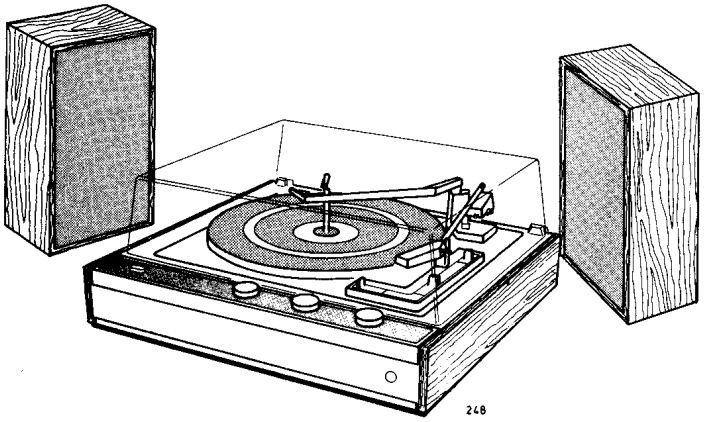
BUSH | MURPHY

SERVICE INFORMATION

MODEL BS3023



STEREOPHONIC RECORD PLAYER

SPECIFICATION

GENERAL
This model is a mains powered transistorised stereophonic record player with an auxiliary socket for connecting ancillary equipment. A socket for connecting stereo headphones is also provided.

The turntable unit is a three-speed automatic assembly that will accept up to eight records of one size, either 12 in., 10 in., or 7 in. Records of differing size or speed may not be mixed.

MAINS SUPPLY
220–240 volts a.c. 50Hz.

POWER CONSUMPTION
15 watts.

POWER OUTPUT
3.0 watts per channel music power at 1000 Hz with 10% total harmonic distortion, measured using an external stabilised power suppy substituted for the internal supply and set to the quiescent voltage of the internal supply.

AMPLIFIER LOAD IMPEDANCE
15 ohms each channel.

FUSES
Mains input: 160mAT.
Mains transformer secondary: 630mAF.

DISMANTLING

TO REMOVE BOTTOM COVER

1. Clamp the turntable unit to the baseboard by turning the transit screws fully anti-clockwise and secure the pick-up arm to its rest.
2. Stand the unit base upwards using suitable supports between the top surface of the unit and the bench to avoid damaging the turntable or pick-up.
3. Remove the five machine screws and one self-tapping screw from the bottom cover. Note that the self-tapping screw is used in the output bracket position.

TO REMOVE THE AMPLIFIER ASSEMBLY

1. Remove the bottom cover as described above.
2. Remove the three push-on control knobs and the circular nut retaining the headphone socket to the front panel.
3. Remove two nuts holding the amplifier assembly, one by the Balance control and one by the Tone control. A nut driver or box spanner will be required.
4. Tilt the assembly backwards to release it from the mounting studs and then lift it clear together with the headphone socket.
5. To replace the amplifier assembly, reverse the above procedure.

TO REMOVE THE TURNTABLE UNIT

1. Remove the bottom cover as previously described.
2. Unsolder the four screened leads from the tag strip under the turntable unit. Note the connections for use on reassembly.
3. Unsolder the two leads from the motor overwind to the bridge rectifier SR1 and the fuse FS1 located on the amplifier assembly. Note the connections for use on reassembly.
4. Unsolder from fuse FS2 and the ON-OFF switch SW2 the mains leads to the motor. Note the connections.
5. Unsolder the turntable earth lead from the tag located adjacent to FS2.
6. Lift the retaining clips on the transit screws so that they are in line with the screw shanks. The turntable assembly can now be lifted away from the base.
7. To reassemble, reverse the above procedure.

TO REMOVE THE PICK-UP CARTRIDGE

1. Remove the screw in the pick-up head moulding.
2. Note the connections to the cartridge and then unplug the leads from the rear.

