

**Removal of Canopy:**

1. Remove tuning and volume knobs (knobs pull off).
2. Remove dial and dial cover as previously described.
3. Remove screws marked "B" (FIG. 1) and lift off canopy. When replacing the canopy see that the 3 small buttons between the tuning and volume knobs are in the "UP" position as this will assist in reassembly. Ensure also that the canopy locates accurately into the top of the set before replacing the fixing screws "B."

**Removal of Speaker Grille:**

1. First remove rear grille and canopy as previously described, then remove battery.
2. Remove 4 screws marked "C" (see FIG. 4).
3. Speaker grille can now be pressed outward and the speaker disconnected by unfastening the voice coil leads. Connecting lugs pull off. Printed board is now accessible from both sides and most components can be replaced when the set is dismantled to this point.

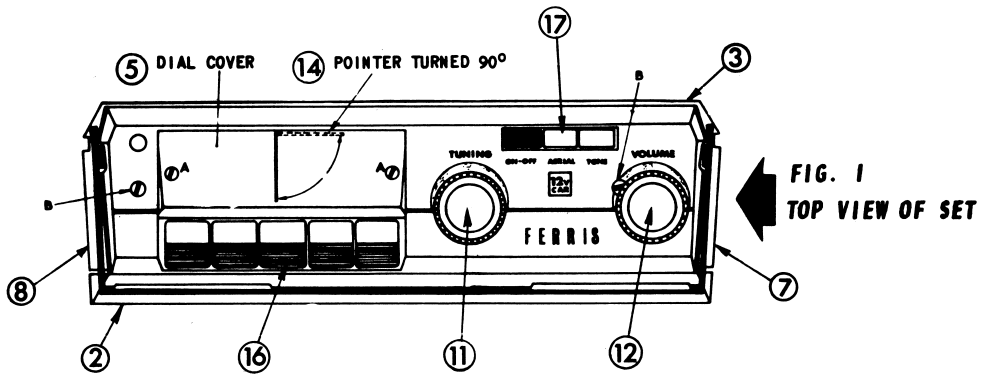


FIG. 1  
TOP VIEW OF SET

SPARE PARTS LIST (CROSS REFERENCE TO NUMBERS ABOVE) SHOWN ON BACK PAGE.

