

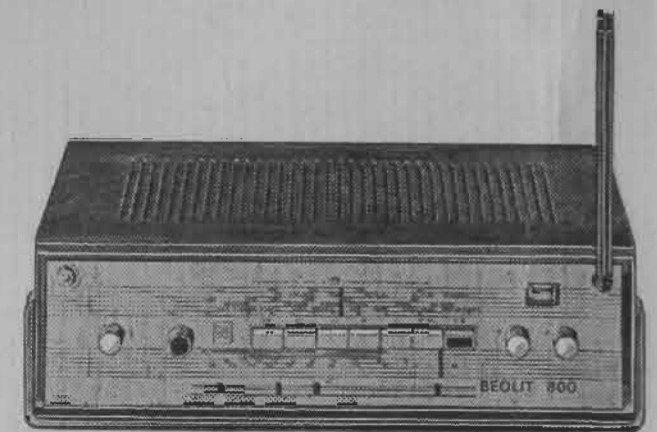
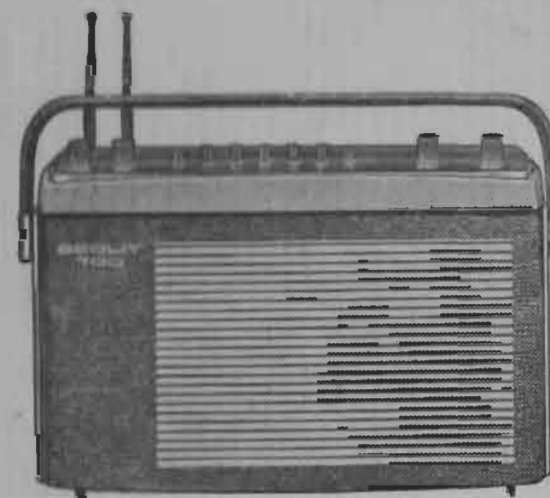
RYLAND HUNTLEY

*Radiolønse*

11, OLD BOND STREET,  
BATH. — Telephone 4322

# beolit 700 - 800 types 1301 - 1302

## SERVICE MANUAL



3-66  
PRINTED IN DENMARK  
BY BANG & OLUFSEN - STRUER

AS BANG & OLUFSEN PRODUKTIONSSKAB

STRUER-DENMARK

Telephone (078) 5 11 22\* • Telex 4289 • Cable Address Bangoluf



### CONTENTS

Technical Data .....	Page 1
Circuit Diagram .....	- 2
PW Units .....	- 3-4
Alignment .....	- 5
IF Transformers .....	- 6
Parts List .....	- 7-14
Description .....	- 15-16
Dial Drive .....	- 17

### TECHNICAL DATA

Aerial, AM: Ferrite aerial for LW and MW. Telescopic whip for 49 m. Provision for connection of auto aerial; ferrite aerial may be cut out on LW and MW by means of pushbutton.

Aerial, FM: One telescopic whip; provision for connection of auto aerial. Automatic frequency control on FM.

Auto mounting bracket: Type 920 H 5 - for Type 1301 only.

Battery drain: AM, approx. 21 mA at low volume; approx. 60 mA at 50 mW output.

Compensation for decreasing battery voltage: Voltage-stabilized output stage.

Dimensions, Type 1301: 328 mm wide, 233 mm high, 94 mm deep (12<sup>7</sup>/<sub>8</sub> × 9<sup>3</sup>/<sub>16</sub> × 3<sup>3</sup>/<sub>4</sub> in.).

Dimensions, Type 1302: 334 mm wide, 238 mm high, 98 mm deep (13<sup>3</sup>/<sub>16</sub> × 9<sup>3</sup>/<sub>8</sub> × 3<sup>7</sup>/<sub>8</sub> in.).

Dry cells: Six 1.5-volt standard dry cells (American standard: Type D).

Extension speaker: 3.5Ω, DIN plug cuts out built-in speaker when inserted in jack.

FM radiation: Suppressed in accordance with FTZ standards.

Gramophone: 5-contact DIN jack, 20 KΩ; also used as tape recorder connection.

