

Fig. 1

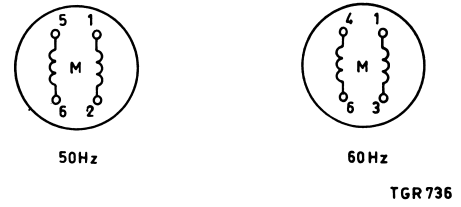


Fig. 2

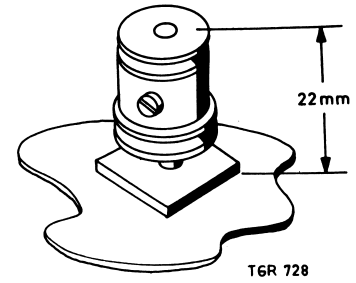


Fig. 3

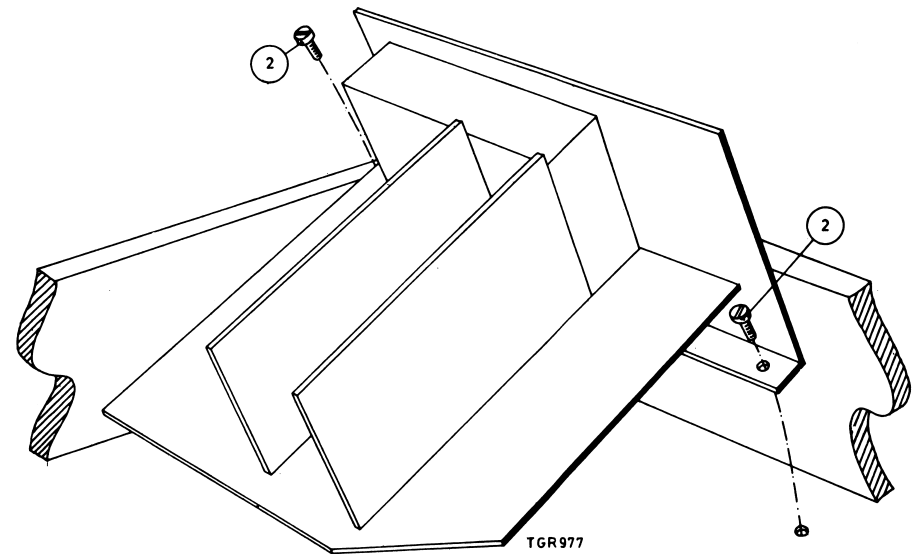
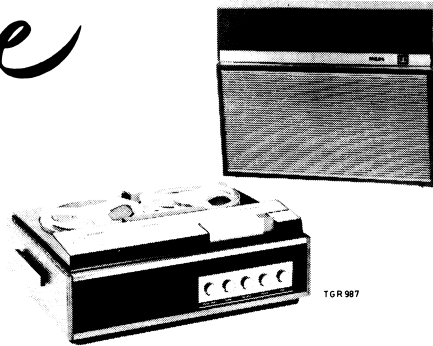


Fig. 4

PHILIPS Service

RECORDERS

EL3555A/00/01



TECHNICAL DATA

Mains voltages	: 110 - 127 - 220 - 245 V
Mains frequency	: 50 or 60 c/s
Power consumption	: approx. 65 W
Tape speeds	: 4.75 cm/sec., 9.5 cm/sec., 19 cm/sec.
Reel diameter	: max. 18 cm (7")
Loudspeakers	: 1 x AD3570M and 1x AD2401R (lid)
Dimensions	: 440 x 350 x 215 mm
Weight	: 10 kg
Frequency ranges	: at 19 cm/sec.: 40 - 18,000 c/s at 9.5 cm/sec.: 60 - 15,000 c/s at 4.75 cm/sec.: 60 - 10,000 c/s

Sensitivities

Microphone	: 0.25 mV across 2 kΩ
Diode	: 2 mV across 20 kΩ
Record player input	: 200 mV across 0.5 MΩ

Output voltages

Diode	: 1 V across 50 kΩ
Headphone	: 200 mV across 1.5 kΩ
Output power	: 2.3 W across 5.6 Ω per channel
Valves	: 2x ECL82, 1x EM87
Transistors	: 4x AC172, 4x AC126, 1x AC125
Diode	: 1x OA70
Microphone	: EL 3757/00
Lead	: EL 3768A/04

It is recommended to clean the apparatus and to lubricate the various points after about 1000 hours of operation.

Clean only with regular or refined alcohol

Tape guides, erase head, record/play-back head, capstan, pressure roller, motor pulley, flywheel, cordgrooves of the pulleys.

Removing the cabinet, see Fig. 1

Remove knob, item 155, and the screws items 156 and 139. Unscrew the bottom plate by means of the four screws in the rubber feet, item 177.

In most cases it will not be necessary to remove the entire cabinet for repairs. If this should be necessary, remove the four screws in the corners of the mounting plate and the knobs, item 172. Furthermore, pull out the grip and unsolder the loudspeaker.

Replacing the motor

- Loosen the nut of cord-protection bracket B, see Fig. 12.
- Remove the drive cord, item 68.
- Unsolder the motor connections.
- Loosen the screws, item 33.
- The motor can then be removed.

Mounting is effected in reverse order.

Converting 50 to 60 c/s and vice versa

- Detach the motor pulley, item 52, and turn it 180°.
- Adjust according to Fig. 3.
- Rewire the motor connections as in Fig. 2. Fig. 2 is correspondent with the transformer connections.

Replacing the drive cord, item 68

- Remove both springs, item 116 and 124.
- The cord can then be removed.
- For inserting the cord, de-grease all parts over which the cord runs.
- The gap between the ends of bracket B see Fig. 12 should be approx. 2 mm.

Note: The cord should run across both pulleys and the drive wheel, with its bevelled side pointing outward, see Fig. 12.

Replacing cap, item 26

- Remove the screw, item 25.
- The cap can then be pulled from the reel.

Mounting is effected in reverse order.

Disassembling the push-button unit

- Remove the springs, item 104.
- Loosen the screws, item 4.
- The entire unit can then be removed from the mounting plate.

Replacing push-buttons

Remove the clamping ring, item 10, and the spring, item 104. The rod passing through all push-buttons can then be slid out to the left.

Consequently, all push-buttons are freed. If necessary, replace one of the push-buttons and re-insert the rod. Next, proceed in reverse order.

Note: The "pause" button should be at the extreme left; it contains a metal pin which should be positioned below item 103.

Swinging out the print, see Fig. 4

- No buttons depressed.
- Loosen the two screws, item 2.
- The print can then be swung forward.

Replacing the friction ring, item 29

- Remove the reel from the mounting plate.
- Consequently remove items 36, 35, 34 and 30.
- The ring can then be pulled from the reel and replaced.

Mounting is effected in reverse order.

Note: When assembling, everything should be de-greased.

Start and stop friction

The friction force of both reels should be 125-250 gr, measured with full 7" reel.

Replacing flywheel, item 84

- Disconnect print which is fastened by means of a bracket across the electrolytic capacitor.
- Remove ring, item 59a.
- Unscrew screws, item 5 and remove the bearing bracket.
- If necessary, push-button, item 85, can be replaced.
- Remove the flywheel from the bearing.

Mounting should take place in reverse order.

Note: After the flywheel has been refitted, the tone spindle should be degreased.

Run-out time of flywheel and pressure roller

- Switch the apparatus to "19 cm/sec."
- Depress the "play-back" button.
- Allow the apparatus to obtain its speed.
- Keep the "play-back" button depressed and switch off the apparatus.
- The run-out time then should be at least 4 seconds.
- If this time is too short, lubricate or replace bearing, item 74.

