CL020

SUPPLEMENTARY

I N S T R U C T I O N M A N U A L

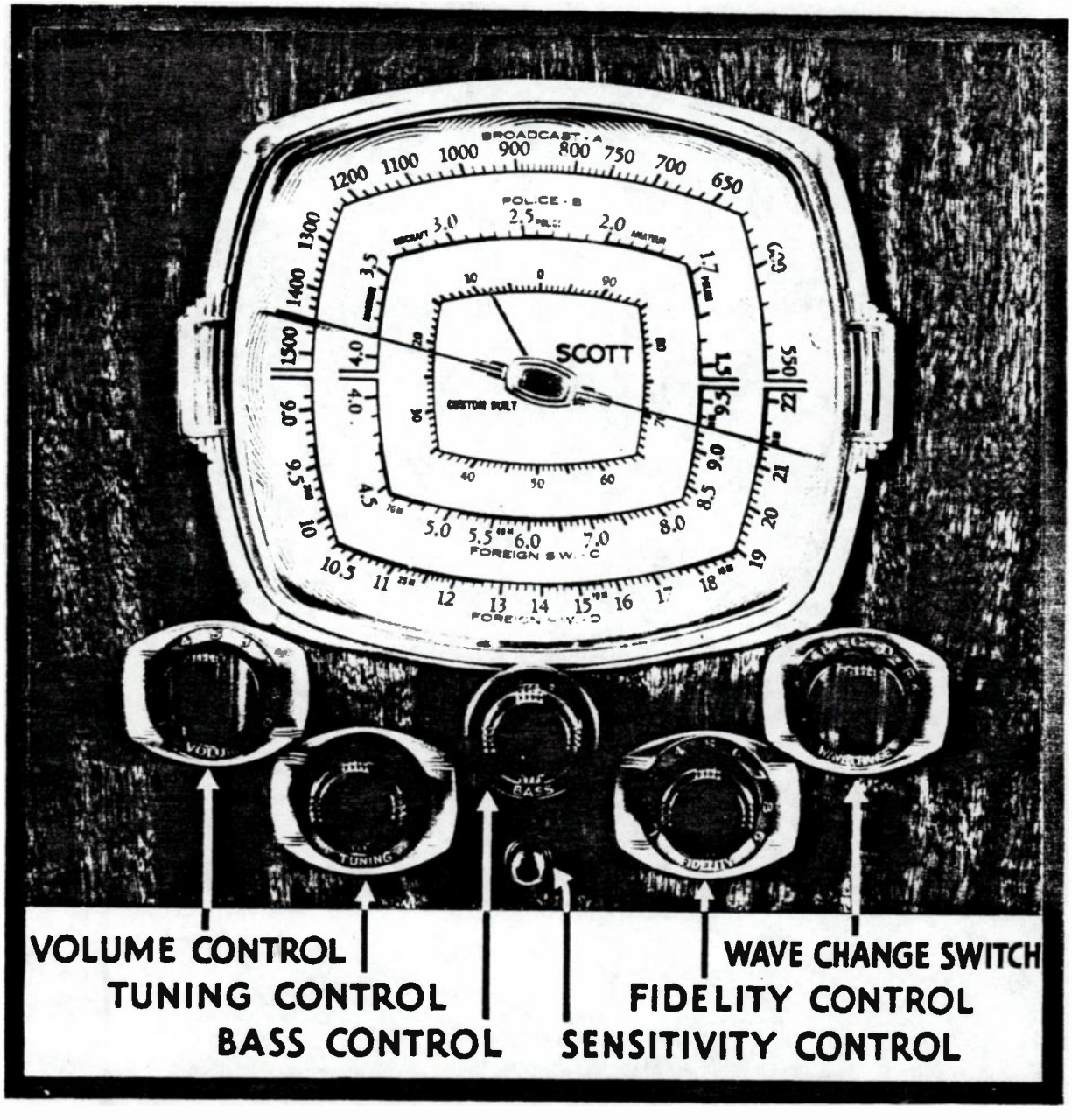
HOW TO INSTALL AND OPERATE

THE

S C O T T S I X T E E N

WITH

R O B O T C O N T R O L


SCOTT
VOLUME CONTROL
TUNING CONTROL
BASS CONTROL
SENSITIVITY CONTROL
FIDELITY CONTROL
WAVE CHANGE SWITCH

INSTRUCTION MANUAL SCOTT SIXTEEN

WITH ROBOT CONTROL

The general operation, maintenance and installation of the Scott Robot Controlled Sixteen will be very similar to that of the regular Sixteen Receiver. Reference, therefore, may be made to the Sixteen Manual and any specific instructions covering this special set will be covered in this supplement. Bear in mind that the push button feature in no way affects regular manual operation of the receiver.

The front panel view of the Robot Sixteen is the same with the exception that the Bass and Tuning Controls have been interchanged, and the sensitivity switch is of the small knob type which is turned to the right for local reception. On the Robot Eighteen both sensitivity and Scratch Suppressor controls are of the knob type.

For unpacking and setting up the receiver and speaker, the instructions given on pages 2, 3, 4, and 5 of the regular Sixteen Manual may be followed.

CONNECTING AMPLIFIER

The amplifier will generally be placed below the chassis. Inspect the fuse located under the amplifier base to make sure it is in tight. Place the tubes in the amplifier by referring to Fig. 5.(Sixteen Manual) The speaker plug may be inserted in the socket marked "Speaker". The 7 prong chassis cable plug is next placed in the socket marked "Set" on the amplifier, and the 4 prong voltage supply cable to the set, is connected to the 4 prong socket of the amplifier.

CONNECTING THE CONTROL KEYBOARD

The Remote Control Keyboard will be regularly furnished with 40 feet of special flat woven cable. The square plug may be inserted into the socket provided on the side of the chassis and the cable itself can be run under a rug to the remote point desired. In special installations other remote Keyboard units may be connected at other points in the house in the same manner. For initial operation, the cable may be left coiled up near the set.

The A. C. plug from the amplifier may now be plugged into the light socket and the set is ready for operation. Read the instructions on pages 6 to 8 of the Sixteen Manual and tune in a few stations before trying the Robot Control feature.

HOW TO OPERATE THE CONTROL KEYBOARD

Where requested, it will be possible to have 12 favorite stations already set up on the receiver so that very little adjustment will be required. In this event, to start the set working simply press the

volume control button marked "On" and after a few seconds the small pilot light will glow, which indicates that the set is on. Now press the radio button, then the button for the desired station, holding the key down until the tuning mechanism stops. The station should now be tuned in and the volume may be raised or lowered as desired by pressing the button marked "Vol On" or "Vol Off". Other stations may be tuned in in the same menner.

HOW TO CHECK AND SET UP STATIONS

In case the stations are not set up properly or others are desired, then the following procedure should be followed. The twelve stations should first be decided upon. These stations should, of course, be locals which would come in with good volume. This station list should now be written down ona piece of paper with the frequency corresponding to each station. Now mark the lowest frequency station #1, next #2, and so on up to #12. This might refer to WIND at 560 and WMAQ at 670 Kc., for example. Now with a pair of scissors take the sheet of station tabs that is furnished and cut out tabs for the stations selected. Take the Control Keyboard and put #1 tab in the top left hand button, #2 tab just below, etc. as marked. These tabs are easily inserted in the slot in the top of each button. Notice that there are two buttons between 5 and 7 without engraved markings below them. The left hand one is for phono and the right hand one Radio.

Press #1 button until the tuning mechanism stops. If the station is not tuned in exactly have some one hold button #1 down and at the same time turn the brass station contact #1 on the back of the set. This moves the station contact disc and main dial all at the same time. When the main dial pointer is at the correct frequency the station should be correctly tuned in. The contact may now be moved back and forth a slight amount until the tuning eye shows maximum closure and it may then be permanently left in place. Now release the keyboard button, press another one and then try #1 again to see if the station has been set up correctly. The other selected stations may be set up in the same manner, and after this is finished, any of the picked stations may be tuned in by merely pressing the proper button. The Bass and Treble controls may be left permanently set at the point which is most pleasing. In general the Bass Control should be tuned about one-half way up and the treble three-quarters of the way on. The Sensitivity switch may be to the right for the strong locals.

MUTING SWITCH

Where the customer does not desire to have phonograph reproduction, the Phono Key will be found useful as a muting control. For example, if the telephone rings or some objectionable advertising comes on in the middle of the program, it can be instantly silenced by touching the Phono Key. To restore the set to operation merely press the key marked "Radio".

INSTRUCTION MANUAL SCOTT SIXTEEN

WITH ROBOT CONTROL

CONNECTING PHONOGRAPH EQUIPMENT

Where phonograph equipment is supplied it must be properly connected to the Robot Controlled Sixteen and the following instructions may be used. On the left of the receiver, when facing the dial, will be found a five prong receptacle. The five prong plug from the phonograph fits into the receptacle.

PHONOGRAPH OPERATION

After the phonograph is filled with records, press the phono button; this will shut off radio reception and the phonograph will play until the magazine is empty, after which it stops. To reject any record, press the Phono Key.

In case records are being played and it is desired to go back to radio, first press the phono button to reject the record, then instantly press the radio button and radio reception may be had. Meanwhile, the arm of the phonograph will swing beyond the edge of the record and stop there.

In case the operator fails to press the Phono button to reject the record before going to radio, then the record changer will continue to play the balance of the record that it is on, after which the arm will come to rest.

PROGRAM SELECTOR CLOCK

A special program selector clock may be furnished built into the cabinet or supplied as a separate unit in a small case, so that eight various programs may be set up to be automatically tuned in at every 15 minute interval or greaterperiod over a 24 hour day.

Refer to the sketch pasted in the back of the clock for an understanding of its operation.

When the clock is supplied with the stations already set up, it is a simple matter to put it into operation. First connect the short cable plug from the clock into the socket provided for it on the flat keyboard cable. This socket may be at the set itself or at the end of the flat keyboard cable, depending upon where the clock is to be used. The AC cable connects into the 110 volt AC wall socket.

On either side or on top of the clock there are a series of small numbered stops in a rack opposite each call letter. The call letters represent 8 picked stations out of the 12 that are set up on the Remote Keyboard. Around the outer rim of the clock there are numbered spaces

from 1 to 12 both on the bottom half and top half face of the clock. When the time is around noon or daytime the bottom half represents P.M. and the top half A.M. This outer rim of numbers moves counter clockwise or to the left or the clock turns to the right. These spaces are further divided by a series of holes representing 15 minute intervals. In the racks will be found green pins, black pins, and some marked with an "S". The green pins are used for the initial start of the clocks operation of turning on the set and tuning in the desired station. The black ones are used to continue the clock control on other selected programs, and the pins marked "S" (Stop) will stop the mechanism.

As an example, suppose the set is in the Chicago area, and it is desired to receive WGN at 1:00 P.M. Take green stop #3 from the rack opposite WGN call letters and insert it in the hole on the clock's rim at 1:00 P.M. If it is desired to hear WCFL at 1:30 P.M., then a black pin from the rack opposite these call letters is inserted in the hole corresponding to 1:30 P.M. and so on. Suppose now it is desired that no program be received after 2:00 P.M. Simply insert an "S" pin at 2:00 P.M. and all programs will be stopped. To start it again at some particular hour, it will be necessary to insert a Green pin at that time. Remember, that after a green pin is inserted, the program may be continued on any of the selected stations with the black pins but another green pin must not be used consecutively after the first. The clock operation must always be stopped with an "S" pin before it can be started at some other time. Thus different stations may be tuned in every 15 minutes or any program sequence can be pre-set as desired.

It takes approximately 7 seconds for the clock mechanism to operate on a station. If for any reason the program as selected by the clock doesn't happen to suit, it can be changed at will by pressing a button on the Remote Keyboard. It must be remembered, however, to guard against pressing a Key while the clock mechanism is tuning in a new program.

HOW TO SET UP NEW STATIONS ON THE CLOCK

In case the stations have not already been set up on the clock, or it is desired to change to new ones, the following instructions should be followed:

A terminal block, having 12 pin jacks, is located on the back of the clock. These jacks are numbered from 1 to 12 corresponding to the Key buttons on the Remote Control Keyboard. ~~The two extra jacks correspond to Radio and Phone on the Control Keyboard~~. Now there are 8 colored wires having jack tips, and by plugging these wires into the terminals any 8 stations out of the 12 on the Control Keyboard may be selected, ~~or by plugging into the two extra contacts Radio and Phone may be had in place of two stations~~. Refer to the sketch that is pasted on the back plate of the clock.

WITH ROBOT CONTROL

The jack tip wires are coded as follows:

1-Brown
2-Orange
3-Yellow
4-Green
5-Blue
6-White
7-White-Brown
8-White-Red

To select any 8 stations all that is necessary is to refer to the remote Keyboard and write down the corresponding Key numbers of the stations desired in ascending Key numbers, then plug the jack pin wires into the terminal block on the clock in the same consecutive order. Suppose we pick WMAQ which may be #2 key as our first station. Now our first wire, or brown, will plug into #2 jack on the clock terminal, #2 wire will plug into #3 jack and so on. The following table will show a typical set-up.

Keyboard # or Terminal #	Station Desired	Wire #	Color
2	WMAQ	1	Brown
3	WGN	2	Orange
4	WBBM	3	Yellow
6	WAAF	4	Green
8	WCFL	5	Blue
9	WJJD	6	White
10	WCRW	7	White-Brown
11	WGES	8	White-Red

After the stations have been picked for the clock, they may be preset for different time intervals on the clock in the same manner as previously described under "Operating Program Selector Clock".

CHECKING TUBES IN THE RECEIVER

To check the tubes in the set, the same instructions as given on page 10 of the Sixteen Manual may be followed. Note, however, that the inverter tube has been replaced with a dual tube, the 6F8G. The same test of substitution may be tried for checking.

HOW TO REPLACE THE CONTROL KEYBOARD LIGHT

If the pilot light should burn out, it can be replaced by taking the bottom off the Keyboard control box. The long glass bulb may now be pulled out of the sping socket and replaced with another type 30-B2 bulb. This bulb should be ordered from us.

WITH ROBOT CONTROL

INSTRUCTIONS FOR CONNECTING EXTRA SPEAKERS

Where one extra speaker is desired for a bedroom or other location it is a simple matter to install it. Remove the speaker terminal strip cover. Next take the jumper wire off 38 and connect ir from VC to 19. Take the two wires from the extra speaker and connect them to terminals G and 19. A special Volume Control Key can be furnished as part of the remote speaker.

Where two or more extra speakers are desired, a special 40 watt amplifier can be furnished in place of the regular amplifier, and up to five extra speakers may then be used and arranged so that any relative degree of volume can be supplied at each speaker. Special instructions will be furnished for such installations, and the customer should write for such information.

SET PLUGGED IN BUT WILL NOT TURN ON

(1) Make sure power is available at the wall outlet by plugging in a floor lamp. It may be necessary in some cases to spread the prongs of the receiver line plug so that it makes contact with the wall socket.

(2) Make certain that receiver and speaker connections are firmly plugged into the amplifier and that the selector plug is tightly plugged into the chassis.

(3) Turn up the volume control manually until the switch snaps. If tubes now light up, then the trouble is in the Keyboard selector, flat cable or plug. Check the prongs of the Keyboard plug to see that they are not bent.

(4) Replace the 2 ampere fuse in the clips in the amplifier.

TUBES LIGHT BUT SET DOES NOT OPERATE

(1) Check speaker, receiver, and flat cable plug connections.

(2) Check the antenna installation.

(3) Check each tube carefully, one at a time, to be sure all tubes are properly and firmly inserted in their sockets and all grid caps are in place.

(4) The fact that a tube lights does not necessary mean that it is operating. Check all tubes by substitution as described under "How to Check the Tubes in the Sixteen", starting on page 8 in the Sixteen Manual.

(5) Push radio button as the relay may be in phono position.

COMMUTATOR DISC SQUEAKS

Although it is very unlikely that the commutator disc should squeak due to the station contact wearing down, it may do so. The cure for this is to oil a small piece of cotton or rag wrapped around a toothpick and hold it on the point on the disc where the contacts rub, while the disc ir rotating.

A FEW PARTING DON'TS

DON'T - Remove the speaker plug from the amplifier while the receiver is turned on, as this may damage the amplifier.

DON'T - Remove either of the 5V4-G tubes in the amplifier when the receiver is turned on.

DON'T - Hold two station buttons down at the same time. It won't damage anything if the buttons are two that are close together but might if one is at the low frequency end of the dial and the other at the high frequency end of the dial. Don't hold the Phono and Radio buttons down at the same time.

DON'T - Try to set up foreign stations on the remote control keyboard.

DON'T - Try to force the plugs into the sockets when connecting the receiver or speaker to the amplifier or flat cable to the chassis. If they do not go together easily, do not attempt to force them into place, as these connections can be plugged in only one way.

DON'T - Pull on the cables when removing any of the plugs from the amplifier or receiver but rather on the plug itself.

DON'T - Operate the receiver with inferior tubes and expect good reception.

DON'T - Try to operate the speaker without a baffle of reasonable size and don't use a flimsy speaker housing.

DON'T - Press a Keyboard button while the clock mechanism is tuning in a new program.

DON'T - Set up weak distant stations on the Control Keyboard and expect them to come in clearly. The Keyboard feature is only meant for locals and strong out-of-town stations.

DON'T - Tamper with any of the internal adjustments in the receiver; this will void your Guarantee.

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4450 RAVENSWOOD AVENUE
CHICAGO, ILLINOIS

CL020

Steve C.

TECHNICAL SERVICE MANUAL

SCOTT SIXTEEN RECEIVER
AND
SCOTT EIGHTEEN RECEIVER

FOR THE EXCLUSIVE USE

OF

OFFICIAL SCOTT SERVICE REPRESENTATIVES

SCOTT RADIO LABORATORIES, INC.,
4541 RAVENSWOOD AVENUE
CHICAGO 40, ILLINOIS

SERVICE MANUAL FOR THE SCOTT SIXTEEN

ELECTRICAL SPECIFICATIONS

Voltage Rating	115 volts
Frequency Rating	60 cycles

NOTE: Power transformers can be furnished for any special frequency or voltage range.

Power consumption	135 watts
Type Circuit	Superheterodyne, having dual AGC 1 R.F. stage 4 tuning bands - 3 stage band Passed I.F. Amplifier - Bass and Treble Controls- Phase inverter - Inverse feedback . Shielded Antenna Input Circuit & Beam power output stage.
Number of R. F. stages	One, high gain type
Number of I. F. stages	Three
Number of A. F. stages	Three and phase inverter: 1 single, 1 push pull driver, 1 push pull output.
Type Oscillator	Electron coupled
Detector	Diode
Rectifiers	Full Wave using 2 - 5V4G tubes
Audio Power output	13½ watts undistorted - 16 watts
Audio Frequency range	30 - 7,500 cycles
Radio Frequency coverage	550 KC to 22 Megacycles

PHYSICAL SPECIFICATIONS

Chassis Dimensions (for mounting)

Width	15¼"
Depth	12 5/8"
Height	10"

Amplifier

Length	16"
Depth	5 3/8"
Height	8"

Speaker

Baffle Hole	10 3/4"
Weight Chassis	24 lbs.
Weight Amplifier	16 lbs.
Weight Speaker	14 lbs.
Total Weight	54 lbs.
Weight Packed	80 lbs.

GENERAL

The Scott Sixteen is a carefully engineered "Small" set comprising features heretofore only available in the larger models. It has in addition many special features of its own particularly adapted to its design.

The Scott Sixteen covers all frequencies from 550 KC to 22 megacycles in 4 bands taking full advantage of a high gain R.F. stage on all bands. The perfected Scott Supershield antenna (coupling) system is employed to provide effective antenna lead in noise reduction on the important short wave bands and in addition a new type antenna input system is used on the broadcast and police bands for sub-frequency resonance elimination.

Other circuit developments include a means for providing control of bass and treble frequencies - a highly stabilized electron coupled oscillator - Silent tuning between stations - band pass I.F. amplifier - Separate R.F. and I.F. automatic gain control systems - Self-balancing phase inverter - Cathode ray tuning indication - Phonograph input - beam power output stage, with inverse feed-back.

ELECTRICAL DESCRIPTION OF THE CIRCUIT

R. F. SECTION

The antenna input circuit is arranged s o that when operating on the two short wave bands the signal picked up on the flat top portion of the doublet antenna is transferred to the R.F. tube grid by means of the special shielded ring coupling system, achieving a high degree of noise reduction. On the police and broadcast bands the input is capacitively coupled to the separate secondary coils and only half the antenna flat top is used. The band switch is so arranged that the band lower in frequency is shorted out to minimize circuit loss. The first tuned circuit resonates and amplifies the desired signal. The second tuned circuit operates directly in the plate circuit of the R.F. amplifier tube and feeds directly into the converter grid reducing loss to a minimum. A 6U7G type tube, having an unusually high mutual conductance is used in the R.F. stage providing high sensitivity on all bands.

CONVERTER SECTION

The amplified signal from the R.F. amplifier is applied to the 6L7G converter control grid and the oscillator output is coupled to grid #3. These two input signals now both modulate the converter cathode emission and the results will be a difference frequency component in the plate circuit of the converter which represents the I.F. frequency.

