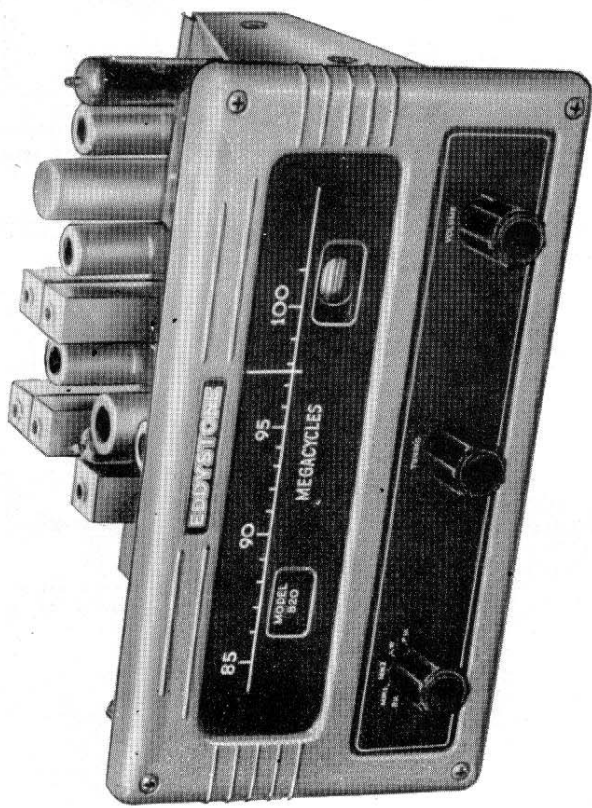


Manufacturers :
STRATTON & CO. LTD.
BIRMINGHAM 31 :: ENGLAND
Telephone : PRIORY 2231 Cables : STRATNOID, BIRMINGHAM



MANUFACTURERS OF SPECIALISED SHORT
WAVE RADIO EQUIPMENT SINCE 1925



EDDYSTONE "820" RECEIVING UNIT

Instruction Manual

The Eddystone "820" Unit is designed for reception of broadcast transmissions in the very high frequency band 87.5 Mc/s. to 100 Mc/s. and facilities are also provided for reception of one spot frequency in the long wave range (150 to 250 kc/s.) and two spot frequencies on medium waves (600 to 1550 kc/s.).

The audio output is at a level adequate for feeding into an amplifier or pick-up terminals and the unit is provided with its own A.C. operated power supply, so avoiding any necessity of finding this externally.

INSTALLATION DETAILS

Tappings are provided on the mains transformer for 200, 220 and 240 volt supplies, and a check should be made that the tapping in use is the one most closely corresponding to the local supply voltage.

From the audio output socket on the unit, a screened lead is taken to the amplifier, keeping this lead as short as possible to minimize attenuation of the higher frequencies and pick-up of hum. The method of attaching the cable to the plug provided is illustrated below.

The feeder cable from the Band II aerial is plugged into the appropriate socket and the aerial for medium and long wave reception connected to the aerial terminal. It is desirable also to use an earth, connected to the terminal provided.

There is one other socket in the unit, marked "P.U." To this can be taken a lead from the pick-up used with record-playing equipment and then, simply by rotation of the control knob and without disturbing any connections, facilities are immediately available for (a) reception on V.H.F. channels. (b) reception on medium or long wave channels and (c) record reproduction.

The sensitivity of the unit, (on medium and long waves) is such that good reception of stations at no great distance is feasible with only a few yards of insulated wire as an aerial, but for the best results, and where Continental stations are wanted, it is advisable to erect a good outdoor aerial.

In areas of high signal strength, it may be necessary to fit an attenuator between the aerial feeder and the coaxial input socket, to prevent overloading.

OPERATION

The Unit is switched on by rotating the volume control (right hand knob) in a clockwise direction. The dial will be illuminated immediately and after a short interval the Magic Eye tuning indicator will glow.

It takes a little longer for a receiver of this type to settle down, compared to one operating on medium frequencies and it is therefore advisable to switch on some ten to fifteen minutes beforehand, to allow a stable operating temperature to be reached.

For the Band II V.H.F. stations, the control knob (on the left) is moved to the "F.M." position and the three local stations will then be found on their allotted frequencies (Note—the Third Programme is not usually available during the day). The correct tuning point is when the glow in the Magic Eye indicator expands to the maximum degree. It will also be noticed that when a V.H.F. station is correctly tuned in, the background noise will disappear almost completely and, with the 820 Unit, this effect will occur even with comparatively weak signals.

