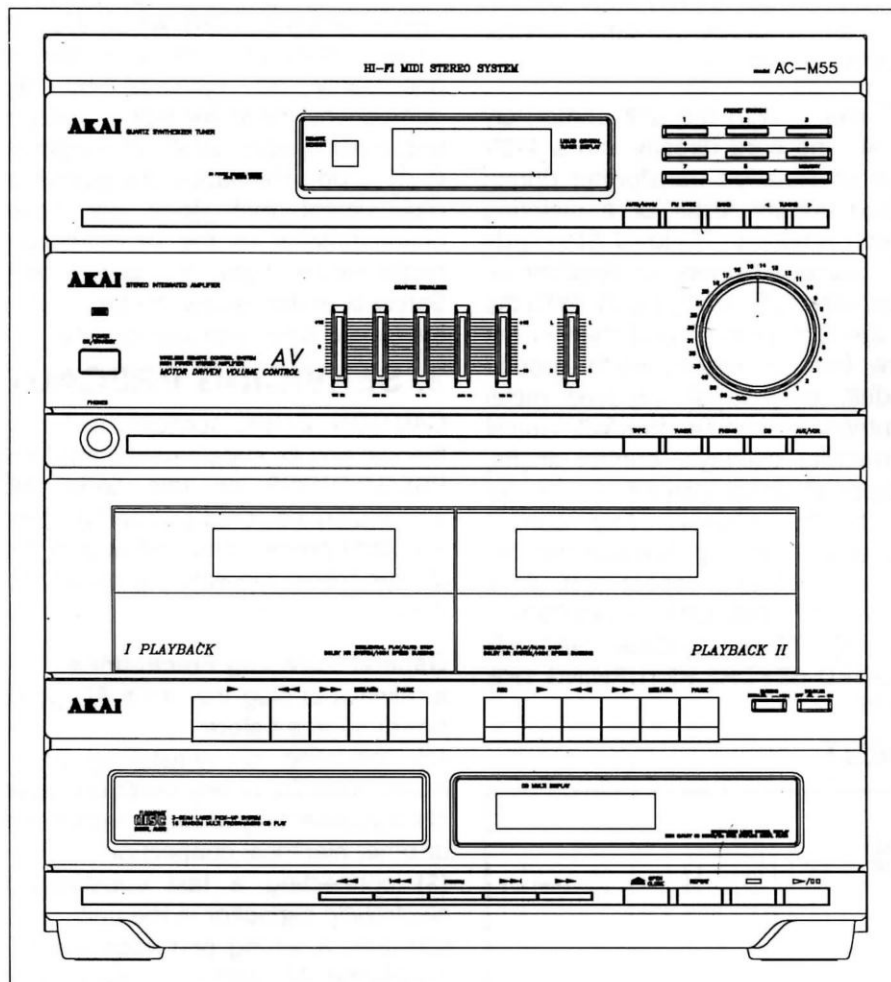


AKAI

STEREO MUSIC SYSTEM

AC-M55

SERVICE MANUAL



Akai-Creative At Heart.

1. SAFETY PRECAUTIONS

Before returning a unit to the customer, always make a safety check of the entire unit, including, but not limited to the following items:

a. Be sure that no built-in protective devices are defective and/or have been defeated during servicing.

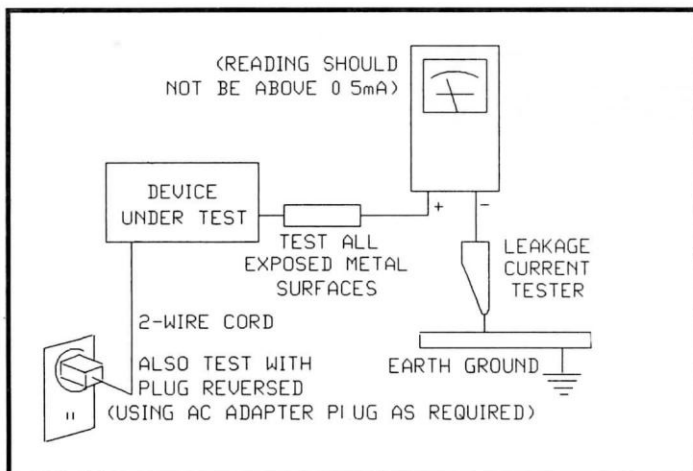
(1) Protective shields are provided to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience.

(2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including, but not limited to, nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. Do not operate this unit or permit it to be operated without all protective devices correctly installed and functioning.

b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, excessively wide cabinet ventilation slots, and an improperly fitted and/or incorrectly secured cabinet back cover.

Leakage Current Hot Check - With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlets. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.1 "Leakage Current for Appliances" and Underwriters Laboratories (UL) 1410, (50.7). With the unit AC switch first in the ON position and then in the OFF position, measure from a known earth ground (metal waterpipe, conduit, etc.) to all exposed metal parts of the unit (antennas, handle bracket, metal cabinet, screwheads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milliamp. Reverse the unit power cord plug in the outlet and repeat test. ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE UNIT TO THE CUSTOMER.

AC LEAKAGE TEST

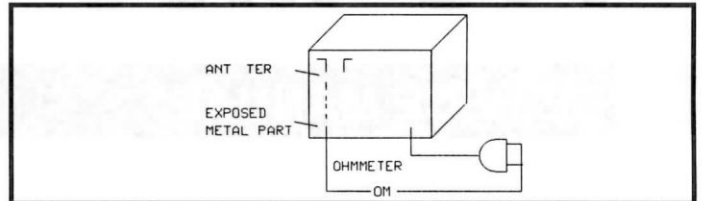


d. Insulation Resistance Test Cold Check

(1) Unplug the power supply cord and connect a jumper wire between the two prongs of the plug.

(2) Turn on the power switch of the unit.

(3) Measure the resistance with an ohmmeter between the jumpered AC plug and such exposed metallic cabinet part on the unit, such as screwheads, antenna, control shafts, handle brackets, etc. When the exposed metallic part has a return path to the chassis, the metallic part has a return path to the chassis, the reading should be between 1 and 5.2 Megohms. When there is no return path to the chassis, the reading must be "infinite". If it is not within the limits specified, there is the possibility of a shock hazard, and the unit must be repaired and rechecked before it is returned to the customer.



2. PRODUCT SAFETY NOTICE

Some electrical and mechanical parts have special safety related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by (⚠) on schematics and parts list. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. Products Safety is under review continuously and new instructions are issued whenever appropriate.

3. SERVICING PRECAUTIONS

CAUTION: Before servicing unit covered by this service manual and its supplements, read and follow the SAFETY PRECAUTIONS on this page. **NOTE:** If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions. Remember: Safety First.

General Servicing Precautions

a. Always unplug the unit's AC power cord from the AC power source before:

(1) removing or reinstalling any component, circuit board, module, or any other unit assembly.

(2) disconnecting or reconnecting any unit electrical plug or other electrical connection.

(3) connecting a test substitute in parallel with an electrolytic capacitor in the unit.

Caution: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.

b. Do not defeat any plug/socket B+ voltage interlocks with which unit covered by this service manual might be equipped.

c. Do not apply AC power to this unit and/or any of its electrical assemblies unless all solid - state device heat sinks are correctly installed.

d. Always connect a test unit ground lead to the unit chassis ground before connecting the test unit ground lead last.

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SPECIFICATIONS

POWER AMPLIFIER SECTION

8 OHMS

Rated power output 40 hZ TO 20 KHz.....	30 W / 0-3
Din power output 1KHz	35 W / 0-3
Music power (Both channels)	150 W
Power bandwidth (IHF-3dB, 8 Ohms).....	10 Hz-40 KHz (0.5%)
S/N ratio.....	66 dB
Channel seperation 1KHz.....	50 dB
Required speaker impedance.....	8 to 16 Ohms

PRE-AMPLIFIER SECTION

Frequency response	30 Hz-35 KHz
-3dB down	
Graphic equalizer	
Type	5 Band
Center frequency.....	100 Hz, 330 Hz, 1KHz, 3.3 KHz, 10 KHz
Control range.....	$\pm$ 12 dB

TUNER SECTION

FM

Tuning frequency range.....	87.5 MHz to 108.0 MHz
Quieting sensitivity	10 μ V
Selectivity 300 KHz.....	30 dB
Image rejection.....	34 dB
IF rejection.....	60 dB
AM suppression	32 dB
S/N ratio.....	55 dB
THD	%0.4 (Mono) % 1 (Stereo)
Stereo seperation 1KHz.....	30 dB
Frequency response	30 Hz to 15 KHz

AM

	MW	LW
Tuning frequency range	531 KHz to 1602 KHz	153 KHz to 281 KHz
20 dB Quieting sensitivity	62 dB	70 dB
IF rejection	35 dB	35 dB
Image rejection	35 dB	34 dB
S/N ratio	45 dB	40 dB
THD	% 2	% 5

DECK SECTION

Tape speed.....	4.76 cm/sec
Wow & Flutter.....	0.15 % (WRMS)
Frequency response	40 Hz to 16 KHz $\pm$ 3 dB
S/N	50 dB
Dolby NR Switch On.....	Improves up 10 dB at 1 KHz
Harmonic distortion.....	% 1.5
Crosstalk.....	50 dB

PHONE PLAYER SECTION

Speed.....	33 & 45 rpm
Wow Flutter	% 0.3 WRMS
Channel separation	35 dB
Distortion.....	% 0.6

CD SECTION

Frequency response	2Hz - 20 KHz
Dynamic range (S/N)	70 dB
THD	% 0.3
Channel separation	45 dB

OUTPUT SECTION

Dimensions (mm)

W..... 360

H..... 460

D..... 340

Weight (Kg)..... 10

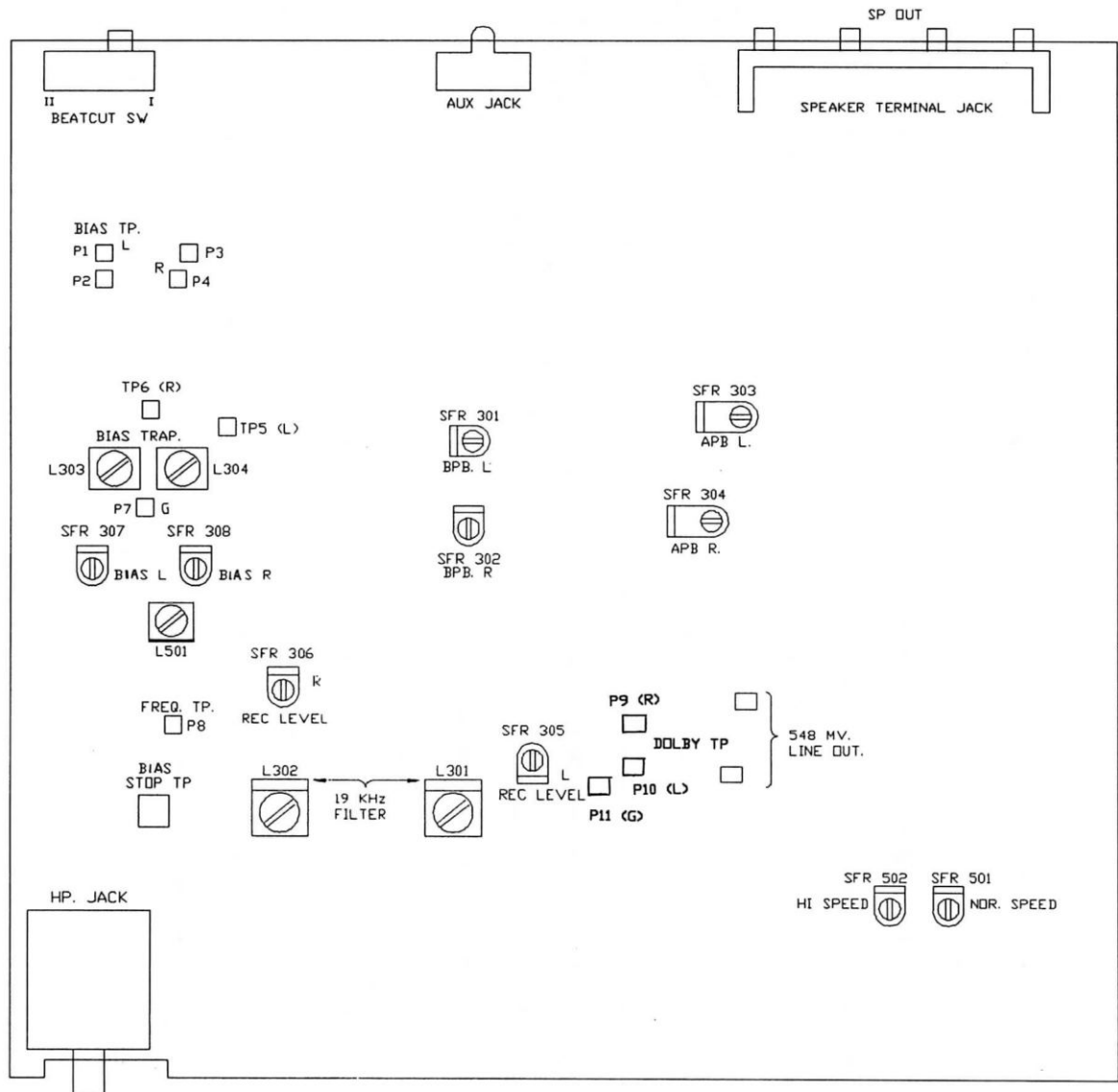
Power requirements..... 220V, 50 Hz for Europe except UK

240V, 50 Hz for UK

Power consumption..... 150 W

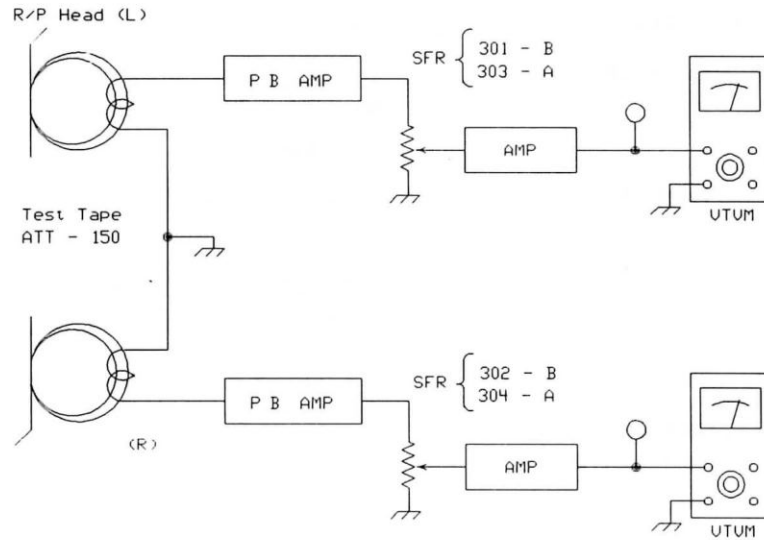
SERVICING ADJUSTMENTS & ALIGNMENTS

MAIN PCB ADJUSTMENTS & TEST POINTS

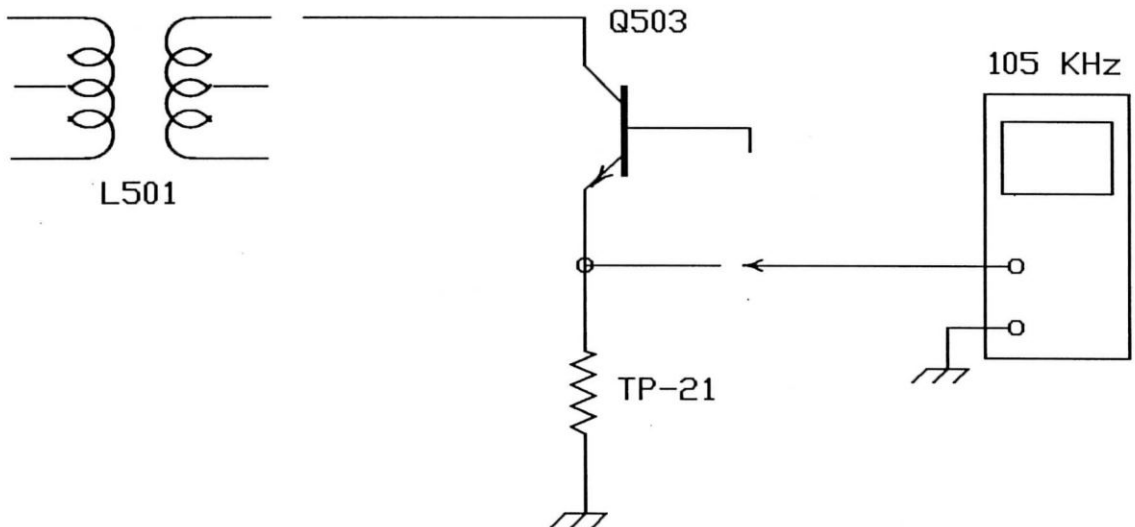


Item		Reference Value	Tape	Volume			Switch		Adjustment Point	Test Point	Note
				Graphic Value	Balance	Main	Dolby	Beat Proof			
1	Head Azimuth Adjustment [DECK A, DECK B]	L,R ch Peak	ATT-225C	Center	Center	Center	OFF	I	Head Screw	TP-23 TP-24	After adjustment apply screw lock at head screw. If L and R ch peak values are different, take the medium value.
2	Tape Speed Adjustment [DECK A, DECK B] High Speed	5400 $\pm$ 60Hz	ATT-111	Center	Center	Center	OFF	I	SFR 502	SP OUT	—
	Tape Speed Adjustment [DECK A, DECK B] Standard Speed	3000 $\pm$ 30Hz	ATT-111	Center	Center	Center	OFF	I	SFR 501	SP OUT	Make this adjustment after high speed adjustment is completed 0 ~ -30 Hz for DECK B to A.
3	Playback Sensitivity Adjustment [DECK A, DECK B]	245mV $\pm$ 10mV	ATT-150	Center	Center	Center	OFF	I	SFR B $\leftarrow$ (301,302) A $\leftarrow$ (303,304)	DOIBY TP. AND P10(GND)	DECK A should be adjusted after DECK B adjustment.
4	Osc. Frequency Adjustment [DECK B]	135 $\pm$ 1KHz	AC-512	Center	Center	Center	OFF	I	L501	FREQ. TP(P8) AND P7(GND)	In the record mode
5	BIAS CURRENT	4.8 MV.	NOR TAPE	Center	Center	Center	OFF	I	SFR 307,308	P1,2 P3,4	—
		6.6 MV.	CrO ₂ TAPE								
6	BIAS TRAP Adjustment [DECK B]	L,R ch MINIMUM LEVEL	AC-512	Center	Center	Center	OFF	I	L303 L304	SP OUT	—
7	Rec/Play Sensitivity Adjustment [DECK B]	Output $\pm$ 1dB	AC-512	Center	Center	Center	OFF	I	SFR 305 SFR 306	SP OUT	333 Hz - 10 KHz 500mV input from AUX.

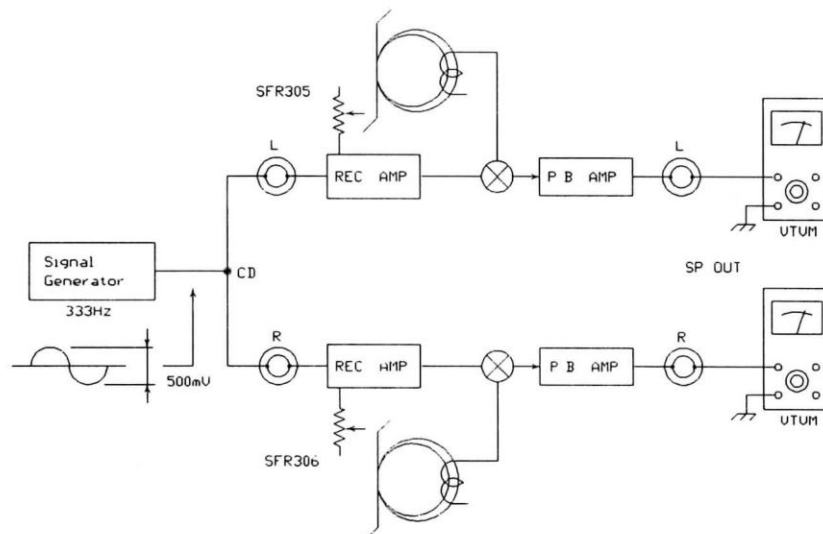
PLAYBACK SENSITIVITY ADJUSTMENT



OSCILLATOR FREQUENCY ADJUSTMENT



R/P SENSITIVITY ADJUSTMENT



AM/FM IF & RF ALIGNMENTS

Equipment required:

1. AM signal generator.
2. FM signal generator.
3. VTVM.
4. DC Volt Meter.

Notes:

1. Signal input must be as low as possible to avoid overload and clipping. (Use highest sensitivity of output indicator).
2. Volume control at maximum, balance and tone control, at mechanical center.
3. Standard modulation is 400 Hz at 30% amplitude for AM, 1000 Hz at 22.5 kHz deviation for FM.
4. Connect 4 ohm load across speaker jack.

AM IF ALIGNMENT

Signal Source	Signal Generator	Alignment Indicator	Frequency Setting	Adjustment	Remarks
AF IF sweep generator connected to a standard radiating loop	Sweep centered 450 KHz	Oscilloscope connect to IF test point IF/OP and ground	Tuning to Lowest freq.	T103 (Refer to Fig. 3)	Adjust for maximum output (Refer to Fig. 4)
	Repeat adjustment as necessary for maximum sensitivity				

LW/MW RF ALIGNMENT

Signal Source	Signal Generator		Alignment Indicator	Frequency Setting	Adjustment	Remarks
AM signal generator connected to a standard radiating loop	MW	531 KHz	DC meter across UT TP and ground	Lowest freq.	L104, L105 (Refer to Fig. 3)	DC Meter 1.2V $\pm$ 0.05V
	LW	153 KHz				DC Meter 1.9V $\pm$ 0.05V
	MW	1602 KHz		Highest freq.	TC104, TC105 (Refer to Fig. 3)	DC Meter 8.2V $\pm$ 0.05V
	LW	281 KHz				DC Meter 6.5V $\pm$ 0.05V
	Repeat adjustment as necessary to obtain frequency range					Adjust for maximum output
	MW	630 KHz	UT UM across speaker jack (Using 8 ohm resistive load)	MW 602 KHz	L10*, L10* (Refer to Fig. 3)	
	LW	164 KHz		LW 164 KHz		
	MW	1404 KHz		MW 1404 KHz	TC102, TC103 (Refer to Fig. 3)	
	LW	273 KHz		LW 27 KHz		
	Repeat adjustments as necessary to minimize tracking error.					

FM IF ALIGNMENT

Signal Source	Signal Generator	Alignment Indicator	Frequency Setting	Adjustment	Remarks
FM IF sweep generator connected to FM ext. ant. matching network used	Sweep centered 10.7 KHz	Oscilloscope connect to IF test point IF/OP TP and ground	Tuning to Lowest freq.	T101, T102 (Refer to Fig. 3)	Adjust for maximum amplitude and proper linearity between $\pm$ 100KHz Markers

FM/RF ALIGNMENT

Signal Source	Signal Generator	Alignment Indicator	Frequency Setting	Adjustment	Remarks	
FM signal generator connected to Ext. Ant. terminal matching network used (Refer to Figure 9)	87.3 MHz	Set up DC Meter across UT TP and ground	Lowest freq.	L103 (Refer to Fig. 3)	UT= 12V $\pm$ 0.05V	
	108 MHz		Highest freq.	—	UT= 8V $\pm$ 1V	
	Repeat adjustments as necessary to obtain frequency range					Adjust for maximum output
	90.1 MHz	UT UM across speaker jack (Using 8 ohm resistive load)	90 MHz	L102 (Refer to Fig. 3)		
	106 MHz		106 MHz	TC101 (Refer to Fig. 3)		
	Repeat adjustments as necessary to minimize tracking error.					

FM - MPX ALIGNMENT

Equipment Required:

- Signal generator.....Modulation rate by pilot signal..... 10%
Modulation rate by main signal (L + R) 45%
Modulation rate by sub signal (L-R) 45%
- Frequency counter, Dummy antenna, VTVM

Selector switch to FMS. Dial setting to approx. 98 MHz, Adjust Volume control until output level of both channels become equal.

Item	Signal Source	Signal Generator Frequency	Alignment Indicator	Dial Setting	Adjustment	Remarks
Adjustment of pilot signal	FM signal generator connected to FM Ext. Ant. terminal Matching network used Modulation OFF	98 MHz (1 mV)	Frequency counter connected to TP4 and TP5	98 MHz	SFR 101 Fig. 3	Measure pilot signal only and adjust for 76 KHz $\pm$ 100Hz

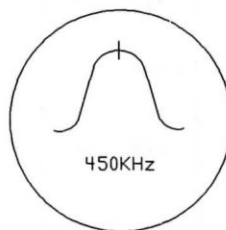


Figure 8

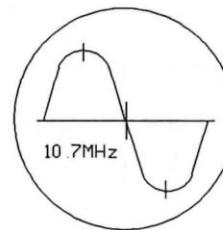
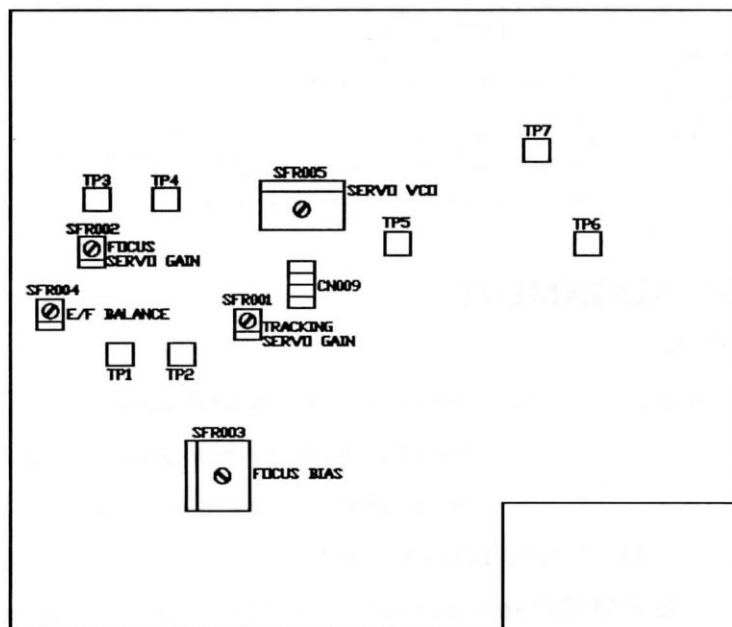


Figure 9

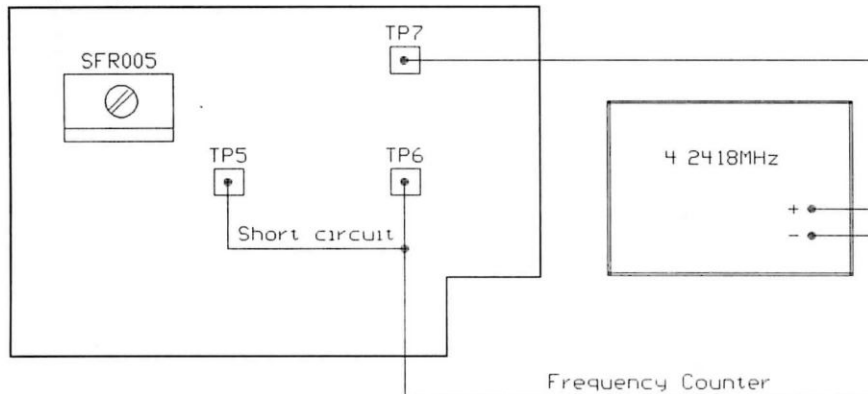
CD DECODER PCB ADJUSTMENTS AND TEST POINTS



ITEM	REFERENCE VALUE	TEST CD	CD CONDITION	ADJUSTMENT POINT	TEST POINT	NOTE
1	SERVO VCO ADJUSTMENT 4,2418 ±10KHz MHz	SONY TYPE 4	STOP	SFR 005	TP7 TP6	TP6-TP5 SHORT CIRCUIT
2	FOCUS BIAS ADJUSTMENT RF SIGNAL MAX. AMPL.	SONY TYPE 4	PLAY	SFR 003	TP1 TP2	
3	E/F BALANCE (TRACKING ERROR BALANCE ADJUSTMENT) WAVEFORM SIMETRIC	SONY TYPE 4	STOP	SFR 004	TP3	STOP TP3-TP2 SHORT CIRCUIT
			PLAY		TP4	PLAY TP4-TP3 CONNECT OSCIL.
4	FOCUS SERVO GAIN ADJUSTMENT SERVO ANALYZER FOCUS GAIN	SONY TYPE 4	STOP	SFR 002	CN009 TP6	REPEAT FOR FIRST AND LAST TRACK
			PLAY			
5	TRACKING SERVO GAIN ADJUSTMENT SERVO ANALYZER TRACKING GAIN	SONY TYPE 4	STOP	SFR 001	CN009 TP6	REPEAT FOR 1 ST AND LAST TRACK
			PLAY			

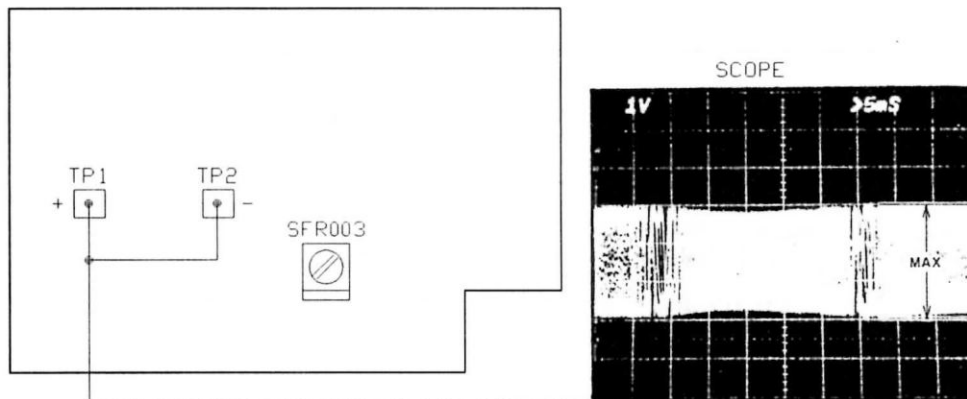
SERVO VCO ADJUSTMENT

When CD is at stop position, TP5 and TP6 is short circuited by crocodile. Then the live side of the wire connected to the frequency counter is to TP7, ground side of it to short circuited TP5 & TP6. And adjust by SFR005 until 4,2418 MHz $\pm$ 10 KHz is reached on frequency counter.



