

MODIFYING THE COMMUNICATIONS RECEIVER (PART 1)

The 'Trio' 9R-59DE communications receiver with short wave listeners both in mind and priced, the receiver represents excellent value for the expenditure of a little time and money.

THE ADVENT OF THE 'TRIO' 9R-59DE COMMUNICATIONS receiver has enabled many short wave listeners not having the proverbial long pocket to obtain a design which is excellent in its class and price range, and which can be further improved by a few modifications. These alterations do not necessarily have to be carried out at one and the same time, and they may be spread out over a period as the available time and spare cash permits.

In this short series, the modifications to be described are divided into two sections. Those discussed here are simple to carry out whilst those described in Part 2 (to be published next month) are more complex.

Throughout the series it is assumed that the modifications described by C. M. Lindars in the October 1970 issue of this magazine have been carried out.¹

The manufacturer's specification is shown in Table I and the circuit block diagram in Fig. 1. From this it will be seen that the receiver is a single-conversion superhet having an r.f. stage, a mixer with separate oscillator, two i.f. stages with 455kHz mechanical filters, a germanium diode a.m. detector, product detector and b.f.o., audio and power amplifiers, half wave voltage doubler a.g.c. rectifier, noise limiter, S-meter, and h.t. rectifier. A total of seven solid-state devices are incorporated in the circuit, D1 – the S-meter rectifier – not being shown in the block diagram of Fig. 1.

WARNING

Before commencing any of the modifications to be described, all connections to the receiver should be removed. It is particularly important that the mains plug be disconnected from the a.c. mains socket.

At the rear of the chassis, on the back apron, is fitted a slide switch immediately under the fuseholder. This switch must at all times (in the U.K.) be in the 230V position and *not* in the 150V position. If the receiver is rested on the bench such that the front panel is uppermost, ensure that this switch is clear of the bench top by resting the chassis on two small piles of books. It will be necessary to place the receiver in this position during the lining-up process to be described in Part 2.

After any modification, and prior to reconnection of the a.c. mains and switching on the receiver, always ensure that the 230V/150V switch is in the 230V position. If the switch is incorrectly positioned, the fuse will blow (provided the correctly rated 2A fuse is fitted).

During modifications, always stand the receiver on the bench such that the mains transformer is nearest the bench top.

MODIFICATION 1

To completely eradicate any unwanted r.f. couplings along the heater line, three 5,000pF ceramic capacitors are used to bypass the heater line to chassis. The first is connected from pin 4 of V1 (6BA6) to chassis – see Fig. 2(b); the second from pin 4 of V2 (6BE6) to chassis and the third from pin 5 of V3 (a) (6AQ8) to chassis.

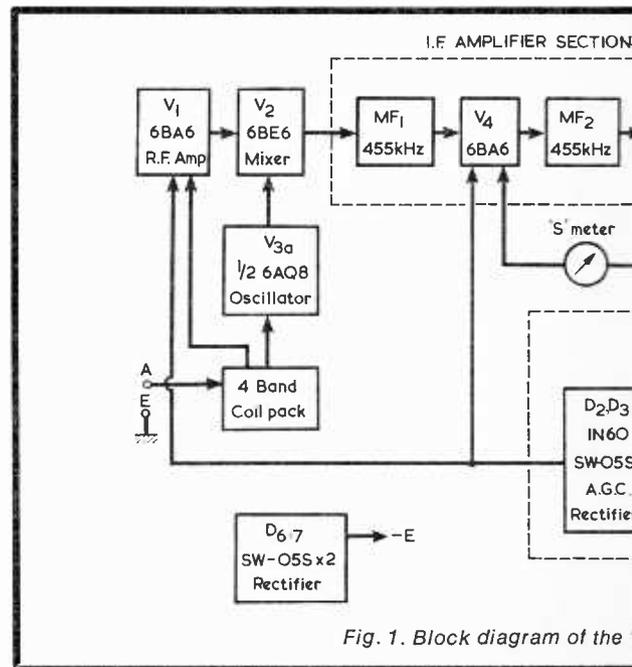


Fig. 1. Block diagram of the

¹ Copies of the October 1970 issue may be obtained direct from the publisher at 20p post paid.

E 'TRIO' 9R-59DE IONS RECEIVER RT 1)



Cover Feature

receiver has proved to be very popular
s country and abroad. Very reasonably
llent value, and it is possible with the
ey to further improve its performance

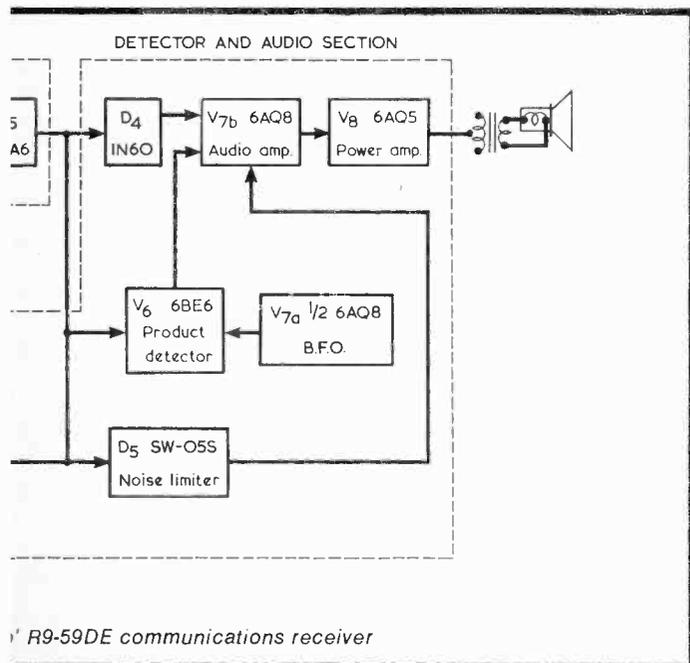
These capacitors also assist in the eradication of
a.c. mains hum - of which more later.