Power output: 1.8 watts max.

Radiator: AM and FM tuning, battery checking.

Tape recorder connection: 5-contact DIN socket, 20 KΩ; also used as gramophone connection.

#### Wave bands:

LW	940 - 2040 m,	320 - 147 kc/s
MW	187 - 545 -	1603 - 520 -
49 m	48.4 - 50.4 -	6.2 - 5.95 Mc/s
FM		87.5 - 108 -

Weight, Type 1301: 3.55 kg (7.8 lbs) inclusive of dry cells.

Weight, Type 1302: 4.3 kg (9.5 lbs) inclusive of dry cells.





## SENSITIVITY MEASUREMENTS AND ALIGNMENT PROCEDURE

RANGE	DIAL SETTING	RF CONNECTION	OSCILLOGRAPH CONNECTION	FREQUENCY	ALIGNMENT	SENSITIVITY	OUTPUT
AM-IF Circuits							
MW MW MW MW	approx. 1 Mc/s approx. 1 Mc/s approx. 1 Mc/s approx. 1 Mc/s	Point A through 0.1 $\mu$ F Point B through 0.1 $\mu$ F Point C through 0.1 $\mu$ F Aerial socket	Point D	444 kc/s 444 kc/s 444 kc/s 444 kc/c	Turn core of coil 21 all the way out Coils 11, 10, 9, 4, 3 for max. response and symmetrical curve Bandwidth 5 kc/s at 6 dB. Coil 21 for minimum response	Point A: 125 $\mu$ V Point B: 20 $\mu$ V Point C: 560 $\mu$ V	50 mW
AM-RF-Circuits							
LW osc. LW osc. MW osc. MW osc. 49 m osc. 49 m osc. LW ferrite LW ferrite MW ferrite MW ferrite LW ext. aerial  LW ext. aerial MW ext. aerial MW ext. aerial 49 m ext. aerial	160 kc/s 272 kc/s 584 kc/s 1484 kc/s 5.95 Mc/s 6.2 Mc/s 160 kc/s 272 kc/s 584 kc/s 1484 kc/s 160 kc/s  272 kc/s 584 kc/s 1484 kc/s 5.95 Mc/s	Aerial socket - - - - - Measured in screened room with frame aerial - - - Aerial socket through dummy aerial - - Aerial socket without dummy aerial			Coil 17 Trimmer 24 Coil 18 Trimmer 25 Coil 20 Trimmer 26 Coil 22 Trimmer 27 Coil 23 Trimmer 28 Coil 15  Trimmer 30 Coil 16 Trimmer 29 Coil 19	450 $\mu$ V/m 275 $\mu$ V/m 175 $\mu$ V/m 130 $\mu$ V/m 85 $\mu$ V  140 $\mu$ V 76 $\mu$ V 140 $\mu$ V 21 $\mu$ V/m	50 mW 100 mW 50 mW 100 mW 50 mW  500 mW 50 mW 500 mW 50 mW
FM-IF Circuits							
FM	97 Mc/s	Aerial socket	AF 125 <sub>3</sub> collector with diode probe	10.7 Mc/s	Detune coils 12, 13, 14. Coils 1, 2, 5, 6, 7, 8 for max. response and symmetrical curve. Bandwidth 250 kc/s $\pm$ 30 kc/s at 6 dB	2.4 $\mu$ V EMF	200 mW
FM	97 Mc/s	Aerial socket	Across 220 pF (No. 115) without diode probe	10.7 Mc/s	Coils 13, 14 and coil 12 for best noise suppression. Repeat until perfectly symmetrical S-curve is obtained.	Signal/noise ratio: 1.6 $\mu$ V	12 dB
FM-RF Circuits							
FM osc. FM osc. FM RF FM RF	89 Mc/s 106 Mc/s 89 Mc/s 106 Mc/s	Aerial socket - - -			Coil 32 Trimmer 33 Coil 31 Trimmer 34		

AM-IF alignment: Sweepgenerator: Frequency swing approx. 20 kc/s.

AM sensitivity measurements: Signal generator: 400 c/s — 30% modulated.