TO REMOVE THE STYLUS

1. Turn the stylus lever midway between the two playing positions and then pull it carefully outwards and upwards away from its retaining spring.
2. To refit, locate the end of the stylus moulding under the retaining spring and then press the assembly into its seating. Ensure that the stylus arm lies in the fork actuator.

AMPLIFIER CHECK PROCEDURE

EQUIPMENT REQUIRED

Multimeter	– 20k ohms per volt
A.F. Generator	– 100Hz to 10kHz sinewave
Oscilloscope	– Y bandwith 5Mz, sensitivity 0.1V/cm
Power output meter	– 0 to 5 watts, 15 ohms impedance
Coupling capacitor	– 1000 pF

With the record player connected to a 240 volt a.c. supply, proceed as follows:

VOLTAGE AND CURRENT

1. Switch on and set the volume control to minimum with no input signal.
2. Connect the meter between the d.c. supply line and chassis; a reading of 22.5 volts ± 5% should be obtained.
3. Remove the fuse FS1 and connect the meter in its place, switched to a.c. current. The current should be approximately 35 mA.

SENSITIVITY (Left or Right channel)

1. Disconnect the pick-up cartridge, noting the positions of the wires.
2. Connect the A.F. generator via the coupling capacitor to pin 3 or 5 of the Tape socket SKT4. Connect the screen to pin 2.
3. Connect the Power Output Meter (set to 15 ohms) to loudspeaker socket SKT1 or SKT2, as appropriate.
4. Set the Volume control to maximum and the Tone control to maximum treble response. Set the Balance control to the mid-way point.
5. Adjust the input level from the A.F. Generator for 50mW output. The input signal should not exceed 70mV ± 3dB with a maximum of 3dB imbalance between channels.

RATED OUTPUT

1. Disconnect the pick-up cartridge, noting the positions of the wires.
2. Connect the A.F. Generator and the Power Output Meter as for Sensitivity check.
3. Connect the Oscilloscope in parallel with the Output Meter.
4. Set the Volume, Tone and Balance controls as for Sensitivity check.
5. Adjust the signal input from the A.F. Generator for maximum sinewave output just before the onset of clipping. An output of approximately 2.0 watts should be obtained for an input of not greater than 550mV.

RANGE OF TONE CONTROL

1. Disconnect the pick-up cartridge, noting the positions of the wires.
2. Connect the A.F. Generator and Power Output Meter as for Sensitivity check.
3. Set the Volume control to maximum and the Tone control to the mid-way position. The mid-way position must be estimated starting from the 'mains off' position of the control.
4. With a signal of 1000Hz, adjust the output of the A.F. Generator so that the Output Meter reads 1.0 watt and then adjust the Volume control to reduce the output to 100 mW (10dB down).
5. Change the input frequency to 10,000Hz and check that the Tone control range is —3dB (± 3dB) to +11dB (± 3dB) with respect to the level at 1000Hz.

