

# ERT

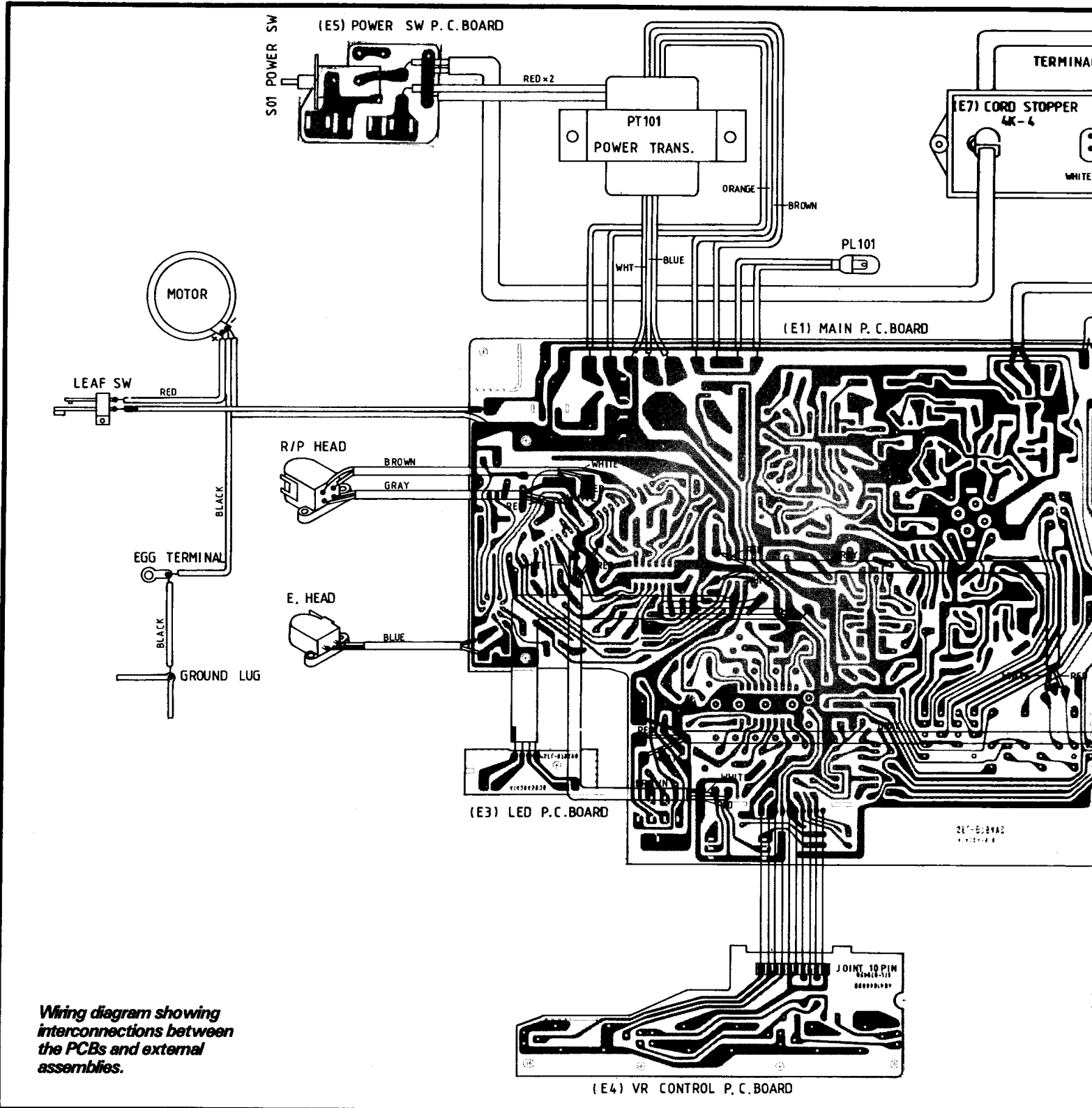
SERVICE CHART

# BUSH 8830/88

## Music centres

### (Part 1)

# 2541

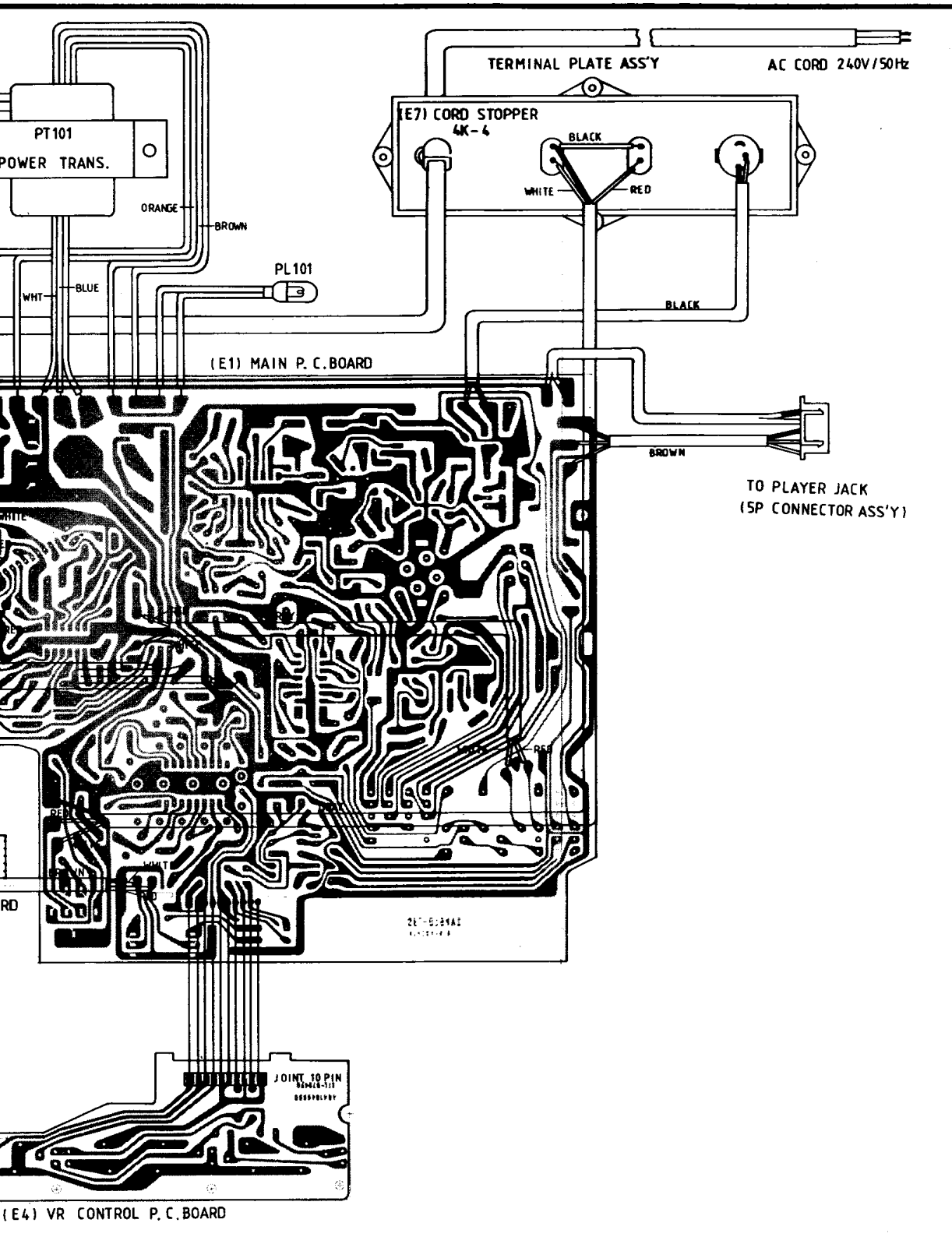


Wiring diagram showing interconnections between the PCBs and external assemblies.

# BUSH 8830/8835

## Music centres

### (Part 1)





## General

### Coverage

LW: 145-265kHz  
 MW: 510-1650kHz  
 VHF: 87.5-108.5MHz

### Intermediate frequencies

AM: 460kHz FM: 10.7MHz

### Audio output

5W into 4 ohms

### Transistors

TR101 2SC1674K  
 TR102-4 2SC1675L  
 TR201-2 2SC945F  
 TR401 2SC2001L  
 TR601 2SC2001L

### Diodes

D101 1S2790WT  
 D102 20A90  
 D104-5 1N418  
 D106 LT-3213A (green LED)  
 D401-3 1N4002L  
 D404 RD-0.1EB23  
 D601 LT-3233A (red LED)

### Integrated circuits

IC101 HA-12413  
 IC102 LA-3361  
 IC301 LA-4500  
 IC401 L78M12  
 IC601 TA-7668AP

### Ceramic filters

CF101-2 SFE10.7MA5M  
 CF103 SFU460B

### Pilot lamp

PL101 8V 60mA

### Sockets

J301: Stereo headphone socket.  
 J302: Speaker socket, 2 x 2-pin DIN  
 J601: Microphone input (L channel)  
 J602: Microphone input (R channel)

