

- (1) Remove the appropriate section of the cabinet back and place aside.
- (2) Disconnect the power lead to the record changer unit.
- (3) Withdraw the pickup, speaker and indicating lamp plugs.
- (4) Disconnect the lamp lead to the record changer compartment from the chassis.
- (5) Release the cable clamps, remove all the leads and place them aside so that they will not interfere with the removal of the chassis.
- (6) Remove the wood screws securing the chassis mounting board to the cabinet, and gently remove the chassis and board together.
The mounting board has a hole in it to facilitate servicing under the chassis without further dismantling.



RADIO SERVICE BULLETIN

Issue No.: 126

Date of Issue: April, 1957

Subject: Model A8471

SPECIFICATION OF S.T.C. MODEL A8471 CONSOLE RADIOGRAM

REPLACEMENT OF PICKUP STYLUS:

To preserve the condition of valuable records, each of the sapphire styli should be replaced after 30 to 50 hours of actual playing time. Replacement may be carried out readily as follows:—

- (1) Lift up the pick-up arm and select the stylus needing replacement.
- (2) With a suitable small screwdriver remove the screw at the fixed end of the stylus shank.
- (3) Gently ease the stylus off the crystal coupling block.
- (4) Place the new stylus in position, replace the screw and tighten gently.

NOTE: Slight pressure should exist between the stylus shank and the crystal coupling block when the stylus has been fitted correctly.

DESCRIPTION:

An eight valve four band, A.C. operated console, radiogram incorporating:—

Two loudspeakers

A double cone high fidelity 12 inch loudspeaker.

A high fidelity 5 inch loudspeaker to extend the 12 inch loudspeaker's reproduction at high frequencies.

Electronic tuning indicator.

Two loops of constant inverse feedback.

Separate bass and treble tone controls.

Record scratch attenuator.

Bandspread of extended short wave band.

Four speed mixer record changer.

High fidelity pickup.

Automatic gain control.

Self balancing phase inverter.

Push-pull beam tetrode output valves.

Low distortion audio amplifier.

New output transformer with high efficiency.

Improved slotted baffle and vented sound chamber.

TUNING RANGE:

530-1620 Kc/s Broadcast.

3.95-6.25 Mc/s S.W.1.

6.15-11.7 Mc/s S.W.2.

11.5-16 Mc/s S.W.3.

INTERMEDIATE FREQUENCY:

455 Kc/s.

VALVE COMPLEMENT:

V1. R.F. Amplifier, 6BA6.

V2. Frequency converter and 1st I.F. amplifier, 6BA7.

V3. 2nd I.F. amplifier and detector, 6N8.

V4. Tone control amplifier and audio amplifier, 12AX7.

V5. Phase inverter, 12AT7.

V6. Output tetrode, 6BW6.

V7. Output tetrode, 6BW6.

V8. Rectifier, 5Z4G.

Electronic tuning indicator, EM85.

POWER SUPPLY:

230-250 volts at 50 cycles only.
330 milliamps at 240 volts input on RADIO.
440 milliamps at 240 volts input on GRAM.

LOUD SPEAKER:

12 inch permanent magnet type, with a 10,000 ohm push-pull transformer mounted on the chassis.
5 inch permanent magnet type high frequency speaker with a 15,000 ohm transformer mounted on the chassis.

CIRCUIT VOLTAGES:

Refer to circuit diagram.
The voltages indicated are measured to the receiver chassis with a voltmeter having a resistance of 20,000 ohms per volt and they may vary within 10% of their stated value.

MEASUREMENT SPECIFICATION:

Refer to section "I" of alignment instructions.
Reference voltage across output transformer primary is 22.5 for the input voltages (mod. 30%) stated below:
I.F. sensitivity—V2 grid 150 microvolts.
I.F. sensitivity—V3 grid 6 millivolts.
Broadcast sensitivity—2 to 3 microvolts.
Short wave sensitivity—8 to 15 microvolts.
To measure the above sensitivities, no wiring is to be removed and sensitivities are correct only when the tone controls are set as described in Section "I" of the alignment instructions.

