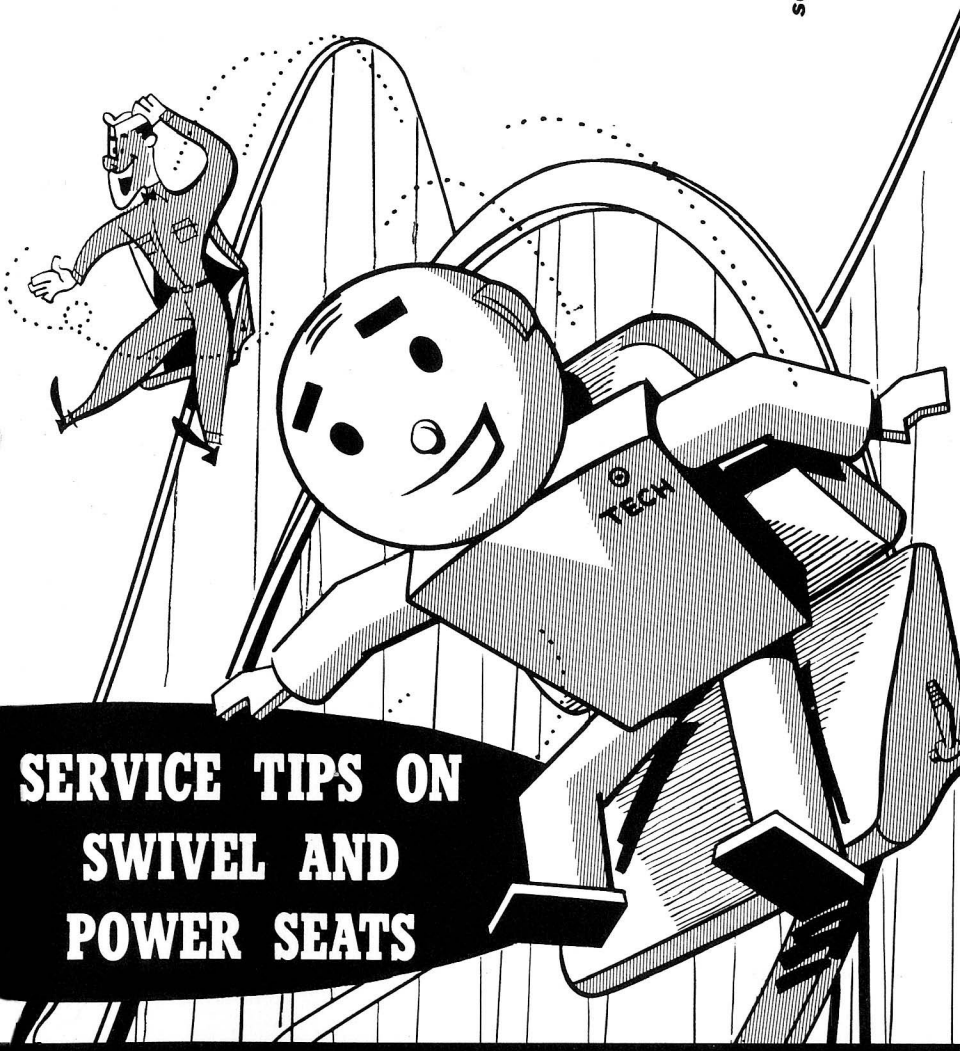
SERVICE REFERENCE BOOK

of the MASTER TECHNICIANS SERVICE CONFERENCE

session no. 134



SERVICE TIPS ON SWIVEL AND POWER SEATS

PREPARED BY CHRYSLER CORPORATION

Plymouth · Dodge · De Soto · Chrysler · Imperial

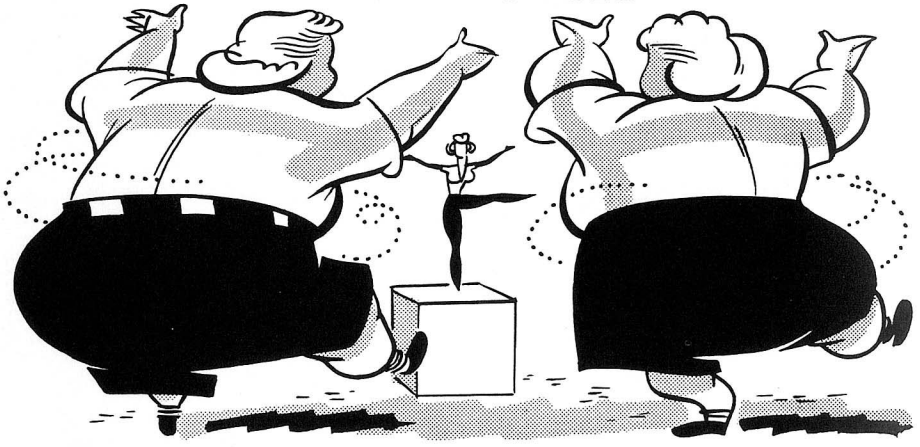
"LET'S KEEP OUR CUSTOMERS SITTIN' PRETTY!"

Everybody knows that we've scooped the field with our brand-new swivel seats. Our power seats, too, are rated the best in the business. Both of these features, naturally, are designed to keep our customers driving in greater comfort.

Since well-operating, comfortable seats are so basic to an owner's comfort, it's up to us to keep our customers sittin' pretty. To help you do that, this reference book covers operation, adjustment, and normal maintenance suggestions on both the swivel and the power seats.

Here's where to look for the seat service tips you want:

SWIVEL SEATS

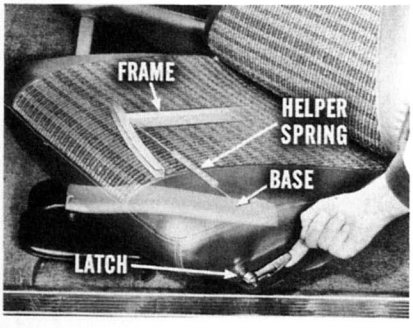


Description

This arrangement consists of two pivoted front seats that can be swiveled outward to an angle of 40 degrees after front doors are opened. When both seats are in their normal position, both cushions join with a center cushion to provide a continuous seat cushion effect. The seat back of the center section folds forward to provide a padded armrest.