MODIFICATION 2

Fig. 2(a) shows the r.f. stage which has been
previously modified (as described in the October
1970 issue) to include its own gain control and a
68Ω resistor in the R3 position.²

Fig. 2(b) shows the r.f. stage after further modifi-
cation. From this it will be seen that the a.g.c. com-
ponents C1 (150pF) and R2 (1MΩ) have been
removed. Additionally, the grid resistor R1 (47Ω)
has been taken out. A short length of p.v.c. covered
wire should now be connected from pin 1 of V1
to the r.f. coil tag from which C1 was disconnected.

² All R and C designations in this series conform to those of the
receiver Operating Manual.



9R-59DE communications receiver

TABLE I

'Trio' 9R-59DE Manufacturer's Specification

Frequency ranges

550—1,600kHz

1.6—4.8MHz

4.8—14.5MHz

10.5—30MHz

Bandsread

(Direct Reading on Amateur Bands)

3.5MHz 80m

7MHz 40m

14MHz 20m

21MHz 15m

28MHz 10m

Sensitivity

A, B, C, BANDS—Less than 6dB
(for 10dB S/N ratio)

D, BAND—13MHz; Less than 18dB
(for 10dB S/N ratio)

28MHz; Less than 10dB
(for 10dB S/N ratio)

Selectivity

±5kHz at - 50dB

Audio power output

1.5 watts

Power supply

AC 115/230V, 50/60Hz

Power consumption

45 watts

Valves and Diodes

6BA6 RF Amplifier

6BE6 Mixer

6AQ8 Oscillator

6BA6 I.F. Amplifier

1N60 Detector

SW-05S ANL

SW-05S 1N60 AGC

1/2 6AQ8 BFO

1/2 6AQ8 Audio Amplifier

6AQ5 Audio Power Output

SW-05 × 2 Rectifier

1N60 S Meter

Recommended speaker type

4 or 8 ohm moving-coil speaker

Dimensions

7in. H, 15in. W, 10in. D.

Weight

18.8 lbs.

The 10kΩ potentiometer in the cathode line should be replaced by a 5kΩ potentiometer.

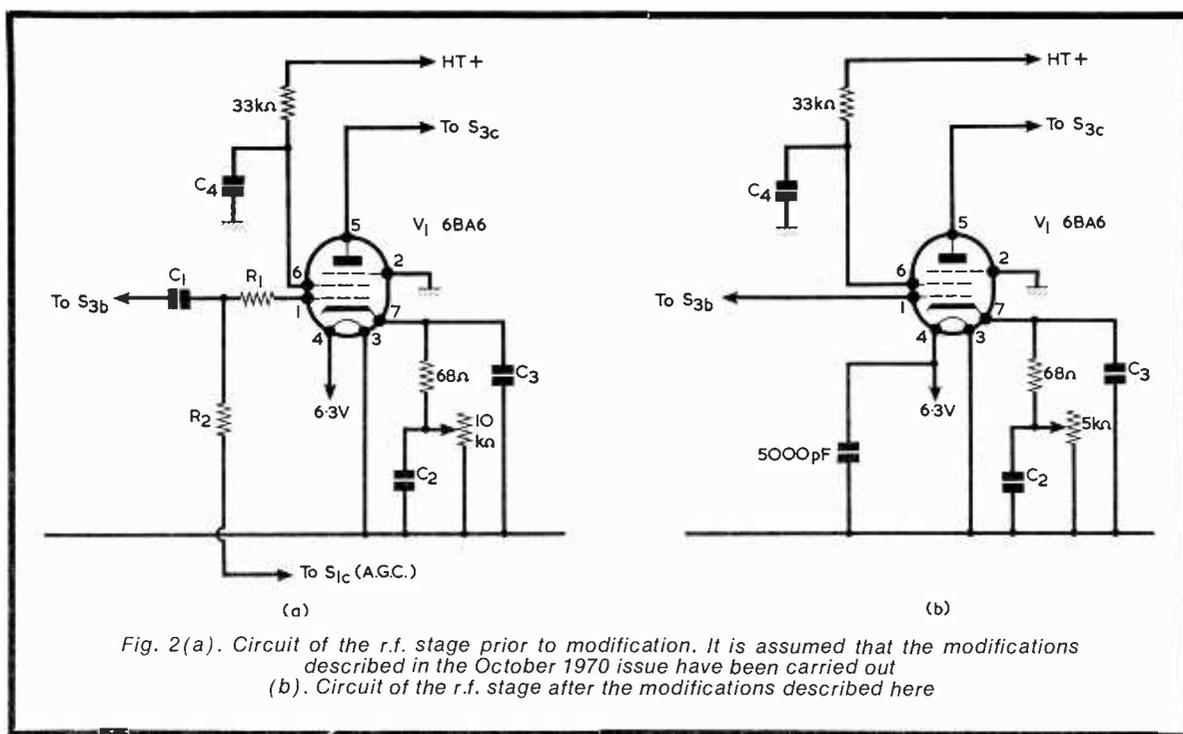
In practice, it has been found that this modification causes the receiver to have enhanced sensitivity. Provided the r.f. gain control is used intelligently, the circuit will not be subject to cross-modulation effects.

The foregoing modification represents the simplest that can be made to the existing r.f. stage, and it is capable of being carried out by comparative beginners. In Part 2, to be published next month, a more complex modification to this stage – the substitution of the higher gain type EF183 for the 6BA6 – will be described. With the high amplification then available, the components which have just been removed from the grid circuit of the 6BA6 will require to be replaced; they should therefore be retained by those wishing to carry out this further modification.

most of it had been induced between the two adjacent transformers.

Unsolder all the output transformer wires, to both primary and secondary connections, then remove the transformer from the top of the chassis deck and re-locate it on the rear apron of the coil pack. When unsoldering the connections from the output transformer, it is necessary to make notes of the wire colour codes and their correct connections. This precaution makes the re-wiring process an easy matter.

The output transformer can be secured to the coil-pack rear apron with the aid of a 6BA nut and bolt fitted with a shakeproof washer. This is fitted through an existing hole located between the r.f. coils for Bands B and C. The necessary second securing bolt is that which already holds the r.f. coil for Band A



MODIFICATION 3

The two basic shortcomings of the receiver are (a) excessive 50Hz a.c. mains hum – particularly noticeable when using 8Ω headphones – and (b) oscillator instability above 15MHz.