FM-IF alignment: Sweepgenerator: Frequency swing approx. 1 Mc/s.

FM sensitivity measurements: Sweepgenerator: Frequency swing 22.5 kc/s — 400 c/s.



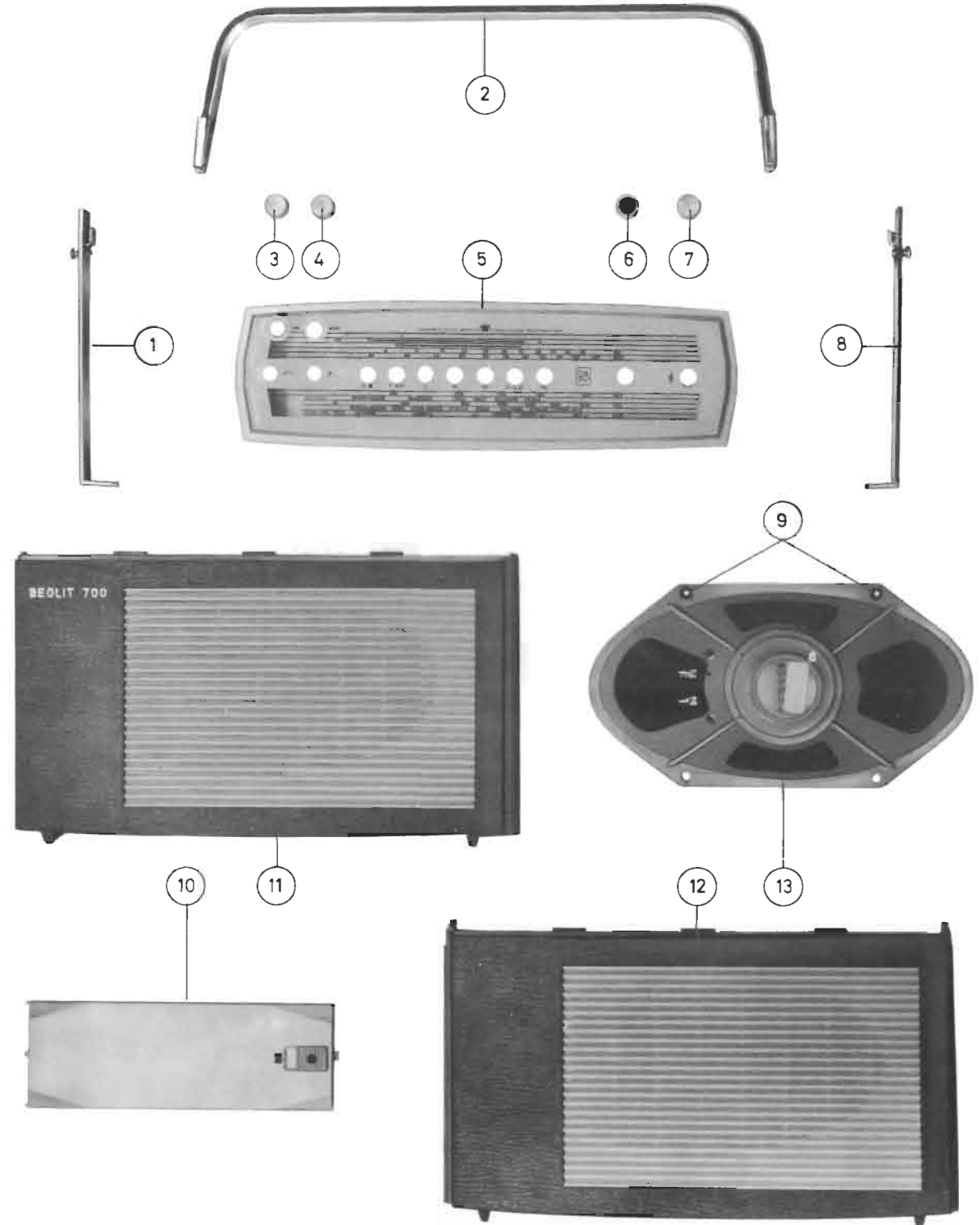
PARTS LIST, BEOLIT 700, Type 1301

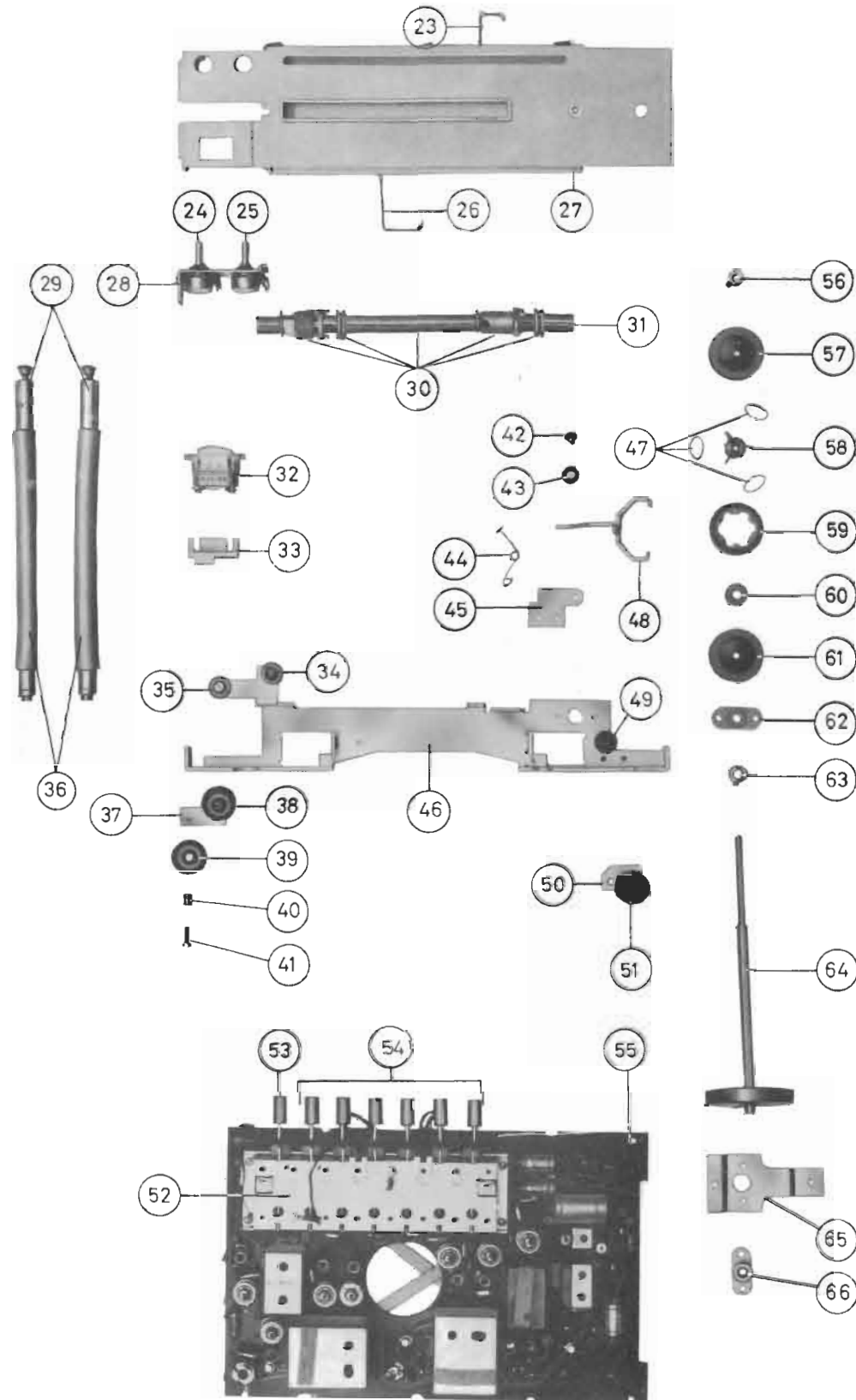
* 1	Ornamental strip.....	0690085
* 2	Carrying handle.....	0760426
* 3	Knob, volume .....	0322241
4	Knob, bass .....	0322241
* 5	Top, complete with dial etc. ....	0690108
* 6	Knob, tuning.....	0760492
7	Knob, treble.....	0322241
8	Ornamental strip.....	0690085
9	Bushings .....	0412257
*10	Battery cover, complete.....	0690083
*11	Cabinet, front, red .....	0690102
	- - green .....	0690103
	- - black .....	0690104
	- - blue .....	0690105
	- - grey .....	0690106
*12	Cabinet, back, red .....	0690089
	- - green .....	0690090
	- - black .....	0690091
	- - blue .....	0690092
	- - grey .....	0690093
*13	Speaker .....	0760493