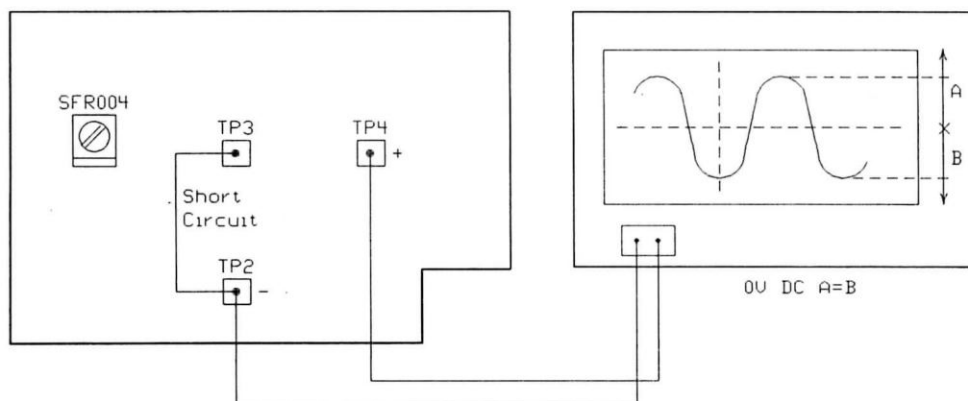
FOCUS BIAS ADJUSTMENT

When CD is at play position. The live side of the wire connected to the oscilloscope to TP1, ground side of the wire to TP2. Then, the amplitude of RF signal seen on scope screen is adjusted to maximum by SFR 003.



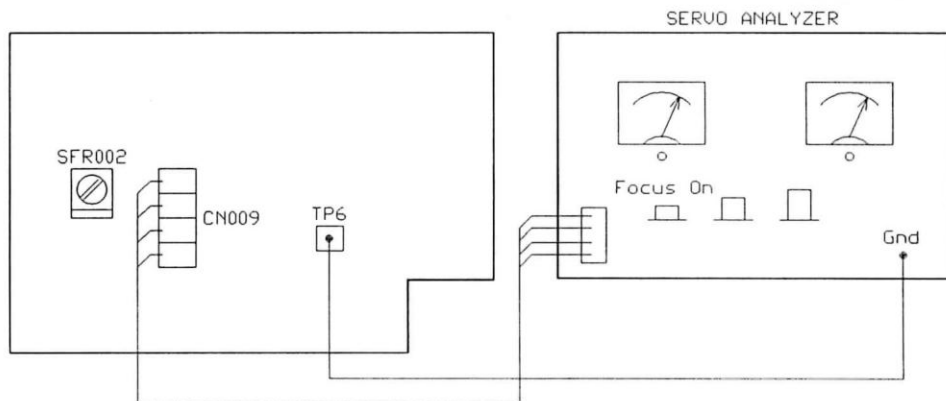
E/F BALANCE (TRACKING ERROR BALANCE) ADJUSTMENT

When CD is at stop position, TP3 & TP2 is short circuited by crocodile. Then the live side of the wire connected to the oscilloscope to TP4, ground side of it to short circuited TP3 & TP2. Take the CD to play position. Adjust the waveform seen on oscilloscope by SFR004 until it gets a symmetric form.



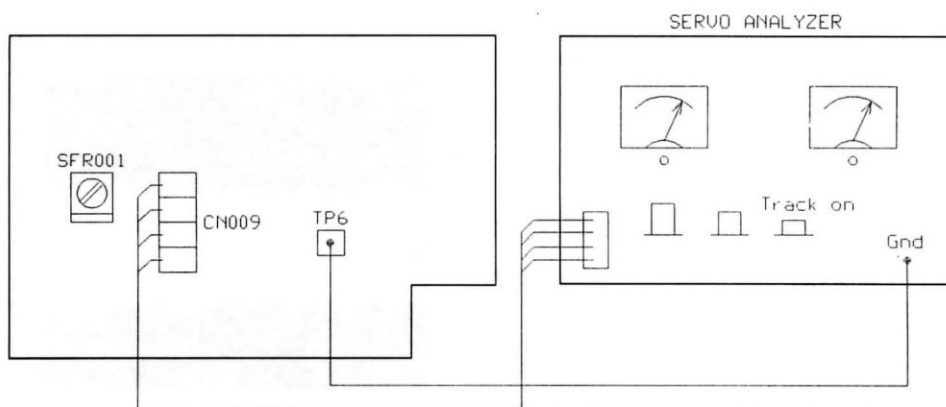
FOCUS SERVO GAIN ADJUSTMENT

When CD is at stop position, take out the CN009 socket from the CD PCB and plug the servo analyzer socket into this place, connect the ground of servo analyzer to TP6. Then take the CD to play position. Take the servo analyzer to focus position. Adjust the focus gain by SFR002. Repeat the procedure for last and first tracks.



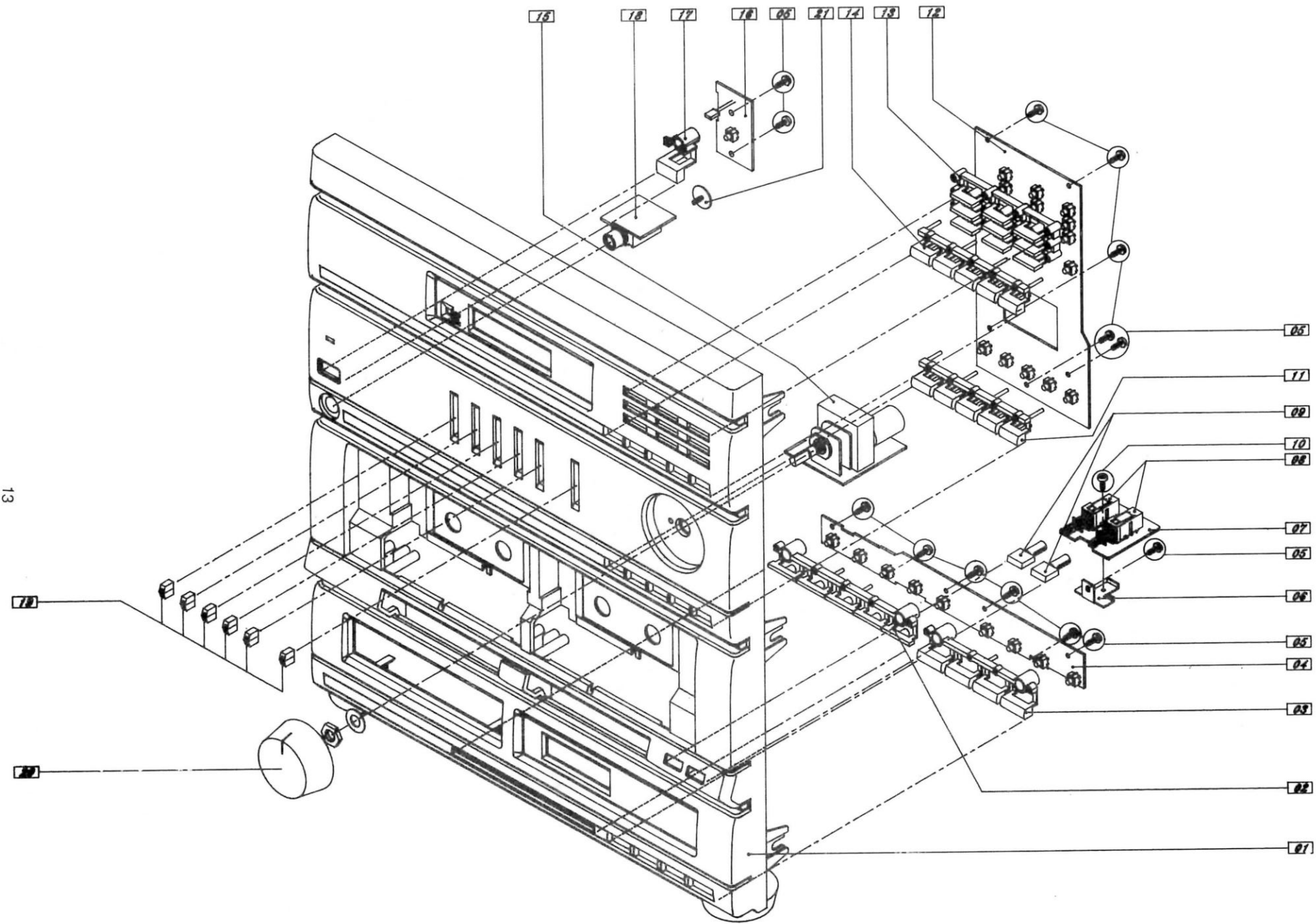
TRACKING SERVO GAIN ADJUSTMENT

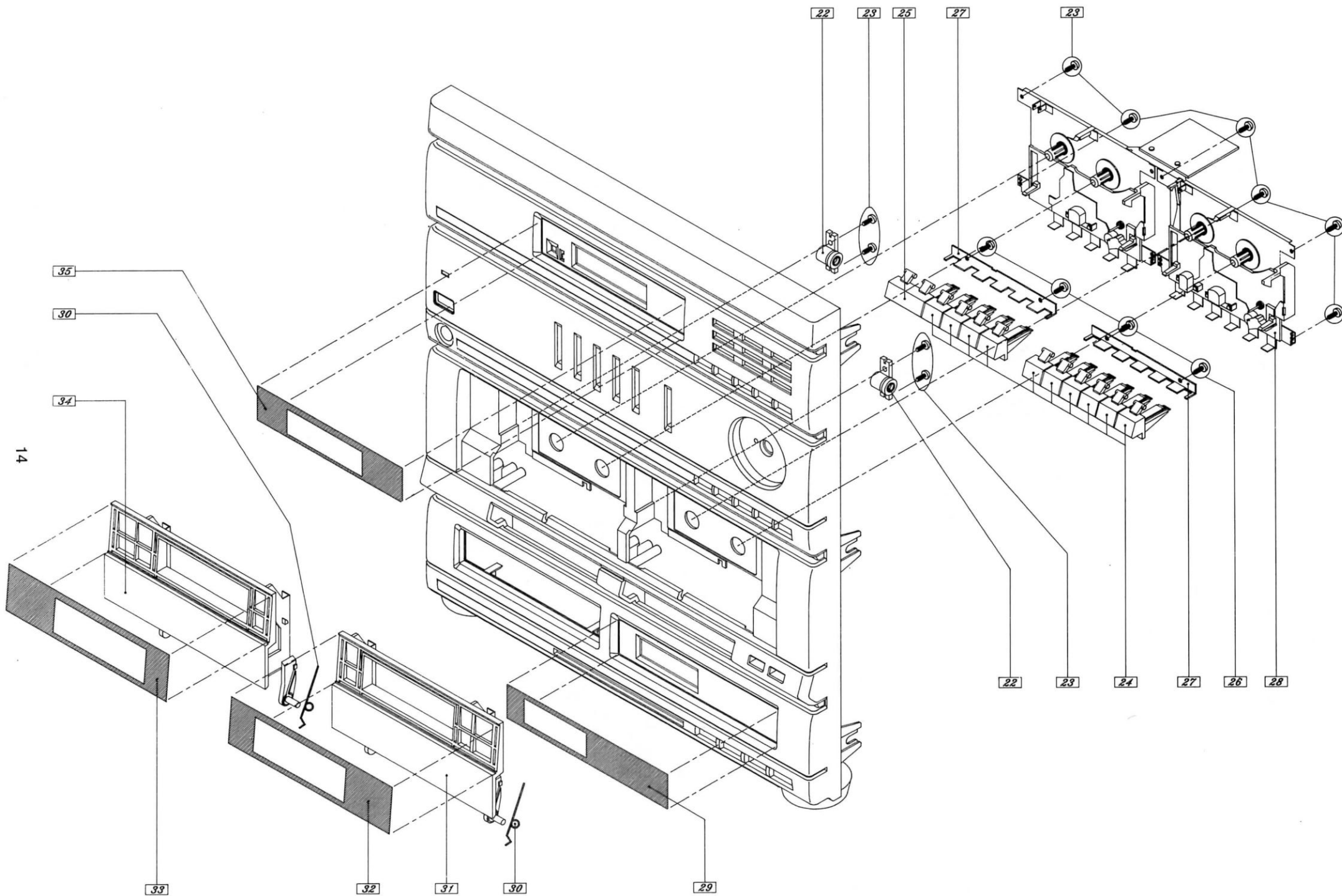
When servo analyzer is at track position, take the CD to play position and by SFR001 make the tracking gain adjustment. Repeat the procedure for first and last tracks.

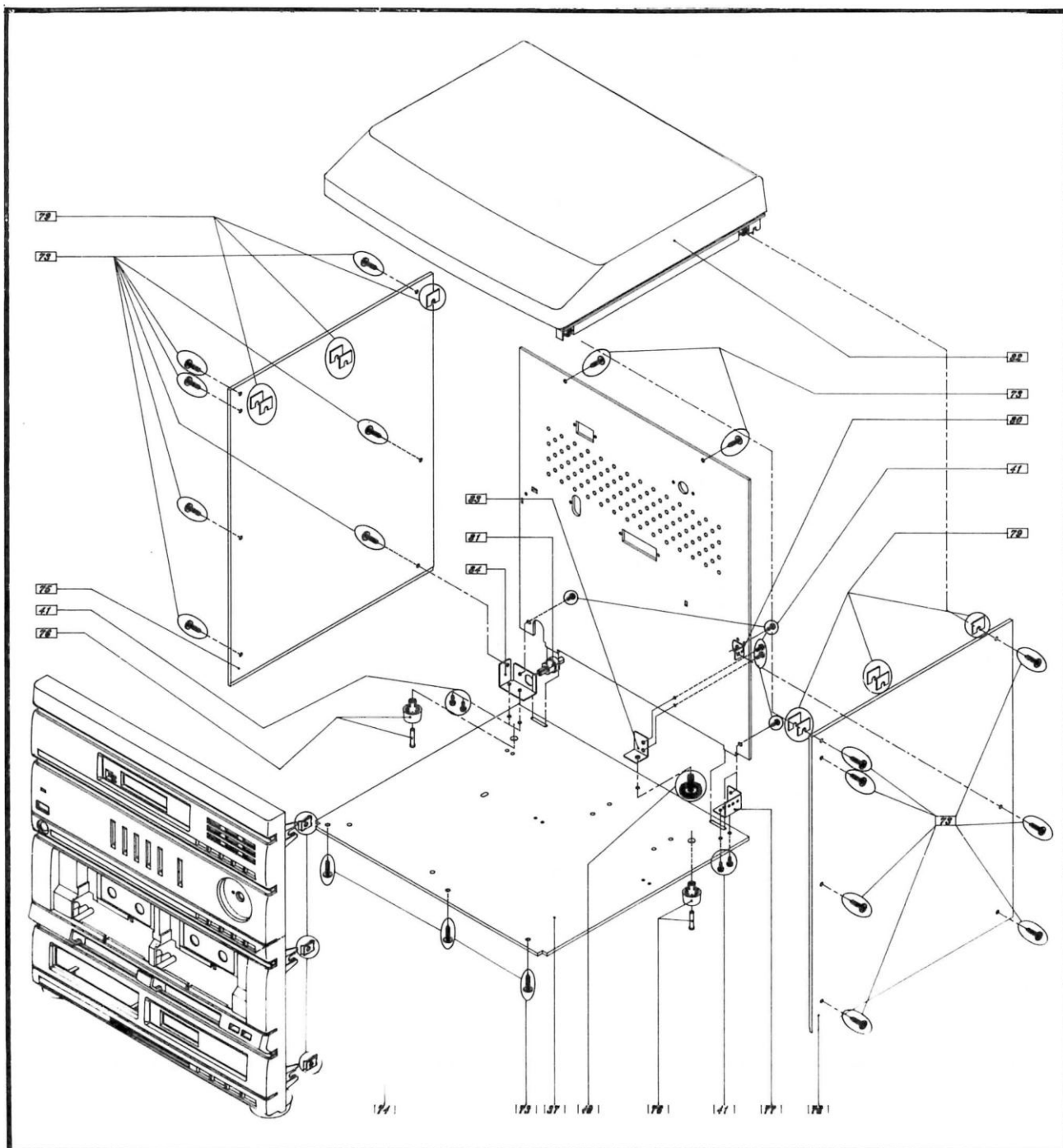


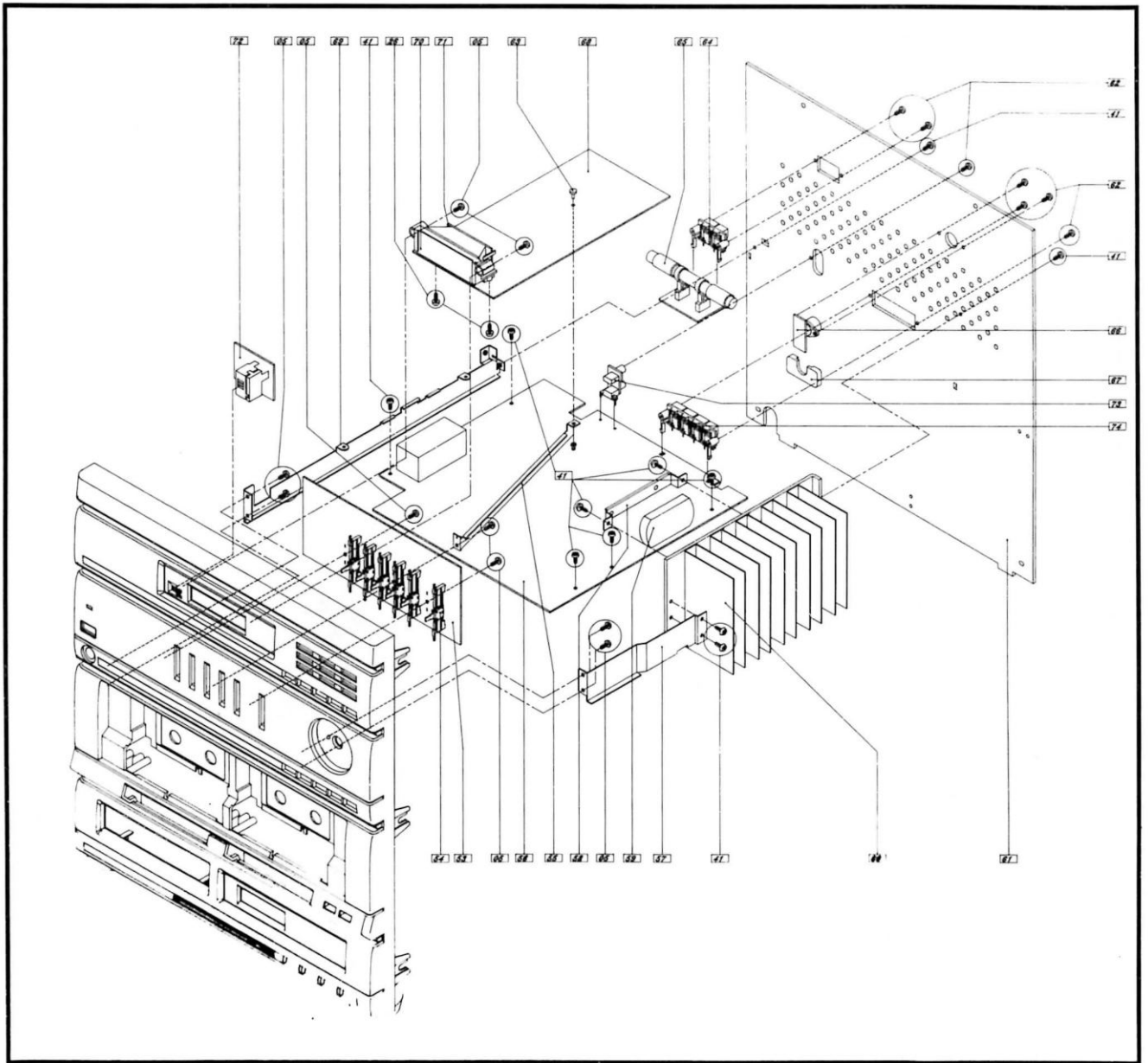
IMP. NOTE: After focus gain and tracking gain adjustments, attach the CN009 socket to its own place.

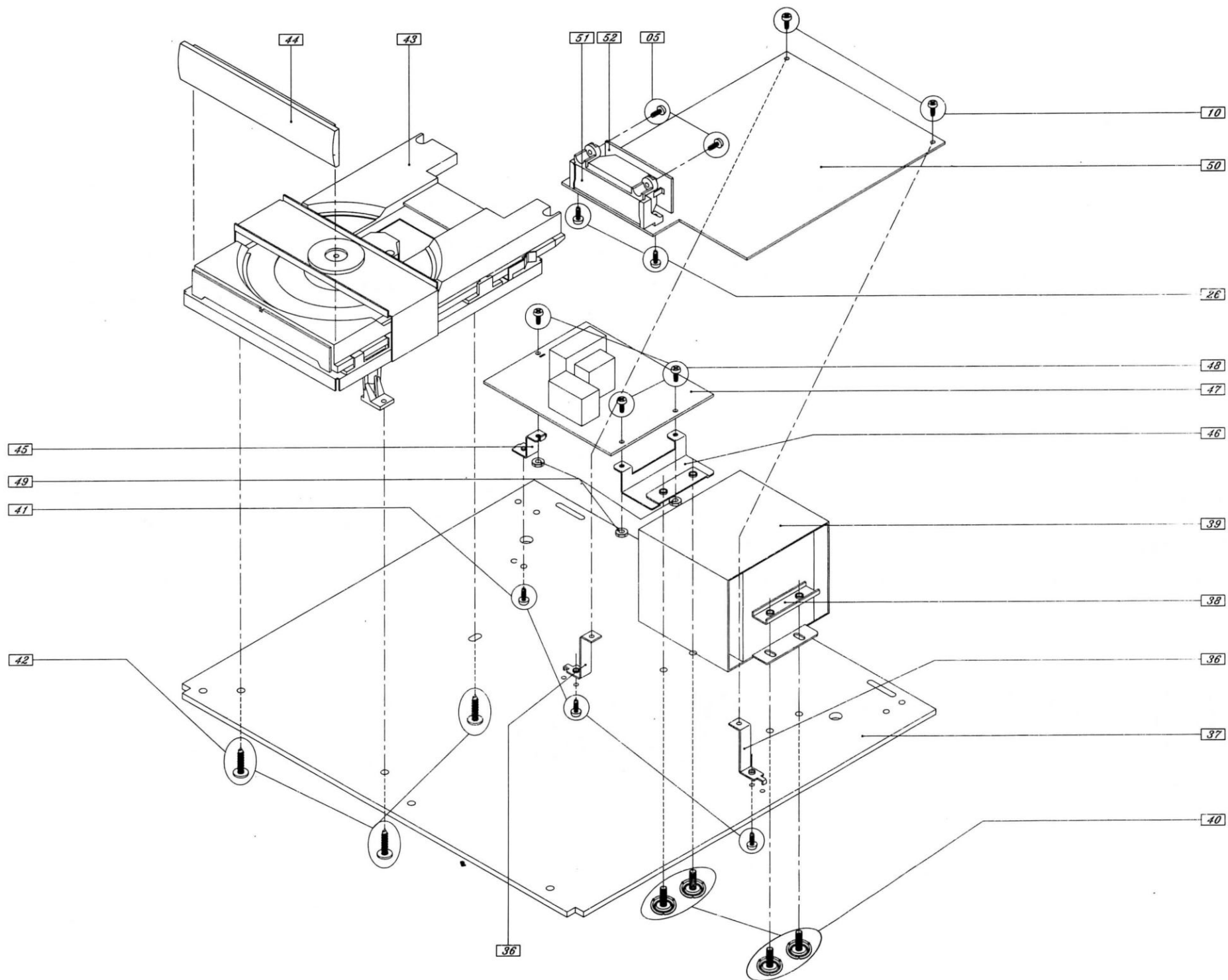
EXPLODED VIEW AND MECHANICAL PART LIST







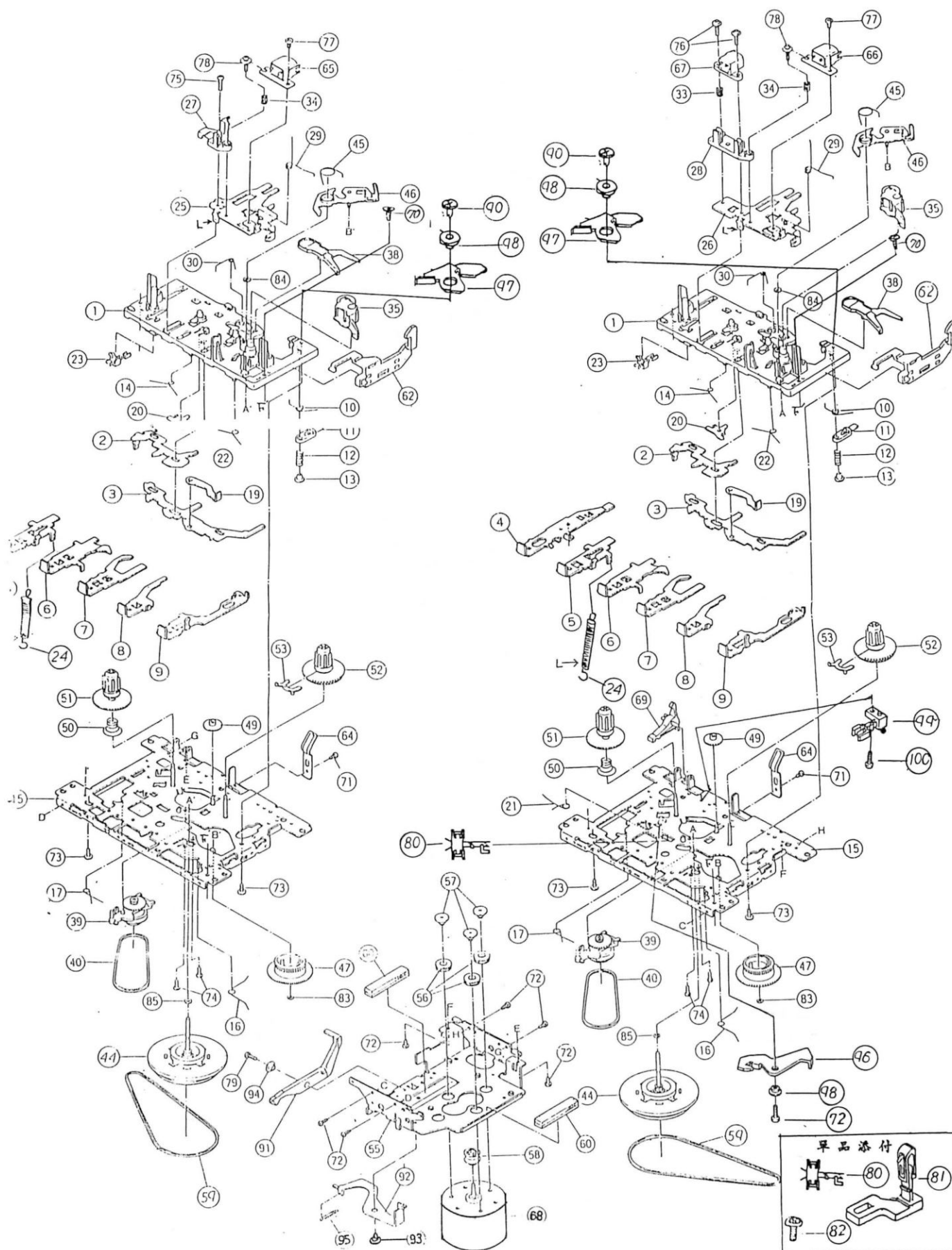




MECHANICAL PARTS LIST (MEKANİK PARÇA LİSTESİ)