LIST OF CABINET PARTS

Item	Code number	Description
154	4822 212 00653	Ring
155	4822 212 00645	Knob
	994/03	Spring, in knob
156	4822 212 00604	Screw
157	4822 212 00929	Cover plate
158	4822 212 00926	Cabinet
159	4822 212 00605	Screw
160	4822 212 00644	Cover
161	4822 212 00764	Knob
162	4822 212 00931	Ornamental plate for sockets
163	4822 212 00753	Spring
164	4822 212 00927	Handle
165	4822 212 00678	Push-button (white)
166	4822 212 00681	Push-button (red)
167	4822 212 00781	Interval switch
168	4822 212 00898	Lid
169	4822 125 00431	Lock
170	4822 212 00639	Foot
171	4822 212 00918	Loudspeaker grille
172	4822 212 00646	Knob
173	4822 212 00916	Grille
174	4822 212 00892	Ornamental plate
175	4822 212 00917	Lid
176	4822 212 00651	Bottom plate
177	4822 212 00652	Foot
178	4822 212 00916	Ornamental strip

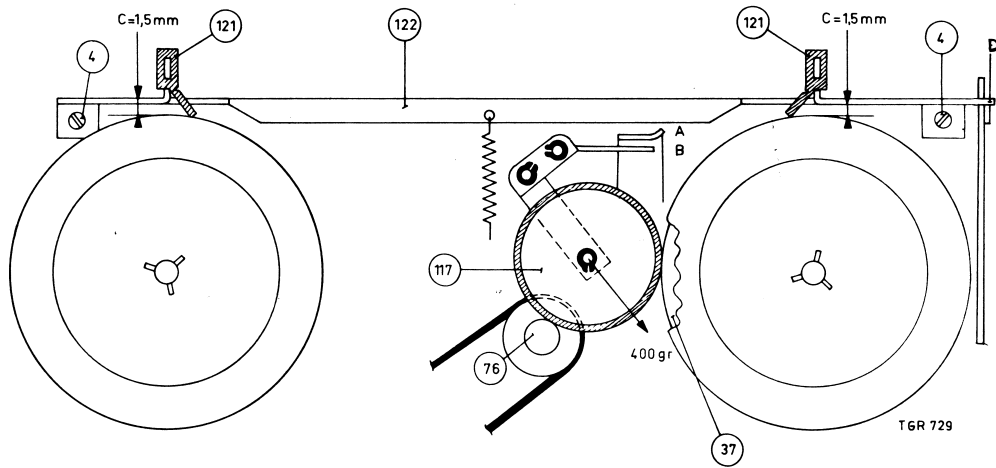


Fig. 6

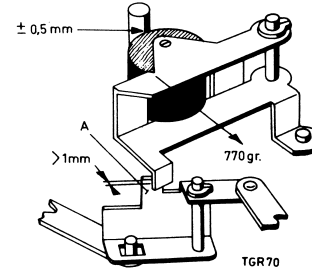


Fig. 7

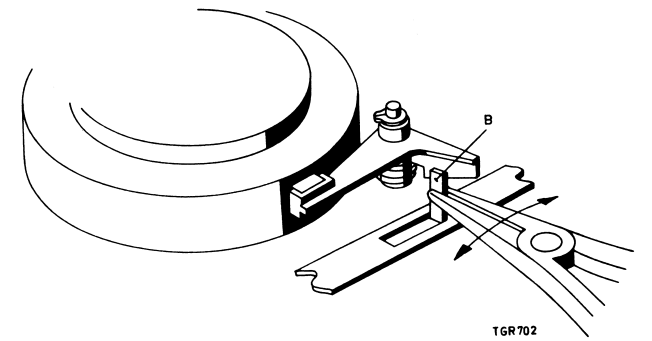


Fig. 8

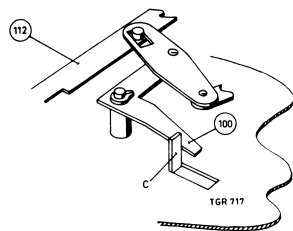


Fig. 9

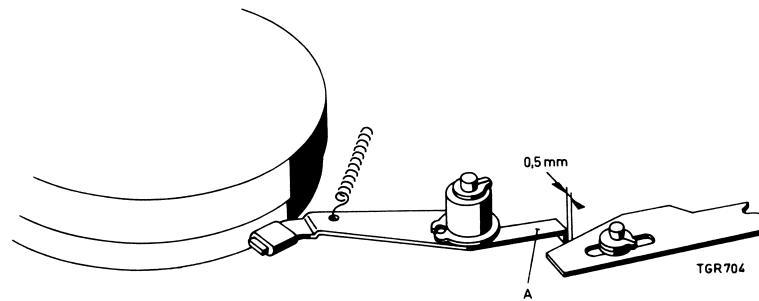


Fig. 10

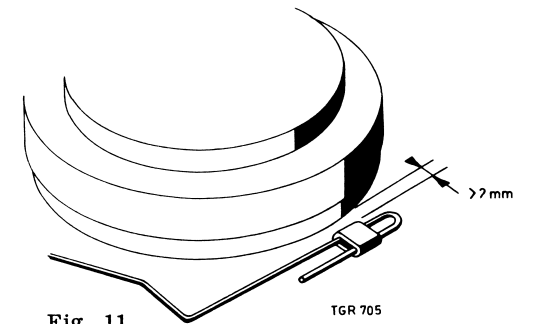


Fig. 11

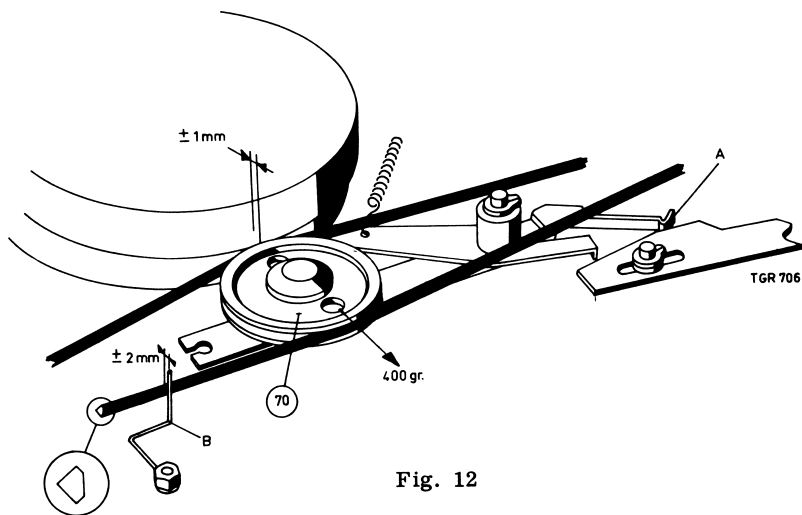


Fig. 12

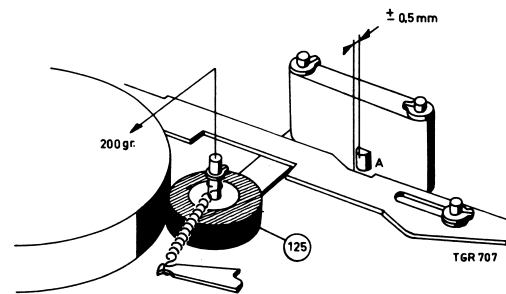


Fig. 13

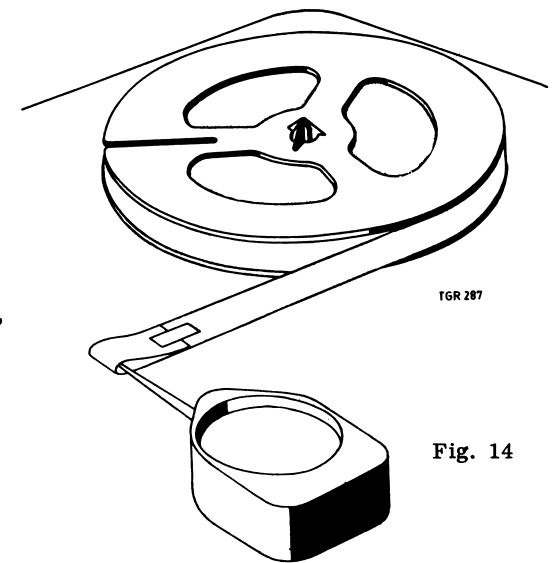


Fig. 14

Adjusting the brake bracket, item 122, see Fig. 6

- Loosen both screws, item 4.
- Hold the brake bracket perpendicularly on the mounting plate.
- Distance C should be 1.5 mm.

