	Washer	1
28	722-0231-00	Nut	2

REF. NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
29	012-4511-00	Variable resistor (TUN/FADER) (PE-6049A)	1
	012-4512-00	Variable resistor (TUN/FADER) (PE-6050A)	1
30	012-4513-00	Variable resistor (VOL/BAL)	1
31	309-0552-00	Front plate	1
32	382-1085-00	Button	6
33	311-1240-00	Lower case	1
34	013-3809-00	Switch (PE-6049A)	1
	013-3693-00	Switch (PE-6050A)	1
35	099-7751-00	P.W.B (PE-6049A)	1
	099-7752-00	P.W.B (PE-6050A)	1
36	347-2167-00	Insulator	1
37	880-0002A	SDK Block ass'y (PE-6049A)	1

REF. NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
38	347-1528-00	Insulator (PE-6049A)	1
39	330-8439-00	Tuner holder	1
40	092-0516-01	Antenna receptacle	1
41	330-8442-00	IC holder	1
42	313-1270-00	Heat sink	1
43	944-0727-00	Filter ass'y	1
44	335-1535-00	Jointer	1
45	335-1536-00	Jointer	1
46	746-0668-01	Washer	1
47	941-0160-00	Tuner pack (PE-6049A)	1
	941-0161-00	Tuner pack (PE-6050A)	1
48	330-8438-00	Mechanism holder	1
49	930-0519-10	Mechanism	1
50	347-1029-00	Insulator	1
51	347-1867-00	Insulator	1
52	382-1082-00	Button (PRO)	1
53	382-1093-00	Button (REW/EJECT)	1
54	382-1094-00	Button (FF/EJECT)	1
55	310-1277-00	Upper case	1
56	750-2486-00	Spring	2
57	285-0915-00	Guide label	1
58	285-1000-00	Guide label	1
59	286-5779-00	Set plate (PE-6049A)	1
	286-5780-00	Set plate (PE-6050A)	1
60	850-2258-00	A-lead (PE-6049A)	1
61	120-0050-00	Fuse (5A) (PE-6049A)	1
62	850-1822-00	A-lead (PE-6049A)	1
63	840-0386-00	Bonding wire (PE-6049A)	1
64	850-2361-00	A-lead (Illumi.) (PE-6049A)	1
65	852-6652-01	Extension lead (PE-6049A)	1
66	851-2609-00	Speaker lead (PE-6049A)	1
67	851-2609-01	Speaker lead (PE-6049A)	1
68	851-2609-02	Speaker lead (PE-6049A)	1
69	851-2609-03	Speaker lead (PE-6049A)	1
70	852-9245-00	Extension lead (PE-6049A)	1
71	335-0833-01	Lead clamp	1
72	731-3006-80	Tap tight (M3x6)	13
73	714-3004-81	Machine screw (M3x4)	8
74	714-3005-81	Machine screw (M3x5)	2
75	714-3006-41	Machine screw (M3x6)	2
76	714-3006-81	Machine screw (M3x6)	2
77	714-3008-41	Machine screw (M3x8)	2
78	850-1822-00	A-lead (PE-6050A)	1
79	852-9254-00	Extension lead (PE-6050A)	1
80	120-0070-00	Fuse (7A) (PE-6050A)	1
81	731-3008-80	Tap tight (M3x8)	1
82	285-1262-00	Guide label (PE-6050A)	1

CIRCUIT DIAGRAM:

©PE-6049A-A



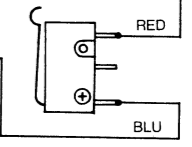
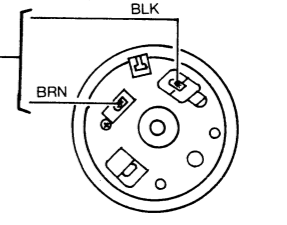
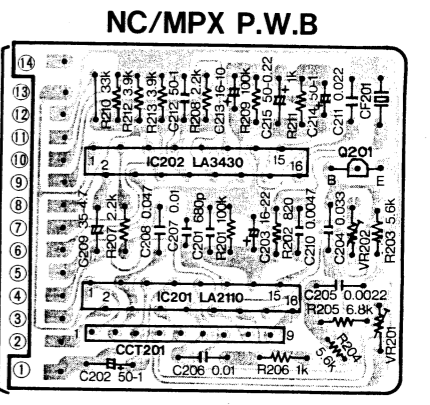
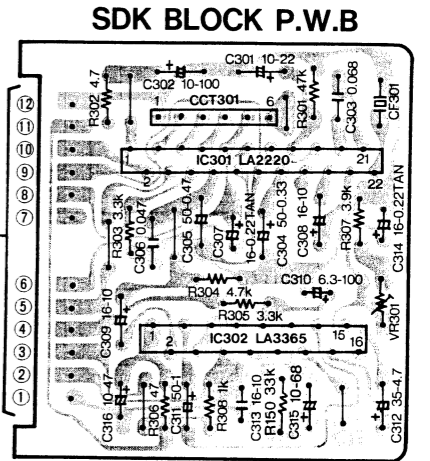
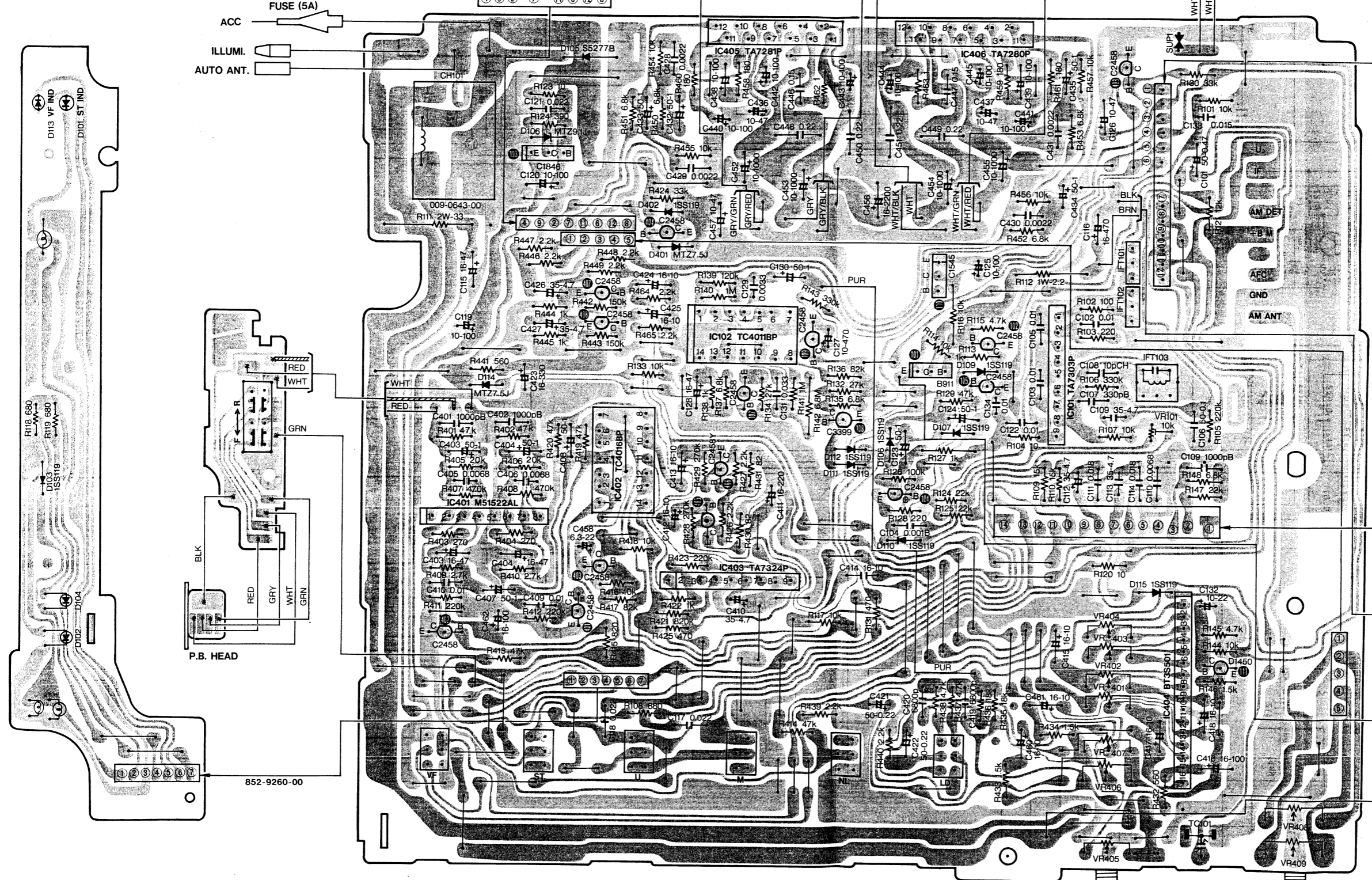
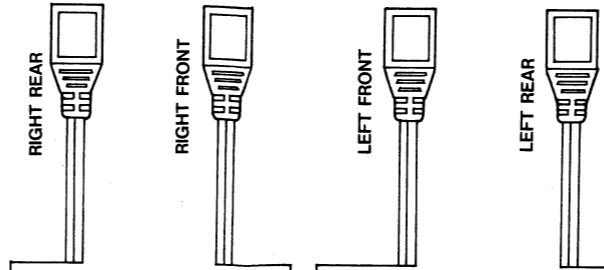
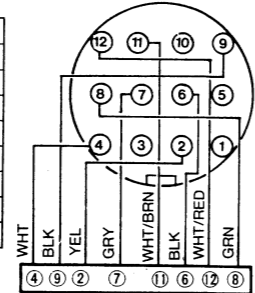
TOP VIEW