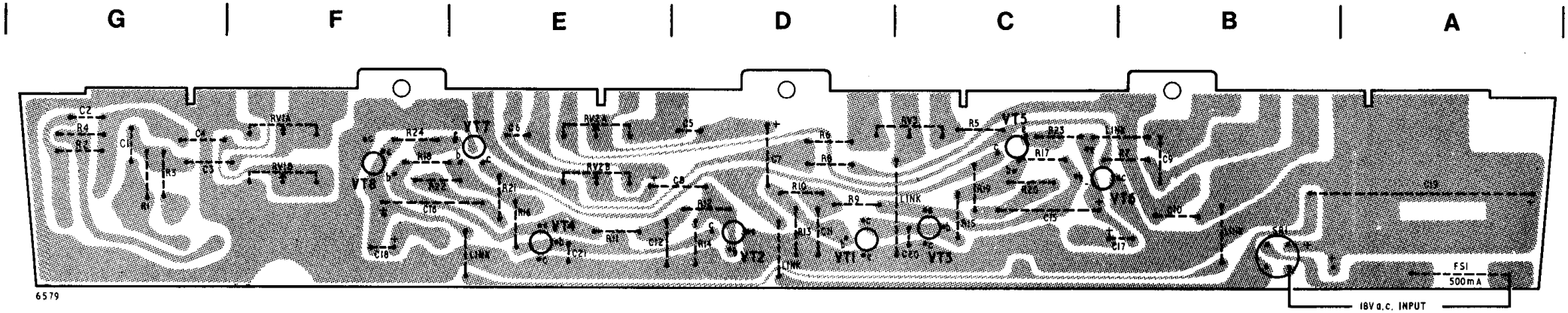


Fig. 1 *Amplifier board—Print side.*

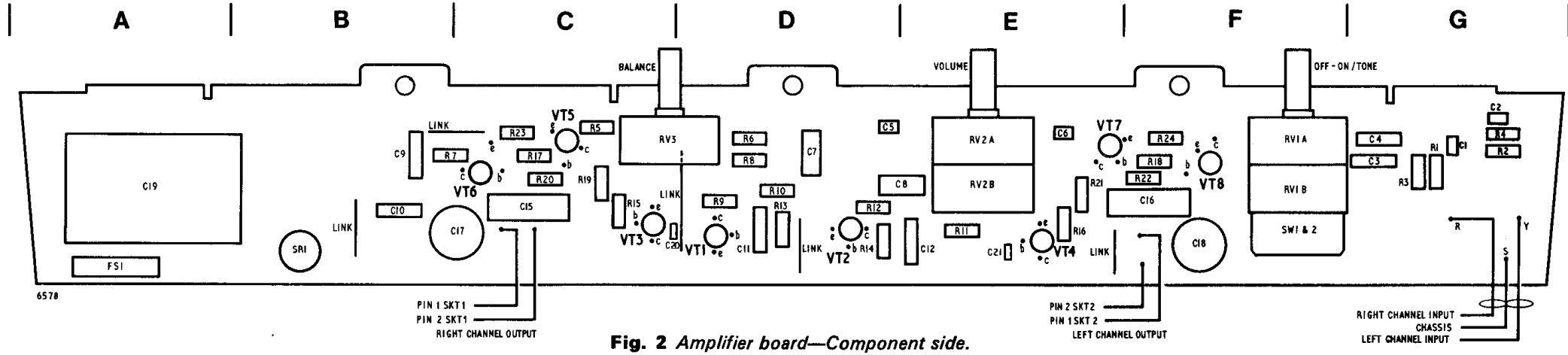
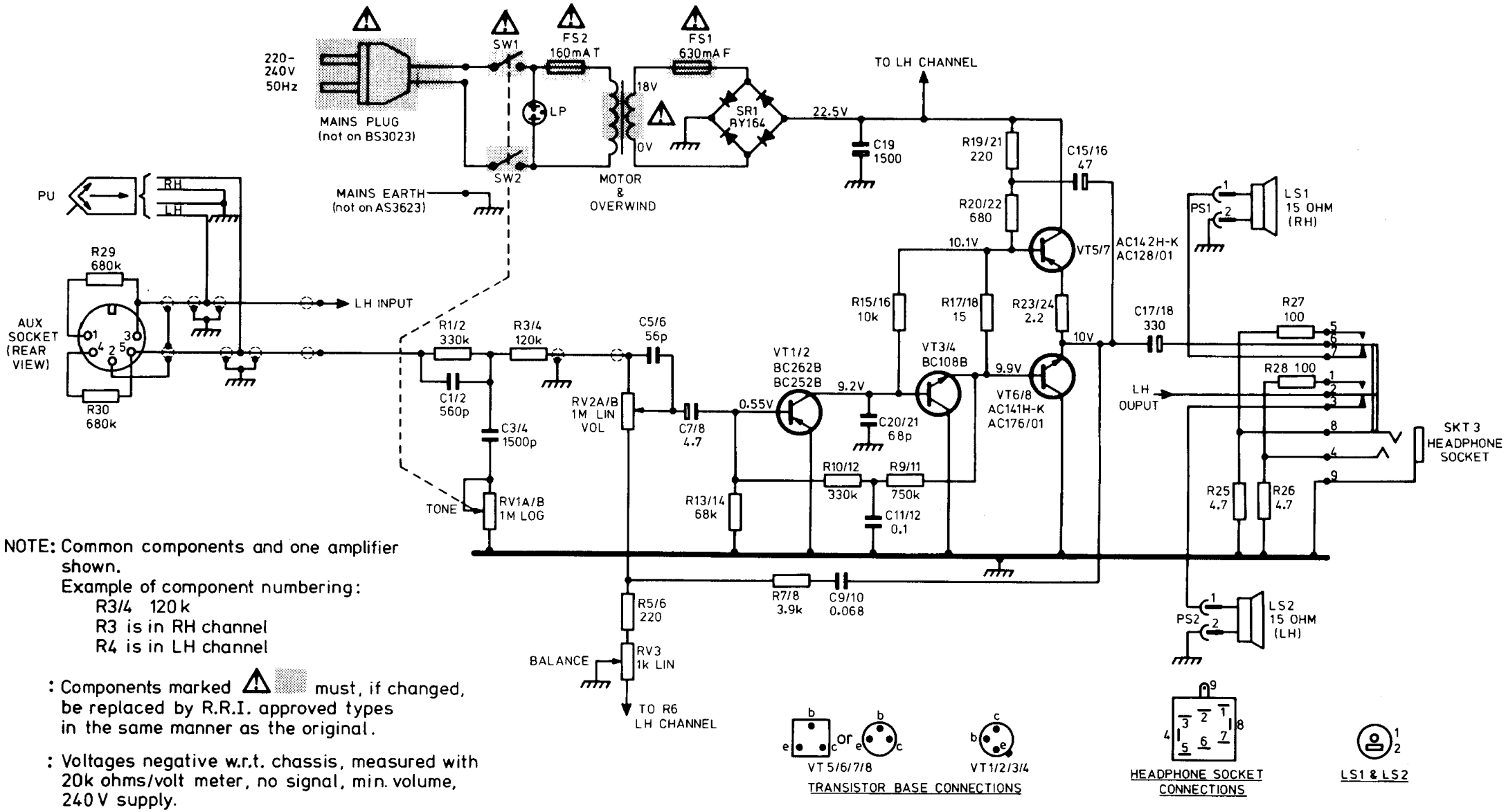


