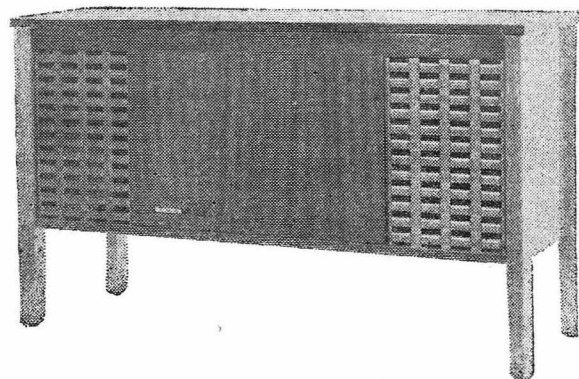


RF770

PHILIPS *Service*
notes



MODEL RF770

770 CASSETTE

SPECIFICATIONS

Power supply	220-250V, 50Hz
Power consumption	40W
Tuning range	525KHz to 1605KHz
Intermediate frequency	455KHz
Record changer	BSR type UA70
Pick-up head	BSR type C1ST3
Tape Deck	Philips type EL3312
Microphone (mono)	CZ.160.213 (DM262)
Lamps, dial X2	8045D (6.3V, 0.32A, tub. screw)
Lamp, bezel	8008D (6.3V, 0.15A, tub. screw)
Modules	1X UF303, 2X UA504

CHASSIS REMOVAL

Remove power plug from mains supply socket. Remove cabinet back. Swivel rod aerial to a position parallel with chassis to prevent breakage during withdrawal. Unplug from chassis—speaker lead plug, pick-up lead plug, record changer power supply plug, tape recorder lead plug, and tape recorder power supply plug. Remove control knobs, nylon dial window retainers, dial window and four chassis retaining screws. Withdraw chassis from cabinet taking care not to damage inside of lid. Re-install in the reverse order.

LAMP REPLACEMENT

Dial Lamps

Remove dial window glass (refer Chassis Removal). At the end of the dial scale at which the lamp is to be replaced, back off the screws holding the clamping bracket and rubber dial scale support. The dial lamp in its holder may now be withdrawn from the moulding. (Lamp type 8045D 6.3V—0.32A).

Bezel Lamp

Remove cabinet back. Slide bezel lamp and holder from mounting bracket. (Lamp type 8008D 6.3V—0.15A).

RECORD CHANGER REMOVAL

Remove power plug from mains supply socket. Remove cabinet back. Unplug pick-up lead and motor power lead. From the underside of the changer mounting board, turn the spring clips on the ends of the two transit screws through 90° to assume the vertical position. Lift the changer clear of cabinet.

TAPE RECORDER REMOVAL

Remove power plug from mains supply socket. Remove cabinet back. Unplug tape recorder interconnection and mains leads—release lead from cable clip. Unscrew and remove screw near centre of left side of tape recorder top cover. Lift up left side of cover and ease to left until clip on R.H. side disengages. Unclip modulation indicator from top cover. Remove four mounting screws (unplated 5/32" CH HD screws).

ALIGNMENT

Trimming point locations are shown on the UF303 module circuit. Put volume control at maximum, balance and tone control in central position.

I.F. ALIGNMENT

Fully close tuning capacitor. Connect signal generator via I.F. dummy to TRI. Peak cores in the order quoted and at the respective frequencies listed.

I.F.T.-3	455 kHz
I.F.T.-2	456.5 kHz
I.F.T.-1	453.5 kHz

Repeat adjustments as necessary.

R.F. ALIGNMENT

Fully close tuning capacitor and position the dial cursors to the 520 kHz marks. Inject signal via a single turn around the aerial rod. Set signal generator at 520 kHz and peak oscillator coil. Tune receiver to full H.F. limit and set generator at 1620 kHz. Peak oscillator trimmer. Repeat above until band end setting is correct. Tune receiver and adjust generator to 600 kHz (7ZL) and peak rod aerial assembly. Tune receiver and adjust generator to 1500 kHz (3AK) and peak aerial trimmer (C303).

