



# DELCO

## electronic parts

### AUTO RADIO BULLETIN

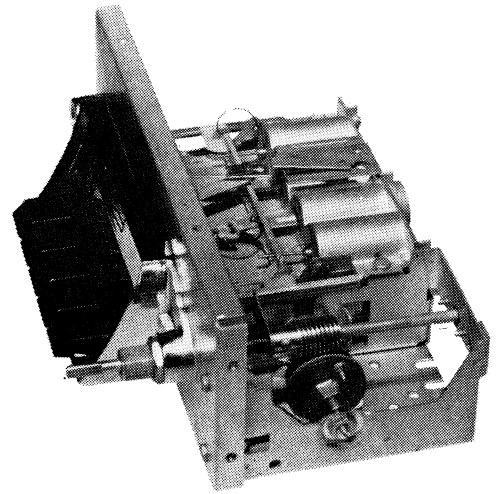
Bulletin	6D-622
Delco	TUNER
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First Issue	

#### SUBJECT: SERVICE INSTRUCTIONS FOR THE SHORT STROKE PUSH BUTTON TUNER SERIES P-2

#### GENERAL:

The short stroke push button tuners are used on several Delco radio models (starting in 1957). The service bulletin for any radio using this type of tuner will refer to this bulletin for tuner service.

The push button tuner is a mechanism used to tune the radio through the broadcast band. This tuner uses permeability tuning. The tuning is done either with the manual tuning control or any of five push buttons.



Short Stroke Push Button Tuner Series P-2

#### TUNER OPERATION

##### MANUAL TUNING MECHANISM

In a permeability tuned radio, the tuning is done by moving powdered iron cores in and out of the tuning coils. To do this, the manual drive mechanism connects the rotary motion of the manual tuning knob to the straight line motion of the iron cores. This is done as follows: (See Fig. 1).

1. The manual knob (1) and shaft (2) turn the worm gear (3).
2. The worm gear (3) then turns, at a slower speed, the flat-anti-backlash gears (4) which is fastened through the clutch (5) to the treadle shaft (6).
3. As the treadle (7) rotates, it moves the core bar (9) which is connected to it by the links (8), back and forth along the tuner side plates (not shown).
4. The iron cores (9) are fastened to the core bar (10) and move in or out of the coil housing (not shown) accomplishing the tuning.

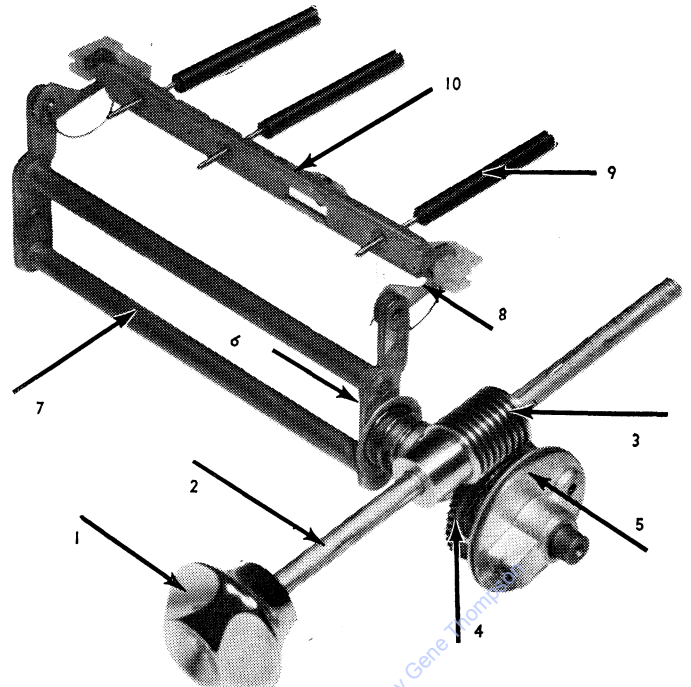


FIG. 1

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The worm gear drive acts as a positive brake to hold the tuning cores in position even though the radio is jarred. The worm gear drive can only be turned from the worm gear (manual tuning knob) end of the drive. This irreversible drive eliminates any mechanical drift of the tuner.