### Switches

SW01: mains on-off  
 SW201-6: function switch (LW, MW, FM, FM stereo, tape, phono).  
 SW601: record/play switch

### Fuses

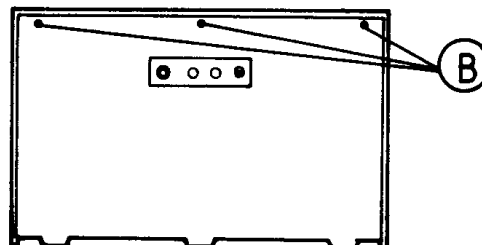
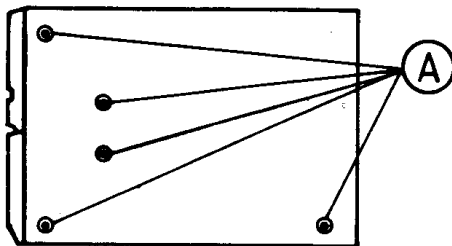
FS01 0.25T  
 FS401 T800mA/250V  
 Also fitted is a fusible resistor R401 (22 ohms)

### Manufacturer

Bush Radio plc, Wharf Road, Enfield, Middx. EN3 4TE. Tel: 01-805 1664.

## Dismantling

To remove the wooden cabinet, first remove 10 screws **A** (see diagram) five from each side of the cabinet. Then remove three screws **B** from the back board. The cabinet will then be freed.



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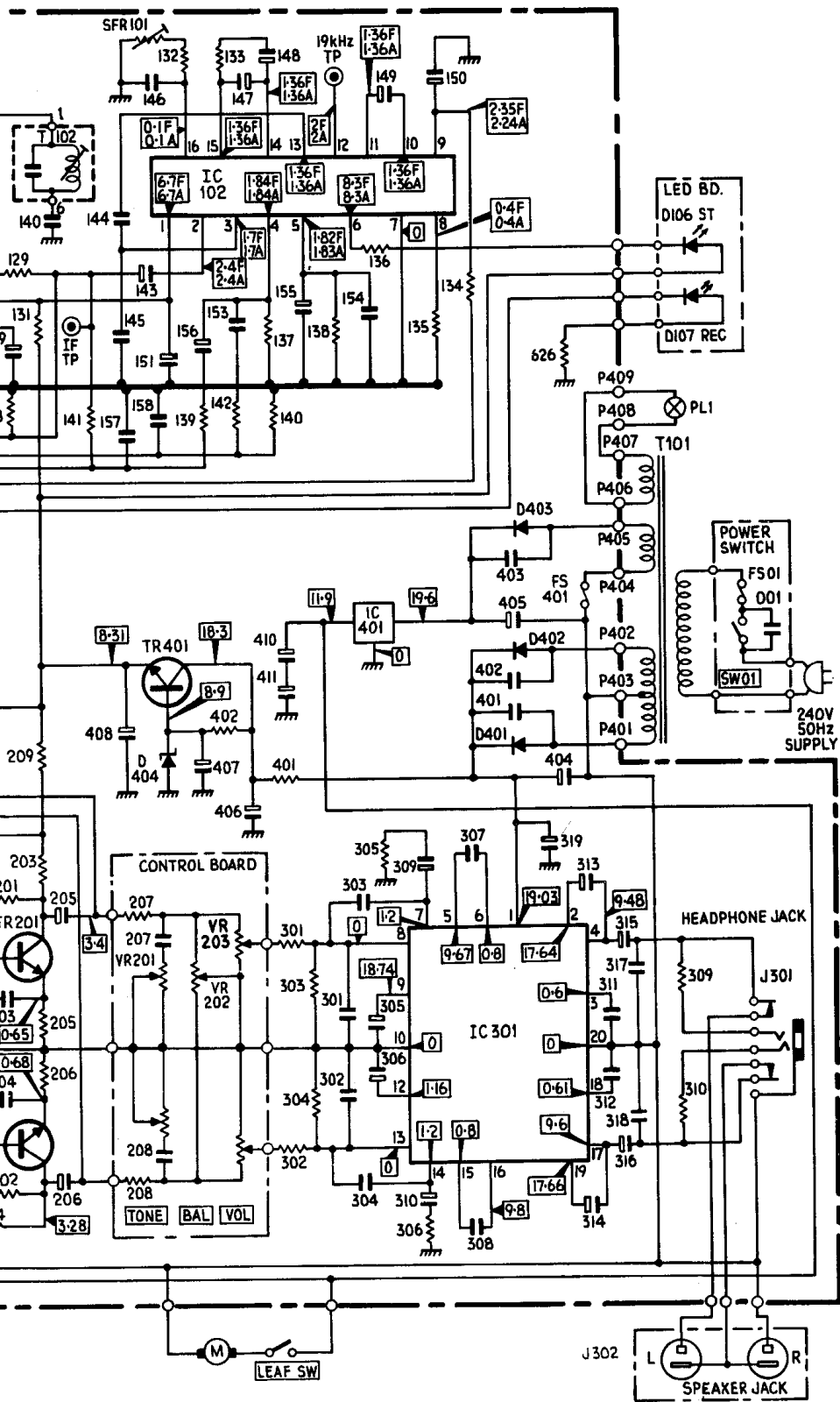
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28	129	131	141	SFR101	132	139	133	137	140	138	136	135	134	626	309	310					
139	140	145	157	146	156	147	148	155	154	149	150	403	319	313	311	317	315	001			
204	205	206	408	207	143	407	153	410	301	303	305	309	307	405	401	404	314	312	318	316	
			144	208	158	151	406	411	302	304	306	310	308								
T102										T101											