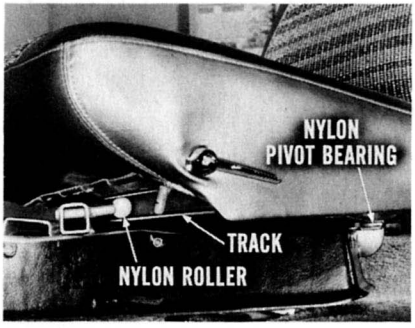
Operation

A springloaded latch holds each swivel seat in its normal position. When the latch handle is raised, an anti-rattle, or helper spring, that's connected between the frame and base helps swivel the seat outward in a 40° arc.



When the seat is pushed back to its straight-ahead position, it automatically locks in place. A pull-down armrest is attached to a stationary section between the two swivel seats.

The seats turn on a washer-type nylon pivot bearing, and a curved semi-circular track that rides on two nylon rollers mounted on pins that project rearward from the front section of the seat frame.

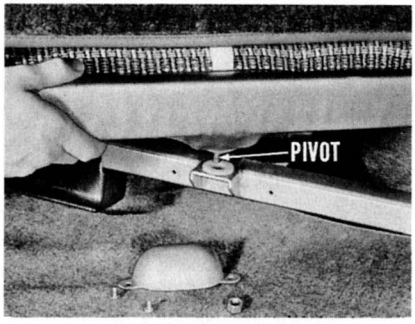


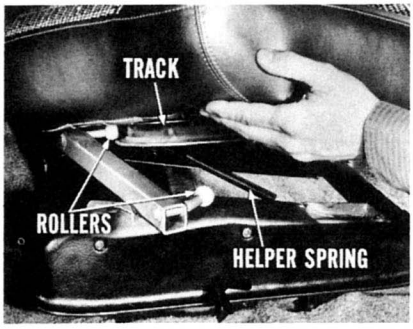
Maintenance

Diagnosing and servicing conditions on swivel seats is something you can take in stride. Only rotational and noise problems are involved, and these are more easily corrected with the seat on the bench.

Occasionally, there might be an appearance condition to correct, such as damage to the door trim panel. This is caused by closing the door without first returning the seat to the latched position. The latch handle will damage the door panel.

Removing the Seat. To remove the seat, first take out the two screws that hold the pivot bracket cover at the rear of the seat. Remove the cover, and then the pivot nut. Swing the seat out to its stop, and raise it to remove the pivot from the seat base.





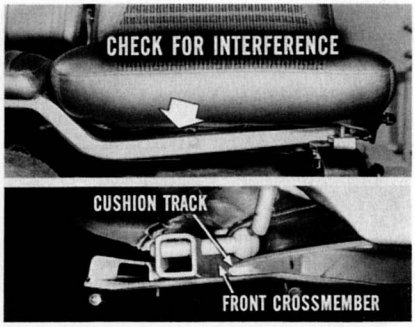
Next, move the seat backward slightly to remove the track from the two rollers. Then, detach the helper spring from the seat frame. Finally, remove the seat and put it on a clean area of the bench.

Seat Does Not Swivel Freely. If the seat doesn't swivel smoothly, it's possible that the helper spring is too weak, or broken. In a case like this, replacing the spring will correct the condition.

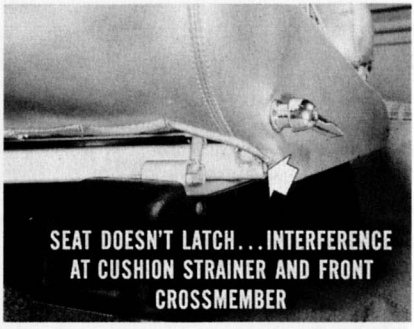
If the helper spring is okay and swivel action is still on the stiff side, check for a broken nylon roller, a molding flash at the hole in the roller, or some flat spots. If those possibilities aren't present, spin the rollers on their mounting pins to see how freely they turn. If they don't roll freely, remove them and lubricate the pins with MoPar Lubriplate.

In addition, check action at the rear pivot. Both faces of the nylon pivot bearing washers must be lubricated, and be free from wear, cracking, or other damage.

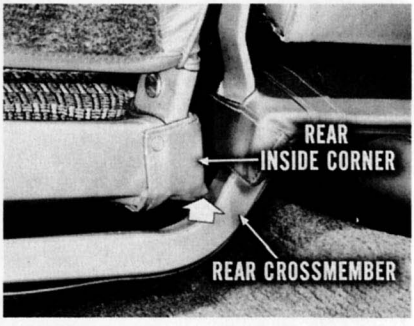
It's wise, also, to check for interference between the seat cushion and its base frame. The cushion track just clears the rear vertical face of the front crossmember. Filing off the edge of the track, if it does interfere, should correct a case like this.



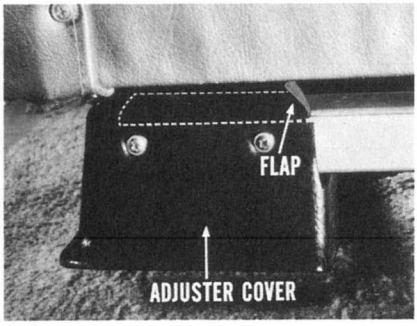
No Latching in Straight-ahead Position. If the seat doesn't automatically latch when it's returned to its straight-ahead position, see if there's interference between the cushion strainer flange and end of the front crossmember. Remove, or realign the surplus trim material, if necessary.



At the rear *inside* corner of either seat, the trim welt, or a material build-up, might interfere with the rear crossmember kick-up. Loosen, and realign the trim—or file off the edge of the seat strainer.

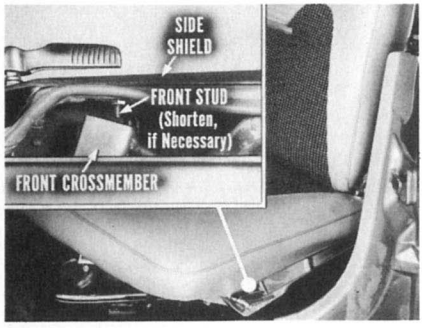


Besides that, check below the rear outside corner of either seat. As the seat swivels outward, the seat springs might catch and peel



back the top flap of the adjuster cover. This not only causes interference, but sounds off like a piece of stiff paper in the spokes of a turning bicycle wheel. Just use a sharp knife to cut off the flap and eliminate this interference-noise possibility.