Pushbutton tuning is accomplished by pushing a button all the way in and releasing. The sequence of operation is as follows: (See Fig. 2).

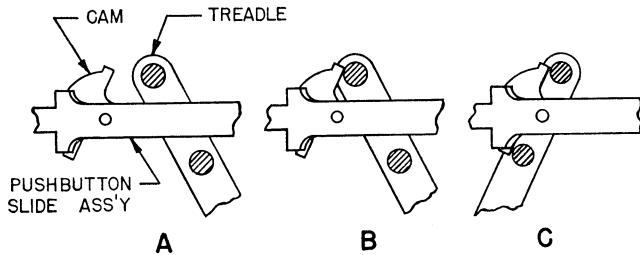


FIG. 2

1. Figure A shows a push button in its normal position and the relationship between the pushbutton slide assembly and the treadle.
2. As the push button is depressed to the position shown in Figure B, the clutch is disengaged (see clutch operation) allowing the treadle bar to move easily.
3. When the push button is depressed all the way, the treadle is rotated to a position which is parallel to the setting of the cam on the push button slide assembly, (Figure C) thereby changing the frequency to which the radio was tuned.
4. As the push button is released, its slide assembly is returned to its normal position (Figure A) and the clutch is re-engaged.

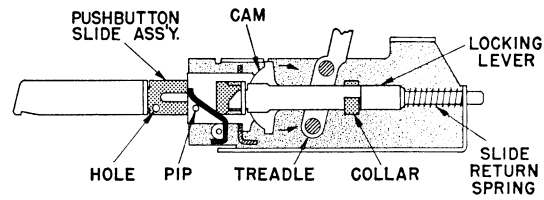
#### Push Button Set-Up Procedure

1. Manually tune to desired station.
2. Select the button to be set up and push it to the side (see bulletin for radio involved) and pull all the way out (about 1/2 inch).
3. Push the button all the way in and release.

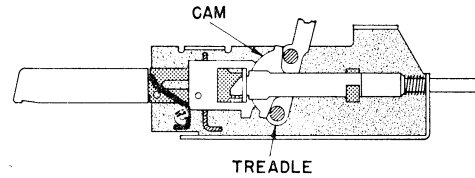
#### How It Works:

To set up the push buttons to tune in a station, it is necessary to position the cam on the push button slide assembly so that when the push button is depressed, it will move the treadle to the correct position to tune the radio to the desired frequency. This is done as follows:

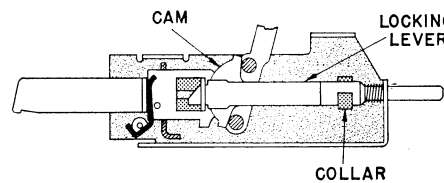
1. As the desired station is tuned in manually, the treadle is being rotated and positioned for the required frequency. The clutch assembly holds the treadle securely in position.
2. The push button is moved to the side. This moves the black dotted portion of the push button slide away from the white portion (See Fig. 3, Step 1) disengaging the hole from the pip and—
3. Allowing the push button to be pulled all the way out to its extended position as shown in Step 1. In this position, the locking lever exerts no pressure on the cam, allowing the cam to move freely.