R145	27k	B1	C139	100u 10V	B1
R201	1M	A1	C140	10n	B2
R202	1M	A1	C141	100p	B2
R203	6k8	A1	C142	4u7 50V	B2
R204	6k8	A1	C143	4u7 50V	B1
R205	1k	A1	C144	47n	B1
R206	1k	A1	C145	680p	B1
R207	15	C1	C146	1n	B1
R208	15	C1	C147	1u 50V	B1
R209	330	A1	C148	1u 50V	B1
R301	2k2	A2	C149	1u 50V	A1
R302	2k2	A2	C150	1u 50V	A1
R303	100k	A2	C151	220u 10V	B2
R304	100k	A2	C152	10n	B1
R305	47	A2	C153	12n	B1
R306	47	A2	C154	12n	A1
R309	220	A2	C155	4u7 50V	A1
R310	220	A2	C156	4u7 50V	A1
R401	22	B2	C157	2n2	A1
R402	1k	B2	C158	2n2	A1
R501	1M	B1	C159	22n	B1
R502	1M	B1	C160	22n	B1
R601	10	B2	C161	10u 25V	B1
R602	10	B2	C162	4u7 50V	B1
R603	100	B2	C201	1u 50V	A1
R604	100	B2	C202	1u 50V	A1
R605	15k	B2	C203	330p	A1
R606	15k	B2	C204	330p	A1
R607	39k	B2	C205	10u 25V	A2
R608	39k	B2	C206	10u 25V	A2
R609	220k	A2	C207	18n	C1
R610	220k	B2	C208	18n	C1
R611	10k	A2	C209	100u 16V	A1
R612	10k	B2	C301	470p	A2
R613	22k	A2	C302	470p	A2
R614	22k	B2	C303	330p	A2
R617	22k	A2	C304	330p	A2
R618	22k	A2	C305	100u 25V	A2
R619	1k	A2	C306	100u 16V	A2
R620	1k	A2	C307	30p	A2
R621	470k	A1	C308	30p	A2
R622	470k	A1	C309	100u 16V	A2
R623	1k	A2	C310	100u 16V	A2
R624	470	B2	C311	10n	A2
R625	560k	B2	C312	10n	A2
R626	1k	B2	C313	100u 16V	A2
R627	68	B2	C314	100u 16V	A2
R628	22k	B2	C315	470u 16V	A2
R629	47	B2	C316	460u 16V	A2
R630	1	A2	C317	200n	A2
SFR101	10k	B1	C318	200n	A2
VR201	50k + 50k	C1	C319	470u 25V	A2
VR202	100k	C1	C401	22n	B2
VR203	50k + 50k	C1	C402	22n	B2
			C403	22n	B2
			C404	220u 25V	B2
			C405	100u 25V	B2
			C406	220u 25V	B2
			C407	100u 16V	B2
			C408	220u 16V	B2
			C410	470u 16V	B2
			C411	470u 16V	B2
			C501	15p	B1
			C502	15p	B1
			C601	1n	B2
			C602	1n	B2
			C603	4u7 50V	B2
			C604	4u7 50V	B2
			C605	330p	B2
			C606	330p	B2
			C607	10u 25V	A2
			C608	10u 25V	B2
			C609	68p	A2
			C610	68p	B2
			C611	10n	B2
			C612	10n	B2
			C613	4n7	B2
			C614	4n7	B2
			C615	4u7 50V	A2
			C616	4u7 50V	B2
			C617	1n	A2
			C618	1n	B2
			C619	4n7	A2
			C620	4n7	B2
			C621	4u7 50V	A2
			C622	4u7 50V	A2
			C623	1n5	A2
			C624	1n5	A2
			C625	22u 16V	B2
			C626	100u 16V	B2
			C627	100u 16V	B2
			C628	47n	B2
			C629	15n	B2
			C630	10n	B2
			C631	4n7	B2
			C632	47u 16V	B2
			C633	33n	A2
			C001	4n7	D1