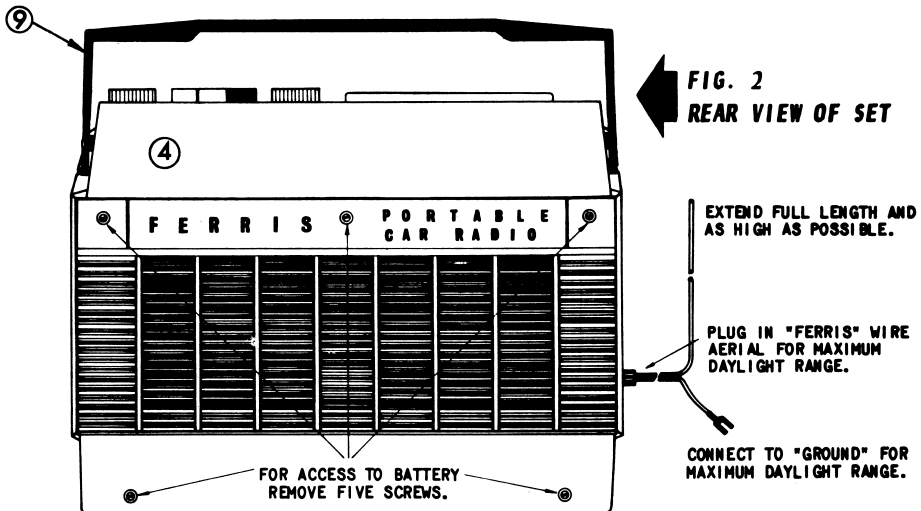
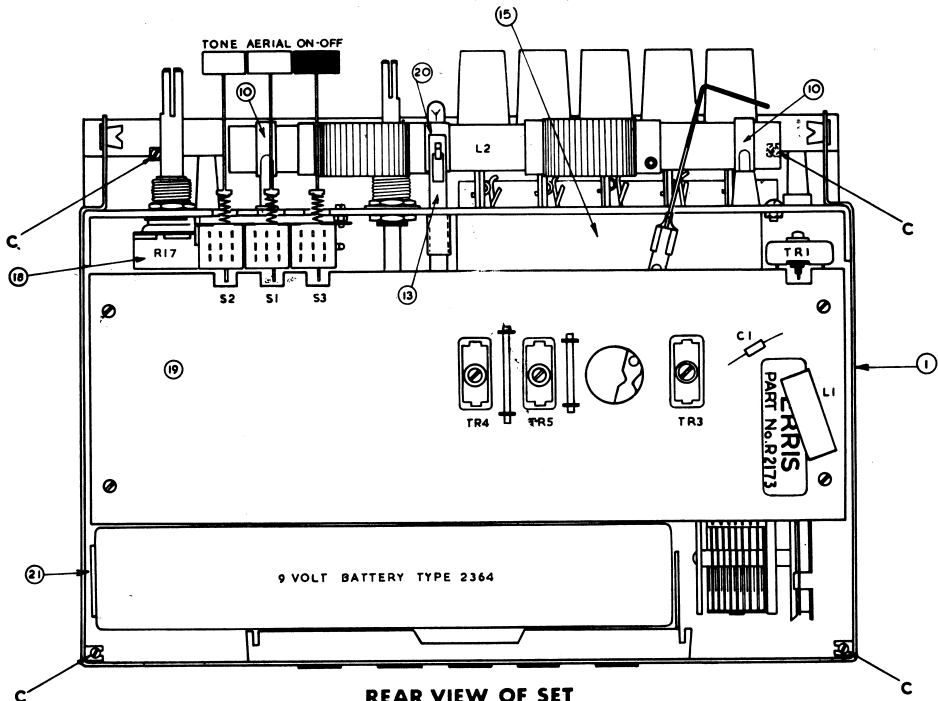
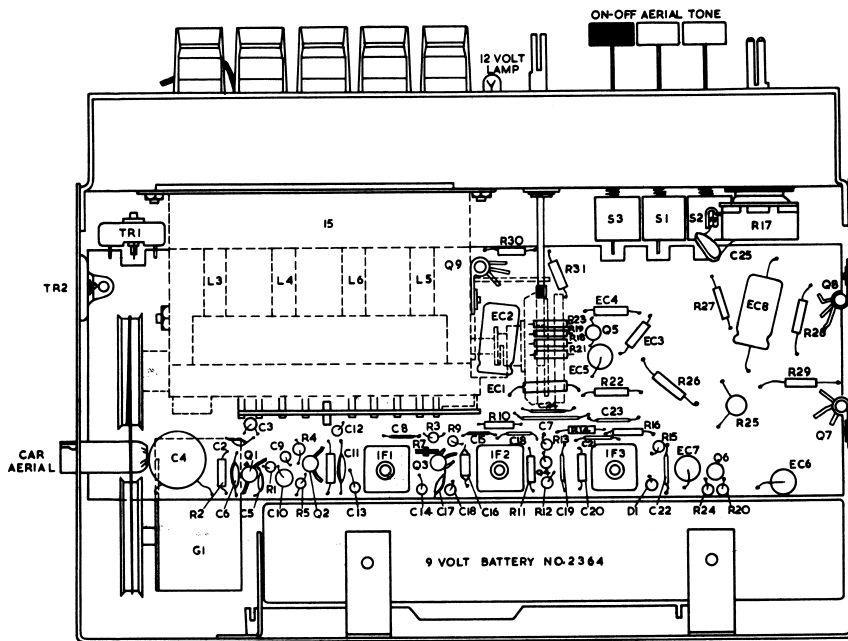


