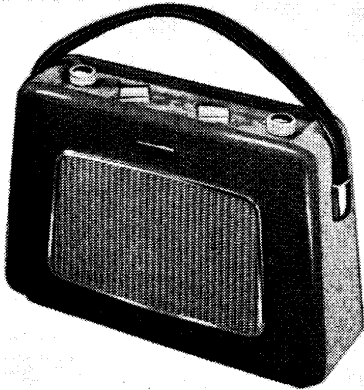


"TRADER" SERVICE SHEET
1450

DYNATRON TP11 "NOMAD"

Also Covering Model TP12 "Linnet"



Appearance of the Dynatron TP11.

THE Dynatron TP11 "Nomad" is a 2-band portable receiver designed to operate from two 9V batteries. It is fitted with seven Ediswan p-n-p transistors, two germanium diodes, ferrite rod aerials, and a printed circuit. A coaxial socket is provided for the connection of a car aerial. The waveband ranges are 185-565m (M.W.) and 1,050-1,850m (L.W.).

The TP12 "Linnet" is a table model receiver employing a similar chassis and circuit to the TP11.

Release dates: TP11, September 1959; TP12, April 1960. Original price, both models, £19 9s 6d. Purchase tax extra.

TRANSISTOR ANALYSIS

Transistor voltages and currents given in the table (Col. 2) are those derived from the manufacturers' information. Voltages were measured with a high resis-

tance meter and, except where otherwise indicated, the positive meter terminal was connected to chassis. There was no signal input.

Transistor	Emitter (V)	Base (V)	Collector	
			(V)	(mA)
TR1 XA102	1.41	1.28	7.9	0.43
TR2 XA101	0.8	1.0	7.0	1.0
TR3 XA101	1.2	1.3	8.2	1.15
TR4 XB102	0.2	0.3	5.8	0.43
TR5 XB103	0.3†	0.2†	8.4	3.6
TR6 XC131	0.01	0.2	8.8	1.2
TR7 XC131	9.05†	8.88†	—	1.2

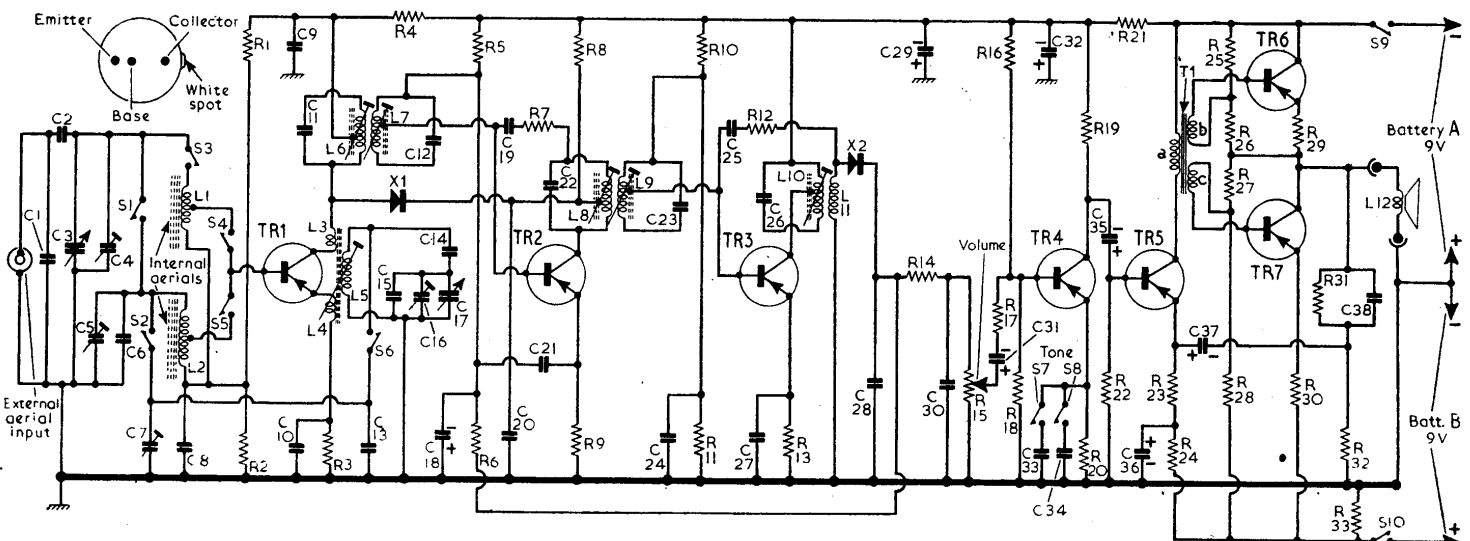
†Negative meter terminal to chassis.