OSCILLATOR SECTION

The proper combination of series padders, shunt trimmers, and coils in the oscillator circuit provides a signal frequency 465 k.c. higher than that to which the R.F. section is tuned. The efficient 6J5-C type oscillator tube is used in an electron coupled circuit. Oscillator potentials are carefully by-passed and filtered and the circuit is made extremely stable.

I. F. SECTION

The I.F. amplifier consists of three stages employing two 6K7-G tubes and one 6B8G The I.F. transformer are wound in 4pi sections in both primary and secondary coils and are permanently tuned by a combination fixed and adjustable air condenser, in addition each stage is arranged with resistance capacity filters for each circuit The I.F. system is permanently band-passed in the 2nd and 3rd stage by the use of special precision type adjustable mica condensers in series with the I.F. trimmers. The system may be carefully adjusted for high fidelity reception and yet maintain good selectivity at the same time. The signal developed in the converter plate circuit is highly amplified in the I.F. amplifier at 465 Kc. and is passed to the second detector.

R. F. AND I. F. AGC SYSTEMS:

The Scott Sixteen employs two separate AGC systems. In the R.F. AGC circuit the control grid of the 6B8G tube is capacitively coupled to the plate of the 6L7-G converter tube. I.F. and signal frequency are amplified and rectified by this tube and applied as control on the first R.F. grid. This prevents overload in the R.F. stage and helps to reduce the effects of noise and distortion when tuned to powerful locals and also protects the first tube from these effects when the set is tuned to a weak distant station that is near in frequency to a powerful local. This AGC action operates only when the input signal exceeds 1000 microvolts.

In the I.F. AGC circuit the 6B8G tube acting as an I.F. amplifier and audio diode detector also supplies agc voltage for control on the first and second I.F. tube grids and prevents overload and distortion in this part of the circuit.

Just below the main tuning dial is the push-pull sensitivity switch which will decrease the maximum sensitivity of the receiver when pulled out by increasing the minimum bias of the I.F. AGC to approximately 30 volts. This provides silent tuning between stations but in no way affects the normal AGC action on stations which are well above the noise level.

DETECTOR:

As mentioned above the 6B8G tube acts as second detector in addition to its two other functions and handles high percentage modulation signals with a minimum of distortion.

AUDIO AMPLIFIER:

When the wave change switch is set to position "P" the input to the three stage audio system is automatically connected to the phonograph input terminals on the rear of the chassis. A volume control tapped for bass compensation is employed at the input circuit of the 6K7-G first audio tube and in the plate circuit of this tube the variable bass and treble control circuits are connected. The bass circuit utilizes a high "Q" resonator choke system and provides a boost of about 15 db. in the maximum position. The chokes for the bass and Treble circuits are mounted under the gang condenser cover and are then almost completely isolated from the rest of the set wiring.

The first audio tube is followed by the 6J5G phase inverter tube. This circuit is self-balancing and couples into the grids of the 6J5G push-pull wnd audio tubes which operate into the balanced primary of a special driver transformer, the secondaries of which in turn apply the signal to the 6V6G Beam power output stage.

The power output stage incorporates inverse feed back which helps to flatten loud speaker response and improves reproduction.

POWER SUPPLY:

The power supply used is of the heavy duty type employing two of the new 5V4G heater type rectifier tubes. The primary of the power transformer is arranged for standard 115 volts on the domestic model. On the foreign model it is designed to accomodate either 115 volts or 230 volts A.C. by proper placement of the fuses.

This is clearly shown on the schematic diagram. The rectified plate voltages are filtered by the use of 3 high capacity electrolytics, a choke and the speaker field employed as another choke. In addition, the bias voltage is further filtered by the use of a mfd. condenser.

LOUD SPEAKER

The loud speaker employed is arranged to provide connections for an external speaker. It is necessary only to remove the terminal cover, disconnect the jumper wire between terminals V.C. and 38 and connect it between V.C. and 19 instead. Now connect a 38 ohm speaker to the terminals marked 19 and G. T-pads may be added by reference to diagram showing these connections.

SPECIAL MODEL

A special model is available employing the feature of automatic scratch suppression using two additional tubes, a 6B8G and a 6J7G, in a special circuit which attenuates the higher audio frequencies (corresponding to record scratch) when they are very weak, but passes unattenuated the stronger high frequencies (corresponding to useful high fidelity reproduction.

RECORD SCRATCH SUPPRESSION

The 6B8G tube operates as an amplifier and diode to supply rectified bias voltages, (proportional to input signal amplitude for frequencies above 1500 cycles to the control grid of a 6J7G tube. The circuit is arranged so that the effective capacity of a 35 mmf. condenser, amplified to a maximum of approximately 3000 mmf. by the gain of the 6J7G tube, is in shunt with the first A.F. 6K7G tube grid at audio frequencies.

When the higher audio frequencies are weak no rectified bias is developed by the 6B8G tube allowing the 6J7G tube to operate at maximum gain shunting a high capacity from the grid of the first AF tube to ground thus practically eliminating record scratch However when the audio higher frequencies are strong, considerable rectified bias is developed in the 6B8G tube and applied to greatly reduce the gain of the 6J7G tube thus reducing the effective capacity shunting the input to the first A.F. tube and allowing all frequencies to pass unattentuated.

A thorough understanding of the functions of all elements of the circuit diagram in conjunction with the foregoing description will enable a competent service man to correct any difficulties which may be experienced with this relatively simple receiver. In most cases, trouble can be traced to defective or unsuitable tubes which may best be tested by substituting other known good tubes until the bad ones are found.

It is strongly recommended that the process of elimination be employed to localize any trouble whichmay develop. For example, if the tubes light, but no sound is heard from the speaker, remove the grid cap from the 6K7G first A.F. tube. Loud sounds in the speaker indicate that the A.F. system is probably functioning properly while silence indicates the trouble is between that point and the speaker, thus having the work of locating the trouble. It is generally possible, by this process, to "narrow down" any trouble to one tube circuit.

TESTING THE SCOTT SIXTEEN:

In order to properly align and service the Scott Sixteen receiver, the service man must have the following equipment.

Signal Generator (90 Kc to 22 Megacycles) (Long Wave)
Output Meter (such as Weston or Triplett)
Voltmeter and Ohm Meter (Sensitivity 1000 ohms per volt)
Microameter (Weston model 600, see sketch)
Tuning Wand (Aladdin)
Audio oscillator (30 to 10,000 cycles)

An audio oscillator while desirable is not an absolute necessity except on the model having automatic Scratch Suppression.

SERVICE MANUAL FOR SCOTT SIXTEEN

HUM TESTS ON RECEIVER

Make certain that there are no soldering irons near the chassis and that the power transformer end of the amplifier is as far awsy from the chassis as possible. Connect a good output meter, having a resistance of 3000 ohms or more to the 6V6G plates (#3 prong) and have a 1 to 2 mfd. condenser in series with one lead to the meter.

With bass full on --- treble full --- and volume off the hum should not exceed .2 of a volt. To make overall tests, remove the 2nd audio 6J5G tubes. The hum should now drop to less than 0.1 volt. If it does not the amount of hum read on the meter is the hum in the amplifier itself. Leave the tubes out and change the 6V6G tubes in the amplifier until the hum is reduced to a minmum The phone jack may be defective or there may be a filament short, check the circuit and connections and get the humout of the amplifier before proceeding with the rest of the test.

NOTE: It is highly important, in minimizing hum to use the SPIRAL HEATER type 6K7G and 6J5G tubes in the audio system since, while considerable bass boost is available tubes are the sole source of hum, there being no hum pickup whatsoever in chokes, transformers, etc

After a very few of the first receivers were shipped out, a 250 mmfd. mica condenser was added to the grid circuit of each 6V6G tube to eliminate high frequency parasitic oscillation which occurred with some tubes. If these two condensers are not present, they should be added, as shown on the circuit diagram, otherwise oscillation may occur when the 2nd A.F 6J5G tubes are removed.

After the amplifier is found to be O.K. replace the second audio tubes and remove the inverter and 1st audio, now substitute for the 2nd audio tubes until hum is reduced to a minimum, allowing sufficient time in each case for the tubes to heat up properly. Next try the inverter tube in the same manner and follow with the first audio 6K7G. It may be necessary to push the filament wires nearer the base and away from grid wiring on some of the tube sockets, also the dial light circuit may be shorted against the dial frame All these points should be checked along with the trying of new tubes.

AUDIO GAIN TEST

With an audio input signal of 0.1 volt at 400 cycles an output reading between 2 and 3 volts should be obtained on the output meter which is connected across the voice coil. Make this test with volume full, bass control ½ on, fidelity full and band switch in Phono position. If the gain is low it may be due to defective tubes, wrong voltages, shorts or open circuits, either in the setor power amplifier.

AUDIO FIDELITY TESTS

For correct high fidelity reproduction it is important that the electrical frequency response of the audio system, from the phono posts to a 38 (or 40) ohm dummy voice coil resistor, approximate 5 volts at 75 cycles and 6 volts at 6250 cycles with the bass and fidelity controls on full, after the output has been carefully adjusted, by means of the volume control, to 1 volt at 400 cycles with an input of 0.1 volt at each frequency. Failure of the system to approximate this response (if you are certain that your meters are accurate and that no series meter condenser, which would "cut" low frequencies, is being used) should lead to analysis of the low of high frequency circuit involved to determine and eliminate the trouble.

SERVICE MANUAL FOR THE SCOTT SIXTEEN
HOW TO ADJUST THE AUTOMATIC RECORD SCRATCH SUPPRESSION CIRCUIT ON THE SPECIAL SCOTT EIGHTEEN

This test refers only to the 18 tube model and can be ignored when checking the sixteen. See Fig. 1 for tube locations in Scott Eighteen.

Connect an output meter across the voice coil circuit (V.C to G.) Connect and audio oscillator and a sensitive output meter to the phono-posts, and turn the Wave Switch to position "P" (allway to right). With the Bass Control set to minimum, treble control full on, and Scratch Suppressor Switch pushed in, apply 0.25 volt at 3500 cycles to the phono-posts. Set the volume control so that 1 volt is obtained on the output meter across the voice coil. Pull out the suppressor switch and the 1 volt reading should just start to drop (say to 9V). Now push the suppressor switch in (off position) and reduce the audio oscillator input to 0.05 volts, reset the volume control to obtain a 1volt reading again on the voice coil output meter and now pull out the suppressor switch ("on" position). The 1 volt reading should now drop to a level of 0.2 of a volt or slightly under. This gives a reduction ratio of 5 to to 1 and this is the proper ratio to maintain. If this 5 to 1 reduction is not obtained the 6 volt bias should be reduced slightly by shunting it to ground by a suitable resistor. The value of this resistor will lie somewhere between 800 and 5000 ohms. It will have to be determined by substitution of various resistors. If too much control is obtained, it may be due to an abnormal 6J7G.

The 6B8G tube determines the level at which the circuit starts to cut high frequencies and the 6J7G tube determines the amount of this cut.

HOW TO ALIGN AND BAND PASS THE I. F. AMPLIFIER

While this operation is quite difficult in many receivers the Scott Sixteen and eighteen incorporates a new development which greatly simplifies this adjustment if the following procedure is carefully followed. However, the I F adjustments should be changed only as a last resort on positive indication that the I F alignment has become impaired. A good signal generator should be connected to the input of the I F system at the grid of the 6L7G converser tube using the circuit shown in Fig. 2 in order to maintain normal operating bias. Turn the Wave Band switch to the Broadcast band; turn the tuning pointer to the extreme high frequency end or the dial; push in the sinsitivity switch, and remove the 6U7G R F tube.

Now referring to the underside view of the chassis, Fig. 2, connect a jumper wire between points "A" and "B". Remove the wire jumper which shunt the terminals of the 2nd I F Transformer as shown in Fig. 3. leaving these terminals vacant, and connect two solid wire jumpers across the two terminal strips of the 3rd I F transformer. (In case resistors are found connected across any of the terminal strips their positions should be carefully noted on a piece of paper since they must be replaced exactly as found when the operation is completed.) NOTE: Turn set off when changing jumpers to avoid shock from the plate voltage. Connect the negative terminal of a 20,000 ohm per volt D.C. voltmeter using the 25 volt scale,) or a sensitive microameter with a 0.5 meg resistor connected in series with its negative terminal) to the "I F Diode Output Point shown in Fig. 3 and the positive terminal to the chassis.

Apply an unmodulated 465 K.C signal of sufficient strength to produce a diode output voltage reading of approximately 10V (or 20 microamperes for the microammeter) and very carefully adjust the 1st, 2nd, 3rd I F diode trimmers and I F for maximum meter reading, reducing the input, if necessary, to avoid exceeding the above figures.

The wire jumpers may now be removed from the 3rd I F transformer terminals and the wire jumpers (or the original resistors if they were used) connected to the 2nd I F transformer terminals The bias jumper may now be removed from points "A" and "B" leaving the I F terminals connected as originally found and completed the alignment.

ALIGNMENT OF R. F. SECTIONS:

Before starting on this portion of the set, it is important to understand how the tuning wand tool works. One end of this device has a core of material such as polyiron while the other end is brass. When the inductance of a coil is high, insertion of the brass end will decrease it to the proper resonant value; whereas, insertion of the other end will increase the effective inductance. This gibe a very convenient means of determining whether or not it is necessary to add or remove turns from the coil. In the following instructions only a slight adjustment of trimmers and padders should be necessary where original coils are used. Full instructions however, are given to cover the case where new coils are to be used.

BROADCAST BAND ALIGNMENT

First turn the dial pointer completely to the low frequency dial stop and center the pointer exactly between the two heavy horizontal lines which separate the "Broadcast A" and the "Foreign Short Wave C" bands. Turn the wave band switch to the "Broadcast A" position, and set the bass control to minimum, treble control to maximum and sensitivity switch to minimum (pulled out), and connect an output meter across the voice coil. Refer to Fig.5 , and adjust oscillator trimmer C1, until a 1400 KC signal is set on the dial is tuned in from the generator. Rotate the dial to 650 KC and tune in a 650 KC signal from the generator by adjusting the padding condenser C3. Check the dial at 970 KC and if it tunes high in frequency spread turns on the oscillator secondary, if it is low in frequency push the turns together and then readjust trimmer condenser C1, and padder condenser C3, as before.

With the oscillator circuit correctly spotted tune in a signal from the generator at 1400 KC and use the output meter as indication. Have as weak a signal as possible and adjust trimmer C4 and C6 for maximum output. Turn the dial to 650 KC and check the alignment of the R.F. and antenna stages with a tuning wand, spreading turns on the coil where less inductance is needed and pushing turns together if more inductance is required. Readjust the trimmer condenser C4 and C6 for maximum at 1400 KC. Turn the dial to 970 KC and check the alignment of the R.F. and antenna stages.

POLICE BAND

Set the wave band switch to the Police "B" band, position and turn the dial to 3.7 megacycles. Tune in a signal from the generator by adjusting trimmer C2 then turn the dial to 1.8 megacycles and tune in a signal from the generator by adjusting the padder C10. Check the alignment at 2.6 megacycles, if off, either push together or spread turns on the oscillator secondary as described under "Broadcast Band Alignment". Readjust trimmer C2 and padder C10 until correctly aligned. Tune in a sigal at 3.7 megacycles and adjust trimmers C1 and C3 to maximum output, now check the alignment of 1.8 megacycles with a tuning wand and make any necessary corrections by pushing or spreading turns on the coils and readjusting trimmers C5 and C7. Recheck the alignment at 2.6 megacycles.

LONG WAVE BAND ON EXPORT MODEL:

On the export model the Long Wave Band replaces the Police Band. To align this model set the wave change switch to L.W. position A and rotate the tuning dial on the set to 370 KC. Tune in a signal from the generator by adjusting the trimmer condenser C1. Now turn the set dial to 170 Kc and tune in a L70 KC signal from the generator by adjusting the oscillator padding condenser C3. Return to 370 KC and re-trim condenser C1. Check the calibration at 250 KC. Add or remove turns from the oscillator coil as required for perfect dial calibration at these three frequencies. Now turn the dial to 370 KC and tune in a weak signal from the generator and adjust trimmers C4 and C6 until maximum output is shown on the output meter.

CONT.

LONG WAVE BAND ON EXPORT MODEL:

Now turn the dial to 170 Kc and check the R.F. and Ant. alignment with a tuning wand. Make any necessary corrections on the coils (where new) by adding or removing turns Then repeak the trimmers C4 and C6. Check the alignment at 250 Kc.

FOREIGN S. W. - C - (SW1)

Set the wave Band Switch to the "C" position and tune in a signal at 9 megacycles by adjusting trimmer condenser C9. Turn the dial to 5.4 megacycles and if necessary to correct the calibration do so by spreading turns on the coil and readjusting the trimmer condenser C9. Check the calibration at 6.5 megacycles.

With the oscillator calibrated tune in a signal at 9 megacycles and adjust trimmer condensers C12 and C14 for maximum output. Check the alignment at 4.5 and 8.6 megacycles and make any necessary corrections by pushing or spreading turns on the coils and readjusting trimmers C12 and C14.

FOREIGN S. W. -D - (SW2)

Set the wave band switch to D position and tune in a signal at 20 megacycles by adjusting trimmer C8, check and if necessary correct the calibration at 12 megacycles by pushing or spreading the turns on the oscillator coil. Check the calibration at 15 megacycles.

With the oscillator correctly aligned tune in a signal at 20 megacycles and adjust trimmers C11 and C13 to maximum output. Check the alignment at 12 and 15 megacycles and make necessary corrections by pushing or spreading turns on the coils, now readjust trimmer C11 and 13.

CONNECTING EXTRA SPEAKER

The new type high fidelity Scott permanent magnet 3.8 ohm voice coil speaker may be readily connected to a Scott Receiver as shown in Fig. 6, with the optional "T-Pad inserted in the voice coil leads where separate control of the extension speaker volume is desired. In case the extension speaker is disconnected the jumper must be changed to connect terminals "V.C." and "38".

ELECTROLYTIC CONDENSERS

Where the electrolytic in the condenser becomes frozen during shipment or by subjection to a cold room, the condenser will then act like a resistor until the electrolite again becomes liquid. The cure of course, is to let the amplifier set in a warm room night as freezing does not permanent damage to the condenser.

WAVE CHANGE SWITCH TROUBLE

Poor contact in the wave change switch are generally be corrected by slightly bending the contacts involved. However, in case a switch section is accidentally damaged beyond repair this section can be replaced by first removing the dial face then removing the two screws which support the Wave Change switch shaft. The damaged section can then be unsoldered, removed and replaced with a new unit which should be obtained from the Scott Chicago Laboratories before the change is made in order to assure exact duplication of switch positions and connections. Note particularly that the small notch near the center of the switch rotor must be in the same position in each switch section.

CONCLUSION

In the manual we have tried to give sufficient detailed data so that with the aid of the circuit diagram and outlined tests, any experienced service man may be able to successfully service the Scott Sixteen. Since all new developments resulting from constant research in the Scott Laboratories are immediately incorporated in the receivers whenever possible, these differences should not be interpreted as errors, but rather as improvements.

Symtoms like noisy controls -- and tubes will tell instantly where the trouble lies. If there is no voltage and the tubes still light the service man will at once test the rectifiers, power transformer, and input condenser. Where the voltage is low, circuit shorts are indicated.

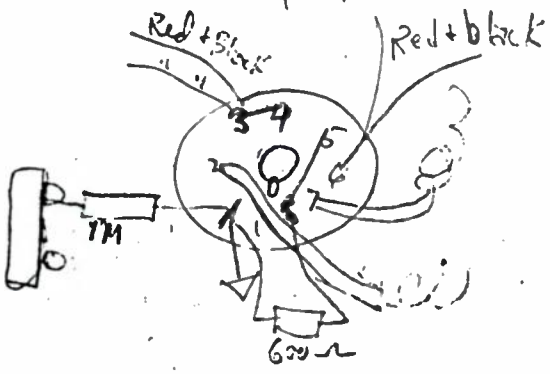
Where cases arise that are particularly baffling, the Scott Radio Laboratories may always be relied upon to co-operate in every way possible.

SCOTT RADIO LABORATORIES, INC.,

4541 Ravenswood Avenue

Chicago, Illinois

1st audio



eleminate hum
use 600Ω res
disconnect yellow from
filter cond.
can

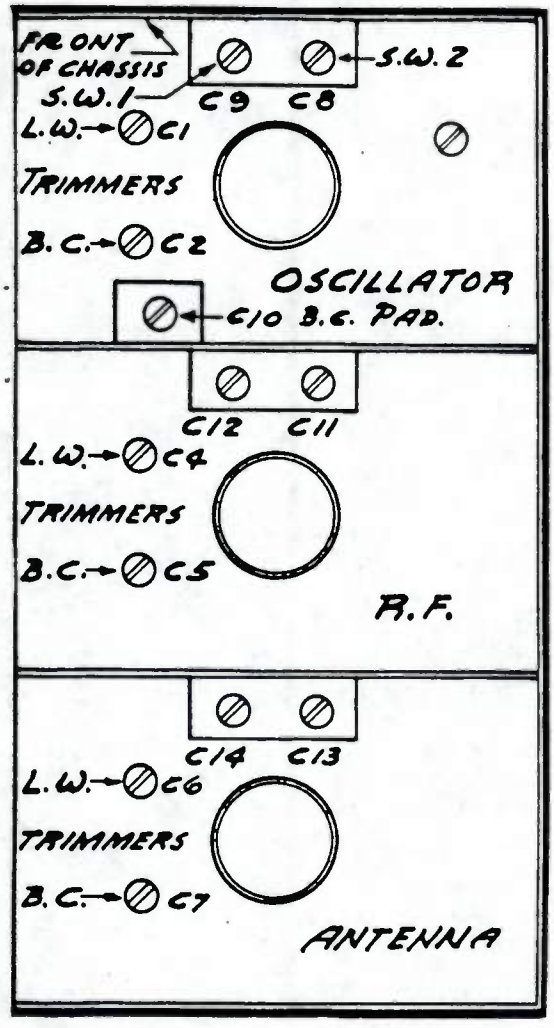


Fig. 4 Location of R.F. Trimmers and padders (Export Model.)