FIG. 2  
REAR VIEW OF SET



REAR VIEW OF SET

FIG. 4



FRONT VIEW OF SET  
SHOWING COMPONENT LAYOUT

**Ferrite Rod Alignment:**

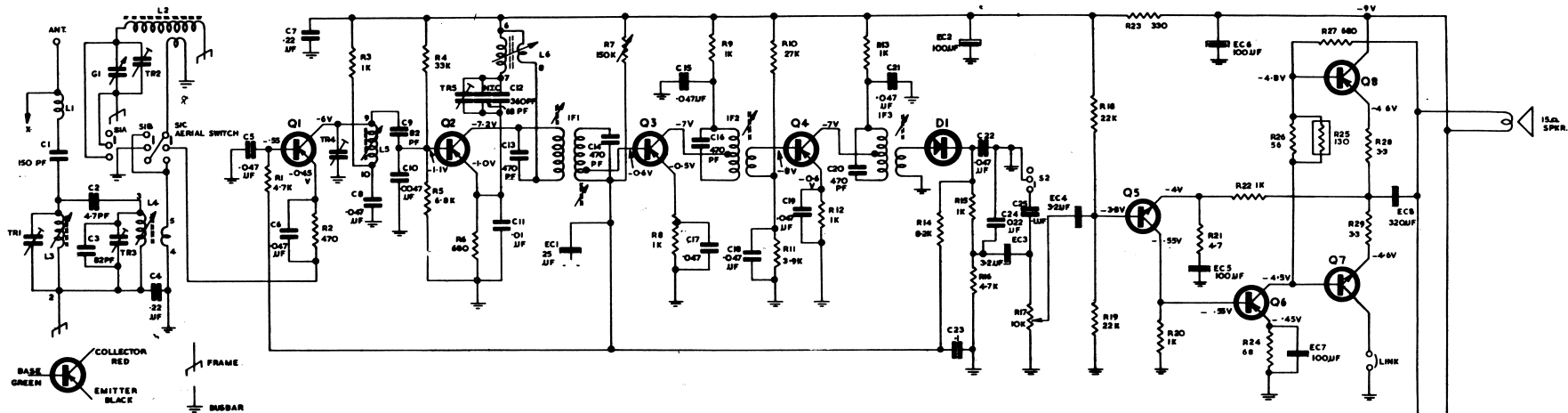
Place set in normal operation position with canopy removed. Set aerial switch in "UP" position.

Step	Connect Sig. Gen to	Tune Sig. Gen. to	Tune Receiver to	Adj. for Max. Output
1	To Aerial Socket via dummy aerial	1400 KHz	1400 KHz	TR2
2	" " "	550 KHz	550 KHz	Slide windings along Ferrite slab.

When adjustment of the rod aerial is made at the L.F. end, set windings for minimum noise rather than maximum sound output. Aerial trimmer peak at H.F. end is normal.

The output from the signal generator will need to be in the order of 0.3-1 mw, as it is only loosely coupled to the set via the capacity of the aerial switch.

FERRIS PUSH-BUTTON PORTABLE CAR RADIO - MODEL 284



- R1 - 4.7K 10% RESISTOR
- R2 - 470 OHM
- R3 - 1K
- R4 - 33K
- R5 - 6.0K
- R6 - 680 OHM
- R7 - 150K VARIABLE
- R8 - 1K 10% RESISTOR
- R9 - 1K
- R10 - 27K
- R11 - 3.0K
- R12 - 1K
- R13 - 1K
- R14 - 0.2K
- R15 - 1K
- R16 - 4.7K
- R17 - 10K POTENTIOMETER
- R18 - 22K 10% RESISTOR
- R19 - 22K
- R20 - 1K
- R21 - 4.7 OHM
- R22 - 1K
- R23 - 330 OHM
- R24 - 60 OHM
- R25 - 130 OHM THERMISTOR
- R26 - 56 OHM 10% RESISTOR
- R27 - 680 OHM
- R28 - 3.3 OHM
- R29 - 3.3 OHM
- R30 - 33 OHM
- R31 - 47 OHM

- C1 - 150 pf 125v
- C2 - 4.7 pf 500v
- C3 - 0.2 pf 125v
- C4 - .22 uf 50v
- C5 - .047 uf 25v
- C6 - .047 uf 25v
- C7 - .22 uf 25v
- C8 - .047 uf 25v
- C9 - 0.2 pf 125v
- C10 - .0047 uf 25v
- C11 - .01 uf 25v
- C12 - .36 uf 15% 125v STYMOSEAL CAPACITOR
- C13 - 470 pf 125v
- C14 - 470 pf 125v
- C15 - .047 uf 25v
- C16 - 470 pf 125v
- C17 - .047 pf 25v
- C18 - .047 uf 25v
- C19 - .047 uf 25v
- C20 - 470 pf 125v
- C21 - .047 uf 25v
- C22 - .047 uf 25v
- C23 - .1 uf 25v
- C24 - .022 uf 25v
- C25 - .1 uf 25v
- N.T.C. - 60 pf H4.7K