ALIGNMENT FREQUENCIES:

Broadcast—600 Kc/s and 1400 Kc/s.
Short Wave—3.95 Mc/s and 6.25 Mc/s, for S.W.1.
11.7 Mc/s for S.W.2.
16.0 Mc/s for S.W.3.

The above information may also be found in table form in Section 2.

CHECK POINTS:

Broadcast—1000 Kc/s.
Short Wave—5 Mc/s, 6 Mc/s for S.W.1.
9 Mc/s for S.W.2.
13 Mc/s for S.W.3.

The above information may also be found in table form in Section 2.

ALIGNMENT INSTRUCTIONS:

To obtain the best results from this receiver it is necessary to carry out the following procedure.

SECTION 1.

- AUDIO** (a) Set both tone controls at maximum and feed into the pick-up socket a 6,000 cycle tone.
(b) Adjust volume control to give an output of 50 volts, then turn down the treble control to give an output voltage of 12.

(c) Now feed in a 100 cycle tone of such a level so as to give an output of 50 volts without touching the volume control, then turn down the bass control to reduce the output voltage to 12.

(d) In the absence of suitable audio test equipment, the bass and treble controls should be set between positions 2 and 3. Whilst this method is less accurate than procedure detailed above, it will be satisfactory for most purposes.

These settings of the tone controls will give a response which is within ± 3 db of a flat amplifier and should be used for all receiver measurements.

SECTION 2.**RADIO FREQUENCY:**

First set the tone controls as detailed in Section 1, then with the assistance of the table provided below, align the broadcast and short wave bands.

Range	Osc. Section		Aerial and RF Sections		
	Peak slug at	Peak trimmer at	Peak slug at	Peak trimmer at	Check Points
Broadcast	530 Kc/s	1620 Kc/s	600 Kc/s	1400 Kc/s	1000 Kc/s
S.W.1 3.95-6.25 Mc/s	3.95 Mc/s	6.25 Mc/s	5 Mc/s	6 Mc/s	5 & 6 Mc/s
S.W.2 6.15-11.7 Mc/s		11.7 Mc/s		9 Mc/s	9 Mc/s
S.W.3 11.5-16 Mc/s		16 Mc/s		13 Mc/s	13 Mc/s

Note: Before peaking aerial and R.F. sections of the broadcast band, it is desirable to check the broadcast station calibration on the air and if the calibrations are out, repeak the oscillator section using the stations as a signal.

NOTES ON SERVICING:

- (1) To keep the reproduction up to the highest possible standard, it is desirable, when replacing an output valve, to check the plate current of the two output valves and match them to within one or two milliamps.
- (2) With a 400 cycle input wave to the pickup socket, the maximum output obtainable across the secondary of the output transformer before clipping occurs on the pattern of the output wave displayed on an oscillograph, should be about 4.5 volts. (A 2 ohm $\pm 5\%$ 10 watt resistor should be used in place of the speaker when making the above test.)
- (3) A vacuum tube voltmeter should be used to check the circuit, particularly the operation of the automatic gain control circuits.
- (4) A crystal-controlled source of radio frequencies for short wave alignment is desirable but not essential.

REMOVAL OF CHASSIS:

To remove the chassis from the cabinet, it is necessary first to SWITCH OFF THE POWER AND REMOVE THE PLUG FROM THE POWER POINT, then proceed as follows:

POWER SUPPLY:

230-250 volts at 50 cycles only.
330 milliamps at 240 volts input on RADIO.
440 milliamps at 240 volts input on GRAM.

LOUD SPEAKER:

12 inch permanent magnet type, with a 10,000 ohm push-pull transformer mounted on the chassis.
5 inch permanent magnet type high frequency speaker with a 15,000 ohm transformer mounted on the chassis.