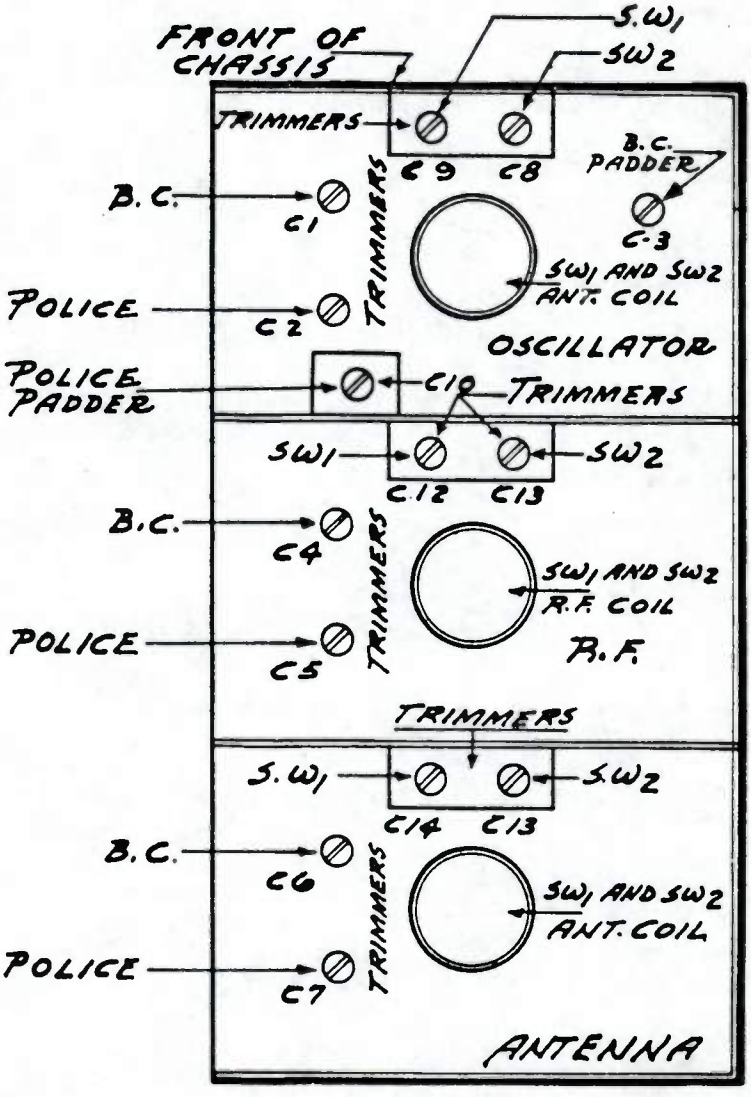


Fig. 5 Location of R.F. Trimmers and padders for Domestic Model.

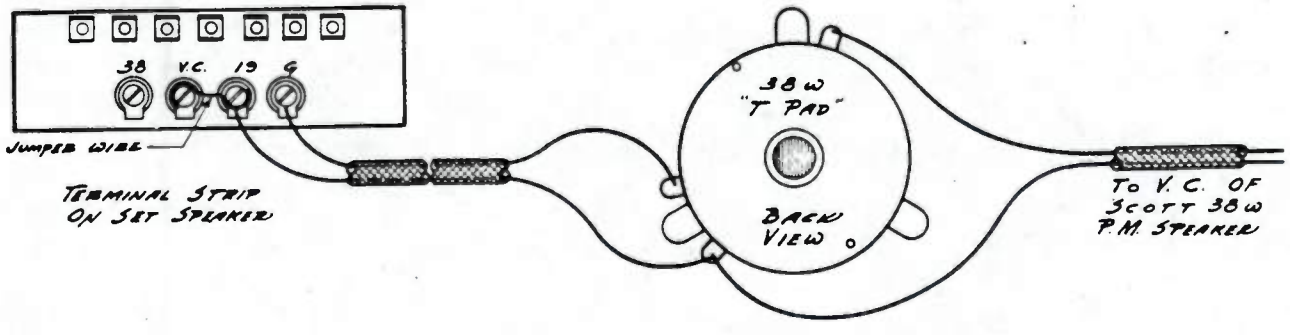


Fig. 6 Extra Speaker Connection

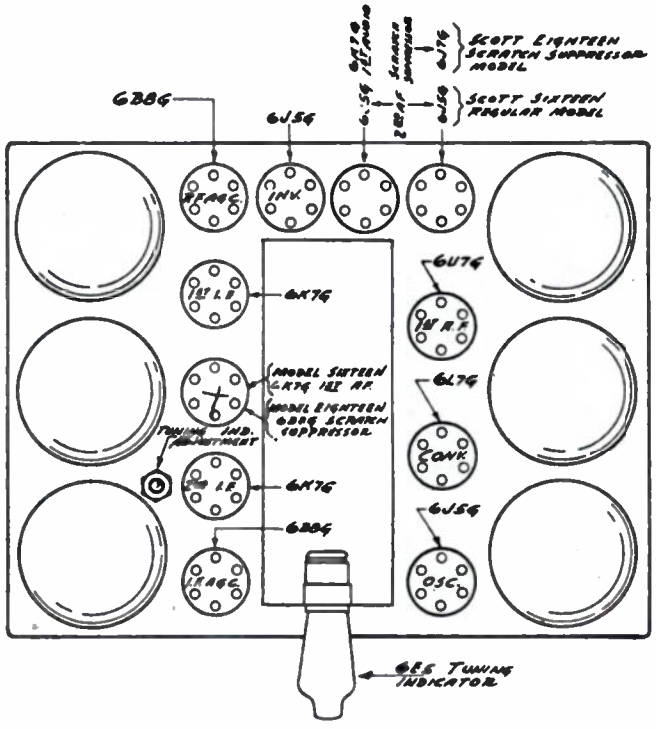


Fig. 1 Showing Tube Locations

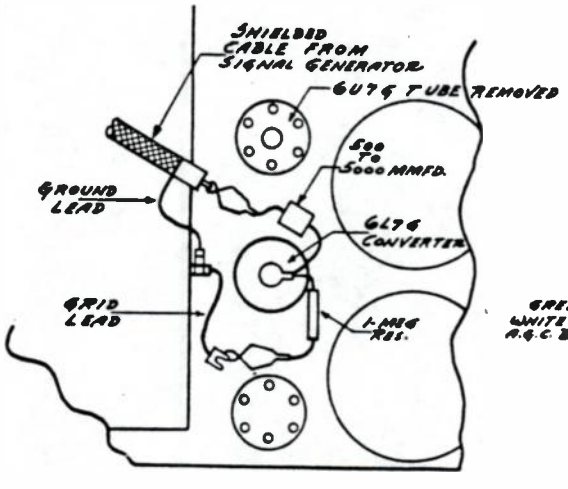


Fig. 2
Signal Generator Connection
For I.F. Alignment

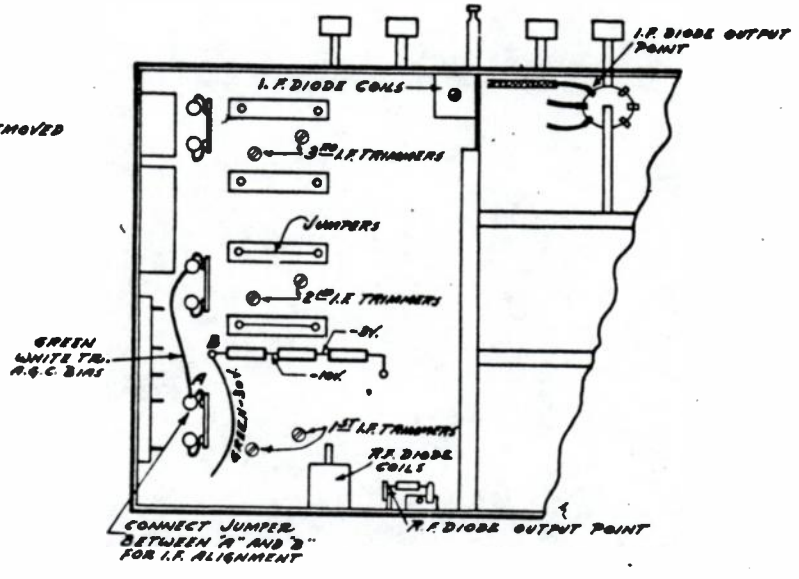


Fig. 3
Under Chassis View Showing
I. F. Adjustments, Etc.,

MODELS 16,18

E. H. SCOTT RADIO LABS., INC.

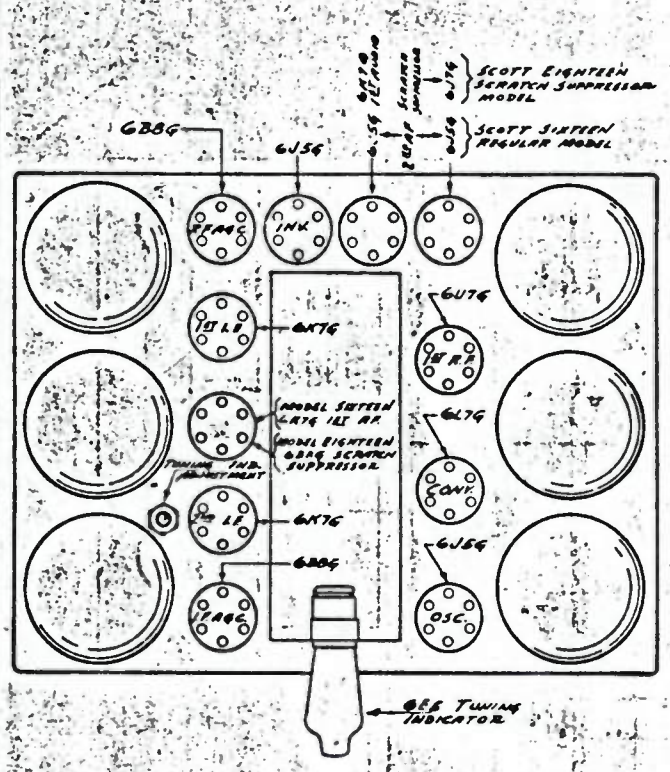


Fig. 1 Showing Tube Locations

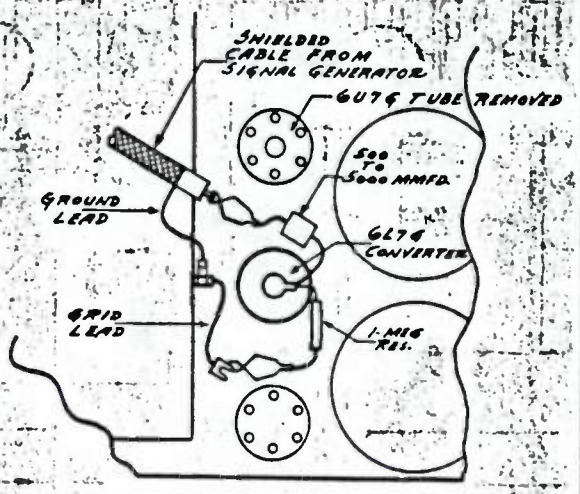


Fig. 2
Signal Generator Connection
For I.F. Alignment

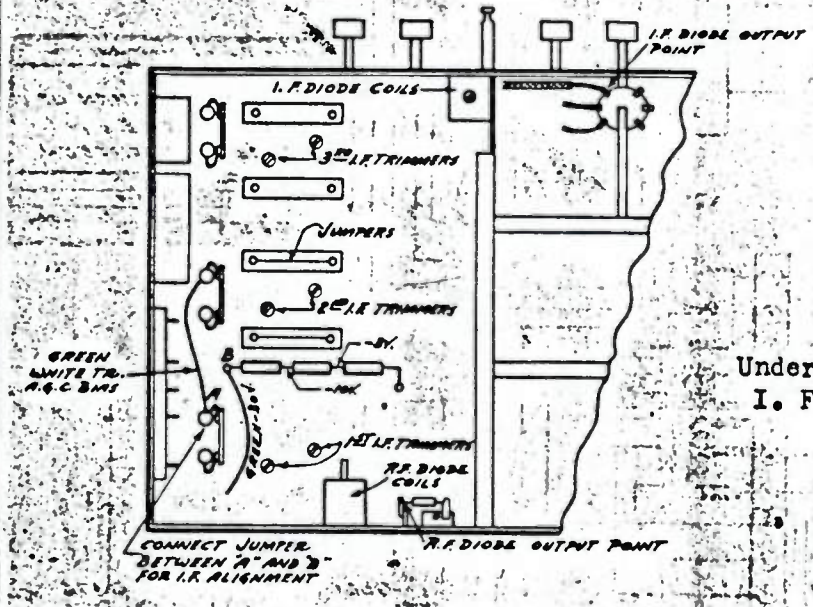


Fig. 3
Under Chassis View Showing
I. F. Adjustments, Etc.,

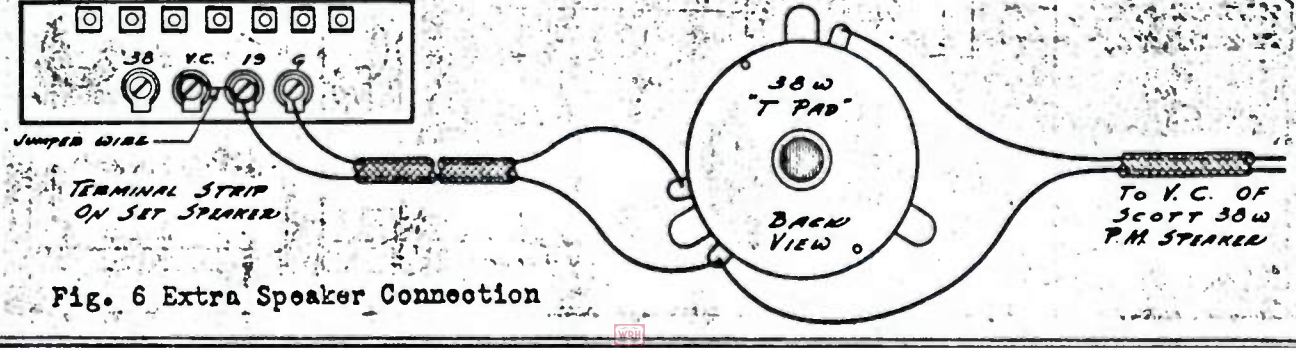
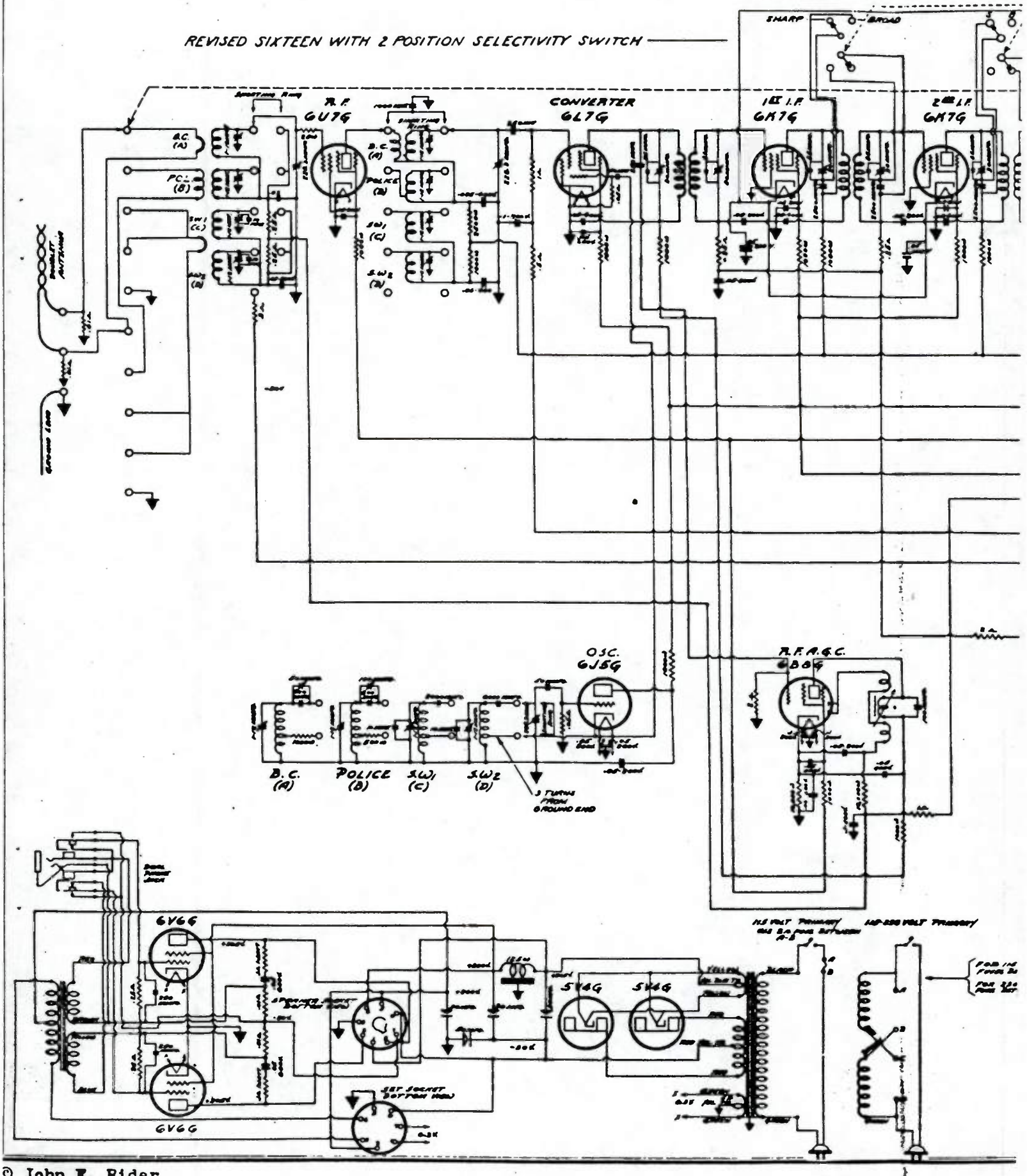


Fig. 6 Extra Speaker Connection


REVISED SIXTEEN WITH 2 POSITION SELECTIVITY SWITCH
SHARP
BROAD
R. F.
6U7G
CONVERTER
6L7G
1ST I.F.
6K7G
2ND I.F.
6K7G
OSC.
6J5G
R.F.A.G.C.
6B6G
B.C. (A)
POLICE (B)
SW1 (C)
SW2 (D)
3 TURNS FROM GROUND END
6V6G
6V6G
5Y4G
5Y4G
115 VOLT PRIMARY
105-250 VOLT PRIMARY

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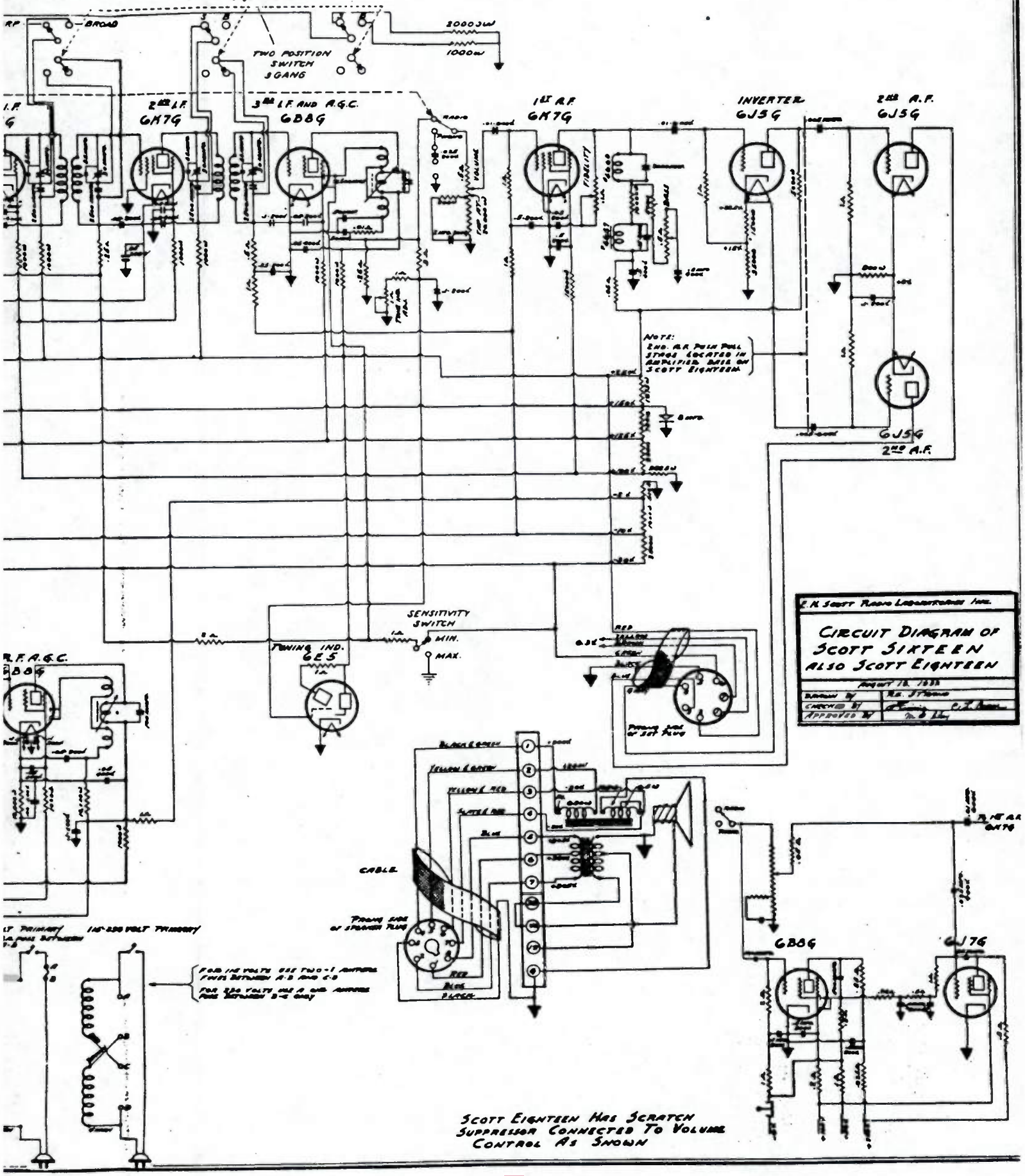
MODELS 16,18



SCOTT EIGHTEEN HAS SCRATCH SUPPRESSOR CONNECTED TO VOLUME CONTROL AS SHOWN

HUM TESTS ON RECEIVER

Make certain that there are no soldering irons near the chassis and that the power transformer end of the amplifier is as far away from the chassis as possible. Connect a good output meter, having a resistance of 3000 ohms or more to the 6V6G plates (No. 3 prong) and have a 1 to 2 mfd. condenser in series with one lead to the meter.

