SERVICE MANUAL FOR HUDSON
AUTOMOBILE RADIO RECEIVERS
SPECIFICATIONS AND CIRCUIT FEATURES

SA-39-SIX TUBE DELUXE

TUBE COMPLEMENT
6K7G - R. F. amplifier
6J7G - Oscillator and 1st detector
6K7G - I. F. amplifier
6Q7G - 2nd detector, A.V.C., audio
6K6G - Output
6X5G - Rectifier

TUNING RANGE
540 kilocycles to 1560 kilocycles

SPEAKER
Type - dynamic (6 inch)
Voice coil impedance - 3.5 ohms at 400 cycles
Field resistance - 4.5 ohms (cold)

OUTPUT RATING
Maximum - 5.1 watts
Undistorted - 2.3 watts

VIBRATOR
Non - Synchronous type

POWER RATING
Current drain - 5.8 amp. at 6.0 V.
Fuse protection - 15 amperes

GENERAL
SPECIFICATIONS
The following list incorporates the most prominent electrical and mechanical features of this model.

- Tuning ratio 17 to 1
- Temperature compensated oscillator circuit.
- All coils of the iron core type.
- Ant. compensator for Ant. matching.
- Superior filtering system for reduction of ignition noise.
- Broad band-pass 1st I.F. transformer for high fidelity and easy tuning.

DB-39-SEVEN TUBE CUSTOM

TUBE COMPLEMENT
6K7G - R. F. amplifier
6J7G - Oscillator and 1st detector
6K7G - I. F. amplifier
6R7G - 2nd detector, A.V.C. and audio amplifier
6VE6 - Push-pull beam power output
6VE6 - Push-pull beam power output
OZ4 - Rectifier

The rectifier socket is wired with filament connections so that a 6X5G can be used in place of the OZ4, if need be. This replacement will necessarily increase the "A" battery drain, but can be used as a temporary substitute.

TUNING RANGE
540 kilocycles to 1560 kilocycles

SPEAKER
Type - dynamic (6 inch)
Voice coil impedance - 3.5 ohms at 400 cycles
Field resistance - 5 ohms (cold)

OUTPUT RATING
Maximum - 8.8 watts
Undistorted - 5.5 watts

VIBRATOR
Non - Synchronous type

POWER RATING
Current drain - 7.1 amp. at 6.0 V. (OZ4)
Fuse protection - 15 amperes

GENERAL SPECIFICATIONS
Tuning ratio 17 to 1.
Temperature compensated oscillator.
All coils of the iron core type.
Ant. compensator for Ant. matching.
Superior filtering system for reduction of ignition noise.
Broad band-pass 1st I.F. Transformer.
Automatic tone compensation.
Variable tone control.
Delayed A.V.C. for max. sensitivity.
INSTALLATION INSTRUCTIONS

RADIO KITS—1939 HUDSON

RADIO RECEIVER KITS
HA-157670—5 TUBE RADIO
MODEL SA-39
HA-157677—7 TUBE RADIO
MODEL DB-59

Parts Included with Each Complete Kit:
- Radio receiver
- Mounting bracket
- Attaching bolts, nuts & washers
- Distributor as present
- Generator complete (identification No. 11468)
- Belt tensioner on cover (ident. No. 11572)
- Ignition lead complete (identification No. 11505)
- Gas gauge complete (identification No. 11455)
- Station call letters charts
- Station call letters complete charts
- “A” lead and fuse charts
- Dial scale chart charts

RADIO INSTALLATION KITS
HA-157647—INSTALLATION KIT
HA-157649—INSTALLATION KIT
HA-157648—INSTALLATION KIT

HA-155813—ANTENNA KIT
(Parabolic Reflex Type)
HA-155814—ANTENNA KIT
(Parabolic Dish Type)

Additional Parts Required for Installation:
- Ground strap—14 gauge
- Ground strap—14" bolt
- Ground strap to body parts
- Harnessing equipment for Hudson models

RADIO ANTENNA KITS

RADIO SERVICE PARTS KIT
BC-158096—KIT CONTAINING ONLY
PARTS REQUIRED FOR RAPID
SERVICING OF MINOR FAULTS.
INSTALLATION INSTRUCTIONS

FOR

- MODELS -

SA-39-SIX TUBE-DELUXE

DB-39-SEVEN TUBE-CUSTOM

RUNNING BOARD ANTENNA INSTALLATION INSTRUCTIONS (SEE FIG. ON PG. 2)

1. Assemble front and rear antenna support brackets on left-hand running board with bolts and nuts and clips to firmly in place. Bolt to bottom of running board.