CIRCUIT VOLTAGES:

Refer to circuit diagram.
The voltages indicated are measured to the receiver chassis with a voltmeter having a resistance of 20,000 ohms per volt and they may vary within 10% of their stated value.

MEASUREMENT SPECIFICATION:

Refer to section "I" of alignment instructions.
Reference voltage across output transformer primary is 22.5 for the input voltages (mod. 30%) stated below:
I.F. sensitivity—V2 grid 150 microvolts.
I.F. sensitivity—V3 grid 6 millivolts.
Broadcast sensitivity—2 to 3 microvolts.
Short wave sensitivity—8 to 15 microvolts.
To measure the above sensitivities, no wiring is to be removed and sensitivities are correct only when the tone controls are set as described in Section "I" of the alignment instructions.

ALIGNMENT FREQUENCIES:

Broadcast—600 Kc/s and 1400 Kc/s.
Short Wave—3.95 Mc/s and 6.25 Mc/s, for S.W.1.
11.7 Mc/s for S.W.2.
16.0 Mc/s for S.W.3.

The above information may also be found in table form in Section 2.

CHECK POINTS:

Broadcast—1000 Kc/s.
Short Wave—5 Mc/s, 6 Mc/s for S.W.1.
9 Mc/s for S.W.2.
13 Mc/s for S.W.3.

The above information may also be found in table form in Section 2.

ALIGNMENT INSTRUCTIONS:

To obtain the best results from this receiver it is necessary to carry out the following procedure.

SECTION 1.

- AUDIO** (a) Set both tone controls at maximum and feed into the pick-up socket a 6,000 cycle tone.
(b) Adjust volume control to give an output of 50 volts, then turn down the treble control to give an output voltage of 12.

- (c) Now feed in a 100 cycle tone of such a level so as to give an output of 50 volts without touching the volume control, then turn down the bass control to reduce the output voltage to 12.
(d) In the absence of suitable audio test equipment, the bass and treble controls should be set between positions 2 and 3. Whilst this method is less accurate than procedure detailed above, it will be satisfactory for most purposes.
These settings of the tone controls will give a response which is within ± 3 db of a flat amplifier and should be used for all receiver measurements.

SECTION 2.**RADIO FREQUENCY:**

First set the tone controls as detailed in Section 1, then with the assistance of the table provided below, align the broadcast and short wave bands.

Range	Osc. Section		Aerial and RF Sections		
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Broadcast	530 Kc/s	1620 Kc/s	600 Kc/s	1400 Kc/s	1000 Kc/s
S.W.1 3.95-6.25 Mc/s	3.95 Mc/s	6.25 Mc/s	5 Mc/s	6 Mc/s	5 & 6 Mc/s
S.W.2 6.15-11.7 Mc/s		11.7 Mc/s		9 Mc/s	9 Mc/s
S.W.3 11.5-16 Mc/s		16 Mc/s		13 Mc/s	13 Mc/s

Note: Before peaking aerial and R.F. sections of the broadcast band, it is desirable to check the broadcast station calibration on the air and if the calibrations are out, repeat the oscillator section using the stations as a signal.

NOTES ON SERVICING:

- (1) To keep the reproduction up to the highest possible standard, it is desirable, when replacing an output valve, to check the plate current of the two output valves and match them to within one or two milliamps.
- (2) With a 400 cycle input wave to the pickup socket, the maximum output obtainable across the secondary of the output transformer before clipping occurs on the pattern of the output wave displayed on an oscillograph, should be about 4.5 volts. (A 2 ohm $\pm 5\%$ 10 watt resistor should be used in place of the speaker when making the above test.)
- (3) A vacuum tube voltmeter should be used to check the circuit, particularly the operation of the automatic gain control circuits.
- (4) A crystal-controlled source of radio frequencies for short wave alignment is desirable but not essential.