With bass full on - treble full - and volume off the hum should not exceed .2 of a volt. To make overall tests, remove the 2nd audio 6J5G tubes. The hum should now drop to less than 0.1 volt. If it does not the amount of hum read on the meter is the hum in the amplifier itself. Leave the tubes out and change the 6V6G tubes in the amplifier until the hum is reduced to a minimum. The phone jack may be defective or there may be filament shorts, check the circuit and connections and get the hum out of the amplifier before proceeding with the rest of the test.

NOTE: It is highly important, in minimising hum to use the spiral heater type 6K7G and 6J5G tubes in the audio system since, while considerable bass boost is available, tubes are the sole source of hum, there being no hum pickup whatsoever in chokes, transformers, etc.

After a very few of the first receivers were shipped out, a 250 mmfd. mica condenser was added to the grid circuit of each 6V6G tube to eliminate high frequency parasitic oscillation which occurred with some tubes. If these two condensers are not present, they should be added, as shown on the circuit diagram, otherwise oscillation may occur when the 2nd A. F. 6J5G tubes are removed.

After the amplifier is found to be O. K. replace the 2nd audio tubes and remove the inverter and 1st audio, now substitute for the 2nd audio tubes until hum is reduced to a minimum, allowing sufficient time in each case for the tubes to heat up properly. Next try the inverter tube in the same manner and follow with the 1st audio 6K7G. It may be necessary to push the filament wires nearer the base and away from grid wiring on some of the tube sockets, also the dial light circuit may be shorted against the dial frame. All these points should be checked along with the trying of new tubes.

AUDIO GAIN TEST

With an Audio input signal of 0.1 volt at 400 cycles an output reading of between 2 and 3 volts should be obtained on the output meter which is connected across the voice coil. Make this test with Volume full, Bass control 1/2 on, Fidelity full and Band Switch in Phono position. If the gain is low it may be due to defective tubes, wrong voltages, shorts or open circuits, either in the set or power amplifier. Both should be checked.

AUDIO FIDELITY TESTS

For correct high fidelity reproduction it is important that the electrical frequency response of the audio system, from the phono posts to a 38 (or 40) ohm dummy voice coil resistor, approximate 5 volts at 75 cycles and 6 volts at 6250 cycles with the bass and fidelity controls on full, after the output has been carefully adjusted, by means of the volume control, to 1 volt at 400 cycles with an input of 0.1 volt at each frequency. Failure of the system to approximate this response (if you are certain that your meters are accurate and that no series meter condenser, which would "cut" low frequencies, is being used) should lead to analysis of the low of high frequency circuit involved to determine and eliminate the trouble.

HOW TO ADJUST THE AUTOMATIC RECORD SCRATCH SUPPRESSION CIRCUIT ON THE SPECIAL SCOTT EIGHTEEN

This test refers only to the 18 tube model and can be ignored when checking the Sixteen. See Fig. 1 for tube locations in Scott Eighteen.

Connect an output meter across the Voice coil circuit (V.C. to G.) Connect an audio oscillator and a sensitive output meter to the phono-posts, and turn the Wave Switch to position "P" (allway to right). With the Bass Control set to minimum, treble control full on, and Scratch Suppressor switch pushed in, apply 0.25 volt at 3500 cycles to the phono posts. Set the volume control so that 1 volt is obtained on the output meter across the voice coil. Pull out the suppressor switch and the 1 volt reading should just start to drop (say to .9V.) Now push the suppressor switch in (off position) and reduce the audio oscillator input to 0.05 volts, reset the volume control to obtain a 1 volt reading again on the voice coil output meter and now pull out the suppressor switch ("on" position). The 1 volt reading should now drop to a level of 0.2 of a volt or slightly under. This gives a reduction ratio of 5 to 1 and this is the proper ratio to maintain. If this 5 to 1 reduction is not obtained the 6 volt bias should be reduced slightly by shunting it to ground by a suitable resistor. The value of this resistor will lie somewhere between 800 and 5000 ohms. It will have to be determined by substitution of various resistors. If too much control is obtained, it may be due to an abnormal 6J7G.

The 6B8G tube determines the level at which the circuit starts to cut high frequencies and the 6J7G tube determines the amount of this cut.

HOW TO ALIGN AND BAND PASS THE I. F. AMPLIFIER

While this operation is quite difficult in many receivers the Scott Sixteen and Eighteen incorporate a new development which greatly simplifies this adjustment if the following procedure is carefully followed. However, the I. F. adjustments should be changed only as a last resort on positive indication that the I. F. alignment has become impaired. A good signal generator should be connected to the input of the I. F. system at the grid of the 6L7G converter tube using the circuit shown in Fig. 2, in order to maintain normal operating bias. Turn the wave band switch to the Broadcast Band; turn the tuning pointer to the extreme high frequency end of the dial; push in the sensitivity switch; and remove the 6U7G R. F. tube.

Now referring to the underside view of the chassis, Fig. 2, connect a jumper wire between points "A" and "B". Remove the wire jumpers which shunt the terminals of the 2nd I. F. Transformer as shown in Fig. 3, leaving these terminals vacant, and connect two solid wire jumpers across the two terminal strips of the 3rd I. F. transformer. (In case resistors are found connected across any of the terminal strips their positions should be carefully noted on a piece of paper since they must be replaced exactly as found, when the operation is completed.) NOTE: Turn set off when changing jumpers to avoid shock from the plate voltage. Connect the negative terminal of a 20,000 ohm per volt D. C. voltmeter using the 25 volt scale, (or a sensitive microammeter with a 0.5 meg. resistor connected in series with its negative terminal) to the "I. F. Diode Output Point" shown in Fig. 3 and the positive terminal to the chassis.

Apply an unmodulated 465 K. C. signal of sufficient strength to produce a diode output voltage reading of approximately 10V (or 20 microamperes for the microammeter) and very carefully adjust the 1st, 2nd, 3rd I. F. and I. F. diode trimmers for maximum meter reading, reducing the input, if necessary, to avoid exceeding the above figures.

The wire jumpers may now be removed from the 3rd I. F. transformer terminals and the wire jumpers (or the original resistors, if they were used) connected to the 2nd I. F. transformer terminals. The bias jumper may now be removed from points "A" and "B" leaving the I. F. terminals connected as originally found and completing the alignment.

Alignment of R. F. sections:

Before starting on this portion of the set, it is important to understand how the tuning wand tool works. One end of this device has a core of material such as Polyiron while the other end is brass. When the inductance of a coil is high, insertion of the brass end will decrease it to the proper resonant value; whereas, insertion of the other end will increase the effective inductance. This gives a very convenient means of determining whether or not it is necessary to add or remove turns from the coil. In the following instructions only a slight adjustment of trimmers and padders should be necessary where original coils are used. Full instructions however, are given to cover the case where new coils are to be used.

Broadcast Band alignment:

First turn the dial pointer completely to the low frequency dial stop and center the pointer exactly between the two heavy horizontal lines which separate the "Broadcast A" position, set the Bass Control to minimum, Treble control to maximum and sensitivity switch to minimum (pulled out), and connect an output meter across the voice coil. Refer to Fig. 5, and adjust oscillator trimmer C1, until a

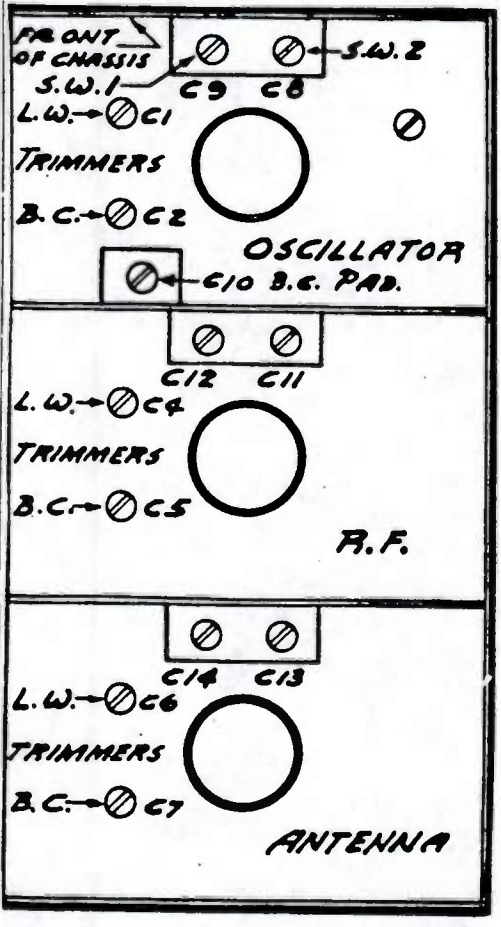


Fig. 4 Location of R.F. Trimmers and padders (Export Model.)

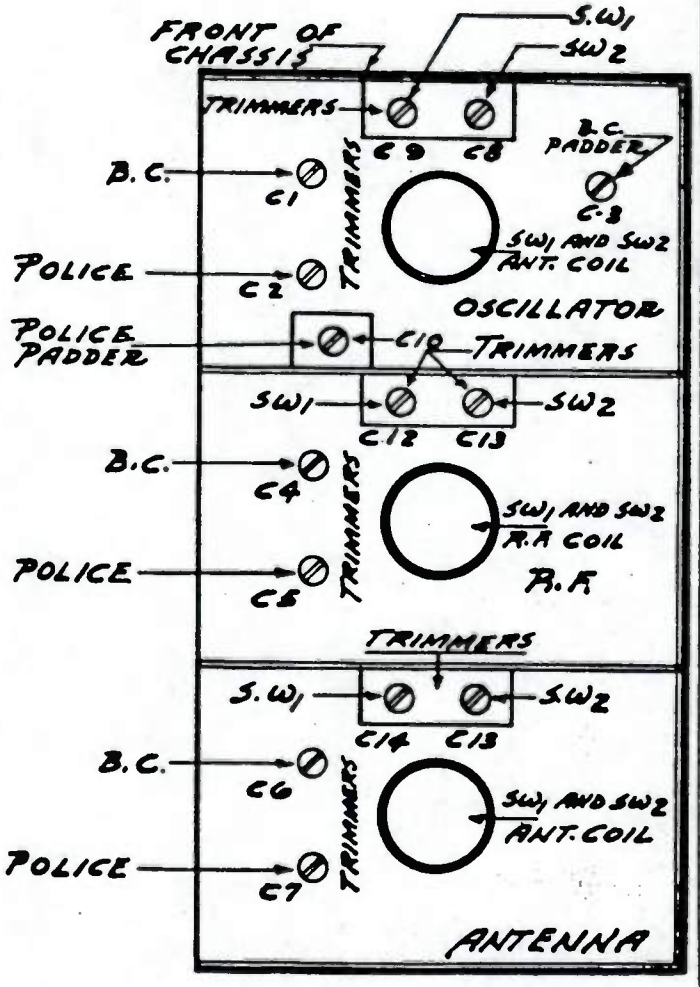


Fig. 5 Location of R.F. Trimmers and padders for Domestic Model.

MODELS 16,18

E. H. SCOTT RADIO LABS., INC.

1400 KC signal as set on the dial is tuned in from the generator. Rotate the dial to 650 KC and tune in a 650 KC signal from the generator by adjusting the padding condenser C3. Check the dial at 970 KC and if it tunes high in frequency spread turns on the oscillator secondary, if it is low in frequency push the turns together and then readjust trimmer condenser C1, and Padder condenser C3, as before.

With the oscillator circuit correctly spotted tune in a signal from the generator at 1400 KC and use the output meter as indication. Have as weak a signal as possible and adjust trimmer C4 and C6 for maximum output. Turn the dial to 650 KC and check the alignment of the R. F. and antenna stages with a tuning wand, spreading turns on the coil where less inductance is needed and pushing turns together if more inductance is required. Readjust the trimmer condenser C4 and C6 for maximum at 1400 KC. Turn the dial to 970 KC and check the alignment of the R. F. and antenna stages.

Police Band:

Set the wave Band switch to the Police "B" Band, position and turn the dial to 3.7 megacycles. Tune in a signal from the generator by adjusting the Padder C10. Check the alignment at 2.6 megacycles, if off, either push together or spread turns on the oscillator secondary as described under "Broadcast Band Alignment". Readjust trimmer C2 and padder C10 until correctly aligned. Tune in a signal at 3.7 megacycles and adjust trimmers C1 and C3 to maximum output, now check the alignment of 1.8 megacycles with a tuning wand and make any necessary corrections by pushing or spreading turns on the coils and readjusting trimmers C5 and C7. Recheck the alignment at 2.6 megacycles.

Long Wave Band on Export Model.

On the Export model the Long Wave Band replaces the Police Band. To align this model set the wave change switch to L. W. position A and rotate the tuning dial on the set to 370 KC. Tune in a signal from the generator by adjusting trimmer condenser C1. Now turn the set dial to 170 KC and tune in a 170 KC signal from the generator by adjusting the oscillator padding condenser C3. Return to 370 KC and retrim condenser C1. Check the calibration at 250 KC. Add or remove turns from the oscillator coil as required for perfect dial calibration at these three frequencies. Now turn the dial to 370 KC and tune in a weak signal from the generator and adjust trimmers C4 and C6 until maximum output is shown on the output meter. Now turn the dial to 170 KC and check the R. F. and Ant. alignment with a tuning wand. Make any necessary corrections on the coils (where new) by adding or removing turns. Then repeak the trimmers C4 and C6. Check the alignment at 250 KC.

Foreign S. W. - C - (SW1)

Set the wave band switch to the "C" position and tune in a signal at 9 megacycles by adjusting trimmer condenser C9. Turn the dial to 4.5 megacycles and if necessary to correct the calibration do so by spreading or pushing turns on the coil and readjusting the trimmer condenser C9. Check the calibration at 6.5 megacycles.

With the oscillator calibrated tune in a signal at 9 megacycles and adjust trimmer condensers C12 and C14 for maximum output. Check the alignment at 4.5 and 8.6 megacycles and make any necessary corrections by pushing or spreading turns on the coils and readjusting trimmers C12 and C14.

Foreigh S. W. - D - (SW2)

Set the Wave Band Switch to D position and tune in a signal at 20 megacycles by adjusting trimmer C8, check and if necessary correct the calibration at 12 megacycles by pushing or spreading the turns on the oscillator coil. Check the calibration at 15 megacycles.

With the oscillator correctly aligned tune in a signal at 20 megacycles and adjust trimmers C11 and C13 to maximum output. Check the alignment at 12 and 15 megacycles and make necessary corrections by pushing or spreading turns on the coils, now readjust trimmer C11 and C13.

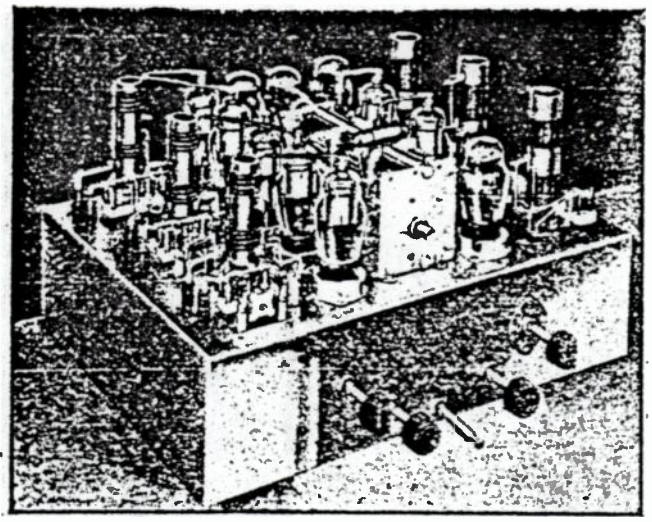
CONNECTING EXTRA SPEAKER

The New Type High Fidelity Scott Permanent Magnet 38 ohm voice coil speaker may be readily connected to a Scott receiver as shown in Fig. 6, with the optional "T Pad" inserted in the voice coil leads where separate control of the extension speaker volume is desired. In case the extension speaker is disconnected the jumper must be changed to connect terminals "V.C." and "38".

WAVE CHANGE SWITCH TROUBLE

Poor contact in the wave change switch can generally be corrected by slightly bending the contacts involved. However, in case a switch section is accidentally damaged beyond repair this section can be replaced by first removing the dial face then removing the two screws which support the wave change detent plate and very carefully pulling out the wave change switch shaft. The damaged section can then be unsoldered, removed, and replaced with a new unit which should be obtained from the Scott Chicago Laboratories before the change is made in order to assure exact duplication of switch position and connections. Note particularly that the small notch near the center of the switch rotor must be in the same position in each switch section.

CL020



TO SHOW QUALITY OF "INNER" WORKMANSHIP

This view of the receiver is one taken with the shields and front dial removed so that the coil arrangements and the working details are laid bare to inquisitive eyes. Very often beautifully finished and polished shield "cans" hide poor workmanship, but in this case it is really a shame that the operator cannot see the well-made tuning units.

DX Fading Reduced by

DUAL A.G.C.

in New 16-Tube Super

(Scott Model "Sixteen")

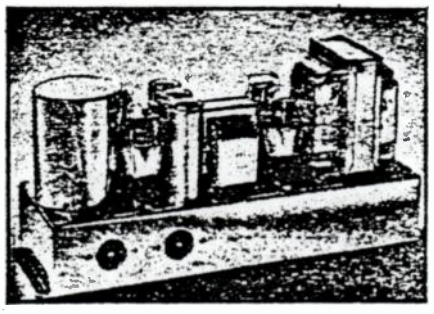
By Laurence M. Cockaday
and S. Gordon Taylor

HERE is a receiver for the most hard-to-please readers of RADIO NEWS, whether they are experienced short-wave listeners, amateurs, or broadcast listeners with a trained ear for good music. There is so much that is "new" technically, as well as good laboratory practice in the design of this set, that it is felt by our editors that an article along technical lines will be appreciated.

BRIEFLY, the new Scott "16" receiver employs, as the name would suggest, 16 tubes to cover all frequencies from 550 kc. to 22 mc., in four bands. It incorporates an r.f. system with the proper kind of selectivity and a remarkable value of useful sensitivity for DX work. Looking at the diagram, which is printed herewith, one can see that the circuit includes one high-gain r.f. system, three stages of intermediate-frequency amplification, diode detection, and three stages of audio-frequency amplification, two of which are push-pull. The audio amplifier employs phase-inversion as well as negative feedback for high-fidelity reproduction from 30 to 7500 cycles. The set is capable of 13½ watts undistorted audio output.

THE POWER PACK AND OUTPUT AMPLIFIER

This unit is as well made as the receiver. It is a high-power stage, capable of a maximum of 16 watts of audio and a full 13½ watts without distortion.