CIRCUIT DESCRIPTION

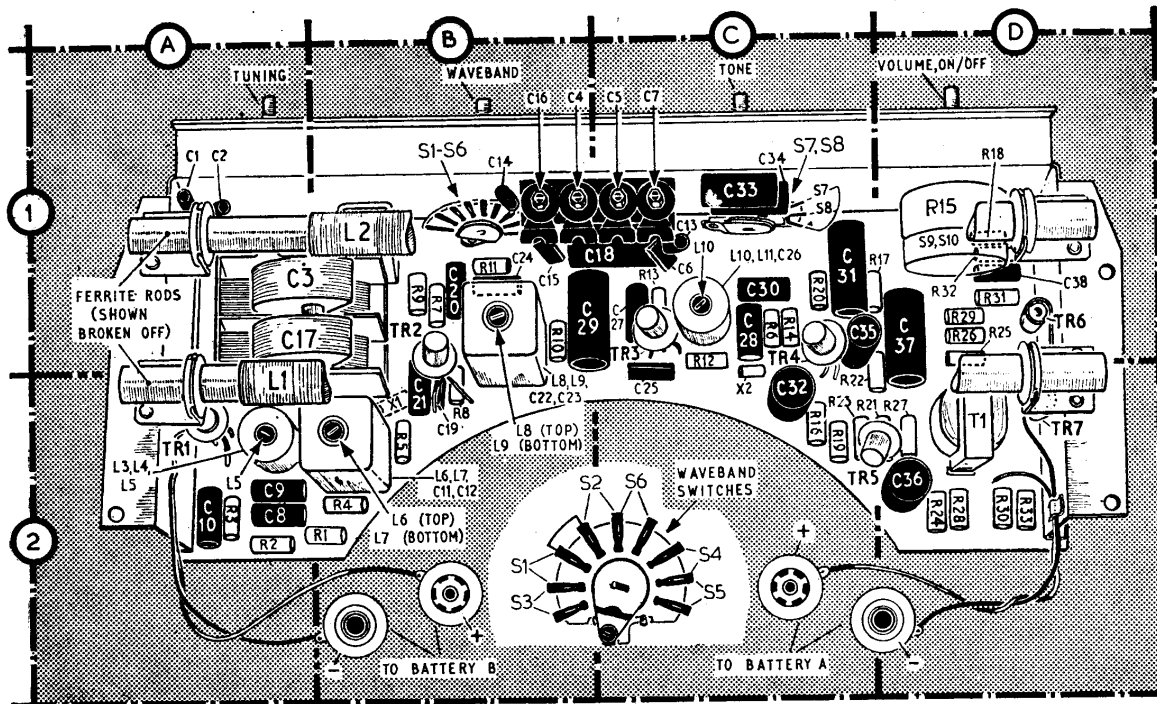
M.W. tuned circuit comprising L1, C3, C4, and L.W. tuned circuit L2, C5 and C6 are coupled via low-impedance tapings on L1, L2, and switches S4 (M.W.), S5 (L.W.) to the base of TR1, which operates as a self-oscillating frequency changer. For M.W. reception, L2 is effectively short-circuited by S2, C7 and C13, thus preventing spurious responses due to inductive coupling between the tuned circuits. Provision is made for the connection of a car aerial, which is coupled to the tuned circuits via C1 and

(Continued overleaf, col. 1)