Keep in mind, too, that the fixed cushion might interfere with the cushion that turns. You can eliminate this, of course, by loosening the four screws underneath and relocating the fixed cushion.

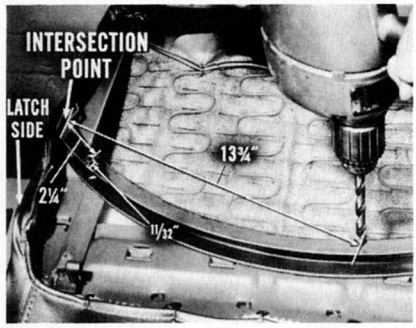


On models with side shields, check for interference at the shield front stud and end of the front crossmember. Shorten the stud, if necessary, to take care of this.

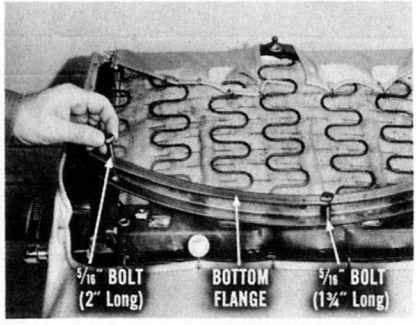
Seat Loose and Noisy. If the seat is noisy, or chatters while the seat is in its latch position, you can check for several possible causes. There can be too much clearance between the rollers and track, loose pivot nut, or looseness at the seat base frame mountings. To do this, slide the rollers off their mounting pins and

see how they fit in the track. If there's too much space between the roller and track, it means the track has spread apart. There should be just enough clearance to let the rollers turn freely.

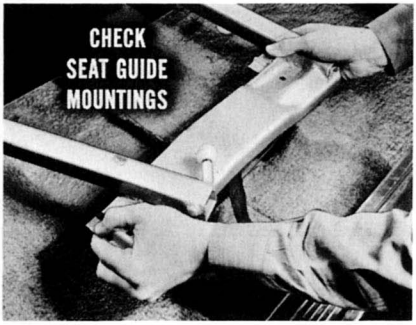
You can correct excessive roller-to-track clearance by installing two bolts in the track to draw the flanges in. Turn the seat upside down, and drill two sets of holes, 11/32" in diameter. They should be drilled 11/32" in from the front edge of the track. Drill the first set of holes 2¼" in from the track-to-strainer intersection on the latch side. Drill the second set 13¾" from the same point.



When the holes are drilled, insert a 5/16" bolt, 1¾" long, through the inner set of holes, from the *bottom* flange. Put a 2" bolt, same diameter, through the *outer* set of holes, also from the bottom. Add nuts and lock washers. Tighten the nuts to close up the track until there's no excessive clearance and the rollers can still turn freely.



NOTE: Some success has been reported with *tapping* the upper flange after drilling the holes. In this case, the bolt used should be a 5/16"-18, and long enough to use all the threads in the flange, yet not interfere with the seat trim. Using a tapped hole makes it very easy to adjust the roller clearance with the seat installed.



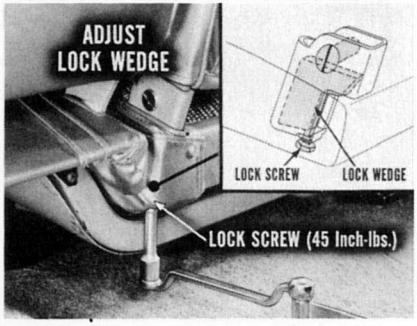
Before you install the seat, check the seat guide mountings to the seat base frame for looseness. Excessive movement there can cause noise. Tightening the four stud nuts that hold the frame to the guides will usually fix this condition.

Installing the Seat. Best way to check on how well you've corrected a noise is to install the seat and check its operation. So, put MoPar Lubriplate on the roller pins, and slide the rollers onto their pins. Again, check the rollers for free rotation. Also, apply MoPar Lubriplate to both surfaces of the pivot bearing washer, and place it on its mounting bracket. Then, hook up the helper spring. Position the track on the two rollers. Insert the pivot assembly through the bearing washer and into the seat base mounting hole. Make sure no trim material gets between the pivot bearing and metal surfaces, as it would retard pivoting action.

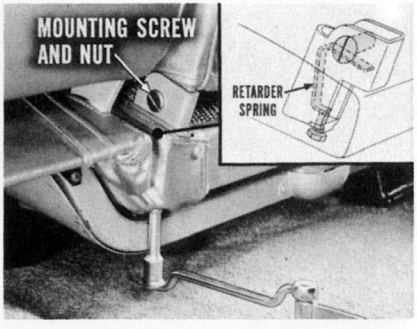
Install the pivot nut next. Tighten the nut enough to permit pivot movement, but absolutely no vertical movement. If the seat operates smoothly, noiselessly, and with no feeling of looseness, install the pivot bracket cover and secure it with the two screws.

Seat Back Folds Forward (4-door Models). On 4-door models, you might encounter a condition where the seat back tends to fold forward. This seat should be firmly locked in place under all conditions.

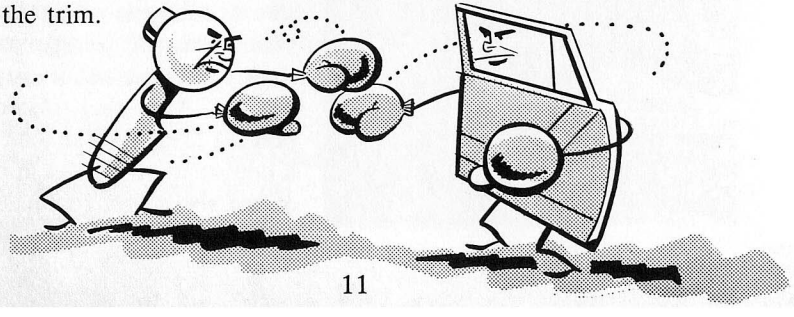
Check tightness of the seat back mounting screw and nut on each side of the hinges. In addition, adjust the lock wedge by tightening its lock screw to a maximum torque of 45 inch-pounds. If the back still falls forward, replace the lock wedge, torque the lock screw and check it again.



