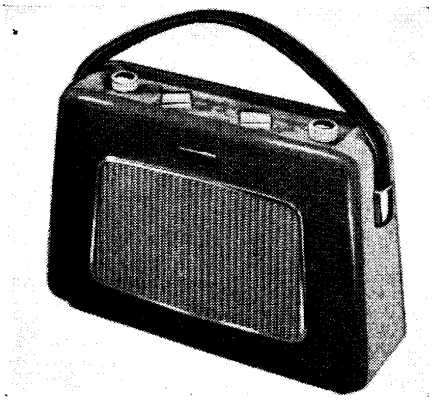
"TRADER" SERVICE SHEET

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 co-axial 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 resistance 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)	Collector (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.*

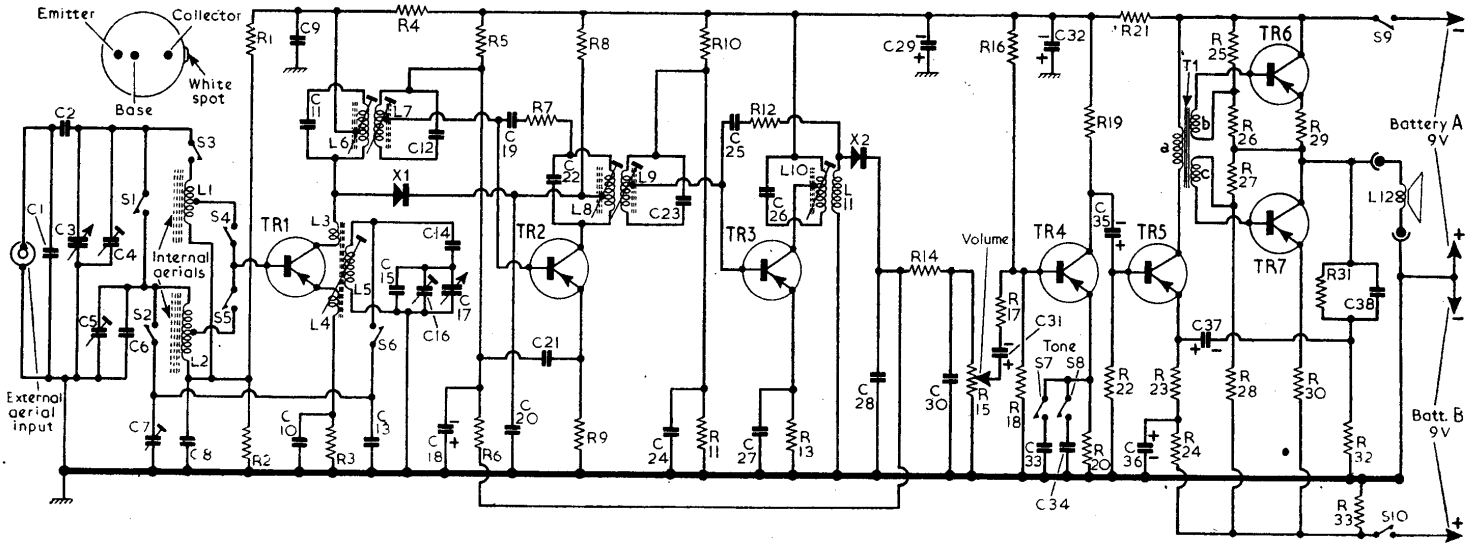
CIRCUIT DESCRIPTION

M.W. tuned circuit comprising **L1, C3, C4,** and L.W. tuned circuit **L2, C5** and **C6** are coupled via low-impedance tappings 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