- Make sure that the brake shoes are positioned as shown in Fig. 6.

- Tighten the screws, item 4.

- Next, bend tag D so that distance at C is 1.5 mm.

- Depress the "play-back" button so that the pressure roller just touches the capstan. Then, bend tag A so that the brake shoe, item 121, just releases the right-side reel.

- Switch on the apparatus and slowly depress the "play-back" button. The intermediate wheel, item 117, should start driving the friction wheel, item 37, just before the brake bracket releases the right-side reel.

Adjusting the "pause" button, see Fig. 7

Depress the "pause" button and the "play-back" button; the distance between capstan and pressure roller should then be approximately 0.5 mm. This can be adjusted by bending tag A.

Check

Release the "pause" button; the distance between tag A and the pressure bracket should be at least 1 mm. When depressing the "pause" button, the brake should become operative at the same time the pressure roller is released. Adjust by bending tag B, see Fig. 8.

Adjusting the push-button unit

Roller, item 114, should be in the centre between the "wind" and "rewind" buttons. If necessary, adjust by slightly bending the bracket, item 93. Depress the "play-back" button; the distance between tag C and bracket, item 100, should be about 0.5 mm, see Fig. 9. Adjust by slightly bending tag C.

Adjusting the brake brackets of the friction discs

Left brake, see Fig. 10

No buttons depressed; the distance at tag A should then be 0.5 mm. This can be adjusted by bending tag A.

Check

Depress the "rewind" button; the distance between friction disc and brake then also should be 0.5 mm.

Right-side brake, see Fig. 11

When the "play-back" button is depressed, the distance between the brake and the friction wheel should be at least 2 mm. If necessary, slightly bend the brake. When depressing the "rewind" button, the friction wheel of the right-side reel should be blocked.

Adjustments at rewinding, see Fig. 12

Depress the "rewind" button; adjust tag A so that the distance to the control bracket is 0.5 mm.

Check

Set the apparatus to "stop"; the distance between reel and drive wheel; item 70, should be about 1 mm.

Adjustments at winding, see Fig. 13

Depress the "wind" button; the distance at A should then be about 0.5 mm.

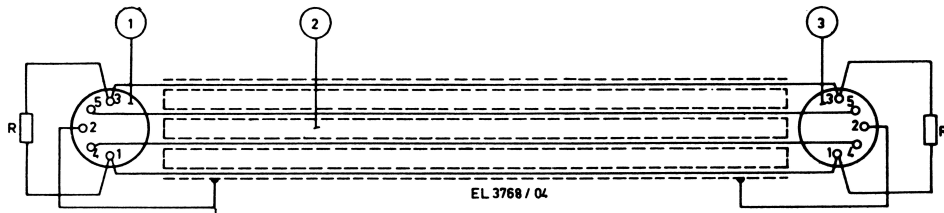
Check

When the apparatus is in operation, the reel should not go up. If this does happen, however, the shaft of the drive-wheel, item 125, should be bent slightly in the direction of the cut-out relay.

Friction of the reels at rewinding, see Fig. 14

The friction between the friction discs and the reels should be 30 gr. \pm 20 %, measured with a empty 7" reel. If the tape also runs along the tape guides and head, the force should be about 50 gr.

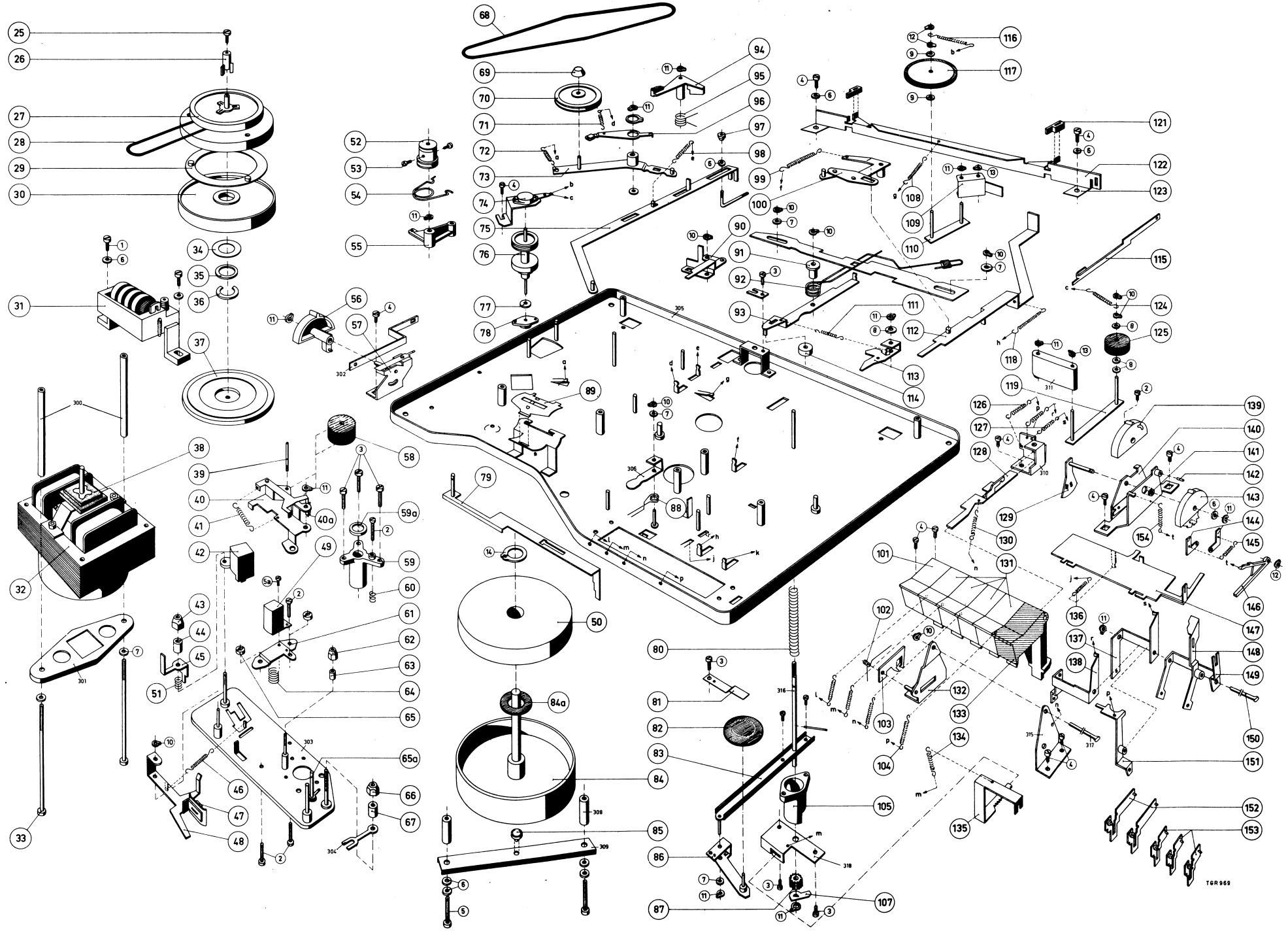
EL 3768/04



Pos.	Code number	Description
1-3	978/5x180	Five pole plug
2	R 365 KA/56FP9	Flex per meter
R	902/A1M	Resistor