Seat Back Falls Forward (2-door Models). On 2-door models, if the passenger seat back falls forward during sudden stops, or is hard to fold when you try to get in the back seat, the retarder springs may need adjustment. You adjust them on both sides by tightening or loosening the lock screws. At the same time, be sure to check the mounting screws and nuts for proper position and tightness.

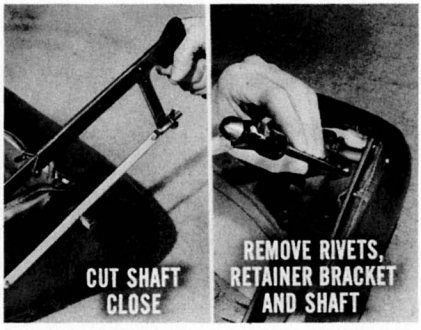


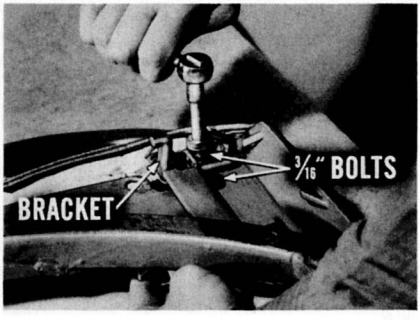
Latch Handle and Door Panel Interference. If you noticed some signs of interference between the latch handle and door panel, be sure to correct it. This can happen if an owner leaves the seat unlatched and tries to close the door. The door strikes the latch handle, damaging the trim.



There's a new handle and shaft package available (Part No. 1881871) that you can use to take care of door trim interference. It contains two shorter shafts, two new handles, bolts, washers, and attaching screws – enough for both seats.

Remove the seat. On cars without side shields, remove the handle and spacer, and discard both. Then, to make shaft removal easy, cut it off as closely as possible to the frame hole. Use a chisel to cut the rivets that hold the retainer bracket. Drive or drill out the rivets. Remove the bracket and shaft. Throw the shaft away, but save the spring.

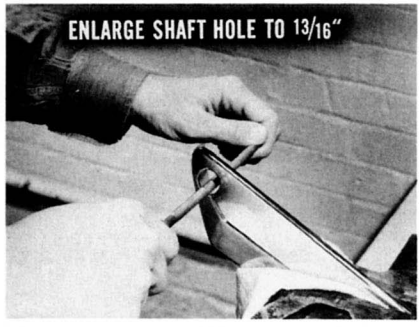




Each new shaft in the replacement package is 5/8" shorter than the original shaft. Work the old spring over the shaft and install it in the bracket. After that, fasten the bracket back on the seat. Use a couple of 3/16" bolts in place of the rivets you removed.

On models without side shields install a chrome washer (Part No. 2080317) on the shaft, and then the new handle. Run in the attaching screw, and you're done.

On cars that *do* use side shields, you'll have to remove the shield so you can make the shaft hole larger. So, as soon as you get the handle off, reach inside the seat frame to remove the two stud nuts that hold the shield to the frame. Lift off the shield and replace the shaft with the new one as described earlier. Then, enlarge the shaft hole in the shield to $^{13}/_{16}$". Be sure to use the same hole center so the new handle won't rub on the shield. Reinstall the shield and install the handle and screw. Finally, reinstall the seat and check its operation.

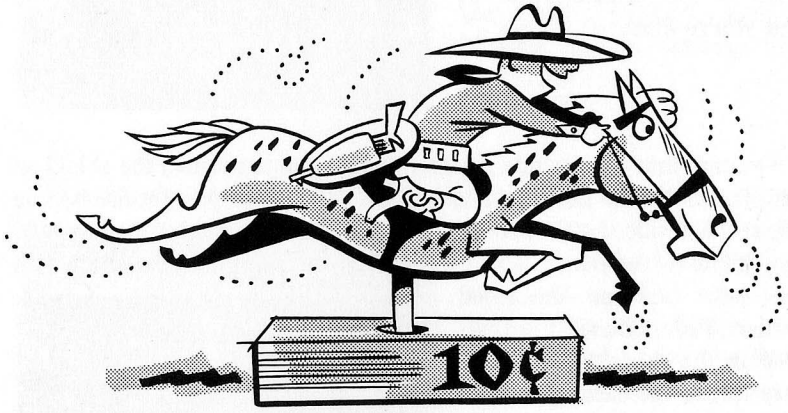


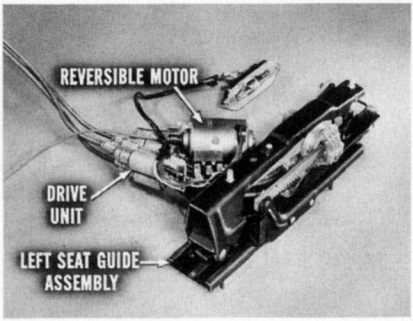
Armrest Hinge. The center armrest between the two swivel seats is mounted on two hinges and a hinge rod. Hinges pivot against a flat nylon bearing, and are held in position by crosshead pivot screws. If the armrest doesn't operate smoothly, remove the crosshead screws on both sides and lift the hinge straight up to remove it.

Inspect the nylon bearings for wear and damage. If there's any question about their serviceability, replace them with new ones. Position the bearings on the hinge rod. Place the hinge in position and install the screws. Last, recheck hinge operation.

SIX-WAY POWER SEATS

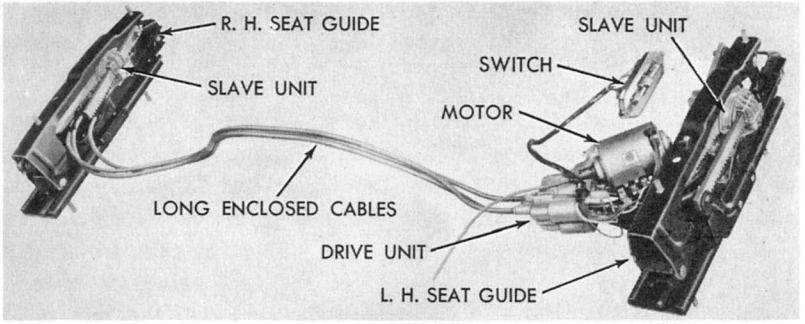
Six-way power seats, available on Dodge, De Soto, Chrysler and Imperial models, enable the driver to adjust the seat for greatest comfort and for the position that allows him to drive alertly. It can be moved up to 5″ fore or aft, 2″ up or down, and tilted 18°.