**CAPACITORS**

C101	20p	B1
C102	27p	B1
C103	20p	B1
C104	10n	B1
C105	22n	B1
C106	10n	B1
C107	22p	B1
C108	5p	B1
C109	24p	B1
C110	220p	B1
C111	10n	B1
C112	2p	B1
C113	6p	B1
C114	20p	B1
C115	4p	B1
C116	22n	B1
C117	5p	B1
C118	100p	B1
C119	10n	A1
C120	22n	A1
C121	330p	A1
C122	18p	A1
C124	270p	A1
C125	10u 25V	B1
C126	22n	B1
C127	22n	B1
C128	22n	B1
C129	22n	B1
C130	22n	B1
C131	10u 25V	B1
C132	22n	B1
C133	22n	B1
C134	47u 10V	B2
C135	22n	B1
C136	1u 50V	B2
C137	1u 50V	B2
C138	22n	B2

R109	220	B1	R118	470	B1	R127	22k	B1	R136	1k	A1
R110	330	B1	R119	470	B1	R128	47k	B2	R137	3k3	B1
R111	22k	B1	R120	330	B1	R129	8k2	B2	R138	3k3	A1
R112	10k	B1	R121	10k	B1	R130	330	B2	R139	6k8	A1
R113	2k2	B1	R122	220k	B1	R131	100	B2	R140	6k8	A1
R114	100	B1	R123	680k	B2	R132	6k8	B1	R141	18k	A1
R115	10	A1	R124	5k6	B2	R133	1k	B1	R142	18k	A1
R116	220k	B1	R125	2k2	B1	R134	12k	A1	R143	3k9	B1
R117	2k2	A1	R126	2k2	B1	R135	390	A1	R144	33k	B1

# ERT

## SERVICE CHART

# 2542

# BUSH 8830/88

## Music centres

### (Part 2)

### Alignment

#### AM circuits (IF)

Connect IF sweep generator to AM aerial. Connect output meter across L or R speaker jack, together with a four ohm load for each channel. Turn receiver volume control to maximum and balance and tone controls to their centre-range positions. Switch to MW and tune to extreme low frequency end of band.

Inject a signal centred on 460kHz and adjust the cores of T103 and T104 for maximum output. Repeat the adjustments for optimum sensitivity.

#### AM circuits (RF)

Remove sweep generator. Connect signal generator to coupling loop placed near to ferrite rod aerial. Select LW and tune to extreme low frequency end of scale.

Inject a signal of 145kHz AM 30% at 1kHz and adjust core of LW oscillator coil L107 for maximum output on meter. Retune receiver to extreme high

frequency end of scale, inject a signal of 265kHz and adjust LW oscillator trimmer TC6 for maximum output.

Inject a signal of 160kHz, tune in the signal and then adjust position of LW coil on ferrite rod for maximum output. Inject a signal of 240kHz, tune in the signal and then adjust LW aerial trimmer TC5 for maximum output.

Repeat the LW alignment steps until no further improvement can be obtained.

Select MW band and tune to extreme low frequency end of scale. Inject a signal of 510kHz and adjust MW oscillator coil L107 for maximum output. Retune to extreme high frequency end of scale, inject a signal of 1650kHz and adjust MW oscillator trimmer TC4 for maximum output.

Inject a signal of 600kHz, tune in the signal and then adjust the position of MW coil on ferrite rod for maximum output. Inject a signal of 1400kHz, tune in the signal and then adjust MW aerial trimmer TC3 for maximum output.

Repeat the MW alignment steps until no further improvement can be obtained.

#### FM circuits (IF)

Connect sweep generator to VHF aerial terminal. Switch receiver to VHF and tune to extreme low frequency end of band.

Inject a sweep signal centred on 10.7MHz and adjust the cores of T101 and T102 for maximum reading on output meter.

