BUSH DAC73

DUG73, PB73, SUG73

Four valve, plus rectifier, receiver covering medium and long waves, and with four band-spread short-wave ranges and two push-button stations. Suitable for 200–250 v., A.C./D.C. supplies (models DAC73 and DUG73) or 200–250 v., 40–100 cycle A.C. only (models PB73 and SUG73). Made by Bush Radio, Ltd., Power Road, Chiswick, London, W.4.

Circuit.—This service sheet covers both the PB73 and DAC73 chassis because the circuits are the same except for the mains input arrangements and a few minor details. As the PB73 has a perfectly conventional full-wave A.C. mains input, this sheet deals as a whole with the A.C./D.C. model, DAC73.

The set has eight push-buttons providing L. and M.W. bands, four band-spread short-wave ranges and two pre-selected stations.

Aerial input is to three H.F. transformers for L., M. and S. bands. On short waves the grid circuit is not variably tuned, but the buttons switch in pre-set capacities which tune the S.W. grid coil to the middle of the band covered by the button.

V1 is the frequency-changer. In the oscillator section a special, stabilised Colpitts arrangement is used. On S.W., the tuned circuits are between anode and chassis, feed-back to the grid being taken from the top of the padder, C17. C15 is a special temperature compensating condenser and C16 is a capacity switched across the osc. gang section on band-spread.

V1, V2 and V3 are coupled by trimmer-tuned, iron-cored I.F. coils. The A.V.C. diode of V3 is fed from I.F.2 primary and controls V1 on L. and M.W., and V2 on all bands. Demodulation arrangements are straightforward, with P.U. sockets switched across R13, the diode load.

The triode section is resistance-capacity coupled to V4, the output pentode. This has a shunt tone control.

H.T. is derived from V5, a half-wave rectifier with smoothing by the speaker field, L1, and two electrolytics. The valve heaters are run in series with the pilot lamps and with a voltage adjustment resistance. L6 and L7 are H.F. filter chokes in the mains input.

Model PB73 has a straightforward full-wave rectifier circuit with similar smoothing arrangements. The pilot lamps are switched across a tapping on the L.T. winding. Condensers C34A and C34B, which isolate the P.U. sockets from chassis, and C1A, C1B, which isolate the A. and E. sockets are omitted. R21, R22, R23, R24 and C47 are omitted.

In model PB73, C45 is 16 mfd. and C46 is 8 mfd.

Provision is made for low-impedance (approx. 700 ohms) P.U. and for 2.5 ohm extension speaker.

GANGING

I.F. CIRCUITS.—Tune to 300 m., set volume to max., and tone to low. Inject 465 kc. and keep input low to prevent A.V.C. functioning.

Connect a damping circuit consisting of 30,000 ohms in series with .05 mfd. across half of each transformer in turn while adjusting the other half.

M.W. BAND.—See that pointer registers with top wavelength mark with gang at maximum.

Tune to 300 m., inject 1,000 kc. and adjust T1 and T2. Tune to 500 m., inject 600 kc. and check calibration.

L.W. BAND.—Tune to 1,500 m., inject 200 kc. and adjust T3 and T4. Check calibration at 1,900 m. (157.6 kc.)

S.W. BANDS.—The band-spread ranges cover: 16.45–17.2 m. (approx. centre of band 16.8 m.); 19.15–20.1 m. (centre 19.6 m.); 24.85–25.8 (25.4); 30.25–31.85 (31). When the four bands require adjustment commence with 31 m. band.

On another S.W. receiver, tune in a station near the middle of the band to be adjusted. Utmost care must be used in establishing identity and wavelength of this station.

Press appropriate button on Bush set and turn pointer to correct place for receiving check station. If the station is heard below correct point, increase inductance by screwing oscillator adjustment anti-clockwise and vice versa.

Note when retightening the hexagon locking nut not to shift the screw again.

