

# ASTOR

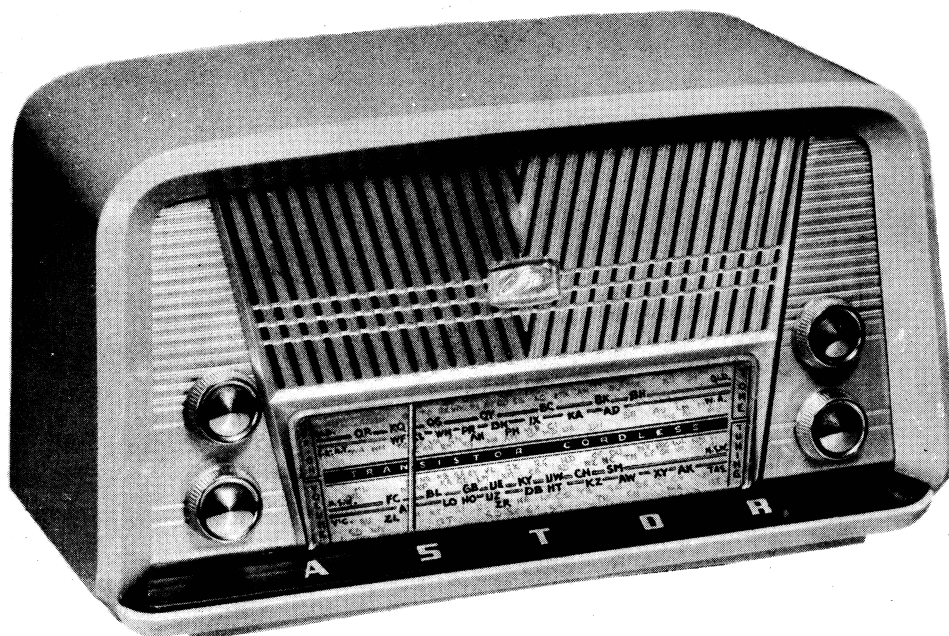
## SERVICE DATA

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### ASTOR MODEL "HQX"

#### CORDLESS MANTEL

#### 7 TRANSISTOR SUPERHETERODYNE BROADCAST RECEIVER



<b>TUNING RANGE:</b>	520 – 1610 Kilocycles
<b>INTERMEDIATE FREQUENCY:</b>	455 Kilocycles
<b>BATTERY SUPPLY:</b>	9 Volts DC. (internal battery)
<b>BATTERY CONSUMPTION:</b>	9 mA. (no signal) 120 mA. (.5W, output)
<b>POWER OUTPUT:</b>	.5 Watt (undistorted)
<b>TRANSISTOR COMPLEMENT:</b>	2N412 Mixer-Oscillator 2N410 I.F. Amp. 1. 2N410 I.F. Amp. 2 . 2N406 Audio Amplifier 2N406 Audio Driver OC74 Audio Output } 2-OC74 OC74 Audio Output } Matched Pair
<b>GERMANIUM DIODES:</b>	IN295 AGC. IN295 Detector /AGC.

STYLING COMPONENTS

Cabinet front section, less 'ASTOR' name plaque and grille.

Blossom Pink	504/81-1	Coral	504/81-2
Cherry Red	504/81-3	Chinese Red	504/81-4
Grey	504/81-6	Lime	504/81-8
Lawn Green	504/81-10	Ivory	504/81-12
Charcoal	504/81-14	Old Rose	504/81-15
Chartreuse	504/81-16	Rose Coral	504/81-17

Cabinet back section

Blossom Pink	506/81-1	Coral	506/81-2
Cherry Red	506/81-3	Chinese Red	506/81-4
Grey	506/81-6	Lime	506/81-8
Lawn Green	506/81-10	Ivory	506/81-12
Charcoal	506/81-14	Old Rose	506/81-15
Chartreuse	506/81-16	Rose Coral	506/81-17