2. Mount the antenna under the left-hand running board assembly on engine side of the rear bracket with the end opposite the lead-in, working back and forth and stretching to attach the last hook to the outer hole of the front bracket.

3. Insert the lead-in through the hole in body floor panel in line with left front door front pillar post, leading up behind kick panel, scrape paint on running board in Hudson Six and Hudson Six Deluxe, remove the lead-in to bracket with bolt and nut. Install antenna lead-in to upper left corner of dash with clip No. 58537 by means of dash lining pad and clinch button located near choke wire hole.

TELESCOPIC TYPE ANTENNA INSTALLATION INSTRUCTIONS (SEE INSERT EE ON PG. 2)

1. Remove left-hand console front. Loosen cowl insulating pad and roll it down.

2. Drill two 5/8 inch holes in left-hand side of body cowl panel using template furnished in radio attachment kit. Place top edge of template at center of console over upper mounting area with center edge of template against edge of hinge pillar.

3. Insert antenna stand-off insulators with washers spaced over insulators so that they fit between body panel. From inside of body, assemble lower insulator housing and secure in place with washer and nut.

4. Remove paint from inside surface surrounding upper hole. Remove lead-in connector cap and assemble connector cap and assembly over upper mounting area and secure in place with washer and nut. Snap connector cap in place on connector.

5. In case of Hudson Six and Hudson Six Deluxe, the cover plate just above it which is held in place by three screws. These screws can be accessible from the back of the instrument panel.

6. Install new instrument panel escutcheon securing grommets with washers and nuts.

7. Install radio by inserting control knobs andconnecting instrument panel from back. Install control and connecting grommets and tighten securely with special wrench (see note at bottom of page). Tighten wing nuts securely.

8. Install control knobs and secure with set screw. Push in the push buttons.

9. Attach "A" lead to battery terminal "B" and connect to socket "C" on radio receiver being sure that fuse and fuses do not have in place. Connect antenna lead-in to socket "D".

10. Connect large condenser, part number 114486, to upper rear upper cap screw in engine water outlet and attach condenser terminal to terminal of water temperature gauge element. (Insert "CC3")

11. Attach one small condenser, part number 114485, to upper rear cap screw in engine water outlet and attach condenser terminal to gauge unit terminal. (Insert "BD4")

12. Attach one small condenser, part number 114484, to upper rear cap screw in engine water outlet and attach condenser terminal to gauge unit terminal. (Insert "CE4")

13. Install No. 155321 ground strap from front console bracket to chassis frame. (Insert "AA")

14. Install No. 155322 ground strap from the front console bracket to chassis frame. (Insert "BB")

15. Install No. 155323 ground strap from the center rear cylinder head stud to dash. The paint must be removed from points of attachment to insure good electrical contact.

16. Install suppressor in central terminal of distributor.

7. When installing radio on Hudson Six models, it is necessary to install the high range generator and charge regulator. (Insert "BB5") Connect "FPL" terminal on side of charge regulator to "F" terminal (engine side) of generator.

NOTICE: This special wrench, part No. J-1509 is to be ordered direct from the Packard-Meyers Company, Jackson, Michigan. The price of this special tool is $1.50.

--- IMPORTANT ---

After the set is installed, the antenna compensator must be adjusted. Carefully tune the set to a weak station between 550 and 650 KC. Remove the chrome plated button located above the rear plate on the left side of the set, adjacent to the antenna lead-in plug. Adjust the compensator for maximum volume. This adjustment insures maximum sensitivity.