REF. NO	PART. NO PARÇA NO	DESCRIPTION	TANIMI
01	1001079383	FRONT ESCUTCHEON	ON PANEL
02	1008079383	CD KNOB (A)	CD BUTONU (A)
03	1009079383	CD KNOB (B)	CD BUTONU (B)
04	DA48197170	CD CONTROL PCB ASS'Y.	CD KONTROL KARTI
05	8741301200	7 BID 3012 ZN3A	7 BID 3012 ZN3A
06	2010079481	PUSH SW BRACKET	BRACKET
07	DA48197180	HI-SPEED PCB ASS'Y.	HIZLI KAYIT KARTI
08	4430801800	PUSH SW SPUL 19A601-CP	ANAHTAR
09	1011079383	H/D SW KNOB	HIZLI KAYIT ANAHTAR DUGMESI
10	8441300800	4 BID 3008 ZN3A	4 BID 3008 ZN3A CIVATA
11	1010079383	SELECTOR KNOB	SECME BUTONU
12	DA48197110	FUNCTION KEY PCB ASS'Y.	FONKSIYON KARTI
13	1007079383	PRESET BUTTON	ISTASYON BUTONU
14	1010079383	SELECTOR KNOB	SECME BUTONU
15	C041218100	VOLUME PCB ASS'Y	MOTORIZED SES KONTROL KARTI
16	DA48197150	ON/OFF PCB ASS'Y	ACMA/KAPAMA KARTI
17	1012079383	POWER KNOB	GUC DUGMESI
18	4142198820	H/P JACK PCB ASS'Y	KULAKLIK JAK KARTI
19	1021078911	SLIDE KNOB	SURGU DUGMESI
20	1006071055	VOLUME KNOB	SES DUGMESI
21	8741301214	7 BID 3012 WF 14 ZN3A	7 BID 3012 WF14 RONDELALI CIVATA
22	2000001065	GEAR DAMPER	DISLI TAMPONU
23	8741301000	7 BID 3010 ZN3A	7 BID 3010 CIVATA
24	1027079383	CASS. BUTTON	KASET BUTONU
25	1026079383	CASS. BUTTON	KASET BUTONU (CALMA)
26	8741300800	7 BID 3008 ZN3A	7 BID 3008 CIVATA
27	2003078915	BUTTON PLATE	BUTON PLAKASI
28	B938351002	CASS. DECK ASS'Y.	KASET DECK MEKANİZMASI
29	1016079383	CD DISPLAY WINDOW	CD GOSTERGE CAMI
30	2016079383	EJECT SPRING	CIKARMA YAYI
31	1002079383	CASS. DOOR (A)	KASET KAPAGI (A)
32	1013079383	CASS. DOOR WINDOW (R)	KASET KAPAGI CAMI (R)
33	1003079383	CASS. DOOR (B)	KASET KAPAGI (B)
34	1014079383	CASS. DOOR WINDOW (L)	KASET KAPAGI CAMI (L)
35	1016079383	TUNER DISPLAY WINDOW	TUNER GOSTERGE CAMI
36	2008079383	CD DISPLAY BRACKET	CD GOSTERGE BRAKETI
37	2003079383	BOTTOM BOARD	ALT TABAN
38	2032077005	TRANSFORMER WASHER	TRAFO BRAKETI
39	420A785206	TRANSFORMER	TRAFO
40	2000000093	CABINET WASHER ASS'Y. 4*14	RONDELALI CIVATA
41	8481301000	4-CUP 3010 ZN3A	4-CUP 3010 CIVATA
42	8382401600	3-THIN 4016 ZN3K	4-THIN 4016 CIVATA
43	C486040383	CD PLAYER KSL-210 AFM4	CD MEKANİZMASI
44	1004079383	CD DOOR	CD KAPAGI
45	2009079383	POWER PCB BRACKET (R)	GUC KARTI BRAKETI (R)
46	2010079383	POWER PCB BRACKET (L)	GUC KARTI BRAKETI (L)
47	C041198900	BACK UP PCB ASS'Y.	GUC KARTI
48	8241300800	2 BID 3008 ZN3A	M3*8 CIVATA
49	3032100030	NUT 30 ZN3A	M3 SOMUN
50	DA42187714	CD DECODER PCB	CD KARTI
51	2014178115	CD DISPLAY HOLDER	CD GOSTERGE TUTUCUSU
52	4142187722	CD LAMP PCB ASS'Y	CD LAMPA KARTI
53	DA48197140	TONE PCB ASS'Y	EKOLAYZER KARTI
54	5210154249	VR 50 KW RS20HILC001	BALANS
	5210215248	VR 100 KW X2	EKOLAYZER SURGUSU
55	2006079383	TUNER PCB BRACKET	TUNER KART BRAKETI
56	DA42198810	MAIN PCB ASS'Y.	ANA KART
57	2004079383	MAIN PCB BRACKET (L)	ANA KART BRAKETI (L)
58	2002079383	IC HOLDER	ENREGRE TUTUCUSU
59	4152041420	IC STK 4142	STK 4142 ENTEGRE
60	2001079383	HEAT SINK	SOGUTUCU
61	1019079383	BACK BOARD	ARKA KAPAK
62	8741301200	7 BID 3012 ZN3A	7 BID 3012 CIVATA
63	2000000145	P-RIVET 3*4.5	PLASTİK PERCİN
64	4560002047	2P ANT. TERMINAL	2 PIN ANTEN TERMINALI
65	4300103010	MW/LW BAR ANT. COIL.	MW/LW BAR ANTENİ
66	4570900720	DIN ANT. SOCKET	DIN ANTEN SOKETİ
67	2007079383	FM JACK HOLDER	FM SOKET TUTUCUSU
68	C143175917	TUNER PCB ASS'Y.	TUNER KARTI
69	2005079383	MAIN PCB BRACKET (R)	ANA KART BRAKETI (R)
70	2002077500	TUNER DISPLAY HOLDER	TUNER GOSTERGE TUTUCUSU
71	2017077500	DISPLAY PLATE	GOSTERGE PLAKASI
72	7148101001	REMOTE PRE AMP. ASS'Y.	UZAKTAN KUMANDA SENSÖRÜ
73	8382401600	3 THIN 4016 ZN3K	3 THIN 4016 CIVATA
74	2017071880	ESCUTCHEON NUT	ON PANEL SOMUNU
75	1017079383	SIDE CABINET (L)	YAN KABINET
76	0003038401	LEG ASS'Y.	AYAK TAKIMI
77	2020171219	CONNECTOR	KONNEKTÖR
78	1018079383	SIDE CABINET (R)	YAN KABINET (R)
79		SPACER	MESAFE AYAR PLASTİĞİ
80	2009079329	BACK BOARD BRACKET	ARKA KAPAK BRAKETİ
81	4580200006	CORD STOPPER SR-4N-6	KABLO TUTUCUSU
82	1001071065	DUST COVER	TOZ KAPAGI
	C486030395	PLAYER ASS'Y 0621-08	PIKAP
83	2045079383	BOTTOM BOARD BRACKET	ALT TABAN BRAKETİ
84	2016078360	AC CORD HOLDER	AC KABLO TUTUCUSU

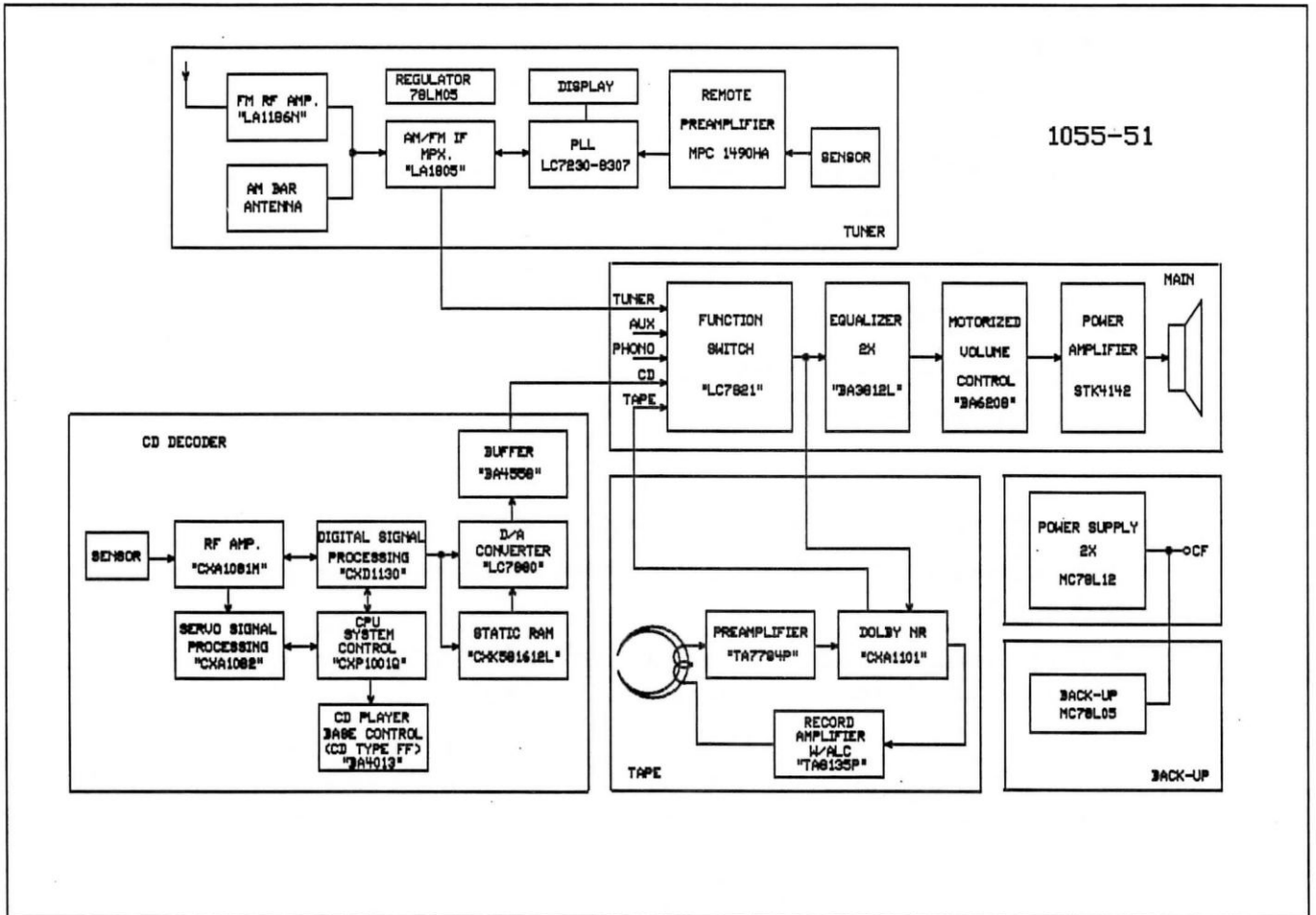
CASS. DECK EXPLODED VIEW AND PART LIST



NO.	PARTS NAME	DESCRIPTION	Q'TY
1	基板	BASE ASS'Y	1921 14 301 2
2	スイッチ作動板	SWITCH ACTUATOR	1921 14 09 2
3	押ボタン作動板	PUSH BUTTON ACTUATOR	1921 14 08 2
4	RECボタンレバー	REC BUTTON LEVER	1921 14 22 1
5	PLAYボタンレバー	PLAY BUTTON LEVER	1921 14 84 2
6	REWボタンレバー	REW BUTTON LEVER	1921 14 24 2
7	FFボタンレバー	FF BUTTON LEVER	1921 14 25 2
8	STOPボタンレバー	STOP BUTTON LEVER	1921 14 26 2
9	PAUSEボタンレバー	PAUSE BUTTON LEVER	1921 14 61 2
10	PコントロールSP	P CONTROL SPRING	1921 14 13A 2
11	PAUSEレバー	PAUSE LEVER	1921 14 55 2
12	PAUSEレバーSP	PAUSE LEVER SPRING	1921 14 12 2
13	PAUSEストッパー	PAUSE STOPPER	1921 14 11 2
14	ボタンレバーSP(A)	BUTTON LEVER SPRING (A)	1921 14 14 2
15	シャーシASS'Y	CHASSIS ASS'Y	1921 01 501 2
16	EアクチュエーターSP	E ACTUATOR SPRING	1921 14 16 2
17	PSレバーSP	P.S. LEVER SPRING	1921 14 17 2
18			
19	Eキックレバー	E KICK LEVER	1821 01 159 2
20	PRストッパー	PR STOPPER	1921 14 20 2
21	RECボタンレバーSP	REC BUTTON LEVER SPRING	1921 14 21 1
22	ボタンレバーSP(B)	BUTTON LEVER SPRING (B)	1921 14 15 2
23	リーフSW MSW-1541T	LEAF SWITCH MSW-1541T	6401 01 149 2
24		PLAY BUTTON LEVER SPRING	1821 01 50 2
25	ヘッドパネル	HEAD PANEL	1921 03 11 1
26	ヘッドパネル	HEAD PANEL	1921 03 12 1
27	ヘッドベース	HEAD BASE	1921 03 04A 1
28	ヘッドベース	HEAD BASE	1921 03 06 1
29	パネルP SP	PANEL P SPRING	1921 03 03 2
30	MコントロールSP	M CONTROL SPRING	1921 14 18 2
31			
32			
33	EH SP.	EH SPRING	1821 03 08 1
34	アジマスSP	AZIMUTH SPRING	1821 03 07 2
35	ピンチローラーアームASS'Y	PINCH ROLLER ARM ASS'Y	1921 04 301 2
36			
37			
38	センシングレバー	SENSING LEVER	1921 26 04 2
39	RFクラッチASS'Y	RF CLUTCH ASS'Y	1921 07 302 2
40	RFベルト	RF BELT	1921 07 03 2
41			
42			
43	フライホイールASS'Y	FLYWHEEL ASS'Y	1921 09 304 1
44	フライホイールASS'Y	FLYWHEEL ASS'Y	1921 09 303 1
45	ギヤプレートSP	GEAR PLATE SPRING	1921 26 05 2
46	ギヤプレートASS'Y	GEAR PLATE ASS'Y	1921 26 502 2
47	カムギヤ	CAM GEAR	1921 26 02 2
48			
49	FFギヤ	FF GEAR	1821 10 70 2
50	バックテンションSP	BACK TENSION SPRING	1821 10 99 2

NO.	PARTS NAME	DESCRIPTION	Q'TY
51	サプライリールASS'Y	SUPPLY REEL ASS'Y	1921 05 306 2
52	テイクアップリールASS'Y	TAKE UP REEL ASS'Y	1921 05 305 2
53	センサー	SENSOR	1921 05 06 2
54			
55	モーターブラケット	MOTOR BRACKET	1921 12 11 1
56	モーターラバー	MOTOR RUBBER	1820 13 06 3
57	Mカラーネジ	MOTOR COLLER SCREW	1821 12 02 3
58	モータープーリー	MOTOR PULLEY	1921 12 13 1
59	メインベルト	MAIN BELT	1921 09 24 2
60	防振マット	ANTI VIBRATION FELT MAT	1921 12 12 2
61			
62	イジェクトスライドレバー	EJECT SLIDE LEVER	1921 13 02 2
63			
64	バック受SP板	PACK SPRING	1829 10 01 2
65	Pヘッド	P. HEAD	MS15R-AA2N1 1
66	RPヘッド	R.P. HEAD	MS15R-AA2N1 1
67	Eヘッド	E. HEAD	LE15B-C1 1
68	モーター	MOTOR	SHU-2LCO 1
69	REC安全レバー	RECORD SAFETY LEVER	1821 10 69 1
70	カメラタッピングビス	CAMERA TAPPING SCREW	9999-14-02 2
71	Cタイトビス M2x3	C TAPPING SCREW M2x3	9179 00 00 2
72	Cタイトビス M2x4	C TAPPING SCREW M2x4	9180 00 00 7
73	Pタイトバインドビス M2x5	P TAPPING BING SCREW M2x5	9679 00 00 4
74	カメラタッピングビス M2x4.5	TAPPING SCREW (FOR CAMERA) M2x4.5	9999 18 09 4
75	ナベコネジ M2x6	SCREW M2x8	9004 00 00 1
76	ブラマイカップビス	⊕ ⊙ CAP SCREW 2x7.5	9223 CC CC 2
77	⊕ バインドコネジ M2x3	⊕ BIND SCREW M2x3	9115 00 00 2
78	アジマスビス M2x7	AZIMUTH SCREW M2x7	9922 00 00 2
79	Cタイトビス M2x6	C TAPPING SCREW M2x6	9182 00 00 1
80		LEAF SW LSA-115R1	6401 01 161-1 2
81		C102 SW MSW-664	6401 01 125 1
82		CAP SCREW 2X5	9661 CC CC 1
83	ポリスライダワッシャー 1.2x3.8x0.3	P WASHER CUT 1.2x3.8x0.3	9422 00 00 2
84	ポリスライダワッシャー 1.45x3.8x0.5	P WASHER CUT 1.45x3.8x0.5	9999 03 13 2
85	ポリスライダワッシャー 2x3.5x0.3	P WASHER 2x3.5x0.3	9786 00 00 2
86			
87			
88			
89			
90		P STAPPING SCREW 2X3	9999 20 41 2
91	Pキックレバー(B)	P KICK LEVER (B)	1921 12 09 1
92	Pキックレバー(A)	P KICK LEVER (A)	1821 12 68 1
93	PKカラーネジ(A)	PK COLLER SCREW (A)	1821 12 23 1
94	カラー(B)	COLLER (B)	1821 12 65 1
95	PキックレバーSP	P KICK LEVER SPRING	1821 12 25 1
96		REC ARM	1921 C2 01 1
97		P ARM	1921 14 34 2
98		P ARM COLLAR	1921 14 37 3
99		LEAF SW MSW-1275	6401 01 38 1
100		TAPPING SCREW 2X5	9180 CC CC 1

GENERAL BLOCK DIAGRAM



IC DESCRIPTIONS

LC7230

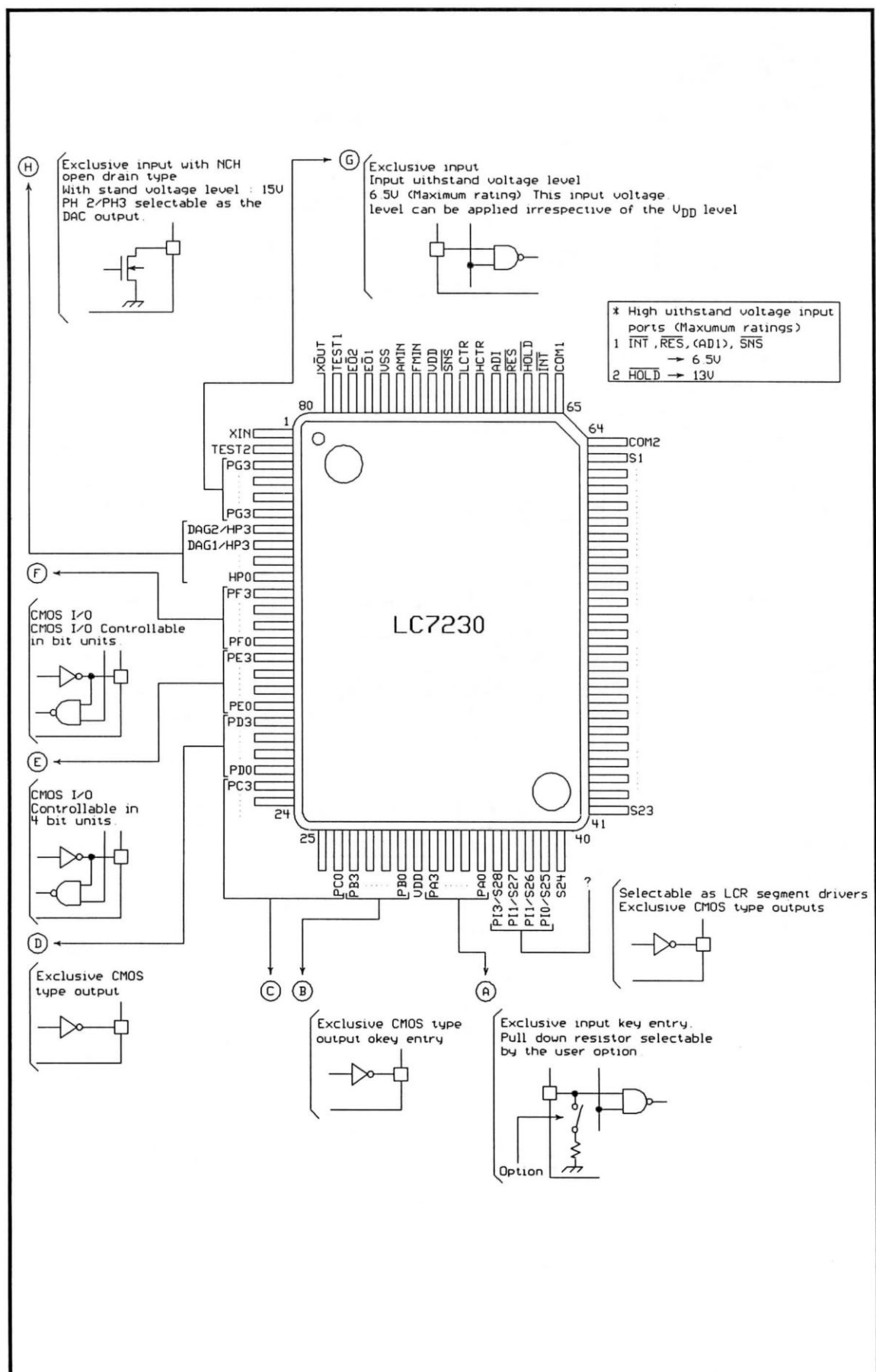
SINGLE-CHIP PLL + CONTROLLER WITH LCD DRIVER

The LC7230 is a single chip microcontroller with internal LCD driver and phase locked loop (PLL) circuitry and operates at a frequency of up to 150MHz.

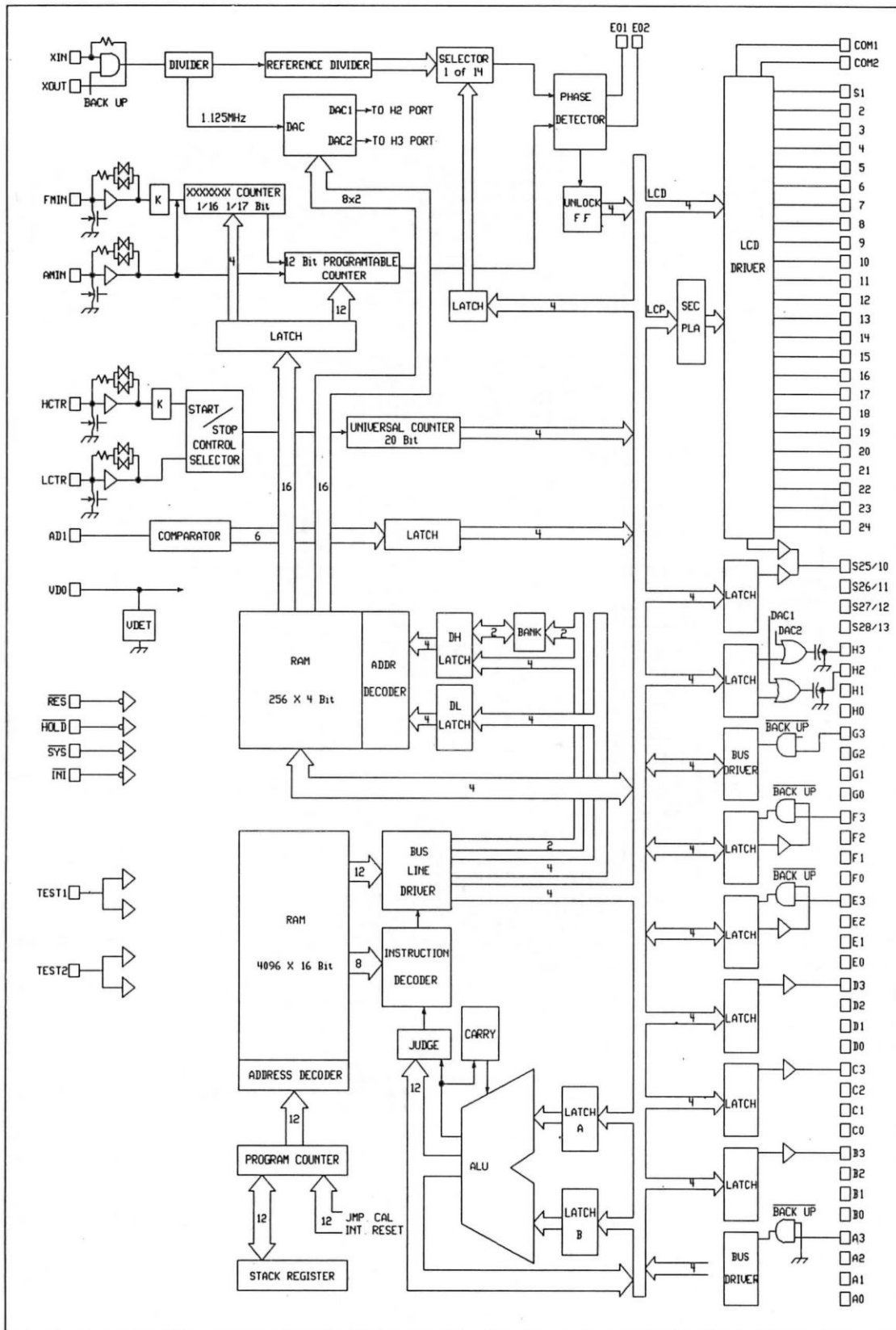
Functions

- High-speed and programmable divider
- General purpose counter: HCTR for frequency measurement. LCTR for frequency or frequency cycle measurement. Note that the HCTR denotes the Horizontal counter and the LCTR, the Longitudinal counter.
- LCD driver: 56 segments (1/2 duty and 1/2 bias)
- Program memory (ROM): 16 bits x 4096
- Data memory (RAM): 4 bits x 256
- All instructions: One-word in length
- Cycle time: 2.67 microseconds
- Stack levels: 4
- Unlock flip-flop (FF): 0.55-microsecond detection and 1.1-microsecond detection
- Timer flip-flops (FF): 1 millisecond, 5 milliseconds, 25 milliseconds and 125 milliseconds
- Data input ports: Two ports ... One for exclusive key entry and the other input port with high withstand voltage level. Note that each port consists of four pins.
- Data output ports: 2 for exclusive key output, one open drain type output port with high withstand voltage level, 2 CMOS type output ports (One of them can be used as the LCD driver from a user application program.) Note that each port consists of four pins.
- I/O port: One I/O port controllable in 4-bit units. One I/O port controllable in bit units. Note that each I/O port consists of four pins.
- Timeout error detectable and specific address settable
- On-chip voltage-controlled reset circuit
- Six-bit ADC (Analog-Digital Converter)
- Eight-bit DACx2 (DAC: Digital-Analog Converter as a Pulse Width Modulator (PWM))
- External interrupt level: One
- HOLD mode: RAM backup at reduced power dissipation
- Sensing flip-flop (FF) circuit for Hot/Cold start decision ($V_T = 1.3V$ to $2.5V$)
- PLL (Phase Locked Loop) circuit: 4.5V to 5.5V
- CPU: 3.5V to 5.5V
- RAM: 1.3V to 5.5V

Pin Assignment



Functional Block Diagram



Pin Description

Pin Name	Pin No	Functional Description	I/O	I/O Circuit Type
PA ₀ PA ₁ PA ₂ PA ₃	35 34 33 32	Used exclusively for data input. These port pins can be used for key data entry. Pull-down resistance can be selected by the user option. In this selection, all the four port pins are controlled at a time. That is, the pull-down resistor cannot be selected for each port pin individually. Input to the port pins is inhibited during the BACKUP mode ON.	Input	
PB ₀ PB ₁ PB ₂ PB ₃ PC ₀ PC ₁ PC ₂ PC ₃	30 29 28 27 26 25 24 23	Used exclusively for data output. Can be used for key scan timing signal output because these ports are composed of CMOS transistors with unbalanced impedance state at the BACKUP mode. Placed in the "L" level state at the reset ($\overline{RES}$ ="L")	Output	
PD ₀ PD ₁ PD ₂ PD ₃	22 21 20 19	Used exclusively for data output. Normal CMOS output type. Enter into output high impedance state at the BACKUP mode. Placed in the "L" level state at the reset ($\overline{RES}$ ="L")		
PE ₀ PE ₁ PE ₂ PE ₃	18 17 16 15	Used for data input and output. The port is set to the input mode once the input instruction (IN, TPT, or TPF) is executed in your application program while set to the output mode if the output instruction (OUT, SPB, RPB) is used. The operation mode once selected by such an instruction can be effective until an instruction of different type is used in your application program. Set to the input mode at the reset ($\overline{RES}$ ="L"). Set to the input mode at the BACKUP mode. In this case, note that data input to this port is inhibited.	Input / Output	
PF ₀ PF ₁ PF ₂ PF ₃	14 13 12 11	Used for data input and output. This port is controlled by FPC instruction. Each port pin can be set to the input mode or the output mode by that instruction. Set to the input mode at the reset ($\overline{RES}$ ="L"). This port is set to the input mode at the BACKUP mode. In this case, note that data input to this port is inhibited.		
PG ₀ PG ₁ PG ₂ PG ₃	6 5 4 3	Used exclusively for data input. Data input to the port is inhibited at the BACKUP mode.	Input	
PH ₀ PH ₁ PH ₂ PH ₃	10 9 8 7	Used exclusively for data output. This port can be used for frequency band power source selection because this port has Nch open drain output circuit at high withstand voltage level. Port pins H2 and H3 can be also used as the DAC1 and DAC2 outputs, respectively. Enter into high impedance state at the reset ($\overline{RES}$ ="L") and the BACKUP mode.	Output	
P1 ₀ /S25 P1 ₁ /S26 P1 ₂ /S27 P1 ₃ /S28	39 38 37 36	Used exclusively for data output. This port has the CMOS type output circuit and can be selected as the LCD driver output ports. The port operation mode can be selected by the SS or RS instruction. The output mode cannot be selected by such an instruction. This port is set to the LCD driver output mode at the reset ($\overline{RES}$ ="L") and at power supply. In this case, segment display is forced into the OFF state. This port is set to the "L" level at the BACKUP mode.	Output	

Continued from preceding page.

Pin Name	Pin No.	Functional Description	I/O	I/O Circuit Type
SNS	72	Used at the BACKUP mode for power failure signal input. This port can be used as a normal input port.	Input	
$\overline{\text{HOLD}}$	67	Used for HOLD mode request signal input. The HOLD mode becomes active if the $\overline{\text{HOLD}}$ pin logic changes to "L" with the HOLDEN flag already ON. Note that this flag is set by the SS instruction. The withstand voltage level of this part is high in order that the port can be used together with a power switch.	Input	
$\overline{\text{RES}}$	68	Used for the system reset request input. The power up "L" level reset request signal must be applied to this port for more than 75 milliseconds. The reset "L" level start request signal must be applied to this port for more than five fundamental clock cycles.	Input	
XIN XOUT	1 80	These two pins are used for X'tal oscillation frequency (4.5MHz) input and output. On-chip feedback resistor available	Input / Output	
TEST1 TEST2	2 79	These two pins are used for LST test signal input. They should be open-circuited or connected with the V_{SS} pin.	—	—
V_{DD} V_{SS}	31, 73 76	Power source	—	—

Continued from preceding page.