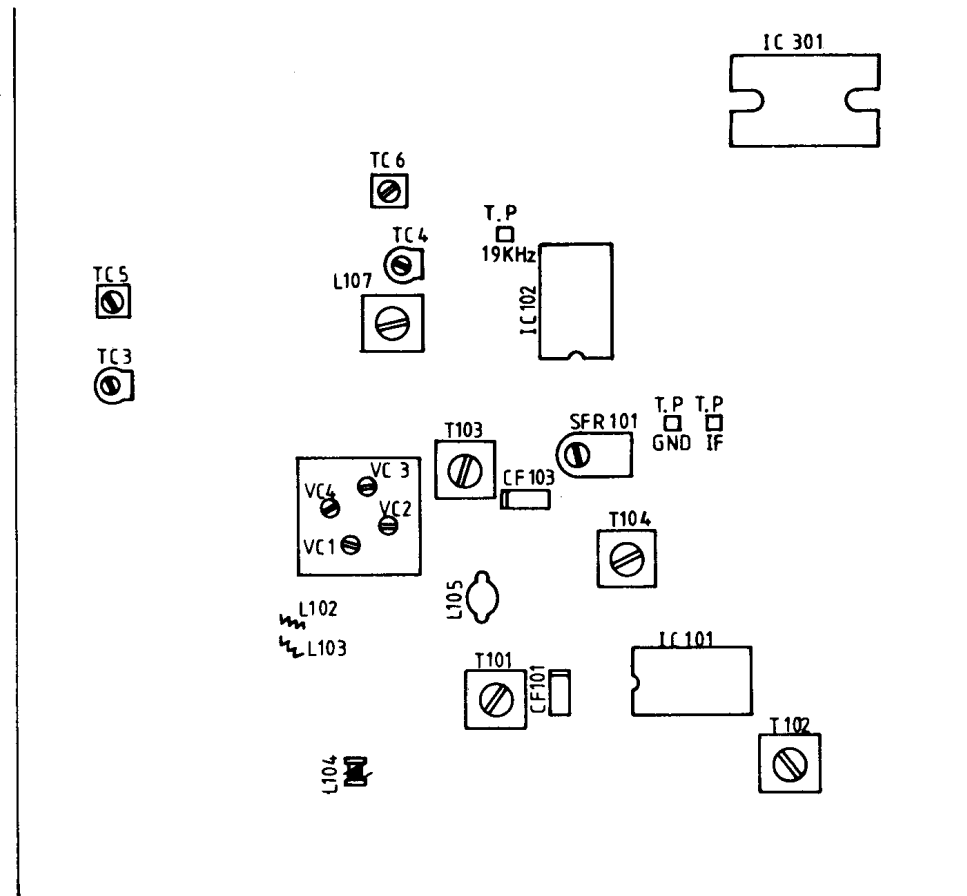
Repeat these adjustments for optimum sensitivity.

#### FM circuits (RF)

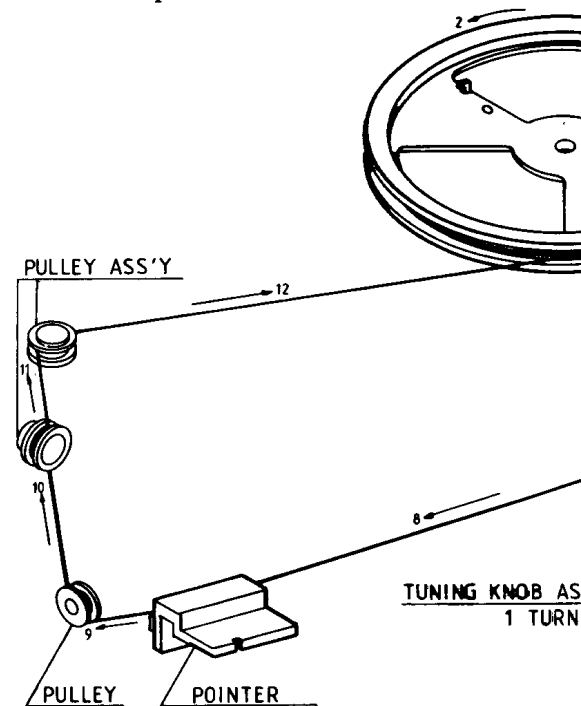
Replace sweep generator with signal generator at the VHF aerial terminal, via matching network. With receiver tuned to extreme low frequency end of scale, inject a signal of 87.5MHz FM and adjust FM oscillator coil L105 for maximum reading on output meter. Retune to extreme high frequency end of scale, inject a signal of 108.5MHz and adjust FM oscillator trimmer TC2 for maximum output.

Repeat the L105 and TC2 alignment steps for optimum sensitivity.

Inject a signal of 90MHz, tune in the signal and then adjust L101, L102 and L103, by slightly opening or closing coil turns, for maximum output. Inject a signal of 106MHz, tune in the signal and then adjust aerial trimmer TC1 for maximum output.



Plan view of PCB showing alignment points.



Replacement drive cord stringing. Length of cord = 1

# BUSH 8830/8835

## Music centres

### (Part 2)

end of scale, inject a signal of 160kHz, tune in the signal and adjust LW oscillator trimmer TC5 for maximum output.

