

TA27—SERVICE NOTES

Operation

The Preamplifier is designed to operate in conjunction with a four-track mono tape recorder incorporating the BRC tape deck. The tape recorder is fitted with a 6-pin accessory (ACC) socket which feeds signals and operating power to the Preamplifier to provide the following facilities:

(1) Stereo preamplification, equalised at $3\frac{1}{2}$ ips, for playing back the second channel of pre-recorded stereo tapes through a mono record player, radiogram or high-quality amplifier.

(2) Playing back both channels of stereo tapes through a stereophonic record player, stereo radiogram or a high-quality stereo amplifier.*

(3) Second-track monitoring (using the earphone) to enable two separate recordings to be synchronised for simultaneous playback.

*The separate lead supplied with the TA27 is ready-fitted with connectors at each end to fit the 5-pin socket of the Preamplifier and the 5-pin socket of the tape recorder.

Circuit Notes

Second Channel Tape Playback. The Preamplifier is used with a BRC 4-track tape recorder with P2 connected to the 6-pin ACC socket. The signal from the 'unselected' head winding of the tape recorder, appearing at pin 2 of the ACC socket, is amplified by the TA27 to provide either earphone monitoring or an equalised output for feeding into a power amplifier to reproduce the second channel of stereo pre-recorded tapes.

The signal at pin 2 of P2 is connected to VT1 base via C1. The amplified output from VT1 is coupled to the base of VT2 via C3. Bias trap L1-C9 provides negative feedback to suppress any bias breaking through from the 'selected' head circuit of the recorder. VT2 and VT3 operate as directly coupled amplifiers with equalisation for tape replay provided by network R14, R15 and C6, C11, C5 and R16. The output from VT3 collector is taken to the Stereo output socket (SKT1) pin 3 via C7 and the preset volume control R17.

To facilitate direct connection to a stereo amplifier, the output from the tape recorder available at pin 4 of P2 is also taken to SKT1, pin 5.

Bias Trap Adjustment (L1)

Record a tone (300Hz-1kHz), or music of fairly constant programme level, on one track of the associated recorder. Plug in TA27 and, with the other track of the recorder switched to the Record mode, adjust L1 for maximum output of programme signal from the earphone socket (SKT3).

Access for Service

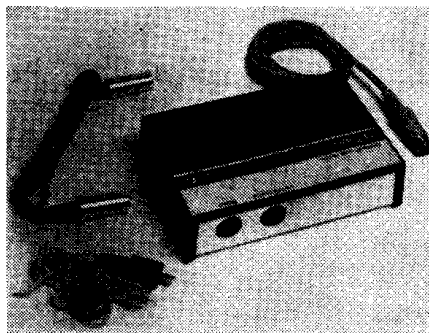
Take out screw from underside and slide off moulded cover. To remove printed board for access to copper side, lever off plastic feet from underside of chassis and disconnect earthing lead on solder tag riveted to chassis. Raise board into a convenient position whilst feeding plug lead through grommet.

BRC service manual

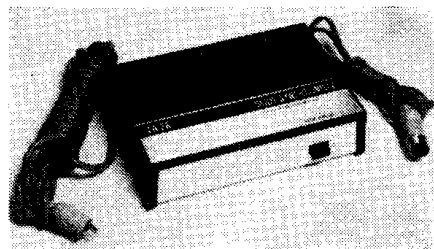
Price: One Shilling & Sixpence

Pre-Amplifier TA27

Slide Synchroniser TA28



TA27



TA28

The manufacturers reserve the right to vary specifications or use alternative materials as may be deemed necessary or desirable at any time.

BRITISH RADIO CORPORATION LIMITED

SERVICE DEPOTS

LONDON:
P.O. Box No. 121, Lea Valley Trading Estate, Angel Road, Edmonton,
London, N18 3BP. Tel. 01-807 3060
Spare Parts Tel. 01-807 0791 Answering Service: 01-807 6332

MANCHESTER:
Thorn House, Derby Street, Cheetham,
Manchester 8. Tel. 061-832 2499

GLASGOW:
155 Shieldhall Road, Glasgow, S.W.1.
Tel. 041-882 4512



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TA28—SERVICE NOTES

Operation

Plug P2 is connected to the 6-pin ACC socket of a BRC 4-track tape recorder. Plug P1 is plugged into the remote control socket of an automatic slide projector.