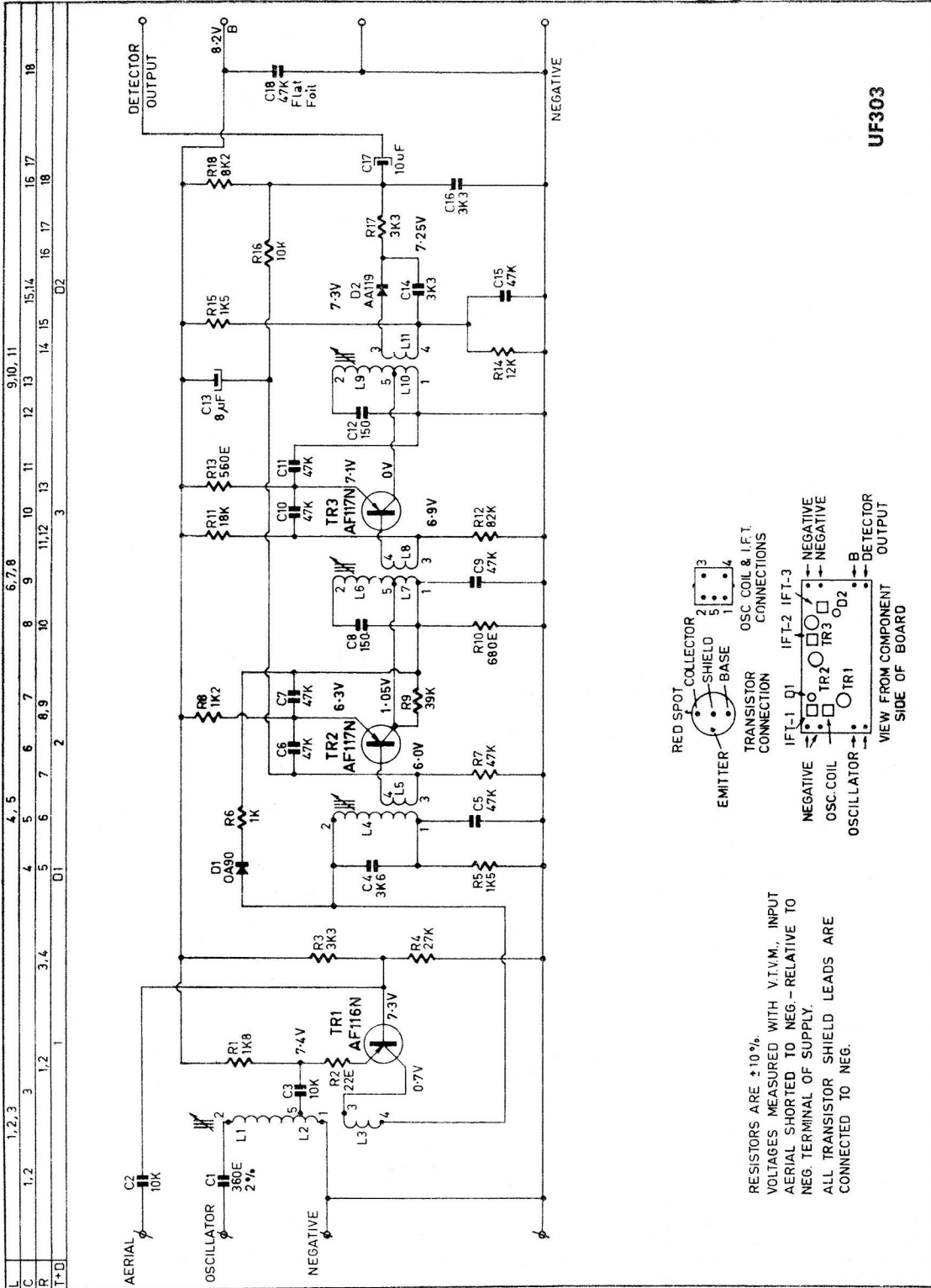
UA504 VOLTAGE — CURRENT

Voltage on emitter of TR301 should be 17.0V±1V with vol. control at minimum. Output transistor quiescent current check—voltage between TR103 emitter and TR104 emitter to be in accordance with table below.

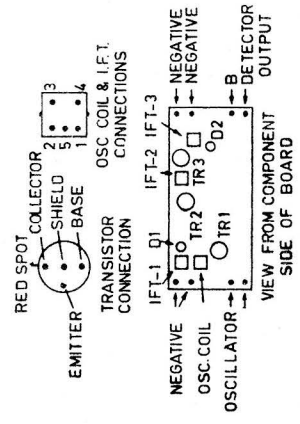
Temp. °F	40-90	95	10°	105	110	115	
V mV	10	10.5	11	11.7	12.3	14.3	±20%

UF303 CURRENT CONSUMPTION

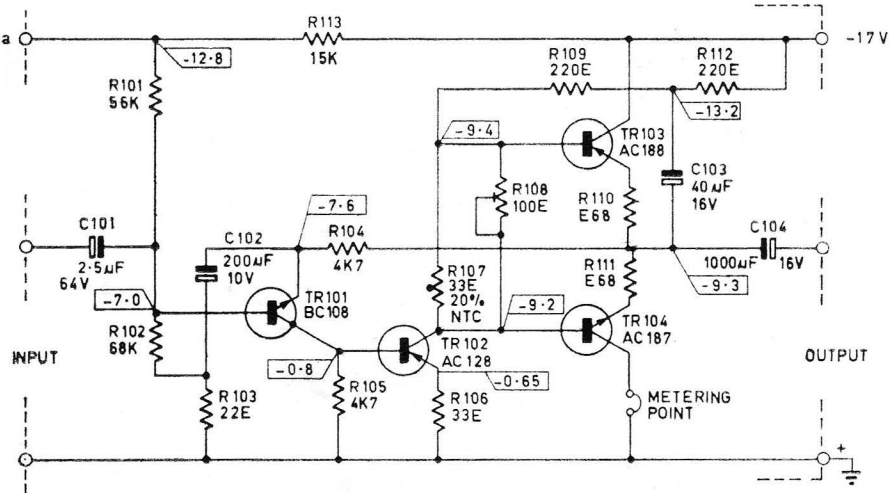
Under no signal conditions, UF303 module should draw 5mA±1mA.