Description and Operation. The seat mechanism is driven by a two-way, or reversible motor attached at an angle to the left-hand seat guide assembly. Mounted on the motor's front end is a drive unit.

Solenoid-operated clutches in the drive unit couple the motor to flexible cables that look a lot like speedometer cables. These cables, enclosed in tubes, transmit power to gear trains and racks in slave units that are mounted on both seat guides. Three short cables drive the left-hand slave unit. Three long ones drive the right-hand unit.



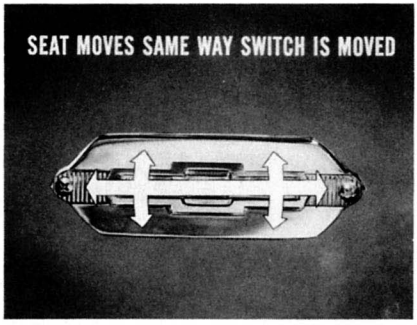
Inside each slave unit are three worm gear trains that are driven by the cables. Each worm shaft meshes with a flat worm gear that carries a pinion. Each pinion meshes with a rack that positions the seat by means of levers. There's an outboard, inboard, and center rack on each side.

The outboard racks move to provide fore-and-aft seat movement. Inboard racks move to provide up-and-down movement at the rear of the seat. Center racks move to provide up-and-down movement at the front of the seat.

When the center and inboard racks both move at the same time, the seat goes up or down. In this case, the racks act like a scissors that open to raise the seat, and like a scissors that close to lower the

seat. How you push the bar-type switch on the side of the driver's seat cushion, of course, determines which rack moves, and in which direction.

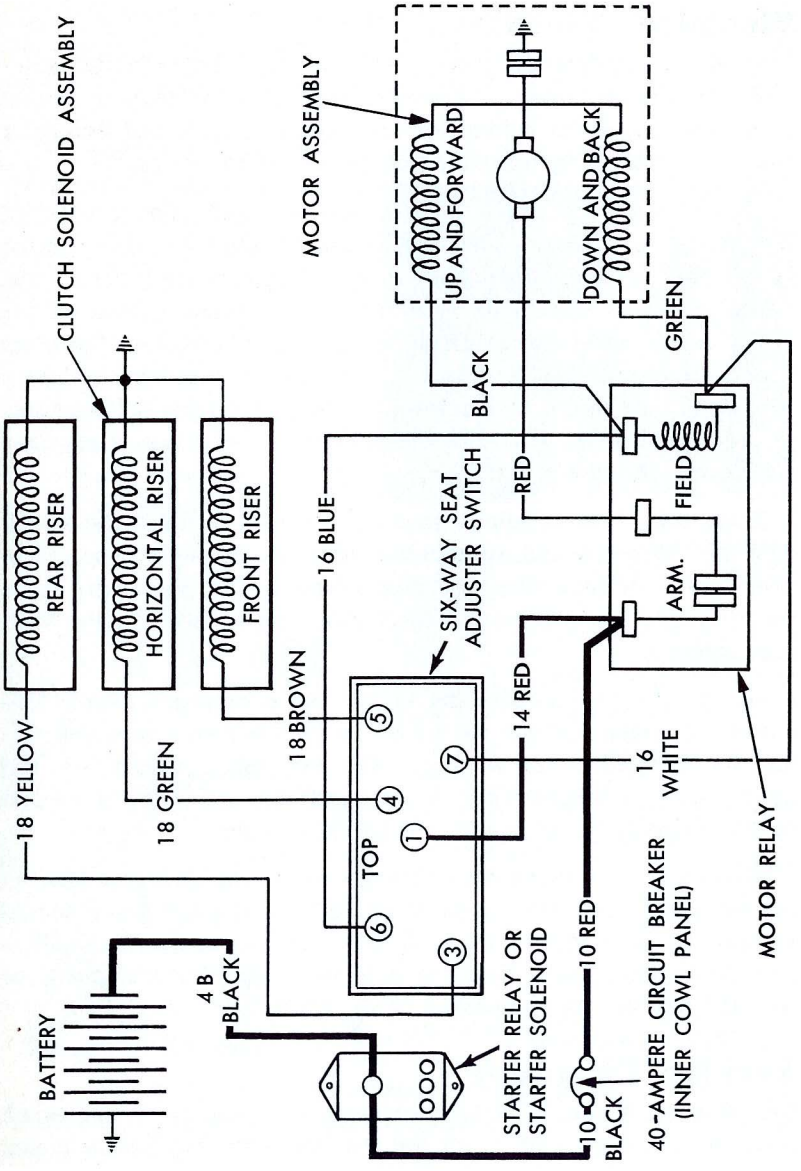
The seat moves in the same direction in which the switch is moved. Pulling the switch *bar up raises the seat* straight up. Depressing the switch bar lowers the seat. Move the switch bar forward, or back, and the seat moves the same way. Raise or lower the front edge of the switch, and the front edge of the seat raises or lowers. Raise or lower the rear edge of the switch, and the rear of the seat moves accordingly. Basically, each switch position provides a separate circuit that uses either the up-and-forward or the down-and-back windings of the motor.