See photo on page 9

*23	Dial pointer, FM .....	0760504
*24	Potentiometer, volume .....	0854723
*25	Potentiometer, bass .....	0854810
*26	Dial pointer, AM .....	0760503
27	Dial rear wall.....	0534048
28	Bracket .....	0248800
*29	Telescopic whips.....	8720001
30	Ferrite aerial, complete with coils .....	0601016
*31	Ferrite rod, less coils.....	6700000
*32	Radicator.....	0858045
33	Radicator bracket.....	0249228

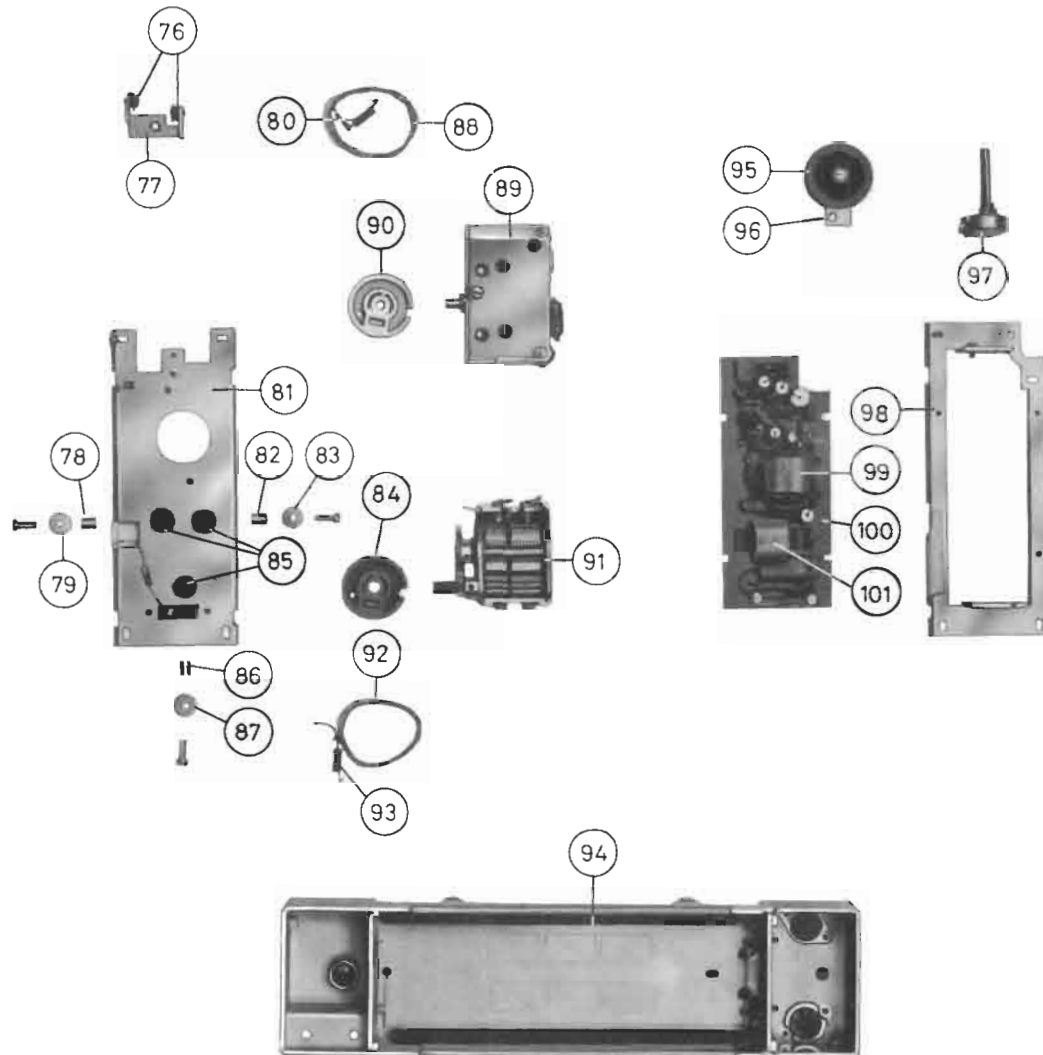
PARTS marked with an \* are preferred spare parts