2	MUTE
4	+B
6	S-GND
7	A-F
8	L-F
9	GND
11	A-R
12	L-R

PRINTED WIRING BOARD:

©PE-6049A-A

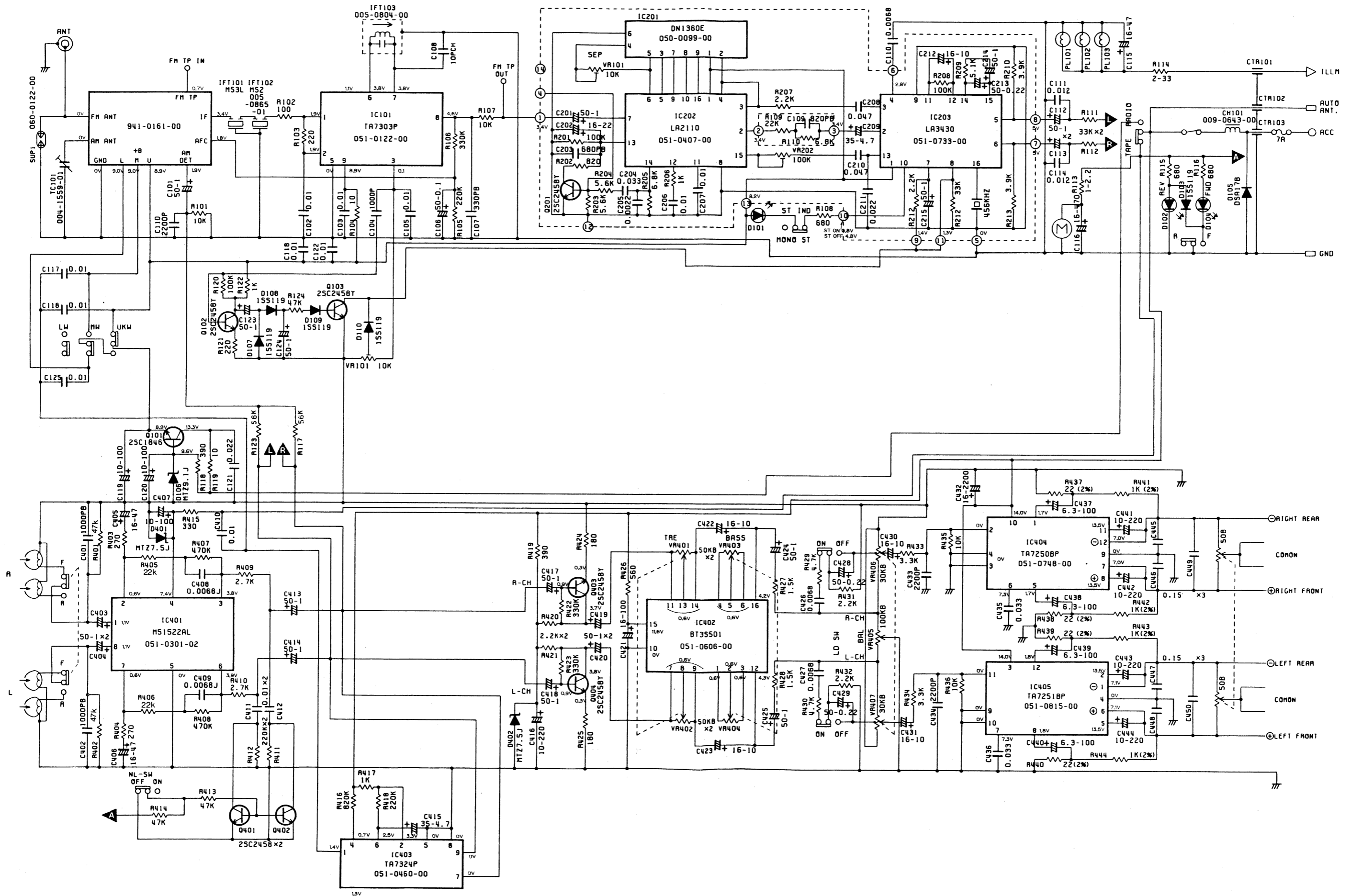
PIN NO.	NOTE
2	MUTE
4	+B
6	GND (SIGNAL LINE)
7	RIGHT FRONT
8	LEFT FRONT
9	GROUND
11	RIGHT REAR
12	LEFT REAR



ON/VOL push BASS pull TREB BAL TUNING FADER

CIRCUIT DIAGRAM:

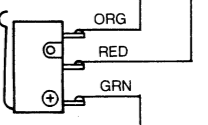
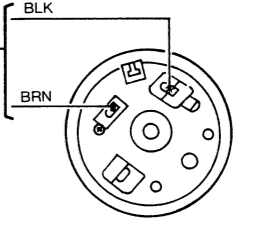
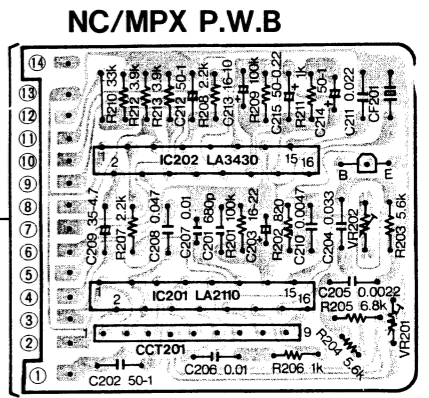
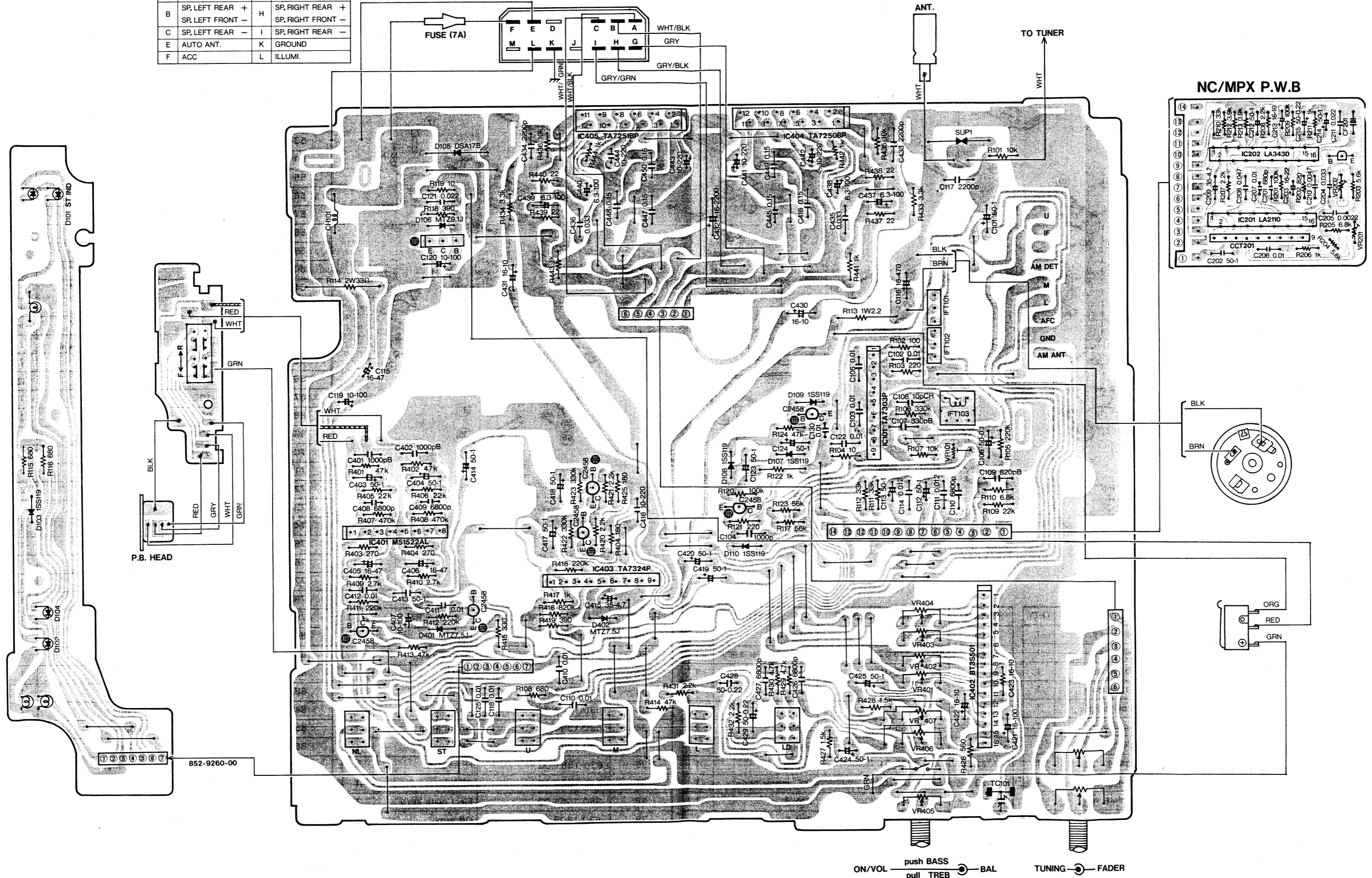
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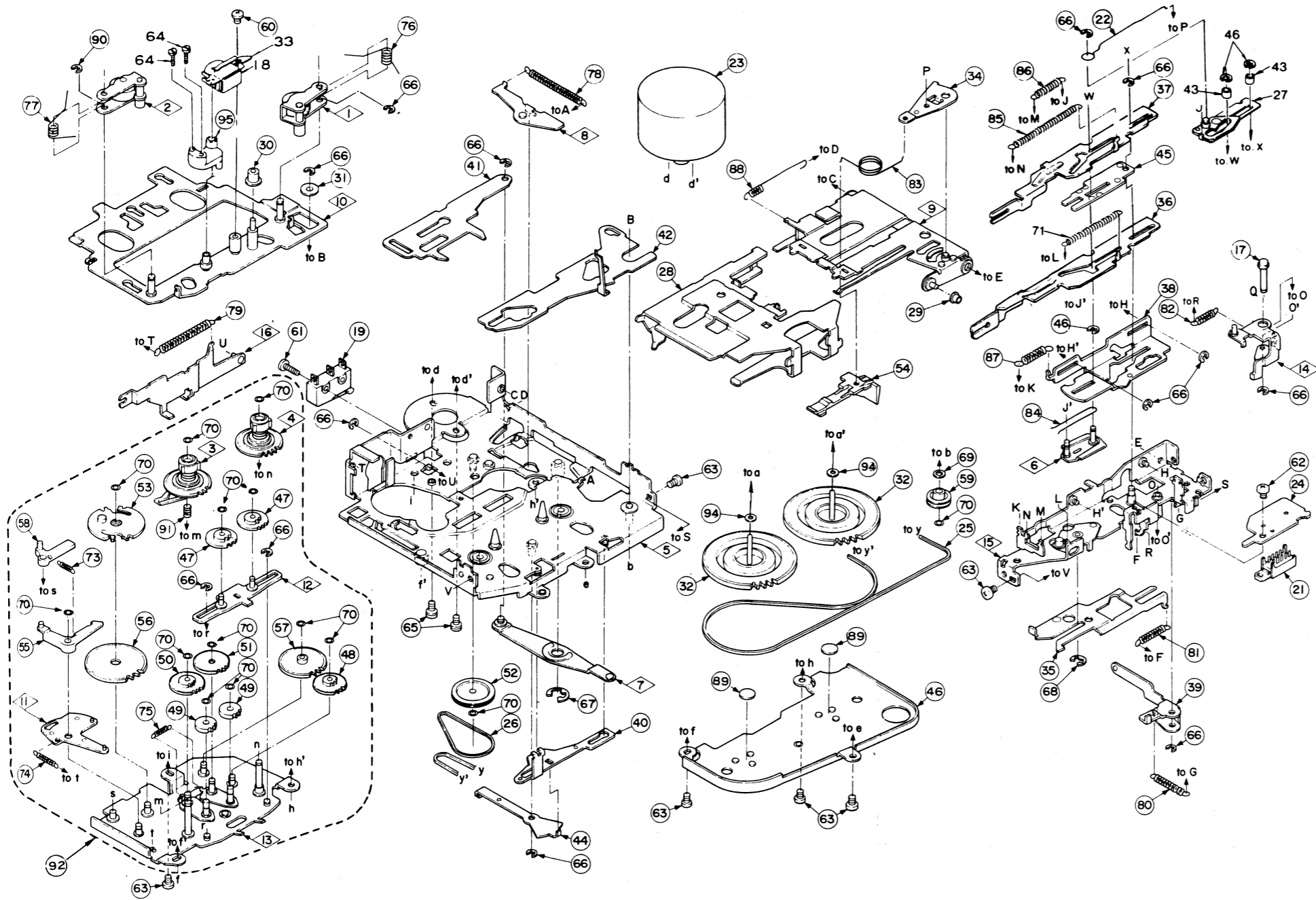
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NO.	NOTE	NO.	NOTE
A	SP. LEFT FRONT +	G	SP. RIGHT FRONT +
B	SP. LEFT REAR +	H	SP. RIGHT REAR +
C	SP. LEFT FRONT -	I	SP. RIGHT FRONT -
E	SP. LEFT REAR -	J	SP. RIGHT REAR -
F	AUTO ANT.	K	GROUND
		L	ILLUM.