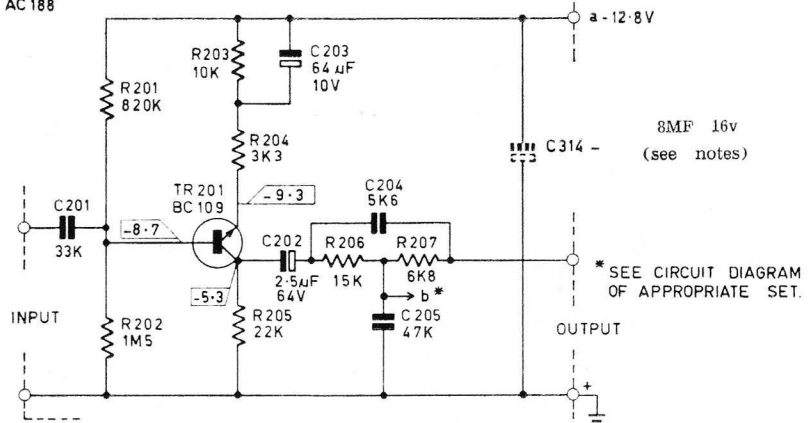
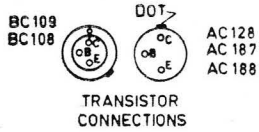
RESISTORS ARE $\pm 10\%$.
 VOLTAGES MEASURED WITH V.T.V.M., INPUT
 AERIAL SHORTED TO NEG. - RELATIVE TO
 NEG. TERMINAL OF SUPPLY.
 ALL TRANSISTOR SHIELD LEADS ARE
 CONNECTED TO NEG.



C	101	102		103	104	C
R	101, 102	103	113, 104, 105	107, 102, 106, 108, 109, 110, 111	112	R
TR		101	102	103, 104		TR



C	201	202, 203, 204, 205	314	C		
R	201, 202	203	204, 205	206	207	R
TR		201				TR



NOTES: RESISTORS ARE $\pm 10\%$ UNLESS INDICATED OTHERWISE.
 VOLTAGES ARE MEASURED WITH V.TVM, RELATIVE TO POSITIVE UNDER "NO SIGNAL" CONDITIONS WITH 33K RESISTOR CONNECTED ACROSS "a" + QUIESCENT CURRENT TR103-TR104 SET BY MEANS OF R108 TO 7.5mA AT 17V AND 75°F.
 C314: ONE PER PAIR OF MODULES:
 TOLERANCE ON ELECTROLYTIC CAPACITORS IS $-10+50\%$
 TOLERANCE ON OTHERS $\pm 10\%$.

ELECTRICAL PARTS LIST

CAPACITORS

C. No.	Description	V.W.	Tol. ±%	Type or Code No.
1	360E Styroflex	100	2	C.285.AA/5360E
2	10K ceramic	25	+80-20	Ducon CDR
3	10K ceramic	25	+80-20	Ducon CDR
4	3K6 Styroflex	100	5	C.285.AA/B3K6
5	47K ceramic	25	+80-20	Ducon CDR
6	47K ceramic	25	+80-20	Ducon CDR
7	47K ceramic	25	+80-20	Ducon CDR
8	part of 2nd I.F.T.			
9	47K ceramic	25	+80-20	Ducon CDR
10	47K ceramic	25	+80-20	Ducon CDR
11	47K ceramic	25	+80-20	Ducon CDR
12	part of 3rd I.F.T.			
13	8M electrolytic	4	—	C.426.A5/B8
14	3K3 ceramic	500	+50-20	C.322.BA/H3K3
15	47K ceramic	25	+80-20	Ducon CDR
16	3K3 ceramic	500	+50-20	C.322.BA/H3K3
17	10M electrolytic	16	—	C.426.AR/E10
18	47K flat foil	40	20	C.280.AA/P47K
101	2M5 electrolytic	64	—	C.426.AR/H2.5
102	200M electrolytic	10	—	C.426.AR/D200
103	40M electrolytic	16	—	C.426.AR/E40
104	1G electrolytic	16	10	C.437.AR/E1000
201	33K Polyester	160	10	C.296.AA/A33K
202	2M5 electrolytic	64	—	C.426.AR/H2.5
203	64M electrolytic	10	—	C.426.AR/D64
204	5K6 Polyester	400	10	C.296.AC/A5K6
205	47K Polyester	160	10	C.296.AA/A47K
301-2	Tuning capacitor			CZ.107.103
303	30E air trimmer			C.005.CA/30E
304	30E air trimmer			C.005.CA/30E
305	2G electrolytic	25	—	{ CZ.100.152 Ducon ET5D
306	80M electrolytic	25	—	C.426.AR/F80
307-8	680K Polyester	160	10	C.296.AA/A680K
309-10	39K Polyester	160	10	C.296.AA/A39K
313	125M electrolytic	16	—	C.426.AR/D125
314	80M electrolytic	16	—	C.426.AR/E80
315	82K Polyester	160	10	C.296.AA/A82K
401-2	4K7 Polyester	400	10	C.296.AC/A4K7
403-4	640K electrolytic	64	—	C.426.A5/H0.64
405-6	6M5 electrolytic	25	—	C.426.AR/F6.4
501-2	68K Polyester	160	10	C.296.AA/A68K
503-4	68K Polyester	160	10	C.296.AA/A68K
505-6	3K3 Polyester	400	10	C.296.AC/A3K3
507-8	2K2 Polyester	400	10	C.296.AC/A2K2