--- PAGE 3 ---
THE COIL TERMINALS CARRY LETTERS WHICH CORRESPOND TO SIMILARLY LETTERED TERMINALS IN THE CIRCUIT DIAGRAM ON THE PRECEDING PAGE.
ALIGNMENT PROCEDURE

THIS MATERIAL APPLIES TO BOTH MODELS SA-39 AND DB-39 UNLESS OTHERWISE INDICATED BY NOTES BELOW.

TO PROPERLY ALIGN THESE RECEIVERS IT IS ESSENTIAL THAT YOU FOLLOW THIS PROCEDURE EXACTLY.

BEFORE ALIGNING THE I.F. TRANSFORMERS THE GREEN-WHITE JUMPER LOCATED UNDER THE FIRST I.F. TRANSFORMER MUST BE CONNECTED AS SHOWN IN FIGURES 2 AND 4 OTHERWISE ALIGNMENT WILL BE INCORRECT.

AFTER ALIGNING THE I.F. TRANSFORMERS TRANSFER THE GREEN-WHITE JUMPER LOCATED UNDER THE FIRST I.F. TRANSFORMER TO ITS ORIGINAL POSITION.

1- Connect the output meter across the speaker voice coil or
   (a) For Model SA-39, connect between the plate of the 6SK9 and chassis in series with a 1-mfd. condenser.
   (b) For Model DB-39, connect between the plates of the two 6V6G output tubes.
   NOTE: The Pore Sensitive type of meter should be connected across the voice coil.

2- Connect the ground lead of the signal generator to the receiver chassis and leave it connected in this manner throughout the entire alignment procedure.

3- Turn the volume control to the maximum volume position.

4- With the grid condenser in full mesh, set the pointer to the end of the calibration slot on the low frequency end of the dial scale. This can be done by loosening the setscrew in the dial cord drive drum, (see "E" in Figure 6 on page 11) holding the grid condenser in full mesh and turning the drum until the pointer is correctly set. Then tighten the setscrew in the dial drum.

<table>
<thead>
<tr>
<th>DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR</th>
<th>CONNECTION OF SIG. GEM. OUTPUT TO RECEIVER</th>
<th>SIGNAL GENERATOR FREQUENCY</th>
<th>RECEIVER DIAL SETTING</th>
<th>TRIMMER NUMBER</th>
<th>TRIMMER DESCRIPTION</th>
<th>TYPE OF ADJUSTMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>.05 MFD CONDENSER</td>
<td>CONTROL GRID OF 6670 TUBE</td>
<td>202 KC.</td>
<td>ANY POINT WHERE IT DOES NOT AFFECT THE SIGNAL</td>
<td>1-2</td>
<td>1ST I.F.</td>
<td>IMPORTANT: CHANCE TRIMMER ON BOTTOM OF 2ND I.F. TRANSFORMER TO CONNECT TERMINALS A &amp; B INSTEAD OF A &amp; C. (SEE FIGURE 1 OR 3 ON PAGE 2.) ADJUST FOR MAXIMUM OUTPUT. THEN RETIGHTEN TRIMMER. (TRIMMER NO. 4 IN MODEL DB-39 ONLY)</td>
</tr>
<tr>
<td>CONNECT A .125 MFD. MICA CONDENSER AT THE END OF THE SIGNAL GENERATOR LEAD. CONNECT THE OTHER END OF THE CONDENSER TO POINT &quot;A&quot; SHOWN IN FIGURE 1 OR 3 ON PAGE 5.</td>
<td></td>
<td>1350 KC.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAME AS ABOVE</td>
<td>1350 KC.</td>
<td>TIME TO 1350 KC. SIGNAL</td>
<td>6</td>
<td>ANTENNA (SHORT CONDENSER)</td>
<td>ADJUST FOR MAXIMUM OUTPUT.</td>
<td></td>
</tr>
<tr>
<td>SAME AS ABOVE</td>
<td>1350 KC.</td>
<td>TIME TO 1350 KC. SIGNAL</td>
<td>9</td>
<td>ANTENNA (IRON CORE)</td>
<td>ADJUST FOR MAXIMUM OUTPUT.</td>
<td></td>
</tr>
<tr>
<td>SAME AS ABOVE</td>
<td>600 KC.</td>
<td>TIME TO 600 KC. SIGNAL</td>
<td>6</td>
<td>ANTENNA (SHORT CONDENSER)</td>
<td>ADJUST FOR MAXIMUM OUTPUT.</td>
<td></td>
</tr>
<tr>
<td>SAME AS ABOVE</td>
<td>600 KC.</td>
<td>TIME TO 600 KC. SIGNAL</td>
<td>7</td>
<td>R.F. (IRON CORE)</td>
<td>ADJUST FOR MAXIMUM OUTPUT.</td>
<td></td>
</tr>
<tr>
<td>SAME AS ABOVE</td>
<td>1850 KC.</td>
<td>TIME TO 1850 KC. SIGNAL</td>
<td>7</td>
<td>R.F. (IRON CORE)</td>
<td>ADJUST FOR MAXIMUM OUTPUT.</td>
<td></td>
</tr>
<tr>
<td>SAME AS ABOVE</td>
<td>600 KC.</td>
<td>TIME TO 600 KC. SIGNAL</td>
<td>8</td>
<td>ANTENNA (SHORT CONDENSER)</td>
<td>ADJUST FOR MAXIMUM OUTPUT.</td>
<td></td>
</tr>
</tbody>
</table>