Capacitors			Resistors			Coils*			Miscellaneous*		
C1	47pF	A1	R1	33kΩ	B2	L1	0.25	D2	T1	100-0	D2
C2	8.2pF	A1	R2	8.2kΩ	A2	L2	2.6	B1	T1	37.0	
C3	401pF	A1	R3	3.3kΩ	A2	L3	0.25	A2	T1	37.0	
C4	30pF	B1	R4	390Ω	B2	L4	—	A2	X1	CG6E	†B2
C5	30pF	C1	R5	56kΩ	B2	L5	1.75	A2	X2	CG64H†	C2
C6	100pF	C1	R6	8.2kΩ	C1	L6	4.0	B2	S1-S6	—	B1
C7	30pF	C1	R7	3.3kΩ	B1	L7	4.0	B2	S7, S8	—	C1
C8	0.04μF	A2	R8	1kΩ	B2	L8	4.0	B1	S9, S10	—	D1
C9	0.04μF	A2	R9	680Ω	B1	L9	4.0	B1			
C10	0.02μF	A2	R10	15kΩ	B1	L10	4.0	C1			
C11	400pF	B2	R11	3.3kΩ	B1	L11	0.5	C1			
C12	400pF	B2	R12	2.2kΩ	C1	L12	50.0	—			
C13	350pF	C1	R13	1kΩ	C1						
C14	480pF	B1	R14	470Ω	C1						
C15	20pF	B1	R15	5kΩ	D1						
C16	30pF	B1	R16	180kΩ	C2						
C17	401μF	A1	R17	3.3kΩ	D1						
C18	8μF	C1	R18	10kΩ	D1						
C19	15pF	B2	R19	5.6kΩ	C2						
C20	0.04μF	B1	R20	470Ω	C1						
C21	0.04μF	B2	R21	150Ω	D2						
C22	400pF	B1	R22	6.8kΩ	C2						
C23	400pF	B1	R23	680Ω	C2						
C24	0.04μF	B1	R24	1.5kΩ	D2						
C25	25pF	C2	R25	2.2kΩ	D1						
C26	250pF	C1	R26	51Ω	D1						
C27	0.04μF	C1	R27	2.2kΩ	D2						
C28	0.02μF	C1	R28	51Ω	D2						
C29	100μF	B1									
C30	0.02μF	C1									
C31	8μF	C1									
C32	100μF	C2									
C33	0.1μF	C1									
C34	0.1μF	C1									
C35	8μF	C1									
C36	100μF	D2									
C37	100μF	D1									
C38	0.005μF	D1									



Circuit diagram of the Dynatron TP11 and TP12 receivers. C15 is omitted in early versions of the TP11.



Rear view of the TP11 chassis. The ferrite aerial rods are shown cut away in order to provide a clear view of the components mounted on the printed circuit board and top panel. TR6 and TR7 are mounted on the right-hand chassis bracket, and germanium diode X1, shown dotted in location reference B2, is mounted on the printed side of the circuit panel. A diagram of the waveband switch unit is shown in location references B2, C2.

Circuit description—continued

C2 to prevent the detuning effect due to aerial capacitance.

The oscillator coil L5 is tuned by C14-C17 on M.W. and, in addition, by C7, C13 on L.W. Reaction coupling between TR1 collector and emitter by L3, L4. The intermediate frequency output of TR1 is coupled via a two-stage I.F. amplifier comprising earthed emitter transistors TR2 and TR3, double-tuned transformers L6, L7; L8, L9, and single-tuned transformer L10, L11 to germanium diode detector X2. TR2 and TR3 are neutralized by feedback networks C19, R7 and C25, R12.

Intermediate frequency 470kc/s

The audio frequency output from X2 is developed across R14 and volume control R15 and passed via electrolytic capacitor C31 to A.F. amplifier TR4. R.F. filtering by C28, R14 and C30.

The positive going D.C. component of the rectified signal developed across R14, R15 is fed back as A.G.C. bias to the base of TR2. The A.G.C. action is supplemented by the variable damping effect of X1 on the primary of I.F. transformer L6, L7. Under weak signal conditions, the voltage drop across R8 provides a reverse bias for X1 so that its impedance is high enough to have a negligible damping effect. As the signal strength increases, A.G.C. action reduces the collector current of TR2 and therefore the voltage drop across R8. This reduces the impedance of X1 and increases the damping on L6.