Inject a signal of 160kHz, tune in the signal and adjust position of LW coil for maximum output. Inject a signal of 140kHz, tune in the signal and adjust LW aerial trimmer TC5 for maximum output.

Repeat the LW alignment steps until no further improvement can be obtained.

Repeat the MW alignment steps until no further improvement can be obtained.

Repeat the LW alignment steps until no further improvement can be obtained.

Repeat the MW alignment steps until no further improvement can be obtained.

#### FM circuits (IF)

Connect sweep generator to VHF aerial terminal. Switch receiver to VHF and tune to extreme low frequency end of band.

Inject a sweep signal centred on 10.7MHz and adjust the cores of T101 and T102 for maximum reading on output meter.

Repeat these adjustments for optimum sensitivity.

#### FM circuits (RF)

Replace sweep generator with signal generator at the VHF aerial terminal, via matching network. With receiver tuned to extreme low frequency end of scale, inject a signal of 87.5MHz FM and adjust FM oscillator coil L105 for maximum reading on output meter. Retune to extreme high frequency end of scale, inject a signal of 108.5MHz and adjust FM oscillator trimmer TC2 for maximum output.

Repeat the L105 and TC2 alignment steps for optimum sensitivity.

Inject a signal of 90MHz, tune in the signal and then adjust L101, L102 and L103, by slightly opening or closing coil turns, for maximum output. Inject a signal of 106MHz, tune in the signal and then adjust aerial trimmer TC1 for maximum output.

Repeat the L101, L102, L103 and TC1 alignment steps for optimum sensitivity. Remove all test equipment.

#### FM Stereo alignment

Remove the line cord aerial attached to the external VHF aerial terminal. Connect FM signal generator to VHF aerial terminal. Connect frequency counter across pin 12 of IC102 and earth. Inject an FM signal of 98MHz at 30uV, tune in the signal, then adjust the preset control SFR101 to obtain a reading on the frequency counter of 19kHz  $\pm$  50Hz.

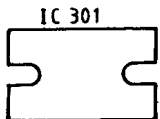
### Cassette unit adjustments

#### Take-up tension

Insert a torque test cassette and set the tape recorder to Play. The take-up torque should be between 40-70gm/C. If this is not so, clean any oil and dust adhering to the flywheel belt and the rubber ring of the take-up spool.

#### Head azimuth

Turn volume control to minimum. Insert a test tape with 8kHz tone. Connect voltmeter to cassette unit output. Play the test tape and adjust the azimuth adjusting screw on the R/P head assembly for maximum reading on meter.