Cabinet grille

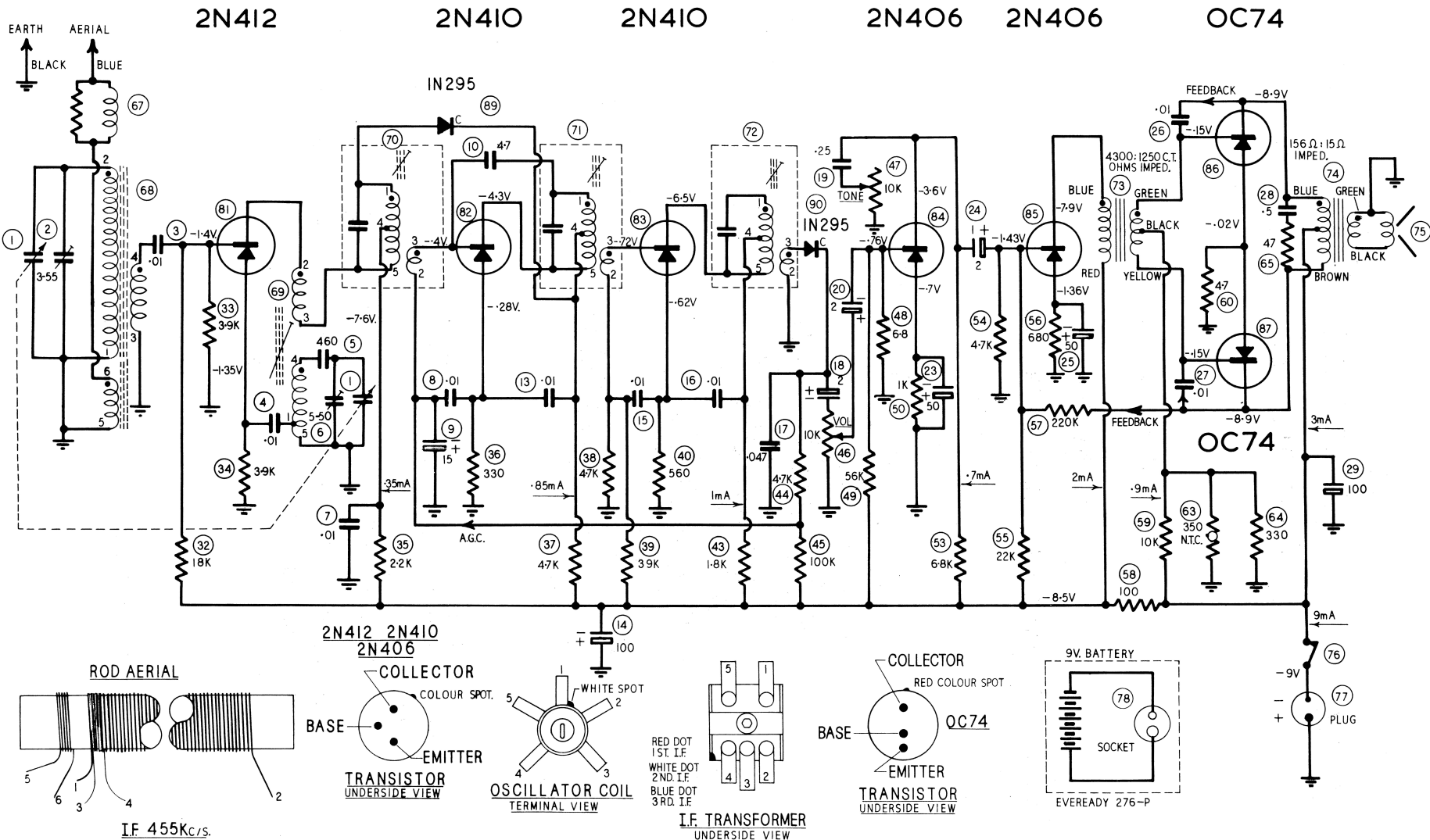
Pink/Gold		Clear/	
Silver	505/81-6	Silver	505/81-5
Clear/Gold		Clear/Old	
Silver	505/81-7	Rose	505/81-10

"ASTOR" name plaque	529/81-1
Control Knob Assy. (4)	A138/81

DETECTOR DIODE TYPE 1N295 - CIRCUIT NO. 90

Detector diode type SFD106 may be used as a replacement for type 1N295 in the detector stage.

Type SFD106 must not be used as the A.G.C. control diode.



ALL VOLTAGES MEASURED BETWEEN POINTS INDICATED AND COMMON POSITIVE WITH A D.C. VACUUM TUBE VOLT-METER. (NO SIGNAL.)

MODEL-HQX

NUMBERS ASSIGNED TO TERMINALS OF COILS AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT BE FOUND ON THE UNIT.

PB1141

# SERVICE INSTRUCTIONS—electrical

## ALIGNMENT EQUIPMENT

Signal Generator - modulated 400 cps.  
Output Meter - 15 Ohm impedance.  
Dummy Aerial - 200 pF. Mica capacitor.  
Series Capacitor - Sig. gen. for I.F.T. alignment .1 MF Part No. C113.