LIST OF MECHANICAL PARTS

Item	Code number	Description	Item	Code number	Description
1	999/4x8	Screw	82	4822 212 00956	Idler
2	999/3x15	Screw	83	4822 212 00721	Bracket
3	999/3x10	Screw	84	4822 212 00716	Flywheel housing + spindle
4	999/4x8	Screw	84a	4822 213 00511	Felt ring
5	999/4x50	Screw	85	4822 212 00717	Bearing
5a	999/2x5	Screw	86	4822 212 00778	Bracket
6	988/5	Ring	87	4822 212 00723	Pinion
7	988/6	Ring	88	4822 212 00674	Pressure spring
8	988/4	Ring	89	WT 824 25	Screen for EM87
9	988/3	Ring	90	4822 212 00846	Bracket
10	984/3	Clamping ring	91	4822 212 00673	Bushing
11	984/5	Clamping ring	92	4822 212 00672	Spring
12	984/2	Clamping ring	93	4822 212 00667	Switch bracket
13	984/4	Clamping ring	94	4822 212 00663	Brake bracket
14	B 045 BF/13	Clamping ring	95	4822 212 00662	Tension spring
25	4822 220 00369	Screw	96	4822 212 00664	Bracket
26	4822 212 00713	Cover	97	4822 212 00661	Nut
27	4822 212 00712	Turntable	98	4822 212 00755	Tension spring
28	4822 358 30052	String	99	4822 212 00759	Tension spring
29	4822 212 00765	Ring	100	4822 212 00687	Bracket
30	4822 212 00711	Drive disc	101-167	4822 212 00781	Interval switch
31	4822 212 00727	Counter	102	4822 212 00677	Spring
32	4822 194 00213	Motor	103	4822 212 00676	Bracket
33	4822 212 00724	Screw	104	4822 212 00682	Spring
34	4822 212 00709	Leaf spring	105	4822 212 00719	Switch bushing
35	4822 212 00766	Ring	106		Bracket
36	4822 212 00708	Clamping ring	107	4822 212 00908	Bracket
37	4822 212 00707	Friction disc	108	WT 740 86	Tension spring
38	4822 194 00225	Grommet	109	4822 212 00782	Bracket
39	4822 213 00436	Spindle	110	4822 212 00685	Idler bracket
40	4822 212 00954	Pressure bracket	111	4822 212 00675	Tension spring
40a	WY 820 38	Pressure felt	112	4822 212 00669	Bracket
41	4822 212 00756	Spring	113	4822 212 00783	Bracket
42	4822 249 40033	Erase head	114	4822 212 00668	Nylon roller
43	4822 212 00856	Nut	115	4822 212 00868	Bracket
44	4822 212 00853	Tape guide	116	WT 741 38	Tension spring
45	4822 212 00767	Bracket	117	4822 212 00686	Idler
46	4822 212 00696	Spring	118	4822 214 00975	Tension spring
47	4822 212 00861	Pressure felt	119	4822 212 00784	Bracket
48	4822 212 00859	Pressure bracket	121	4822 213 00506	Brake shoe
49	4822 212 00957	Recording/playback head	122	4822 212 00771	Brake bracket
50	4822 212 00961	Flywheel proper	123	4822 212 00704	Leaf spring
52	4822 212 00725	Motor pulley	124	WT 741 39	Tension spring
53	997/2.6x6	Screw	125	4822 212 00684	Idler
54	4822 212 00761	Spring	126	4822 212 00906	Tension spring
55	4822 212 00714	Bracket, mains switch	127	4822 212 00905	Tension spring
56	4822 212 00715	Knob	128	4822 212 00913	Bracket
57	4822 212 00768	Switch	129	4822 212 00912	Switch bracket
58	WT 881 66	Pressure roller	130	WT 740 86	Tension spring
59	4822 212 00688	Flywheel bearing	131-165	4822 212 00678	Push-button (white)
59a	4822 212 00798	Ring	132	4822 212 00786	Bracket
60	WT 730 47	Spring	133-166	4822 212 00787	Push-button (red)
61	4822 212 00959	Fixing plate	134	WT 741 63	Tension spring
62	4822 212 00769	Nut	135	4822 212 00897	Bracket
63	4822 212 00772	Tape guide	136	4822 212 00659	Tension spring
64	4822 212 00691	Pressure spring	137	4822 212 00894	Switch bracket
65	WT 924 58	Nut	138	4822 212 00893	Switch bracket
65a	990/3.5x35	Bushing	139	4822 212 00933	Knob
66	VT 575 06	Insulating piece	140	4822 212 00911	Bracket
66	4822 212 00856	Nut	141	4822 212 00914	Bushing
67	4822 212 00855	Tape guide	142	4822 212 00915	Pin
68	4822 212 00726	Drive string	143	4822 212 00934	Knob
69	4822 208 00289	Cover	144	4822 212 00896	Bracket
70	4822 212 00773	Idler	145	4822 212 00907	Tension spring
71	4822 212 00756	Tension spring	146	4822 212 00909	Bracket
72	4822 212 00758	Tension spring	147	4822 212 00902	Bracket
73	4822 212 00774	Bracket	148	4822 212 00904	Stop bracket
74	4822 212 00814	Bearing	149	4822 212 00895	Spindle
75	4822 212 00775	Bracket	150	4822 212 00932	Switch bracket
76	4822 212 00706	Pulley	151	4822 212 00903	Bracket, switch
77	4822 220 00349	Ring	152	4822 212 00901	Bracket, switch
78	4822 212 00657	Bearing	153	4822 212 00899	Bracket, switch
79	4822 212 00776	Bracket		4822 212 00796	Pin (A) for switches, see Fig. 2
80	4822 212 00722	Spring			
81	4822 212 00955	Bracket			



Speed selector, see Fig. 15

Switch on the apparatus and set it to position 9.5 cm/sec. Lug A should be in the centre of the recess of bracket, item 83. If necessary, adjust by bending. When changing from 4.75 cm/sec. to 19 cm/sec., idler, item 82, should be lifted properly across all pulley stages. Besides, the idler should run in the centre of the relevant pulley stage for every speed. Adjust by placing a few rings under bracket item 86.

Adjusting the tape transport

The top bearing of the capstan is factory adjusted so that even with an 18 μ -tape there is no distortion of the tape at the tape guide.

Adjusting the bearing after replacement, see Figs. 16

- Insert an 18 μ -tapes (test tape 4822 215 00898) and switch on the apparatus.
- Loosen screws C for only one 90° turn.
- Then, turn in screw A so far that the tape becomes deformed at the bottom of the tape guide, see Fig. 17.
- Turn back screw A, until the tape snaps back into the tape guide.
- Then, turn the screw another 120°.
- Slightly tighten the lock-screw and screws C.

Replacing the recording/playback head, see Fig. 18

- Unsolder the connections.
 - Unscrew screw, item 5a.
 - Remove the recording/playback head.
- Mounting is done in reverse order.

Height adjustment of record/play-back head, see Fig. 18

For this, the 1 kc/s signal of the test tape is used. Switch on the apparatus on track 1-4. Tape speed 9.5 cm/sec. Then adjust the height by means of the nut, item 65, so that the signal is just converted into noise while the volume control is at maximum.

Asimuth alignment of the recording/play-back head, see Fig. 18

For this the 13 kc/s signal of the test tape is used. Turn the screw, item 2, so that a maximum signal is measured.

Replacing the erase head, see Fig. 19

- Successively remove items: 43, 44, 45 and 51.
- Remove the erase head.

Mounting is done in reverse order. When mounting, nut, item 43, should be tightened firmly. By tightening it, it is set to the correct height.

Adjusting the erase head, see Fig. 19

The erase head can be adjusted by bending lug A up or down. The erase head is so adjusted that the top of the topmost core is flush with the top of the tape, see Fig. 20.