AFTER THE SET IS INSTALLED IN THE CAR, TUNE IN A FAIRLY WEAK STATION NEAR 600 KC. AND ADJUST TRIMMER 8 FOR MAXIMUM OUTPUT.

-PAGE 8-
TRIMMER LOCATION CHARTS FOR MODEL SA-39.

Important

Before aligning the IF transformers, this green-white jumper should be connected between terminals A and B.

After the IF alignment is complete and before aligning the R.F., this jumper must be connected from terminal A to terminal C.

Leave the jumper connecting terminals A and C after all alignment is completed.

Bottom view of chassis

Fig. 1

TRIMMER LOCATION CHARTS FOR MODEL DB-39.

Important

Before aligning the IF transformers, this green-white jumper should be connected between terminals A and B.

After the IF alignment is complete and before aligning the R.F., this jumper must be connected from terminal A to terminal C.

Leave the jumper connecting terminals A and C after all alignment is completed.

Bottom view of chassis

Fig. 3
ADDITIONAL SERVICE DATA

HOW TO REPLACE THE DIAL POINTER DRIVE CORD

1. Tie a knot near one end of 25' of special pointer drive cord (Part Number 118-78).

2. Thread the free end of the cord through hole A in drum B (figuring from the inside of the drum out). See Fig. 6.

3. After pulling the cord through hole A, make one half turn around the drum B in a counter-clockwise direction (when viewed from front of radio). See Fig. 6.

4. Continue the cord over to the back of pulley C and around to pulley D. From this point continue across to pulley E and around to pulley F.

5. Go around pulley E and up to the top of drum H to hole C.

6. Draw the cord through hole C and tie it to the end of tension spring H in such a manner that when the spring is clipped to lug J, the spring will be extended to approximately 7/8 inch.

HOW TO SET UP THE PUSH BUTTONS.

To set up the push buttons, proceed as follows:

1. Turn on the set and allow it to operate for at least one-quarter hour before attempting to set up the push buttons.

2. Select the five stations to which the buttons are to be set. The best results are obtained by starting with a known situation, since weak signals will generally give better results than those tuned in manually.

3. With the push buttons in position, the push button switch should be in the position set for the station to be set.

4. Tune in the station to which you wish to set the particular push button, and tune the station exactly by turning the knob of the push button and stop when the signal is heard at the push button.

5. Grasp the push button being set, and turn the button to the left (counter-clockwise) about one turn.

6. Push this button by tapping it with a ballpoint pen or a similar tool, pushing it in, turn right (clockwise) until firmly set.