Then adjust corresponding aerial trimmer.

PUSH-BUTTONS

Both buttons cover 325–550 m. Adjust oscillator and aerial cores in that order to receive required station, checking against manual reception. Turn clockwise to increase wavelength.

NOTE.—Adjust of T3 and T2 will affect these two P.B. circuits. After replacement of V1 the P.B. and band-spread adjustments should be checked.

Valve readings are those obtained with model DAC73 on 230v. A.C. mains. On 200v. D.C. readings are approximately 25 per cent. lower. With model PB73, readings are about 30 per cent. higher.*

CONDENSERS

C	Mfds.	C	Mfds.
1A	.005	24	556 mmfds.
1B	.005	25	50 mmfds.
1	50 mmfds.	26	33 mmfds.
2	50 mmfds.	27	47 mmfds.
3	800 mmfds.	28	11 mmfds.
4	33 mmfds.	29	.05
5	1.5 mmfds.	30	.05
6	20 mmfds.	31	.05
7	80 mmfds.	32	.05
8	150 mmfds.	33, 34	100 mmfds.
9	.5 mmfds.	34A	.03
10	.05	34B	.1
11	.05	35	50 mmfds.
12	100 mmfds.	36	100 mmfds.
13	100 mmfds.	37	100 mmfds.
14	500 mmfds.	38	.01
15	100 mmfds.	39	.2
16	200 mmfds.	40	50
17	175 mmfds.	41	.01
18	50 mmfds.	42	50
19	200 mmfds.	43	.001
20	316 mmfds.	44	.03
21	125 mmfds.	45	24
22	340 mmfds.	46	16
23	15 mmfds.	47	.01

OSC. TRIMS — T1 T3
PRE-SETS 31 25 19 16 M M L
BUTTONS
AE TRIMS — T2 T4
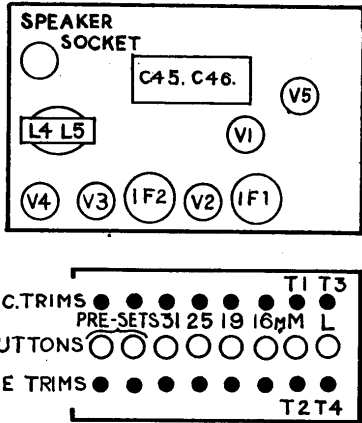
The Bush trimmers are readily accessible and are in pairs above and below their respective station and waveband buttons.

VALVE READINGS

V	Type	Electrode	Volts	Ma.
1	CCH33 or CCH35	Anode	200	1.7
		Screen	70	2.5
		Osc. anode	90	5
		Cathode	1.2	9.2
2	EF39	Anode	160	4
		Screen	60	1.2
		Cathode	1.5	5.2
3	EBC33	Anode	80	2
		Cathode	2	2
4	CL33	Anode	180	36
		Screen	200	6
		Cathode	8	42
5	UR3C	Anodes (A.C.)	230	—
		Cathode	265	54.5

Pilot lamps, 6.2 v., .3 amp.

See note at end of text

RESISTANCES

R	Ohms.	R	Ohms.
1	1 meg.	14	100,000
2	100,000	15	10,000
3	50,000	16	50,000
4	20,000	17	1,000
5	30,000	18	1 meg.
6	150	19	500,000
7	50	20	200
8	100,000	21	100,000
9	.5 meg.	22	75
10	1 meg.	23	75
11	300	24	750
12	250,000	VR1	500,000
13	500,000	VR2	50,000

WINDINGS

L	Ohms.	L	Ohms.
1 (D.A.C73)	1,000	4	700
1 (PB73)	2,000	5	.7
2	2.6	6	1
3	.7	7	7

VALVES
V1 MULLARD CCH 35 OR CCH 33
V2 MULLARD EF 89
V3 MULLARD EBC 33
V4 MULLARD CL 33
V5 MULLARD UR 3C