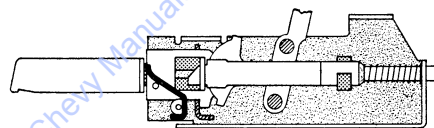
STEP 1 - BUTTON EXTENDED - CAM FREE



STEP 2 - BUTTON EXTENDED - CAM ALIGNED



STEP 3 - BUTTON LOCKED - CAM LOCKED



STEP 4 - BUTTON IN NORMAL POSITION - CAM LOCKED

FIG. 3

4. As the push button slide assembly is pushed in, it remains extended until the cam is positioned against the treadle as shown in Figure 3, Step 2. This positions the cam parallel to the treadle.
5. As the push button is pushed further in, the collar slides along the inclined plane of the locking lever (Step 3) causing the locking lever to exert a pinching pressure on cam strong enough to hold it in position so that whenever the push button is depressed, the cam will return the treadle to the same position.
6. The push button is released and assumes its normal position as shown in Step 4.

The push button is now set up and any time the push button is operated, it will tune the radio to the frequency for which it has been set.

#### Clutch Operation

The clutch in this tuner is used to release the braking action of the manual tuning mechanism by completely disengaging the manual drive mechanism from the treadle while the push button is operated. The clutch operates as follows: (See Figure 4.)

1. As push button is depressed, the button forces finger on the cam and finger bar "A" backwards.

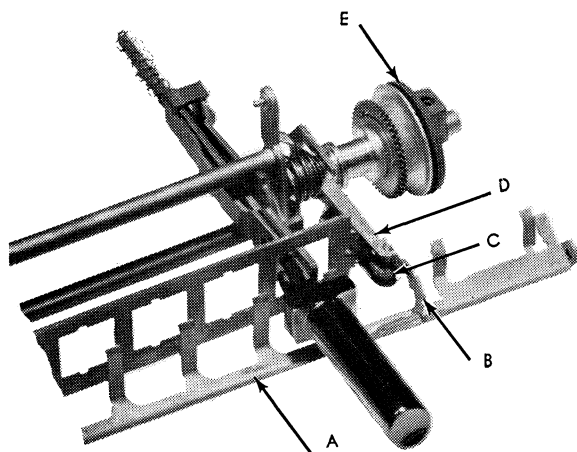


FIG. 4

2. This rotates the clutch cam "B" backwards, causing the roller "C" on the clutch lever "D" to move toward the tuner.
3. As lever "D" is moved towards the tuner, all pressure is removed from the inside face of clutch "E"; thereby removing all friction from the two faces of clutch "E."
4. The inside face of clutch "E" is fastened to the flat anti-backlash gears and therefore to the manual drive. The outer face of the clutch is fastened to the shaft of the treadle and when the faces of the clutch "E" are separated the treadle is free to move easily.

### TUNER ADJUSTMENTS

No tuner adjustments should be necessary unless some parts have been changed in the tuner. The factory makes all adjustments with precision equipment. Always be sure an adjustment is necessary before it is made.

#### Pointer Calibration Adjustment

The procedure for calibrating the pointer is as follows:

1. Connect the signal lead of a signal generator to the antenna connector of the radio and the ground lead to the chassis.

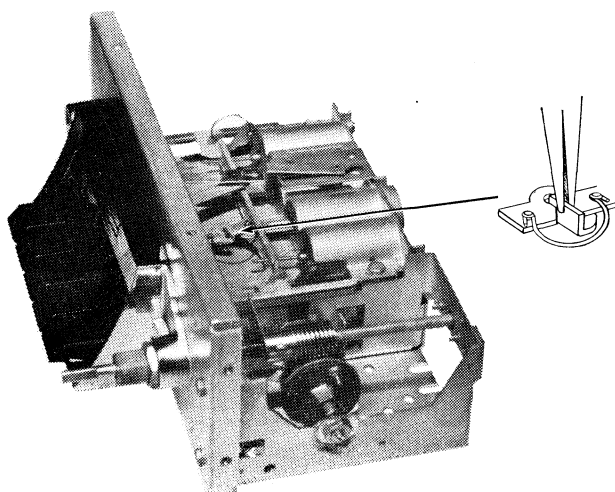


FIG. 5

2. Tune the signal generator to the frequency specified under "alignment procedure" in the service bulletin for the radio involved.
3. The pointer should now be adjusted by bending the pointer adjustment ear in the proper direction to make the pointer coincide with the signal frequency. (See Fig. 5).