Circuit Notes

Record. VT1 and VT2 operate as an 800Hz audio oscillator with feedback from VT2 output to VT1 input via C7, R12, R3, S1 contacts 2 & 3 and C4.

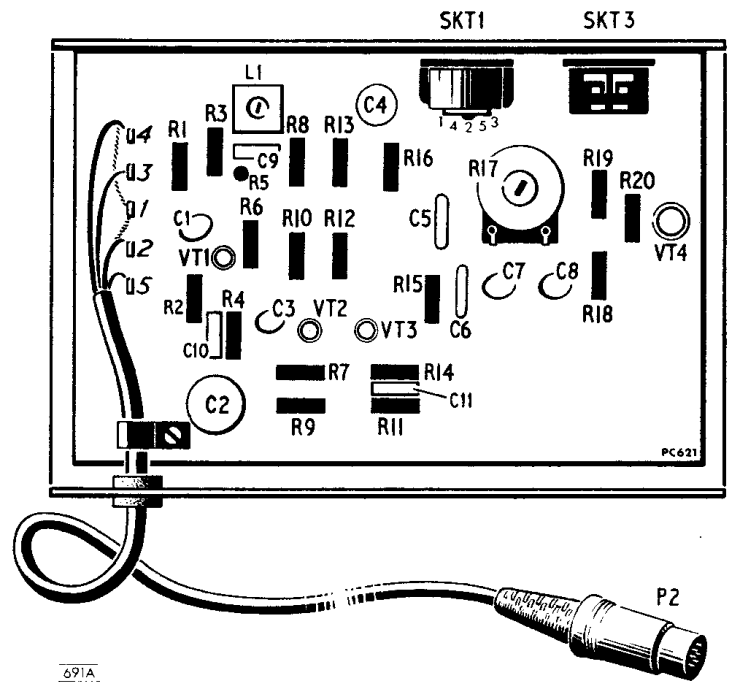
When the Sync Pulse button is depressed, the oscillator output appearing at the junction of C8, R14, R15, R16 is applied through C5, R8, S1 contacts 5 & 6 and pin 2 of P2 to the unselected head of the tape recorder, forming the recorded synchronizing pulse.

The oscillator output is also fed through R16 to the base of relay driver VT3. This drives VT3 on, energizing the relay and initiating slide change. C11 filters the signal ripple current to prevent chattering of the relay.

Playback. The synchronizing pulses recorded on the unselected track of the tape are applied via pin 2 of P2 to the audio amplifier VT1/VT2. The output from the amplifier is fed to the base of VT3, the relay driver, via C8 and R16. This pulse triggers the relay, initiating slide change.

Access for Service

Remove cover, earthing lead and plastic feet as described for TA27. To remove printed board for access to copper side, depress push-button whilst at the same time carefully springing the front chassis wall outward and raising the front edge of the printed board to release it. Hinge over the printed board and feed the leads through grommets.



TA27—Component locations

CIRCUIT DIAGRAMS

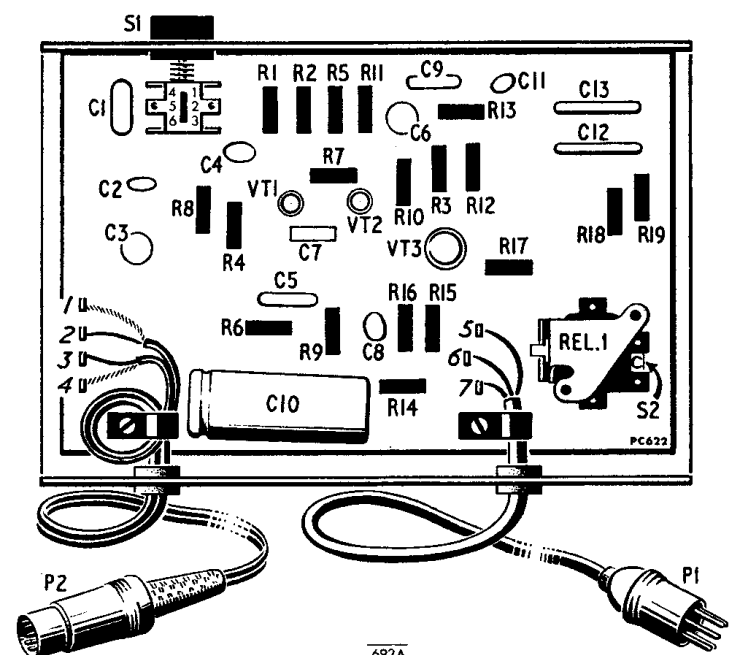
Figures in rectangles are DC voltage readings taken under 'no signal' conditions with a 20000Ω/volt meter. They were taken relative to negative chassis line and are based on the 24V (nominal) supply derived from the tape recorder via pin 3 of the accessory socket. This voltage should be checked initially and allowance made for tolerance variations of up to 10%. Ringed figures indicate printed board tag connections.