The first of these will disappear once the following modification has been carried out. The second shortcoming will be dealt with next month.

The first cure for excessive hum tried out was to fit an additional smoothing circuit in the main h.t. line but this proved to be ineffective, only a small improvement being gained at the expense of a reduced supply voltage.

The a.c. mains 50Hz hum was found to be almost entirely due to the siting of the output transformer on the chassis deck right alongside the mains transformer. Upon re-siting the output transformer under the chassis the hum virtually vanished, proving that

(this being the largest r.f. coil at the rear right-hand edge of the pack). Rewire the output transformer into circuit.

It will be found, after this modification, that hum has almost completely vanished, even when using headphones. The remaining very small amount of residual hum is that to be expected from most mains operated equipment.

MODIFICATION 4

This modification entails the fitting of a separate 6.3V supply for the Bandspread and Bandset dial lamps, thereby removing some of the load from the hard working mains transformer, and in addition providing a dial lamp for the S-Meter.

For this modification the following items must be obtained: a heater transformer having a rating of 6.3V at 1.5A (H. L. Smith & Co. Ltd., type LT1),

THE RADIO CONSTRUCTOR

an MES bracket (Home Radio Ltd., Cat. No. PLH2) and a round MES pilot lamp rated at 6.3V 0.3A.

The heater transformer is mounted on the chassis deck centrally between the Bandset and Bandsread tuning capacitors. The tags of the transformer should point towards the front panel. Secure the transformer to the chassis deck by means of two 4PK self-tapping screws. When drilling through the chassis deck, take great care to ensure that the drill does not cause damage to any of the coils, coil wiring or switch wafers.

To the input side of the transformer (clearly marked on the component) connect two lengths of p.v.c. covered wire – clear plastic-covered lighting flex is ideal – and feed the free ends down below the chassis through the Bandset dial chassis cut-out. Solder the end of one length to the tag of the on/off switch to which a yellow p.v.c. covered wire is already attached, and solder the end of the remaining length to the fuseholder tag to which a brown a.c. mains input lead is connected. Ensure that the Bandset dial rotates freely and that the a.c. mains input wires to the heater transformer do not chafe against the circular drum drive.

Disconnect the existing heater leads from the mains transformer to the dial lights. These are blue and black p.v.c. leads connected to the mains transformer tags nearest the capacitor C45 associated with the fuseholder. These lengths of wire can now be used when wiring up the S-Meter lamp.

Looking from the front panel, from the left-hand panel lamp assembly connect the blue and black leads to the heater transformer secondary (6.3V) tags. These are clearly marked on the component.

Obtain the MES bracket and secure this to the metal screening panel associated with the Bandsread capacitors. Use the existing bolt at the top of the screen nearest the front panel. Do not tighten this bolt as yet.

Screw home the new pilot lamp, carefully bend the two 'legs' of the MES bracket through 45° and adjust it such that the lamp is near (but not touching) the S-Meter dial edge in a position between the S-Meter and the Bandsread dial assembly. Secure the bolt holding the MES bracket.

Connect two p.v.c. covered wires from the added dial lamp tags to the secondary 6.3V tags of the heater transformer.

NEXT MONTH

In the following issue we shall be dealing with the four steps necessary to achieve oscillator stability above 15MHz, a tape recording facility, the addition of a double-tuned i.f. stage and full frequency alignment.

NEW SPECIAL DUTY BATTERY

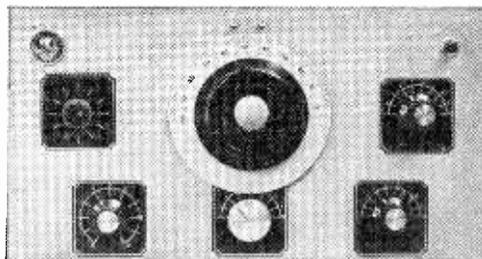
A new 12 volt primary battery has been introduced by Crompton Parkinson Ltd., a Hawker Siddeley Electric company, for use where good storage properties are required along with low quiescent current drains and only sporadic high current requirements.

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BLOCK LETTERS PLEASE

MODIFYING THE 'TRIO' 9R-59DE COMMUNICATIONS RECEIVER

(PART 2)

Modifications to the 'Trio' 9R-59DE communications receiver described here include a high gain r.f. stage, the curing of frequency drift above 15MHz and an added i.f. stage. Complete lining-up details are also given

IN THIS CONCLUDING ARTICLE, IT IS ASSUMED THAT the modifications described in Part 1, published last month, and those which appeared in the October 1970 issue, have been carried out.*

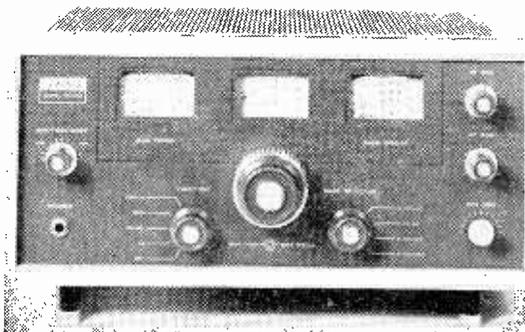
Some of the modifications about to be described are fairly complex, beginners are therefore advised not to undertake them unless they are in a position to enlist aid from a more knowledgeable source. A working knowledge of communication receiver techniques is necessary – the modifications are not described in a step-by-step manner.

MODIFICATION 5

The receiver is subject to some frequency drift above about 15MHz, this being especially noticeable when operating in the c.w. and s.s.b. modes. With the receiver warmed up, it will be found that the station tuned in 'wanders' haphazardly from time to time.

Several distinct steps were taken to curb this annoying fault, these being listed here in order of increasing complexity.

* The first modifications to this receiver were described in the October 1970 issue, copies of which may be obtained direct from the publisher at 22p post paid.



(a) Remove the top and bottom covers of the receiver and the a.c. mains plug, etc. Locate V3 (6AQ8 oscillator) valveholder, remove V3 and solder pins 6, 7 and 8 of the valveholder to chassis. In practice, these three pins can be bent inwards and soldered to the valveholder spigot which is already connected to chassis.