#### Anti-Backlash Gear Adjustment

The anti-backlash gear is a special gear used to take out any play in the mesh of the flat and worm gears. The anti-backlash arrangement of this tuner consists of two flat gears, side by side. One of these gears is fastened to the shaft on which it is mounted while the other is free to rotate around the shaft. These gears are spring loaded against each other so that their teeth will completely fill the space between the worm gear even though this space may vary. The anti-backlash gear is adjusted as follows: (See Fig. 6).

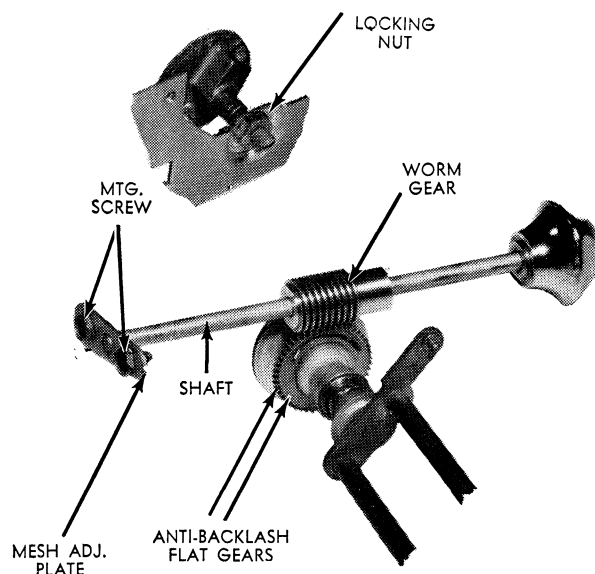


FIG. 6

1. Remove mesh adjustment plate.
2. Disengage worm from flat gears by lifting the back end of the tuning shaft.
3. Turn the flat gear, that is free to move, clockwise (looking from the right end of the tuner) until the spring is completely compressed, and then back off four teeth. Re-engage the worm to hold the anti-backlash gear from slipping. This adjustment can be made easily through the access hole in the bottom of the tuner.
4. Reinstall the mesh adjustment plate. Make worm gear mesh adjustment.

#### Worm Gear Mesh Adjustment

The worm gear mesh adjustment is made for the proper meshing of the worm gear and flat gears. The worm gear mesh adjustment is made as follows: (See Fig. 6).

1. Loosen the locking nut and position the flat gears directly under the worm gear by adjusting the treadle pivot set screw.
2. Loosen the mesh adjustment plate screws.
3. Insert a screwdriver in the adjustment slot and bring the worm down snug against the flat gears until you are unable to turn the manual tuning shaft with your fingers (knob removed from shaft).
4. Twist the screwdriver counterclockwise lifting the worm gear until you are able to tune easily from one end to the other end of the dial without a knob on the shaft.
5. Tighten down mesh adjustment plate.

### Clutch Adjustment

The clutch adjustment on this tuner is made in order to control the amount of pressure on the clutch faces. When properly adjusted, the clutch will not slip when engaged, and will disengage at the proper moment to allow the free movement of the clutch faces when necessary.

If the clutch slips during manual tuning, it may be that there is a mechanical bind somewhere in the tuner. To check for a mechanical bind, depress a pushbutton just far enough to cause declutching action, and move the core bar back and forth by hand. The movement of the core bar should be free and easy.

If the clutch seems to be too tight and not declutching, check to see that the finger bar cam is moving the declutching lever arm whenever a pushbutton is depressed; if not, refer to the tuner operation section to diagnose trouble.

If the clutch is slipping due to some oil or other lubricant on the clutch faces, open the clutch by depressing a pushbutton. With the clutch faces separated, rinse the faces with a grease cutting solvent such as carbon tetrachloride until the faces are once again grease free.