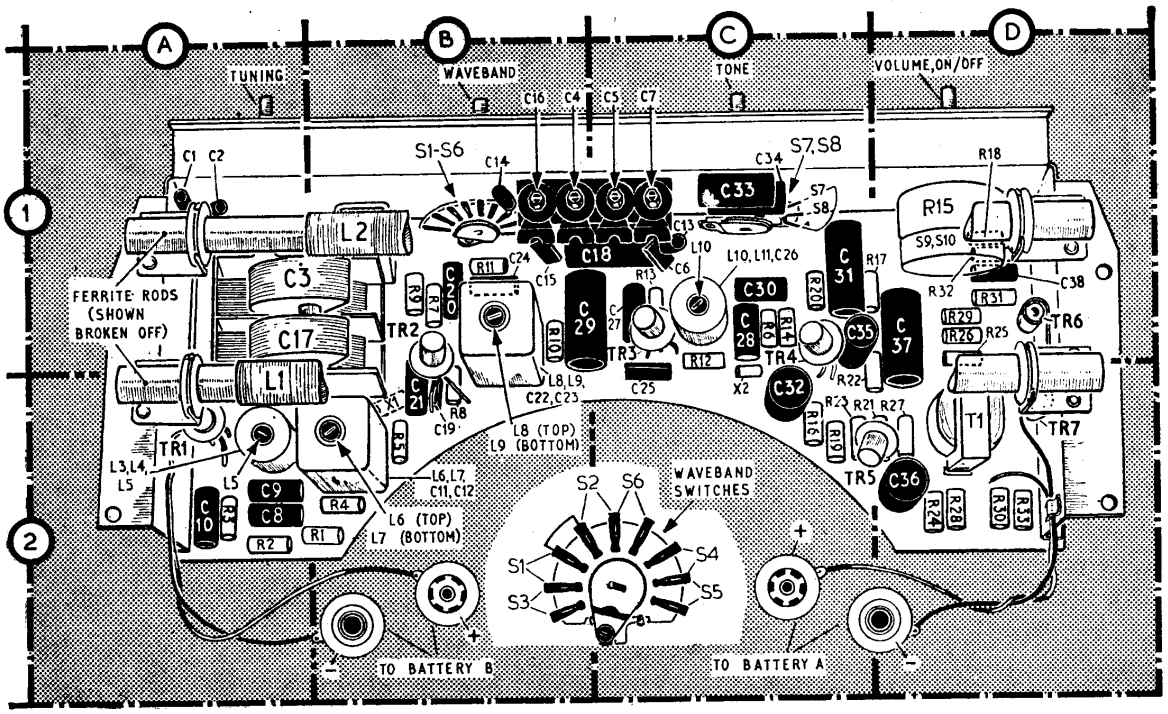
(*Continued overleaf, col.* 1)

Capacitors		
C1	47pF	A1
C2	8·2pF	A1
C3	401pF	A1
C4	30pF	B1
C5	30pF	C1
C6	100pF	C1
C7	30pF	C1
C8	0·04μF	A2
C9	0·04μF	A2
C10	0·02μF	A2
C11	400pF	B2
C12	400pF	B2
C13	350pF	C1
C14	480pF	B1
C15	20pF	B1
C16	30pF	B1
C17	401μF	A1
C18	8μF	C1
C19	13pF	B2
C20	0·04μF	B1
C21	0·04μF	B2
C22	400pF	B1
C23	400pF	B1
C24	0·04μF	B1
C25	25pF	C2
C26	250pF	C1
C27	0·04μF	C1
C28	0·02μF	C1
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
Resistors		
R1	33kΩ	B2
R2	8·2kΩ	A2
R3	3·3kΩ	A2
R4	390Ω	B2
R5	56kΩ	B2
R6	8·2kΩ	C1
R7	3·3kΩ	B1
R8	1kΩ	B2
R9	680Ω	B1
R10	15kΩ	B1
R11	3·3kΩ	B1
R12	2·2kΩ	C1
R13	1kΩ	C1
R14	470Ω	C1
R15	5kΩ	D1
R16	180kΩ	C2
R17	3·3kΩ	D1
R18	10kΩ	D1
R19	5·6kΩ	C2
R20	470Ω	C1
R21	150Ω	D2
R22	6·8kΩ	C2
R23	680Ω	C2
R24	1·5kΩ	D2
R25	2·2kΩ	D1
R26	51Ω	D1
R27	2·2kΩ	D2
R28	51Ω	D2
R29	10Ω	D1
R30	10Ω	D2
R31	1kΩ	D1
R32	27Ω	D1
R33	3·3kΩ	D2
Coils*		
L1	0·25	D2
L2	2·6	B1
L3	0·25	A2
L4	—	A2
L5	1·75	A2
L6	4·0	B2
L7	4·0	B2
L8	4·0	B1
L9	4·0	B1
L10	4·0	C1
L11	0·5	C1
L12	50·0	—
Miscellaneous*		
T1 a	100·0	D2
T1 b	37·0	D2
T1 c	37·0	D2
X1	CG6E	†B2
X2	CG64H‡	C2
S1-S6	—	B1
S7, S8	—	C1
S9, S10	—	D1

**Approximate D.C. resistance in ohms.*
†*Below chassis.*
‡*TP11 early versions CG12E.*



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 generator, modulated 30 per cent at 400c/s; an A.C. voltmeter for use as an output meter; a 0.1μF capacitor; and a screwdriver-type trimming tool.

1.—Connect the signal generator, via the 0.1μF 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 200μV 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.

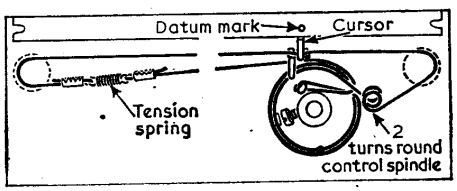
S7 and **S8** are the tone control switches shown in our chassis illustration in location reference C1, where the contacts are identified.

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 29⅞ inches. Paint a mark on the cord 7⅛ 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, placing 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.

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