Fig. 2 *Amplifier board—Component side.*



NOTE: Common components and one amplifier shown.
Example of component numbering:
R3/4 120 k
R3 is in RH channel
R4 is in LH channel

: Components marked ⚠ must, if changed, be replaced by R.R.I. approved types in the same manner as the original.

: Voltages negative w.r.t. chassis, measured with 20k ohms/volt meter, no signal, min. volume, 240 V supply.

: Resistance/capacitance values in ohms/microfarads unless shown otherwise.

PARTS LIST

CAPACITORS

Abbreviations: CD – ceramic disc; CF – carbon film; E – electrolytic; P – polyester

Reference	Location	Value	Type	Volts	Part Number
C1	G	560pF	CD	500	2561 0715
C2	G	560pF	CD	500	2561 0715
C3	G	1500pF	P	500	2609 0211
C4	G	1500pF	P	500	2609 0211
C5	D	56pF	CD	500	2551 0320
C6	E	56pF	CD	500	2551 0320
C7	D	4·7uF	E	63	2751 5084
C8	D	4·7uF	E	63	2751 5084
C9	B	0·068uF	P	250	2606 3463
C10	B	0·068uF	P	250	2606 3463
C11	D	0·1uF	P	250	2606 3475
C12	E	0·1uF	P	250	2606 3475
C15	C	47uF	E	25	2751 5072
C16	F	47uF	E	25	2751 5072
C17	C	330uF	E	16	2767 1008
C18	F	330uF	E	16	2767 1008
C19	A	1500uF	E	40	2773 0153
C20	C/D	68pF	CD	63	2557 0171
C21	E	68pF	CD	63	2557 0171