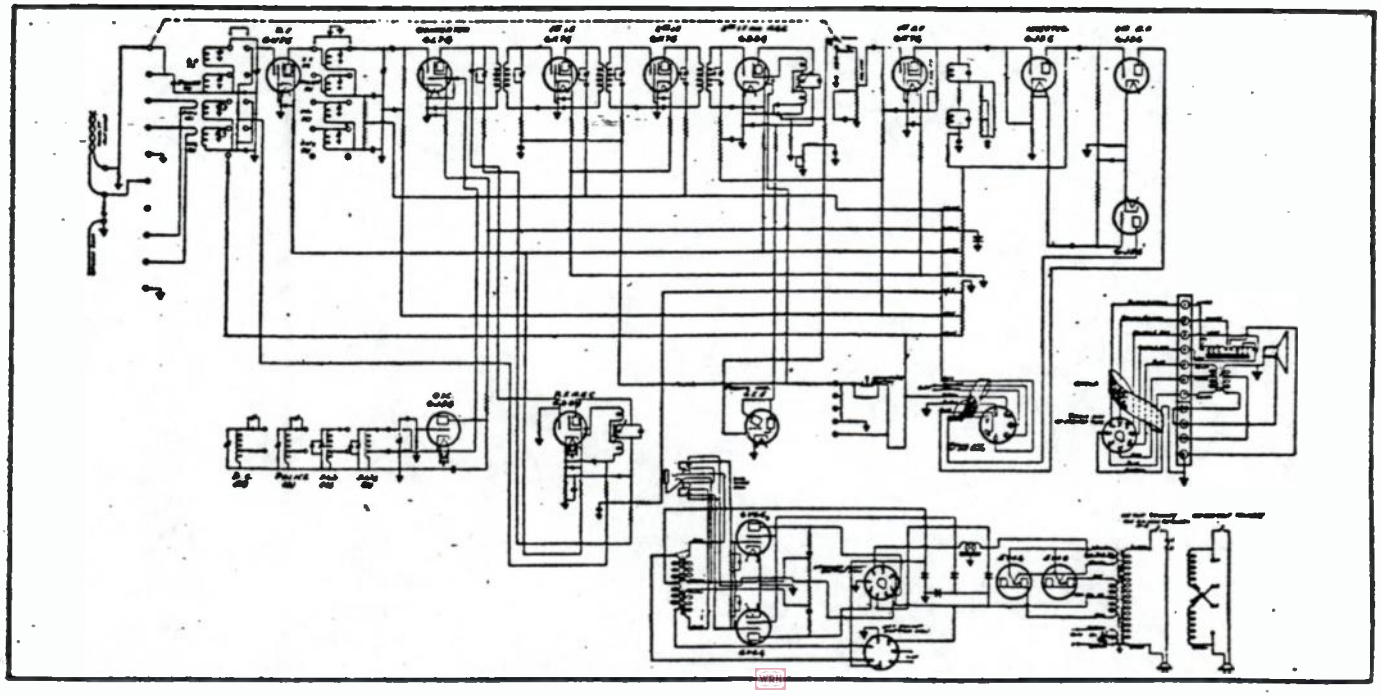
The loudspeaker is a double-cone model for covering the entire range.

The local oscillator is electron-coupled.

Two separate automatic volume-control systems are employed, one for the r.f. stage and one to control the i.f. stages to prevent any possibilities of overloading.

The novel supershield antenna-coupling system provides effective noise reduction on the important short-wave bands, using an automatic switching arrangement for the broadcasts and adjacent channels.

A further amplification of certain features of the receiver will be interesting to the strictly technical person. Looking at the antenna-switching arrangement, it will be seen that when the receiver operates on the two short-wave bands, the signal is picked up on (*Turn to page* 569)



Observer Law, Edmonton, Alberta, Canada: "As a result of the regional conference held in Cuba last fall, Canada has been assigned 15 high-power channels, seven of which are for unlimited power. These are: 540, 690, 740, 860, 990, 1010 and 1580 kc. The channels of 940, 1070, 1130 and 1550 will be limited to 50 kw. The 800, 900, 1060 and 1080 channels will be for Class 2 stations."

Observer Hunt, Leucadia, Calif.: "Twenty JO's were heard here between September 10 and November 8. This is as many as were heard during the entire 1936-37 season."

Observer Routzahn, York, Pa.: "Am using a Patterson PR15 this season and it's the best set I have owned to date. No TP reception to speak of during December. European reception fair but hope for improvement during January. PP, Bordeaux and Normandie are the "Best Bets" from Europe so far. The S.A.'s are coming in very well."

Observer Roman, Chicago, Ill.: Have heard two steamships operating on 1630 kc.—the S.S. Weyburn at Middle Island, Lake Huron and the S.S. Canadian at Port Stanley. Have also heard WNYF (New York City Fire Dept.) on this same frequency calling experimental stations W2XNA, W2XND, etc. Can anyone provide information on the Canadian stations which give weather reports for the Great Lakes between 10:45 and 11 p.m., C.S.T. on 1630 kc.?

Observer Woytan, Syracuse, N. Y.: CBO and CBW are the new calls for CRCO and CRCW. Would like to know what station operated on 1000 kc. on November 7 at 4 a.m.

Observer Watson, Christchurch, N. Z. reports that 1ZB, 1090 kc., Auckland; 2ZB, 1120 kc., Wellington; 3ZB, Christchurch and 4ZB, Dunedin which constitute the New Zealand national network have already developed a firm hold on the radio public due to their brighter programs, ultra-modern equipment and high-fidelity recordings. The whole service is on a sound commercial basis similar to that in Australia. All four of these stations operate with 1 kw. in the antenna.

Merlin Olmstead, Washington, D. C. reports reception of a new station at Nassau, a British island of the Bahamas. He hears it from 8:30 to 9:30 p.m., E.S.T. on a frequency of 540 kc. The call is ZNS.

Observer De Laet, Dayton, Ohio: Australian 4QN has shifted frequency from 600 to 630 kc.

Observer Routzahn, York, Pa: Trans-Pacific reception not so good this season. The stations just heard were 2BL and 2NR of Australia and 2YA, 3YA and 4YA of New Zealand. Hawaiian stations are well received with KHBC, 1400 kc. and KGU, 750 kc. the best.

Observer Coales, Hampshire, England: United States reception generally poor although on November 16, 17 and 18 a number of United States stations were heard with tolerable loudspeaker volume. South Americans have been audible a number of nights but mostly very weak indeed. They were quite good on the three dates mentioned above and also on November 9. I heard a South American, on 1440 kc. and am sure I heard the announcer say "Radio Provincial, La Plata". I logged the program and sent in a report. I notice a Massachusetts listener reports the La Plata station LS11 on 1310 kc. Now I am wondering whether I mistook the call heard on 1440 kc. These Spanish announcers are very difficult to understand when their signals are weak, especially with large slices of static chucked in.

Harry Honda, Los Angeles, Calif.: KMTR, Hollywood, 570 kc. conducts a "ham fest" from 3 to 3:30 a.m. every Sunday morning. The programs are conducted by Jim Guest, W6HCN and Don Draper, W6GXM. They interview the wives and prospective wives of hams to obtain their idea of ham radio, etc. These broadcasts are specials by the Los Angeles Chapter of the ARRL. Also, short-wave tips are given every morning at 3 a.m. over KMTR.

Dual A. G. C.

(*Continued from page* 529)

both halves of the doublet, but when changing to the other two higher-wave bands the input is coupled through a capacity to separate secondary coils. The band-switch short-circuits the coil which is next lowest in frequency to that being used. The 6U7G tube used in the first stage provides exceptionally high sensitivity in this circuit.

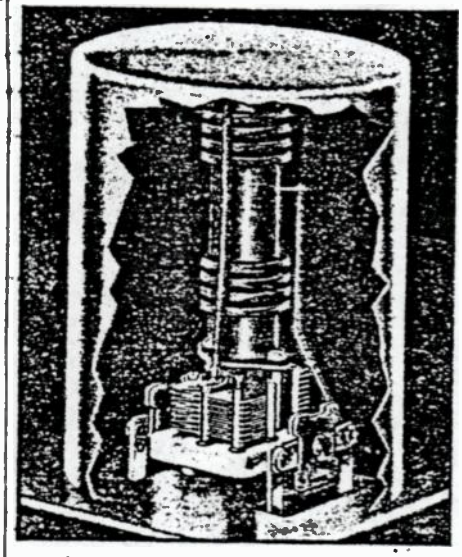
One of the new 6L7G converter tubes is used for frequency conversion. The r.f. signal is applied to the control grid while the oscillator output from the G6G5 is coupled to grid No. 3 so that both modulate the cathode emission with a signal of 465 kc. This is then applied to the i.f.

(*Turn to page* 571)

38-ohm speaker; a special "dual" phone jack that allows phone-and-loudspeaker reception when the phone plug is inserted part way, and phone "alone" when the plug is pushed all the way in. The receiver also may be obtained with two additional tubes in a scratch-filter circuit which takes out all noise when playing records.

An idea of the excellent mechanical workmanship on this receiver can be obtained from an examination of the photograph at the head of this article which shows the receiver with a dial and the shield can removed. Cut-away photographs of the i.f. tuning units, and the oscillator unit show the careful shielding and beautiful coil and coupling workmanship inside the chromium-plated "cans."

The chassis dimensions are 15¼ inches wide, 12⅝ inches deep and 10 inches high. The output amplifier and power unit is 16 inches long, 5⅜ inches deep and 8 inches high.



The controls on the receiver, looking at the front of the panel, include the main tuning dial with its control knob centered below it; the volume-control knob, at the extreme left; the bass control, next on the left; center, the silent-control button; next on the right, the fidelity control; and on the extreme right, the wave-change switch which has four radio positions and one marked "P" for playing records. From standpoints of design, workmanship, and operation, the receiver recommends itself immediately for both distance and local reception. It is easy to tune and should give long and satisfactory service.

If further technical details are required by interested readers, it can be obtained by writing to the E. H. Scott Company, in care of RADIO NEWS, and the added information will be supplied free of charge.

In the next issue a result of our Laboratory and Listening Post tests on the "16" will be published.

Snow Static

(*Continued from page 520*)

particles, no static was heard as long as the charge on the plane did not exceed a certain potential. As soon as the discharge from a 2-ft. steel point on the tail of the plane, or from the antenna, exceeded the potential in equilibrium with the surrounding charged atmosphere, then snow static sounds were heard on the plane's receiver.

A series of metal points were installed on the plane to learn the distribution of this discharge. These were arranged on the nose, tail, each wing, behind exhaust outlet, behind props and at four points along the plane's belly. A number of group systems connected to vacuum tube electrometers. Electrometers were connected to paper recorders.

A grouping of points suggested by Professor E. C. Starr of Oregon State College gave best results. Two-foot rods were distributed from the plane in the disturbed air at the tail and the undisturbed air forward of the nose. A plate on the nose recorded impacting water particles. Data collected gave conclusions that: (1) the plane may be either positive or negative with respect to surrounding atmosphere; (2) at any instant one swing may be in positive cloud particles while the other is in negative; (3) at any instant the nose of the plane may be in positive particles while the tail is in negative or vice versa.

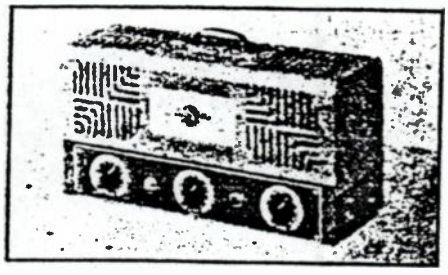
During one field flight through a thundercloud the plane's magnetic compass moved 10 degrees with respect to the gyro compass, for several minutes. This could have been caused by a strong magnetic field in the cloud or by a cross flow of current in the plane structure. Ground tests required a wing flow of about 45 d.c. amperes to produce the same deviation. A nose-to-tail flow of 125 amperes was required for the same effect, varying with the plane's position with respect to the earth's magnetic field.

It is known that propeller action in cutting up water particles at 800 feet per second will produce an electric charge. It was concluded that a plane wing moving at 260 feet per second would do likewise. It was found that a negatively charged point will produce a corona about 50 percent more readily than a positive. From these facts six variables influencing snow static were concluded. Most interesting was that foreign matter in water particles is of considerable importance. Portland, Ore., tapwater split by a rotating prop

(The tests were never published. Mr. Taylor joined the Navy)

"Co-ordinated" sound systems offered by the Wholesale Radio Service Co. are designed to meet every professional and industrial use to which sound amplification equipment can be put. They are available in all power ranges from 5 to 90 watts.

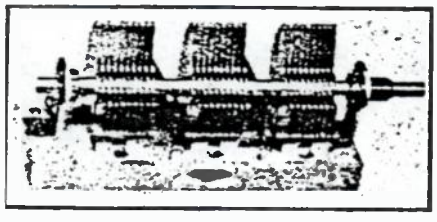
The Lafayette 15-20 watt sound system illustrated is inclosed in an



attractive "Streamlined" decorative steel cover finished in platinum grey with dark grey chassis. Among its many advanced features are: 6 all-metal tubes, mixing and fading controls, variable output impedances, etc.

Wide Application for New Midget Condensers

Three gang midget condensers are now made available by Bud Radio, Inc. Rotor and stator plates are made of brass and securely soldered to their respective shafts. Mounted

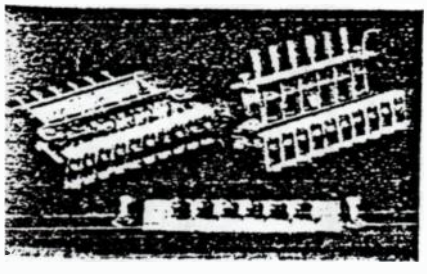


on ceramic bases 1¾ inches wide by 5¼ inches long, these units are supplied in several popular capacity sizes, and should find many uses in transmitters, receivers and test equipment by amateurs and engineers. The manufacturer lists the new gang condensers of 20, 35, 100, and 140 mmfd. capacity per section.

Modernize Your Receiver with Automatic Tuning

The Hetro 5-station automatic push-button tuner system is designed for quick and easy installation on any superheterodyne receiver which is without benefit of touch-button tuning. The master control is of the double-pole double-throw switch type and can be connected directly to the

(*Turn to page* 576)



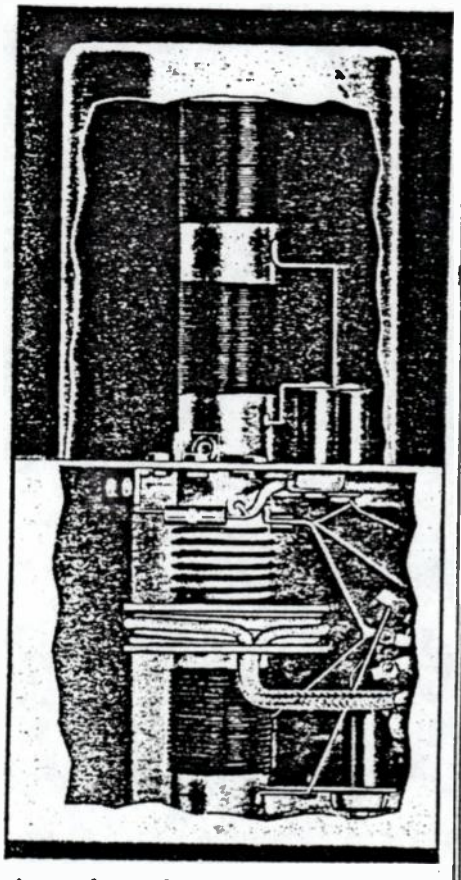
Dual A. G. C.

(*Continued from page* 569)

tuning stages.

Now a word about the two automatic-gain-control systems. In the r.f. circuit the control grid of the 6B8G tube is coupled through a capacity to the plate of the converter tube. The 6B8G tube both amplifies and rectifies the signal and applies the rectified energy to the grid circuit of the 6U7G, effectively preventing overloading when tuning to powerful local stations.

In the second a.g.c. circuit, the 6B8G tube serves as an extra i.f. amplifier and diode detector, supply-



ing voltage for controlling the first and second i.f. tube stages and preventing distortion in this part of the circuit. The sensitivity switch (which may seen near the 6G5 tube in the diagram) may be pulled out when tuning for signals and in such a position the bias is changed on the i.f. tubes to about 30 volts which provides silent tuning between stations. The tuning eye (6E5) indicates when a station is properly tuned "on the nose."

Some other features of the receiver include the following: input circuit for playing phonograph records; full bass tone compensation; a separate heavy-duty power supply, using two of the new heater-type 5V4G tubes; provisions for connecting external

CL020

THE FINE THINGS ARE ALWAYS HAND MADE

CABLES
SCOMACO
CHICAGO

E.H. SCOTT RADIO LABORATORIES INC.

4450 RAVENSWOOD AVENUE — CHICAGO, ILL.
PHONES · LONGBEACH · 5172·3·4·5

November 11, 1937

Mr. E. M. Fowler,
1309 Vickers Avenue,
Durham, North Carolina.

Dear Mr. Fowler:

I am very glad to enclose a formal acknowledgment of your order for the Scott Sixteen Receiver which has been entered under our order No. 73698, as per the enclosed invoice.

You will note the order calls for one Scott Sixteen Receiver, one Super Antenna System and one Leamington Console. The total amount of your order is $188.50. We have your remittance in the amount of $59.50, leaving a balance of $129.00.

You, of course know, Mr. Fowler, that every Scott Receiver is custom-built to order. You can be assured your receiver will be thoroughly tested and absolutely perfect in every respect before it is shipped.

The chassis, amplifier, speaker and tubes for your receiver will be shipped direct from the laboratories, here in Chicago. The Leamington Console will be shipped to you direct from our console factory at Rockford, Illinois, not from the laboratories here in Chicago. I am giving you this information so that you will not be disappointed if, by chance, the receiver and the console do not arrive at exactly the same time. You will find that the console will be properly drilled and cut, so that it requires only a few minutes work to install the complete receiver in the console.

Herewith I am enclosing our regular conditional sales contract and would appreciate it if you would sign and return the two original copies back to the laboratories, together with the attached affidavit, duly signed and executed.

Should you desire any assistance in the installation of your new receiver, let me suggest that you contact our

WRH

expert Service Representative, Mr. B. W. Johnson, 1003 Burch Avenue, Durham. You will find him thoroughly familiar with our receivers, and I know he will be glad to co-operate with you in every way in order that maximum performance will be received.

A standard fee of $10.00 is charged for the installation of the receiver in the console, erection of the antenna and instructions on how to tune for foreign stations. If, however, there are any unusual problems in making the installation, you can discuss this with Mr. Johnson and make arrangements which will be mutually satisfactory with reference to extra remuneration for this work.

I am enclosing the Instruction Manual so that you may have the opportunity of studying the installation and the controls so that you may become familiar with the receiver before arrival of the set.

In closing, I would like to take this opportunity of wishing you many years of pleasure from your Scott Sixteen Receiver, and I will be very glad to hear from you, from time to time, regarding your reception.

Cordially yours,

E. H. SCOTT RADIO LABORATORIES, INC.

EHS:CKL

President

E. H. SCOTT RADIO LABORATORIES, INC.

Order No. 73698

CABLES
SCOMACO
CHICAGO

(Formerly Scott Transformer Co.)
4450 RAVENSWOOD AVE., WEST
CHICAGO

PHONES
LONGBEACH
5172-5173
5174-5175

Sold to MR. E. M. FOWLER
1309 VICKERS AVE.,
DURHAM, N.C.

Date 10/22/37

[illegible]
[illegible]
[illegible] CONTRACT
COVERS THIS SHIPMENT.

Shipped via EXPRESS

TERMS: CONDITIONAL SALES CONTRACT

Order written by A.M.

QUANTITY	DESCRIPTION	PRICE	AMOUNT	TOTAL
1	SCOTT SIXTEEN CHASSIS AND AMPLIFIER			
1	SCOTT HIGH FIDELITY SPEAKER			
1	COMPLETE SET LAB. MATCHED TUBES			
1	SUPER ANTENNA			
1	LEAMINGTON CONSOLE - DP 15244			164.50
	FEDERAL EXCISE TAX, RCA AND HAZELTINE LIC. FEE			14.10
	CARRYING CHARGES			9.90
				188.50
	RECEIVED DOWN PAYMENT			59.50
				129.00
	IF BALANCE IS PAID WITHIN 60 DAYS CARRYING CHARGES WILL BE DEDUCTED. (12 PAYMENTS $10.75)			
	Total			

We acknowledge with thanks receipt of this order. It has been entered and is receiving prompt attention.

It will be shipped on_____.

Please mention our order number if necessary to correspond with us regarding it.

Date Shipped_____

Exp. or P. P._____

THE FINE THINGS ARE ALWAYS HAND MADE

CABLES
COMACO
HICAGO

E.H. SCOTT RADIO LABORATORIES
4450 RAVENSWOOD AVENUE — CHICAGO, ILL.
PHONES · LONGBEACH · 5172 · 3 · 4 · 5

December 2, 1937

Mr. E. M. Fowler,
Durham, N. C.

Dear Mr. Fowler:

You will be glad to know that your Scott Sixteen has gone forward to you, and I feel sure you will have no trouble in quickly installing it and getting it into operation.

I am enclosing the guarantee on your radio. You will notice that this guarantee is void if the receiver is tampered with or altered in any way, without our authorization.

When you examine your new Scott, you will see that it is a beautifully constructed and carefully adjusted instrument. I feel certain that aside from the occasional replacement of a tube, that it will give you excellent service over a long period of time without attention. Should it ever need attention, please write us for instructions. Do not permit any unauthorized person to tamper with your Scott.