### Alignment Tools

- (a) Chisel point type Part No. PM581 for trimmer cond. adjustment.
- (b) Hexagonal tip type Part No. 418/81 for I.F.T. core adjustment.
- (c) Flexible rod type Part No. 48/712 for osc. coil core adjustment.

## ALIGNMENT CONDITIONS

The receiver chassis has to be removed from the cabinet for alignment purposes.

Instructions for removing the chassis from the cabinet are detailed in the Service Instructions, mechanical section of the data.

Volume Control - maximum volume (fully clockwise)  
Tone Control - maximum treble (fully clockwise)  
Output Level - 50 milliwatts.

### Output Meter

Connection - across secondary of output transformer, speaker voice coil disconnected.

## INTERMEDIATE FREQUENCY TRANSFORMER ALIGNMENT

NOTE. 1: Two peaks may be obtained when adjusting the I.F. transformers. The correct peak is the peak obtained when the core is screwed nearest to the terminal base.

NOTE. 2: The injection point for the Signal Generator is the junction of circuit No.3 and terminal 4 of the rod aerial. This point is accessible above the chassis and is the green wire from the lug of the terminal strip, which is mounted on the tuning condenser.

NOTE. 3: Turn tuning condenser to high frequency end of travel stop.



Oper. No.	Generator Connection	Generator Frequency	Dummy Aerial	Instructions
1.	As Note 2.	455 Kc/s	.1 MF Cond. in series with generator	Peak iron core of 3rd I.F. trans. for max. output, refer NOTE. 1:
2.	As Operation No. 1.	455 Kc/s	As Operation No. 1.	Peak iron core of 2nd I.F. trans. for max. output.
3.	As Operation No. 1.	455 Kc/s	As Operation No. 1.	Peak iron core of 1st I.F. trans. for max. output.
4.	Repeat Operations 1, 2 and 3.			

#### BROADCAST ALIGNMENT

1.	To aerial and earth leads.	1610 Kc/s	200 pF capacitor in series with generator	Turn tuning cond. to high freq. end of travel (plates fully open). Adjust osc. trim. cond. for max. output.
2.	As Operation No. 1.	1470 Kc/s	As Operation No. 1.	Tune receiver accurately to generator, adjust aerial trim. cond. for max. output. Do not move tuning control during adjustment.
3.	As Operation No. 1.	640 Kc/s	As Operation No. 1.	Tune receiver to generator. Rack to and fro through signal whilst adjusting osc. coil iron core for max. output.
4.	Repeat operations 2 and 3.			
5.	Tune receiver to a local station, align centre of pointer to centre of call sign letters then check logging. Adjust pointer if necessary to obtain optimum logging of local stations.			

#### PRECAUTIONS WHEN TESTING TRANSISTOR RECEIVERS

- A. A transistor is extremely sensitive to heat. If a soldering iron is to be used close to a transistor move the transistor or place non-conductive material between the iron and transistor. When making soldered connections to the leads of the transistors hold the lead which is being soldered between the heat source and transistor body with pliers; excess heat will be dissipated away into the pliers. Use a soldering iron which supplies just the required heat for satisfactory soldering of connections.

- B. A continuity meter must not be applied to the receiver wiring with the transistor in circuit. A transistor must not be checked for continuity with an ohmmeter as the applied voltage and resultant excess current flow may result in permanent damage to the transistor. A voltmeter of at least 20,000 ohms/volt or a high impedance vacuum tube type voltmeter is a safe means of measuring circuit voltages.
- C. A screwdriver or similar instrument must not be used to short components together or to the chassis. The use of this method of checking for the existence of voltage or signal clicks may result in permanent damage to the transistors and components.

## SERVICE INSTRUCTIONS—mechanical

### CHASSIS SERIAL NUMBER

The chassis serial number is stamped into the rear of the metal chassis. When viewing the receiver from the rear, the serial number is visible through a slot at the right of the cabinet.

### COIL, DRIVER TRANSFORMER AND SPEAKER TRANSFORMER CONNECTIONS

Lead colours and terminal numbers for the connections to these components are shown on the circuit.

### TO REMOVE AND REFIT CHASSIS TO CABINET

- 1. Remove push-on type knobs from control spindles.
- 2. Remove two screws fastening rear section of cabinet to chassis.
- 3. From base of cabinet remove four screws and washers fastening chassis in position.
- 4. Slide chassis out of cabinet.
- 5. Refitting of the chassis to the cabinet is the reverse procedure to removing it.