(b) The connections between the bandset and bandspread tuning capacitors of the mixer and oscillator stages and the Band Selector switches S3(d) and S3(f) employ thin p.v.c. covered wire which is subject to movement almost at the slightest touch. Additionally, the stabilised voltage from the OA2 stabiliser tube to the anode (pin 1) of the oscillator V3 (6AQ8) is fed via a very long length of thin p.v.c. covered wire. This length is free to move and causes considerable frequency variations, these being particularly noticeable when the receiver is tuned to the high frequency end of Range D – 10.5 to 30MHz.

The remedy consists of replacing the thin p.v.c. covered wire with wire having a gauge stout enough to resist undue movement, and a reel of 18 s.w.g. tinned copper was brought into service for this purpose. The wire should be covered with suitable lengths of Systoflex prior to soldering into position.

Remove V1 (6BA6), V2 (6BE6) and V3 (6AQ8) from their respective valveholders. First, remove the existing thin p.v.c. covered wiring from S3(d) to the mixer bandset and bandspread variable capacitors (centre section of the variable capacitors assembly). This wiring can easily be traced visually. Replace it with Systoflex covered 18 s.w.g. wire.

Similarly deal with the wiring from the oscillator bandset and bandspread variable capacitors (front section of the variable capacitors assembly) to switch S3(f).

The soldering of the lengths of 18 s.w.g. wire should be carried out with a pencil-bit type of soldering iron. It is necessary to remove and re-solder connections to the variable capacitors at the tags situated underneath them. Ensure that the iron does not 'dwell' unduly when making these soldered joints or the capacitor insulation may suffer damage. The

lengths of 18 s.w.g. wire should be as short as possible, the ends being tinned prior to soldering them into position.

Replace V1, V2 and V3 in their respective valveholders.

Before replacing the existing wire between the OA2 stabiliser and the anode of the 6AQ8 oscillator (via R41, 150Ω) with 18 s.w.g. wire, the reader may care to consider first carrying out the following alteration.

(c) It will be noted that the OA2 stabiliser tube, which generates a considerable amount of heat, is mounted close alongside the oscillator section (nearest the front panel) of the bandset variable capacitor. This in itself is a source of slow frequency drift as the capacitor fixed vanes warm up.

In the interests of frequency stability, the OA2 should be removed from the holder, the holder removed from the chassis and resited in the hole already in existence for the possible inclusion of a frequency standard circuit.

If the modifications described in the October 1970 issue of this magazine have been carried out, the resiting of the OA2 stabiliser will entail removing the frequency standard circuit and rebuilding it as an outboard unit, either with an integral power supply or taking the necessary power supplies from the receiver. Despite this task, the resiting of the OA2 further away from the oscillator bandset capacitor is a worthwhile modification if long term frequency stability is to be achieved.

With the resiting of the OA2, a length of 18 s.w.g. tinned copper wire suitably covered with Systoflex should be connected from the stabiliser tube to R41. R41 is secured at one end to the tagstrip associated

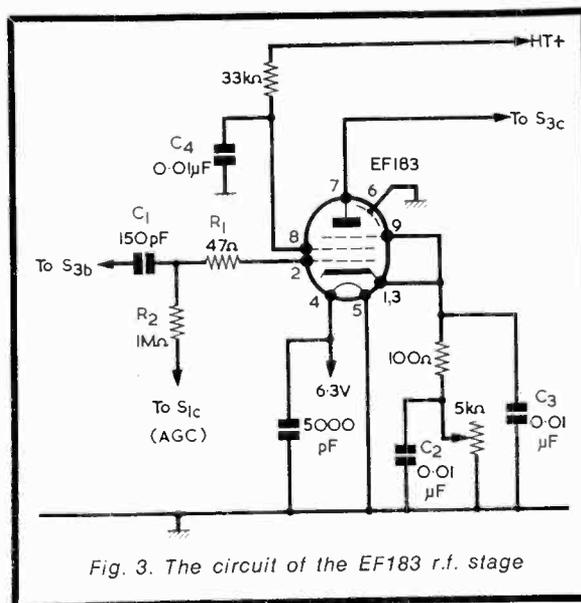


Fig. 3. The circuit of the EF183 r.f. stage

with V3 and to pin 1 of this valve at the other end.

When rewiring the OA2 holder, join pin 1 to pin 5 with a short length of p.v.c. covered wire – this connection not being made during manufacture.

MODIFICATION 6

An increasing number of operators today use a tape recorder with their receivers and the present

