

1591418 . SGT. STAVES. M.E.

course 359-26

"Bags of GEN"

Form 714.

ROYAL AIR FORCE.

Rough Notebook for use in Laboratories and Workshops

Z. 536 1/2 1886 810,000 Nos. 1/43. C.W.A. Ltd

Requirements of Aircraft Transmitters.

1. Stable Frequency Output.
2. Adequate Power Output to Weight Ratio.
3. Wide Frequency Coverage.
4. Capable to Transmit CW, Morse, and LS.
5. Simple Tuning.
6. Power Supplies to be drawn from A/C supply.
7. Accessibility for Fault Rectification.

Types of Transmitter.

1. Simple T_o
2. MO. and PA T_o
3. Crystal Controlled.

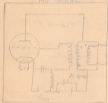
Disadvantages of 1. Frequency Instability and Low Power.

Precautions taken with MO. to ensure Stable Frequency.

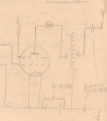
1. Screening of MO.
2. Valve heated on all the time.
3. Use of ICH Valves.
4. Power Supplies are kept constant.
5. Components are rigidly mounted.

2 Tubes T_e

M₀ STAGE



P₀ STAGE



T_e 150V $\frac{1}{2}$ $\frac{2}{2}$



M₀ - to let up the freq of the T_e tuned, a station oscillator is required.

P₀ Disturbance from the M₀ are amplified and then sent to the A_e.

A_e neutralizing condenser required in 100 because the Pentode prevents any feed back for the screen grids

Key feed - increases input to the P₀ anode only

then P₀ is in resonance with M₀ least input because maximum impedance - smaller current

M₀ ~~is a circuit~~ ^{the key is a pent} Just a circuit oscillator part 100 sp to enable key to hear own signals.

Out ft. Amplifier for the auto voltage (key tone)

Keying Relay

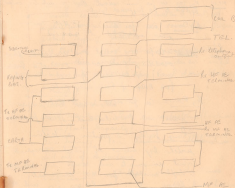
is connected through the Key to the Relay.
Key up on any No 3 or fed to lead A relay substituted
portion of each lead over to common position.

Key closed. lead B is energized which cuts out
lead A. lead B. is also energized
which switches relay over to transmit.



Key up on the Receiver. Since 1 PE is connected
to the R₂₅, negative bias on M₂ and 1A
control grids.

Key closed on transmit position. Telephone to side tone
circuit. Heavy lead is removed. PE is
connected to the T₂. The ~~PE~~ connections are
parted.

KEYING RELAYTransmitReceive

in other book

MCW Key 100 as for June except that modulator output applied to PA bypassed Grids

Key 100 as for June except that carrier wave modulated at 200 c.p.t

Rf Key 100 as for MCW except that modulator stop oscillating. make circuit connected between grid and cathode of modulator valve (ing 4034 of block/any other)

Key 100 as for MCW except that carrier wave now modulated at speech frequency

Frequency Range Switch 3 position, 2 sections
 parallel by means of which appropriate circuit components and screws are selected & left contact for MO components.
 3 screws PA and 15

MO Tuning Oil Range

1. Fixed inductance and variable condenser.
2. Block key mechanism for use with pre-set frequencies.
3. Variable frequency control for use with old steps. Give variation of 1% either side of frequency.

19 Feed & Blue Range

1. Tuning mechanism
2. Variable condenser and inductance. Part of inductance shunted out to cover high frequencies
3. Aerial Taps of Switches.

9 taps on aerial inductance. Adjusted in conjunction with tuning condenser until max feed reads 65 mV. (Point of max efficiency)

Violet Range

1. Aerial Tap Switches.
~~Aerial~~ Coarse Tuning, 17 taps on inductance (backlash in Aerial/PAth capacity)
Fine Tuning Iron Core coil sliding in and out of inductance

Coarse Tuning 17 taps on inductance
 Adjusted in conjunction with fine tuning until max feed reads 65 mV.