REPLACEMENT TRANSISTORS

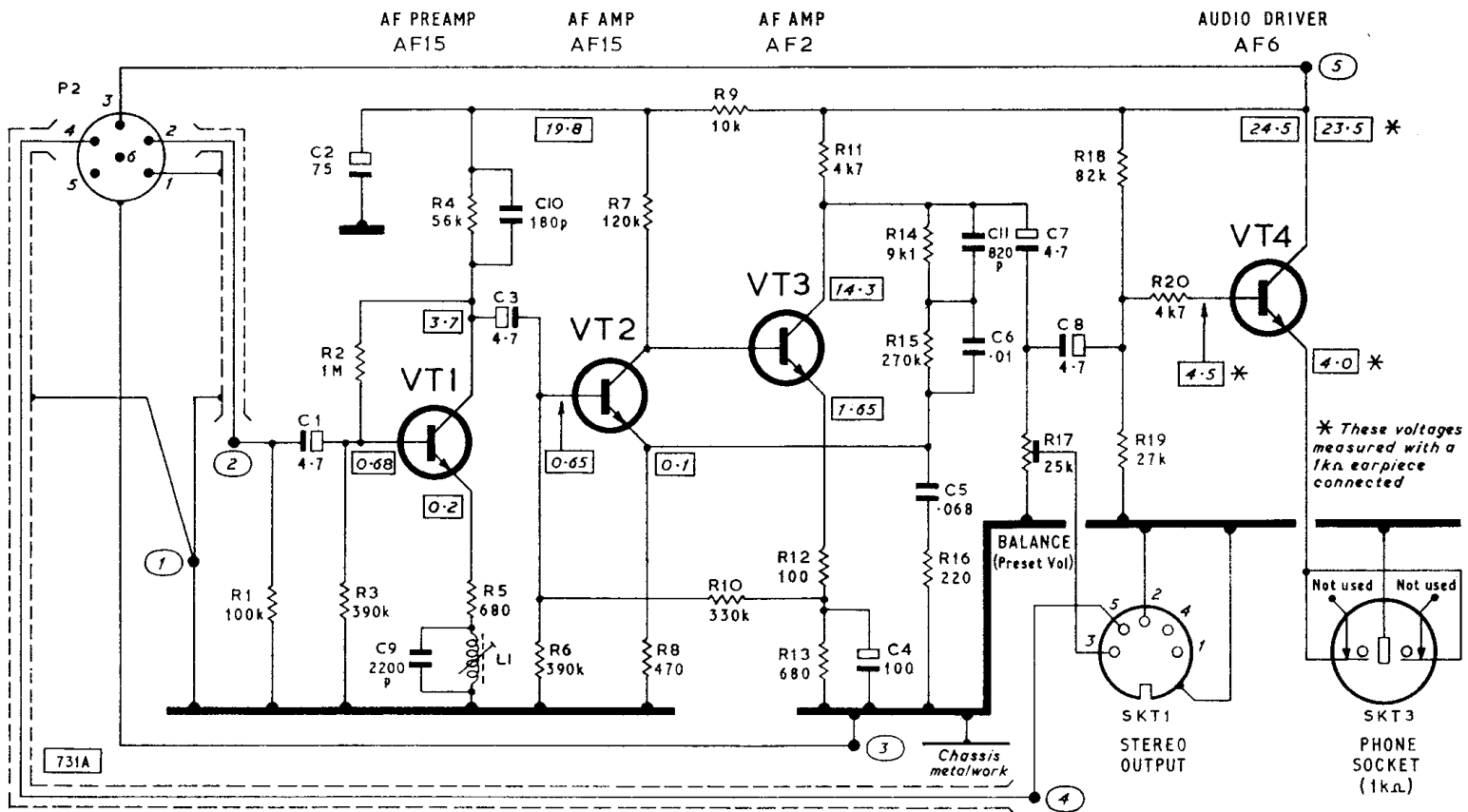
Replacement transistors are obtainable from BRC Service Depots quoting classification numbers shown in the Circuit Diagrams. Suitable Mullard types, which are available from wholesalers, are listed below.