### TO REMOVE THE BATTERY

- 1. Switch the receiver OFF.
- 2. Remove two screws fastening rear section of cabinet to chassis.
- 3. Lift the retaining clip from battery compartment upward away from the battery.
- 4. Slide battery out of cabinet and remove two pin plug.
- 5. Fitting a new battery is the reverse procedure to removing it.

STORAGE WHEN OUT OF USE

It is not advisable to leave an exhausted battery in the receiver. If the receiver is stored away or not required for long periods, even partly used batteries should be removed and stored in a dry cool place.

This is a precautionary measure against the swelling and corroding action of worn-out batteries, which applies to all battery operated devices, such as torches, etc.

CLEANING AGENT FOR CABINET

Do not polish the moulded case or plastic sections with an abrasive material, motor car polish, boot polish, or similar household cleaning fluids, as permanent damage may result to the finish of the case and plastic sections.

To restore the lustre of the moulded case wipe with a soft cloth dampened with water and lightly polish with a neutral wax.

Circuit No.	Condensers	Tol.	Rating	Part No.
1	Tuning gang			PC636
2	3-55 pF Trimmer			PC899
3	.01 MF Ceramic	+80% -20%	33V DCW	C391
4	.01 MF Ceramic	+80% -20%	33V DCW	C391
5	460 pF Mica	$\pm 2\frac{1}{2}\%$	500V DCW	PC728
6	5-50 pF Trimmer wire wound			C157
7	.01 MF Ceramic	+80% -20%	33V DCW	C391
8	.01 MF Ceramic	+80% -20%	33V DCW	C391
9	15 MF Electrolytic	+100% -10%	15V DCW	C282
10	4.7 pF Disc ceramicon	$\pm .5$ pF	500V DCW	C123
11				
12				
13	.01 MF Ceramic	+80% -20%	33V DCW	C391
14	100 MF Electrolytic	+250% -10%	12V DCW	C457
15	.01 MF Ceramic	+80% -10%	33V DCW	C391
16	.01 MF Ceramic	+80% -10%	33V DCW	C391
17	.047 MF Ceramic	+80% -10%	33V DCW	C388
18	2MF Electrolytic	+250% -10%	6V DCW	C323
19	.25 MF Metallised paper	$\pm 20\%$	200V DCW	C125
20	2 MF Electrolytic	+250% -10%	6V DCW	C323
21				
22				
23	50 MF Electrolytic	+250% -10%	3V DCW	C307
24	2 MF Electrolytic	+250% -10%	6V DCW	C323
25	50 MF Electrolytic	+250% -10%	3V DCW	C307
26	.01 MF Ceramic	+80% -10%	33V DCW	C391
27	.01 MF Ceramic	+80% -10%	33V DCW	C391
28	.5 MF Metallised paper	$\pm 20\%$	200V DCW	C138
29	100 MF Electrolytic	+250% -10%	12V DCW	C457
30				
31				

Circuit No.	Resistors		Tol.±	Rating	Part No.
32	18,000 ohm	Carbon	10%	$\frac{1}{2}$ W	R1832
33	3,900 ohm	Carbon	10%	$\frac{1}{2}$ W	R3922
34	3,900 ohm	Carbon	10%	$\frac{1}{2}$ W	R3922
35	2,200 ohm	Carbon	10%	$\frac{1}{2}$ W	R2222
36	330 ohm	Carbon	10%	$\frac{1}{2}$ W	R3312
37	4,700 ohm	Carbon	10%	$\frac{1}{2}$ W	R4722
38	4,700 ohm	Carbon	10%	$\frac{1}{2}$ W	R4722
39	39,000 ohm	Carbon	10%	$\frac{1}{2}$ W	R3932
40	560 ohm	Carbon	10%	$\frac{1}{2}$ W	R5612
41					
42					
43	1,800 ohm	Carbon	10%	$\frac{1}{2}$ W	R1822
44	4,700 ohm	Carbon	10%	$\frac{1}{2}$ W	R4722
45	100,000 ohm	Carbon	10%	$\frac{1}{2}$ W	R1042
46	Volume control	10,000 ohm			R447
47	Tone control	10,000 ohm			R447
48	6,800 ohm	Carbon	10%	$\frac{1}{2}$ W	R6822
49	56,000 ohm	Carbon	10%	$\frac{1}{2}$ W	R5632
50	1,000 ohm	Carbon	10%	$\frac{1}{2}$ W	R1022
51					
52					
53	6,800 ohm	Carbon	10%	$\frac{1}{2}$ W	R6822
54	4,700 ohm	Carbon	10%	$\frac{1}{2}$ W	R4722
55	22,000 ohm	Carbon	10%	$\frac{1}{2}$ W	R2232
56	680 ohm	Carbon	10%	$\frac{1}{2}$ W	R6812
57	220,000 ohm	Carbon	10%	$\frac{1}{2}$ W	R2242
58	100 ohm	Carbon	10%	$\frac{1}{2}$ W	R1012
59	10,000 ohm	Carbon	10%	$\frac{1}{2}$ W	R1032
60	4.7 ohm	Wire wound	5%	$\frac{1}{2}$ W	R194
61					
62					
63	350 ohm	Negative temperature, coefficient			R259
64	330 ohm	Carbon	10%	$\frac{1}{2}$ W	R3312
65	47 ohm	Carbon	10%	$\frac{1}{2}$ W	R4702