ON/VOL — push BASS — BAL — TUNING — FADER
 dull TREB

EXPLODED VIEW • PARTS LIST: ©Tape mechanism section



REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
43	632-1557-00	Roller	2
44	630-1420-00	FF link	1
45	630-1671-01	Hold plate	1
46	630-1415-01	Flywheel plate	1
47	631-0353-00	FF-REW gear	2
48	631-0354-01	Gear-B	1
49	631-0355-01	Play idler gear	2
50	631-0356-00	Gear-R	1
51	631-0357-00	Gear-F	1
52	631-0358-02	Gear pulley	1
53	960-3506-01	Power gear ass'y	1
54	631-0455-02	Pack stopper	1
55	631-0361-01	Lock link	1
56	631-0362-01	Cam gear	1
57	631-0363-02	Gear-A	1
58	631-0364-03	Sub lock link	1
59	631-0370-00	Tension pulley	1
60	714-2003-81	Machine screw (M2x3)	1
61	714-2308-81	Machine screw (M2.3x8)	1
62	716-0485-00	Screw	1
63	714-2604-81	Machine screw (M2.6x4)	6
64	716-0654-01	Screw (for Head azimuth)	2
65	716-0690-00	Screw	2
66	743-1500-10	E-ring	12
67	743-4000-10	E-ring	1
68	744-0006-01	E-ring	1
69	745-0645-00	Washer	2
70	746-0628-01	Washer	14
71	750-2357-02	Spring	1
72	630-1690-00	Adjust plate	1
73	750-2134-01	Spring	1
74	750-2135-01	Spring	1
75	750-2136-02	Spring	1
76	750-2372-01	Spring	1
77	750-2378-01	Spring	1
78	750-2139-01	Spring	1
79	750-2140-02	Spring	1
80	750-2141-01	Spring	1
81	750-2142-03	Spring	1
82	750-2374-00	Spring	1
83	750-2361-01	Spring	1
84	750-2199-00	Spring	1
85	750-2356-02	Spring	1
86	750-2359-00	Spring	1
87	750-2358-00	Spring	1
88	750-2150-00	Spring	1
89	631-0293-00	Thrust washer	2
90	743-2000-10	E-ring	2
92	960-3580-02	Bottom sub ass'y	1
94	746-0617-00	Washer	2
95	631-0456-00	Adjust link	1

REF NO	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
1	960-3321-06	Roller F ass'y	1
2	960-3322-06	Roller R ass'y	1
3	960-3323-01	Reel base ass'y	1
4	960-3324-01	Reel base ass'y	1
5	960-3325-08	Deck plate ass'y	1
6	960-3568-02	Spring H ass'y	1
7	960-3328-04	Coupling P ass'y	1
8	960-3329-01	Link ass'y	1
9	960-3330-07	Guide arm ass'y	1
10	960-3562-05	Head plate ass'y	1
11	960-3332-03	Check P-B ass'y	1
12	960-3333-02	FF plate ass'y	1
13	960-3334-07	Bottom P ass'y	1
14	960-3577-03	Lock plate ass'y	1

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
15	960-3567-04	Frame ass'y	1
16	960-3339-02	Program lever ass'y	1
17	632-1153-01	Lock plate pin	1
18	011-0296-10	Head	1
19	013-2690-03	Switch	1
20	750-2155-00	Spring	1
21	013-3646-00	Switch	1
22	750-2360-01	Spring	1
23	SMA-107-100	D.C. motor ass'y	1
24	099-6942-01	P.W.B	1
25	602-0068-00	Belt-A	1
26	602-0069-00	Belt-B	1
27	960-3565-01	Over plate ass'y	1
28	606-0071-07	Pack guide	1

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
29	610-0080-00	Roller	1
30	610-0258-01	Head P-roller	1
31	610-0104-02	Roller	1
32	611-0062-02	Flywheel	2
33	630-1689-01	Head spring	1
34	630-1394-03	Swing plate	1
35	630-1399-04	Off plate-B	1
36	630-1881-00	FF lever-A	1
37	630-1882-00	REW lever	1
38	960-3563-02	Eject plate ass'y	1
39	630-1405-01	Off arm	1
40	630-1407-03	FF plate-B	1
41	630-1410-00	Power plate	1
42	630-1691-01	Change plate	1