RESISTORS

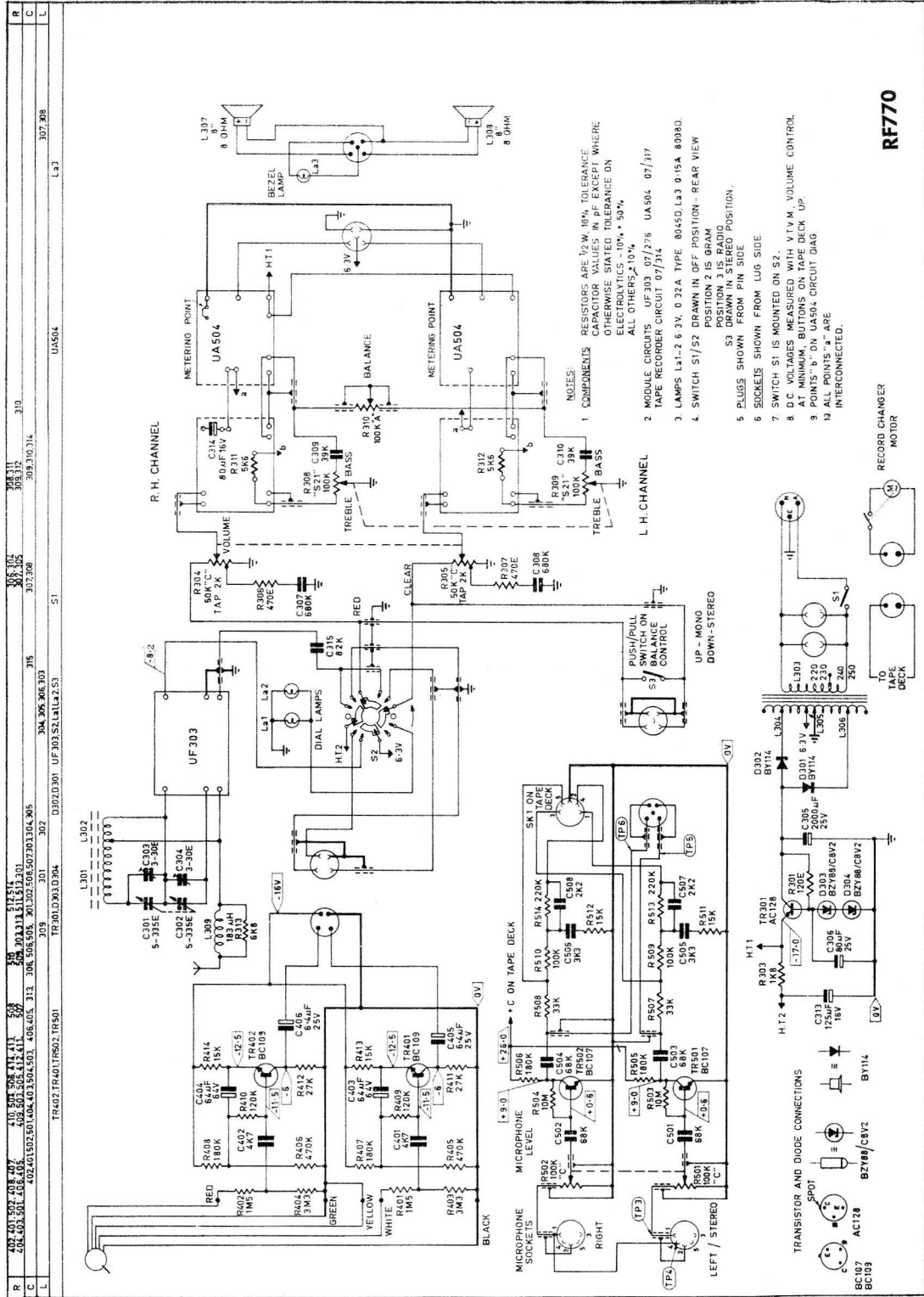
R. No.	Description	W.	Tol. ±%	Type or Code No.
1	1K8 carbon	1/2	10	IRC BTS
2	22E carbon	1/2	10	IRC BTS
3	3K3 carbon	1/2	10	IRC BTS
4	27K carbon	1/2	10	IRC BTS
5	1K5 carbon	1/2	10	IRC BTS
6	1K carbon	1/2	10	IRC BTS
7	47K carbon	1/2	10	IRC BTS
8	1K2 carbon	1/2	10	IRC BTS
9	39K carbon	1/2	10	IRC BTS
10	680E carbon	1/2	10	IRC BTS
11	18K carbon	1/2	10	IRC BTS
12	82K carbon	1/2	10	IRC BTS
13	560E carbon	1/2	10	IRC BTS
14	12K carbon	1/2	10	IRC BTS
15	1K5 carbon	1/2	10	IRC BTS
16	10K carbon	1/2	10	IRC BTS
17	3K3 carbon	1/2	10	IRC BTS
18	8K2 carbon	1/2	10	IRC BTS
101	56K carbon	1/2	10	IRC BTS
102	68K carbon	1/2	10	IRC BTS
103	22E carbon	1/2	10	IRC BTS
104	4K7 carbon	1/2	10	IRC BTS
105	4K7 carbon	1/2	10	IRC BTS
106	33E carbon	1/2	10	IRC BTS
107	33E NTC, disc	1	20	E.201.BC/P33E
108	100E carbon pre-set (bias adj.)			E.097.AC/100E
109	220E carbon	1/2	10	IRC BTS
110	E68 wire wound	1/2	10	IRC BW ^{1/2}
111	E68 wire wound	1/2	10	IRC BW ^{1/2}
112	220E carbon	1/2	10	IRC BTS
113	15K carbon	1/2	10	IRC BTS
201	820K cracked carbon	1/2	10	B8.305.05.A/820K
202	1M5 cracked carbon	1/2	10	B8.305.05A/1M5
203	10K carbon	1/2	10	IRC BTS
204	3K3 carbon	1/2	10	IRC BTS
205	22K carbon	1/2	10	IRC BTS
206	15K carbon	1/2	10	IRC BTS
207	6K8 carbon	1/2	10	IRC BTS
301	120E carbon	1/2	10	IRC BTS
303	1K8 carbon	1/2	10	IRC BTS
304-5	50K carbon potentiometer, taper C, tapped at 2K (volume)			{ CZ.034.159 dual ganged
306-7	470E carbon	1/2	10	IRC BTS