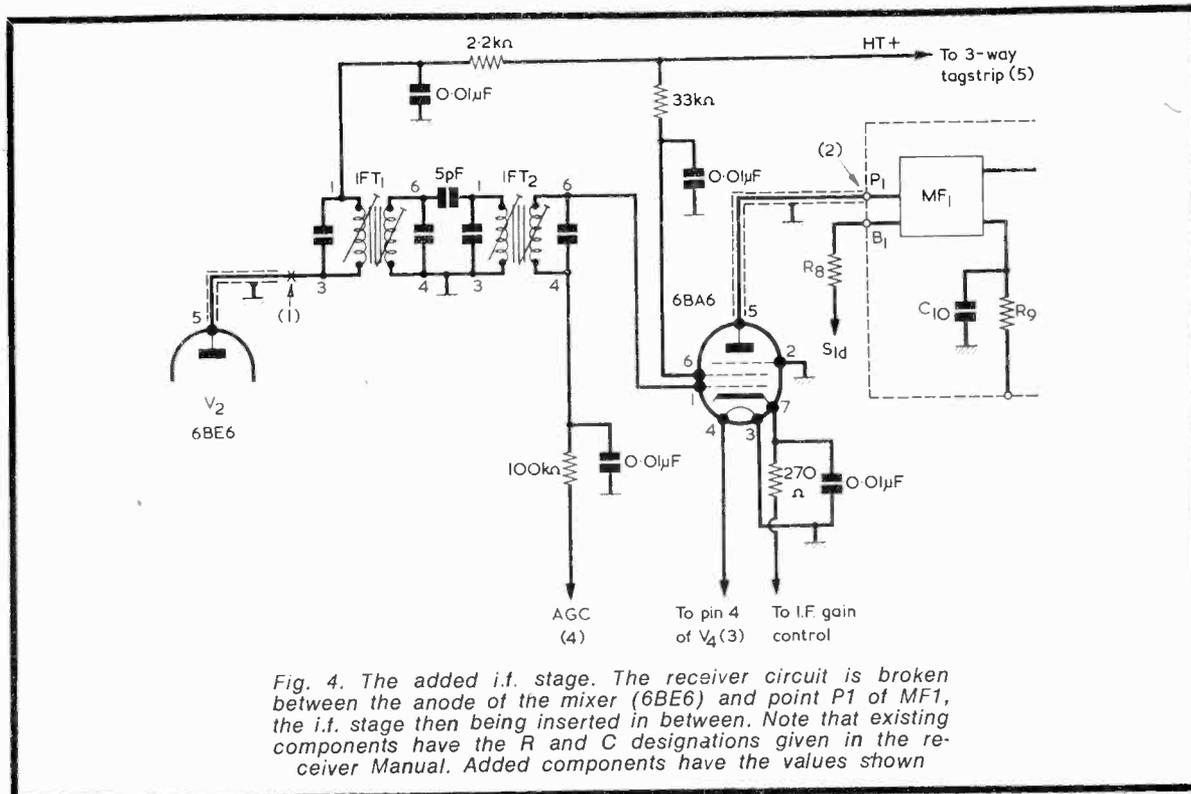


Fig. 4. The added i.f. stage. The receiver circuit is broken between the anode of the mixer (6BE6) and point P1 of MF1, the i.f. stage then being inserted in between. Note that existing components have the R and C designations given in the receiver Manual. Added components have the values shown

modification deals with the very simple task of adding an outlet to the 'Trio' receiver for a recorder.

A hole should be drilled in the chassis rear apron, in a position between the S-Meter potentiometer VR2 and the earth terminal, such that a coaxial socket can be fitted. Under one of the securing nuts of the socket fit an earthed soldering tag.

Obtain a short length of coaxial cable sufficient to reach from the added coaxial socket to capacitor C32 (0.01 μ F) associated with S1(b) and the a.f. gain control. This capacitor is located behind the front panel and is adjacent to S1(a), (b). One end of C32 being soldered to a tag of a two-way tagstrip, the other tag of which is earthed.

Position the coaxial cable round the rear of the coilpack. Solder one end of the centre wire to that tag of the two-way tagstrip to which C32 is connected. Solder the braiding to the earthed tag of the same tagstrip. At the other end of the coaxial cable, solder the centre wire to the coaxial socket tag and the braiding to the earthed solder tag.

Externally, the tape recorder is connected to the coaxial socket by means of a coaxial plug and a short length of coaxial cable.

The permanent connection of a tape recorder in the above manner has no noticeable effect on the performance of the receiver.

MODIFICATION 7

In this modification a high gain EF183 frame grid pentode is fitted in place of the existing 6BA6 r.f. amplifier valve, V1. It will be recalled that this 6BA6 stage is already modified, as described in Part 1.

The EF183 has a gain factor approximately three times that of the 6BA6. To obtain optimum sensitivity in a valve communications receiver it is normally necessary for the r.f. stage to run at, or near, maximum gain without a.g.c. In the present instance, however, there is one snag, this being that strong signals can then overload the mixer, with consequent distortion and audio 'splashing'. To overcome this drawback, it will be necessary to replace C1 (150pF), R1 (47 Ω) and R2 (1M Ω) in the grid circuit of the r.f. stage (these components were removed in the modifications described in Part 1) thus applying a.g.c. to the new EF183 r.f. stage. The circuit incorporating this valve is shown in Fig. 3.

In practical terms, once the existing B7G valveholder has been removed, a B9A chassis cutter will be required to enlarge the hole in the chassis deck. When carrying out this task, remove V6 (6BE6 product detector) from its valveholder or the valve may be damaged when turning the Allen key. The key should be rotated carefully, a little at a time, such that IFT1, positioned at the rear of the chassis deck, is not damaged.

When securing the B9A valveholder to the chassis, ensure that an earth tag is mounted under the nut nearest pin 9.

To ensure r.f. stability, a small metal screen of tinfoil cut from a 2-ounce tobacco tin or similar, should be positioned across the valveholder and soldered to pins 5,6, the spigot and to the earth tag under the valveholder securing nut. The tinfoil provides a screen between pins 2 and 7.

The circuit shown in Fig. 3 has proved satisfactory

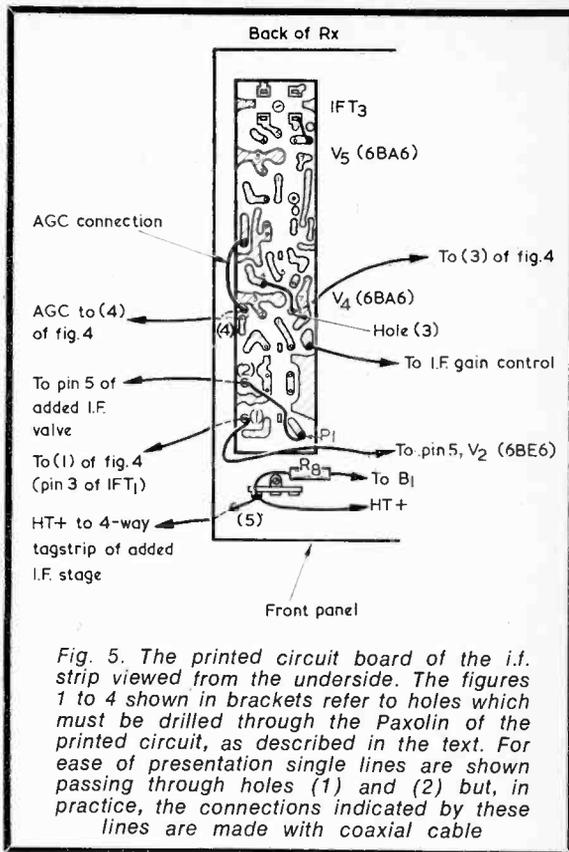


Fig. 5. The printed circuit board of the i.f. strip viewed from the underside. The figures 1 to 4 shown in brackets refer to holes which must be drilled through the Paxolin of the printed circuit, as described in the text. For ease of presentation single lines are shown passing through holes (1) and (2) but, in practice, the connections indicated by these lines are made with coaxial cable

with the receiver in question. In individual cases, however, it may be necessary to reduce the stage gain if overloading of the mixer occurs on strong signals at the maximum setting. Raising the cathode bias resistor value to 150 Ω , or higher, will prove effective in this respect.