*34	Cord pulley.....	2724001
35	Cord pulley.....	2724001
36	Plastic tubing.....	15 $\phi$ $\times$ 15 cm PVC.
37	Bracket .....	0287196
38	Cord pulley.....	2724002
39	Cord pulley.....	2724002
40	Bushing .....	0410165
41	Screw.....	AM 3 $\times$ 10 DIN 84
42	Screw.....	0106091
43	Spring washer .....	0286200
44	Spring.....	0335160
45	Clamp.....	0288036
46	Bracket .....	0504265
*47	Springs .....	0335156
48	Arm .....	0387310
49	Cord pulley.....	2724001
50	Bracket .....	0248909
51	Cord pulley.....	2724002
52	Pushbutton switch assembly, Type 1301 .....	0854809
	- - - - - 1302 .....	0854811
*53	Button .....	0760487
*54	Buttons .....	0760488
55	PW unit complete, IF, Type 1301 .....	8001008
	- - - - - 1302 .....	8001002
	Diodes .....	Three OA79's
	Socket for electrolytic capacitor .....	0506101
	Coil, coupling, 10.7 Mc/s.....	0990054
	- LW osc.....	0996431
	- MW osc.....	0996432
	- 49 m osc.....	0996502
	- 49 m aer.....	0996503
	- 444 kc/s, series trap.....	0990128
	Transformer for external-aerial coils .....	0972143
	Transformer, 1st IF .....	0971200
	- 2nd IF .....	0971201
	- AM detector .....	0971202
	- FM detector I .....	0971240
	- FM detector II .....	0971241
	Transistor, AM mixer .....	AF 126
	- 1st IF .....	AF 126
	- 2nd IF .....	AF 126
	Trimmers, 30 pF .....	C 005 CC/30 E
	- 60 pF .....	C 005 CC/60 E
56	Stop ring.....	0376381
57	Washer .....	0377076
*58	Hub for coupling.....	0760483
*59	Coupling.....	0760491
60	Washer .....	13 $\phi$ $\times$ 5.1 $\phi$ $\times$ 0.5
61	Washer .....	0377076
62	Bearing .....	0400033
63	Stop ring.....	0376380
64	Drive shaft with flywheel.....	0760418
65	Bracket .....	0248821
66	Bearing .....	0400029