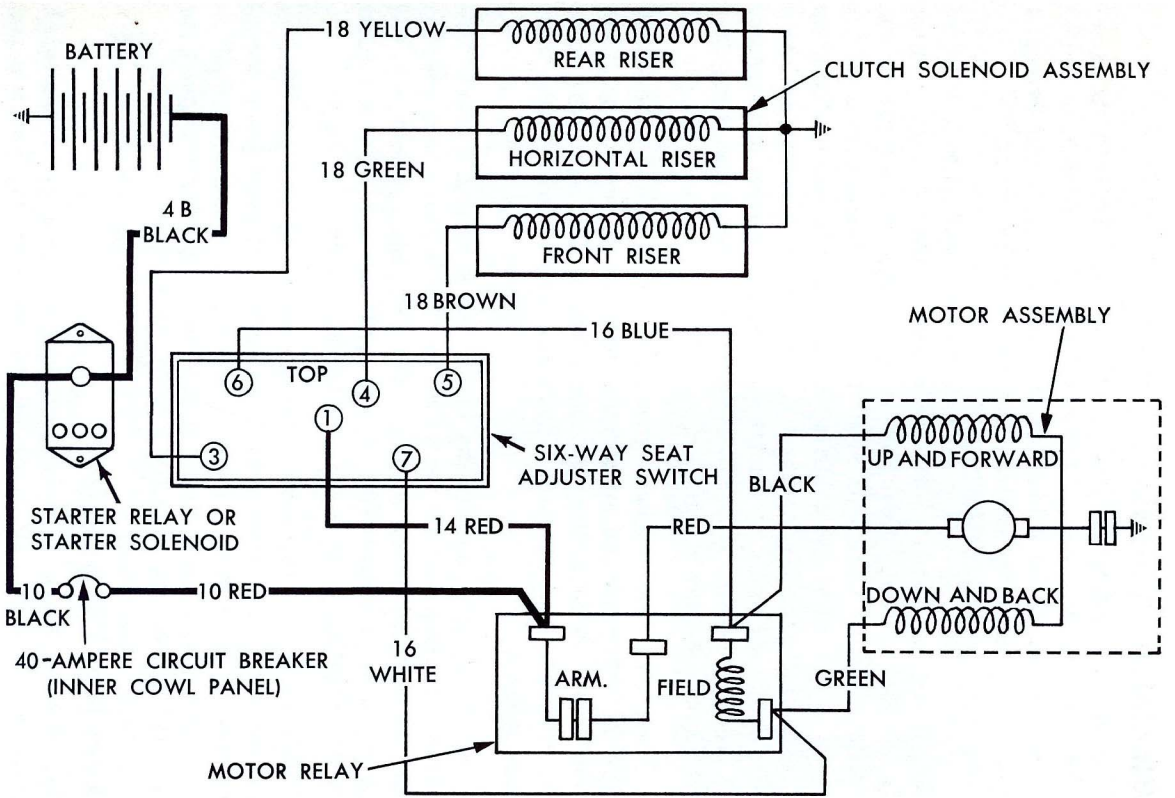


CAUTION: Don't ever twist the switch to operate the seat. Twisting makes the reversible motor try to operate in both directions. Then the thermal circuit breaker (inside the motor) opens to protect the windings.

Thermal Circuit Breaker. This protective device inside the motor guards against overloads. It consists of a pair of alloy electrical contacts, mounted on bimetallic strips. All current through the motor passes through these points. The protector is sensitive to heat generated by the coils, and to the current passing through the motor.

If the bar-type switch is twisted, stalling the motor for more than one and one-half seconds, enough internal heat will build up to cause the thermal points to separate. If this ever happens, give the thermal circuit breaker time to cool off and reset itself. This usually takes from 15 to 60 seconds, and sometimes as long as three minutes. This lengthy delay should not be construed as being due to a faulty circuit breaker or motor.


CLUTCH SOLENOID ASSEMBLY
REAR RISER
HORIZONTAL RISER
FRONT RISER
MOTOR ASSEMBLY
UP AND FORWARD
DOWN AND BACK
GREEN
BLACK
RED
FIELD
ARM.
18 YELLOW
18 GREEN
18 BROWN
16 BLUE
SIX-WAY SEAT ADJUSTER SWITCH
TOP
14 RED
16 WHITE
MOTOR RELAY
BATTERY
4 B BLACK
STARTER RELAY OR STARTER SOLENOID
10 RED
10 BLACK
40-AMPERE CIRCUIT BREAKER (INNER COWL PANEL)


BATTERY
18 YELLOW
REAR RISER
CLUTCH SOLENOID ASSEMBLY
HORIZONTAL RISER
18 GREEN
4 B
BLACK
FRONT RISER
18 BROWN
16 BLUE
MOTOR ASSEMBLY
TOP
6
4
5
1
3
7
SIX-WAY SEAT
ADJUSTER SWITCH
UP AND FORWARD
BLACK
STARTER RELAY OR
STARTER SOLENOID
14 RED
RED
10
BLACK
10 RED
DOWN AND BACK
40-AMPERE CIRCUIT BREAKER
(INNER COWL PANEL)
16
WHITE
ARM.
FIELD
GREEN
MOTOR RELAY

Electrical Circuit

From the wiring diagram, you can see that power comes to the motor from the starter circuit. It passes through a 40-ampere circuit breaker mounted just behind the left front kick pad, and through a motor relay assembly assembled on the reversible motor.

Current from the circuit breaker goes through a heavy red feed wire to the motor relay. Three wires connect the motor relay to the switch. The red wire connects the relay battery terminal to the switch. White and blue wires carry current for directional control of the motor. Three wires also connect the relay with the motor. The green wire connects the field terminal of the relay to the down-and-back windings of the motor. A black wire connects the relay field terminal to the up-and-forward windings. Another red wire connects the relay armature to the motor armature.

Three other wires—yellow, green, and brown—connect the switch with the clutch solenoid assembly mounted on the motor. The yellow wire feeds current to the rear riser solenoid. The green wire feeds the horizontal riser solenoid. The brown wire connects to the front riser solenoid.

As an example, suppose the switch bar is moved forward. This closes the circuit through the switch to the horizontal riser solenoid and the forward motor windings. The energized solenoid is pulled against spring pressure. This engages the clutch and power is applied to the horizontal gear trains of the two slave units.

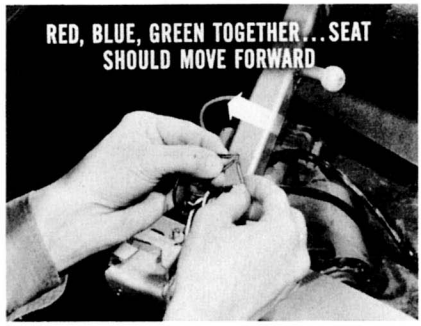
Motion is then transmitted through the worm and gear train to the outboard racks attached to levers on the seat guide bases. Movement of the slave units on the stationary racks causes the seat guides—and the seat attached to them—to move forward. Once positioned, the seat will remain until moved by a new position of the switch bar.