RESISTORS

R. No.	Description	W.	Tol. ±%	Type or Code No.
308-9	100K carbon potentiometer, taper S21 (tone)			{ CZ.034.156
310	100K carbon potentiometer, taper S21 (balance) with push pull SPST switch (stereo-mono).			{ CZ.032.059
311-2	5K6 carbon	1/2	10	IRC BTS
313	part of L309			
401-2	1M5 cracked carbon	1/2	5	B8.305.05B/1M5
403-4	3M3 cracked carbon	1/2	5	B8.305.05B/3M3
405-6	470K cracked carbon	1/2	5	B8.305.05B/470K
407-8	180K carbon	1/2	10	IRC BTS
409-10	120K carbon	1/2	10	IRC BTS
411-2	27K carbon	1/2	10	IRC BTS
413-4	15K carbon	1/2	10	IRC BTS
501-2	100K carbon potentiometer, taper C (mic. level)			{ CZ.034.160 dual ganged
503-4	10M cracked carbon	1/2	10	B8.305.05A/10M
505-6	180K carbon	1/2	10	IRC BTS
507-8	33K carbon	1/2	10	IRC BTS
509-10	100K carbon	1/2	10	IRC BTS
511-2	15K carbon	1/2	10	IRC BTS
513-4	220K carbon	1/2	10	IRC BTS

INDUCTORS

L. No.	Description	Code No.
1, 2, 3	Oscillator coil	CZ.652.003
4, 5	1st I.F. transformer	CZ.651.004
6, 7, 8	2nd I.F. transformer	CZ.651.003
9, 10, 11	3rd I.F. transformer	CZ.651.005
301-2	Rod aerial assy.	CZ.323.106
303-4-5-6	Ferroxcube rod for above	CS.152.428 cut to 5"
307-8	Power transformer	CZ.344.155
309	Speaker (Rola CBMX/8)	CZ.161.244
	Aerial loading coil	CZ.321.292



RF770

TAPE RECORDER — ELECTRICAL MEASUREMENTS

In checking the tape deck the following conditions shall apply:-

- 240 A.C. mains supply.
- Record level control set at maximum (clockwise) position.

Test points as follows:-

- TP1: SK1 pin 6—L.H. channel record/playback head.
- TP2: SK2 pin 6—R.H. channel record/playback head.
- TP3: Left microphone socket pin 1—left channel record input.
- TP4: Left microphone socket pin 4—right channel record input.
- TP5: Junction R507/C503—left channel playback output.
- TP6: Junction R508/C504—right channel playback output.

VOLTAGE AND CURRENT ANALYSIS

Voltage to be within $\pm 10\%$ of values indicated on circuit diagrams—RF770—TAPE RECORDER. A.C. mains current in "record" position should be approx. 110 mA $\pm 10\%$.

RECORD AMPLIFIER SENSITIVITY

Disconnect oscillator supply conductor at point "B". Microphone level control to 10 K ohm. (Slider to earth). Switch to record. Generator output at 700 Hz connected to TP3, input set to 1.5 mV. Output at TP1 = 7 - 11 mV. Similarly for right channel using TP4 and TP2 respectively.

OSCILLATOR VOLTAGES

Switch to record. Bias voltage at TP1 and TP2 = 30 mV $\pm 15\%$. Erase voltage across head 13V.

PLAYBACK AMPLIFIER SENSITIVITY

Microphone level control to minimum. Switch to playback. Generator output at 700 Hz connected to TP1 through 100 K ohm resistor, input set to 200 mV.

Output at TP5 = 300 - 450 mV. Similarly for right channel using TP2 and TP6 respectively. NOTE: Refer EL3312A service data for adjustment details.

TEST CASSETTES

- 4822.397.30011 (with mirror) Capstan adjustment.
 - 4822.397.30005 (6300 Hz) Azimuth alignment.
- Available from Philips Service Centres.