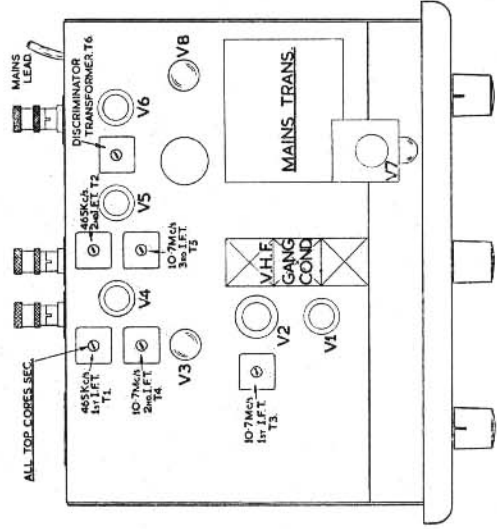
The pre-set M.W. and L.W. positions will have been set up beforehand to the frequencies of the local stations (Droitwich on the L.W. band) and it is only necessary to move the control knob to the appropriate positions to receive these stations.

Actually, in switch position M.W.1., any frequency between 960 and 1550 kc/s. can be set up, and similarly between 610 and 960 kc/s. in position M.W.2. It is generally desirable to use proper test equipment for setting up on a frequency different to the one already in use and the Dealer should be consulted on this point when necessary.

PHYSICAL INSTALLATION

The foregoing instructions relate to the use of the 820 Unit, as a separate entity. In many cases, it will be desired to include the Unit as part of an installation comprising amplifier, record reproducer and loudspeaker, and the frontal area of the "820" has been kept small with this in mind.

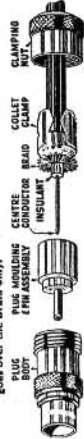
An aperture $10\frac{1}{2}$ " wide by $5\frac{7}{8}$ " high is required in the cabinet and the necessary fixing screws and rear plates are supplied with the Unit. These plates should be fixed crosswise to clamp on to the woodwork. Care should be taken fitting the Unit in place to ensure proper clearance for the flywheel at the bottom, and the pointer carrier guide at the top.



PLAN VIEW OF "820" IN OUTLINE.

METHOD OF ATTACHING CABLE

1. Trim Feeder by removing 1" Outer Cover, 2" of Braid and 1" of Insulation.
2. Slide Clamping Nut and Collet onto Feeder and apply the Insulation sharply for soldering. Solder and Trim.
3. Slide Collet up to played ends of Braid and crimp Braid flush with Plug Housing, only the inner Plug to that Collet enters it. Screw Nut on firmly to Crimp Feeder. The Plug Nut must be firm.
4. In the case of Feeder larger than 1" dia. over Cover, the Collet Clamp goes over the Braid only.



SERVICING INSTRUCTIONS

ALIGNMENT.

For complete alignment, the following equipment is required:—

Signal Generator(s): 150 kc/s. to 1,600 kc/s. (with A.M.)
10 Mc/s. to 110 Mc/s. (preferably with F.M.)

Standard Output Meter

0—50 Microammeter.

Trimming tools for coil cores and Phillips-type concentric trimmers.

10.7 Mc/s. (F.M.) I.F. Channels.

The earthy end of R27 — the 270,000 ohm resistor at the limiter grid(V6) should be unsoldered and the 50 microammeter placed in series with the end of the resistor (neg. terminal of meter) and chassis (positive terminal). The output from the signal generator is fed direct to the grid of V4, and with the generator set to 10.7 Mc/s., the output is increased until a deflection is observed on the microammeter. The cores — primary and secondary — of the third 10.7 Mc/s. I.F. transformer (T5) are adjusted for maximum output. A sensitivity of approximately 15 millivolts for 4 microamps deflection should be obtained.

Next, the generator lead is transferred to the grid of the ECH42 valve (V3) and the 10.7 Mc/s. transformer (T4) in its anode circuit adjusted for maximum deflection of the microammeter. At this point the sensitivity should approximate 700 microvolts for 4 microamps deflection. The generator input is then transferred to the grid (pin 7) of the 12AT7 valve (V2) and the cores of the I.F. transformer T3 trimmed for maximum output.

This completes alignment of the 10.7 Mc/s. circuits. If an accurate check is desired on the I.F. sensitivity, it is necessary to unsolder the wire connected to pin 7 of the 12AT7 and apply the test signal at this point. The oscillator should also be prevented from functioning by temporarily placing a short circuit across the gang condenser section. The sensitivity obtained should be approximately 50 microvolts for a deflection of 4 microamperes.

Alignment of R.F. Stage.