Service Diagnosis

Seat Doesn't Move. If nothing happens when you move the switch properly with one finger, check the red feed wire first. That tells you

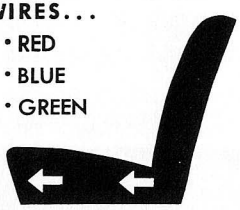
whether the circuit is hot. If power is going to the switch, then remove the bezel and disconnect the wires to the switch. By connecting certain wires, you can check seat operation and bypass the switch.

For example, put the red, blue, and green wires together. The seat should move forward horizontally. If it doesn't, check for a loose, or broken red feed wire. If the seat does move, the switch is faulty and should be replaced. Before you replace the switch, though, be sure to check for a short in the wiring harness. A short there could have been the cause of the switch burning out.



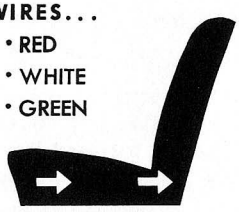
You can check other seat movements by grouping the switch wires according to the following chart. Connect all the wires to the switch when you finish.

WIRES...
- RED
- BLUE
- GREEN



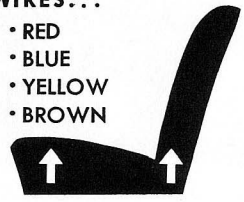
FORWARD

WIRES...
- RED
- WHITE
- GREEN



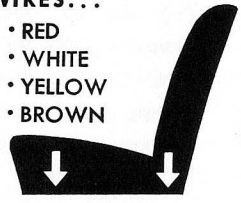
REARWARD

WIRES...
- RED
- BLUE
- YELLOW
- BROWN



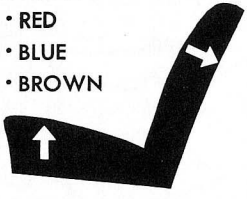
STRAIGHT UP

WIRES...
- RED
- WHITE
- YELLOW
- BROWN



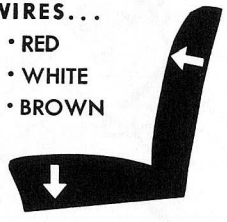
STRAIGHT DOWN

WIRES...
- RED
- BLUE
- BROWN



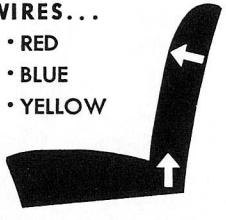
UP IN FRONT (REARWARD TILT)

WIRES...
- RED
- WHITE
- BROWN



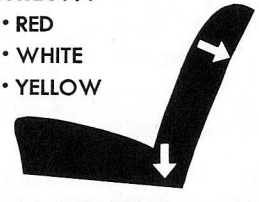
DOWN IN FRONT (FORWARD TILT)

WIRES...
- RED
- BLUE
- YELLOW



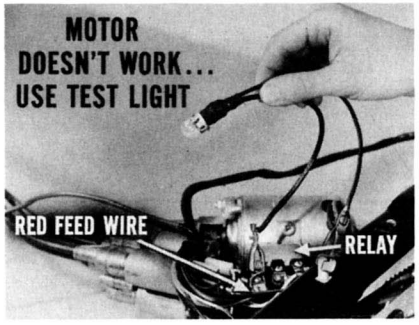
UP IN REAR (FORWARD TILT)

WIRES...
- RED
- WHITE
- YELLOW

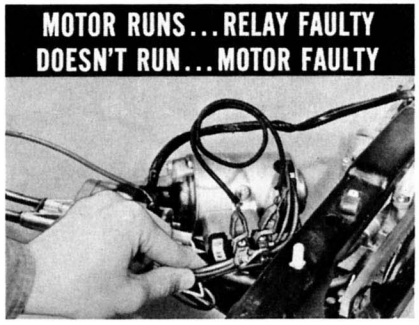


DOWN IN REAR (REARWARD TILT)

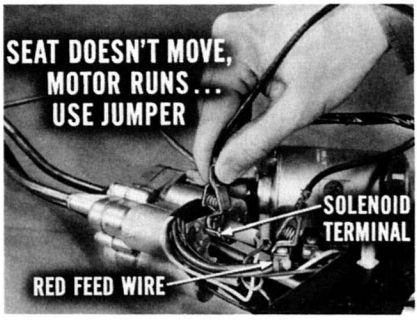
Motor Inoperative. Now, suppose the motor stalls, and you've waited long enough for the thermal breaker to cool and reset. In a case like this, if the motor doesn't work, use a test light to check the red feed wire at the relay. If the test light doesn't light, make a continuity check back to the circuit breaker for a loose or broken connection.



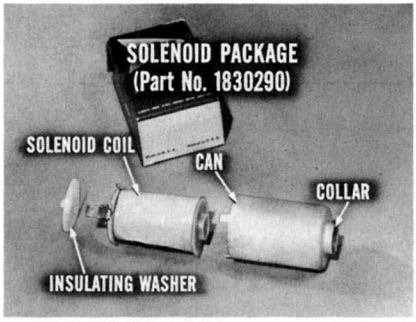
Now, if the test light lights, then at the relay connect the red feed wire with either the red and black wires, or with the red and green wires from the motor. If the motor works, the relay is faulty and should be replaced. If the motor doesn't run, then the motor is faulty and should be replaced.



Motor Runs, Seat Inoperative. If the seat doesn't move, yet the motor runs, use a jumper between the red feed wire and each solenoid terminal of the drive unit. You should hear each solenoid "click" as the jumper touches its terminal. If there's no "click", you've got three things to look for: (1) open circuit in the wiring harness (continuity check), (2) burned-out solenoid, (3) solenoid armature may be seized inside the solenoid coil. Along with these possibilities, look for their causes.

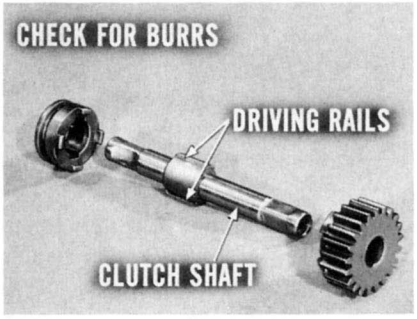


A switch that sticks can cause a solenoid to stay energized until it burns out. The switch could bind on its bezel. A driver's overcoat or outergarment can get caught between the door and switch, causing it to stick in one position too long.