If after careful examination, the clutch adjustment is necessary, proceed as follows:

1. Tune the radio to the low frequency end of the dial (cores will be in coils).
2. Loosen locking nut and position the treadle arm ("treadle arm" sticks through coil housing to link onto core bar) midway between the coil housing and the frame arm by adjusting the treadle pivot screw (held by locking nut). (See (insert,) Fig. 6).
3. Tune the radio to the high frequency end of the dial and loosen the slab-head set screw on the clutch disc which is accessible from beneath the tuner.
4. Position the flat gears directly beneath the worm gear by sliding the clutch along its axle, and tighten the slab-head set screw in order to hold the clutch in this position. (Tuner must be kept at high end of the dial

when tightening slab-head set screw). Check to see that finger bar cam is holding the roller snug against the finger bar cam; if not, bend the cam until the roller is just held securely in position. Loosen the treadle Pivot Screw until the clutch slips while turning the manual tuning control.

5. Tighten treadle pivot screw until the point is just reached where there is no clutch slippage when the radio is manually tuned across the band and back. (Caution—If treadle pivot screw is turned in too far, the treadle arm will strike the coil housing and tuning will be impossible—a mechanical bind could cause this condition.)

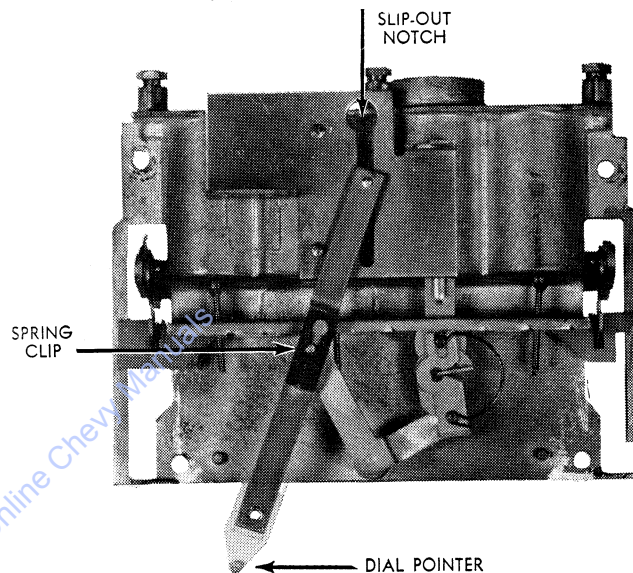


FIG. 7

### Replacement of Dial Pointer (Refer to Figure 7)

1. Remove the escutcheon by removing the four mounting screws.
2. Remove the spring clip holding the pointer arm.
3. Remove the two screws that hold the dial. (This step may be omitted in the case of Buick, Oldsmobile and Chevrolet. In these models, the dial is fastened directly to the escutcheon.)
4. Remove the left mounting screw for the station selector bar as you look in from the front of the set. Move the station selector bar upward as far as possible after removing the screw so that the dial pointer may be slipped past it. (This step applies to only the Buick models.)
5. Move the dial pointer to the low end of the dial so that the pointer linkage may be slipped out of the guide slot in which it rides. (Figure 7).
6. Lift the pointer out and reinstall the new pointer by reversing the above procedure.

### Rubber Clutch Facing Replacement

1. Remove the four mounting screws which attach the power supply unit to the receiver and separate the two units. (This step does not apply to all models.)
2. Remove the mounting screws for both the large and small printed circuit boards.
3. Disconnect any wires which make it possible to move the printed circuit boards up and out of the way.
4. Remove the pulley belt and then remove both pulleys. (This step applies to Cadillac only.)
5. Remove the treadle set screw.
6. Loosen the slab-head set screw on the clutch driven disc from the bottom of the tuner.
7. Slide the disc toward the end of the shaft and remove the old facing.
8. Slip the replacement facing over the end of the treadle shaft and then stretch it over the clutch disc.
9. Position the facing on the clutch disc, and move the disc back against the other clutch face, tightening the slab-head set screw.
10. The tuner parts are replaced by reversing the above procedure.
11. Make the clutch adjustment as outlined in the adjustment section.