After you have had your new Scott in use for a week or two, won't you drop a line and tell me how you are getting along with it? Please feel assured that I am ready at all times to help you get maximum results.

Cordially yours,

E. H. SCOTT RADIO LABORATORIES, INC.

EHS:CKG

President

E. H. Scott Radio Laboratories, Inc.

4450 Ravenswood Avenue, Chicago, U. S. A.

Name of Purchaser E. M. FOWLER Serial Number E-E-125

Guarantee On Scott Radio Receiver

This custom built Scott is absolutely guaranteed (with the exception of tubes which carry the manufacturer's guarantee) for Five full years from date against defects in either material or workmanship. Any unit of its construction that becomes defective during this period will, on return to the Laboratories, be replaced free of charge either for parts, material, or labor provided that such defect is not the result of misuse. Burned out or broken tubes are not replaceable.

Any tampering with the receiver or its parts by unauthorized servicemen makes this guarantee null and void.

Date NOV 22 1937

E. H. Scott Radio Laboratories, Inc.

President

Chicago, Illinois, U. S. A.

This Guarantee Not Transferable Without Our Written Permission.

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KER—The space re-
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8½" high, 16" long.
red 10⅞".

	Net	60 lbs.
	Legal	81 lbs.
	Gross	110 lbs.
	Net	35 lbs.
	Gross	80 lbs.

r Amplifier, Speaker,

sight draft.
he following.

ORIES, INC.
CHICAGO, ILLINOIS
GO

FREE *Leamington Console*

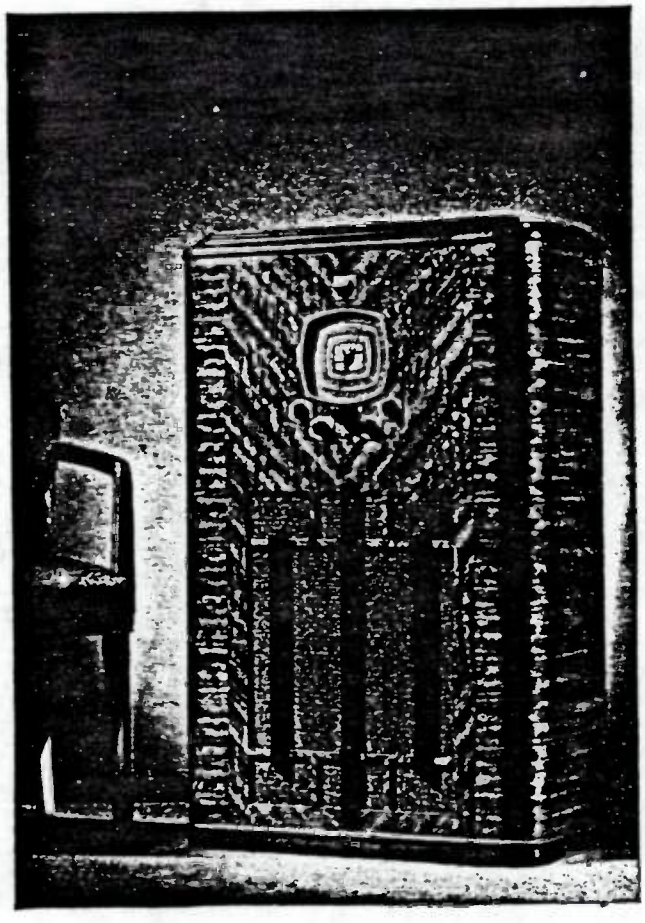
AND SCOTT SUPER ANTENNA SYSTEM

On All Orders Postmarked Before October 30

The Scott Super Antenna System is the last word in Allwave Antenna design, and a series of tests made in our laboratories to determine the relative efficiency of various types of antenna proved in a most conclusive manner, that the Scott Super Antenna System is superior to any other type of short wave antenna. It gives greater signal strength on all wave bands, has greater noise filtering properties, and is easy to erect. Comes completely assembled, thus eliminating any soldering of joints. It will assure best performance of your SCOTT SIXTEEN on all wave lengths.

The Leamington Console

This Beautiful
Newly Designed
$40.00 Console
Given Free
With All Orders
For Scott
Sixteen Postmarked
Before October
30th, 1937



VOLTAGE

Be sure to specify in placing your order the voltage or current on which the receiver must operate and the frequency or cycles.

25 to 50 CYCLES: Where this current is in use a special transformer can be installed on the power pack at an extra charge of $10.00. This will also operate on 60 cycles.

PACKING

Special provision has been made in our Laboratories to provide proper packing on all export shipments. Each unit of the receiver is carefully packed in an air cushion carton, and the entire receiver is then crated in a specially prepared wooden box. Consoles are packed independently of receivers. The charge for export packing is $5.00 extra.

GUARANTEED FOR FIVE YEARS

The new SCOTT SIXTEEN RECEIVER is a precision built instrument, guaranteed to the original purchaser against defects for Five Years. Any part (except tubes which are guaranteed by the manufacturer) that becomes defective within this time, will on return to the laboratory, be replaced free of charge, providing the seals on the chassis are not broken and that such defect has not developed as the result of tampering with the instrument.

DIMENSIONS OF CHASSIS, AMPLIFIER AND SPEAKER—The space required for the SCOTT SIXTEEN CHASSIS is 15¼" long; 11½" high and 13¼ or more inches deep. The Amplifier is 5½" wide, 8½" high, 16" long. Speaker height overall 12", depth 8", baffle hole required 10⅞".

WEIGHT—Chassis, Power Amplifier, Speaker, Tubes.....	Net	60 lbs.
	Legal	81 lbs.
	Gross	110 lbs.
Leamington Console.....	Net	35 lbs.
	Gross	80 lbs.

SCOTT CABLE CODES

SIXO—Ship SCOTT Custom Built Sixteen Chassis, Power Amplifier, Speaker, Tubes.

ARCH—Ship us as soon as possible.

ARMY—How soon can you ship the following?

ARAB—Deposit arranged through bank, ship balance sight draft.

AERO—Sending remittance by mail today—prepare the following.

E. H. SCOTT RADIO LABORATORIES, INC.

4450 RAVENSWOOD AVENUE CHICAGO, ILLINOIS

Cable Address: SCOMACO—CHICAGO

Scott Sixteen

WHEN we set out to design the new SCOTT SIXTEEN, our goal was to build the finest Custom Built radio we could—yet price it so that many people who had long wanted a Scott could afford to buy it. I believe I can say unreservedly that the SIXTEEN is the greatest radio value of all time.

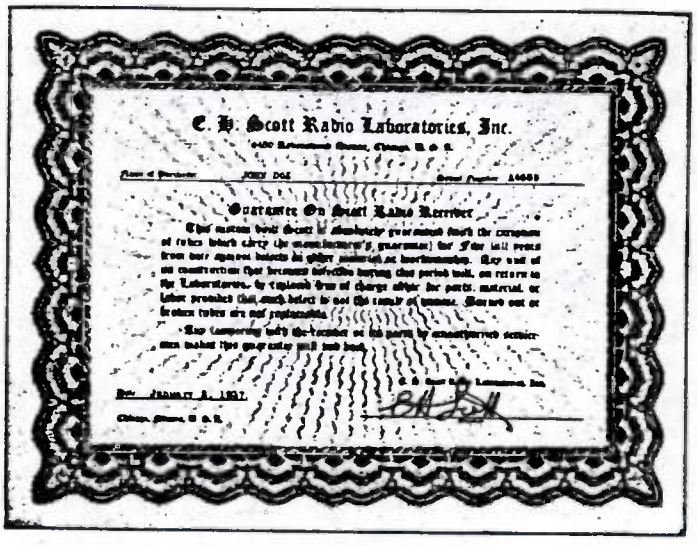
Features heretofore available only in a radio costing twice as much are incorporated in the SIXTEEN. Tone Compensated Volume Control, separate Bass and Treble controls, the new and exclusive Supershield Antenna Coupling System, and a host of other new features make the SIXTEEN a radio that is unapproachable in performance, tone, and long life.

The amazing thing is that we haven't made any compromises with the long established Scott policy of using only the Best—in materials and workmanship. Every SCOTT SIXTEEN will be built to order only, using the same careful custom building methods that I have employed in my laboratories for the past 14 years.

In addition to being sold on our usual 30-day home trial policy, the new SIXTEEN is guaranteed for Five Full Years, the same as all Scott receivers that I have sold since 1930. When you unpack your new SCOTT SIXTEEN and snap the switch, you will experience a thrill such as you have never known since you listened to your first radio program.

Remember, I have only a limited number of the new Leamington consoles to give Free with the SCOTT SIXTEEN. To make sure you receive one of these fine Custom consoles at no extra charge, mail the order blank without delay.

E. H. SCOTT.


E. H. Scott Radio Laboratories, Inc.

Guarantee On Scott Radio Receiver

PRICES OF CONSOLES ONLY

Name	Size	List Price	YOUR NET PRICE
Warrington	40½" high, 27" wide, 19" deep.....	$ 70.00	$ 35.00
Acousticraft	40" high, 24¾" wide, 18" deep.....	90.00	45.00
Waverly	45" high, 27½" wide, 18½" deep.....	124.00	62.00
Chippendale	45" high, 27" wide, 18" deep.....	160.00	80.00
Linden	34½" high, 36¼" wide, 18⅛" deep.....	104.00	52.00
Gothic Grande	49" high, 30" wide, 20½" deep.....	247.00	123.50

NOTE

If you want any other console instead of the FREE Leamington, deduct $20 from console's net price (Name of Console wanted.....)

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XTEEN, our goal was to
'et price it so that many
buy it. I believe I can
radio value of all time.
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Volume Control, sepa-
re Supershield Antenna
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ne trial policy, the new
ie as all Scott receivers
r new SCOTT SIXTEEN
uch as you have never

Y

	List Price	YOUR NET PRICE
.	$ 70.00	$ 35.00
.	90.00	45.00
.	124.00	62.00
.	160.00	80.00
.	104.00	52.00
.	247.00	123.50

leduct $20 from console's net

.....)

TEAR OFF HERE

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TERMS: Payment may be made by cable, through United States buying agents, Bankers draft, or by letter of credit for 50% of the total of the order. Balance due collected by sight draft controlling documents attached. This applies excepting countries where exchange or monetary restrictions exist where full remittance in advance is necessary. OUR PRICES ARE ALL F.O.B. OUR LABORATORIES.

	LIST PRICE	YOUR NET PRICE
New Scott Sixteen Tuning Chassis..... New Scott Sixteen Amplifier Chassis..... New Scott High Fidelity Dynamic Speaker... Complete Set 16 Matched Tubes.....	$329.00	$164.50
New Scott Leamington Console.....	40.00	FREE
New Scott Super Antenna System Complete.....	7.50	FREE
R.C.A. and Hazeltine License Fees.....	$6.50	$6.50
YOUR NET CASH PRICE COMPLETE.....		$171.00
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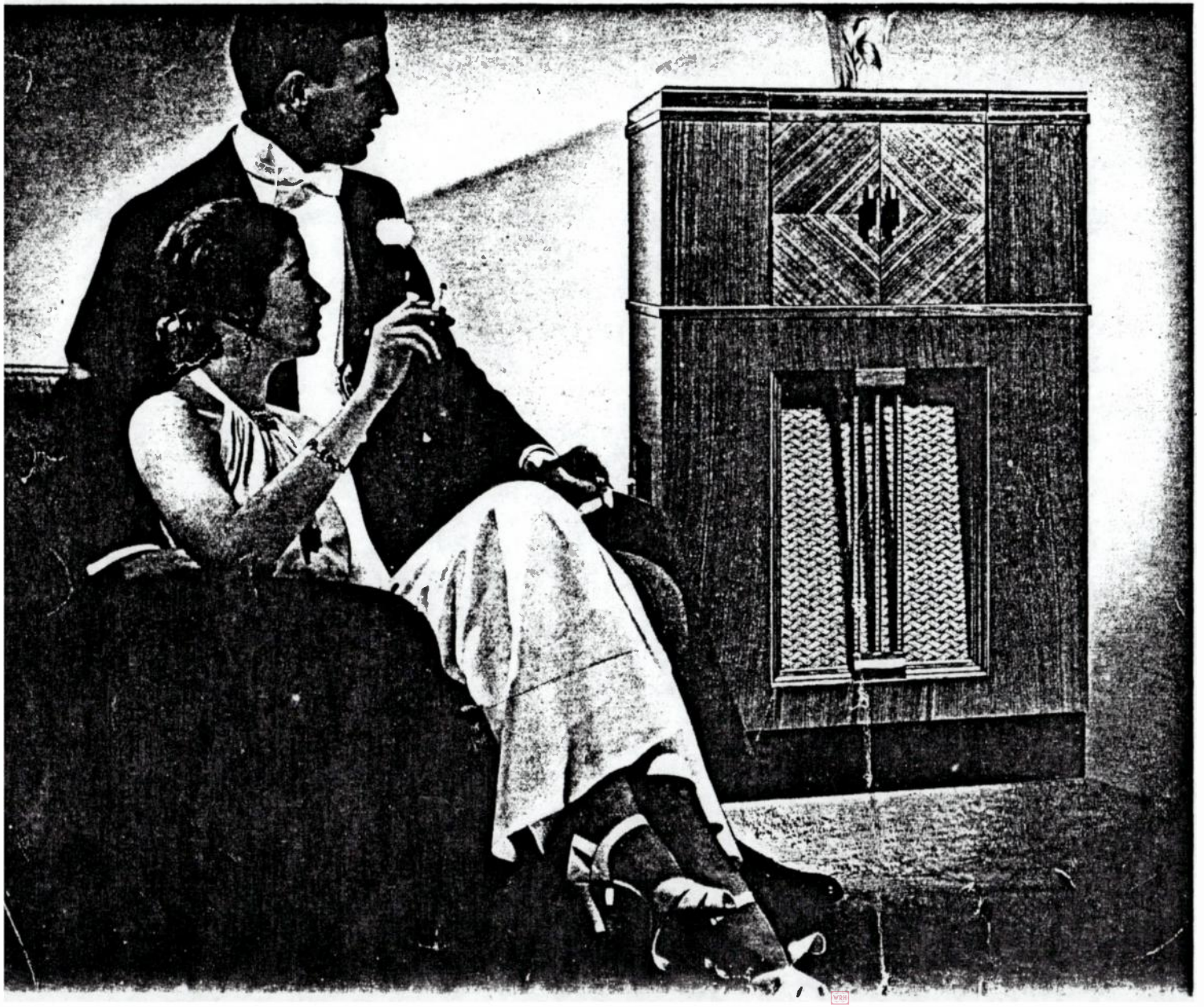
OPTIONAL ACCESSORIES

KNEE	Single Record Electric Phonograph..... $5.00 Extra for Voltage Other Than 110 Volts, 60 Cycles	$ 70.00	$35.00
KELL	Automatic Record Changing Phonograph..... NOTE—If phonograph equipment is used, the selection of a phonograph-radio combination cabinet must be made.	195.00	97.50
RAPS	Set of 8 Spare Tubes (One of Each Type).....	16.00	8.00

CL020

SCOTT SIXTEEN



The World's Finest

High Fidelity Radio Receiver—

now built in England

in limited quantity only

and guaranteed

for - years

CL020

THE BEST RADIO IN THE WORLD

FOR over fifteen years, the Scott Laboratories in the United States have pioneered almost every important development in radio short-wave listening. Today, Scott receivers are famous in five continents. The greatest musical artists praise the superb reproduction. Foreign Embassies and Consulates throughout the world rely on Scott for clear, long-range reception. Business men in Europe and America depend on Scott for reliable reception of international broadcasts of Stock and Market prices. Every day Scott receivers are making new records of long-distance reception, creating new standards of brilliant reproduction, increasing radio enjoyment tenfold.

In fact, among those who are in a position to appreciate the finest radio receiving equipment, regardless of cost, Scott is pre-eminent, for, at the Centenary Celebration of the American Institute of Patents last year, where the latest scientific developments were reviewed, Scott was chosen to demonstrate the perfection of high fidelity radio reproduction.

Like many notable scientific achievements, this success is mainly due to the efforts of one powerful personality — Mr. E. H. Scott, a Britisher who many years ago settled in Chicago. A brilliant engineer, an indefatigable research worker, E. H. Scott concentrated from the first on the development and perfection of *long-distance* reception, of improving tone quality to the highest pitch technically feasible. He has always worked on the principle of "Not how much, but how well."

The Scott Sixteen, which we have the honour to present, is the latest development of the Scott Laboratories. The production of this luxury receiver has now been extended to England, launched under the personal guidance of E. H. Scott himself, and supervised, with characteristic care and precision, by engineers from Chicago. In the tradition of the Scott Laboratories, the Scott Sixteen will be produced *in limited quantity only*. Every component is so designed that it works well within its capacity — consequently no part is subjected to the strain that so often follows the use of inferior materials. At every stage of manufacture virtually all parts are subjected to rigorous tests. It is therefore possible to cover every Scott Sixteen with *a written five-year guarantee*.

Detailed specifications of the Scott Sixteen bespeak its quality better than any words. To appreciate its fine craftsmanship, you must see it; to understand the full meaning of High Fidelity reproduction, you must hear it; to know the joys of dependable short-wave reception, you must own a Scott Sixteen.

brief description of the precision-built Scott Sixteen

THE Scott precision-built Sixteen is a super- efficient superheterodyne receiver employ- sixteen latest type octal base valves. Of these ves two are dual-purpose and one triple- pose, so that the performance is equal to that 1 20 valve receiver.

Of the sixteen valves, twelve are mounted on receiver chassis. The R.F. valve gives greater al to noise ratio on short waves and is auto- tically controlled. The first detector is linked h separate electron-coupled triode oscillator. ee I.F. stages, giving high overall gain and fect band spread, incorporate two H.F. todes and one double-diode pentode, ctioning as second detector and A.G.C. A arate A.G.C. system using one valve supplies C. to the R.F. valve. Air spaced condensers oughout ensure high signal to noise ratio. The t audio-amplifier valve effects tone correction. output is fed to the inverter valve which ds two push-pull triodes operated into the mary of special push-pull audio-transformer, h separate balanced secondaries which drive two beam-power output tetrodes mounted the amplifier. Also mounted on the amplifier two indirectly heated rectifier valves.

AVE RANGES. A. Long waveband: -2000 metres; B. Medium waveband: -550 metres; C. Short waveband: 31-76 tres (3.9 meg.-9.5 meg.); D. Short waveband: 34 metres (8.8 meg.-22 meg.).

JNING DIAL. Medium and long waves calibrated in metres. Short waves in mega- les. Names of the principal stations are shown medium and long wavebands. A vernier scale rovided to assist in accurate logging of short- ve stations.

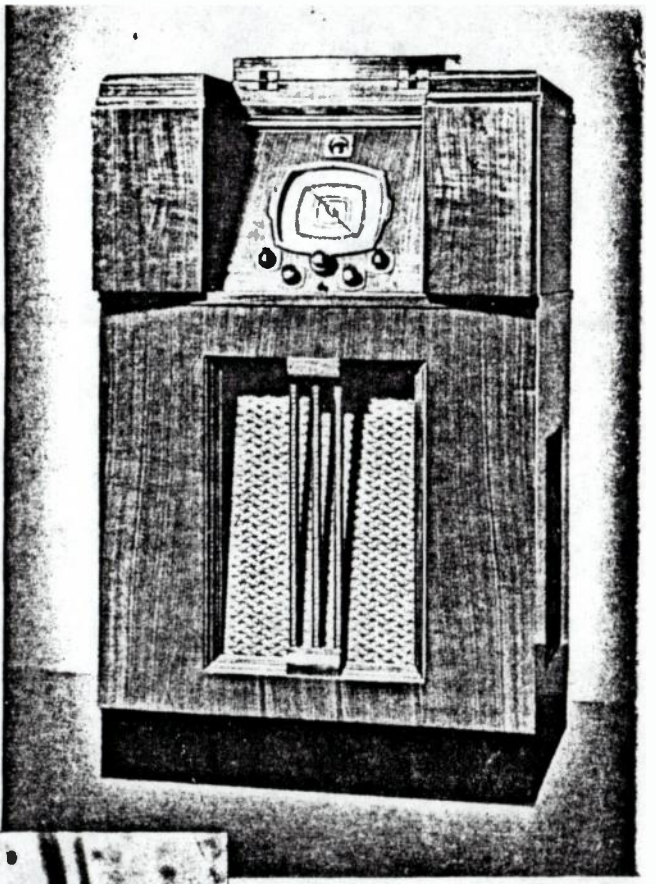
JNING CONTROLS. Concentric high and low-geared controls ensure speed and accuracy in moving from one station to another. Visual assistance is provided by an improved cathode ray indicator. A separate switch increases sensitivity for tuning weak or distant stations, or provides quiet tuning between powerful stations. Selectivity is 8 K.C.

VOLUME AND TONE CONTROLS. Special tone balanced volume control keeps constant the relationship between low, middle and high frequency response — ensuring perfect definition at any volume. This is one of the outstanding features of the Scott Sixteen. Separate, continuously variable, bass and treble controls operate in calibrated escutcheons enabling the user to adjust the response to the balance of any transmission or recording and to register the positions for subsequent reproductions.