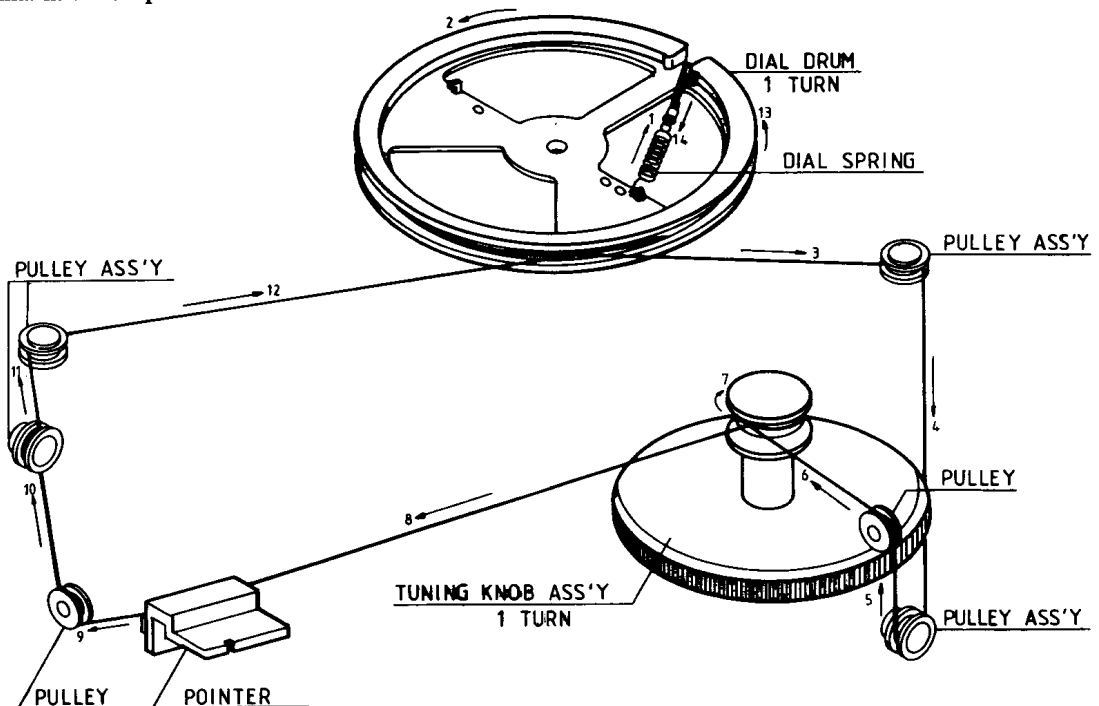


T.P T.P  
GND IF

104

IC 101

T 102



Replacement drive cord stringing. Length of cord = 1050mm.

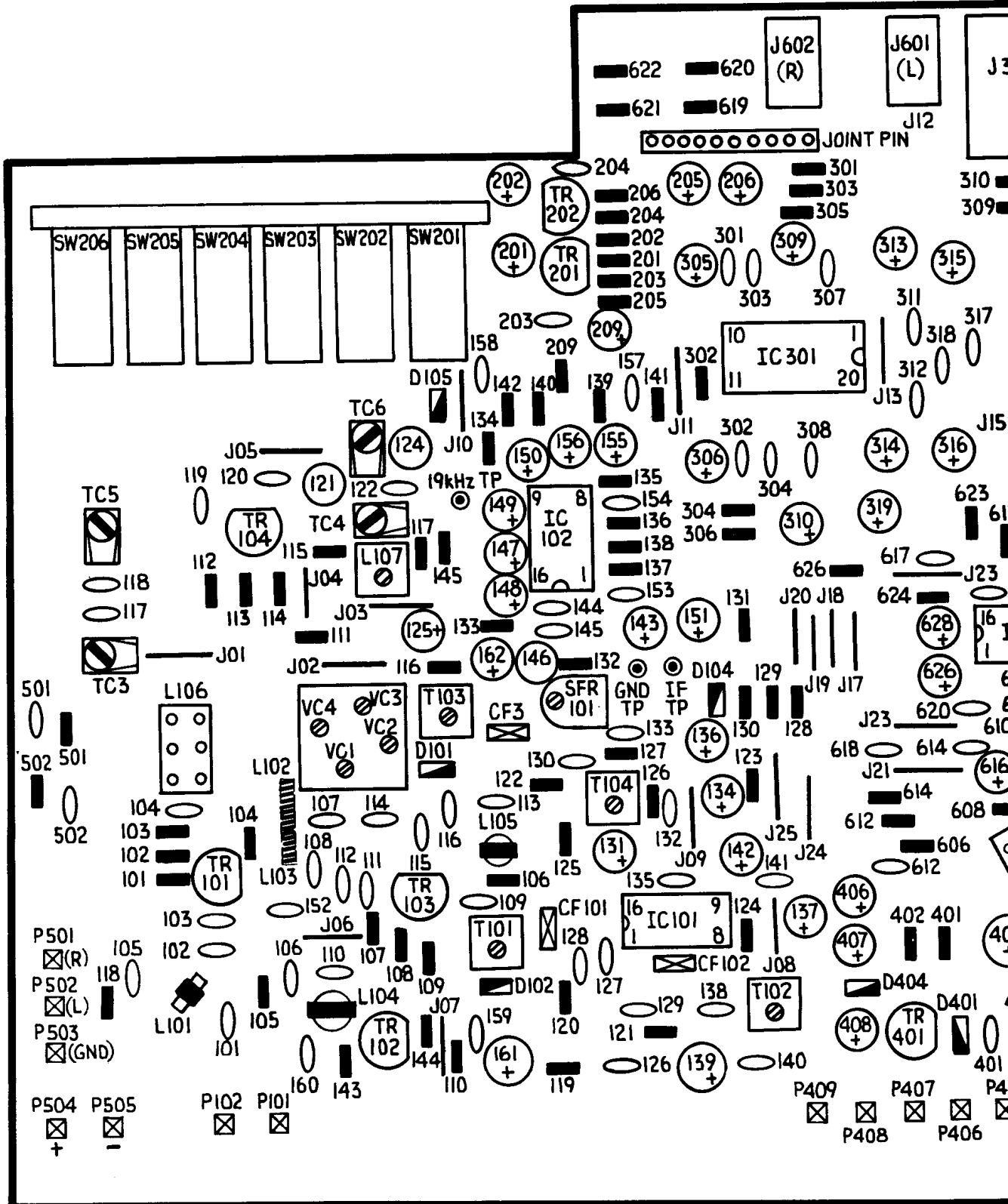


1

MAIN BOARD

A

B



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