REMOVAL OF CHASSIS:

To remove the chassis from the cabinet, it is necessary first to SWITCH OFF THE POWER AND REMOVE THE PLUG FROM THE POWER POINT, then proceed as follows:



**SPECIFICATION OF S.T.C. MODEL 8471/1
CONSOLE RADIOGRAM**

DESCRIPTION:

The description of this receiver is the same as that of Model 8471, Bulletin No. 126, but with the following additional items.

A loudness control replacing the conventional volume control.

An improved tone control has been fitted.

A new pickup cartridge for improved record reproduction.

TUNING RANGE:

INTERMEDIATE FREQUENCY:

VALVE COMPLEMENT:

POWER SUPPLY:

LOUD SPEAKER:

CIRCUIT VOLTAGES:

MEASUREMENT SPECIFICATION:

ALIGNMENT FREQUENCIES:

CHECK POINTS:

ALIGNMENT INSTRUCTIONS:

Section 1., See below.

ALIGNMENT INSTRUCTIONS:

Section 2.

NOTES ON SERVICING:

REMOVAL OF CHASSIS:

Refer to Service Bulletin on Model 8471 No. 126.

CIRCUIT DIAGRAM

Refer to the circuit diagram supplied with this service bulletin and use it in conjunction with the circuit diagram of Model 8471, Service Bulletin No. 126.

SECTION 1.

AUDIO Set the volume control and the two tone controls to maximum. This setting will give a response which is satisfactory for all receiver measurements.

REPLACEMENT OF PICKUP STYLUS:

To preserve the condition of valuable records, each of the sapphire styli should be replaced after 30 to 50 hours of actual playing time. Replacement may be carried out readily as follows:-

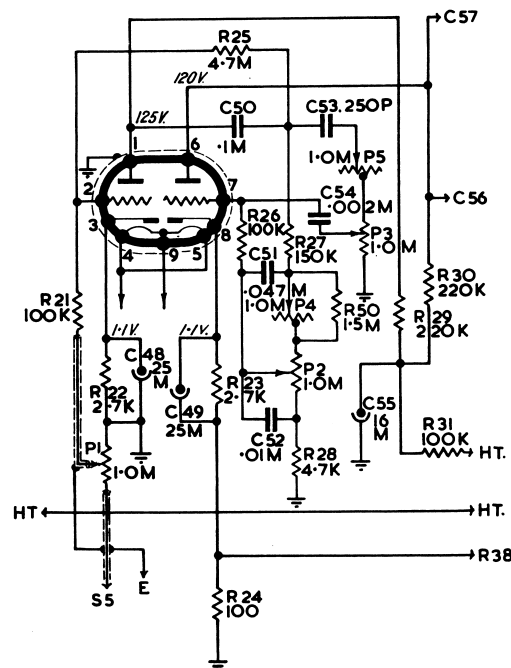
- (1) Slide the pickup cartridge out of the clamp and disconnect the two push-on connections.
- (2) With a suitable small screwdriver loosen the holding screw at the fixed end of the stylus shank.
- (3) Gently ease the stylus off the crystal coupling block and slide the stylus from under the screw.
- (4) Slide the new stylus into position and gently tighten the holding screw.

Note: Slight pressure should exist between the stylus shank and the crystal coupling block when the stylus has been fitted correctly.

- (5) Now reconnect the two push-on connections to the cartridge and slide the pickup back into the mounting clamp noting that it can slide into the clamp in one way only.

**V4
12AX7**

STC MODEL 8471/1.



NOTE:- THE CIRCUIT DIAGRAM OF MODEL 8471/1 IS SIMILAR TO THE CIRCUIT OF MODEL 8471, EXCEPT THAT THE DETAILS ASSOCIATED WITH V4 ARE MODIFIED AS SHOWN ABOVE, AND CONDENSER C66 HAS BEEN CHANGED TO 250P

PI, P4 & P5 ARE GANGED.