Pin Name	Pin No.	Functional Description	I/O	I/O Circuit Type
S1 to S24	63 to 40	Used for driving segments. That is, these ports are used as the LCD output drivers. The frame frequency for segment output is 100Hz. The lighting format is 1/2 duty and 1/2 bias. The segment display is forced into the OFF state. This port is set to the "L" level at the BACKUP mode.	Output	
COM1 COM2	65 64	Used for LCD drive common signal output. The lighting format is 1/2 duty and 1/2 bias. Normal output at the reset (RES="L") and power supply. These ports are set to the "L" level at the BACKUP mode.	Output	
FM IN		Used for FM VCO input (local oscillation). Note that the VCO means Voltage-Controlled Oscillation. Input through capacitor coupling is required. The input frequency range is between 10MHz and 130MHz.	Input	
AM IN		Used for AM VCO input (local oscillation). Note that the VCO means Voltage-Controlled Oscillation. Input through capacitor coupling is required. Frequency bands can be selected by CW1 of the PLL instruction. Hi (2 to 40MHz) → SW Lo (0.5 to 10MHz) → SW		
HCTR	70	Used for universal counter input. Input through capacitor coupling is required. The input frequency range is between 0.4MHz and 12MHz. This port can be used for counting FM IF and AM IF.	Input	
LCTR	71	Used for universal counter input. Input through capacitor coupling is required when the input frequency range is between 100KHz and 500KHz. This port can be used for counting AM IF.		
ADI	59	Used for AD converter input. The AD converter is composed of a 6-Bit sequential comparator requiring a conversion time of 1.28 milliseconds. Full-scale data (3FH) : $V_{DD} \times 63/96$	Input	
$\overline{INT}$	66	Used for interrupt request signal input. Interrupt request becomes active if falling signal edge is detected at the port with the INTEN flag already set. Note that this flag is set by the SS instruction.	Input	
E01 E02	77 78	Used for phase comparison error output. Note that reference signal frequency and programmable divider output signal frequency are compared in their phase. On-chip charge pump available. The E01 and the E02 has the same circuit type.	Output	

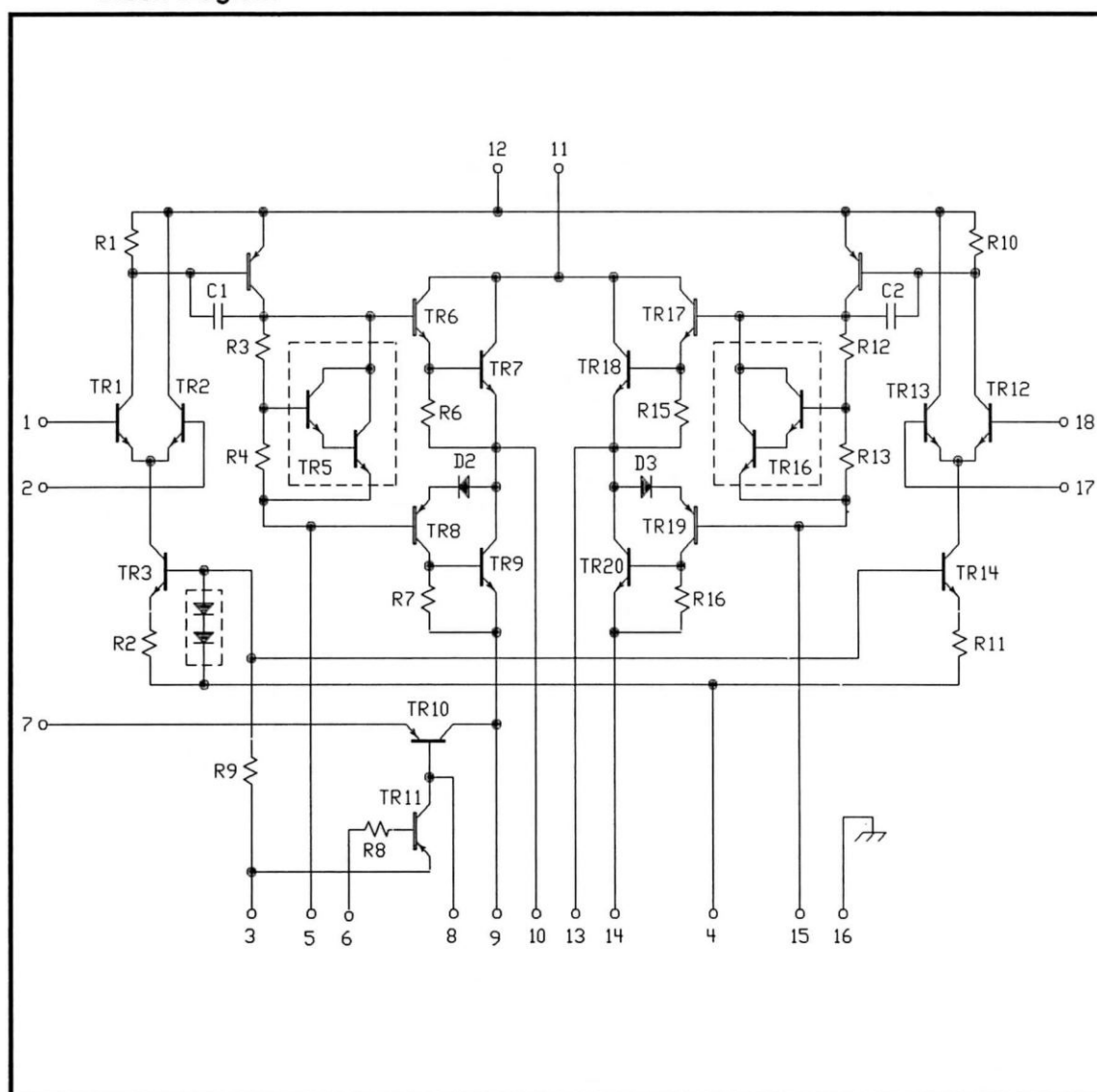
STK4142II

2- CHANNEL 25W MIN AF POWER AMPLIFIER (DUAL SUPPLIES)

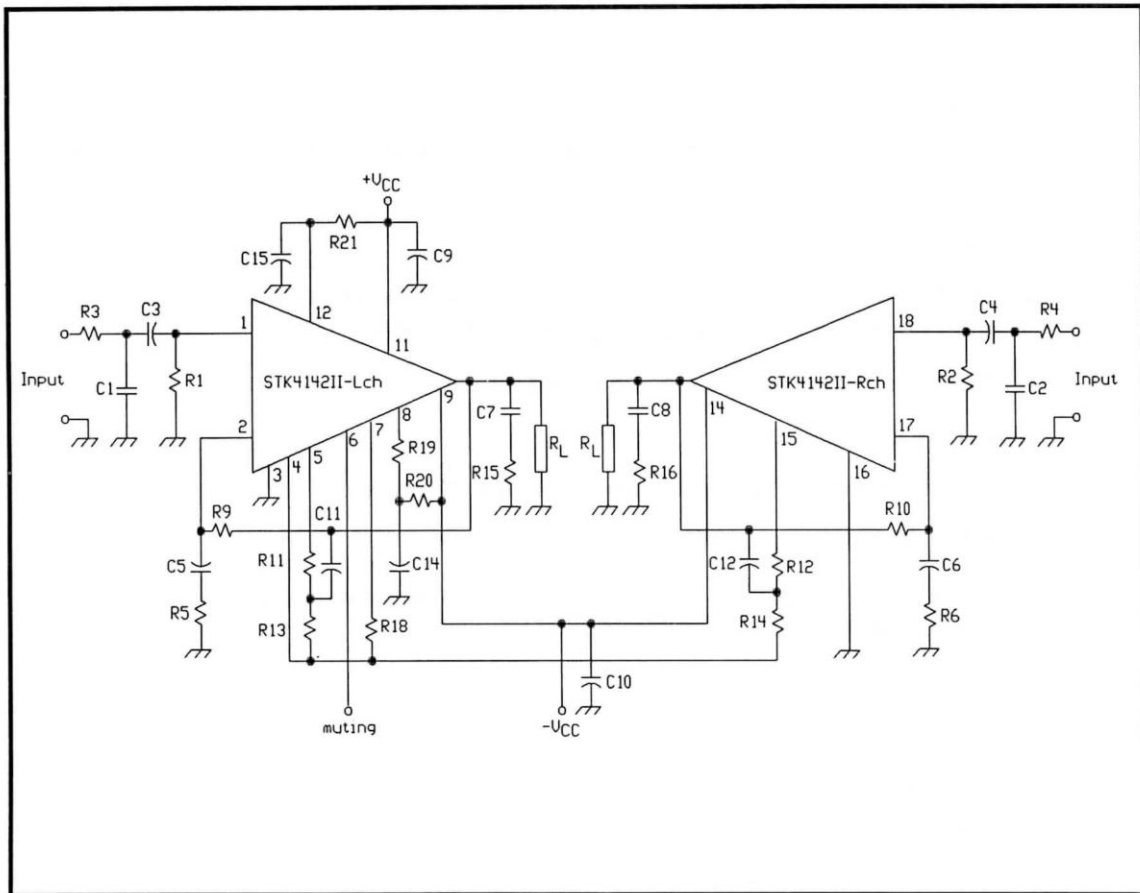
Features

- The STK4102II series (STK4142II) and STK4101V series (high-grade type) are pin-compatible in the output range of 6W to 50W.
- Small-sized package whose pin assignment is the same as that of the STK4101II series
- Built-in muting circuit to cut off various kinds of pop noise
- Greatly reduced heat sink due to case temperature 125°C guaranteed
- Excellent cost performance

Block Diagram



Description of External Parts



C1,C2: Input filter capacitors

- A filter formed with R3 or R4 can be used to reduce noise at high frequencies.

C3, C4: Input coupling capacitors

- Used to block DC current. When the reactance of the capacitor increases at low frequencies, the dependence of $1/f$ noise on signal source resistance causes the output noise to worsen. It is better to decrease the reactance.
- To reduce the pop noise at the time of application of power, it is effective to increase C3, C4 that fix the time constant on the input side and to decrease C5, C6 on the NF side.

C5, C6: NF capacitors

- These capacitors fix the low cut off frequency as shown below.

$$f_L = \frac{1}{2\pi \cdot C5 \cdot R5} \text{ Hz}$$

To provide the desired voltage gain at low frequencies, it is better to increase C5. However, do not increase C5 more than needed because the pop noise level becomes higher at the time of application of power.

C15: Decoupling capacitor

	● Used to eliminate the ripple components that mix into the input side from the power line (+V_{CC})
C11, C12:	Bootstrap capacitors ● When the capacitor value is decreased, the distortion is liable to be higher at low frequencies.
C9, C10:	Oscillation blocking capacitors ● Must be inserted as close to the IC power supply pins as possible so that the power supply impedance is decreased to operate the IC stably. ● Electrolytic capacitors are recommended for C9, C10.
C14:	Capacitor for ripple filter ● Capacitor for the TR10-used ripple filter in the IC system
C7:	Oscillation blocking capacitor ● A polyester film capacitor, being excellent in temperature characteristic, frequency characteristic, is recommended for C7.
R3, R4:	Resistors for input filter
R1, R2:	Input bias resistors ● Used to bias the input pin potential to zero. These resistors fix the input impedance practically.
R5, R9:	These resistors fix voltage gain VG.
(R6, R10):	It is recommended to use R5 (R6) = 560Ω, R9 (R10) = 56kΩ for VG = 40dB. ● To adjust VG, it is desirable to change R5 (or R6) ● When R5 (or R6) is changed to adjust VG, R1 (= R2) = R9 (= R10) must be set to ensure V_N balance.
R11, R13:	Bootstrap resistors
(R12, R14):	The quiescent current is set by these resistors 2.2kΩ + 2.2kΩ. It is recommended to use this resistor value.
R21:	Resistor for ripple filter ● (Limiting resistor for predriver TR at the time of load short)
R18:	Used to ensure plus/minus balance at the time of clip.
R19, R20:	Resistor for ripple filter ● When muting TR11 is turned ON, current flows from ground to -V_{CC} through TR11. It is recommended to use 1kΩ (1/2W) + 1kΩ(1/2W) allowing for the power that may be dissipated on that occasion.
R15, R16:	Oscillation blocking resistors

FM/AM IF + MPX IC

- IM/AM IF + MPX contained on a single chip.
- Fewer external parts.
- Tuning indicator.
- Low voltage operation available.
- Less MPX carrier leak (No input, monaural input mode).
- Less malfunction of stereo indicator (Overmodulation mode).
- Same as above.

The diagram shows the internal architecture of the LA1805 integrated circuit. It includes a variety of functional blocks such as amplifiers, detectors, mixers, and control logic. The components are interconnected via a network of lines, with specific pins (1-24) designated for input, output, and ground connections. The label 'LA1805' is positioned in the lower right corner of the diagram.

FM FRONT END WITH AFC DIODE

- Contains RF amp, MIX, OSC, AFC diode.
- Operating voltage: 1.8 to 8. OV.
- Improvement in cross modulation characteristic due to the use of double balance MIX.
- Improvement in strong input characteristic.
- Minimum number of external parts required.
- Less spurious radiation from local OSC.

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BA6208

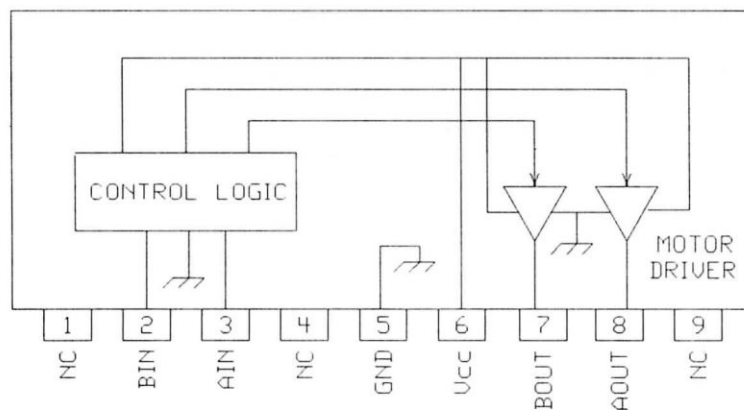
DRIVER FOR MOTORS WITH REVERSIBLE BRUSHES

BA6208 provides an output current up to 0.5A.

Features

- The surge-absorbing diode incorporated.
(Surge current: 500mA max. 10ms duty cycle 1/10)
- Low stand-by current ("L" for both inputs A and B).
- Wide operating voltage range (4.5 to 15V).
- Can be driven with TTL.
- The quiescent current in the IC, excepting motor current, is 0.4mA or less when inputs to both A and B are in the LL output-open mode. Please note that power consumption increase as 22mA (Typ) in the normal or reverse mode, and 33mA (Typ) in the braking mode.

Block Diagram



Truth Table

A IN	B IN	A OUT	B OUT
H	H	L	L
H	L	H	L
L	H	L	H
L	L	OPEN	OPEN

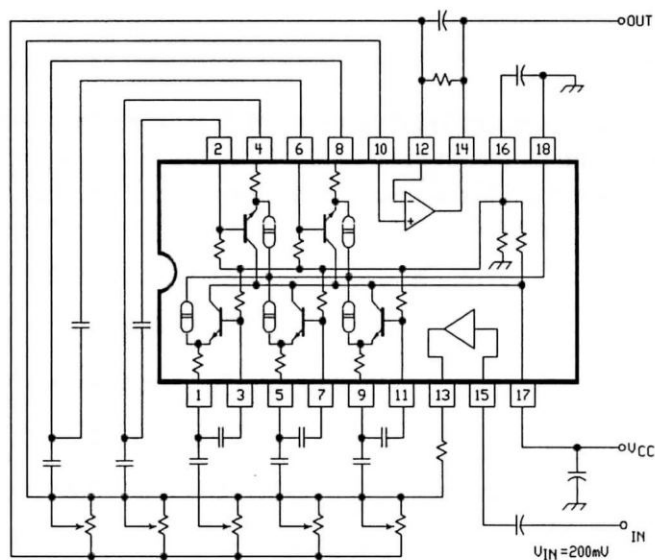
BA3812L

5 POINT GRAPHIC EQUALIZER LF18pin

Functions

The BA3812L is a monolithic IC consisting of a 5-point graphic equalizer including 5-unit tone controller circuits and an input/output buffer amplifier in a single package of LF18pin. It has accomplished low distortion (0.01%), low noise ($5\mu\text{V}$) and has a wide dynamic range ($V_{OM} \sim 2.1V/V_{CC} \sim 8V$).

Block Diagram & External Circuit Diagram



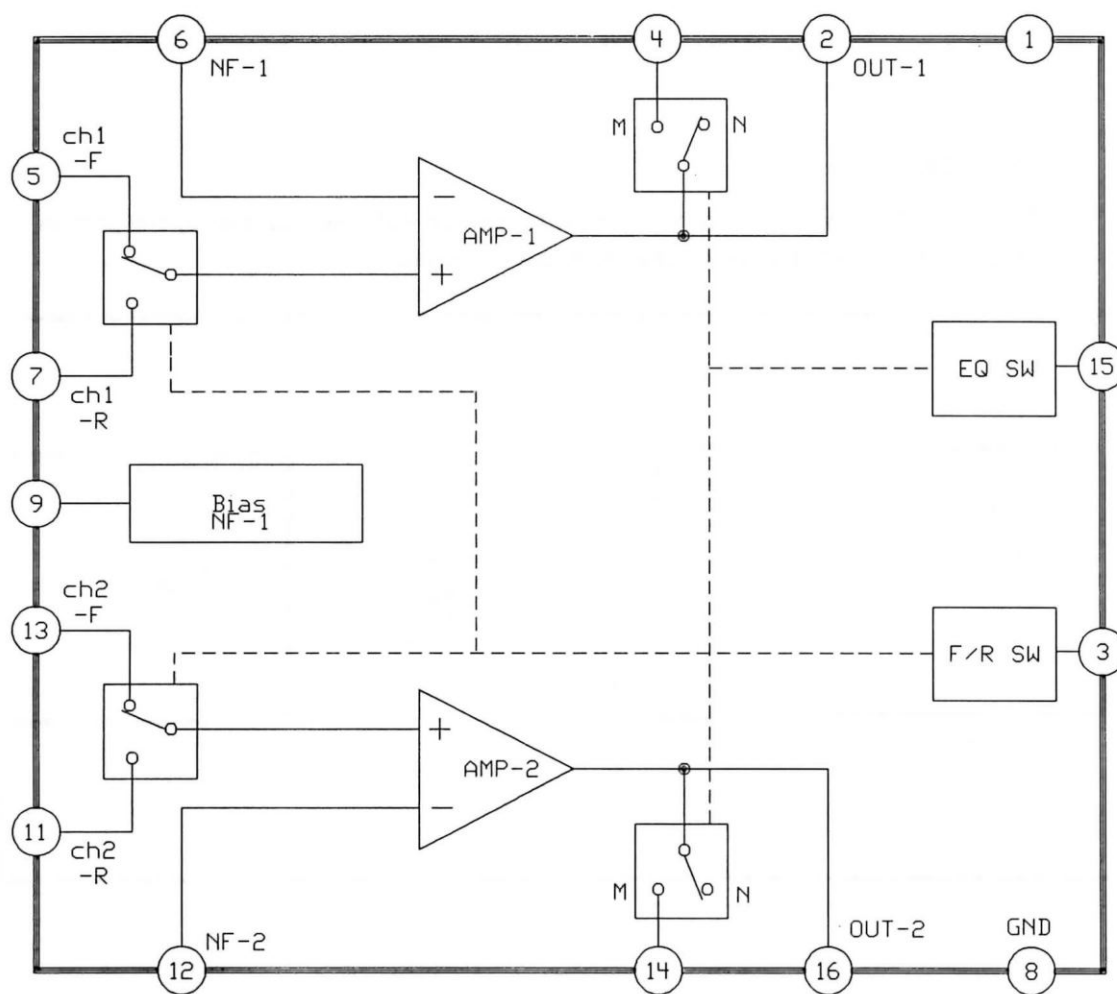
TA7784P

DUAL PREAMPLIFIER FOR AUTOREVERSE

TA7784P is a dual preamplifier, developed for auto-reversing or double-cassette-type radio/cassette recorders.

It incorporates two preamplifiers fitted with electronic switches for shifting input terminals. It is most suitable for switching between forward and reverse in autoreversing mode, or for switching between tape 1 and tape 2 on double-cassette recorders.

Block Diagram



USAGE INFORMATION

FORWARD/REVERSE SELECT SWITCH

1. Threshold Voltage Pin 3 is coupled to the base of Q_1 (PNP-Tr) as shown Fig. 1.
Threshold voltage

Reverse	0 ~ 0.3V
Forward	1.1 ~ V_{CC}

2. The recommended Forward/Reverse select circuit is shown in Fig. 2.

3. I_3 (In Fig. 1)

$I_3 = 12\mu\text{A}$ (Max.) ($T_a = 25^\circ\text{C}$)

EQUALIZER CONTROL SWITCH

Pin 15 coupled to the base of Q2 (PNP-Tr) as shown Fig. 3.

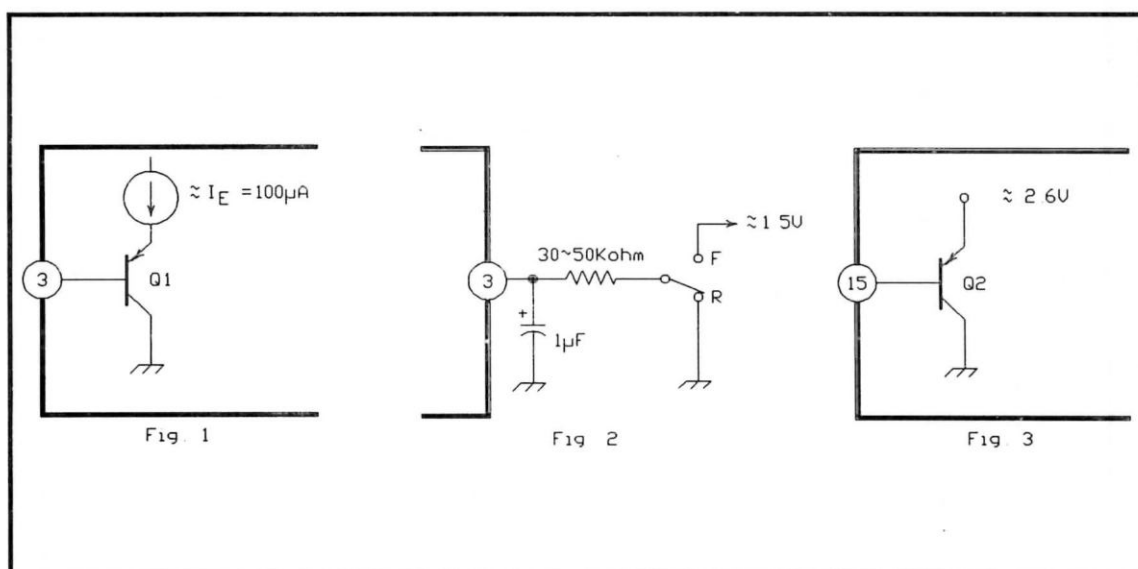
The emitter potential of Q2 is 2.6Vdc.

Threshold voltage

Metal	$1.9 \sim V_{CC}$
Normal	$0 \sim 1.2\text{V}$

$C_2/C_3/C_4/C_5$

Capacitor $C_2 \sim C_5$ may be required for preventing a instability caused by the pattern layout or interference of external high frequency signal.



LC 7821

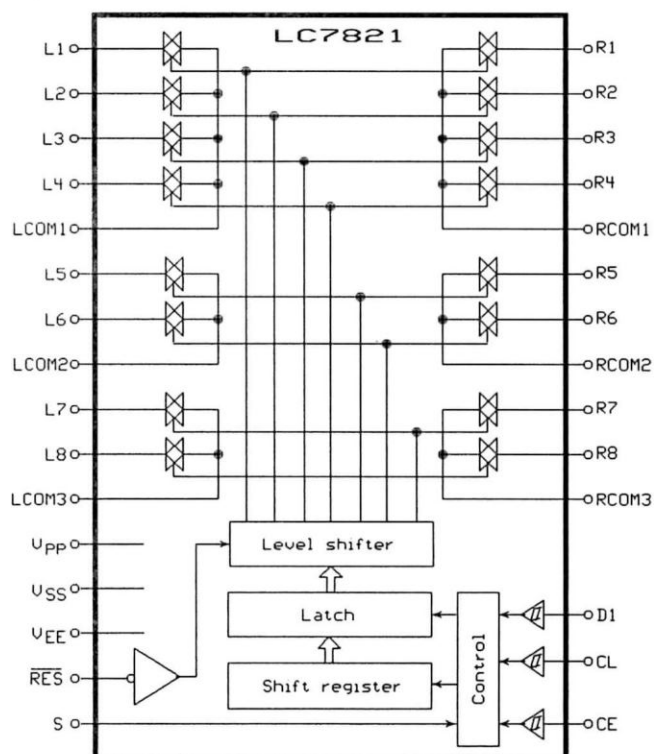
ANALOG FUNCTION SWITCH

Serial data-controlled function select switch suited for use in amplifier receivers.

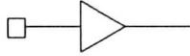
Features

- Analog switches of 8 channels x 2 are contains three types are available according to the internal connection.
- Control is exercised by serial data. The LC7821 may be intend with a microcomputer (5V-operated) easily.
- Even if two ICs of the same type are used, they may be connected to common bus line because the S (selector) pin is provided.
- Reset pin used to turn OFF all analog switches
- Wide dynamic range because of $\pm 20V$ breakdown voltage

Block Diagram



Pin Description

Pin Name	I/O	Internal Equivalent Circuit	Function																					
VSS , VEE , VDD			Power supply pins																					
L ₁ to L ₈ , R ₁ to R ₈ , LCOM ₁ to LCOM ₄ RCOM ₁ to RCOM ₄	I	See Block Diagram	Input/output pins for analog switches																					
DI, CE, CL	I		Serial data input pins (Schmitt buffer) CL --- Clock input pin DI --- Data input pin CE --- Chip enable pin																					
	I		Select pin in the two ICs used mode When the S pin is brought to "L" or "H" level, the addresses will become as shown below <table border="1" data-bbox="923 659 1296 785"><tr><th rowspan="2">Type No</th><th rowspan="2">S Pin</th><th colspan="4">Address</th></tr><tr><th>A₀</th><th>A₁</th><th>A₂</th><th>A₃</th></tr><tr><td rowspan="2">LC7821</td><td>L</td><td>0</td><td>1</td><td>0</td><td>1</td></tr><tr><td>H</td><td>1</td><td>1</td><td>0</td><td>1</td></tr></table>	Type No	S Pin	Address				A ₀	A ₁	A ₂	A ₃	LC7821	L	0	1	0	1	H	1	1	0	1
Type No	S Pin	Address																						
		A ₀	A ₁	A ₂	A ₃																			
LC7821	L	0	1	0	1																			
	H	1	1	0	1																			
	I		Reset pin When power is applied, the state of the analog switches will be indeterminate When this pin is brought to "L" level, all analog switches will be turned OFF																					

TA8135P

DUAL RECORDING PREAMPLIFIER WITH ALC

TA8135P is a dual recording amplifier that includes a high-quality ALC (Auto Level Control) circuit.

Provided with an input selection SW and a recording Muting Circuit.

Built-in 2 channels.

Quality ALC circuit

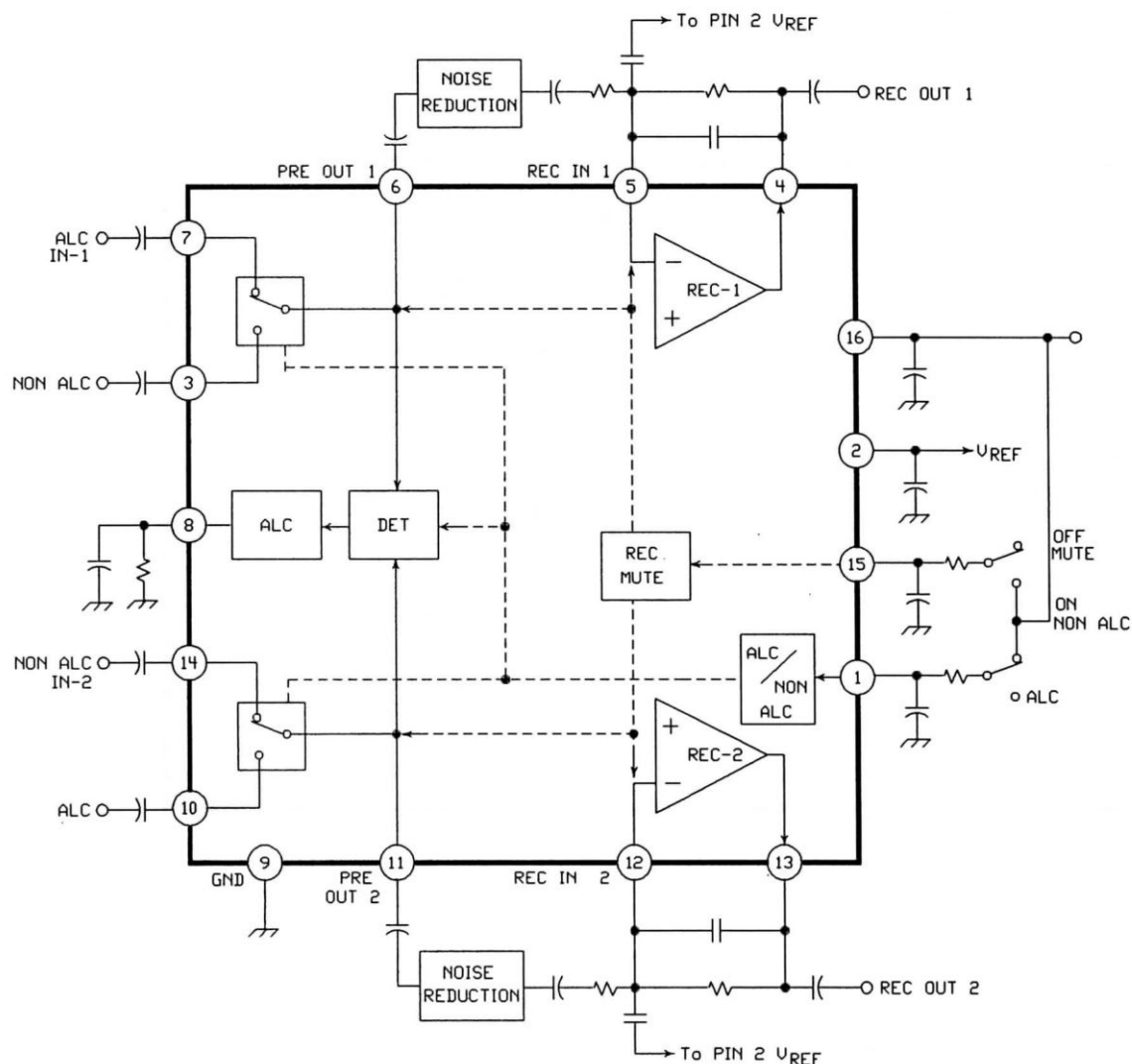
Attack time = 7.8msec (Typ.)

Recovery time = 94 sec. (Typ.)

Low-distortion Recording Amplifier

THD = -81dB (0.009%) (Typ.)