7. Set up the remaining buttons in a similar manner.

8. Label each button with the call letters of the station to which it is connected. Use a clean, waterproof label on the button and cover with a protective cap.

9. Set up the push button tuner, first push in the tuning knob. Then push in the button labeled with the call letters of the station desired. Be sure to push the button all the way in.

INCORRECT TUNING OF PUSH BUTTONS

Occasionally a receiver may be found which will not tune-in stations accurately when push button tuning is used. The cause and remedies for this are as follows:

1. Push buttons incorrectly set-up. Remedy: Reset the button to the desired station and check the station carefully.

2. Extreme weakness of tuning of the receiver. Remedy: The green-white jumper wire on the button of the set should be connected. The correct connection for normal operation of the receiver is shown in Fig. 1 on page 3. Terminals A and C should be connected together.

CATHODE-RAY ALIGNMENT

If a cathode ray oscilloscope is to be used for alignment purposes, its vertical input terminals should be attached to the sweep detector output. Connect the "B" vertical terminal of the cathode-ray oscilloscope to the point shown on the chassis wiring diagram, pages 5 and 7, also indicated as point "A" on the schematic circuit diagram, pages 4 and 8. Connect the "A" or ground terminal of the oscilloscope to the receiver chassis.

When using a cathode-ray oscilloscope for alignment it is necessary that the input signal be frequency modulated.

AUDIO OSCILLATION IN MODEL DB-39 RECEIVER.

Occasionally audio oscillation or howl may be encountered in this model. This effect results from a high audio volume output, which will pass back to the audio section of the receiver from the speaker cord. The remedy is to locate the speaker cord wires from the DB-39-4 to DB-39-5, holding one in place with a rubber band if necessary.

LOW SENSITIVITY

Low sensitivity may be due to improper adjustment of the antenna, compensating trimmer or some other control. In such cases, the antenna and its insulators should be replaced, and preferably, allowed to dry before making adjustment. When this is done, the antenna and any other control should be replaced, and preferably allowed to dry before making adjustment. It is desirable to align the antenna and any other control before making adjustment.

FAILURE OF RECEIVER TO OPERATE

Failure of the receiver to operate may be due to one or more causes. When a receiver is found in such condition, its parts should be checked as follows:

1. FUSE

The fuse may be blown or the fusing is poor. In cases of burnout, replace with another 15 Amperes fuse. If second fuse blows, remove receiver from service and connect an oscillator across the fusing. If the fuse blows, replace the suspected unit with a new fusing. Do not attempt to adjust the defective unit.

2. TUBES

The tube in the tube clamp holding the speaker case cover. This will enable you to reach the tubes. Check to see that all tubes are in their proper sockets. One or more tubes may be defective. If the tubes do not operate, remove the receiver from service and connect an oscillator across the tube fusing. If the tubes work, replace the suspected unit with a new tube.

3. VIBRATOR

Improper operation of the vibrator is usually evidenced by one of the following symptoms: Receiver blows fuses, receiver is dead or weak, reception in intermittent, reception is noisy and undetectable. To check the vibrator, replace the suspected unit with a new vibrator. Do not attempt to adjust the defective unit.

4. CIRCUIT

Failures within the basic circuits of the receiver may be indicated by a systematic test procedure. The receiver should be removed from the car and placed where it will be readily accessible. The top cover and speaker cover should be removed from the case. The defect in the receiver can then be located by means of a voltmeter, voltage, or oscilloscope, using a signal generator. Refer to the diagram and parts list on pages 5, 6, 7, and 8, and take the respective voltage and current readings. Pages 5 and 6 illustrate the wiring diagrams of the parts and the color coding of the wiring, which will be of assistance in checking the circuit for continuity.

ADJUSTMENT OF IRON CORES IN COILS

The Antenna, R, A, and Oscillator coils have adjustable iron cores. Any adjustment of these cores will necessarily change the inductance of the coils and therefore extreme caution must be exercised where adjustment becomes necessary. When working on the receiver for alignment, the grid connection must be left undisturbed. The correct method of adjusting the iron cores is adequately covered under 'Alignment Instructions' on page 5.