Replacing the switches, see Fig. 21

- Open the switch by means of a screwdriver.
- Unsolder the contact springs.
- Mount a new switch.
- One of the ends of the switch has a ridge A which should be located at the side of the recess in the print.

Pressure roller lever, see Fig. 7

The pressure between capstan and pressure roller should be 770 gr. \pm 20 %.

Pressure felt

The pressure exerted by the pressure felt against the record/play-back head, should be 30 gr. \pm 10 %, as measured in Fig. 22.

Adjusting the reel disc height

The reel disc height can be adjusted by fitting rings underneath friction disc item 37. The adjustment should be effected so that the tape is exactly in the centre of the reel.

Note: The steel ring underneath the friction disc should be at the side of the mounting plate.

Drive-wheel, item 117

Switch on the apparatus in "play-back" position; the drive-wheel item 117, should then run between the reel and the pulley, item 76, with a force of 400 gr. \pm 15 %, see Fig. 6.

Drive-wheel, item 70

Switch the apparatus to position "rewind". The force by means of which the drive-wheel presses against the reel, should be 400 gr. \pm 15 %, see Fig. 12.

Intermediate wheel, item 82

Switch the apparatus to a speed of 2.4 cm/sec. The force, measured at point C, should be about 250 gr., see Fig. 15.

Cut-out relay

The force by which the cut-out relay releases the buttons, should be 450 gr., \pm 20 %.

Switch adjustments

SKI - SK101

Depress recording push-button. Set the apparatus to position "Stereo". The two switches should then be set as indicated in Fig. 24. Adjust by bending bracket pos. 153, see Fig. 27.

Checking

None of the push-buttons depressed. The switch cursors should be in the positions shown in Fig. 25. Adjust by loosening plate C and moving it slightly, see Fig. 23.

Tone correction switch SK2

Set the apparatus to position 4.75 cm/sec. The switch should then be set as shown in Fig. 26. Adjust by bending bracket, item 153, see Fig. 27.

SK3

Depress right-hand winding button. The switch cursor should then be set as shown in Fig. 28. Adjust by bending lug A, see Fig. 23.

Checking

None of the push-buttons depressed. The switch cursor should then be set as shown in Fig. 29. Adjust by bending lug A, see Fig. 23.

Track selector (SK4)

Set the apparatus to track 1-4 or 2-3. The distance between bracket, item 148, and bracket, item 128, should then be 0.6 \pm 0.2 mm. This can be adjusted by loosening bracket, item 310, and by moving it, see Fig. 23 and Fig. 30.

Checking

The two switches (SKI - SK101) should switch over in position "Stereo". If necessary, this can be adjusted by bending bracket, item 128.

Position "PAR" (SK101)

In position "PAR", the switch cursor of SK101 should be set as shown in Fig. 31. Adjust by bending bracket, item 152, see Fig. 27.

Multiplay-Duoplay switch SK6

Set the apparatus to position "Duoplay". The switch cursor should then be set as shown in Fig. 31. Adjust by bending bracket, item 153, see Fig. 27.

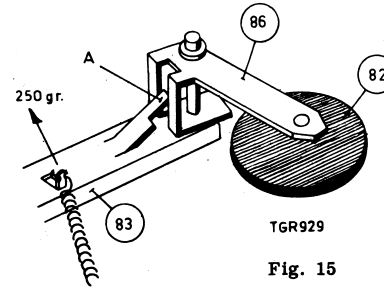


Fig. 15

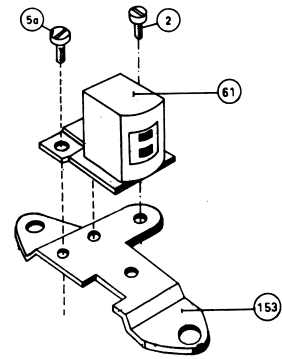


Fig. 18

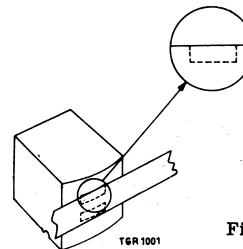


Fig. 20

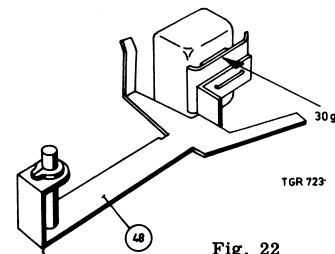


Fig. 22

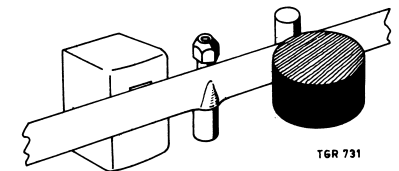


Fig. 17

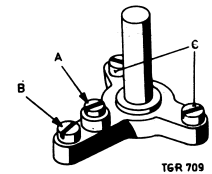


Fig. 16

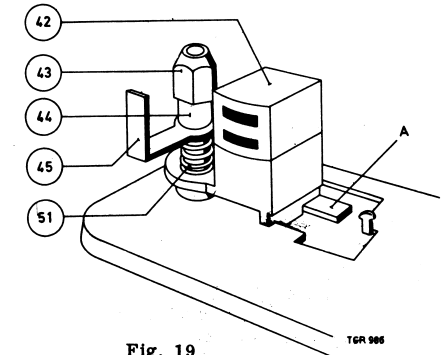


Fig. 19

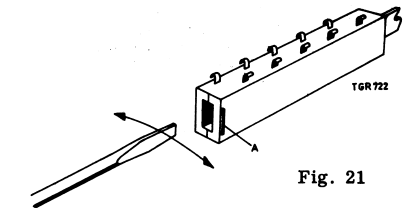


Fig. 21

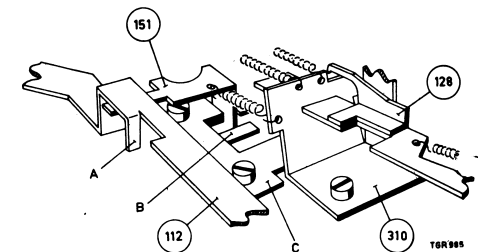


Fig. 23

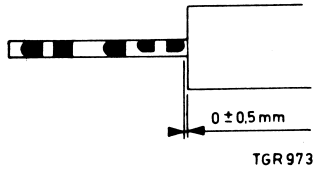


Fig. 24

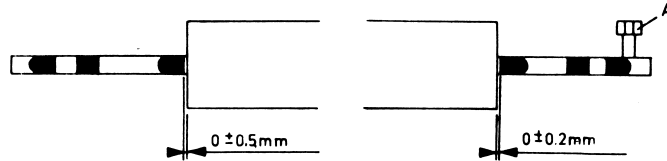


Fig. 25

Fig. 26

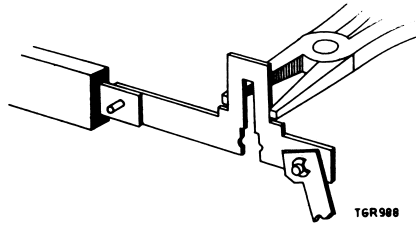


Fig. 27

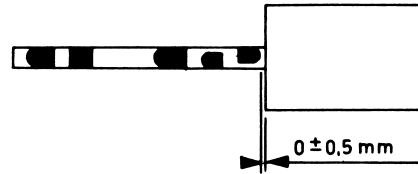


Fig. 28

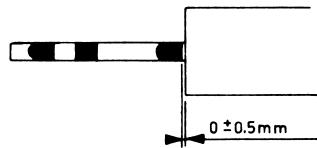


Fig. 29

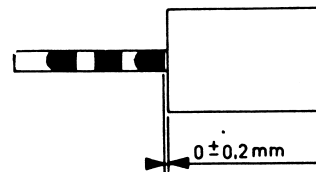


Fig. 31

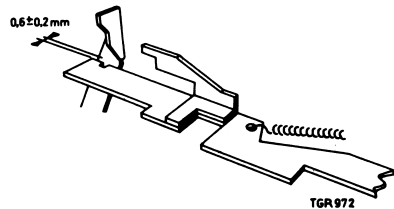


Fig. 30

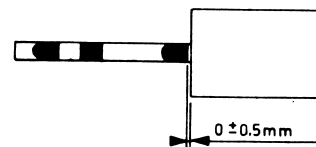
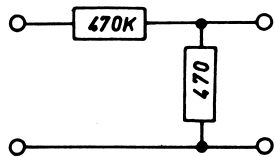
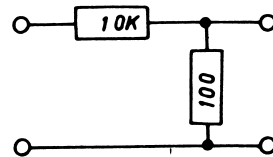


Fig. 32



TGR 736

Fig. 33



TGR 736

Fig. 34

Electrical adjustments

Measure on MP1 for the left-hand channel.
Measure on MP2 for the right-hand channel.