RESISTORS

Reference	*Location	Value (ohms)	Type	Tol. (±%)	Rating (watts)	Part Number
R1	G	330k	CF	5	¼	2061 2382
R2	G	330k	CF	5	¼	2061 2382
R3	G	120k	CF	5	¼	2061 2266
R4	G	120k	CF	5	¼	2061 2266
R5	C	220	CF	5	¼	2061 1559
R6	D	220	CF	5	¼	2061 1559
R7	C	3·9k	CF	5	¼	2061 1882
R8	D	3·9k	CF	5	¼	2061 1882
R9	D	750k	CF	5	¼	2061 2485
R10	D	330k	CF	5	¼	2061 2382
R11	E	750k	CF	5	¼	2061 2485
R12	D	330k	CF	5	¼	2061 2382
R13	D	68k	CF	5	¼	2061 2217
R14	D	68k	CF	5	¼	2061 2217
R15	C	10k	CF	5	¼	2061 1997
R16	E	10k	CF	5	¼	2061 1997
R17	C	15	CF	5	¼	2061 1249
R18	F	15	CF	5	¼	2061 1249
R19	C	220	CF	5	¼	2061 1559
R20	C	680	CF	5	¼	2061 1687
R21	E	220	CF	5	¼	2061 1559
R22	F	680	CF	5	¼	2061 1687
R23	C	2·2	CF	5	¼	2061 2862
R24	F	2·2	CF	5	¼	2061 2862
R25	[1]	4·7	CF	5	¼	2061 2837
R26	[1]	4·7	CF	5	¼	2061 2837
R27	[1]	100	CF	5	½	2051 6265
R28	[1]	100	CF	5	½	2051 6265
R29	[2]	680k	CF	5	¼	2061 2473
R30	[2]	680k	CF	5	¼	2061 2473

[1] *Located on SKT 3*
[2] *Located on SKT 4*
* *see Figs. 1 and 2*

RESISTORS, VARIABLE

Reference	Location	Value (ohms)	Description	Part Number
RV1A	F	1M Log.	Tone control with switch	2354 0266
RV1B	F	1M Log.	Tone control with switch	2354 0266
RV2A	E	1M Lin.	Volume control	2354 0254
RV2B	E	1M Lin.	Volume control	2354 0254
RV3	C	1k Lin.	Balance control	2353 6780

MISCELLANEOUS

Reference	Type	Description	Part Number
FS1	S500	Fuse 630 mAF	3461 0480
FS2	S502	Fuse 160 mAT	3641 0625
LP1	Neon	Power supply indicator	3613 0023
PU1	SX6M	Pick-up cartridge	3132 0053
SKT1	—	Socket, 2-way DIN	3432 4252
SKT2	—	Socket, 2-way DIN	3432 4252
SKT3	—	Socket, headphone	3422 2212
SKT4	—	Socket, 5-way DIN	3432 4264

CABINET FITTINGS

Item	Part Number
Cabinet – teak	6871 1876
Escutcheon	6875 1783
Knob, control	6111 1636
Ring, compression, control knob	4768 0027
Disc, spacer, control knob	5101 1128
Fuse holder	3469 4201
Turntable unit, BSR C129R2 complete	4916 0291

LOUDSPEAKERS

Item	Part Number
Loudspeaker and cabinet assembly – YX9025 – Teak	7602 0605
Cabinet, loudspeaker – Teak	6716 0219
Back, cabinet	6726 0135
Loudspeaker, 116·5 mm	3121 9147
Loudspeaker, 118·5 mm	3121 9159
Loudspeaker, 5-inch	3121 0739
Lead assembly, loudspeaker	7501 4385
Plug, loudspeaker lead (2-pin)	3431 5433