Block Diagram



CXA1101

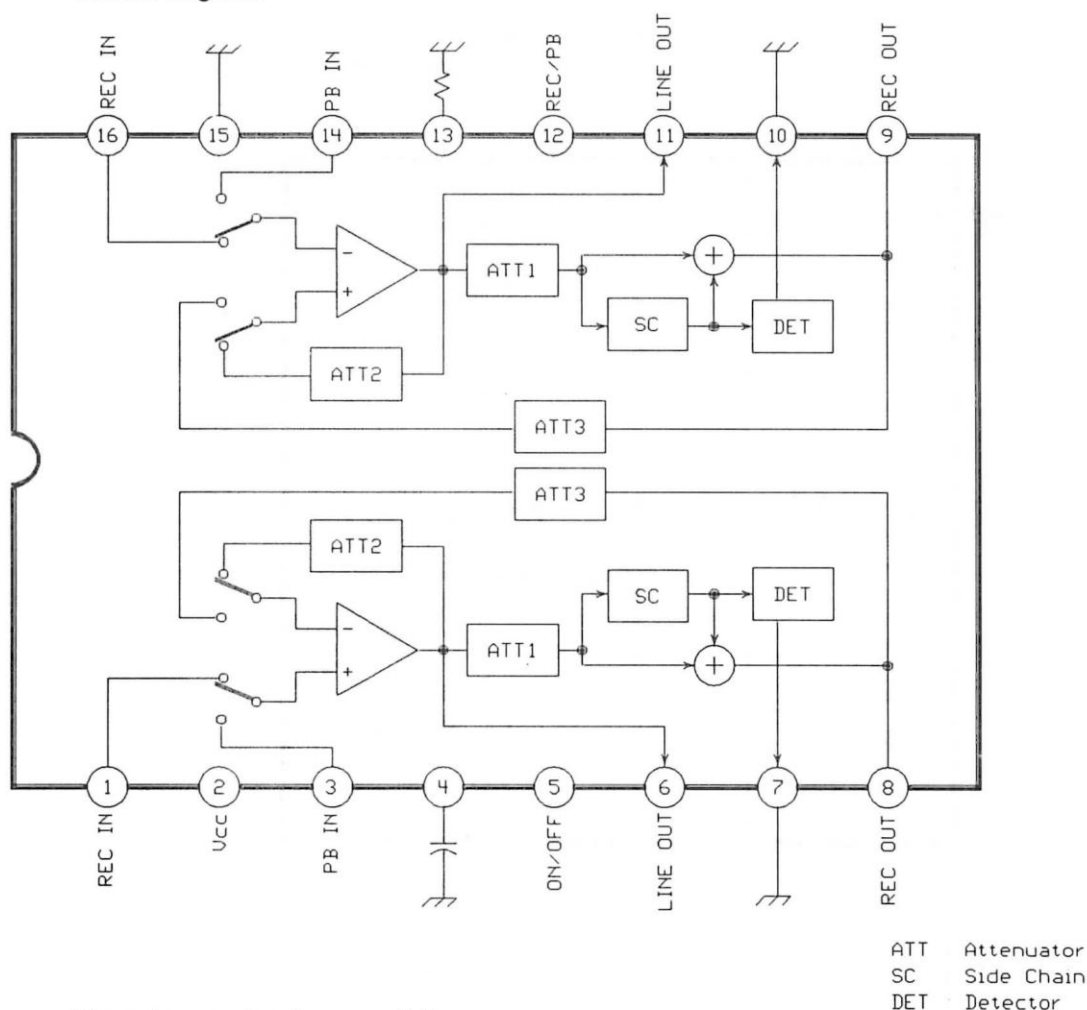
DOLBY* B TYPE NOISE REDUCTION SYSTEM

The CXA1101 is IC including two separate Dolby B type noise reduction processors. Seven devices with four Dolby levels and two types of package are provided for various applications. These devices feature very few external components, which is achieved by integrated filter circuits using integrated thin film capacitors with high capacitance.

Features

- Minimum number of external components.
- NR ON/OFF and REC/PB switches included.
- Small package (DIP16, MFP16).
- Small supply current ($\approx 5.5\text{mA}$ Typ.).
- Dual channel processors in one chip.

Block Diagram



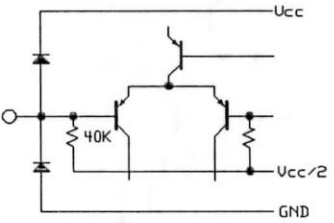
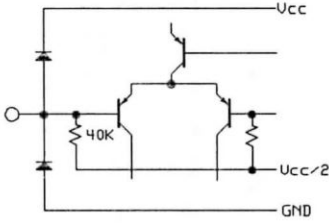
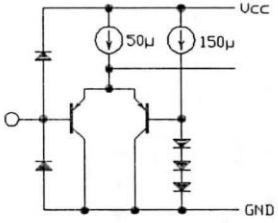
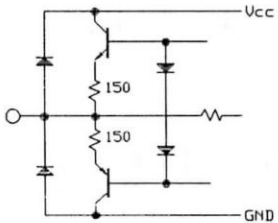
The reference levels are as follows:

Recording output level (= Dolby level) -10 DBm (245 mVRMS)

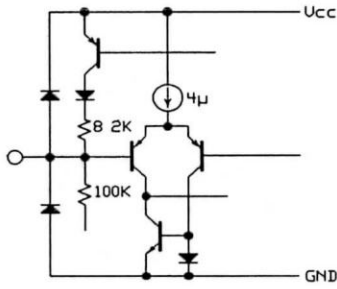
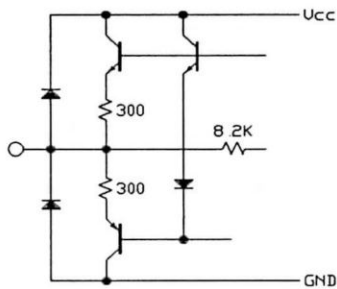
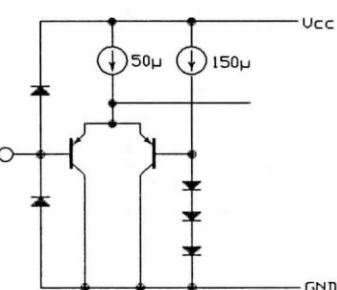
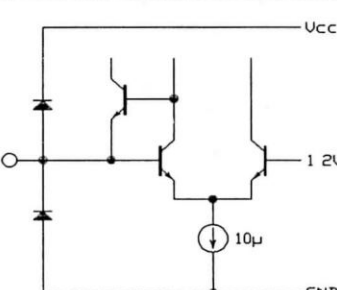
Line output level -3 DBm (548 mVRMS)

Description

$T_a = 25^\circ\text{C}$, $U_{CC} = 12\text{V}$ (Single supply), No signal

No.	Symbol	Z (in)	UDC	Equivalent Circuit	Description
1, 16	REC IN	40 Kohm	6.0V		Recording (Encode) input
2	U_{CC}	—	12.0V		
3, 14	PB IN	40 Kohm	6.0V		Playback (Decode) input
4	$U_{CC}/2$	1 Kohm	6.0V		Single Supply $\rightarrow U_{CC}/2$ Single Supply $\rightarrow$ Ground
5	ON/OFF	—	—		Mode control pin for NR ON/OFF "H" $\rightarrow$ NR OFF "L" $\rightarrow$ NR ON
6, 11	LINE OUT	—	6.0V		Line (Decode) output

Continued from preceding page

No.	Symbol	Z (in)	VDC	Equivalent Circuit	Description
7, 10	TC	—	0.3V		Time constant pin for level detector.
8, 9	REC OUT	—	6.0V		Recording (Encode) output
12	REC/PB	—	—		Mode control pin for REC/PB "H" → PB (Decode) "L" → REC (Encode)
13	IREF	—	1.2V		Reference current input pin for the active filters
15	GND	—	0V		Single Supply → Ground Split supply → VEE

Note

- These ICs are available only to the licenses of Dolby Laboratories Licensing Corporation from whom licensing and application information may be obtained.
- "Dolby" and double D symbols are trade marks of Dolby Laboratories Licensing Corporation.

CXP1001AQ

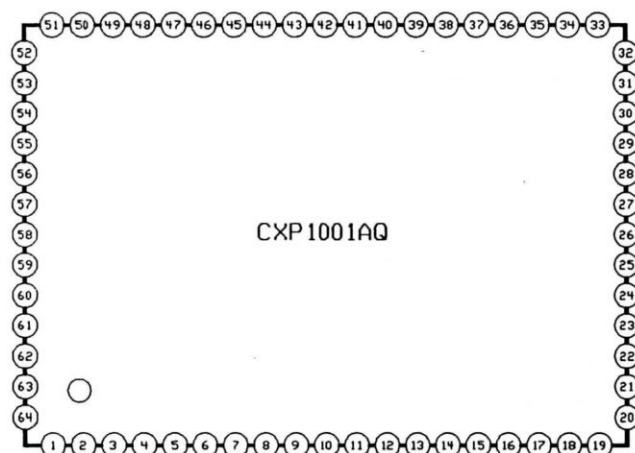
SYSTEM CONTROLLER FOR CD (COMPACT DISCPLAYER)

CXP1001AQ was developed as a system controller for CD to match the CD pick up and mechanism of Sony made AX-5. This IC was farmwared from CXP5024, the 4-bit 1 chip microcomputer of the SPC500 series. Various key inputs and the liquid crystal display (LCD) output make it most suitable for use in radio cassette and portable CD players.

Features

- Can be connected directly to an LSI for CD use
- Various key inputs available
- Key input pins with built-in pull up resistance can be directly connected
- Can directly drive liquid crystal display (LCD)
- Random memory play function up to 16 tunes
- Display function for remaining time
- Music search function
- Cue/review function
- Pause function
- Emphasis signal output
- Mute output
- Opening the CD player cover brings an automatic stop
- Built-in TEST mode makes CD player adjustment easy

Configuration and Description



No.	Symbol	I/O	Description	I/O type
1	—		OPEN	
2	MUTE	0	Mute output, mute ON at "H". Connect to CXD1130 MUTG (19)	Pull up resistance output
3, 4	—	I	Connect to Vss	
5	SCCK	0	Sub code 0 Read clock output Connect to 1130 SCCK (25)	3 state output
6, 7	—		OPEN	
8	SUB0	I	Sub code 0 Data input. Connect to CXD1130 SUB0 (23)	Schmitt inverter input
9	REMAIN	I	Connect remain (Time left) display select input KEY	Inverter input
10	OPEN	I	Connect CD player cover OPEN / CLOSE detection SW. Set to "L" for OPEN	
11	—		Connect to Vss	
12	FOK	I	Input indicating whether focus is set ON or not. Connect to CXA1081 FOK (28)	Inverter input
13	CUE	I	Connect ▷▷ KEY	
14	REV	I	Connect ◁◁ KEY	
15	MEMORY	I	Connect MEMORY KEY	
16	REPEAT	I	Connect REPEAT KEY	
17	PLAY	I	Connect ▷ / ◻◻ (PLAY/PAUSE) KEY	
18	STOP	I	Connect ◻ (STOP) KEY	
19	FFS	I	Connect ⌘ KEY	
20	FRS	I	Connect ⌘ KEY	

No.	Symbol	I/O	Description	I/O type
21	TEST	I	TEST mode input	Inverter input
22	—		Connect to VDD	
23	EMPHASIS	0	At "H" when output emphasis is ON. Connect to analog audio system	3 state output
24	SENS	I	SENS input (various types of system monitor) pin Connected to SENT (18) of CXD1130 and (18) of CXA1082	Inverter input
25	Vss		VSS pin	
26	—	I	VDD pin	
27	XRST	0	System reset output Connected to XRST (16) of CXD1130 and (22) of CXA1082	3 state output
28	CLK	0	System control clock output Connected to CLK (13) of CXD1130 and (25) of CXA1082	
29	XLT	0	System control latch output Connected to XLT (14) of CXD1130 and (24) of CXA1082	
30	DATA	0	System control data output Connected to DATA (15) of CXD1130 and (23) of CXA1082	
31 to 50	SEG19 to SEG0	0	For liquid crystal display (LCD) drive output (Segment) display pattern, see appendix	Segment output
51	—		OPEN	
52 to 54	COM2 to COM0	0	For liquid crystal display (LCD) drive output (Common) display pattern, see appendix	Segment output
55 to 57	VLC1 to VLC3		Bias power supply pin for (LCD) liquid crystal	
58	VDD		VDD pin	
59	VL		Bias power supply pin for (LCD) liquid crystal	
60	—		OPEN	
61	C4M	I	4 2336MHz clock input pin Connected to C4M (51) of CXD1130	Clock input
62	RESET	I	Reset input	Reset
63	—		Connected to Vss	
64	SCOR	I	Sub code sync (SCOR) input Connected to SCOR (24) of CXD1130	Schmitt Inverter input

Input pin Equivalent Circuit

Inverter input	Schmitt inverter input	Reset input	Clock input
		Output pull-up resistor (P-ch Tr) N-ch Tr output Schmitt input	Incorporates an oscillation feedback resistor. In a CR oscillation mode serves as a schmitt inverter and also disconnects the feedback resistor.

Output pin equivalent circuit

Tri-state output	Pull-up resistor output	LCD segment signal output	LCD common signal output pins
	The output pull-up resistor has been made about 10Kohm in value (as it is CMOS pull-up output, the pull-up resistor becomes off when the output is L)	Input signals of the transfer gate have been controlled in advance to conform with the 1/3-bias format	Transfer gate output

AC Characteristics

Item	Symbol	Pin	Condition	Min	Max	Unit
System clock frequency	f_c	C4M	Fig 1	1	5	MHz
System clock input pulse width	t_{XL} t_{XH}	C4M	Fig 1 (External clock drive)	90		ns
System clock input rising and falling times	t_{CR} t_{CF}				200	ns
External interruption high and low level width	t_{IH} t_{IL}	SCOR		$t_{sys}+0.05$		μs
Reset input low level width	t_{RST}	RESET		$2t_{sys}$		μs

Note > $t_{sys}=8/f_c$

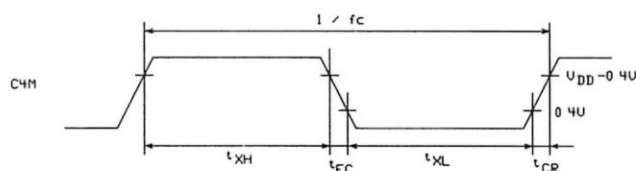


Fig 1 Clock timing

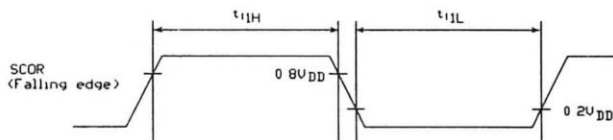


Fig 2 Interruption input timing

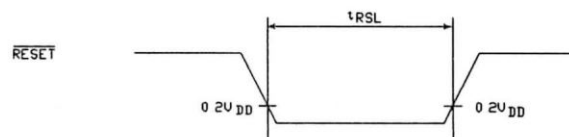


Fig 3 $\overline{RES}$ input timing

CXD1130Q

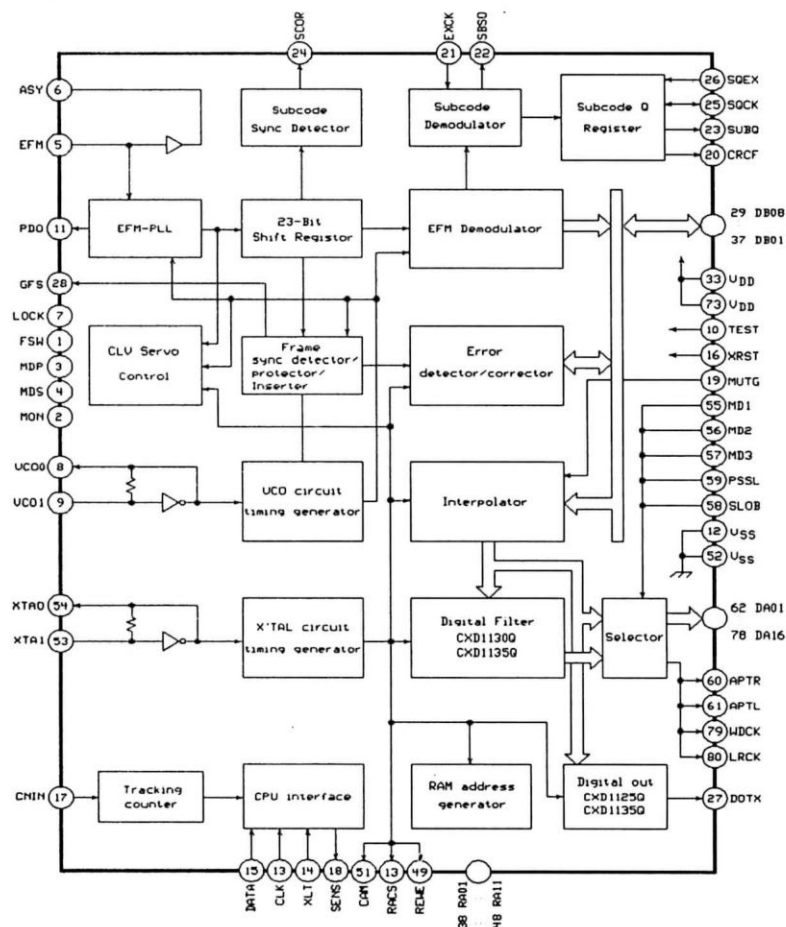
CD DIGITAL SIGNAL PROCESSOR

The CXD1130Q, digital signal processor is designed for compact disc player application.

Functions

- EFM - PLL circuit for bit clock regeneration
- EFM data demodulation
- Frame synchronous signal detection, protection, and insertion
- Powerful error detection and correction
- Compensation using mean value, prior value retention
- Subcode signal demodulation, subcode Q detection
- CLV servo for spindle motor
- 8-bit tracking counter
- CPU interface with serial bus
- Subcode Q register
- Digital filter (CXD1130Q, CXD1135Q)
- Output for digital audio interface

Block Diagram



Pin Description

NO.	SYMBOL	I/O	DESCRIPTION
1	FSW	0	Pin 1 output is switched constant when the output filter of the spindle motor is energized.
2	MON	0	ON/OFF control for spindle motor.
3	MDP	0	Spindle motor drive. Provides rough control during CLU-S mode and phase control during CLU-P mode.
4	MSD	0	Spindle motor drive. Controls speed during CLU-P mode.
5	EFM	I	EFM signal from RF amplifier.
6	ASY	0	Controls slice level of the EFM signal.
7	LOCK	0	The output of pin 7 reflects the status of the GFS signal which is sampled at WFC/16. When the GFS signal is "H", the output of pin 7 is also "H", but, when the signal has remained "L" for at least 8 samples, the output of pin 7 is "L".
8	UC00	0	When UC0 locks to EFM signal, the frequency becomes 8 6432 MHz.
9	UC01	I	UC0 input.
10	TEST	I	(0V)
11	PDO	0	The output of pin 11 provides phase comparison of EFM signal and UC0/2.
12	V _{SS}	-	GND (0V)
13	CLK	I	Pin 13 provides serial transmission clock from the CPU. Data is latched on the leading edge of the clock.
14	XLT	I	Pin 14 provides latch input from the CPU. 8-bit shift register data (serial data received from the CPU) is latched in each of the registers.
15	DATA	I	Serial data from the CPU.
16	XRST	I	System reset ("L")
17	CNIN	I	Tracking pulse input.
18	SENS	0	Output reflecting internal condition as designated by address.
19	MUTG	I	Muting input. MUTG is "L" when ATTM of internal register A is "L" (normal condition). MUTG is "H" when muting condition is set.
20	CRCF	0	Output the results CRC check of subcode Q.
21	EXCK	I	Clock input for subcode serial output.
22	SBSO	0	Serial output of subcode.
23	SUBQ	0	Output of subcode Q.
24	SCOR	0	Output of subcode sync S0+S1.
25	SQCK	I/O	Clock for reading subcode Q.
26	SQEX	I	Input for selecting SQCK (See page 28).
27	DOTX	0	Digital output ($\overline{\text{WFC}}$ is output when D0 is off or for the CXD1130Q).
28	GFS	0	Indicates the frame sync lock status.
29	DB08	I/O	Data pin for external RAM. DATA8 (MSB).
30	DB07	I/O	Data pin for external RAM. DATA7.
31	DB06	I/O	Data pin for external RAM. DATA6.
32	DB05	I/O	Data pin for external RAM. DATA5.
33	V _{DD}	-	Power supply (+5V).
34	DB04	I/O	Data pin for external RAM. DATA4.
35	DB03	I/O	Data pin for external RAM. DATA3.
36	DB02	I/O	Data pin for external RAM. DATA2.
37	DB01	I/O	Data pin for external RAM. DATA1 (LSB).
38	RA01	0	Output address of external RAM. ADDR01 (LSB).
39	RA02	0	Output address of external RAM. ADDR02.
40	RA03	0	Output address of external RAM. ADDR03.

Continued from preceding page

NO.	SYMBOL	I/O	DESCRIPTION
41	RA04	O	Output address of external RAM ADDR04
42	RA05	O	Output address of external RAM ADDR05
43	RA06	O	Output address of external RAM ADDR06
44	RA07	O	Output address of external RAM ADDR07
45	RA08	O	Output address of external RAM ADDR08
46	RA09	O	Output address of external RAM ADDR09
47	RA10	O	Output address of external RAM ADDR10
48	RA11	O	Output address of external RAM ADDR11 (MSB)
49	RAWE	O	Writes enable output signal to external RAM. (Active when "L")
50	RACS	O	Chip select output signal to external RAM. (Active when "L")
51	C4M	O	Divider output for crystal $f = 4\ 2336\text{MHz}$
52	V _{SS}	-	GND (0V)
53	XTAI	I	Input to crystal oscillator circuit Depending on the mode the frequency is either $f = 8\ 4672$ or $16\ 9344\text{MHz}$
54	XTA0	O	Output from crystal oscillator circuit Depending on the mode the frequency is either $f = 8\ 4672$ or $16\ 9344\text{MHz}$
55	MD1	I	Mode selection input 1
56	MD2	I	Mode selection input 2
57	MD3	I	Mode selection input 3
58	PL0B	I	Code switch input for audio data output 2's complement output when "L", offset binary output when "H"
59	PSSL	I	Code switch input for audio data output Serial output when "L", parallel output when "H"
60	APTR	O	Control output for aperture compensation "H" during R-ch
61	APTL	O	Control output for aperture compensation "H" during L-ch
62	DA01	O	DA01 (LSB of parallel audio data) is output when PSSL = "H" C1F1 is output when PSSL="L"
63	DA02	O	DA02 is output when PSSL = "H" C1F2 is output when PSSL="L"
64	DA03	O	DA03 is output when PSSL = "H" C2F1 is output when PSSL="L"
65	DA04	O	DA04 is output when PSSL = "H" C2F2 is output when PSSL="L"
66	DA05	O	DA05 is output when PSSL = "H" C2FL is output when PSSL="L"
67	DA06	O	DA06 is output when PSSL = "H" C2P0 is output when PSSL="L"
68	DA07	O	DA07 is output when PSSL = "H" RFCK is output when PSSL="L"
69	DA08	O	DA08 is output when PSSL = "H" WFCK is output when PSSL="L"
70	DA09	O	DA09 is output when PSSL = "H" $\overline{\text{PLCK}}$ is output when PSSL="L"
71	DA10	O	DA10 is output when PSSL = "H" UGFS is output when PSSL="L"
72	DA11	O	DA11 is output when PSSL = "H" GTOP is output when PSSL="L"
73	V _{DD}	-	Power supply (+5V)
74	DA12	O	DA12 is output when PSSL = "H" RA0U is output when PSSL="L"
75	DA13	O	DA13 is output when PSSL = "H" C4LR is output when PSSL="L"
76	DA14	O	DA14 is output when PSSL = "H" $\overline{\text{C2I0}}$ is output when PSSL="L"
77	DA15	O	DA15 is output when PSSL = "H" C2I0 is output when PSSL="L"
78	DA16	O	DA16 (MSB of parallel audio data) is output when PSSL = "H" DATA is output when PSSL="L"
79	UDCK	O	Strobe signal output Output is 176 4KHz when DF is on Output is 88 2KHz when DF is off or when the chip being used is CXD112500
80	LRCK	O	Strobe signal output Output is 88 2KHz when DF is on Output is 44 1KHz when DF is off or when the chip being used is CXD112500

CXA1081M

RF AMPLIFIER FOR CD PLAYER

The CXA1081 is an RF signal processing IC for three-spot optical pick-up used in compact disc players. It consists of various signal processing circuits for RF, Focus Error and Tracking Error amplifiers. It is also used for Focus OK detection; Mirror detection, Defect detection and EFM (Eight to Fourteen Modulation) comparators.

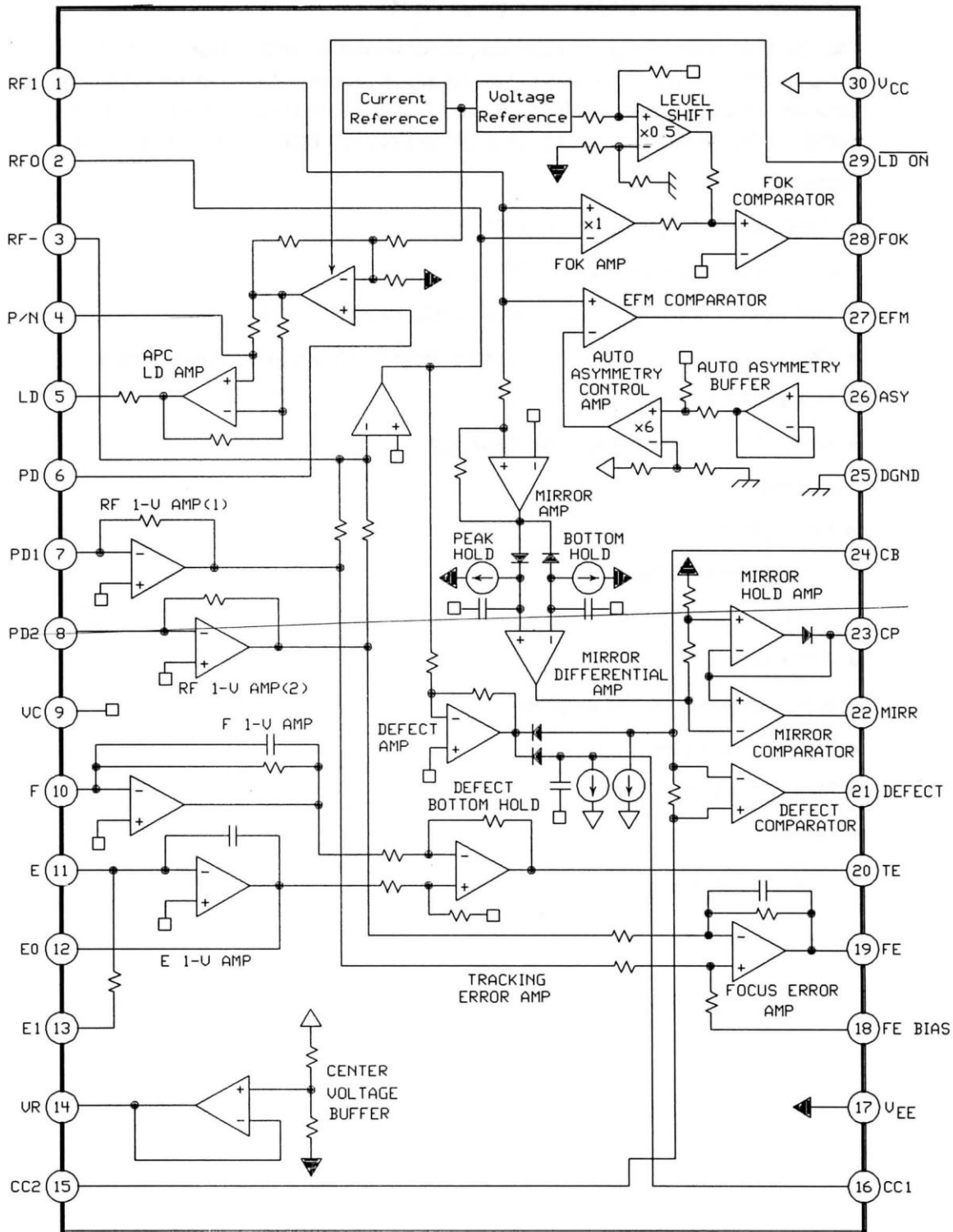
Features

- Single power supply operation +5V
Dual power supply operation + -5V
- Low power consumption (100 mW at + -5V, 50 mW at +5V)
- Contains APC circuit allowing the use of both P-sub and N-sub laser diodes.
- Few external components
- Disc defect detection circuit for playability

Functions

- RF amplifier
- Focus error amplifier
- Tracking error amplifier
- APC circuit
- Auto asymmetry control amplifier
- Focus OK detector
- Mirror detector
- Defect detector
- EFM comparator

Block Diagram & Pin Configuration



Pin Description & Equivalent Circuit

No	Symbol	I/O	DC Vol (U)	Equivalent Circuit	Description
1	RFI	I	0		Input pin with coupling capacitor where the RF summing amplifier output is connection
2	RFO	O	V_{RFO}		Output pin of RF summing amplifier and check point of the eye pattern
3	RF-	I	0		Feedback input pin of the RF summing amplifier
4	P/N	I	0 (UC)		Switching input pin of the LD P-sub/N-sub (DC voltage at N-sub)
5	LD	O	-1.8		Output pin of the APC LD amplifier DC DC voltage at N-sub and pin 6 open
6	PD	I	0		Input pin of the APC PD amplifier (DC voltage: Open)
7	PD1	I	0		Inversion input pin of the RF I-U amplifier (1), with the pin photo diode of A and C connected
8	PD2	I	0		Inversion input pin of the RF I-U amplifier (2), with the pin photo diode of B and D connected
9	UC	-	0		For dual power supply GND For single power supply UR (pin 14)
10	F	I	0		Inversion input pin of the F I-U amplifier, with the pin photo diode of F connected

Continued from preceding page

No	Symbol	I/O	DC Vol (V)	Equivalent Circuit	Description
11	E	I	0		Inversion input pin of the E I-U amplifier, with the pin photo diode of E connection.
12	EO	O	0		Output pin of the E I-U amplifier.
13	EI	I	0		Feedback input pin of the E I-U amplifier. For gain adjustment of the E I-U amplifier.
20	TE	O	V_{TEO}		Output pin of the tracking error amplifier.
14	UR	O	V_{CUO}		Output pin of $(V_{CC} + V_{EE})/2$ DC voltage.
15	CC2	I	1 0		Input pin (with coupling capacitor) where the Defect bottom-hold output is connecting.
16	CC1	O	1 2		Output pin of the Defect bottom hold.
21	DEFECT	O	V_{DFCTL}		Output pin of the defect comparator (DC voltage at 10Kohm load).
24	CB	I	0		Connection pin of the Defect bottom-hold capacitor.
17	V_{EE}	-	-2.5		For dual power supply Negative power supply For single power supply GND
18	FE BIAS	I	0		Non inverted Bias Pin of focus error amplifier. For CMR (Common Mode Rejection) adjustment of the focus error amplifier.
19	FE	O	V_{FEO}		Output pin of the focus error amplifier.

CXA1082AQ/AS

SERVO SIGNAL PROCESSOR FOR CD

The CXA1082AQ is a bipolar IC for the servo control of the compact disc player.