Adjusting L102

- Depress the recording and playback push-buttons.
- Set the apparatus to position "Duoplay", tracks 1-4.
- Adjust L102, so that a minimum high frequency signal is measured on the collector of TS104.

Adjusting L103

- Depress the recording and playback push-buttons.
- Set the apparatus to position "Multiplay", tracks 1-4.
- Adjust L103, so that a maximum high frequency signal is measured on MP1.

Sensitivity of the record player input

- Depress the recording push-button.
- Set the apparatus to position "Stereo".
- Turn the record player control completely clockwise.
- Turn the volume and microphone controls completely anti-clockwise.
- Apply a signal of 1 kc/s with a signal generator, so that the voltage on MP1-MP2 is 15 mV. The voltage, then generated by the signal generator, should be 200 mV ± 2 dB.

Adjusting L1 and L101

- Depress the recording push-button.
- Set the apparatus to position "Stereo".
- Turn the record player control completely clockwise.
- Turn the volume and microphone controls completely anti-clockwise.
- Apply a signal of 1 kc/s with a signal generator, so that the voltage on MP1-MP2 is 3 mV. The voltage, then generated by the voltage generator, should be 40 mV. Next, increase the frequency to 10 kc/s and adjust the voltage to 427 mV. Then adjust L1-L101, so that the voltage on MP1-MP2 is 32 mV ± 0.5 dB.

Sensitivity of the microphone input

- Depress the recording push-button.
- Set the apparatus to position "Stereo".
- Turn the record player and volume controls completely anti-clockwise.
- Turn the microphone control completely clockwise.
- Apply a signal of 1 kc/s with a signal generator, via a circuit as shown in Fig. 33, so that the voltage on MP1-MP2 is 15 mV. The voltage, then generated by the signal generator, should be 250 mV ± 2 dB.

Adjusting the recording level indicator

- Depress the recording push-button.
- Set the apparatus to position "Stereo".
- The tape speed may be arbitrary.
- Turn the record player control completely clockwise.
- Turn the microphone and volume controls completely anti-clockwise.
- Apply a signal with a signal generator, so that the voltage on MP1-MP2 is 15 mV. The voltage, then generated by the signal generator, should be 200 mV ± 2 dB.
- Then adjust R404 so that the indicator shows full deflection.

Oscillator voltage

Measure on MP1 for tracks 1-4.
Measure on MP2 for tracks 2-3.
The oscillator voltage should be 14 V, measured on the erase head. The frequency should be between 51 - 63 kc/s, measured on MP1-MP2.

Playback sensitivity at 250 c/s

- Depress the playback push-button.
- The record player and microphone controls and the signal generator may be in an arbitrary position.
- Turn the volume control completely anti-clockwise.
- The tape speed should be 9.5 cm/sec.
- Apply a signal of 250 c/s - 1568 mV to MP1-MP2 via a resistor of 100 kΩ.
- The voltage on the diode output should then be 1.2 V ± 1.5 dB.

Frequency response curve of the playback amplifier

- Depress the playback push-button.
- The record player and microphone controls and the signal generator may be in an arbitrary position.
- Turn the volume control completely anti-clockwise.
- The tape speed should be 9.5 cm/sec.
- Apply a signal of 1 kc/s to MP1-MP2 and adjust the voltage of the signal generator so that the voltage on the diode output is 65 mV. Next, adjust the signal generator to the following frequencies and measure the relevant voltages on the diode output.

Frequency	Voltage measured on the diode output	
40 Hz	320 mV	+ 2 dB
62.5 Hz	305 mV	+ 1.5 dB
125 Hz	266 mV	+ 1.5 dB
250 Hz	192 mV	+ 1 dB
4 kHz	33 mV	+ 1 dB
8 kHz	30 mV	+ 1 dB
10 kHz	29 mV	+ 1 dB
12 kHz	28 mV	+ 1.5 dB
15 kHz	26 mV	+ 1.5 dB

Adjusting the pre-magnetizing

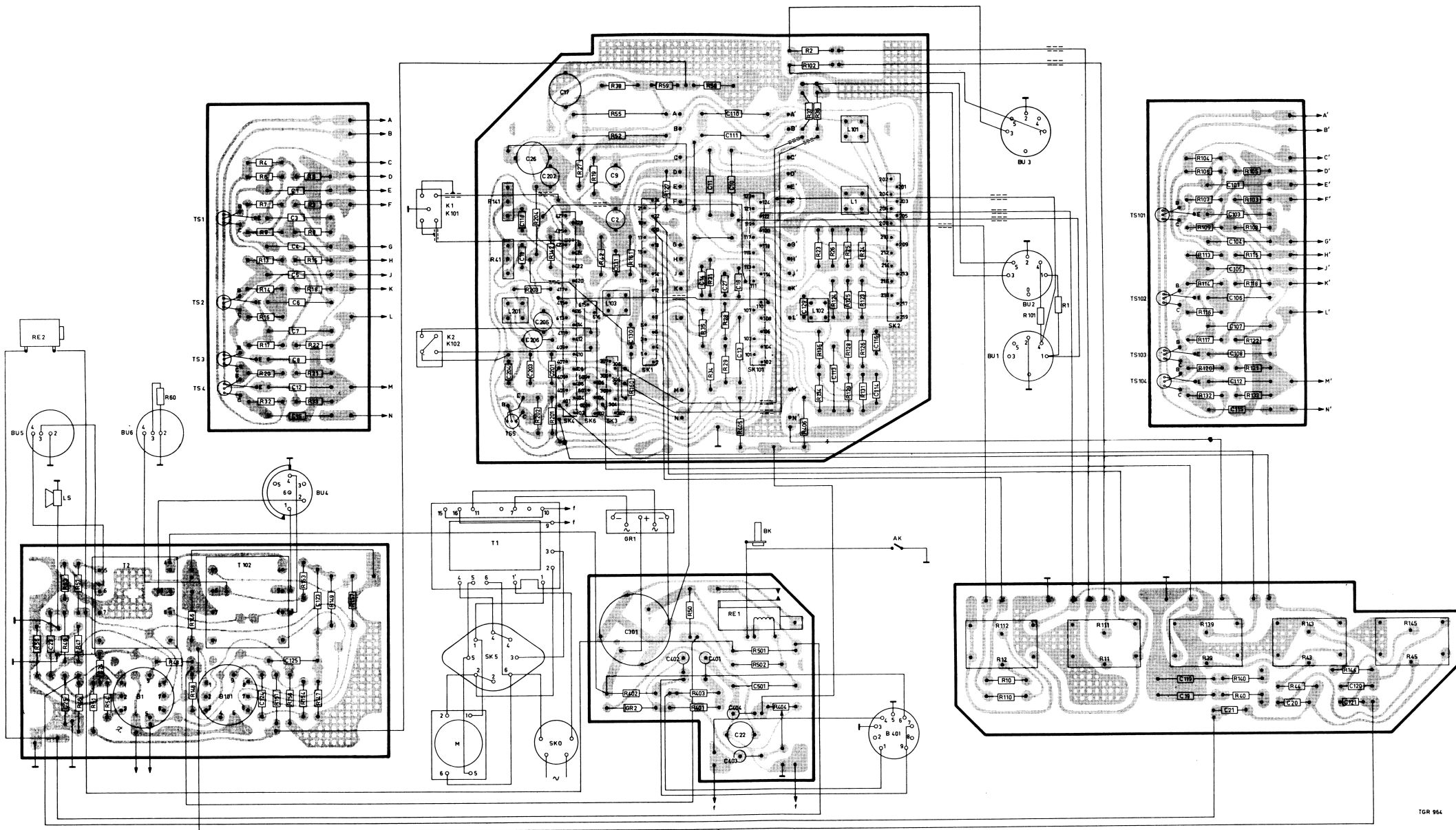
- Depress the recording and playback push-buttons.
- The tape speed should be 9.5 cm/sec.
- Set the apparatus to position "Stereo".
- Adjust R41 or R141 so that the voltage on MP1 or MP2 is 35 mV.