LOUDSPEAKER ASSEMBLY. New type mains-energised moving coil loudspeaker with 12" curvilinear cone. Dips and peaks in loudspeaker response are smoothed out and bass reproduction is improved by new inverse feed-back system. Response is flat from 30-7500 cycles.

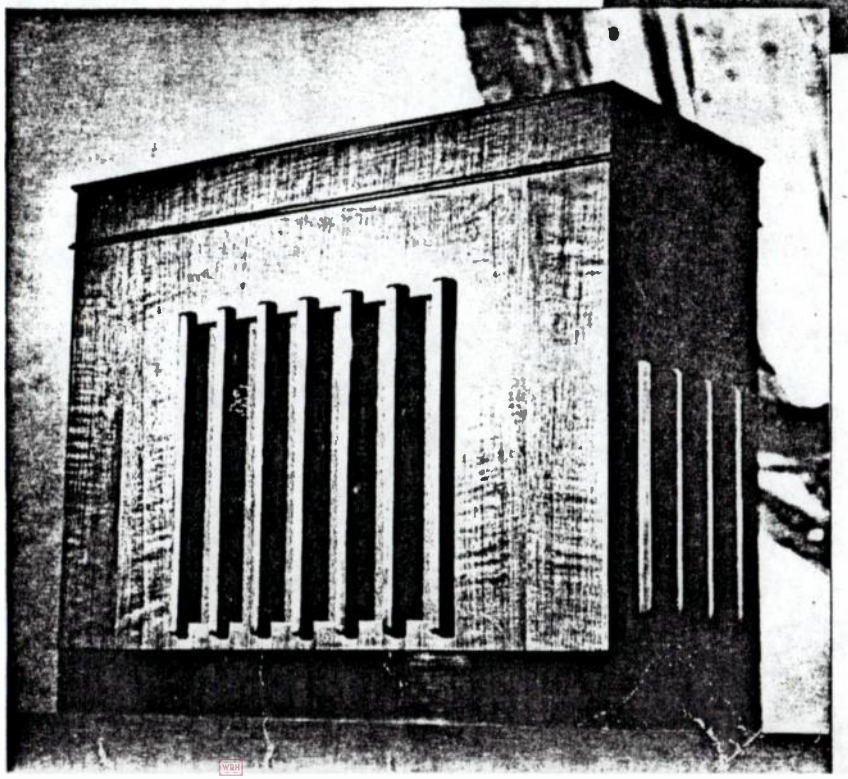
SPECIAL CABINETS will be available exclusively for the Scott Sixteen, by many leading designers — Maples, Waring & Gillow, Gordon Russell, Duncan Miller, Arundel Clarke, Betty Joel.

These cabinets are to special order only and are designed to meet the critical requirements of the discriminating owner.



SCOTT precision-built SIXTEEN RADIOGRAM

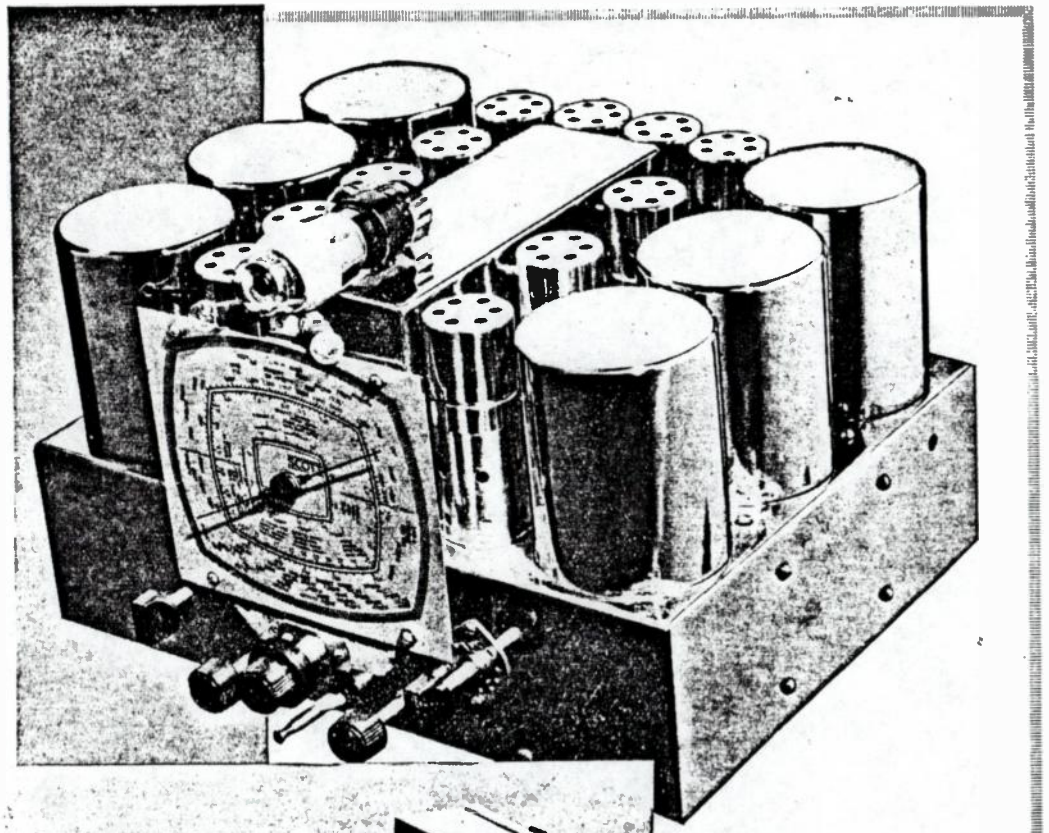
With automatic record-changing mechanism in "Linden" cabinet of American walnut. Voltage range: 200-250 alternating current: 40-60 cycles (other A.C. voltages and periodicities available to order); Consumption, Radio: 135 watts, Gramophone: 155 watts; Output: 13 watts (undistorted). Latest Garrard automatic mechanism, type R.C I.A., plays eight 10" or 12" records mixed in any combination. Price - 90 guineas.



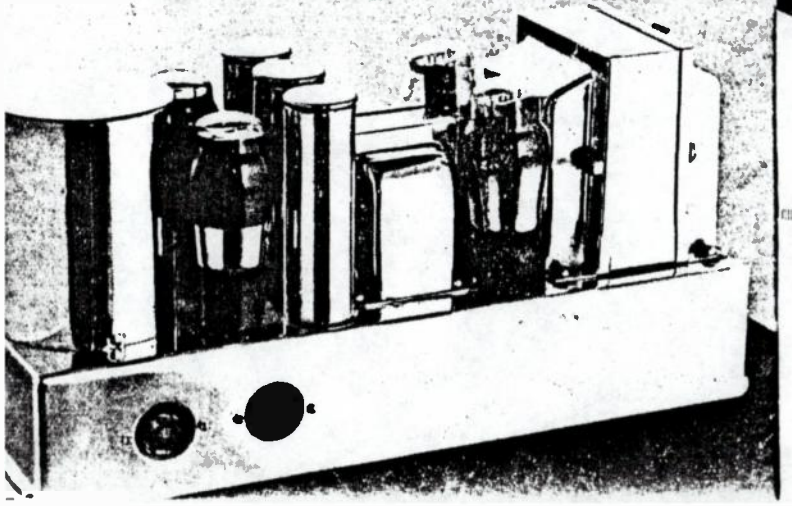
SCOTT precision-built SIXTEEN CONSOLE

In "Acousticraft" cabinet of American walnut. Inclined control panel promotes ease of operation. Folding doors mask control panel when playing. Voltage range: 200-250 A.C. 40-60 cycles (other A.C. voltages and periodicities available to order). Consumption: 135 watts. Output: 13 watts (undistorted). Price - 60 guineas.

THE CHASSIS AND AMPLIFIER...



Receiver Chassis, showing twelve of the sixteen valves, separately shielded by chromium-plated cans.



Amplifier Chassis, mounting four valves, chromium-shielded.

Chromium-shielded for finer performance

ONE of the most interesting features of the Scott Sixteen is the use of *separate* receiver and amplifier chassis. This method of construction — pioneered many years ago by the Scott Laboratories and incorporated in every Scott radio today — prevents interaction between circuits and preserves the stability of the receiver. This *principle* of construction, together with the *quality* of construction, contributes to the very outstanding performance for which the Scott Sixteen is famous.

Both chassis are of extremely robust construction. All shielding cans and exposed parts are heavily chromium-plated — thus increasing the shielding effect. Inside, all coils, chokes, transformers, etc., are impregnated against the effects of climatic conditions. This is especially valuable where proximity to sea air may reduce the efficiency of the ordinary receiver.

Other special features include: Mains transformer, built on extremely generous lines, and completely enclosed. Even after hours of continuous operation, the rise in temperature is negligible. Extra loudspeaker connections are provided, with Scott output transformer designed to allow the external speaker to be connected without affecting the quality and volume of the parent speaker. Sockets are also provided for connection of headphones.

IMPORTANT

The Scott Sixteen is designed to give good results on any efficient all-wave aerial. But, because of the special super-shield aerial coupling system incorporated in the circuit design, the full capabilities of the receiver can only be realized with the Scott All-Wave Aerial. This aerial will be supplied free with every Scott Sixteen.

E. H. SCOTT RADIO LABORATORIES LIMITED

72a Carlton Hill, London, N.W.8, England

FACTORY:

Aintree Road, Perivale, Middlesex

Models are obtainable from a specially selected group of dealers throughout the country

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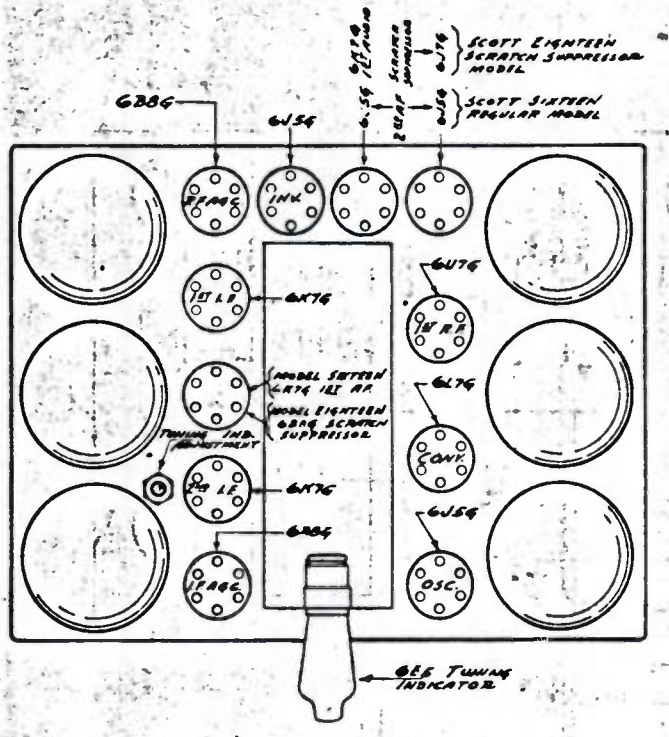

Fig. 1 Showing Tube Locations

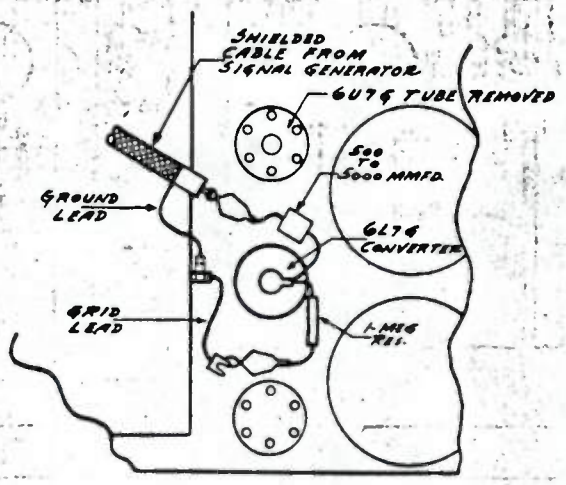

Fig. 2
Signal Generator Connection
For I.F. Alignment

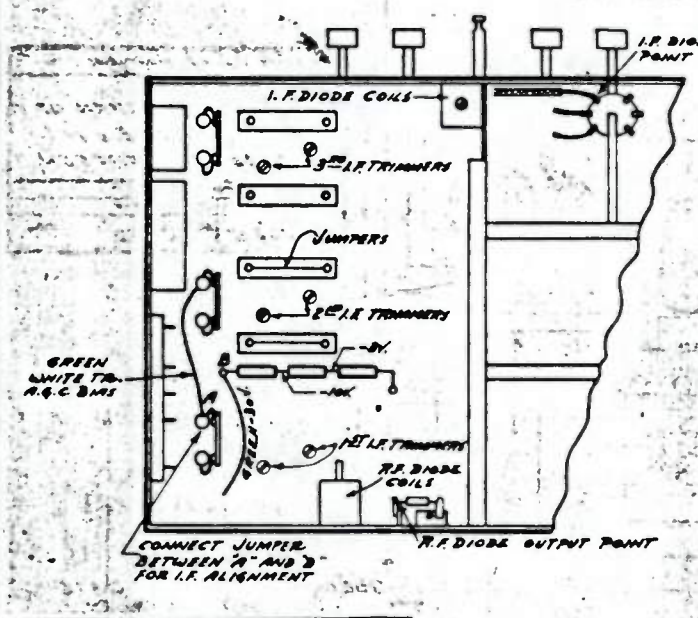

Fig. 3
Under Chassis View Showing
I. F. Adjustments, Etc.,

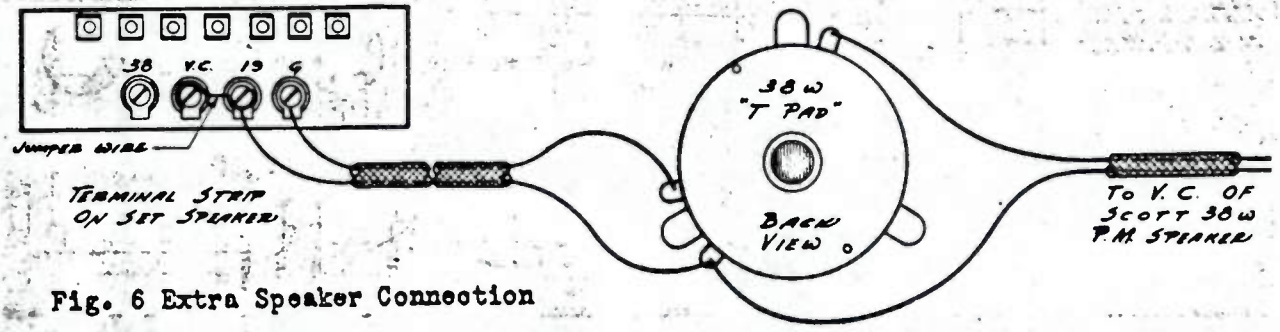

Fig. 6 Extra Speaker Connection

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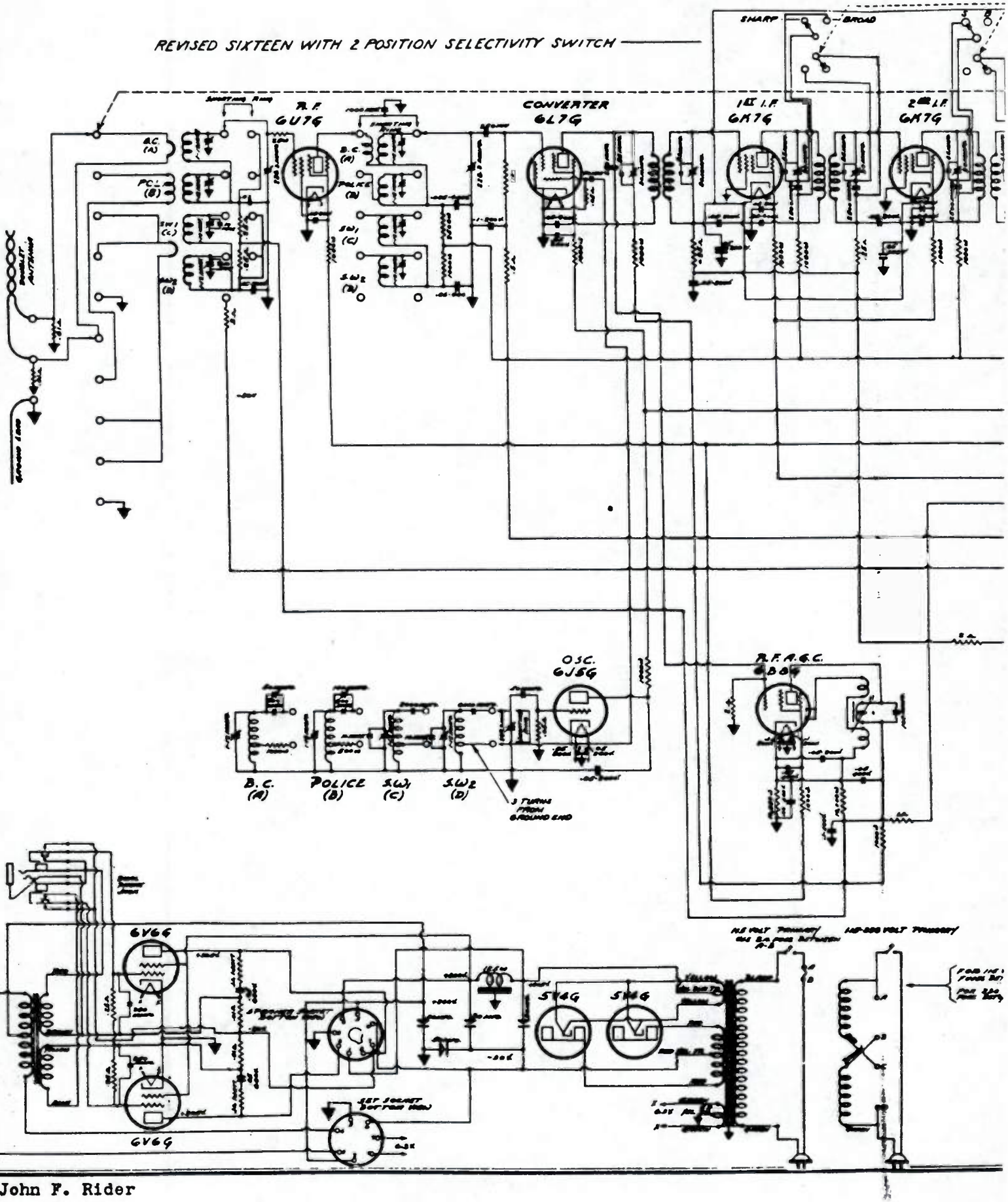
REVISED SIXTEEN WITH 2 POSITION SELECTIVITY SWITCH



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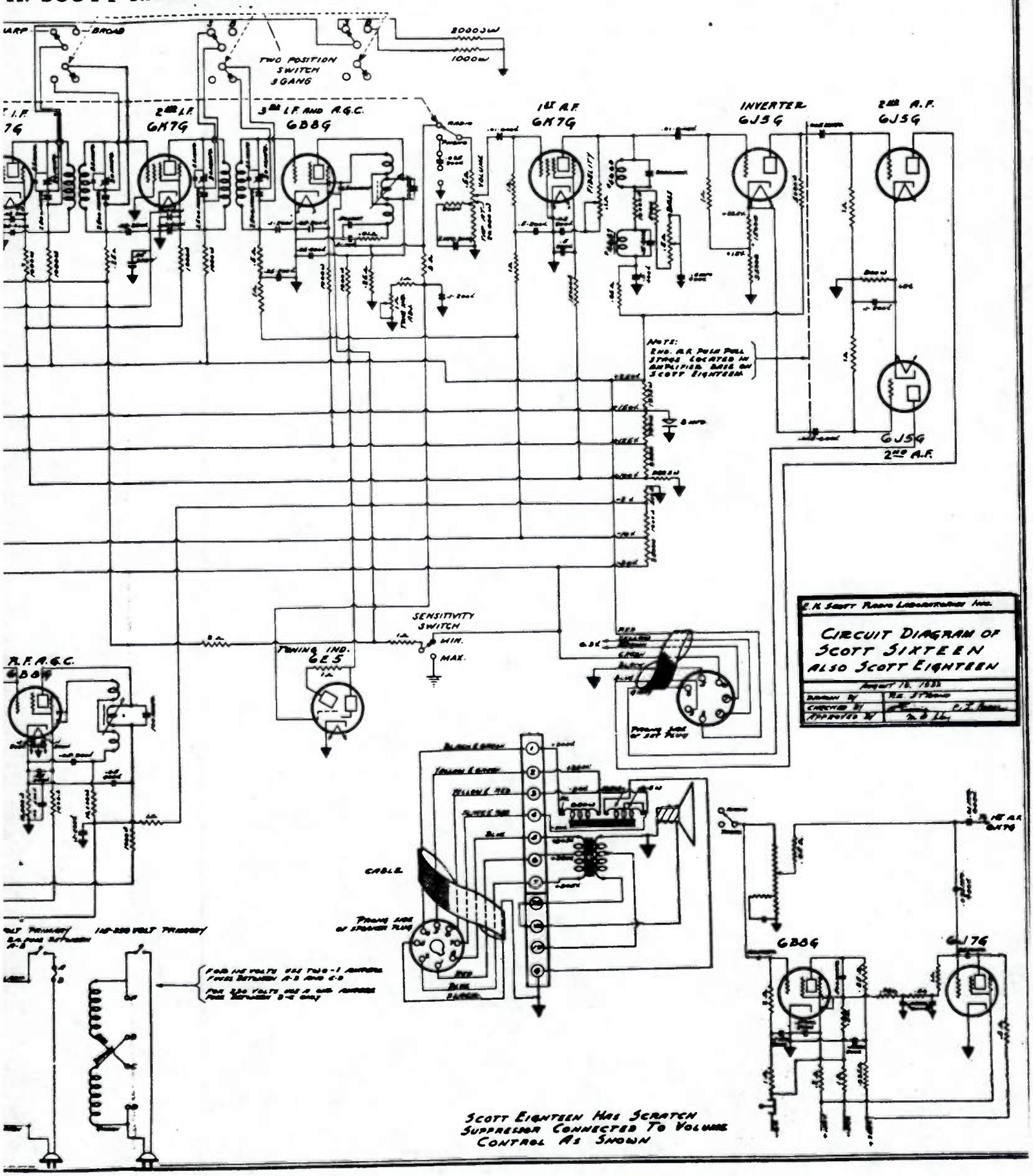
MODELS 16,18



HUM TESTS ON RECEIVER

Make certain that there are no soldering irons near the chassis and that the power transformer end of the amplifier is as far away from the chassis as possible. Connect a good output meter, having a resistance of 3000 ohms or more to the 6V6G plates (No. 3 prong) and have a 1 to 2 mfd. condenser in series with one lead to the meter.