The new r.f. stage not only provides additional gain with stability but also improves the sensitivity of the receiver.

MODIFICATION 8

In this, the last of the present series of modifications, an i.f. stage incorporating two transformers is added to the receiver circuit, it being inserted between the mixer stage and the mechanical filter MF1.

The object of adding the i.f. stage is simply to obtain better selectivity. Some increase of i.f. gain is apparent, and this is not in itself sufficient to cause i.f. instability when correctly aligned.

The circuit of the added stage is shown in Fig. 4, the figures in brackets relating to those similarly shown in Fig. 5. The latter diagram shows the underside of the printed circuit board of the i.f. strip.

In Fig. 4, the added components have values shown alongside, whilst those with R and C designations are already in circuit.

From the circuit of Fig. 4 it will be noted that the added stage is built around a 6BA6. The i.f. transformers are Denco type IFT11/465, and are top-coupled by a 5pF silver-mica capacitor.

A.G.C. is applied to the stage via a 100k Ω resistor,

being bypassed to chassis via a 0.01 μ F capacitor.

The h.t. supply to the anode of the added i.f. stage is via R8 and MF1, the printed circuit board designations B1 and P1 being the respective connection points.

The main problem when adding an i.f. stage to this receiver is lack of chassis space, that available in the required area being almost non-existent. This problem was solved by making up a small sub-chassis as shown in Fig. 6. This sub-chassis is mounted vertically into position above the chassis deck such that the 6BA6 is at the top. The i.f. stage is first wired-up on the bench and then secured to the chassis by means of the existing self-threading screw at the end of the i.f. strip printed circuit board nearest the front panel. When this has been done, the connections to the receiver circuit are made, after which the alignment of the new stage is carried out.

A 4-way tagstrip is mounted to the assembly, alongside the 6BA6 valveholder, as shown in Fig. 6.

The orientation of the two added i.f. transformers is illustrated in Fig. 7, this diagram also showing the wiring in point-to-point form.

Commence by making up the small chassis as shown in Fig. 6 and follow this by securing the components into position and wiring-up the circuit as shown in Fig. 7 - which is drawn in 'exploded' form for purposes of clarity.

Refer to Fig. 8 and disconnect the wire from pin 5 of V2 (6BE6) at point P1 on the printed circuit board.

Two holes of $\frac{7}{32}$ in. diameter should now be care-

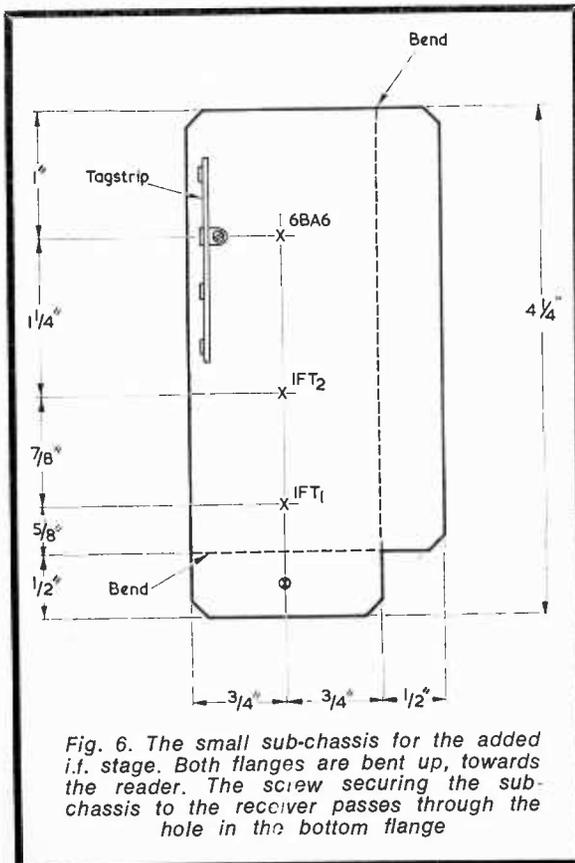


Fig. 6. The small sub-chassis for the added i.f. stage. Both flanges are bent up, towards the reader. The screw securing the sub-chassis to the receiver passes through the hole in the bottom flange

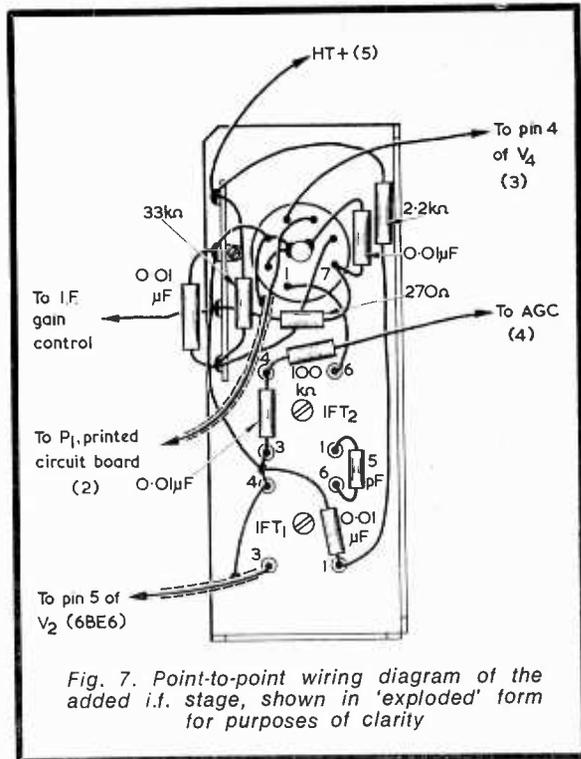


Fig. 7. Point-to-point wiring diagram of the added i.f. stage, shown in 'exploded' form for purposes of clarity

fully drilled through the Paxolin printed circuit board, the positions of these holes being shown as (1) and (2) in Fig. 5. Drill these holes from the underside of the board and ensure that the drill does not 'wander' and cause damage to the actual printed circuit. These two holes are required to take short lengths of coaxial cable from below to above the chassis deck.