Frequency response curve

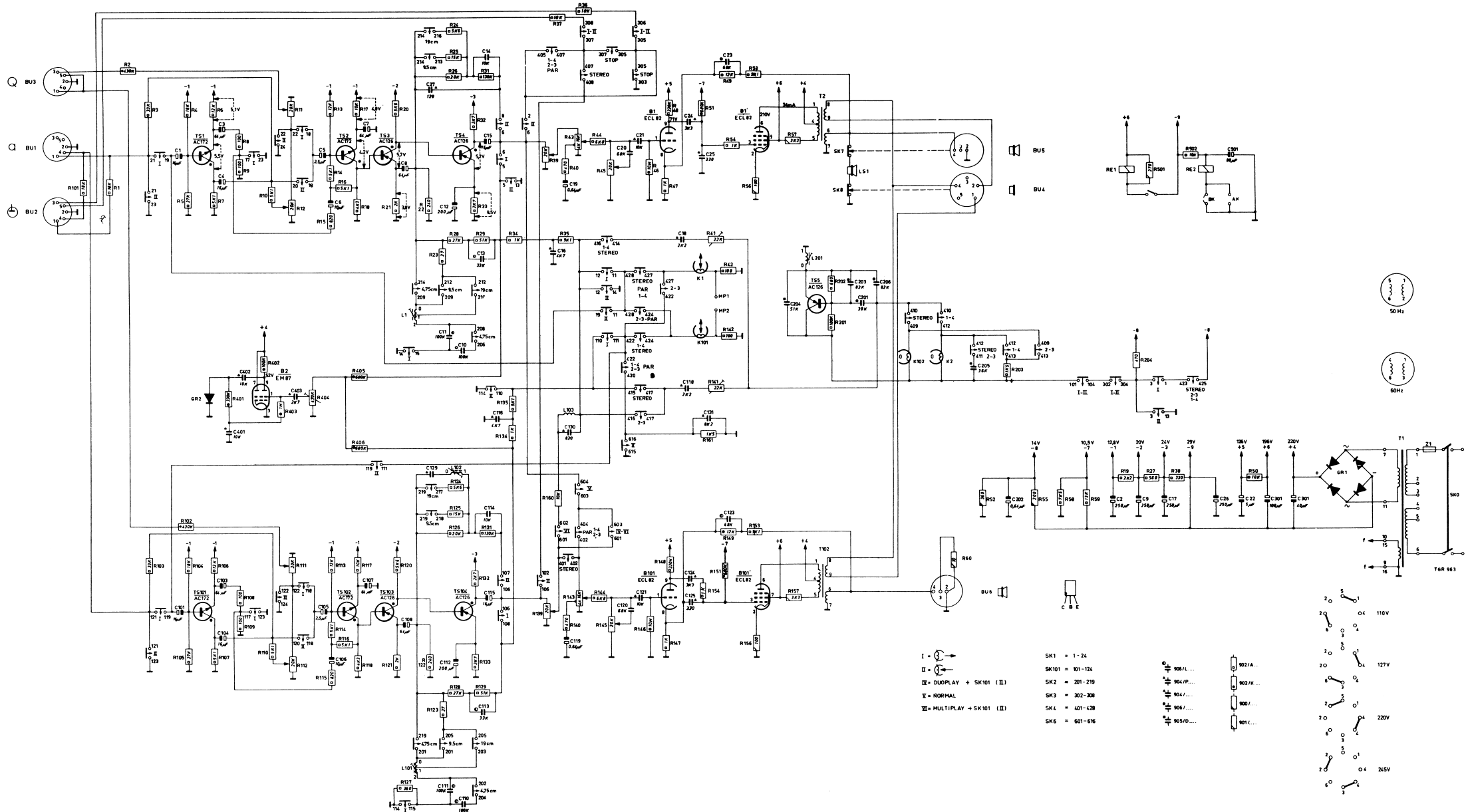
- Turn the radio/record player controls completely clockwise.
- Turn the volume control completely anti-clockwise.
- Turn the microphone control completely anti-clockwise.
- Connect the signal generator to the record player input.
- Record several frequencies at various speeds in a range, as indicated in the following table.

Tape speed	Frequency range
4.75 cm/sec.	62.5 - 10,000
9.5 cm/sec.	62.5 - 15,000
19 cm/sec.	40 - 18,000

These frequencies should be recorded with a voltage of 76 mV, measured via a circuit as indicated in Fig. 34. To adjust this voltage depress only the recording push-button. Next, set the apparatus to position "Playback". Measure the recorded frequencies. The voltage on the diode output should then be within a range of 6 dB.



R	101	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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LIST OF ELECTRICAL PARTS

T1	4822 146 40118	C2	909/W250
T2-T102	4822 140 40113	C5-C105	909/W2, 5
L1-L101	4822 212 00935	C8-C106	909/W10
L102	4822 212 00936	C9	4822 069 01043
L103	4822 212 00937	C12-C112	909/U200
L201	4822 212 00938	C17-C26	909/X250
SK0	F 071 AA/01	C19-C119	909/Z0, 64
SK1	4822 212 00919	C22	4822 069 00984
SK2	4822 212 00921	C202	909/Z0, 64
SK3	4822 212 00922	C301	100 μ F + 40 μ F 250 V
SK4	4822 212 00923	C501	4822 069 00592
SK5	WT 88661	C14-C114	4822 069 01093
SK6	4822 212 00924	C20-C120	4822 069 01103
SK101	4822 212 00925	C203	4822 069 01124
RE1	4822 212 00816	C204-C205	906/39K
RE2	4822 212 00655	R45-R145	4822 071 00621
GR	B250 - C100TD	R39-R139	4822 071 00951
		R43-R143	4822 071 00621
		R41-R141	4822 101 10074
		R404	4822 101 10069
		R57-R157	901/3K

EL 3757/00

General

The microphone is destined for tape recordings. The microphone system consists of two buttons, each with own flex wires, however, with common screening.
The plate "Stereo" indicates the live side.
The buttons having a cardioid-shaped directional effect, have been mounted one above the other and are turned 90° with respect to each other.
The microphone gives good stereo reproduction over an aperture angle of 90° and can be used up to approx. 180°.

Sensitivity

At 1000 c/s, the sensitivity amounts to 0.23 mV/ μ Bar measured at a distance of 70 cm from the sound source.