RF770

TAPE DECK — ELECTRICAL PARTS LIST

CAPACITORS

C. No.	Description	V.W.	Code No.
1-101	100E ceramic	500	C.322.BC/P100E
2-102	10M electrolytic	16	C.426.AR/E10
3	80M electrolytic	25	C.426.AR/F80
4-10	1M6 electrolytic	25	C.426.AS/F1.6
104-110			
5-105	10M electrolytic	16	C.426.AR/E10
6-106	4K7 ceramic	500	C.322.BC/P4K7
7	80M electrolytic	25	C.426.AR/F80
8-108	680E ceramic	500	C.322.BC/P680E
9-109	8K2 ceramic	500	C.322.BC/H8K2
11-111	220K Polyester	160	C.296.AA/A220K
12-112	150E ceramic	500	C.322.BC/P150E
13-113	82K Polyester	160	C.296.AA/A82K
14-114	12M5 electrolytic	25	C.426.AR/F12.5
15-115	100K Polyester	160	C.296.AA/A100K
201	39K Polyester	160	C.296.AA/A39K
202	68K Polyester	160	C.296.AA/A68K
203	33K Polyester	160	C.296.AA/A33K
204	68K Polyester	160	C.296.AA/A68K
301-302	400M electrolytic	40	C.437.AR/G400
303			
304	640M electrolytic	25	C.437.AR/F640
305	50M electrolytic	25	C.426.AR/F50
306	10K ceramic	500	C.318.BA/P10K
401-402	1M electrolytic	40	C.426.AS/G1
403	50M electrolytic	25	C.426.AR/F50

RESISTORS

R. No.	Description	W.	Tol. $\pm\%$	Type or Code No.
1-101	18K carbon	1/8	5	B8.031.04B/18K
3-103				
2-102	1M5 carbon	1/8	5	B8.031.04B/1M5
4-104	220K carbon	1/8	5	B8.031.04B/220K
5-105	910K carbon	1/8	5	B8.031.04B/910K
6-106	100K carbon	1/8	5	B8.031.04B/100K
7-107	22K carbon	1/8	5	B8.031.04B/22K
8-108	33E carbon	1/8	5	B8.031.04B/33E
9-109	120E carbon	1/8	5	B8.031.04B/120E
10-110	6K8 carbon	1/8	5	B8.031.04B/6K8
11-111	22K log. potentiometer, with D.P. switch (record-ing level, switch SO)			4822.102.30082 dual ganged
12	10K carbon	1/8	5	B8.031.04B/10K
13-113				
14-114	1M8 carbon	1/8	5	B8.031.04B/1M8