With bass full on - treble full - and volume off the hum should not exceed .2 of a volt. To make overall tests, remove the 2nd audio 6J5G tubes. The hum should now drop to less than 0.1 volt. If it does not the amount of hum read on the meter is the hum in the amplifier itself. Leave the tubes out and change the 6V6G tubes in the amplifier until the hum is reduced to a minimum. The phone jack may be defective or there may be filament shorts, check the circuit and connections and get the hum out of the amplifier before proceeding with the rest of the test.

NOTE: It is highly important, in minimizing hum to use the spiral heater type 6K7G and 6J5G tubes in the audio system since, while considerable bass boost is available, tubes are the sole source of hum, there being no hum pickup whatsoever in chokes, transformers, etc.

After a very few of the first receivers were shipped out, a 250 mmfd. mica condenser was added to the grid circuit of each 6V6G tube to eliminate high frequency parasitic oscillation which occurred with some tubes. If these two condensers are not present, they should be added, as shown on the circuit diagram, otherwise oscillation may occur when the 2nd A. F. 6J5G tubes are removed.

After the amplifier is found to be O. K. replace the 2nd audio tubes and remove the inverter and 1st audio, now substitute for the 2nd audio tubes until hum is reduced to a minimum, allowing sufficient time in each case for the tubes to heat up properly. Next try the inverter tube in the same manner and follow with the 1st audio 6K7G. It may be necessary to push the filament wires nearer the base and away from grid wiring on some of the tube sockets, also the dial light circuit may be shorted against the dial frame. All these points should be checked along with the trying of new tubes.

AUDIO GAIN TEST

With an Audio input signal of 0.1 volt at 400 cycles an output reading of between 2 and 3 volts should be obtained on the output meter which is connected across the voice coil. Make this test with Volume full, Bass control 1/2 on, Fidelity full and Band Switch in Phono position. If the gain is low it may be due to defective tubes, wrong voltages, shorts or open circuits, either in the set or power amplifier. Both should be checked.

AUDIO FIDELITY TESTS

For correct high fidelity reproduction it is important that the electrical frequency response of the audio system, from the phono posts to a 38 (or 40) ohm dummy voice coil resistor, approximate 5 volts at 75 cycles and 6 volts at 6250 cycles with the bass and fidelity controls on full, after the output has been carefully adjusted, by means of the volume control, to 1 volt at 400 cycles with an input of 0.1 volt at each frequency. Failure of the system to approximate this response (if you are certain that your meters are accurate and that no series meter condenser, which would "cut" low frequencies, is being used) should lead to analysis of the low of high frequency circuit involved to determine and eliminate the trouble.

HOW TO ADJUST THE AUTOMATIC RECORD SCRATCH SUPPRESSION CIRCUIT ON THE SPECIAL SCOTT EIGHTEEN

This test refers only to the 18 tube model and can be ignored when checking the Sixteen. See Fig. 1 for tube locations in Scott Eighteen.

Connect an output meter across the Voice coil circuit (V.C. to G.) Connect an audio oscillator and a sensitive output meter to the phono-posts, and turn the Wave Switch to position "P" (allway to right). With the Bass Control set to minimum, treble control full on, and Scratch Suppressor switch pushed in, apply 0.25 volt at 3500 cycles to the phono posts. Set the volume control so that 1 volt is obtained on the output meter across the voice coil. Pull out the suppressor switch and the 1 volt reading should just start to drop (say to .9V.) Now push the suppressor switch in (off position) and reduce the audio oscillator input to 0.05 volts, reset the volume control to obtain a 1 volt reading again on the voice coil output meter and now pull out the suppressor switch ("on" position). The 1 volt reading should now drop to a level of 0.2 of a volt or slightly under. This gives a reduction ratio of 5 to 1 and this is the proper ratio to maintain. If this 5 to 1 reduction is not obtained the 6 volt bias should be reduced slightly by shunting it to ground by a suitable resistor. The value of this resistor will lie somewhere between 800 and 5000 ohms. It will have to be determined by substitution of various resistors. If too much control is obtained, it may be due to an abnormal 6J7G.

The 6B8G tube determines the level at which the circuit starts to cut high frequencies and the 6J7G tube determines the amount of this cut.

HOW TO ALIGN AND BAND PASS THE I. F. AMPLIFIER

While this operation is quite difficult in many receivers the Scott Sixteen and Eighteen incorporate a new development which greatly simplifies this adjustment if the following procedure is carefully followed. However, the I. F. adjustments should be changed only as a last resort on positive indication that the I. F. alignment has become impaired. A good signal generator should be connected to the input of the I. F. system at the grid of the 6L7G converter tube using the circuit shown in Fig. 2, in order to maintain normal operating bias. Turn the wave band switch to the Broadcast Band; turn the tuning pointer to the extreme high frequency end of the dial; push in the sensitivity switch; and remove the 6U7G R. F. tube.

Now referring to the underside view of the chassis, Fig. 2, connect a jumper wire between points "A" and "B". Remove the wire jumpers which shunt the terminals of the 2nd I. F. Transformer as shown in Fig. 3, leaving these terminals vacant, and connect two solid wire jumpers across the two terminal strips of the 3rd I. F. transformer. (In case resistors are found connected across any of the terminal strips their positions should be carefully noted on a piece of paper since they must be replaced exactly as found, when the operation is completed.) NOTE: Turn set off when changing jumpers to avoid shock from the plate voltage. Connect the negative terminal of a 20,000 ohm per volt D. C. voltmeter using the 25 volt scale, (or a sensitive microammeter with a 0.5 meg. resistor connected in series with its negative terminal) to the "I. F. Diode Output Point" shown in Fig. 3 and the positive terminal to the chassis.

Apply an unmodulated 465 K. C. signal of sufficient strength to produce a diode output voltage reading of approximately 10V (or 20 microamperes for the microammeter) and very carefully adjust the 1st, 2nd, 3rd I. F. and I. F. diode trimmers for maximum meter reading, reducing the input, if necessary, to avoid exceeding the above figures.

The wire jumpers may now be removed from the 3rd I. F. transformer terminals and the wire jumpers (or the original resistors, if they were used) connected to the 2nd I. F. transformer terminals. The bias jumper may now be removed from points "A" and "B" leaving the I. F. terminals connected as originally found and completing the alignment.

Alignment of R. F. sections:

Before starting on this portion of the set, it is important to understand how the tuning wand tool works. One end of this device has a core of material such as Polyiron while the other end is brass. When the inductance of a coil is high, insertion of the brass end will decrease it to the proper resonant value; whereas, insertion of the other end will increase the effective inductance. This gives a very convenient means of determining whether or not it is necessary to add or remove turns from the coil. In the following instructions only a slight adjustment of trimmers and padders should be necessary where original coils are used. Full instructions however, are given to cover the case where new coils are to be used.

Broadcast Band alignment:

First turn the dial pointer completely to the low frequency dial stop and center the pointer exactly between the two heavy horizontal lines which separate the "Broadcast A" position, set the Bass Control to minimum, Treble control to maximum and sensitivity switch to minimum (pulled out), and connect an output meter across the voice coil. Refer to Fig. 5, and adjust oscillator trimmer C1, until a

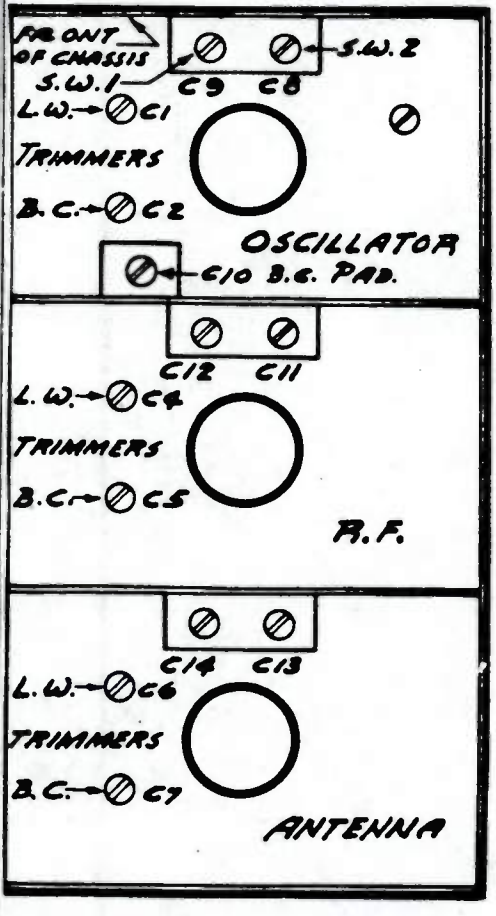


Fig. 4 Location of R.F. Trimmers and padders (Export Model.)

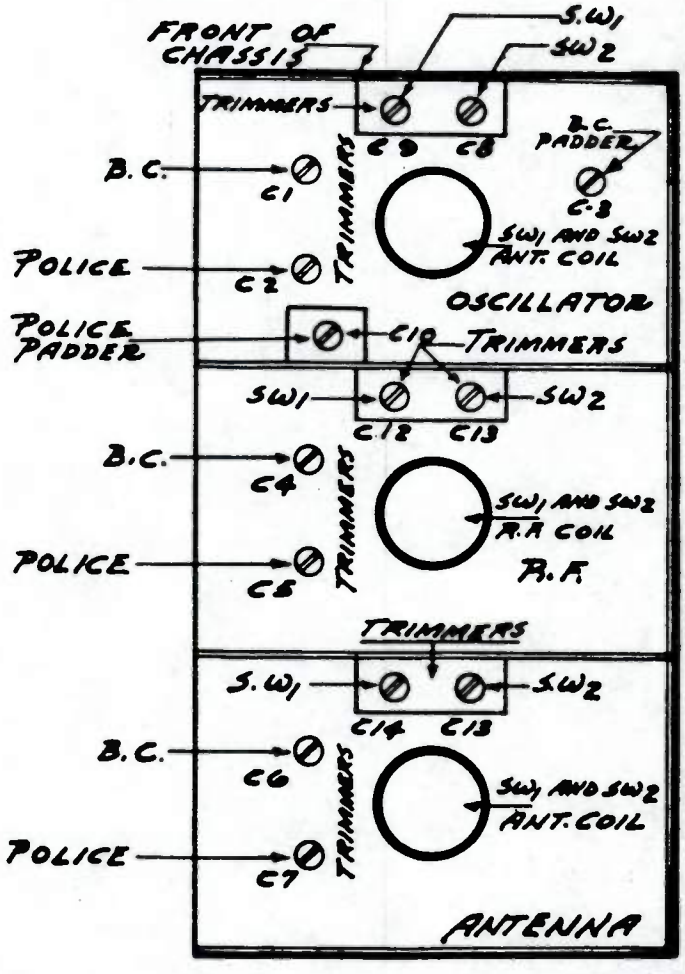


Fig. 5 Location of R.F. Trimmers and padders for Domestic Model.

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1400 KC signal as set on the dial is tuned in from the generator. Rotate the dial to 650 KC and tune in a 650 KC signal from the generator by adjusting the padding condenser C3. Check the dial at 970 KC and if it tunes high in frequency spread turns on the oscillator secondary, if it is low in frequency push the turns together and then readjust trimmer condenser C1, and Padder condenser C3, as before.

With the oscillator circuit correctly spotted tune in a signal from the generator at 1400 KC and use the output meter as indication. Have as weak a signal as possible and adjust trimmer C4 and C6 for maximum output. Turn the dial to 650 KC and check the alignment of the R. F. and antenna stages with a tuning wand, spreading turns on the coil where less inductance is needed and pushing turns together if more inductance is required. Readjust the trimmer condenser C4 and C6 for maximum at 1400 KC. Turn the dial to 970 KC and check the alignment of the R. F. and antenna stages.

Police Band:

Set the wave Band switch to the Police "B" Band, position and turn the dial to 3.7 megacycles. Tune in a signal from the generator by adjusting the Padder C10. Check the alignment at 2.6 megacycles, if off, either push together or spread turns on the oscillator secondary as described under "Broadcast Band Alignment". Readjust trimmer C2 and padder C10 until correctly aligned. Tune in a signal at 3.7 megacycles and adjust trimmers C1 and C3 to maximum output, now check the alignment of 1.8 megacycles with a tuning wand and make any necessary corrections by pushing or spreading turns on the coils and readjusting trimmers C5 and C7. Recheck the alignment at 2.6 megacycles.

Long Wave Band on Export Model.

On the Export model the Long Wave Band replaces the Police Band. To align this model set the wave change switch to L. W. position A and rotate the tuning dial on the set to 370 KC. Tune in a signal from the generator by adjusting trimmer condenser C1. Now turn the set dial to 170 KC and tune in a 170 KC signal from the generator by adjusting the oscillator padding condenser C3. Return to 370 KC and retrim condenser C1. Check the calibration at 250 KC. Add or remove turns from the oscillator coil as required for perfect dial calibration at these three frequencies. Now turn the dial to 370 KC and tune in a weak signal from the generator and adjust trimmers C4 and C6 until maximum output is shown on the output meter. Now turn the dial to 170 KC and check the R. F. and Ant. alignment with a tuning wand. Make any necessary corrections on the coils (where new) by adding or removing turns. Then repeak the trimmers C4 and C6. Check the alignment at 250 KC.

Foreign S. W. - C - (SW1)

Set the wave band switch to the "C" position and tune in a signal at 9 megacycles by adjusting trimmer condenser C9. Turn the dial to 4.5 megacycles and if necessary to correct the calibration do so by spreading or pushing turns on the coil and readjusting the trimmer condenser C9. Check the calibration at 6.5 megacycles.

With the oscillator calibrated tune in a signal at 9 megacycles and adjust trimmer condensers C12 and C14 for maximum output. Check the alignment at 4.5 and 8.6 megacycles and make any necessary corrections by pushing or spreading turns on the coils and readjusting trimmers C12 and C14.

Foreign S. W. - D - (SW2)

Set the Wave Band Switch to D position and tune in a signal at 20 megacycles by adjusting trimmer C8, check and if necessary correct the calibration at 12 megacycles by pushing or spreading the turns on the oscillator coil. Check the calibration at 15 megacycles.

With the oscillator correctly aligned tune in a signal at 20 megacycles and adjust trimmers C11 and C13 to maximum output. Check the alignment at 12 and 15 megacycles and make necessary corrections by pushing or spreading turns on the coils, now readjust trimmer C11 and C13.

CONNECTING EXTRA SPEAKER

The New Type High Fidelity Scott Permanent Magnet 38 ohm voice coil speaker may be readily connected to a Scott receiver as shown in Fig. 6, with the optional "T Pad" inserted in the voice coil leads where separate control of the extension speaker volume is desired. In case the extension speaker is disconnected the jumper must be changed to connect terminals "V.C." and "38".

WAVE CHANGE SWITCH TROUBLE

Poor contact in the wave change switch can generally be corrected by slightly bending the contacts involved. However, in case a switch section is accidentally damaged beyond repair this section can be replaced by first removing the dial face then removing the two screws which support the wave change detent plate and very carefully pulling out the wave change switch shaft. The damaged section can then be unsoldered, removed, and replaced with a new unit which should be obtained from the Scott Chicago Laboratories before the change is made in order to assure exact duplication of switch position and connections. Note particularly that the small notch near the center of the switch rotor must be in the same position in each switch section.

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1400 KC signal as set on the dial is tuned in from the generator. Rotate the dial to 650 KC and tune in a 650 KC signal from the generator by adjusting the padding condenser C3. Check the dial at 970 KC and if it tunes high in frequency spread turns on the oscillator secondary, if it is low in frequency push the turns together and then readjust trimmer condenser C1, and Padder condenser C3, as before.

With the oscillator circuit correctly spotted tune in a signal from the generator at 1400 KC and use the output meter as indication. Have as weak a signal as possible and adjust trimmer C4 and C6 for maximum output. Turn the dial to 650 KC and check the alignment of the R. F. and antenna stages with a tuning wand, spreading turns on the coil where less inductance is needed and pushing turns together if more inductance is required. Readjust the trimmer condenser C4 and C6 for maximum at 1400 KC. Turn the dial to 970 KC and check the alignment of the R. F. and antenna stages.

Police Band:

Set the wave Band switch to the Police "B" Band, position and turn the dial to 3.7 megacycles. Tune in a signal from the generator by adjusting the Padder C10. Check the alignment at 2.6 megacycles, if off, either push together or spread turns on the oscillator secondary as described under "Broadcast Band Alignment". Readjust trimmer C2 and padder C10 until correctly aligned. Tune in a signal at 3.7 megacycles and adjust trimmers C1 and C3 to maximum output, now check the alignment of 1.8 megacycles with a tuning wand and make any necessary corrections by pushing or spreading turns on the coils and readjusting trimmers C5 and C7. Recheck the alignment at 2.6 megacycles.

Long Wave Band on Export Model.

On the Export model the Long Wave Band replaces the Police Band. To align this model set the wave change switch to L. W. position A and rotate the tuning dial on the set to 370 KC. Tune in a signal from the generator by adjusting trimmer condenser C1. Now turn the set dial to 170 KC and tune in a 170 KC signal from the generator by adjusting the oscillator padding condenser C3. Return to 370 KC and retrim condenser C1. Check the calibration at 250 KC. Add or remove turns from the oscillator coil as required for perfect dial calibration at these three frequencies. Now turn the dial to 370 KC and tune in a weak signal from the generator and adjust trimmers C4 and C6 until maximum output is shown on the output meter. Now turn the dial to 170 KC and check the R. F. and Ant. alignment with a tuning wand. Make any necessary corrections on the coils (where new) by adding or removing turns. Then repeak the trimmers C4 and C6. Check the alignment at 250 KC.

Foreign S. W. - C - (SW1)

Set the wave band switch to the "C" position and tune in a signal at 9 megacycles by adjusting trimmer condenser C9. Turn the dial to 4.5 megacycles and if necessary to correct the calibration do so by spreading or pushing turns on the coil and readjusting the trimmer condenser C9. Check the calibration at 6.5 megacycles.

With the oscillator calibrated tune in a signal at 9 megacycles and adjust trimmer condensers C12 and C14 for maximum output. Check the alignment at 4.5 and 8.6 megacycles and make any necessary corrections by pushing or spreading turns on the coils and readjusting trimmers C12 and C14.

Foreign S. W. - D - (SW2)

Set the Wave Band Switch to D position and tune in a signal at 20 megacycles by adjusting trimmer C8, check and if necessary correct the calibration at 12 megacycles by pushing or spreading the turns on the oscillator coil. Check the calibration at 15 megacycles.

With the oscillator correctly aligned tune in a signal at 20 megacycles and adjust trimmers C11 and C13 to maximum output. Check the alignment at 12 and 15 megacycles and make necessary corrections by pushing or spreading turns on the coils, now readjust trimmer C11 and C13.

CONNECTING EXTRA SPEAKER

The New Type High Fidelity Scott Permanent Magnet 38 ohm voice coil speaker may be readily connected to a Scott receiver as shown in Fig. 6, with the optional "T Pad" inserted in the voice coil leads where separate control of the extension speaker volume is desired. In case the extension speaker is disconnected the jumper must be changed to connect terminals "V.C." and "38".

WAVE CHANGE SWITCH TROUBLE

Poor contact in the wave change switch can generally be corrected by slightly bending the contacts involved. However, in case a switch section is accidentally damaged beyond repair this section can be replaced by first removing the dial face then removing the two screws which support the wave change detent plate and very carefully pulling out the wave change switch shaft. The damaged section can then be unsoldered, removed, and replaced with a new unit which should be obtained from the Scott Chicago Laboratories before the change is made in order to assure exact duplication of switch position and connections. Note particularly that the small notch near the center of the switch rotor must be in the same position in each switch section.