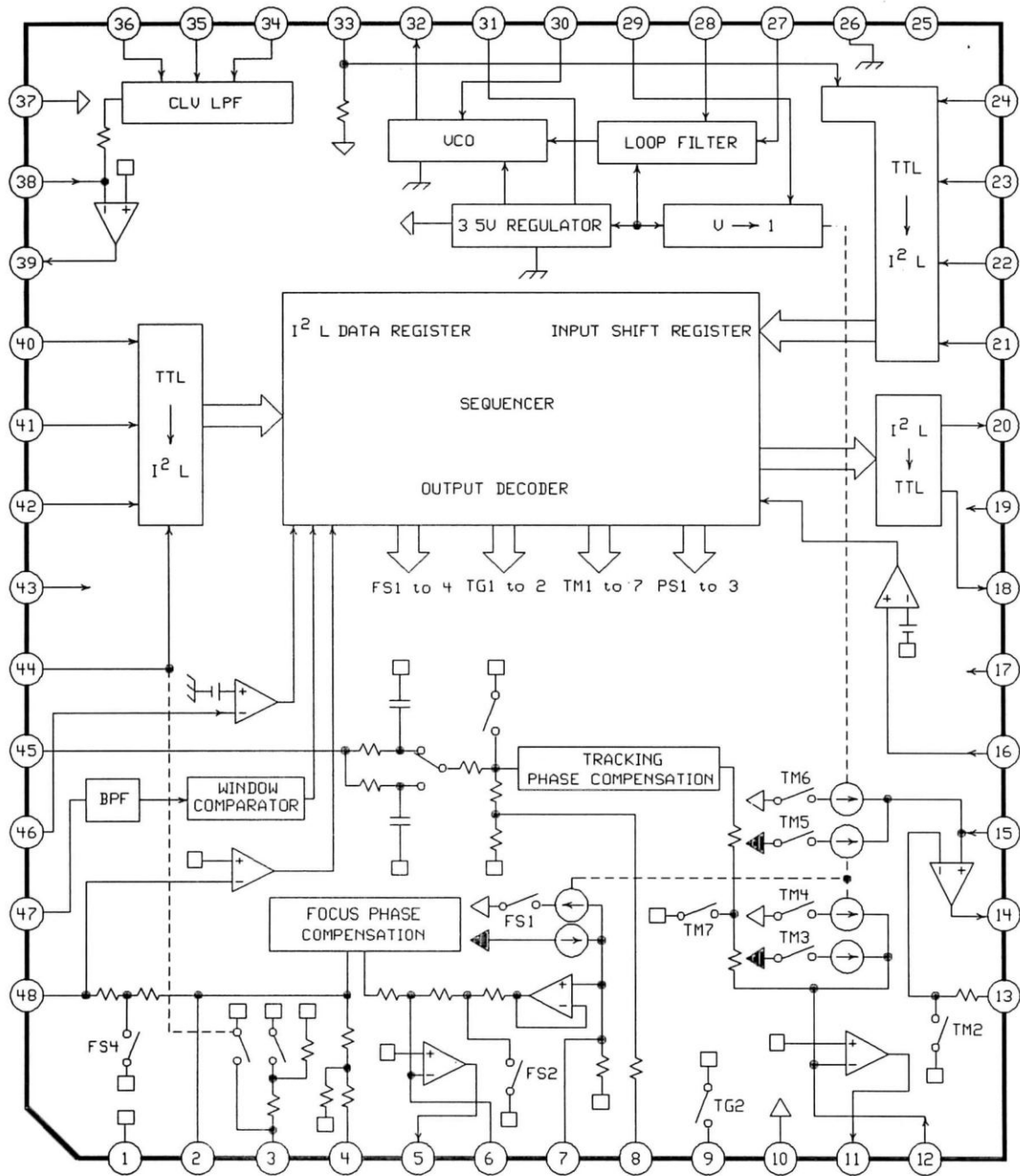
Features

- Single power supply, 5V
- Dual power supply, + -5V
- Low power consumption (165 mW Typ.: + -5V, 100mW, 5V)
- Servo functions same as the CX20108 (focus, tracking, and sled servo)
- Built-in auto sequencer
- Built-in LPF for spindle servo
- Built-in loop filter and VCO for EFM clock reproduction PLL
- Fewer external parts
- Built-in circuit for preventing sled runaway
- Built-in circuit for disc defects
- Built-in anti-shock circuit
- High-speed access using a linear motor
- The peaks of focus search, track jump, and sled kick pulse can be set with external resistors.

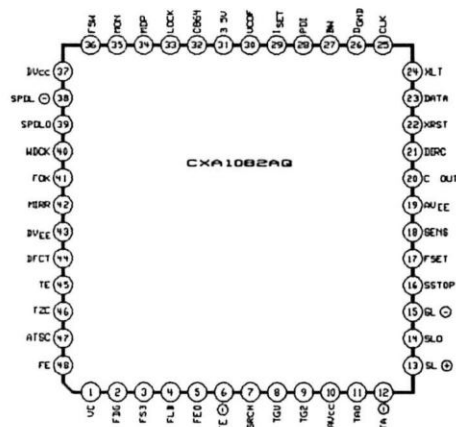
Functions

- Focus servo control
- Tracking servo control
- Sled servo control
- Spindle-servo LPF, drive amplifier
- EFM clock reproduction PLL Loop filter, 8.64 MHz VCO
- Auto sequencer Built-in RAM

Block Diagram



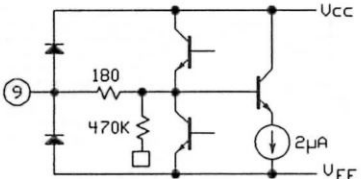
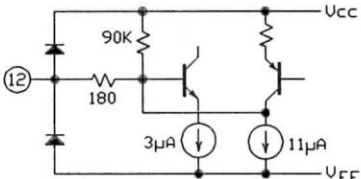
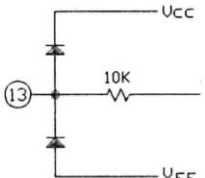
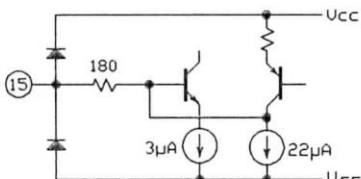
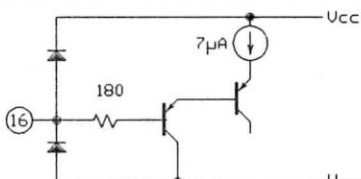
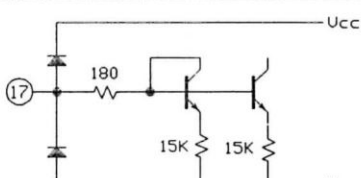
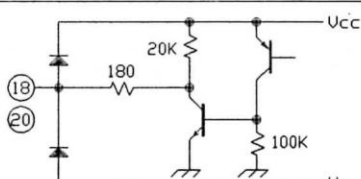
Pin Assignment



Pin Description

No.	Symbol	Equivalent Circuit	Description
2	FGD		Connect a capacitor between this pin and 3 (9) to reduce the high-frequency gain
3	FS3		The high-frequency gain of the focus servo can be change by switching FS3 ON or OFF
4	FLB		Time constant external pin for rising low bandwidth of the focus servc
5	FAO		Focus drive output
11	TAO		Tracking drive output
14	SLO		Sled drive output
39	SPDLO		Spindle drive output
6	FE -		Inverse input pin for the focus amplifiler
7	SRCH		Pin for providing a time constants to generate the focus search waveform
8	TGU		Pin for providing a time constants to switch the tracking gain of high-frequency

Continued from preceding page

No.	Symbol	Equivalent Circuit	Description
9	TG2		Pin for providing a time constants to change the high-frequency tracking gain.
12	TA -		Inverse input pin for the tracking amplifier
13	SL +		Non-inverse input pin for the sled amplifier
15	SL -		Inverse input pin for the sled amplifier
16	SSTOP		Pin for detecting a signal for the ON/OFF limit switch of the innermost part of the disc
17	FSET		Pin for setting the peak frequency of the focus, tracking phase compensation and f0 of the CLV LPF
18	SENS		Pin to output FZC, AS, TZC, SSTOP and BUSY by command from CPU
20	C OUT		Track number count signal output

Continued from preceding page

No	Symbol	Equivalent Circuit	Description
21	DIRC		Pin for on-track jump Contains a 47Kohm pull-up resistor
22	XRST		Reset input pin, reset at "L"
23	DATA		Serial data input from CPU
24	XLT		Latch input from CPU
25	CLK		Serial data transfer clock input from CPU
33	LOCK		Pin for the operation of the sled renaway prevention circuit at "L" Contains a 47Kohm pull-up resistor
27	BW		Pin for providing a time constant for the loop filter
28	PDI		Input pin for the CX23035/CXD1135 phase comparator output PDO
29	ISET		Current is input, determining the peaks of focus search, track jump, and sled kick
30	UCOF		The free-running frequency of UCO is almost proportional to the resistance value between this pin and pin 31 (37)
32	CB64		Output pin of 8.64MHz VCO
34	MDP		Pin for connecting the CX23035/CXD1135 MDP pin
35	MON		Pin for connecting the CX23035/CXD1135 MDP pin

Continued from preceding page

No.	Symbol	Equivalent Circuit	Description
36	FSW		Pin for providing an external LPF time constant of the CLV servo error signal.
38	SPDL-		Inverse input pin for the spindle drive amplifier.
40 41 42 43	WDCK FOK MIRR DFCT		Clock input for auto sequence, usually 88.2KHz is input FOK signal input pin Mirror signal input pin Defect signal input pin for the operation of the defect countermeasure circuit "H"
45	TE		Input pin for tracking error signals
46	T2C		Input pin for the zero-cross tracking comparator
47	ATSC		Input pin for window comparator for ATSC detection
48	FE		Input pin for focus error signals

CXK5816PN

2K-WORD X 8 BIT HIGH SPEED CMOS STATIC RAM

The CXK5816PN is a 16.384 bits high speed CMOS static RAM organized as 2.048 words by 8 bits and operates from a single 5V supply. The CXK5816PN is suitable for use in high speed and low power applications in which battery back up for nonvolatility is required.

Features

- High speed operation (Access time)

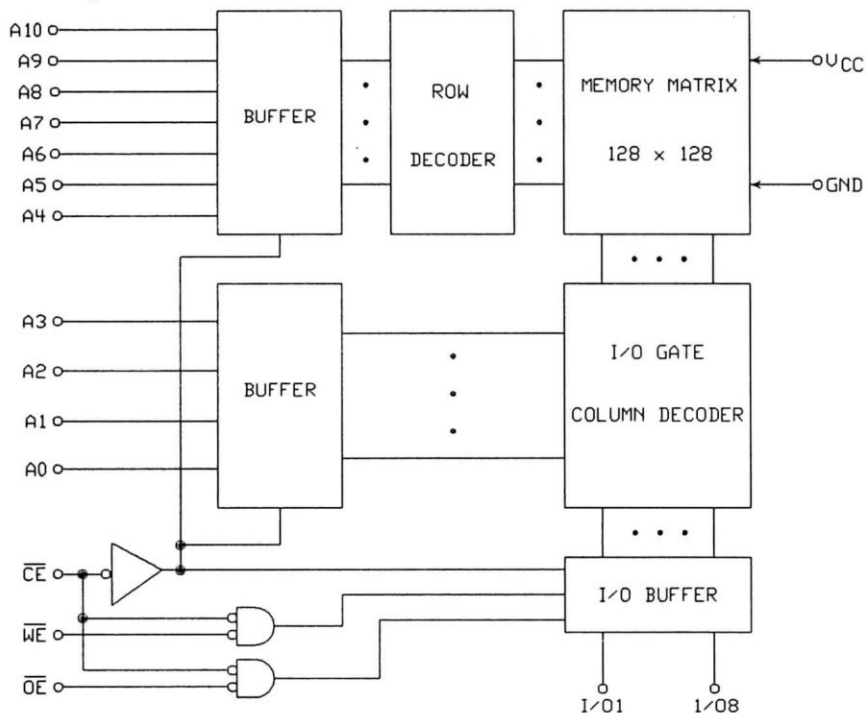
CXK5816PN-10. 10L	100ns (Max.)	
CXK5816PN-12. 12L	120ns (Max.)	
CXK5816PN-15. 15L	150ns (Max.)	
- Low power consumption (Stand-by) (Operation)

CXK5816PN-10. 12. 15	100 μ W(Typ.)	125mW(Typ.)
CXK5816PN-10L. 12L. 15L	5 μ W(Typ.)	125mW(Typ.)
- Single + 5V supply: 5V $\pm$ -10%
- Fully static memory No clock or timing strobe required
- Equal access and cycle time
- Common data input and output: three-state output
- Directly TTL compatible: All inputs and outputs
- Low voltage data retention: 2.0V (Min.)

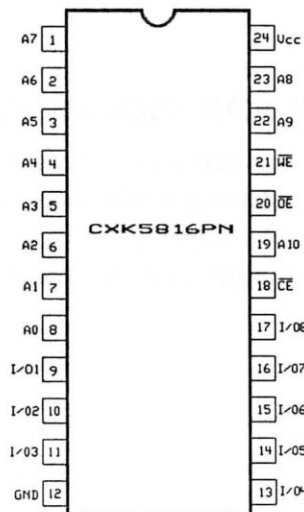
Function

2048-word x 8 bit static RAM

Block Diagram



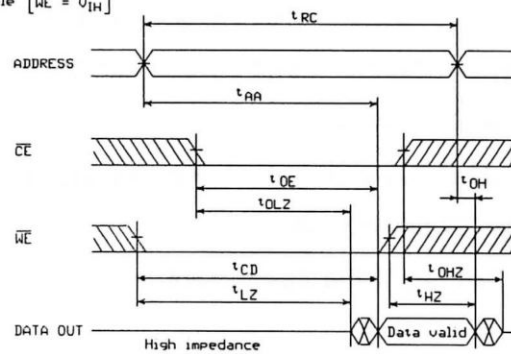
Pin Configuration & Pin Description



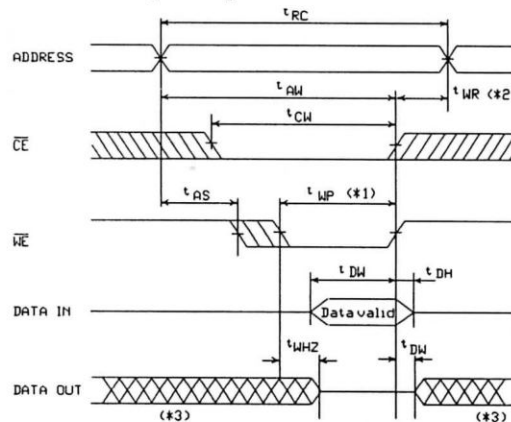
SYMBOL	DESCRIPTION
A0 to A10	ADDRESS INPUT
I/O1 to I/O8	DATA INPUT OUTPUT
CE	CHIP ENABLE INPUT
WE	WRITE ENABLE INPUT
OE	OUTPUT ENABLE INPUT
Vcc	+5V POWER SUPPLY
GND	GROUND

TIMING WAVEFORM

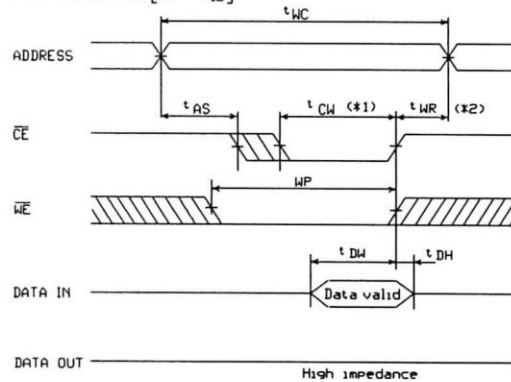
1. Read Cycle [$\overline{WE} = V_{IH}$]



2. Write Cycle (1) $\overline{WE}$ Control [$\overline{OE} = V_{IH}$]



3. Write Cycle (2) $\overline{CE}$ Control [$\overline{OE} = V_{IL}$]



LC7880, 7880M

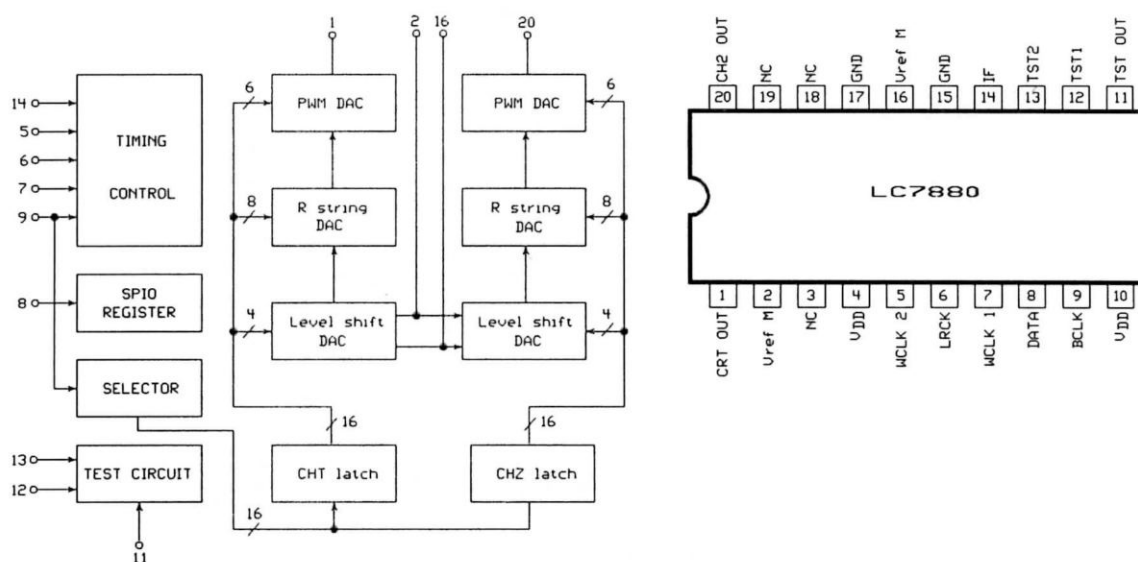
16-BIT D/A CONVERTER FOR DIGITAL AUDIO USE

The LC7880 16-bit CMOS D/A converter (DAC) uses dynamic level shift, combining resistance strings and pulse-width modulation (PWM) with level shifts. Two D/A conversion channels are built in, and the output to the right and left channels is in-phase, making this device ideal for digital audio application. Further, deglitching circuitry is not required.

Features

- Compatible with 2's complement code
- 2 D/A converter channels built in
- In-phase output to the CH1 and CH2
- 88.2kHz (max.) conversion frequency (with oversampling capability)
- Direct interface for Sanyo LC7860 DSP LSI for compact disc players
- No deglitch circuit required
- Si-gate CMOS process for low-power operation
- Single 5V power supply

Block Diagram & Pin Assignment



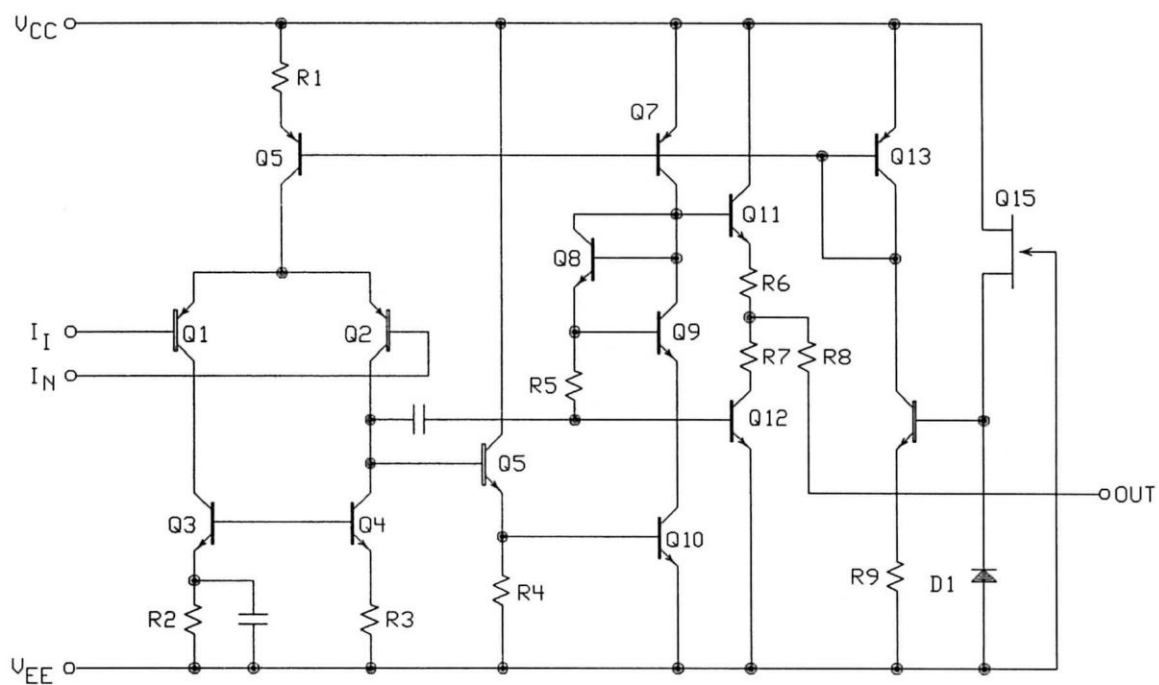
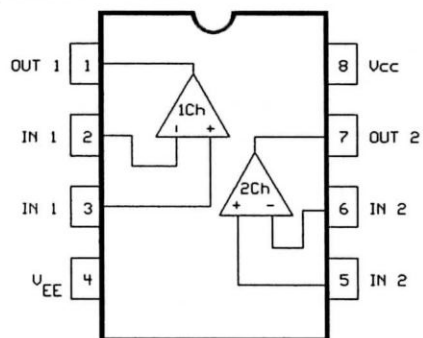
Pin Description

NO.	NAME	DESCRIPTION
1	CH1 OUT	CH1 OUT output pin (R-ch output when interfaced with LC7860)
2	UrefH	Reference Voltage "H" input pin
3	NC	No connection
4	V _{DD}	+5V power supply voltage
5	WCLK2	Word clock input #2 When IF in "L" level and WCLK2 goes LOW, an internal signal is generated that latches the data on the left digital audio channel When IF is "H" level, WCLK2 must be "L" level
6	LRCK	Left-right clock input When "H" level, shows that the digital audio input is on the left-channel, when "L" level, on the right-channel.
7	WCLK1	Word clock input #1 When IF in "L" level and WCLK1 goes "L" level, an internal signal is generated that latches the data on the right digital audio channel When IF is "H" level and WCLK1 goes "L" level, an internal signal is generated that latches the data on both the right and left digital audio channels
8	DATA	Digital audio data input When IF is "L" level, data is input in bit-serial format from the least significant bit (LSB) When IF is "H" level, data is input in bit-serial format from the most significant bit (MSB)
9	BCKL	Bit clock input pin Bit clock for reading in digital audio data in bit-serial format and the clock for the PWM DAC
10	V _{DD}	+5V power supply voltage
11	TSTOUT	Test output, normally open.
12	TST1	Test input, normally grounded
13	TST2	Test input, normally grounded
14	IF	Interface toggle Digital audio data is input LSB first when "L" level, and MSB when "H" level
15	GND	Ground
16	UrefL	Reference voltage "L" level input
17	GND	Ground
18&19	NC	No connection
20	CH2OUT	CH2OUT output pin

BA4558F-BA4558

DUAL OPERATIONAL AMPLIFIER

Block Diagram & Equivalent Circuit

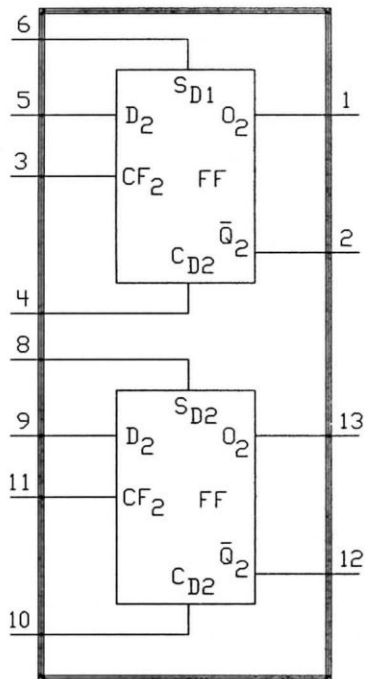


HEF4013B

DUAL D-TYPE FLIP-FLOP

The HEF4013B is a dual D-type flip-flop which features independent set direct (S_D), clear direct (C_D), clock inputs (CP) and outputs ($0, \bar{0}$). Data is accepted when CP is LOW and transferred to the output on the positive-going edge of the clock. The active HIGH asynchronous clear-direct (C_D) and set-direct (S_D) are independent and override the D or CP inputs. The outputs are buffered for best system performance. Schmitt-trigger action in the clock input makes the circuit highly tolerant to slower clock rise and falltimes.

Functional Diagram & Function Tables

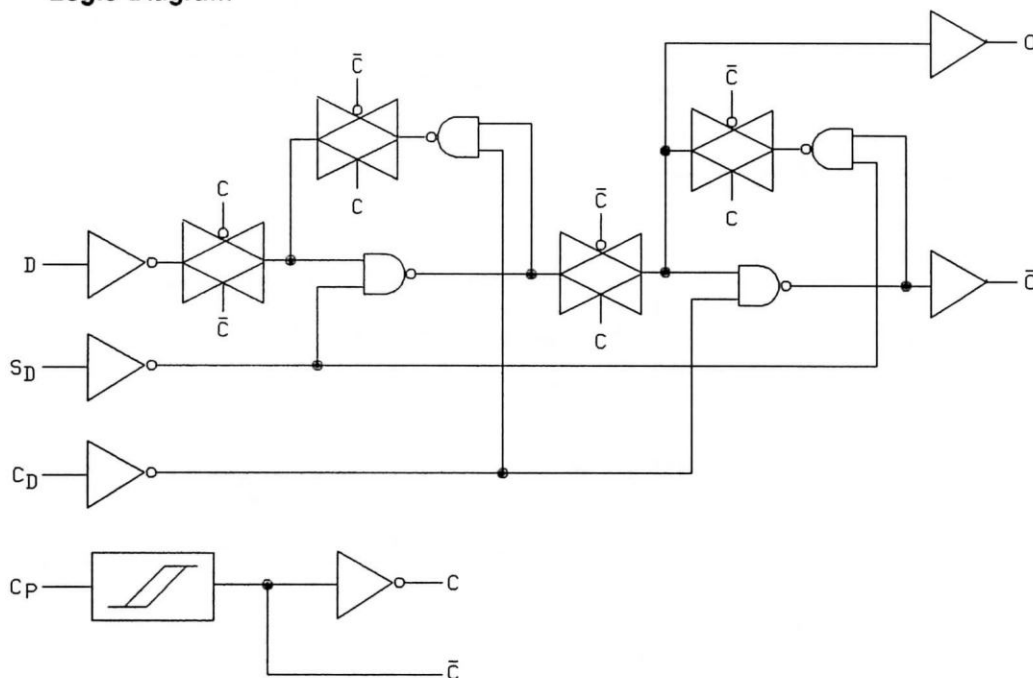


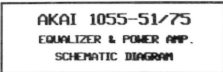
Inputs				output	
S_D	C_D	CP	D	O	$\bar{O}$
H	L	X	X	H	L
L	H	X	X	L	H
H	H	X	X	H	H

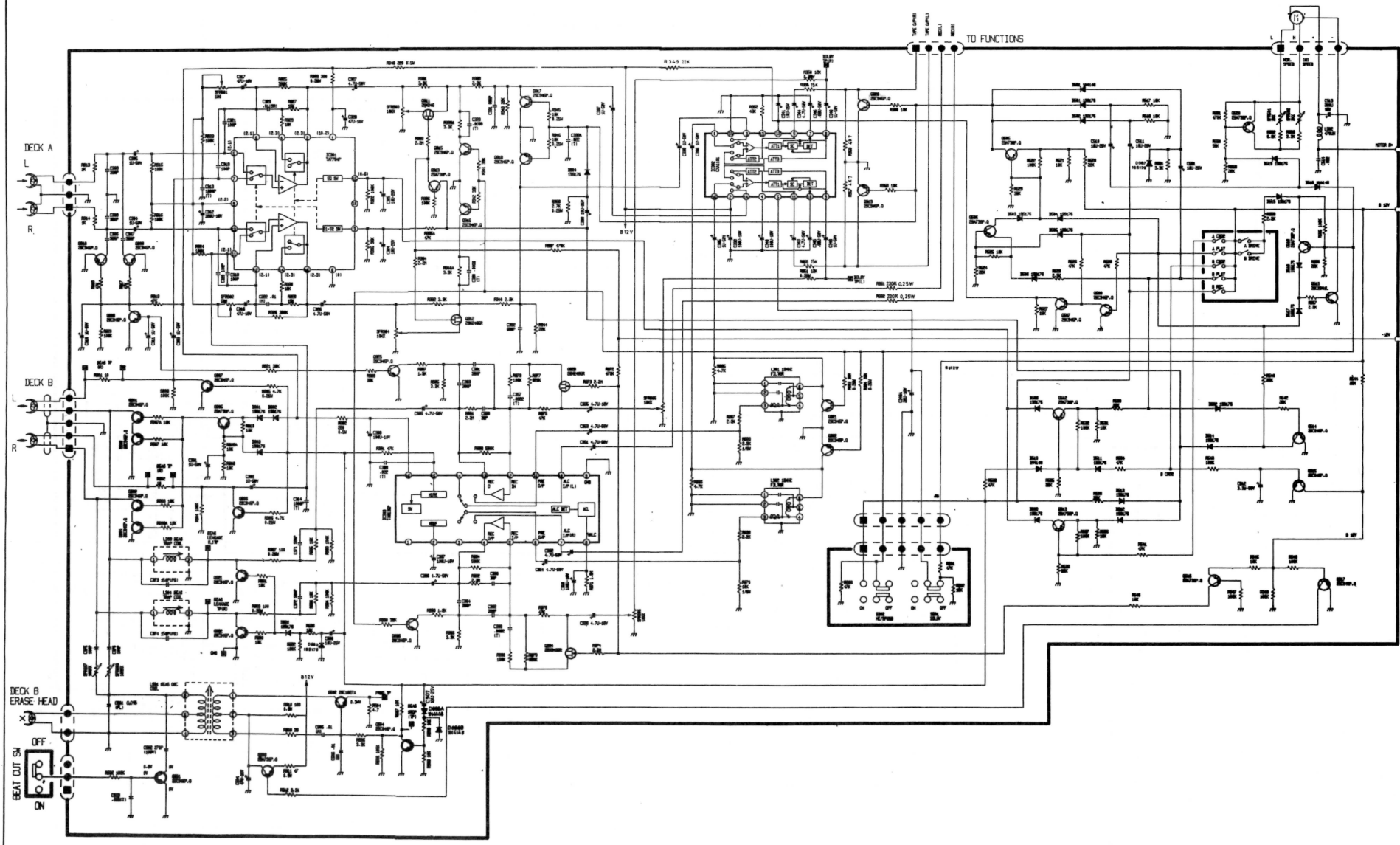
Inputs				output	
S_D	C_D	CP	D	O_{n+1}	$\bar{O}_{n+1}$
L	L	$\nearrow$	L	L	H
L	L	$\nearrow$	H	H	L