### Miscellaneous

66	Loading coil				PT942
67	Ferrite rod aerial				L579
68					L520
69	Oscillator coil				L515
70	No. 1 I.F. transformer - 455 Kc/s				L332
71	No. 2 I.F. transformer - 455 Kc/s				L333
72	No. 3 I.F. transformer - 455 Kc/s				T233
73	Driver transformer - 4300:1250 CT. ohms impd.				T292
74	Speaker transformer - 156CT:15 ohms impd.				K247
75	Speaker - 7" x 5" permag. 15 ohm impd. type 75H00/48/15				S232
76	Switch - On/Off, SP.ST.				482/30C
77	Two pin plug - battery				M470
78	Battery - 9 volt, Eveready type 276-P				
79					

## Circuit

No.	Miscellaneous	Part No.
80		
81	Mixer/oscillator transistor type 2N412	2N412
82	1st I.F. amplifier transistor type 2N410	2N410
83	2nd I.F. amplifier transistor type 2N410	2N410
84	Audio amplifier transistor type 2N406	2N406
85	Audio driver transistor type 2N406	2N406
86	Audio output transistor type OC74	2-OC74
87	Audio output transistor type OC74 ) Matched pair type	

Mechanical

Terminal strip - 8 lug type 2E3E1	A593/30C
Terminal strip - 8 lug type 2E4E	A641/30C
Terminal strip - 10 lug type 2E5E1	A644/30C
Terminal strip - 9 lug type 1E4E2	A620/30C
Terminal strip - 9 lug type E7E	A613/30C
Terminal strip - 4 lug type 2E1	A602/30C
Speaker and dial reading mount plate assy.	A105/850-1
Dial reading	72/395
Dial pointer	8/250
Dial cord - 60 ins.	34/754
Spring - dial cord	21/698
Pulley (2) - dial cord	13/613
Stud (2) - pulley	18/87
Stud (2) - dial cord	18/87-8
Dial drum	A102/617
Tuning spindle	A102/850
Bush - tuning spindle	3/287-1
Horseshoe washer - tuning spindle	19/57-1
Grommet (4) rubber, tuning gang mount	64/30A
Bush (4) brass, tuning gang mount	93/53-1
Screw (4) $\frac{1}{2}$ " x 5/32" Whit. tuning gang mount	16/560-10
Shakeproof washer (4) 5/32" int. tuning gang mount	1/562-5
Mount pillar (2) rod aerial	278/81
Clip (2) wire, rod aerial to mt. pillar	453/250
Clip (3) wire, I.F. trans. mt.	510/250
Spring - battery retainer	20/850
Speednut (4) audio trans. mt.	476/250-4
Speednut (4) chassis to cabinet mt.	395/250-2
Speednut (2) cabinet back mt.	476/250
Speednut (4) speaker mt.	230/250-1
Nut (4) hex., control bushes	542/250
Rubber foot (2) front mt. screws of cabinet	618/250
Screw (8) $\frac{5}{8}$ " x No.6 self-tapping Phillips hd.	78/560-30
Screw (2) $\frac{1}{2}$ " x No.6 self tapping, fastens rear of cab. to chassis	35/560-12
Washer (6) 9/16" x 11/64" flat steel, cabinet rear and chassis	67/30C
mount screws	
Dial packer - chip board	25/850

# UNDERSIDE VIEW OF RECEIVER