- STYMOSEAL CAPACITOR
- STYMOSEAL CAPACITOR
- 125v STYMOSEAL CAPACITOR

- EC1 - 25 uf 6v ELECTRO
- EC2 - 100 uf 12v
- EC3 - 3.2 uf 5v
- EC4 - 3.2 uf 5v
- EC5 - 100 uf 6v
- EC6 - 100 uf 12v
- EC7 - 100 uf 4v
- EC8 - 320 uf 6v
- TR1 - 3 PLATE TRIMMER
- TR2 - 2
- TR3 - 2
- TR4 - 2
- TR5 - 2
- S1A - 3 POLE 2 POSITION
- S1B - 1
- S1C - 1
- S2 - 1
- S3A - 2
- S3B - 2
- G1 - TUNING CAPACITOR
- PILOT LAMP - 12v - 2W
- BATTERY - 9v - TYPE 2364

- L1 - AERIAL COIL Type 6100
- L2 - FERRITE ROD AERIAL Type 7121
- L3 - 1.5
- L4 - 1.5
- L5 - 1.5
- L6 - 1.5
- IF1 - 455 KHz TRANSFORMER 9129
- IF2 - 455 KHz
- IF3 - 455 KHz
- Q1 - 2N1637 AF116
- Q2 - 2N1639 AF116
- Q3 - 2N1638 AF117
- Q4 - 2N1630 AF117
- Q5 - 2N640 AC172
- Q6 - 2N406 AC125
- Q7 - 2N640 AC137
- Q8 - AS120 AC120
- Q9 - AC107
- D1 - 6A00 1060A
- D2 - 6A01

BAND COVERAGE 525-1620 KHz  
IF FREQUENCY 455 KHz

TOTAL BATTERY CURRENT 13 MA FOR 9v BATTERY  
COLLECTOR CURRENT OF O/P STAGE FOR ZERO SIG - 2.5 MA

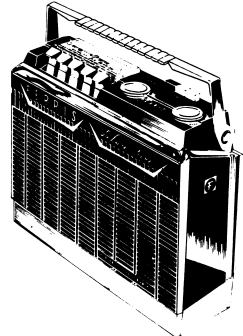
ALL RESISTORS IN OHMS UNLESS OTHERWISE STATED  
ALL RESISTORS IN OHMS UNLESS OTHERWISE STATED

NOTE: ALL VOLTAGES CHECKED WITH 40,000 OHM METER AT ZERO SIGNAL INPUT

DO NOT OPERATE SET WITHOUT SPEAKER CONNECTED.

D.C. RESISTANCE OF WINDINGS

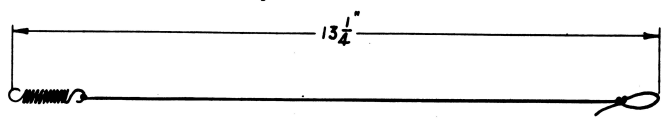
WINDING:	D.C. RESISTANCE IN OHMS:
Aerial Filter Choke	2.5
1st Ant. Coil	0.5
2nd Ant. Coil Primary	5.0
2nd Ant. Coil Secondary	less than 0.5
RF Coil	0.5
Oscillator Coil Primary	1.0
Oscillator Coil Secondary	3.5
IF1 Primary Total	5.0
IF1 Secondary Total	5.0
IF2 Primary Total	5.0
IF2 Secondary	0.5
IF3 Primary Total	5.7
IF3 Secondary	2.3