R3090

TESTING DET CIRCUIT



Detonator is inserted when going within 75 yards of the enemy, enemy occupied or neutral territory

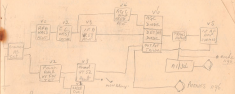
Detonate the R3090 whenever a danger of forced landing in enemy, enemy occ or neutral territory, excluding I. Ireland.

Testing Det Circuit

Inserted det plug into dummy T. Block and bulb should light.

If M11 warning lights are showing the G.P.M. switch is tripped. If the WVE-SAFE switch is pulled to WVE the Det will explode. The M11 should tell Det to reset G.P.M. switch.

T2 1196



Rx

- V1 Antenna
- V2 Variable capacitor
- V3 Tuned circuit
- V4 Detector
- V5 Audio amplifier
- V6 Speaker

Part	Value	Notes
V1	1000	
V2	1000	
V3	1000	
V4	1000	
V5	1000	
V6	1000	
V7	1000	
V8	1000	

Tx

- V1 Pentode
- V2 Triode
- V3 Pentode

Notes

Values which can be changed with L155

- V257 for a V299
- V253 " " V100
- V256 " " V100
- V255 " " V101

If no signals or weak signals pull out crystals of range working on and plug in. Lead of V1 is at. If OK. not longer.

and place on top of each valve and plug is heard if that valve is off.

If controller electric or cable is broken take off the middle cover (relay) and use finger to push the lower relay contact and NG will then start up. Press top relay to put set to T₂ position and for tuning.

R₂ crystal is 460 KHz above T₂ crystal.

Emergency Intercom.

The last two valves in the NG6 can be used for it if the A1136 is up.

- 1 Switch off A1136
 - 2 192 Panel to Emergency.
 - 3 R1196 to receive position.
 - 4 Then switch on to channel and on air.
- 4 ¹ might use if channel.
 Only 5 pos of phone should be used.

RA Position on NG6 Tone for minimum background noise by turning RA volume control. (RA holding out position).

Honey on channel by

Left ^{beam} signal on L₂ Type J to J₁ with deflection on em. balance needles. Turn top to 0° & look left balance needles again & then switch to manual. (If any left drift reduce top reading)
 Stages add " "

balance needles at intervals & turn up to point when nearing str to check if needles still fall to right.

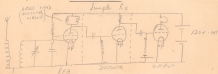
Simple Receiver.

main Requirements of Aircraft Receiver.

1. Selectivity
2. Sensitivity
3. Capable of reception of CW. morse & RT on w/ overhead
4. Simplicity of tuning.
5. Accessibility for fault rectification.
6. must have high signal to noise ratio.
7. must be capable of use as a D/F Re.

Types of Re

1. Simple straight Re.
2. Super-heterodyne Receiver.



A good selective
 1. RFA stage, prevents 2nd channel interference.
 The lesser the value of its IF the less
 adjacent channel interference.

2nd channel IF
 5000 KHz - IF of 500 KHz } LO. of 5500 KHz would get 15% of

Adjusted Channel Bandwidth

4000 Hz \times 0.5 = 2000
 4000 Hz \times 0.1 = 400

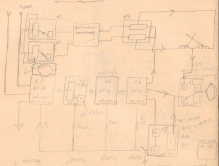
Lower the Inductance Higher the Frequency
 Higher " " " " Lower " " " "

Lower Capacitance Lower the Frequency
 Increase " " " " Higher " " " "

~~to be a ...~~

to be a ...

Fig. 155, 3/10



to be a ...
 to be a ...
 to be a ...
 to be a ...



manual VC

16	1/2	10	
18	1/2	10	
19	1/2	10	

Fig. 155

R.1155



R.1155

Radio Switch 2 On - manual control of V3, 4, 5 & 6.
AVC on V10.

V1, V2 Imperative - no HT to screens

2 AVC Automatic control of V3, 4, 5 & 6
manual control of triode of V8.

V1, V2 still imperative.

AVC on V10

Man Tuning Control - 3 condensers ganged
together with direct and slow motion drive
(100 Hz) tuning.