A further two holes, $\frac{7}{32}$ in. diameter - shown as (3) and (4) in Fig. 5 - should next be carefully drilled through the Paxolin board from the underside.

Secure the new i.f. assembly to the chassis deck as previously described but do not tighten the screw as yet, this allowing a small amount of 'play' so that the sub-assembly can be turned slightly to facilitate wiring-up the remaining connections.

Refer to Fig. 5. Connect one end of the centre wire of a short length of coaxial cable to pin 5 of V2 (see Fig. 4) and connect the other end to pin 3 of the added IFT1, feeding the coaxial cable through hole (1) of Fig. 5. Suitably earth the braiding at both ends.

Obtain a short length of coaxial cable and connect point P1 of the printed circuit board to pin 5 of the added i.f. valve. Feed the coaxial cable through the hole (2) of Fig. 5. Suitably earth the braiding at both ends.

Connect one end of a length of p.v.c. covered wire to pin 4 of V4 (6BA6), feed this wire through hole (3) of Fig. 5 and connect the other end of this wire to pin 4 of the added i.f. valveholder. This is the 6.3V heater connection.

Refer to Fig. 5 and locate hole (4) and the printed circuit point marked 'a.g.c. connection' in the diagram. To this point solder one end of a length of p.v.c. covered wire. Feed this wire through hole (4)

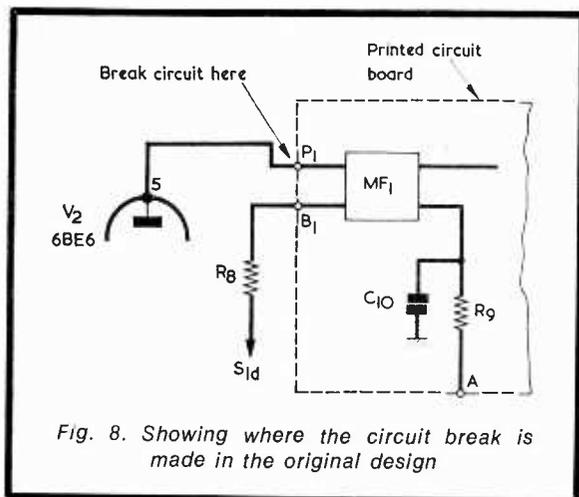


Fig. 8. Showing where the circuit break is made in the original design

and solder the other end to the free end of the 100kΩ resistor (see Figs. 4 and 7).

Next, fit a p.v.c. covered wire to carry h.t. to the 4-way tagstrip on the added sub-assembly. The wire passes through hole (5) in the metal chassis deck, as shown in Fig. 5, this hole being already in existence.

It will be found that the final position of the added assembly, when secured to the chassis deck, is such that the valve top points towards the nearest corner of the front panel.

In practice, the task of lining-up the added i.f. stage may be eased by removing its securing screw and positioning the assembly slightly outboard as far as the wiring will allow. This allows of much easier access to the bottom i.f. dust cores. In this latter position, the earth return is made via the coaxial braiding. Final 'touching-up' of the cores are then made with the assembly secured to the receiver chassis with the previously mentioned self-threading screw.

The 270Ω cathode bias resistor shown in Fig. 4 proved satisfactory with respect to maximum i.f. gain without overloading on a.m. signals. It must of course be realised that, when using the s.s.b. mode, the i.f. gain control will require to be 'backed-off' from the maximum gain position or overloading of the product detector will take place. In some receivers it may be necessary to experiment with cathode bias resistor values higher than that specified here.

When correctly aligned, the increase in selectivity is remarkable and with the slightly enhanced i.f. gain now available, the operator has at his control a very selective and sensitive receiver.

LINING-UP DETAILS

The r.f. alignment details for the 'Trio' 9R-59DE are shown in the Table. Alignment should be carried out in the sequence shown. It must be emphasised that alignment should not be attempted unless a reliable and accurately calibrated signal generator is available and the reader is familiar with the lining-up of superhet receivers. Careless and unskilled attempts at alignment without proper equipment may well do more harm than good. In most instances it is probable that only slight adjustments will be required. Take

care, on the higher frequency ranges, to avoid accidentally trimming to the second channel, above oscillator frequency, instead of to the correct signal below oscillator frequency.

Fig. 9 shows the trimmer capacitor and inductor core locations when viewed from the underside, the receiver standing on the bench with the mains transformer at the bottom.

Prior to alignment, a few points should be noted. In Fig. 9, trimmer capacitor CO5 of Range A is shown above CO4; in fact CO5 is positioned slightly to one side and below CO4. The Range A aerial coil has no adjustment facility.

TABLE

'Trio' 9R-59DE R.F. Alignment

STEP 1

Remove bottom cover

Range	Bandset	Signal Generator	Adjust
A	0.6MHz	0.6MHz	CO5 (Osc)
(0.55-1.6MHz)	1.4MHz	1.4MHz	CO4 (Osc)

Fit bottom cover

STEP 2

A	1.4MHz	1.4MHz	CM4 (Mix)
B	2.0MHz	2.0MHz	LO3 (Osc)
(1.6-4.8MHz)	4.0MHz	4.0MHz	CO3 (Osc)

STEP 3

B	2.0MHz	2.0MHz	LM3 (Mix)
	4.0MHz	4.0MHz	CM3 (Mix)

STEP 4

B	2.0MHz	2.0MHz	LA3 (Ant)
C	5.0MHz	5.0MHz	LO2 (Osc)
(4.8-14.5MHz)	14.0MHz	14.0MHz	CO2 (Osc)

STEP 5

C	5.0MHz	5.0MHz	LM2 (Mix)
	14.0MHz	14.0MHz	CM2 (Mix)

STEP 6

C	5.0MHz	5.0MHz	LA2 (Ant)
D	13.0MHz	13.0MHz	LO1 (Osc)
(10.5-30MHz)	28.0MHz	28.0MHz	CO1 (Osc)

STEP 7

D	13.0MHz	13.0MHz	LM1 (Mix)
	28.0MHz	28.0MHz	CM1 (Mix)

STEP 8

D	13.0MHz	13.0MHz	LA1 (Ant)
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NOTE: Each step should be repeated until dial reading is correct and no further improvements can be obtained.