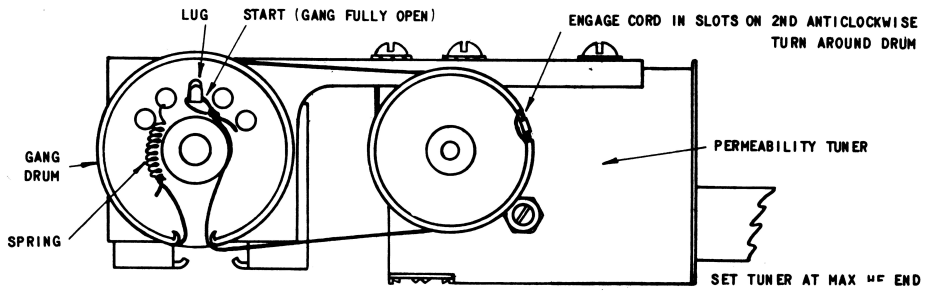
**Permeability Tuner & Gang Drive:**

**REPLACEMENT OF CORD DRIVE:** It is not necessary to remove the tuner from the set to replace the gang drive-cord. Procedure is as follows:

1. With the aid of tweezers, remove old cord.
2. Make up new cord to detail shown in diagram -



3. Fully open gang and set permeability tuner to maximum H.F. end of band (slugs right out).
4. Loop cord over lug in the gang drum and bring it up through the opening in the drum flange.
5. With the aid of fine tweezers and a small screwdriver, feed the cord once around the tuner drum in an anti-clockwise direction (refer to diagram).
6. Now pass the cord around the drum again but this time engage it in the flange slots as shown.
7. Finally, pass the cord to the gang drum and hook the spring into a hole on the drum face so that reasonable cord tension is achieved.



A broken tuning slug can be replaced without removing the tuner from the set:

- 1) Set tuner to maximum H.F. end of band.
- 2) Pull broken slug clear of rubber bung in carriage of tuner.
- 3) Remove rubber bung.
- 4) Remove broken slug.
- 5) Feed new slug through hole in front of bulkhead and into coil former.
- 6) Insert rubber bung into carriage of tuner.
- 7) Feed brass stalk of slug into rubber bung.
- 8) See alignment data for adjustment details.

**Battery Discriminator:**

A transistor is employed for polarity protection of the receiver as well as the Class "A" output stage of the cradle. In addition, the dial lamp will only light when the cradle polarity is matched to that of the vehicle.

The set's 9 volt internal dry battery is subjected to a slow reactivation current whilst the receiver is being operated in the cradle.

Undistorted power output as a portable - 330 mw.  
Undistorted power output in the cradle - 3 watts.

**Alignment Procedure:**

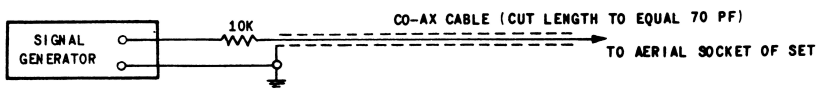
For all alignment operations connect the earth side of the signal generator to the frame or case of the receiver, and keep the generator output as low as possible to avoid A.V.C. action. Set volume control to maximum.

N.B. Use proper alignment tool for making adjustments. Cores are easily broken by improper handling making replacement of entire coil or transformer necessary.

Set aerial switch in "DOWN" position.

Step	Connect Sig. Gen. to	Tune Sig. Gen. to	Tune Receiver to	Adj. for Max. Output
1	Base of 2N1639			IF3 (one core)
2	via. .1 uf capacitor	455 KHz	H.F. end of band	IF2 (one core)
3				IF1 (two cores)
4	Repeat above adjustments until no further increase can be obtained.			
5	Aerial socket via dummy aerial (see diagram)	525 KHz	Max. L.F. end of band	Osc. Trimmer (TR5)
Max. H.F. Limit should now be 1610 KHz approx.				
6	Aerial socket via dummy aerial (see diagram)	1400 KHz	1400 KHz	R.F. Trimmer (TR4) 1st Ant. Trim. (TR1) 2nd Ant. Trim. (TR3)
Check sensitivity at 1400, 900 and 550 KHz				

**Dummy Aerial Arrangement for Alignment:**



N.B. Cores of permeability tuner are accurately aligned and sealed at factory and should not require adjustment. If however, a core is replaced due to breakage, it should be peaked at 1200 KHz. Seal with paint or lacquer.

COMPONENT LAYOUT VIEWED FROM PRINTED WIRING SIDE OF BOARD