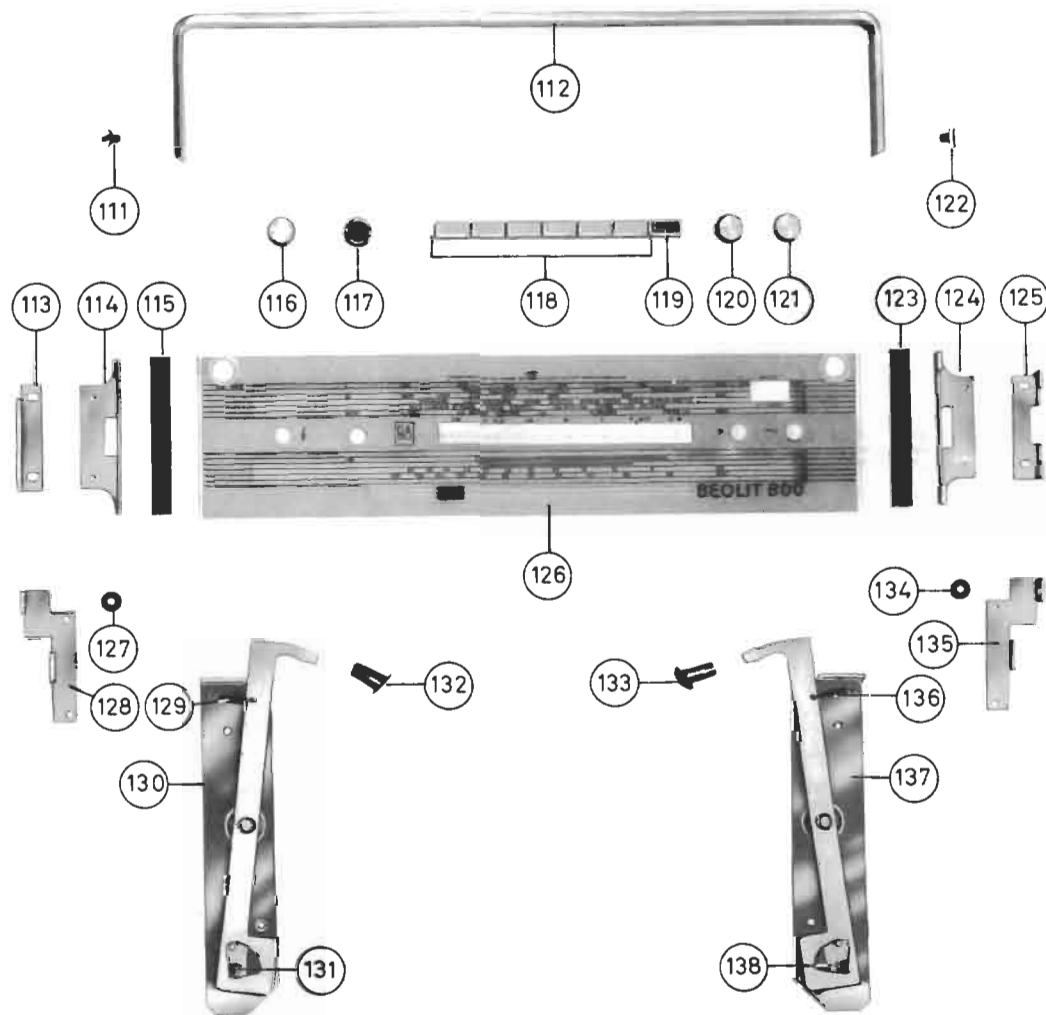
PARTS marked with an \* are preferred spare parts



76	Cord pulleys.....	2724000
77	Bracket .....	0248802
78	Bushing .....	0410273
79	Washer.....	0286185
80	Spring.....	0330194
81	Bracket .....	0504267
82	Bushing .....	0410273
83	Washer.....	0286185
* 84	Dial drive wheel.....	0312039
85	Rubber bushings .....	0411036
86	Bushing .....	0410273
87	Washer.....	0286185
88	Dial cord .....	3955001
89	FM tuner .....	8050005
* 90	Dial drive wheel.....	0312057
* 91	Tuning capacitor.....	0840428
92	Dial cord.....	3955001
93	Spring.....	0330194
* 94	Battery box, complete .....	0690084
95	Cord pulley.....	2724003
96	Bracket .....	0249266
* 97	Potentiometer, treble .....	0854722
98	Bracket .....	0504266
99	Transformer, driver.....	ST C 3194
100	PW unit, AF and output.....	8001007
*	Diode .....	1.4 St. 1
	Holder for output transistors .....	0240274
	Transistor, AF.....	UW 0029
	- AF driver .....	AC 151
	- Output .....	AC 153, pair
101	Transformer, output .....	ST 3527