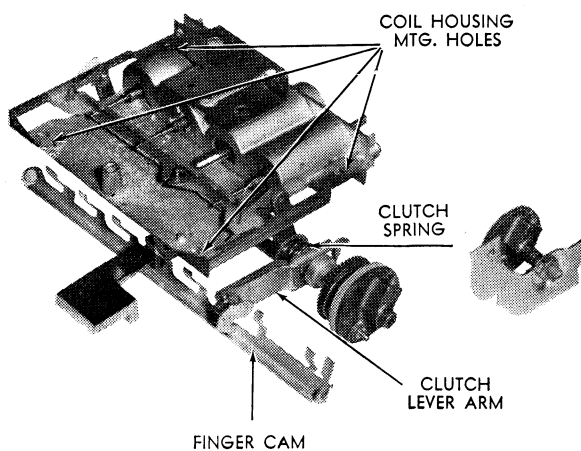


FIG. 8

### Replacement of Push Buttons and Slides

The push button and slide assemblies and the front bearing plate are replaced as one unit. When the front bearing plate and the five push button and slide assemblies are put back in the tuner, the slide return springs may

make the reassembly difficult. However, this can be avoided by holding these springs in a compressed position on the ends of the slides with a paper staple or piece of wire during the assembly operation. Be sure to remove the wire after returning the tuner to the radio.

1. Remove the four mounting screws which attach the power supply unit to the receiver and separate the two units. (This step does not apply to all models.)
2. Remove the mounting screws for both the large and small printed circuit boards.
3. Disconnect any wires which make it possible to move the printed circuit boards up and out of the way.
4. Remove the pulley belt and then remove both pulleys. (This step applies to Cadillac only.)
5. Remove the escutcheon by taking off the four mounting screws.
6. Remove the dial glass. (This applies to Cadillac only.)
7. Remove the three screws holding the tuner frame to the front plate of the radio.
8. Pull the front plate away from the tuner frame so that it is possible to lift out the worm toward the front of the tuner. (To move the front plate, it may be necessary to remove the collar or spring clip on the end of the worm shaft.)
9. Remove the mounting screw for the antenna trimmer. (On the Cadillac model, disconnect the antenna choke so that the trimmer will not restrict the removal of the tuner assembly.)
10. Lift entire tuner assembly out of the chassis.
11. Remove the four screws holding the coil housing and lift the coil housing back so that the pushbutton slides may be removed. (Figure 8).
12. Remove the finger cam arm (Figure 8) by first removing the spring clip on the right side of the arm. The finger arm may then be removed by prying the left end off and working it out.
13. Remove the front bearing plate.
14. Remove the push button and slide assemblies.
15. The tuner may be reassembled by reversing the above steps.

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### Replacement of Tuning Coils

1. Remove the mounting screws for the large and small printed circuit boards and reposition the boards out of the way. (In the Buick model, remove only the large printed circuit board.)
2. Remove the four mounting screws which attach the power supply unit to the receiver and separate the two units. (This step may be omitted on the Cadillac model.)
3. Remove the two screws holding the right wraparound (side near clutch) and bend out.
4. Remove the trimmer mounting screw and reposition the trimmer out of the way.
5. Remove the pulley belt and take off the pulley closest to the antenna trimmer. (This step applies to Cadillac only.)
6. Remove the three mounting screws holding the tuning coil strip.
7. Now move the wraparound as far as possible from the tuning coil strip.
8. Work the tuning coils out of their housing and up past the printed circuit board.
9. Replace the defective coil strip back in the coil housing.
10. Remount all parts.

Old Online Chevy Manuals

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