RESISTORS

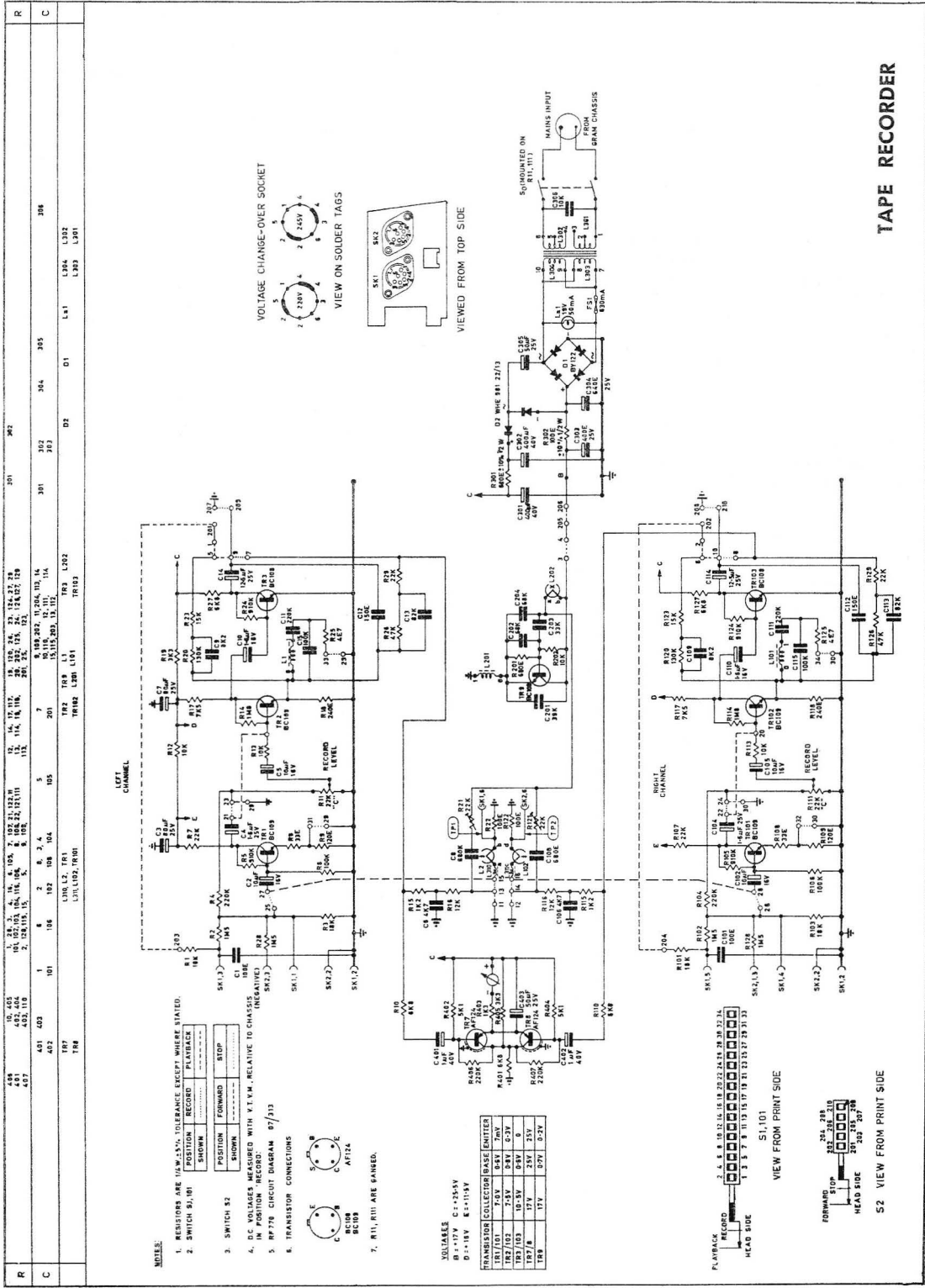
R. No.	Description	W.	Tol. $\pm\%$	Type or Code No.
15-115	1K2 carbon	1/8	5	B8.031.04B/1K2
16-116	12K carbon	1/8	5	B8.031.04B/12K
17-117	7K5 carbon	1/8	5	B8.031.04B/7K5
18-118	240E carbon	1/8	5	B8.031.04B/240E
19	3K3 carbon	1/8	5	B8.031.04B/3K3
20-120	130K carbon	1/8	5	B8.031.04B/130K
21-121	22K linear trim pot. (recording bias)			E.097.AC/22K
22-122	100E carbon	1/8	5	B8.031.04B/100E
23-123	15K carbon	1/8	5	B8.031.04B/15K
24-124	910K carbon	1/8	5	B8.031.04B/910K
25-125	4E7 carbon	1/8	5	B8.031.04B/4E7
26-126	47K carbon	1/8	5	B8.031.04B/47K
27-127	6K8 carbon	1/8	5	B8.031.04B/6K8
28-128	1M5 carbon	1/8	5	B8.031.04B/1M5
29-129	22K carbon	1/8	5	B8.031.04B/22K
201	680E carbon	1/8	5	B8.031.04B/680E
202	10K carbon	1/8	5	B8.031.04B/10K
301	680E carbon	1/2	10	B8.031.05A/680E
302	100E carbon	1/2	10	B8.031.05A/100E
401	6K8 carbon	1/8	5	B8.031.04B/6K8
402-404	5K1 carbon	1/8	5	B8.031.04B/5K1
403	1K3 carbon	1/8	5	B8.031.04B/1K3
405	3K3 carbon	1/8	5	B8.031.04B/3K3
406-407	220K carbon	1/8	5	B8.031.04B/220K

INDUCTORS

L. No.	Description	W.	Tol. $\pm\%$	Type or Code No.
1-101	Compensation coils			4822.157.50316
2-102	Record/playback head			4822.249.10027
201	Oscillator coil			4822.152.10049
202	Erase head			4822.249.40035
301-302	Motor/transformer			4822.361.70145
303-304				
310-311	Hum bucking coil			CZ.323.109

MISCELLANEOUS

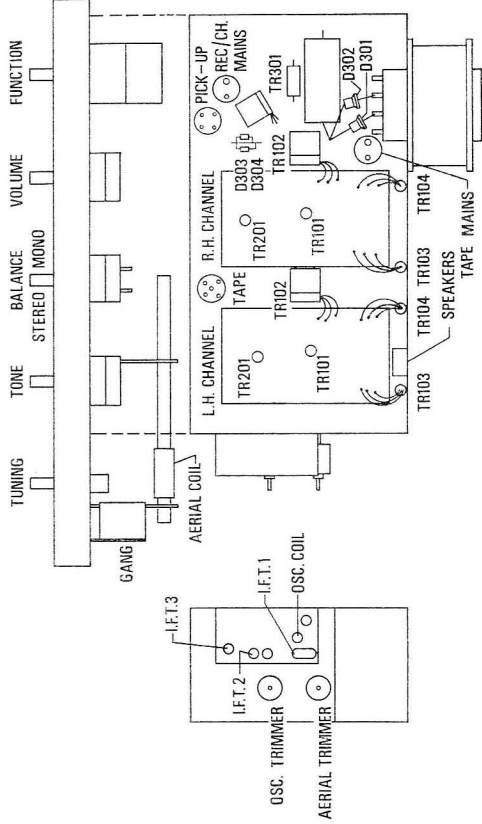
F51	Fuse, 630 mA			974/V630
LA1	Lamp (16V-30 mA)			4822.134.40078
D1	Rectifier X 4 (bridge)			BY122
D2	Rectifier, (15V 200 mA)			4822.130.50221 (WHE.981.22/13)
SK1-SK2	Socket, 5 pole			4822.267.40031
S1-S101	Switch, record/playback			4822.277.30309
S2	Switch, start/stop			4822.277.30311