The pointer on the "820" Unit is set to 100 Mc/s., the generator output fed into the aerial feeder socket, and trimmer C.15 adjusted for maximum deflection of the microammeter. The same procedure is carried out at the other end of the scale—87.5 Mc/s.—and if appreciable falling off in output occurs, a slight adjustment should be made to the inductance, repeating the process until good tracking is obtained. With the generator frequency set to 95 Mc/s., C.1. and C.11. are trimmed for maximum deflection.

Discriminator Alignment.

The Signal Generator is set to 10.7 Mc/s., unmodulated, output at maximum (1 volt) and the output lead connected to the grid of the limiter valve (V5).

A centre zero 50—50 microammeter is placed across the output of the discriminator valve (V6) with a 100,000 ohm resistor in series — that is, from that cathode above earth, through meter and resistor, to chassis. If the discriminator stage is in proper alignment at 10.7 Mc/s., the meter will read zero and a check should be made by varying the frequency of the applied signal each side of 10.7 Mc/s. For equal frequency variations, the microammeter should give equal deflections each side of zero. If they are unequal, adjustment of the primary (lower) core in the discriminator transformer will bring about a balance.

In the unlikely event of complete re-alignment of the discriminator stage being required, the secondary (upper) core is set so that the top of the core is flush with the top of the discriminator transformer can. Then the lower primary core is adjusted for maximum deflection in the microammeter, after which the upper secondary core is adjusted until the meter reads zero. The balance should be checked as before by varying the applied frequency and any unbalance corrected by further adjustment of the primary core.

The peak deflection obtained should be of the order of 20 microamperes.

Alignment of 465 kc/s. I.F. Stages.

The generator output lead is clipped to the grid of

valve V.4, the frequency set to 465 kc/s., and the 465 kc/s. I.F. transformer (T2) in the anode circuit adjusted for maximum audio output on the output meter. The generator signal is then transferred to the grid of the ECH 42 (V3) and transformer T1 tuned for maximum response. During this latter operation, the local oscillator should be rendered ineffective by shorting the grid to earth.

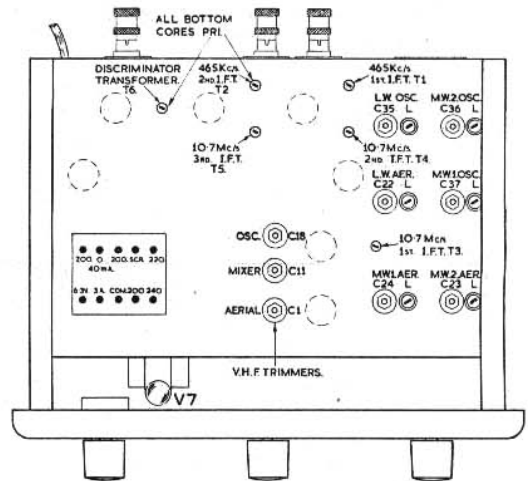
The 10.7 Mc/s. circuits should not be disturbed whilst making adjustments to the 465 kc/s. circuits. The "820" control knob should be in the appropriate position for each class of service.

Long Wave Band.

The signal generator output is applied to the aerial terminal, with the "820" control knob set to "L.W.". The generator frequency should be adjusted as required (e.g. to 200 kc/s. for Droitwich) and the long wave oscillator core rotated until a deflection is observed on the output meter. Fine adjustment is made with the C35 trimmer. Next the core and trimmer associated with the mixer coil are given similar attention until final maximum deflection is obtained.

Medium Wave Band.

The procedure is the same as for long waves, ensuring the control knob is in the correct position. On the "MW1" position, any frequency between 960 and 1,550 kc/s. can be set up and between 610 and 960 kc/s. on "MW2."



UNDERSIDE VIEW OF "820" IN OUTLINE.

VOLTAGE VALUES

Voltages are between points indicated and chassis. Set switch to F.M. for points A to E inclusive, and to a Broadcast band for all other points.

Values are given for A.C. input of 240 volts using two types of meter. It is evident that the actual voltage indicated depends on the particular meter employed. A tolerance of $\pm 5\%$ should be allowed on the values given.

Point	AVO. 8	AVO. 40.
A.	170	165
B.	1.2	.89
C.	168	160
D.	2.45	.73
E.	168	165
F.	184	178
G.	68	46
H.	1.65	.83
J.	79	70
K.	170	167
L.	1.35	1.0
M.	55	42
N.	27	10
P.	187	190
Q.	200	204
R.	200 A.C.	200 A.C.
S.	200 A.C.	200 A.C.