1. P.F. Amplifier Grid Circuit (A)
2. P.F. Grid Circuit (broad portion)
3. P.F. RF. Anode (triode portion)

Volume Control - On base manual control of
124 plates

On AVC manual control of V8

Hot Switch Off breaks the HT to the triode of V7.
HT switch has no effect on AVC

Hot Adjustment Small variable condenser giving
3 x/s. variation to B.F.O. frequency.

To ADJUST Tune on on 100 & 100 kHz frequency
to R/F station (Hot Switch Off).

Tune correctly using range of Hot Switch
on. Adjust condenser until 1kHz note is
heard. Increase freq on R. If dead space
on higher frequency note is correct. If on
low freq adjust condenser.

Filter Switch On. Bypass all frequencies of transient
and less to earth. Thus reducing local
interference (on output filter)

must be kept off for R/F except

On for Casual R/F on R/F. Also to reduce
pitch speed noise.

"range eye" & strong signal on R. Heavy on. Low level
(no degree) prevent flow through valve; low voltage drop across
(+ on base) R.F. any control electrode means a first anode
potential. No of electrons to first anode affected.
range eye shows

and hand reverse

MISC DEFLECTION

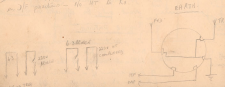
1. High - Part of F4076 input is bypassed to earth for two condensers thus rendering loop more sensitive. Used for taking beam.
2. Low - Full F4076 current input applied to loop rendering loop less sensitive. Used for timing.

SWITCH SPEED

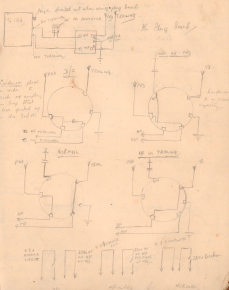
High pos 30 cps used for visual sig on wpt signals
 low pos 30 cps " " " " " " " " " " " "

SAFETY PRECAUTIONS "TYPE F" build.

1. Earth lead circuits are sealed. No HT to T₂.
2. 3/4 sec HT to T₂ (4.3 sec. delay to HV state relay lock).
3. Terminal positions on type F (see table) i.e. master switch on 3/4 position - 1/2 HT to L₂.

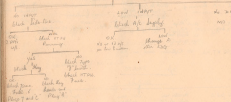


BEAMS



TRUCK PAULS
Transmission Faulty

Check "on" and "off" meter



do 2nd gear
no shift
do 3rd gear
no shift
do 4th gear
no shift
do 5th gear
no shift

Drop with oil level

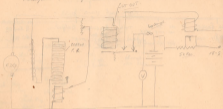
no oil in the
left wheel.

Value Transmission Test

Let yellow no control at 200 rpm with ammeter
a several steps in V position. Take out 1 R.R. value
Price has input reading for each value must
not be below 100 ohms. If one value ~~is~~
is lower than this figure, it should be
replaced. Both values in reading should be 200 ohms

If magi eye up take out middle gear plug
of the and connect the phone plug to
the second pin from the bottom on the
left and tune for 1000 cps note
Reading 200 ohms

Electrical Supplies on Wimpys
 Diagram showing C.B. cut out & length of cable to be



Full number	10	Of	Weight of
	27	Fuse to	HT Pb - 40amp
	33	" "	LT Pb - 20amp
(200V)	9	" "	100 20amp
(200V)	23	" "	500 10amp
(200V)	39	" "	200Watt (100V) 20amp
(200V)	3	" "	500 10amp
(200V)	22	" "	200Watt 5amp 20amp

60amp main charging fuse under C.V. Regulator.

fuse No 5 Pressure lead. A good Indicator 10amp

1500-2000 a Standard Engine - Supplies all 24V
 2 banks of cells 24V and spare bank for
 Emergency only.

When starting the supply fuse (60amp) will pull
 the throttle back on Standard engine to below
 1200 rev per hr. to avoid sparking.

Longer delay - Starts out of Type 22. No other C.B.
 not charging

Type 22 Re This drops the supply voltage to 18V for
 the LT Motor. One section is limited
 by the longer delay when C.B. is not
 charging just the cell voltage is
 lower than that of the 200V.

LT Motor Input 18V
 HT Motor 24V