TA27					
VT3	...	...	...	...	BC109
VT4	...	...	...	...	BC107
TA28					
VT1, VT2	...	...	...	...	BC109
VT3	...	...	...	...	BC107

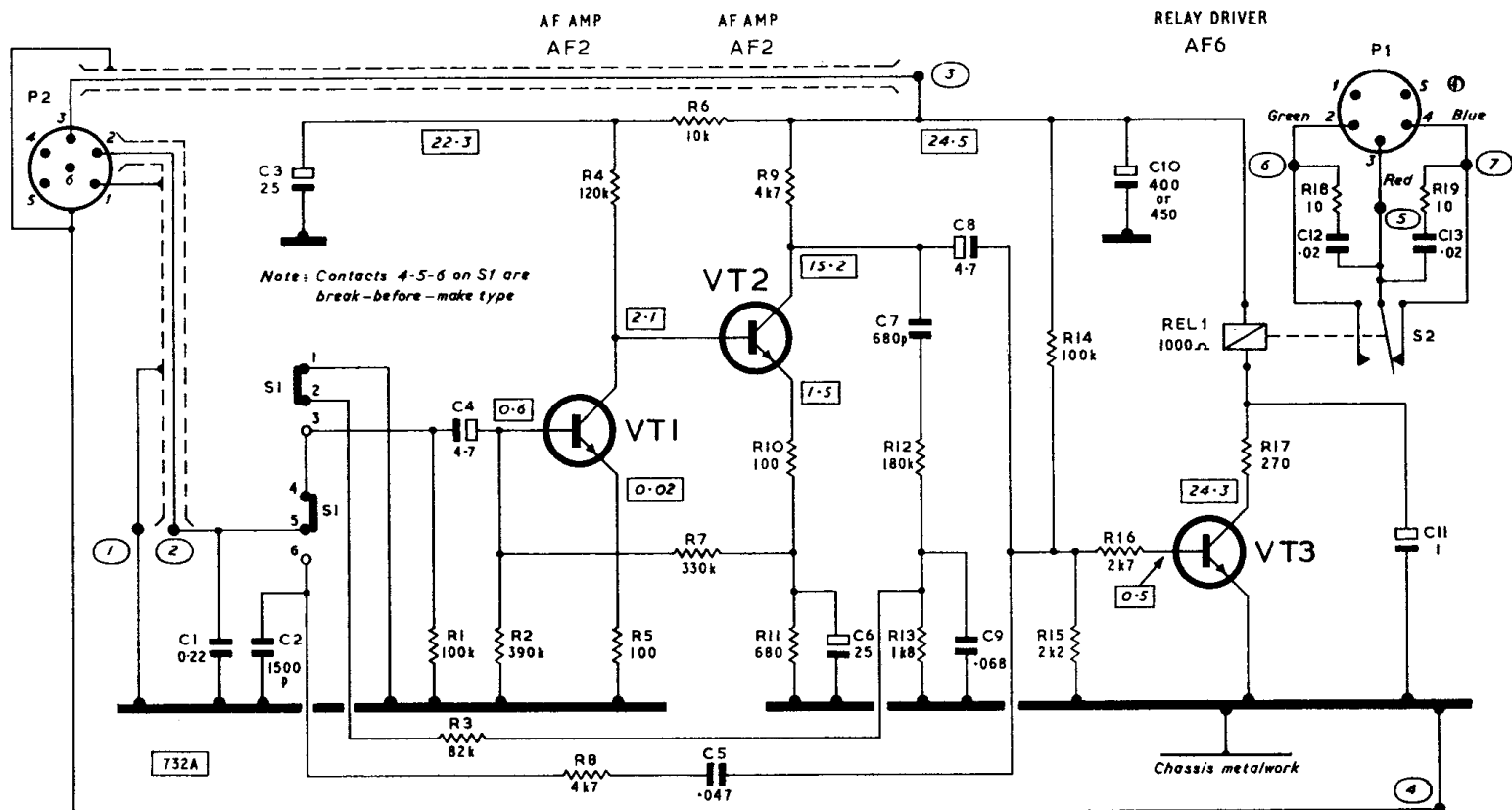
GUARANTEE REPLACEMENTS: Mullard types must be returned to the manufacturer with a claims form. All other types are guaranteed by BRC and the faulty semiconductor should be submitted to a BRC Service Depot together with details of the equipment from which it was removed.