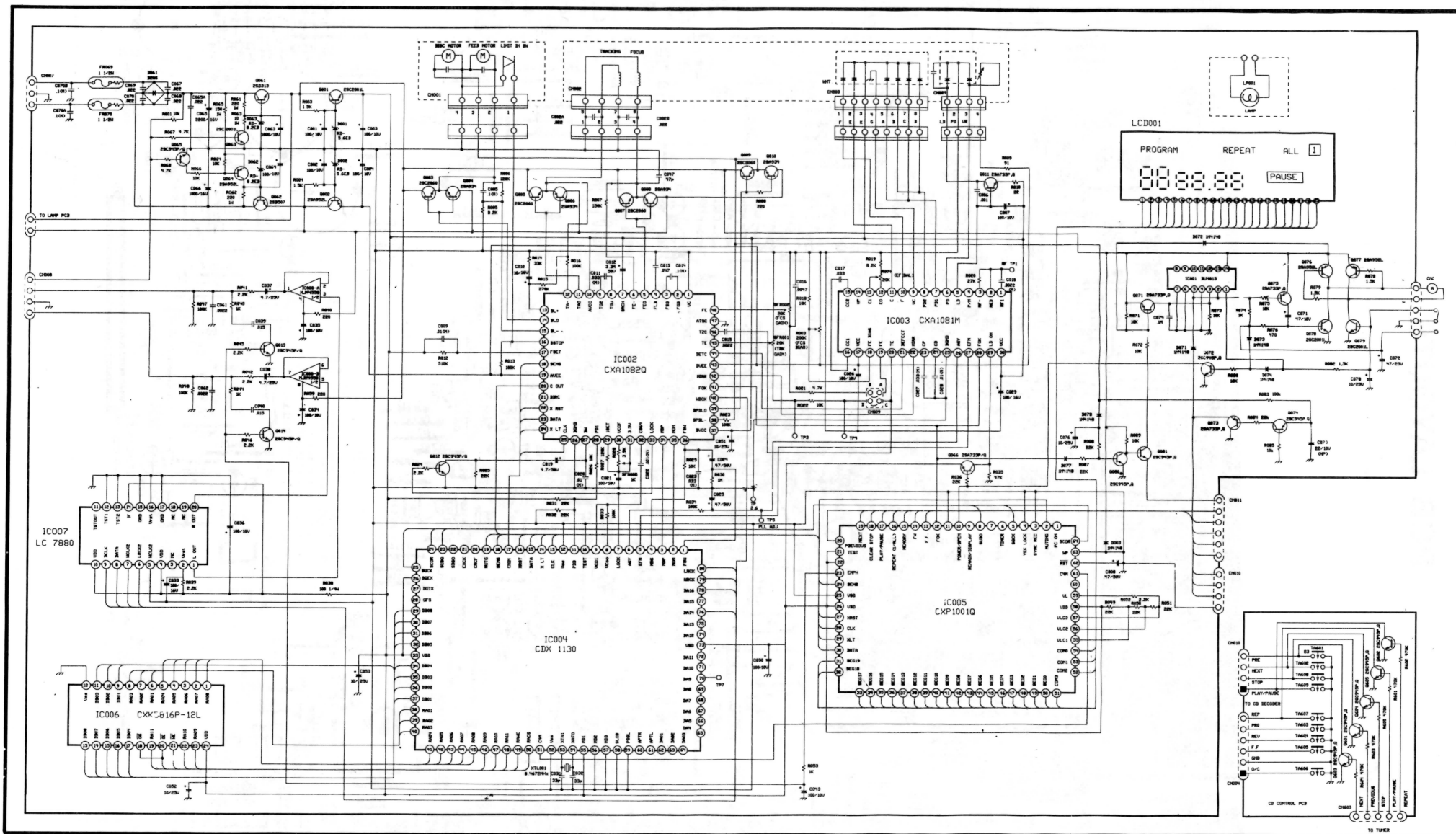
H : HIGH state (more positive voltage)
 L : LOW state (the less positive voltage)
 X : state is immaterial
 $\nearrow$: positive-going transition
 O_{n+1} : state after clock positive transition

Logic Diagram



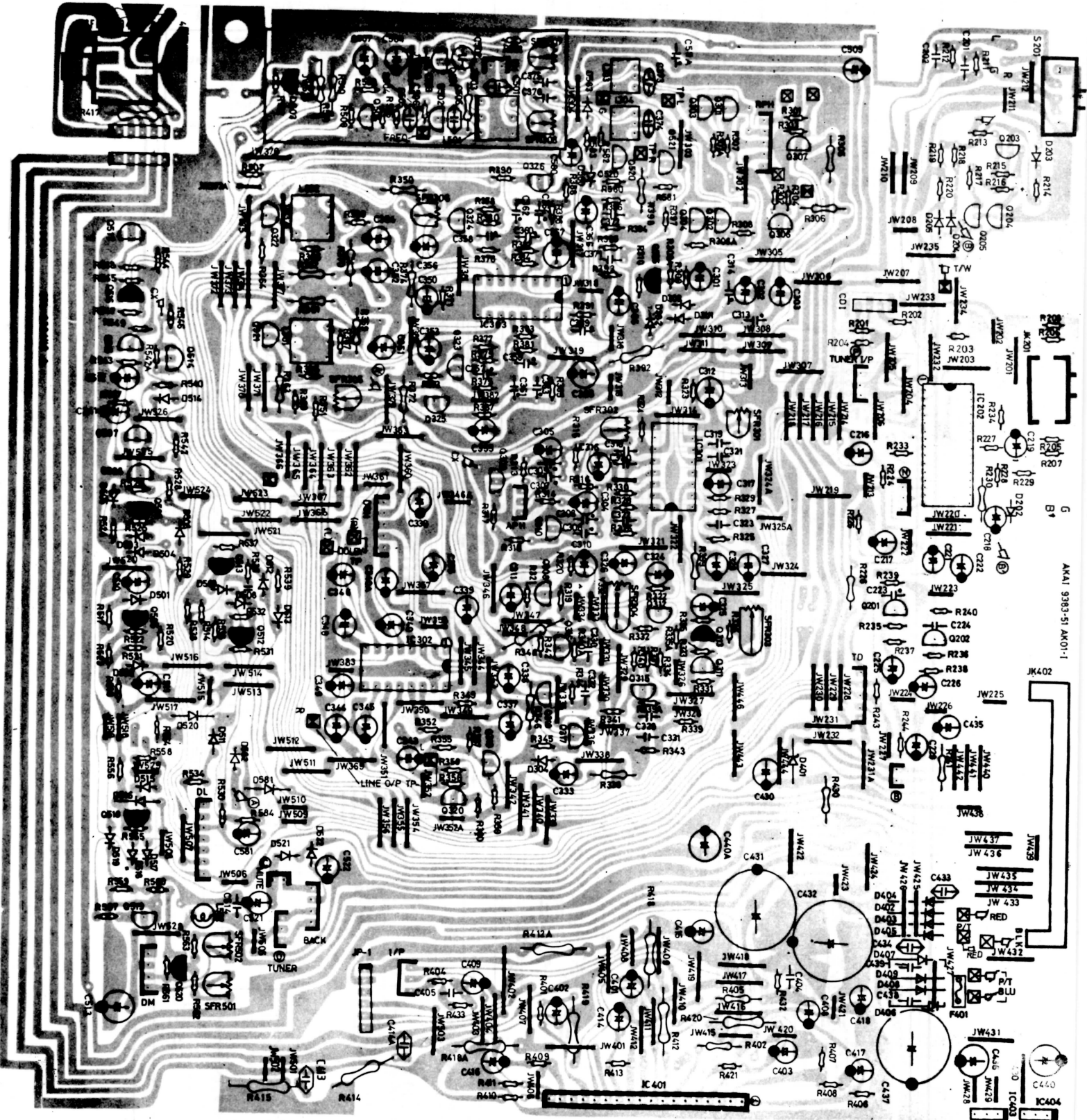




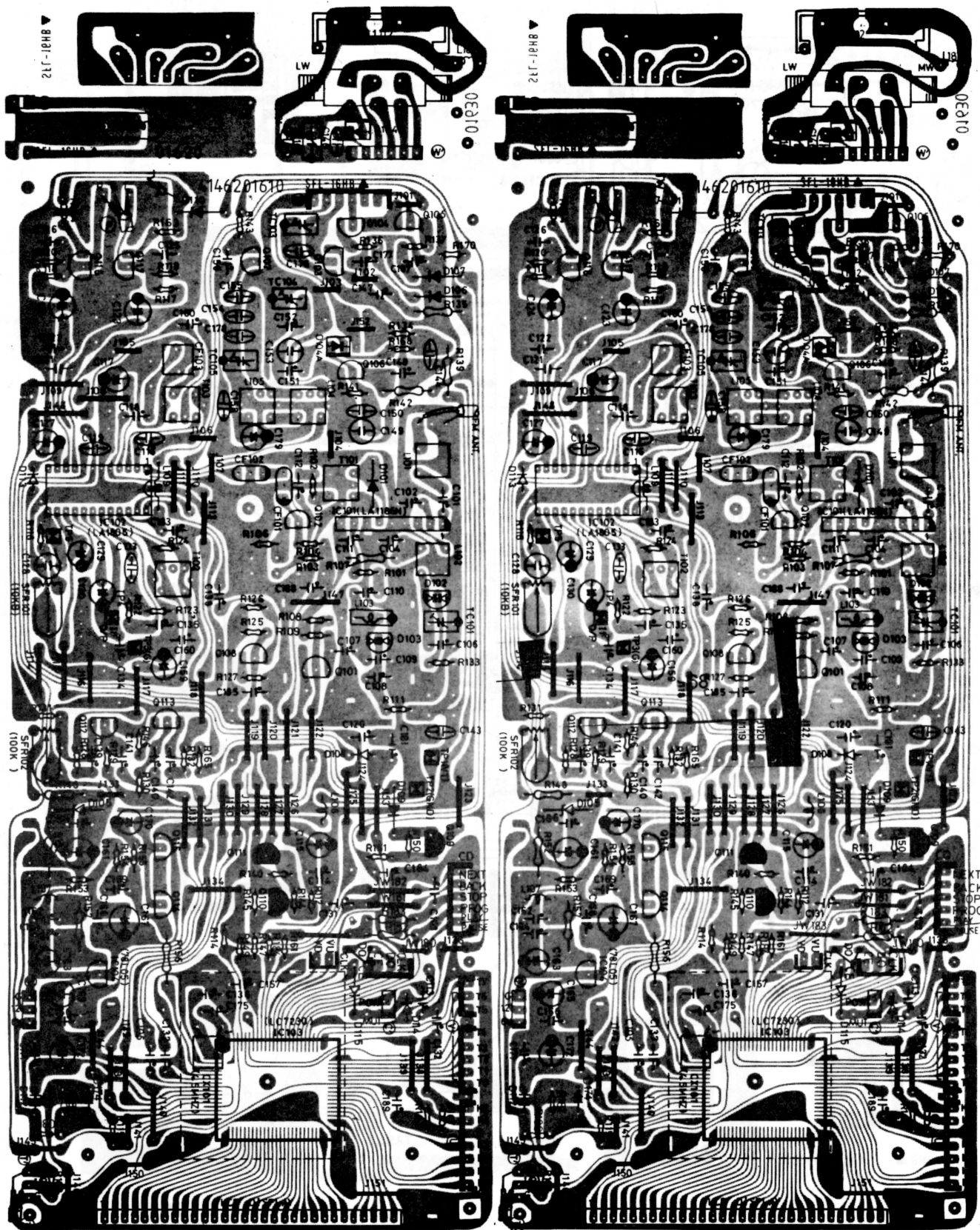


PCB LAYOUTS

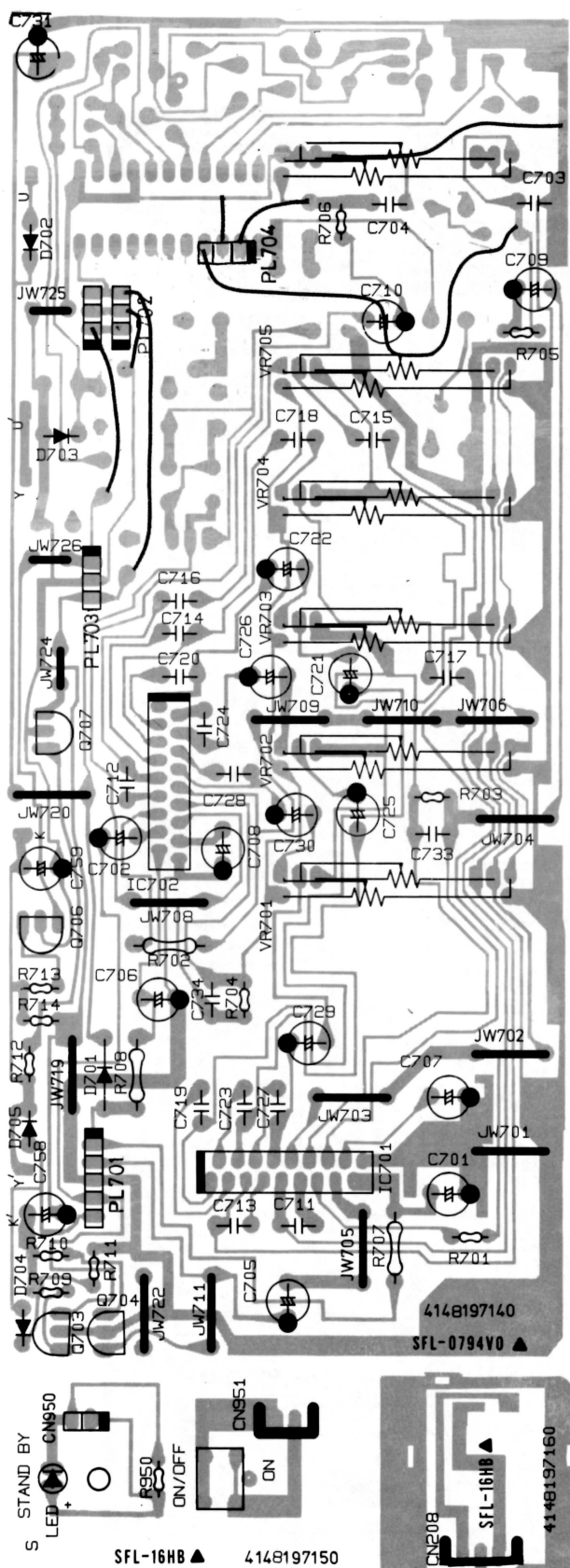
MAIN & H/P PCB



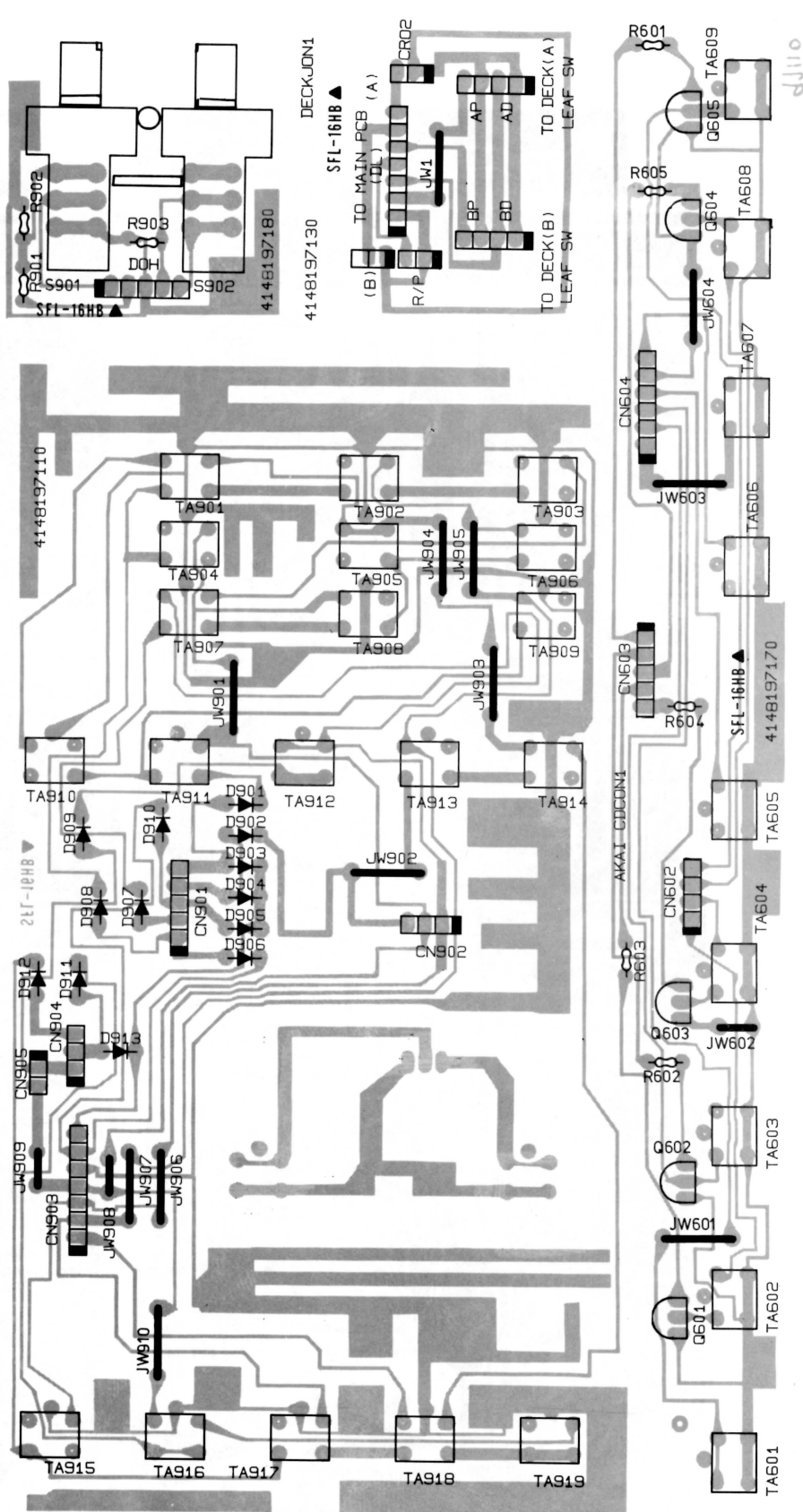
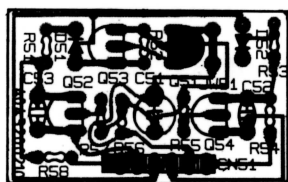
TUNER & TUNER LAMP, FM ANT. & MW/ LW ANT. PCB'S



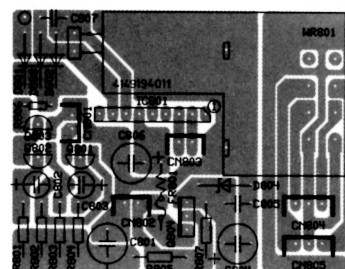
TONE, FUNC. KEY, DOLBY/HI-SPEED, VR , CD CONTROL, IR PREAMP, ON/OFF, CASS DECK PCB'S



IC PROTECTOR PCB



VR PCB





REPLACEMENT PART LIST

CASS. DECK. + H/P JACK + DECK JOINT + MAIN

Note: All resistors are carbon film, + -5% and 1/6 watt, unless otherwise noted.

RESISTORS

Ref. No.	Part No.	Description
R511	4050247059	47 Ω (1/2 W)
R510	4050218159	180 Ω (1/2 W)
R348, 592	4050222159	22 Ω (1/2 W)
R430	4050210295	1 K (1/2 W)
R888A	405011035A	1 K (1/6 W)
R415	4171047955	4,7 Ω 1W
R504	405014795A	4,7 Ω
R301, 302	405011005A	10 Ω
R201, 202, 313, 314	405011025A	1K
R387, 388	405011525A	1,5 K
R339, 340, 367, 368, 557, 529, 558	405012225A	2,2 K
R239, 240, 207, 208	405011825A	1,8 K
R331, 332, 385, 386, 505, 512, 563, 339, 340A, 584, 542A	405013325A	3,3 K
R365, 366, 357, 358	405016875A	4,7 K
R237, 238, 562	405016825A	6,8 K
R351, 205, 206	405011235A	12 K
R327, 328, 527, 355, 356	405011535A	15 K
R329, 330	405011835A	18 K
R227, 343, 344, 349, 520, 524, 530, 535, 536, 538, 539, 540, 542, 544, 556, 559	405012235A	22 K
R335, 529, 341, 342, 321, 389, 390, 364	405013335A	33 K
R317 - 319, 375, 376, 391, 526, 528, 514, 564, 534, 335A, 203, 204	405014735A	47 K
R397	405011015A	100 Ω
R223, 234, 303, 304, 228, 320, 322, 336, 379, 380, 393, 394, 506, 522, 532, 537, 543, 547 - 549, 555, 582, 433, 315, 316, 323, 324, 502, 432	405015635A	56 K

Ref. No.	Part No.	Description
R211, 212, 325, 326	405013345A	330 K
R560	405011045A	100 K
R416, 417	40502331159	330 Ω 1/2 W J
R337, 561	405014745A	470 K
R383, 384	405015645A	560 K
R377, 378	405018245A	820 K
R235, 236	405011055A	1 M
R371	405011555A	1,5 M
R333, 334, 373, 381, 382	405012255A	2.2 M
R352	405014336A	43 K
R225, 229	405011035A	10 K
R224, 307, 308, 307A, R308A, 309, 310, 309A, 395, 396, 507, 508, 509, 517, 518, 521, 525, 531, 545, 546, 345, 359, 360, 580, 581, 583		
R363	405043335A	33 K 1/4 W J
R399	405043315A	330 Ω 1/4 W J
R241	405042715A	270 Ω 1/4 W J
R226, 230	405041025A	1 K 1/4 W J
R338	405042725A	2,7 K 1/4 W J
R374	405042255A	2,2 Ω 1/4 W J
R346, 369, 370	405041035A	10 K 1/4 W J
R350	405041235A	1/2 K 1/4 W J
R305, 306	405044725A	4,7 K 1/4 W J
R503	405043905A	39 Ω 1/4W J
R398	405041015A	100 Ω 1/4 W J
R372	405044745A	470 K 1/4 W J
R361, 362	405042245A	1/4 W 220 K J
R503	405043905A	1/4 W 39 Ohm J
R398	405041015A	100 Ω 1/4 W J
R372	405044745A	470 K 1/4 W J

CAPACITORS

C401, 418, 415	5153100250	10 μ / 50 V T Elect.
C340A, 521	5153220216	22 μ / 16 V T Elect.
C522	5153330216	33 μ / 16 V T Elect.

Ref. No.	Part No.	Description
C217, 219, 316, 317, 328, 435, 504, 229, 509	5153470216	47 μ / 16 V T Elect.
C339, 340, 350, 367, 368	5153101250	100 μ / 16 V T Elect.
C322, 323	5105103132	10 n / 25 V K Cer
C433, 434, 505, 506	5116103511	10 n J 100 V Mylar
C218	5153478250	0,47 μ / 50 V T Elect.
C345, 346	5153688250	0,68 μ / 50 V T Elect.
C221, 222, 301, 302 - 305, 310, 311, 335, 336 - 338, 349, 408, 409, 225, 226, 348	5153109250	1 μ / 50 V T Elect.
C512	5153339250	3,3 μ / 50 V T Elect.
C326, 327, 343, 344, 351 - 356, 365, 366	5153479250	4,7 μ / 50 V T Elect.
C216, 324, 325, 333, 580, 581, 510, 511, 507, 341	5153100225	10 μ / 25 V T Elect.
C359, 360	730693905A	39 p / J Tubular
C318 - 320, 321, 375, 376	730651011A	100 p K Tubular
C361 - 364, 362, 363	730653311A	330 p K Tubular
C306 - 309	730653911A	390 p K Tubular
C371 - 372	730655611A	560 p K Tubular
C331, 332	73065811A	680 p K Tubular
C223, 224, 313, 314	730651021A	1 n K Tubular
C329, 330	730786821A	6,8 n K Epoxy.
C357, 358	730782221A	2,2 n K Epoxy.
C369, 438, 439, 503, 511A, 514	730862234A	22 n Z Epoxy.
C201, 202	730658201A	82 p J Tubular
C501	5091153511	15 n J Polyester
C373, 374	5144151511	0,15 n J SC
C502	5144271511	0,27 n J SC
C430, 440, 513	5154221216	220 μ / 16 V S Elect.
C312	5154331216	330 μ / 16 V S Elect.
C346, 440A	5154471216	470 μ / 16 V S Elect.
C437	5154222225	2200 μ 25 V S Elect.
C431, 432	5154332235	3300 μ / 35 V S Elect.

IC & TRANSISTORS

IC 202	4152078210	IC 7821 (30p)
IC 301	415307784P	TA 7784P (16P)
IC 302	415C011010	CXA 1101 (16P)

Ref. No.	Part No.	Description
IC 303	415308135P	TA 8135P (16P)
IC 403, 404	415178012H	UPC78M12H (3P)
F401	4159000750	ICPF75 (2P) 
Q201, 202, 301 - 304, 306, 307 - 310, 315, 322, 325, 326, 501, 504, 507, 508, 514, 515, 517, 520, 521, 204	410520945P	2SC945P - T
Q313, 305, 505, 503, 506, 512, 513, 516, 518, 520	410500733P	2SA733P - T
Q519	410022001L	2SC2001L
Q502	410021627A	2SC1627A
Q311, 312, 323, 324	4100502467	FET 2SK246GR

DIODES

D516, 520, 581	4122141480	1N4148T2
D402 - 405	4138200020	20D2L
D406 - 409	4138104002	1N4002L
D202, 301 - 304, D501 - 506, 508, 511 - 515 D517 - 519, 580, 583, 521, 582, 509, 522	4120901760	1SS176
D401	4122521205	RD 12 EBT2 (Zener)
D88A / B	4121141480	1N4148T

COILS & TRANSFORMERS

	420A764241	E176F Power Trans. 
L501	4330801770	TWS - 358 - 667 Bias Osc. Co.
L502	4328247186	470UH "K" MOTOR CHOKE
L303, 304	4360900520	TWS358 - 533 BIAS TRAP CO.
L301, 302	4160400051	DOLBY MPX.F TWS - 358 - 356

VARIABLE RESISTORS

SFR 301, 302	5226501137	0,5 KX (D8AA03)
SFR 501, 502	5226202137	2 KX (D8AA03)
SFR 305, 306	5226103137	10KX (D8AA03)
SFR 307, 308	5226104137	100 KX (D8AA03)
SFR 303, 304	5221081418	10 KX

CD DEC + CD CONT + CD LAMP

RESISTORS

Ref. No.	Part No.	Description
R069, 070	4180210957	FUSE R. 1/2 W 1S
R061, 062	4171022155	RSN 1 W 220 Ω (S)
R065	4171015155	RSN 1 W 150 Ω (S)
Cdlamp (Arkadan lehimli) (Mounted to back side)	4050268959	6,8 Ω 1/2 W J
R077	405013995A	3,9 Ω
R010	405012205A	22 Ω
R008, 011	405012215A	220 Ω
R076	405014715A	470 Ω
R009	405019105A	91 Ω
R043, 044, 074	405011025A	1K
R003, 004, 078, 079, 082	405011525A	1,5 K
R024, 039, 041, 042, 045, 046	405012225A	2,2 K
052		
R028	405013925A	3,9 K
R021, 067, 068	405014725A	4,7 K
R005, 019	405018225A	8,2 K
R071 - 073, 075, 080, 064, 029, 066, 085, 018, 022, 026, 089	405011035A	10 K
R063	405011005A	10 Ω
R014	405013335A	33 K
R035	405014735A	47 K
R013, 016, 023, 047, 048, 083	405011045A	100 K
R006, 027	405011245A	120 K 1/4 J
R007	405011845A	180 K 1/4 J
R015	405012745A	270 K 1/4 J
R012	405015145A	510 K 1/4 J
R030	405011015A	100 Ω 1/4 J
R038	405041015A	100 Ω
R053	405041025A	1 K
R033, 034	405041045A	100 K
R040, 059	405042215A	220 Ω
R001	4050410355	10 K

Ref. No.	Part No.	Description
R031	405012235A	22 K
R20	405012735A	27 K
R25, 32, 36, 49 - 51, 84, 87, 88	405012235A	22 K
R601 - 605	405014745A	470 K
CAPACITORS		
C063, 066	5154102216	100 μ /16 V (S) Elect.
C065	5154222216	220 μ /16 V (S) Elect.
C051, 078	5154100225	10 μ /25 V (S) Elect.
C070 A / B	5114104550	100 μ /S (Mylar)
C065A, 002A / B	5104223451	22 nF (Z) Cera.
C073	5164220210	22 pF/10V (S) Non - Elect.
C083	730652211A	Tubular (K) 220pF
C079, 087	7308622342	Tubular (Z) 6200 pF
C071, 072	5153470210	47 μ /10 V (T) Elect.
C024, 025	5153478250	0,47 μ /50 V (T) Elect.
C012	5153339250	3,3 μ /50 V (T) Elect.
C019, 037, 038	5153479250	4,7 μ /50 V (T) Elect.
C010, 051 - 053, 076	5153100225	10 μ /25 V (T) Elect.
C002 - 004, 007, 021, 026	5153101210	100 μ /10 V (T) Elect.
C034, 030, 035, 036, 043, 029		
033, 064, 044		
C008	5153229250	2,2 μ /50 V Elect.
C022	5116102550	1n Mylar J
C015, 018	5116222550	2,2 n Mylar J
C016	5116472550	4,7 n Mylar J
C009, 020, 028	5116103550	10 n Mylar J
C039, 040	5116153550	15 n Mylar J
C011, 017, 023, 027	5116333550	33 n J Mylar
C013	5116473550	47 n J Mylar
C005, 014, 070A, 070B	5116104550	100 n J Mylar
C061, 062	5101222152	2,2 n J Cer.
C006	5101102152	1 n J Cer.
C067 - 070, 002A, 002B, 065A	5104223452	22 n J Cer.

Ref. No.	Part No.	Description
C047	5128470552	47 p J Cer.
C074	7306610445	100 n Tubular J
C031, 032	730693305A	33 pF Tubular J

IC & TRANSISTORS

IC 001	41594013B0	1BU 4013B (14P)
IC 003	415C01081M	CXA 1081M (30P)
IC 002	415C010821	CXA 1082AQ (48P)
IC 004	415C011300	CXD 1130 (30P)
IC 006	415C581617	CXK5816 PS - 121 (124P)
IC 005	415C010019	CXP 1001Q (64P)
IC 007	4152078800	LC 7880 (20P)
IC 008	4159045580	BA 4558 (8P)
Q004, 006, 008, 0010	410000934R	2SA934R
Q003, 005, 007, 009	410022060R	2SC2060R
Q061	410030313D	2SD313D
Q062	410010507E	2SB507E
Q002, 064, 076, 077	410600952L	2SA 952L
Q079	410022001L	2SC 2001L
Q012 - 014, 072, 074, 080, 081, 065	410520945P	2SC 945P - T
Q011, 066, 071, 073, 075	410500733P	2SA 733P - T
Q001, 078, 063	410522001L	2SC 2001L - T
Q601 - 605	410520945P	2SC 4945P - T

DIODES

D003, 071 - 074	4122141480	1N4148T2
D061	4138150020	B20SL
D077, 078	4120901760	1SS176
D062, 063	4120500825	ZEN. DI - RD8 .2EB23
D001, 002	4120500565	ZEN. DI. RD5 .6EB23

FM ANT JACK + ANT + TUNER + TUNER LAMP.