The output of TR4 is resistance-capacitance coupled by R19, C35 and R22 to driver stage TR5. TR6 and TR7 operate in a single-ended class B output stage with D.C. coupling to high impedance speech coil L12.

CIRCUIT ALIGNMENT

Equipment Required.—A signal gener-

ator, modulated 30 per cent at 400c/s; an A.C. voltmeter for use as an output meter; a 0.1 μ F capacitor; and a screw-driver-type trimming tool.

- 1.—Connect the signal generator, via the 0.1 μ F capacitor in its live output lead, between chassis and the base of TR1. Connect the output meter, switched to its 2.5V A.C. range, across the speaker L12. Switch the receiver to M.W. and tune it to 500m. Turn the volume control to maximum.
- 2.—Feed in a modulated 470kc/s signal and adjust the cores of L10 (C1), L9 (B1), L8 (B1), L7 (B2) and L6 (B2) for maximum output, reducing the signal generator output as the circuits come into line to avoid A.G.C. action. Repeat these adjustments until no further improvement can be obtained.
- 3.—Loosely couple the signal generator to the ferrite rod aerial. Tune the receiver to 500m. Feed in a 600kc/s signal and adjust the core of L5 (A2) for maximum output. Then slide the former of L1 (A2) along the ferrite rod for maximum output.
- 4.—Tune the receiver to 200m. Feed in a 1,500kc/s signal and adjust C16 (B1) and C4 (B1) for maximum output.
- 5.—Repeat operations 3 and 4.
- 6.—Switch the receiver to L.W. and tune in the Light programme at 1,500m. Adjust C7 (C1) for maximum output.
- 7.—Tune the receiver to 1,819m. Feed in a 165kc/s signal and slide the former of L2 (B1) along the ferrite rod for maximum output.
- 8.—Tune the receiver to 1,200m. Feed in a 250kc/s signal and adjust C5 (C1) for maximum output.
- 9.—Repeat operations 6, 7 and 8. Then fix the formers of L1 and L2 to the ferrite rods with adhesive tape to prevent them from moving.

I.F. Sensitivity.—Connect the signal generator and output meter as in operation 1 above. Feed in a 470kc/s signal at a level of 200 μ V and check that the reading on the output meter is not less than 2V.

GENERAL NOTES

Switches.—S1-S6 are the waveband switches, ganged in a single rotary unit and indicated in our chassis illustration in location reference B1. A detailed sketch showing the switch contacts is shown in location references B2, C2. S2, S3 and S4 close on MW and S1, S5 and S6 on L.W.

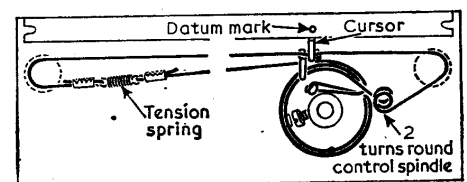
S7 and S8 are the tone control switches shown in our chassis illustration in location reference C1, where the contacts are identified.

Batteries.—The batteries recommended by the manufacturer are two Ever Ready type PP9s, rated at 9V each.

Removing chassis.—To remove the chassis from the cabinet, unscrew four self-tapping screws from the brackets at its ends. Then, taking care to avoid damaging the ferrite rod aerial assembly, withdraw the chassis.

Drive Cord Replacement.—About 31 inches of nylon cord is required for a new tuning drive cord. To replace the cord, remove the chassis from the cabinet, as described above. Then remove the control knobs (recessed grub screws) and the tuning scale (secured by two 6BA screws, nuts and washers).

Secure one end of the new cord to the tension spring by means of a Ross Courtney clamp. Then secure the free end of the cord to the other end of the spring so that the overall length of cord is 29 $\frac{3}{4}$ inches. Paint a mark on the cord 7 $\frac{1}{8}$ inches from one end of the spring; loop the cord at the mark and insert the loop in the hole in the side of the drive drum, plating the marked portion over the retaining tag on the drum. Then run the cord as indicated in the sketch of the tuning drive system shown below. Finally, attach the cursor to the drive



cord so that with the gang at maximum capacitance it coincides with the hole drilled in the chassis above the drive drum.