TA28—Component locations



TA27—Circuit diagram



TA28—Circuit diagram

COMPONENT DETAILS

When ordering replacement capacitors and resistors for which no part number is given, please quote Model number and component details as stated below.

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CAPACITORS

REF	DESCRIPTION AND PART NO.
C1	4.7µF, Tantalum Elec., 35V, VT1 input coupling, 00E0-221/004/ST03
C2	75µF, Elec., 25V, VT1/VT2 supply decoupling, 00E0-228/019
C3	4.7µF, Tantalum Elec., 35V, VT1 output coupling, 00E0-221/004/ST03
C4	100µF, Elec., 6V, VT3 emitter bypass, 00E0-229/073
C5	.068µF, 10%, 250V, Part compensation network
C6	.01µF, 10%, 250V, Part compensation network
C7	4.7µF, Tantalum Elec., 35V, Part AF output coupling, 00E0-221/004/ST03
C8	4.7µF, Tantalum Elec., 35V, VT4 audio coupling, 00E0-221/004/ST03
C9	2200pF, 10%, 160V, Bias filter tuning
C10	180pF, 10%, 160V, High frequency attenuation
C11	820pF, 10%, 160V, Part compensation network

RESISTORS

REF	DESCRIPTION
R1*	100kΩ, 1/4W, 10%, Input matching
R2*	1MΩ, 1/4W, 10%, Part VT1 base bias pot. divider
R3*	390kΩ, 1/4W, 10%, Part VT1 base bias pot. divider
R4*	56kΩ, 1/4W, 10%, VT1 collector load
R5*	680Ω, 1/4W, 10%, VT1 emitter limiting
R6	390kΩ, 1/4W, 10%, Part VT2 base bias pot. divider
R7	120kΩ, 1/4W, 10%, VT2 collector load
R8	470Ω, 1/4W, 10%, VT2 emitter limiting
R9	10kΩ, 1/4W, 10%, VT1/VT2 supply decoupling
R10	330kΩ, 1/4W, 10%, Part VT2 base bias pot. divider
R11	4.7kΩ, 1/4W, 10%, VT3 collector load
R12	100Ω, 1/4W, 10%, Part VT3 emitter stabilizing
R13*	680Ω, 1/4W, 10%, Part VT3 emitter stabilizing
R14	9.1kΩ, 1/4W, 10%, Part compensation network
R15	270kΩ, 1/4W, 10%, Part compensation network
R16	220Ω, 1/4W, 10%, Part compensation network
R17	25kΩ Preset volume control, 00E1-040/006
R18	82kΩ, 1/4W, 10%, Part VT4 base bias pot. divider
R19	27kΩ, 1/4W, 10%, Part VT4 base bias pot. divider
R20	4.7kΩ, 1/4W, 10%, VT4 base stopper

*Low noise type resistors.