PARTS marked with an \* are preferred spare parts





Parts for BEOLIT 800, Type 1302

*111	Screw.....	0104085
*112	Carrying handle .....	0326079
113	Bracket.....	0245555
114	Bracket.....	0245535
115	Cover piece.....	0280415
*116	Knob, treble .....	0322241
*117	Knob, tuning .....	0760492
*118	Buttons for pushbutton switch assembly...	0690096
*119	Button for on/off switch.....	0322333
120	Knob, bass.....	0322241
121	Knob, volume .....	0322241
122	Screw.....	0104085
123	Cover piece.....	0280415
124	Bracket.....	0245535
125	Bracket.....	0245556
*126	Top, complete with dial etc. ....	0690109
127	Bushing .....	0412270
128	Bracket.....	0248913
129	Spring .....	0330194
130	Bracket.....	0760443
131	Arm .....	0760442
*132	Slide shoe.....	0585026
133	Slide shoe.....	0585026
134	Bushing .....	0412270
135	Bracket.....	0248912
136	Spring .....	0330194
137	Bracket.....	0760444
138	Arm.....	0760442
	Cabinet .....	0532616 teak/rosewood
*	Slide shoe for bottom.....	0585018

Other parts as for Type 1301

Extra Accessories

*	Plug, Aerial .....	10076
*	- Gramophone.....	8-7506
*	- Speaker.....	S. 34
	- Tape Recorder .....	8-7506

PARTS marked with an \* are preferred spare parts



## DESCRIPTION

The BEOLIT 700 (Type 1301) and the BEOLIT 800 (Type 1302) are all-transistor FM-AM receivers for battery operation only. They consist of the following units:

PW unit 8050005, screened FM tuner with AFC diode.  
 PW unit 8001008 (Type 1301), AM and FM-IF circuits.  
 PW unit 8001002 (Type 1302), AM and FM-IF circuits.  
 PW unit 8001007, AF and output circuits.

## FM

The FM tuner uses two transistors: one AF 106 and one AF 124. An AFC diode, BA 101, receives control voltage from the discriminator; the AFC is disabled by feeding a stabilized voltage to the diode instead.

## AM

AF 126<sub>1</sub> operates as a self-excited mixer and, with the aerial button released, receives signal voltage from the ferrite aerial. With the aerial button depressed, AF 126<sub>1</sub> connects to screened coils for LW and MW for auto aerial. AF 126<sub>2</sub> and AF 126<sub>3</sub> are IF amplifiers.

## AF

The UW 0029 is a conventional AF amplifier. The AC 151 driver receives stabilized base voltage across the 1.4 St. 1 diode. This stabilization is carried through the emitter circuit and on to the AC 153 output transistors, ensuring constant current drain at decreasing battery voltage and consequently minimizing distortion on loud passages.

## TAPE RECORDER AND GRAMOPHONE

plug into a common DIN jack. Pin 1 is used for recording and pin 3 for playback. A BEOGRAM 1000 VF (Type 5202) record player, or a record player using a crystal pickup, should be used.

## Radicator

The radicator should be aligned with new dry cells inserted and the MW and 49m buttons depressed. The shaft of the 500Ω potentiometer numbered 94 in the circuit diagram should be turned until the pointer hits the stop; then turn in opposite direction until the pointer only just clears the stop.

## AF

No-signal current, point I, should be adjusted for approx. 18 mA by means of the 250Ω potentiometer numbered 524 in the circuit diagram.



## MODIFICATIONS

In order to avoid instability in the AM bands, the detector can (0971202) is soldered all along its edge so that perfect screening is ensured.

Some modifications have been introduced in the last series in order to obtain better reproduction on AM, in particular on strong signals.

22 nF	No. 123	has been replaced with	10 nF	Pe 125 V.
820 Ω	No. 104	- - - -	1 KΩ	1/2 W.
15 KΩ	No. 508	- - - -	12 KΩ	1/2 W.

A diode, OA79, has been installed between pin 9 of IF transformer 0971200 and pin 15 of 0971201 (+ end of diode to pin 15).

1 KΩ	No. 91	has been replaced with	3.3 KΩ	1/2 W.
10 KΩ	No. 66	- - - -	4.7 KΩ	1/2 W.



DIAL DRIVE