Impedance

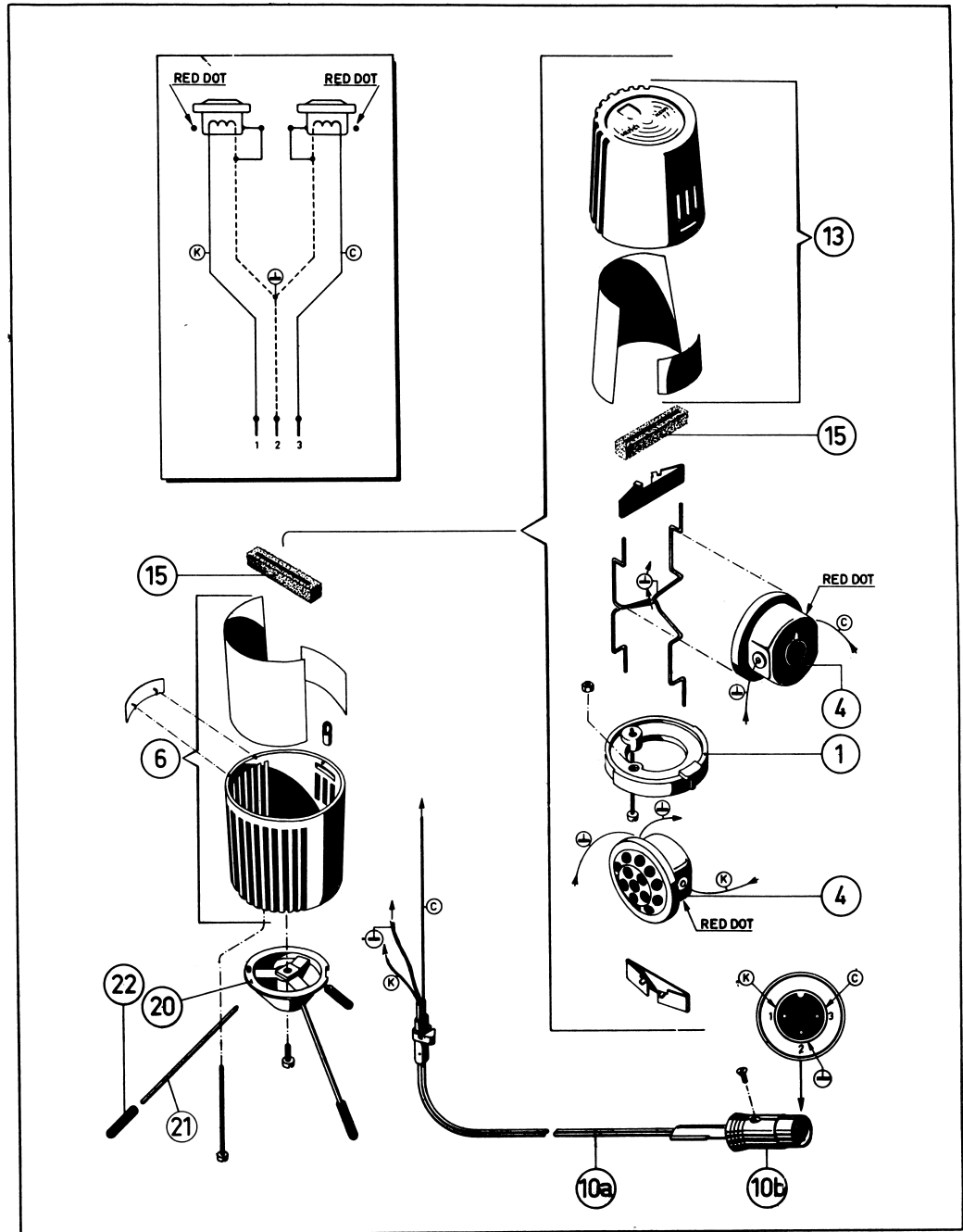
At 1000 c/s the impedance amounts to 500 Ω . This sensitivity and impedance hold good for both buttons separately.

Replacement of button

- Remove microphone from foot or tripod by means of the screw which is found on the lower side of the microphone.
- Unscrew screw A.
- Remove lower casing half.
- Unscrew screw B.
- Remove upper casing half.
- Unsolder the wires of the old button and solder them to the new button.
- Remounting in the reverse order.

LIST OF PARTS

Pos.	Code number	Nomenclature
1	P5 649 58/350	Partition
4	EL 6084/10	Button
6	V3 131 70	Assembly lower cap
10a	R 365 KN/04HP10	Flex
10b	978/5x180	Plug
13	V3 131 71	Assy, upper cap
15	P7 630 87/033	Rubber block
20	P5 649 56/332	Fixing piece
21	V3 248 51	Feet
22	P5 649 57/381	Cap



PHILIPS MODEL EL3555A

P21-10

TROUBLE SHOOTING

<u>Fault</u>	<u>Cause</u>	<u>Remedy</u>
1. Apparatus does not operate.	1a. Fuse blown.	1a. Locate fault and replace fuse.
2. Apparatus does not record or play back.	2a. One of the switches improperly adjusted.	2a. Adjust the switch (see text).
3. No fast winding.	3a. Coupling in the right reel slips. 3b. Drive cord is greasy.	3a. Remove the reel and de-grease it. 3b. Replace the cord.
4. No fast rewinding.	4a. Coupling in the left reel slips. 4b. Drive cord is greasy.	4a. Remove the reel and de-grease it. 4b. Replace the cord.
5. Right reel disc is lifted.	5a. Shaft of intermediate wheel item 125 is misaligned.	5a. Adjust the shaft (see text).
6. Apparatus brakes poorly or not at all.	6a. Brake bracket misaligned. 6b. Brake shoe is greasy.	6a. Adjust the brake bracket (see text). 6b. De-grease with white spirits or replace it.
7. Apparatus wows.	7a. Left brake friction item 37 engages irregularly. 7b. Tension of pressure roller insufficient. 7c. Capstan is slanted so that the flywheel rubs thus producing loud knocks in the apparatus. 7d. Motor runs irregularly. 7e. Drive-cord greasy.	7a. Clean the friction. 7b. Replace pressure roller or spring, item 99. 7c. Adjust the capstan. 7d. Lubricate or replace the motor. 7e. De-grease the cord.
8. Apparatus produces a rattling sound.	8a. Dent in intermediate wheel, item 82.	8a. Replace the intermediate wheel.
9. Apparatus does not record.	9a. Fault in the amplifier. 9b. Recording/play-back head with short-circuited turn. 9c. Pre-magnetising current too large.	9a. Locate the fault and repair it. 9b. Replace the head. 9c. Re-adjust the pre-magnetising current.
10. Tape spilling after switching on.	10a. Winding friction, item 37 of the right reel, does not engage properly.	10a. De-grease the reel.
11. Apparatus hums during play-back.	11a. Fault in amplifier. 11b. Recording/play-back head magnetised.	11a. Locate the fault (transistor) and repair it. 11b. Switch the apparatus on and off a few times in position "recording".
12. Distortion during recording.	12a. Tape is not pressed against the recording/play-back head properly. 12b. Pre-magnetising current too small. 12c. Fault in amplifier.	12a. Check the pressure felt. 12b. Re-adjust the pre-magnetising current. 12c. Locate the fault and repair it.
13. Tape is not wound tightly enough.	13a. Insufficient friction of the right or left reel respectively.	13a. Clean the reel.
14. Flutter during play-back.	14a. Pressure felt worn. 14b. Tape dirty 14c. Recording/play-back head dirty or worn.	14a. Replace the pressure felt and check the pressure. 14b. Replace the tape. 14c. Clean or replace the head.
15. Tape is erased poorly or not at all.	15a. Erasing head dirty. 15b. Erasing head defective. 15c. Oscillator defective.	15a. Clean the head with white spirits or alcohol. 15b. Replace the head. 15c. Locate the fault.
16. No high notes in pre-recorded-tapes.	16a. Recording/play-back head is slanted.	16a. Adjust the head.
17. Both recorded tracks are intermingled.	17a. Lace-up incorrect.	17a. Adjust the capstan, see text.