MISCELLANEOUS

REF	DESCRIPTION AND PART NO.
P2	Tape recorder plug (6-pin DIN), 08F6-063
SKT1	Stereo output socket (5-pin DIN), 08F6-053
SKT3	Earphone socket (2-pin DIN), 08F6-066
L1	Bias filter coil, 08D0-009

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CAPACITORS

REF	DESCRIPTION AND PART NO.
C1	0.22µF, 10%, 250V, Head tuning
C2	1500pF, 10%, 250V, Spurious oscillation suppression
C3	25µF, Elec., 25V, VT1 supply decoupling, 00E0-225/008
C4	4.7µF, Tantalum Elec., 35V, VT1 input coupling, 00E0-221/004/ST03
C5	.047µF, 10%, 250V, Part oscillator output coupling
C6	25µF, Elec., 25V, VT2 emitter bypass, 00E0-225/008
C7	680pF, 10%, 160V, Part oscillator feedback time constant
C8	4.7µF, Tantalum Elec., 35V, VT2 output coupling, 00E0-221/004/ST03
C9	.068µF, 10%, 250V, Part oscillator feedback time constant
C10*	400µF, Elec., 25V, Supply smoothing, 00E0-229/036
C11	1µF, Tantalum Elec., 35V, Relay anti-chatter, 00E0-220/017/ST04
C12	.02µF, 20%, 250V AC, Part relay click suppression
C13	.02µF, 20%, 250V AC, Part relay click suppression

*In some models C10 is 450µF, Elec., 35V.

RESISTORS

REF	DESCRIPTION
R1	100kΩ, 10%, 1/4W, Part oscillator feedback pot. divider (record and input matching (replay))
R2	390kΩ, 10%, 1/4W, Part VT1 base bias
R3	82kΩ, 10%, 1/4W, Part oscillator feedback divider
R4	120kΩ, 10%, 1/4W, VT1 collector load
R5	100Ω, 10%, 1/4W, VT1 emitter limiting
R6	10kΩ, 10%, 1/4W, VT1 supply decoupling
R7	330kΩ, 10%, 1/4W, Part VT1 base bias
R8	4.7kΩ, 10%, 1/4W, Part oscillator output coupling
R9	4.7kΩ, 10%, 1/4W, VT2 collector load
R10	100Ω, 10%, 1/4W, Part VT2 emitter stabilizing
R11	680Ω, 10%, 1/4W, Part VT2 emitter stabilizing
R12	180kΩ, 10%, 1/4W, Part oscillator feedback time constant
R13	1.8kΩ, 10%, 1/4W, Part oscillator feedback time constant
R14	100kΩ, 10%, 1/4W, Part VT3 base bias pot. divider
R15	2.2kΩ, 10%, 1/4W, Part VT3 base bias pot. divider
R16	2.7kΩ, 10%, 1/4W, VT3 base stopper
R17	270Ω, 10%, 1/4W, VT3 collector stopper
R18	10Ω, 20%, 1/4W, Part relay click suppression
R19	10Ω, 20%, 1/4W, Part relay click suppression

MISCELLANEOUS

REF	DESCRIPTION AND PART NO.
P1	Projector plug (5-pin DIN), 08F6-034
P2	Tape recorder plug (6-pin DIN), 08F6-063
REL1	Relay, 08D6-004
S1	Push-button switch, 08E2-037

REPLACEMENT PARTS

When ordering replacement components, please quote Model number and include the description or function given with part number.

TA27

Chassis	...	08B1-275/001
Printed board assembly	...	PC621/1
Grommet	...	08C3-006
Printed board mounting pillar	...	08A8-001
Printed board spacer (polystyrene)	...	08B4-012
Plastic foot	...	08A8-005/050
Cable clip	...	00L4-004
Stereo output lead with plugs (accessory item)	...	08M3-674
Earphone with lead and plug (accessory item)	...	08M3-675
Moulded cover	...	08C8-022
Screw	...	SA06MP08/C
Feature panel	...	08A4-196/001

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Moulded cover	...	08C8-022
Screw	...	SA06MP08/C
Feature panel	...	08A4-196/002
Chassis	...	08B1-275/002
Cable grommet	...	08C3-006
Printed board assemblies	...	PC622/1
Mounting pillar	...	08A8-001
Spacer	...	08B4-012
Plastic foot	...	08A8-005/050
Clip for tape recorder cable	...	00L4-004
Clip for projector cable	...	08L4-003