RESISTORS

Ref. No.	Part No.	Description
R148	405044705A	47 Ω 1/4 W J
R107, 157	405041015A	100 Ω 1/4 W J
R152	405042215A	220 Ω 1/4 W J
R156, 139	405041025A	1000 Ω 1/4 W J
R142, 35	405043325A	3,3 K 1/4 W J
R123	405011245A	120 Ω
R101	405014795A	4,7 Ω
R106	405012205A	22 Ω
R102, 112	405011015A	100 Ω
R104	405013315A	330 Ω
R108, 125, 127	405011025A	1 K
R130	405012225A	2,2 K
R129, 163, 164, 143	405013325A	3,3 K
R122, 153, 155, 150	405014725A	4,7 K
R117, 118	405015625A	5,6 K
R124, 128, 144, 147, 151, 154, 180	405011035A	10 K
R116	405011535A	15 K
R140, 145	405012235A	22 K
R114, 115, 169, 149, 161, 166, 167, 181, 184	405014735A	47 K
R111, 133, 134, 136, 137	405011045A	100 K
R168, 170, 119, 120		
R131	405011545A	150 K
R141	405012245A	220 K
R109, 103	405013345A	330 K
R126	405016845A	680 K
R165	405018245A	820 K
R182, 183	405044735A	47 K
R132	405016825A	6,8 K

CAPACITORS

Ref. No.	Part No.	Description
C130, 175	730693005A	30 pF J Tubular
C183	730692005A	20 p J Tubular
C139	730693305A	33 p J Tubular
C108	730696805A	68 p Tubular
C151	7306582001A	82 p Tubular
C105, 138	730651011A	100 p Tubular
C120, 132, 131, 181	730651511A	150 p Tubular
C102, 137, 140, 141, 142, 101	730651021A	1n J Tubular
C135	730783321A	3,3n J Tubular
C134	730654711A	470 p Tubular
C112, 162, 164, 166, 168, 171, 174, 189	730711033A	10n J Tubular
C103, 104, 111, 113, 114, 118, 147, 148, 157, 160, 169, 177, 180, 184, 185, 187, 188, 186	730862234A	22n J Tubular
C106, 107	730602291A	2,2P J Tubular
C109, 152	730604791A	4,7P J Tubular
C110	730602005A	20P J Tubular
C178	5128390552	39P J Tubular Cer.
C150	5128121552	120P J Tubular
C154	5128151552	150P J Tubular
C143, 144, 133, 155	5104223452	22n J Z Tubular
C119, 158, 116	5104473402	47n Z Cer.
C123, 124	5153478250	0,47 μ /50 V T Elect.
C127	5153109250	1 μ /50 V T Elect.
C129, 130	5153339250	3,3 μ /50 V T Elect.
C170, 179	5153100225	10 μ /25 V T Elect.
C115, 117, 163, 165	5153220216	22 μ /16 V T Elect.
C159, 161, 167	5153101216	100 μ /16 V T Elect.
C121, 122	5105103132	10n 25 V K Cer.
C178A	5125609852	6P D Cer.
TC 102	5010110025	10PF Trimmer.
C146	5104223451	22nF (Z) Cer.
C191	5121809851	8pF (D) Cer.
TC 101	5010110025	TRIMMER C - 10PF
TC104	5010200026	TRIMMER C - 20PF

Ref. No.	Part No.	Description
TC 103, 105	5010300027	TRIMMER C - 30PF
C169B	5104223451	22n / Z / Cer
C169A	5154101216	100 μ /16 V (S) Elect.
C149	5144331511	0,33n (S) SC
C153	5144391511	0,39n (S) SC
C128	5144152511	1,5n (S) SC
C172	2000001034	GOLD CAP. 0,1 F/5,5 V

TRANSISTORS & IC'S

Q104,105, 106, 108, 117, 113, 114, 115, 116	410520945P	2SC945P
Q109, 110, 111	410500733P	2SA733P - T
Q101	410021674L	2SC1674L
Q102, 112	410021675L	2SC1675L
Q103, 107	410022878A	2SC2878A
IC 101	415201186N	LA 1186 N (9P)
IC 102	4152018050	LA 1805 (24P)
IC 103	4152723007	LC 7230 - 8307 (80P)
IC 104	4157780053	UC 78L05CT (3P)

DIODES

D106, 107, 110, 115, 109	4122141480	1N4148T2
D101	4120200602	1N60P
D102, 103	4120400550	1SV55
D104A/B	4120112360	KV1236Z1
D108, 112, 113, 114	4120901760	1SS176
D105	4120520565	ZEN. DI. RD5. 6EB2

COILS & TRANSFORMERS

L106	4300103010	MW/LW BAR ANT - COIL.
L101	4300400710	FM ANT COIL
L102	4310400850	FM RF COIL PC8867
L103	4330400820	FM OSC. COIL
L104	4330101690	MW OSC. COIL. PC9026

Ref. No.	Part No.	Description
L105	4330201620	LW OSC COIL.
L107, 108	4328247186	MOTOR CHOKE 47 OUH "K"
L109	4325010192	P.COIL 101 K - T
T102	4340201340	FM DET COIL R22 - E788
T103	4340101240	AM IFT R22 - E712
T101	4340201010	FM IFT TWS - 358 - 425

VARIABLE RESISTORS

SFR 101	5221681418	SFR 10KX
SFR 102	5221081510	SFR 100KX

FILTERS

CF 101	4160220044	CER. F. SFEIO. 7MS366 YMRED
CF 102	4160200003	CER. F. SFEIO. 7MA5RED
CF 103	4160500083	CER. F. SFEIO. SFP450H
	5401150026	FM INDOOR JACK ANT

BACK - UP PCB ASS'Y

RESISTORS

R431	4050110254	1K
R438	4050133254	3,3 K
R434	4050110454	100K
R435	4050110354	10 K
R433	4050147354	47 K
R432	4050147154	470 Ω
R436	4050447154	470 Ω
R439	4050156354	56 K
FR 436, 437	4180447957	FUSE RES. 1/4 W 4.7ΩS

CAPACITORS

Ref. No.	Part No.	Description
C443	5154470216	47 μ F/16 V (S) Elect.
C444, 451	5154221216	220 μ F/16 V (S) Elect.
C450	5154330216	33 μ F/16 V (S) Elect.
C442	5106472141	4700 p/400 V Spark Killer 
C445, 446	7308622345	22nF (Z) Tubular

IC & TRANSISTORS

IC 430	4151078005	UPC78L05 J
Q430, Q431	410020945P	2SC945 P
Q432	410000733P	2SA733 Q

DIODES

D434, 430, 436	4120901760	1SS176
D435, 431 - 433	4138104002	1N 4002L

COILS & TRANSFORMERS

PT 401	7308622345	TP 05F223 (Z) Back-up Trans. 
RL 401	4390000019	Rel. OMIT - SS - 112DM 

IC PROTECTOR + POWER STAGE

RESISTORS

R54, 58	4050127154	270 Ω
R55, 57	4050139354	39 K
R51, 53	4050118254	1,8 K
R56	4050156354	56 K
R52	4050110254	1 K
R405	405041025A	1 K 1/4 W J
R406, 411, 410, 407	405015635A	56 K
R408, 409	405015615A	560 Ω
R413	405011015A	100 Ω

Ref. No.	Part No.	Description
R402	405041015A	100 Ω 1/2 W J
R419, 420	4050222259	2,2 K 1/2 W
R412A, 418A	4095022858	0,22 Ω 5W (Cement)
R412, 418	4050210295	1 K 1/2 W
R444	4171047955	4,7 Ω (1W)
R404	405011025A	1 K

CAPACITORS

C404, 405	730654711A	470p J Tubular
C408, 409	5153109250	1 μ /50 V T Elect.
C417, 416	5153101216	100 μ /16 V T Elect.
C403, 402	5153470250	47 μ /50 V T Elect.
C413, 414A	5114104550	100 μ J Myler
C414	5153101250	100 μ /50 V T Elect.
C418, 401, 415	5153100250	10 μ /50 V T Elect.
C53, 52	5118273550	27n J Myler
C66A/B	5114332550	3,3n J Myler
C51	5154109250	1 μ /50 V T Elect.

IC & TRANSISTORS

Q52 - 54	410001209R	2SA 1209R
Q51	410022911R	2SC 911R
IC401	4152041420	STK 4142 (18P)

DIODES

D51, D52	4120901760	1SS176
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FUNC KEY + IR PREAMP + ON/OFF + HI - SPEED + VR + TONE

RESISTORS

Ref. No.	Part No.	Description
R950	405011025A	1 K
R701, 703, 704, 705, 706, 709, 710	405014725A	4,7 K
R712, 713	405011035A	10 K
R717	4050110255	1 K (Only 1055-75)
R711, 714	405011045A	100 K
R702	405044725A	4,7 K 1/4 W J
R707, 708	405042715A	270 Ω 1/4 W J
R902	405011835A	18 K 1/6 W
R901, 903	405014735A	47 K 1/6 W
R716	4050233159	330 Ω
R715	4050122555	2.2 M
FR715	4180210957	FU. RE. 1/2 W J

CAPACITORS

C719, 720	5105182132	1,8n 25 V K Cer
C727, 728	5105333132	33n 25 V K Cer
C723, 724	5105103132	10n 25 V K Cer
C717, 718	5105273132	27n / 25 V K Cer
C733, 734	5105102132	1n / 25 V K Cer
C741, 744	5153228250	0,22 μ /50 V T Elect
C725, 726	5153338250	0,33 μ /50 V T Elect
C702, 705, 755, 756, 757, 709, 710, 742, 743, 729	5153109250	1 μ /50 V T Elect
C721, 722	5153108250	0,1 μ /50 V T Elect
C737, 738	5153100225	10 μ /25 V T Elect
C701, 706 - 708, 731	5153101225	100 μ /25 V T Elect
C703, 704, 713, 714	730656811A	0,68n K Tubular
C711, 712	730652711A	0,27n K Tubular
C901	5104104401	0.1 μ /16 V
C735, 736	5153221210	220/10 V T Elect.
C715, 716	7307182215	8,2n K Epoxy.

IC & TRANSISTORS

Ref. No.	Part No.	Description
Q703, 704, 706, 707	410520945P	2SC945P
Q705	410030882P	TR2SD882P
IC 701, 702	415903812L	BA 3812 L (18P)
IC 703	4159062080	BA 6208 (9P)

DIODES

D701	4120520515	ZE. DI. RD5. 1EB2
D901 - 913	4120901760	1SS176
D702, 704, 705	4120901760	

JACKS + LAMPS + SOCKETS + SWITCHES + TERMINALS + LCD'S

JK 402	4560002047	2P ANT. TER
LP 001	4700300005	PILOT LAMP 18 V / 100mA
JK401	4500500237	HP JACK JY - 6312 - 01 - 070
TA901 - 919, TA601 - 609	4400000094	TACTSW SKHHQW 2720 - CP
S902, 903	4430601600	PUSH SW SPUL 19A601 - CP
JP 1	4490600210	F TW BASE (2,5 M/M) 6P
JK 102	4560002047	2P ANT TER
S201	4410102136	SLIDE SW. HTSS - 12F2356
JK201	4500800243	HSP - 202 V (2P) RCA
J402	4560004045	4P SP TERMINAL
JP1	4490666140	Joint 6 Pin.
CX 101	410090450M	XTAL 4,5 MHZ
	4110440133	LCD DISP. HLC 9861 - 01 - 2210
	4570900720	DIN ANT. SOCK - X - U5024 - 21
	4120632112	LED LTL - 3211 RED
LCD001	4110440105	LCD DISP. HLC9538 - 01 - D2
_____	4120632180	LED LTL (RED) 3218 (Only 1055-75)

OTHERS

Deck A Head GNDDECK CASE	4590100105	EARTH TER. ASS'Y BLK 100
DECK MOTOR - MAIN PCB (DM)	C488040490	4P CON. ASS'Y 200 m/m

Ref. No.	Part No.	Description
ERASE HEAD	C488020485	2P CON. ASS'Y 400 m/m
PB HEAD	C488030783	3P CON. ASS'Y 400 m/m
REC / PB HEAD	C488050516	5P CON. ASS'Y 500 m/m
	4592000192	FM - LINE ANT. WHT - 2M
F402	5267250062	FUSE BS 2.5A / 250 V 
	5401150026	FM INDOOR JACK ANT.
DAIWA	4632212080	AC CORD VDE 8F BLK 2 
	4580200006	CORD STOPPER SR - 4N - 6
PLAYER - CD DECODER PCB GND	4590100144	EARTH TER ASS'Y BLK - 100
CD PLAYER KSL - 210 AFM4	C486040383	
CD PLAYER - CD DECODER PCB CN001	C488040855	4P CON. ASS'Y 200 M/M
CD PLAYER - CD DECODER PCB CN003	C488081014	8P CON ASS'Y 200 M/M
CD PLAYER - CD DECODER PCB CN002, 004	C488081015	8P CON ASS'Y 200 M/M
CD PLAYER - CD DECODER PCB CN005	C488051051	5P CON ASS'Y 280 M/M
	6980022007	S/W #30 1365 (AL) BLK 220 M/M
ANT PCB - TUNER PCB	C488060489	6P CON ASS'Y 150 M/M
CD LAMP PCB - CD DECODER PCB	5440224011	RIBW 2A - 240 5/5 M/M
	C488020693	2P CON ASS'Y 350 M/M
LEAFSW PCB (DL) - MAIN PCB (DL)	C488070489	7P CON. ASS'Y 150 M/M
DECK B L/S - 30INT PCB	5440210021	RIBW 2B 100 5/5
DECK B CR02 LEAF S41 - 30INT PCB	5440210011	RIBW 2A 100 5/5
DECK B & DECK A L/S - 30INT PCB	5440420041	RIBW 4E 200 5/5
DECK A L/S - 30INT PCB	5440210081	RIBW 2C 100 5/5
CN208	4490301003	EH 3P SIDE BASE
CN005	4490501004	PH 5P TOP BASE B5B - PH - K
CN001, 002, 004	4490401004	PH 4P TOP BASE B4B - PH - K
CN003	4490801004	PH 8P TOP BASE B8B - PH - K
CN007	4490301004	PH 3P TOP BASE
CN008 - 010	4490401002	EH 4P TOP BASE
CN011	4490601002	EH 6P TOP BASE
CD DEC. CN009	C48864076B	4P CON. ASS'Y 80 M/M
CD DEC. PCB B - B	5446210011	RIBW 2A 100 5/5
CD DEC. PCB A - A	5353611855	L/W #26 1007 BRN 180 F/F
V, CE	4490301002	EH 3P TOP BASE
V	4490501002	EH 5P TOP BASE

Ref. No.	Part No.	Description
U	4490701002	EH 7P TOP BASE
W	4490601002	EH 6P TOP BASE
POWER/MUTE - MAIN PCB	C488020491	2PCON. ASS'Y 250 M/M
TUNER PCB - REMOTE SENS PCB.	C488030644	3P CON. ASS'Y GRY 100 M/M
TUNER PCB - MAIN PCB (CL, DE , LT)	C488030493	3P CON. ASS'Y 400 M/M
TUNER PCB - MAIN PCB (SV)	C488030491	3P CON. ASS'Y 250 M/M
TUNER D/P - MAIN PCB FUNC. IC	C488031028	3P CON. ASS'Y RED 300 M/M
KEYBOARD - CN 901 TUNER PCB (T11 - T0)	C488050489	5P CON. ASS'Y 150 M/M
KEYBOARD - CN 903 TUNER PCB (U)	C488070489	7P CON. ASS'Y 150 M/M
FUNC. PCB CN 905 - ON/OFF PCB CN 951	C488020492	2P CON. ASS'Y 300 M/M
FUNC. PCB CN 902 - VOLUME PCB (CN 907)	5440310031	RIBW 3D 100, 5/5
VR701 - 705	5216215248	100 KW X 2
VR706	5210154249	50 KWRS - 20 HIILC001
TONE PCB CN701 - MAIN PCB CTD	C488050670	5P CON. ASS'Y 350 M/M
TONE PCB (CN703) - MAIN PCB POWER	C488030497	3P CON. ASS'Y 300 M/M
TONE PCB (CN704) - TUNER PCB (CC)	C488030489	3P CON. ASS'Y 150 M/M
U - U' TO TONE (BACK - UP)	C488020495	2P CON. ASS'Y 600 M/M
K - K' TO TONE (MAIN)	C488020664	2P CON ASS'Y 400 m/m
HI - SPEED PCB (DOH) - MAIN PCB (DOH)	C488050670	5P CON ASS'Y 350 M/M
EH 2P SIDE BASE	4490201003	EH 2P SIDE BASE
STAND BY LED - BACK UP PCB CN 401	C488020495	2P CON. ASS'Y 600 M/M
TO TONE (U - U') LED	4490201002	EH 2P TOP BASE
CN 402 - MAIN BACK	C488040493	4P CON. ASS'Y
F402	5267250062	FUSE BS 2.5A / 250 V
MAIN HEADPHONE	5440516051	RIBW 6G 160 M/M 5/5
CONTROL PCB CN602CD DECODER PCB CN010	C488040491	4P CON. ASS'Y 250 M/M
CONTROL PCB CN604 CD DECODER PCB CN015	C488060489	6P CON ASS'Y 150 M/M
CONTROL PCB CN603 TUNER PCB RC	C488050493	5P CON ASS'Y 400 M/M
	4590100105	EARTH TER. ASS'Y BLK 100 M/M
PL906	4490801002	EH 8P TOP BASE
B, C, EH, PL907 (Only 1055 - 75)	4490201002	EH 2P TOP BASE
TUNER, P, W, H/P	4490301002	EH 3P TOP BASE
PM, BACK	4490401002	EH 4P TOP BASE
RPH, DOA, TD	4490501002	EH 5P BASE
DL	4490701002	EH 7P BASE
PL702 (TONE - VR PCB)	C488081017	8P CON ASS'Y 200 M/M
VR901	5025254121	50KB x 2 RK16312M 5015

Ref. No.	Part No.	Description
	C488040773	4P CON ASS'Y 500 M/M
PHONE - MAIN PCB	C488050467	5P CON ASS'Y 500 M/M
MAIN PCB A - A'	5353611455	4W #26 1007 - BRN 140 5/5
MAIN PCB CX - CX'	5353021011	4W #26 1007 RED 100 5/5
MAIN PCB (Solder Side)	6330200000	SHIELD WIRE GRY 100 M/M
ANT PCB - TUNER PCB W - W'	C488060489	6P CON ASS'Y 150 M/M
PL704 (TONE - TUNER)	C488021106	2P CON ASS'Y 200 M/M
D602	C488021027	2P CON ASS'Y 200 M/M (Only 1055 -75)

EMPTY PCB'S

FM ANT PCB 32.5 * 14 * 1.6 MM	4041169900	
BACK - UP PCB 111.5 * 90 * 1.6 MM	4041198900	⚠
MW/LW ANT PCB 47 * 34 * 1.6 MM	4041204900	
CD LAMP PCB 46 * 23 * 1.6 MM	4142187722	
HP JACK PCB 32.5 * 31 * 1.6 MM	4142198820	
LAMP PCB 57.5 * 15 * 1.6 MM	4146201620	
IC PROTECTOR PCB 42 * 26.5 * 1.6 MM	4043200210	
VR PCB 67*52*1.6 MM	4149194011	
DECK JOINT PCB 46 * 45 * 1.6 MM	4148197130	
IR PREAMP PCB 30 * 28.5 * 1.6 MM	4148197160	
CD DECODER PCB 197 * 140 * 1.6 MM	4142187711	
MAIN PCB 247 * 240 * 1.6 MM	4142198810	
TUNER PCB 247 * 98 * 1.6 MM	4146201610	
FUNC KEY PCB 94 * 174 * 1.6 MM	4148197110	
TONE PCB 81 * 190.6 * 1.6 MM	4148198110	
ON/OFF PCB 51.25 * 29.5 * 1.6 MM	4148197150	
CD CONT PCB 222 * 26 * 1.6 MM	4148197170	
HI - SPEED PCB 45 * 41.5 * 1.6 MM	4148197180	
VR LED PCB	4041177100 (Only 1055 -75)	

IC & TRANSISTOR PIN VOLTAGES

CASS CKT IC & TR

IC301

TDA7264P	
1	10 2V
2	2 2V
3	A PLAY 1.8V B PLAY 0 V
4	2 2V
5	2 1V
6	2 1V
7	2 1V
8	0 V
9	2 1V
10	0 V
11	2 1V
12	2 1V
13	2 1V
14	2 2V
15	NORMAL 0.5V CRO2 2.4V
16	2 2V

IC302

CXA1101	
1	5 46V
2	10 75V
3	5 46V
4	5 48V
5	2.94V(NR OFF) 0V (NR ON)
6	5 57V
7	0 37V
8	5 5V
9	5 51V
10	0 38V
11	5 56V
12	4 34(PLAY) 0 (REC)
13	1 22V
14	5 46V
15	0V
16	5 45V

IC303

TDA135P	
1	0V 0V
2	2 2V 2 7V
3	2 2V 2 7V
4	2 2V 2 7V
5	2 2V 2 7V
6	2 8V 2 8V
7	2 2V 2 7V
8	0V 0V
9	0V 0V
10	2 2V 2 7V
11	2 2V 2 7V
12	2 2V 2 7V
13	2 2V 2 7V
14	2 2V 2 2V
15	0V 2 2V
16	9 3V 9 3V
PLAY	REC

Q317
Q318 2SC945P/Q

	PLAY	REC START	REC
E	0	0	0
C	0	0	0
B	0	0.62 HOLD 2 SFC	0

Q501 2SC945P/Q

	I	II
E	0	0
C	0	0
B	0	0.65

Q507 2SC945P/Q

PLAY		REC	
A	B	A	B
E	0	0	0
C	4 34	4 34	4 34
B	0	0	0

Q516 2SA733P/Q

PLAY		REC	
A	B	NOR	CRO2
E	5 98	0	01 6
C	5 97	11 63	11 68 6
B	5 39	0	0 5 43

Q319
Q320 2SC945P/Q

	PLAY	REC START	REC
E	0	0	0
C	0	0	0
B	0	0.62 HOLD 2 UC	0

Q502 2SC1627A

REC	
NOR	CRO2
E	0 11 0 33
C	6 38 10
B	0 58 0 22

Q508 2SC945P/Q

PLAY		REC	
A	B	A	B
E	0	0	0
C	0	0	0
B	0.63	0	0.63

Q517 2SC945P/Q

PLAY		REC	
NOR	CRO2	NOR	CRO2
E	0	0	0
C	11 49	0 63	0
B	0	01 0 67	

Q321
Q322 2SC945P/Q

	PLAY	REC START	REC
E	0	0	0
C	0	0	0
B	0	0	0.65

Q503 2SA733P

REC	
NOR	CRO2
E	11 9 10 17
C	11 9 11 98
B	11 6 9 4

Q512 2SA733P/Q

PLAY		REC	
A	B	NOR	CRO2
E	0	0	3 85 3 7
C	-3 5	-1 4	-2
B	0	0	5 37 3 67

Q518 2SA733P/Q

PLAY		REC	
A	B	NOR	HISP
E	10 56	14 10 5	10 7
C	10 5 6 1	10 5	0
B	9 86 5 48	8 5 11 48	

Q301
Q302 2SC945P/Q

	PLAY	REC
E	0V	-18 5V
C	0V	0V
B	0 7V	-24 1V

Q303
Q304 2SC945P/Q

	PLAY	REC
E	0V	-18 5V
C	0V	0V
B	0 69V	-23V

Q305 2SA733P/Q

	PLAY	REC
E	10 7V	11 5V
C	10 7V	-23 6V
B	10	11 5V

Q323
Q324 2SK246GR

	PLAY	REC
	NOR	HISP
S	3 14	2 6 2 8
G	3 58	9 6 3 3
D	3 13	2 7 2 8

Q504 2SC945P/Q

REC		START		ON	
NOR	CRO2	NOR	CRO2	NOR	CRO2
E	0	0	0	0	0
C	2 98	2 64	2 98	2 64	
B	0.65	0.65	1 5	0	0
HOLD		UC			

Q513 2SA733P/Q

PLAY		REC	
A	B	NOR	CRO2
E	4	0	3 98 3 98
C	-2 5	-4	-3 -2 8
B	3 84	0	-3 8 -3 83

Q519 2SC2001L

	PLAY	REC
E	0	0
C	0	0
B	0 76	0 76

Q306
Q307 2SC945P

	PLAY	REC
E	0V	0V
C	0V	0V
B	0V	-0 73V

Q308 2SC945P

	PLAY	REC
E	0	2
C	3 8	3 8 0
B	0 68	2 68

Q309
Q310 2SC945P

	PLAY	REC
	NOR	HISP
E	0	0 0
C	0	0 0
B	0 7	0 7 0

Q325
Q326 2SC945P

	PLAY	REC
	NOR	HISP
E	0	0 0
C	0	0 0
B	0	0 0 7

Q505 2SA733P/Q

PLAY		REC	
A	B	A	B
E	4 2	4 08	4 2
C	0	0	0
B	11 44	9 23	11 44

Q514 2SC945P

PLAY		REC	
A	B	NOR	HISP
E	0	0	0
C	5	0	0
B	0	0 650	650 65

Q520 2SA733P/Q

	PLAY	REC
	HISP	HISP
E	10	9 7
C	10	7 7
B	9 4	11 2

Q311
Q312 2SK246GR

PLAY		REC	
A	B	A	B
S	0V	0V	0V
G	0 53	9 6	0 5V
D	0V	0V	0V

Q313 2SA733P/Q

PLAY		REC	
A	B	A	B
E	3 4V	0V	3 4V
C	3 4V	11 7	3 4V
B	2 8V	0V	2 8V

Q315
Q316 2SC945P

	PLAY	REC
	NOR	HISP
E	0	0 0
C	0	0 0
B	0	0 0 65

Q505 2SA733P/Q

PLAY		REC	
A	B	A	B
E	0	11 57	
C	-1 67	0	
B	0	11 43	

Q515 2SC945P

PLAY		REC	
A	B	NOR	CRO2
E	0	0	0
C	6 9	0	6 9
B	0	0 64	0 6 0 12

Q521
Q522 2SC945P

	PLAY	REC
	START	ON
E	0	0 0
C	0	0 0
B	0	0 58 0

TUNER IC & TR

IC 701 / 702 BA3812L

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
5 02	6 17	6 17	5 02	5 02	6 17	6 17	5 02	5 02	5 42	6 17	5 42	5 40	5 42	6 05	6 22	10 45	0

IC 703 BA6208

	1	2	3	4	5	6	7	8	9
UP	0	4 35	0	0	0	5	3 30	0	0
DOWN	0	0	4 35	0	0	5	0 3 30	0	0

IC 202 LC7821

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0	0	0	0	0	0	0	0	4 4	-11 3	0	0	0
0	0	10 92	11 03	-4 8	0	11 0	0	0	0	0	0	0	0	0
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

IC 401 STK-4142

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
-0 16	-0 16	0	-28 8	-1 25	0	-30 7	-31 2	-31 5	0	31 5	30 1	0	-31 5	-1 25	0	-0 16	-0 16

IC 101 LA1186M

1	2	3	4	5	6	7	8	9
0 9	1 6	4 2	0	0	4 3	2 5	3 4	4 3

IC 1 UPC1490HA

1	2	3	4	5	6	7	8
5 2	5 2	1 0	1 6	0	1 7	2 5	2 5

IC 403 MC78L12

1	2	3
22 5	0	12 1

MAIN PCB

IC 404 78L12

1	2	3
22 5	0	12 0

MAIN PCB

Q201-202 25C995

E	C	B
1 7	5 25	2 3

MAIN PCB

IC 102 LA1805

	1	2	3	4	5	6	7	8	9	10	11	12
FM	1 58	1 58	5 06	1 58	1 58	0	5 06	0	2 31	2 31	4 36	0 87
AM	1 62	1 62	5 36	0 50	1 62	0	5 06	5 06	2 31	2 31	5 21	0 90
FM	0	1 75	1 75	1 75	1 72	1 57	0 36	5 15	5 07	1 58	1 58	1 58
AM	0	1 72	1 35	1 75	1 69	1 60	0 38	5 36	5 36	1 62	1 62	1 62
	13	14	15	16	17	18	19	20	21	22	23	24

IC 104 78LM05

1	2	3
11 7	0	5 1

Q51-53 2SA1209

E	C	B
0	-30 0	0

PROTECTION PCB

Q52 2SA1209

E	C	B
0	0	-30 6

PROTECTION PCB

Q54 25C2911

E	C	B
-30 2	0	-30 6

PROTECTION PCB

Q103 25C2878A

E	C	B
MW	0	0 0 74
LW	0	0 0 30

Q104 25C945P/0

E	C	B
MW	1 62	1 62 2 18
LW	1 62	1 62 0 1

Q105 25C945P/0

E	C	B
MW	1 62	1 62 0 1
LW	1 62	1 62 2 18

Q106 25C945P/0

E	C	B
MW	0	0 0 7
LW	0	0 15 0 3

Q107 25C945P/0

E	C	B
MW	0	0 0 74
LW	0	0 6 0 31

Q108 25C945P/0

E	C	B
1 53	4 21	2 11

Q109 2SA733P/0

E	C	B
MW	5 1	5 05 4 4
LW	5 36	0 34 4 9

Q110 2SA733P/0

E	C	B
FM	5 72	5 66 5 03
AM	5 77	0 82 5 57

Q111 2SA733P/0

E	C	B
FM	5 72	0 04 5 68
AM	5 77	5 74 5 1

Q430 25C945P

E	C	B
POWER ON	0	0 17 0 8
POWER OFF	0	14 8 0

BACK-UP PCB

Q431 25C945P

E	C	B
POWER ON	0	5 1 0 17
POWER OFF	0	0 8 0 68

BACK-UP PCB

Q432 2SA733P

E	C	B
POWER ON	4 5	0 22 4 47
POWER OFF	3 87	3 45 3 23

BACK-UP PCB

IC430 MC78L05

E	C	B
POWER ON	11 95	0 5 1
POWER OFF	14 8	0 5 1

BACK-UP PCB