TAPE RECORDER

MODEL RF770

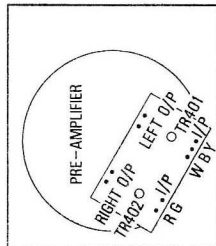
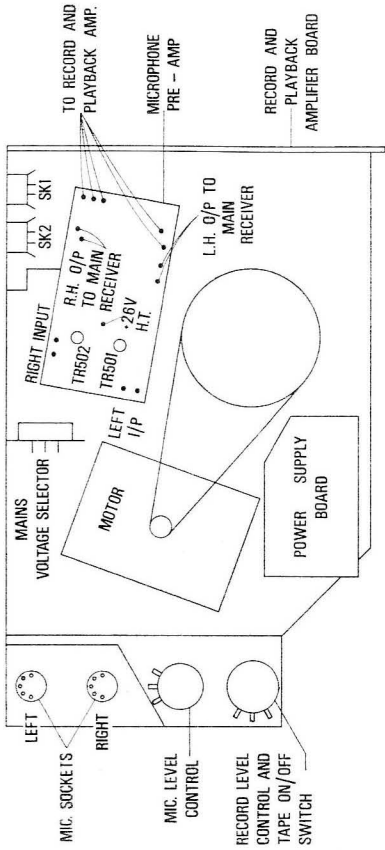
Do NOT operate set with transistors removed from heatsinks.



CS-438547

MODEL RF770

CASSETTE STEREO TAPE RECORDER



- R - RED - LIVE - RIGHT
- G - GREEN - EARTH - RIGHT
- W - WHITE - LIVE - LEFT
- B - BLACK - EARTH - LEFT
- Y - YELLOW - EARTH

UA 70

RECORD CHANGER

CS-438-568

MECHANICAL PARTS LIST

MECHANICAL PARTS		TAPE DECK	
Description	Code No.	Description	Code No.
Control knob X 5	CR.524.527	Knobs, X 2	4822.413.40275
Dial cord (50" required)	965/JB1	Top cover—tape recorder	4822.443.30102
Dial cord spring	CS.200.086	Top cover retaining clip	CS.282.533
Dial cursor assy. X 2	CR.480.716	Screw—tape recorder cover fixing	CH.521.269
Dial drum	CS.359.820	Decorative/designation plate	CS.242.482
Dial drum clip	CH.777.371 or CH.629.240	Meter—indicator	4822.347.10002
Dial escutcheon	CS.430.196	Socket—microphone X 2	3122.997.88880
Dial scale	CS.412.043	Counter	4822.349.50022
Dial scale support block X 2	CS.219.166	Winding pulley	4822.528.80118
Lampholder X 3	A3.311.15	Brake bracket	4822.492.60713
Leg assy.—Maple	CR.700.925	Felt pad for brake	4822.466.40041
—Walnut	CR.700.926	Turntable (left)	4822.528.10032
—Teak	CR.700.927	Turntable (right)	4822.528.10079
Lid stay	CR.285.821	Drive belt—for counter	4822.358.30052
Nut—dial escutcheon mtg. X 2	CS.271.404	Drive belt—friction disc to winding pulley	4822.358.30076
Plug—4 pin (P/U lead)	{ CZ.365.320	Drive belt—motor to flywheel	4822.358.30051
Plug—5 pin, X 2 (Tape recorder speakers and bezel lamp)	McMurdo B4CP	Thrust bearing, nylon X 2 (flywheel, motor)	4822.502.10531
	CZ.365.322	Friction disc (on flywheel)	4822.528.80117
Plug—5 pin, X 2 (Changer motor, tape deck power)	McMurdo B5CP	Friction drive disc for above	4822.532.50481
	CZ.365.142	Flywheel	4822.528.60029
Plug—Microphone	McMurdo B2/PP	Cover—tops of turntable spindles	4822.462.70107
	4822.264.40023	Pulley—counter driving	4822.528.80116
Socket—Microphone, 2X	(978/5X180)	Idler wheel—fast forward	4822.528.70106
	3122.997.88880	Idler wheel—rewind	4822.528.70116
Socket—4 pin, (P/U lead)	CZ.370.512	Push button—red	4822.411.50061
	McMurdo 4QMS/C	Push button—stop	4822.411.50062
Socket—5 pin, X 2 (Tape recorder, speakers and bezel lamp)	CZ.370.513	Push button—white	4822.411.50059
	McMurdo 5QMS/C	Spring, tension—for bush buttons	4822.492.40183
Socket—2 pin, X 2 (Changer motor, tape deck power)	CZ.370.144	Pressure roller	4822.403.40004
	McMurdo 2 QMP/AU	Pulley—motor	4822.528.80249
Switch—function and on/off (S1/S2)	CZ.220.401	Bearing—flywheel	4822.520.30115
Tuning spindle	CS.351.277		
Wordmark assy.	CR.531.439		

NOTE:- Refer EL3312A Service Data for other parts.

VIEW FROM FRONT SHOWING GANG IN OPEN POSITION.
(DRUM FULLY ANTICLOCKWISE.)