The oscillator trimmer capacitor CO1 of Range D and CO2 of Range C, positioned on either side of the Band Selector switch, are capacitors of the threaded screw adjustment type – similar in appearance to the inductor core adjustment screws. This can lead to some confusion when adjustments are

CURRENT SCHEDULES

Times=GMT

Frequencies=kHz

★ KUWAIT

Radio Kuwait has changed the frequency of its English Service to Europe from **11825** to **11735** (250kW). Schedule of this programme is from 1600 to 1800. Address for reports - Kuwait Broadcasting and Television Service, P.O. Box 193, Kuwait.

★ U.S.S.R.

Radio Tbilisi, Georgian Soviet Socialist Republic, is reported to have a Russian language programme on **5980** (240kW) at 2015.

★ MOROCCO

Rabat has an English programme on **11735** (100kW) from 1700 to 1800 directed to W. Africa/Mauritania, Equatorial Africa and S. Morocco.

★ AFGHANISTAN

Radio Afghanistan can be heard with an English programme on **15265** (100kW) from 1800 to 1830 beamed to Europe. Newscast at 1802. For further information see *Now Hear These*.

★ JAPAN

NHK (Nippon Hoso Kyokai) Tokio has added the **15300** (100kW) channel to the **9505**, **9570** and **11815** outlets for the English Service from 1800 to 1830 according to reports.

★ MALAYSIA

The Voice of Malaysia, Kuala Lumpur (Kajang), may be heard on **15280** (50kW) in English from 0625 to 0855. Newscast at 0630 and 0830. Address - Department of Broadcasting, P.O. Box 1074, Kuala Lumpur.

★ IRAQ

According to a report, Radio Baghdad has cut the overseas transmissions devoted to the Palestine Liberation organisation. Styled "Voice of Palestine," the programme in English is now from 1715 to 1730 instead of from 1830 to 1845. Listen on **7240** (100kW) or **11855** (100kW).

★ U.S.A.

WNYW, New York Worldwide, can be heard on **17845** (100kW) with an English programme directed to Europe from 1700 to 1945. After close-down on this frequency, the programme continues on **9690** (100kW) from 2000 to 2300 and on **11890** (100kW) from 2000 to 2030. Address - Radio New York Worldwide, 485 Madison Avenue, New York, N.Y. 10022.

★ BULGARIA

Sofia can be heard with an English programme directed to the U.K. on **6070** (50/100kW) and on **9700** (50/120kW) from 1930 to 2000 and from 2130 to 2200.

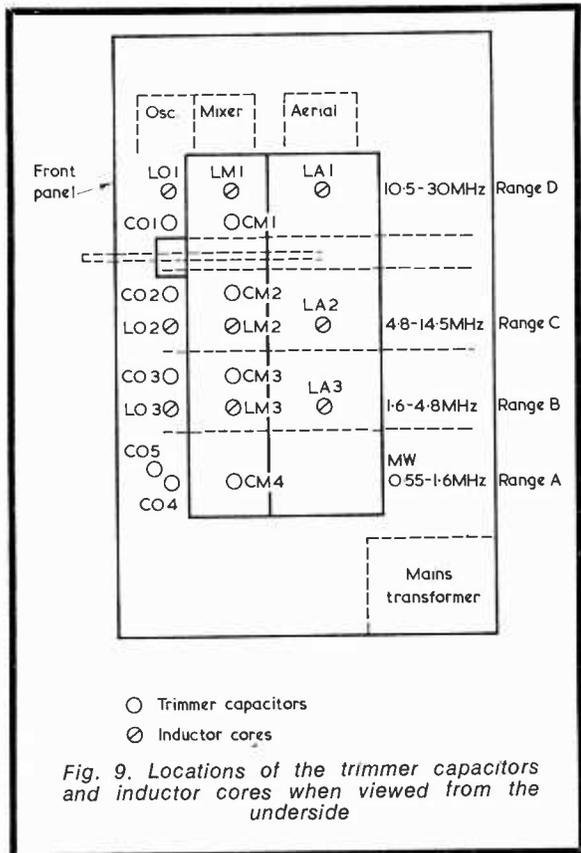
★ CENTRAL AFRICAN REPUBLIC

Bangui, the capital of this republic, can be heard on **5030** (30kW) around 1945. Schedule (Home Service) is from 0430 to 0700, 1630 to 2230 Weekdays and from 1630 to 2230 on Sundays. Address for reports - Radiodiffusion Nationale Centrea Africaine, B.P. 940, Bangui.

★ SAO TOME E PRINCIPE

Sao Tome, Portuguese West Africa, can be heard on **4807** (1kW) with the Home Service in Portuguese from 0530 to 2300.

Acknowledgements: - *Our Listening Post*. ■



made with the bottom cover of the receiver in place. The Table indicates whether the bottom cover should be fitted or removed.

The Aerial Trim capacitor should be set at half-mesh throughout the lining-up process and the Band-spread dial at 100°.

Before attempting to alter any of the capacitor trimmers or inductor cores, it is necessary to carefully 'crack' the white fixative material used by the manufacturer. This particularly applies to the inductor cores, as the slot for screwdriver adjustment can easily be sheared off if care is not taken. With the inductor cores 'cracking' can be carried out by means of a small pair of pliers in the jaws of which is placed some soft cloth material.

The receiver should be allowed to warm up for at least an hour prior to the r.f. alignment being carried out.

When alignment has been completed, the various adjustment devices should be secured in position with a dab of clear nail varnish.

Do not unduly jolt the receiver after alignment and carefully place the set in the required position for operating. ■

POSTAL DISPUTE

We very much regret the inconvenience caused to subscribers by the above dispute.

With bookstall and bookshop supplies, we were able to make arrangements for deliveries to be maintained in the vast majority of cases. In a few instances there was some slight delay, which we much regret.

APRIL 1971