Through the Parts Division, you can secure a solenoid coil repair package (Part No. 1830290) that's available for replacing a burned-out solenoid. When you install a new coil on an *early production unit,* you may have to grind down the can collar to make it fit.

To check for a seized solenoid armature, you'll have to disassemble the drive unit further. But be sure to disconnect the red feed wire first, or you might run the mechanism by accident. After disassembling the drive unit, check the driving rails of each clutch shaft for burrs. If you find any, use a fine file or stone to dress down the rails. Clean off the particles, and check them for smooth operation inside the coils.



Seat Inoperative, Motor Runs, Solenoids "Click". In a case like this, disassemble the drive unit and check the gears for broken or stripped teeth. If there is internal damage, replace the drive unit assembly.

CAUTION: To prevent cable breakage after reassembly, the two seat guides should be in the forward and up position when installing the cables. It is important that both guides be in the same position, that is, in proper alignment. After installing the short or left-hand cables

in the slave unit, by hand, turn the horizontal rack cable one full turn in reverse. Then, connect the cables to the drive unit. Connect the long or right-hand cables to the slave unit and drive unit, but do not turn them after they are installed.

Next, run both guides to the full rear position. Then, disconnect the long cables at the drive unit and turn the horizontal rack cable by hand to move the right-hand guide one-quarter inch forward. Then, reconnect the cables. This assures stopping the left-hand unit at the stop and avoids throwing an extra load on the cables.

Slave Unit Inoperative. If the motor, solenoids and drive unit work okay, but the slave unit doesn't operate, check for a broken flexible drive cable. One way that this shows up is when the seat works fine in one position, but not the other.

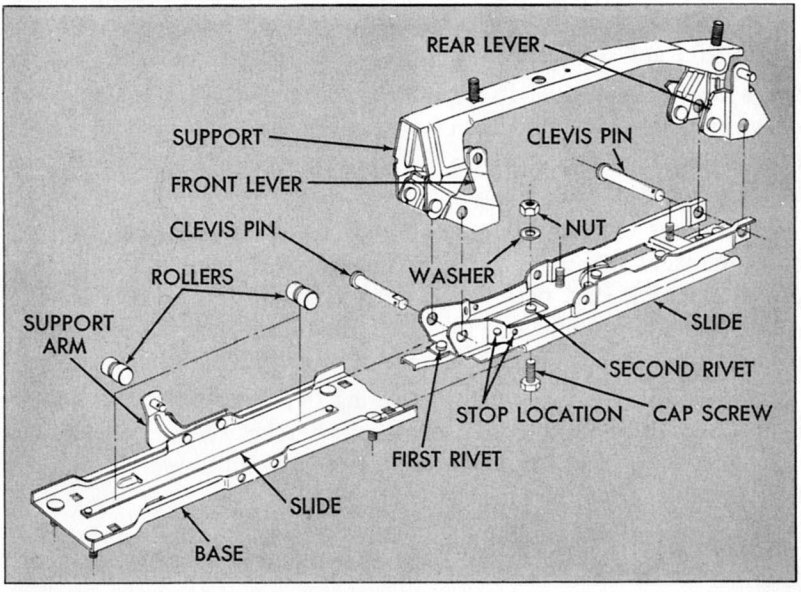
Disconnect the red feed wire. Remove the retainer plate that secures the right side tubes to the drive unit. Next, remove the left side guide attaching stud nuts. Take out the guide and drive assembly. Avoid bending or damaging the right side tubes when you slide them from the drive unit. Then, pull the flexible cables from the tubes.

Remove the left side cables by taking out the bolts that hold the motor and drive unit to the left guide bracket. Next, remove the drive unit with tubes from the left-hand slave unit, and remove the flexible cables from the tubes.

Inspect the cables carefully for kinks, breaks, or other damage that could cause them to jam or fail to operate. Replace any unserviceable

cables and make sure all cables seat well inside the slave units, and drive shafts. Secure the wiring harness so wires won't be pinched when the seat is in its full forward position.

Seat Has Rocking Motion. A power seat that rocks may be due to a guide slide roller being out of place. You'll have to remove and disassemble the seat guide assembly to correct this condition.



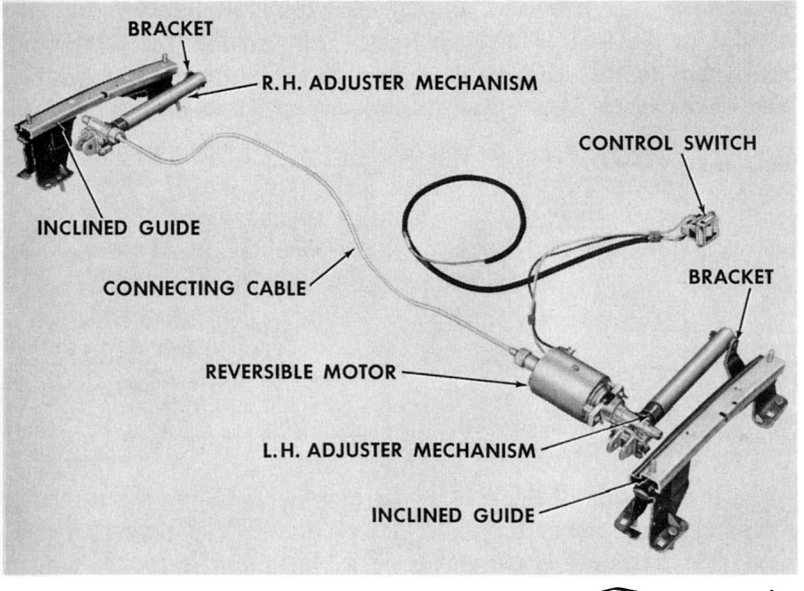
Remove the seat support and then the slave unit from the slide. Remove the horizontal stops located at the front end of the slide. Separate the slide from the base by pressing the slide rearward, allowing the rollers to ride over the retaining rivets.

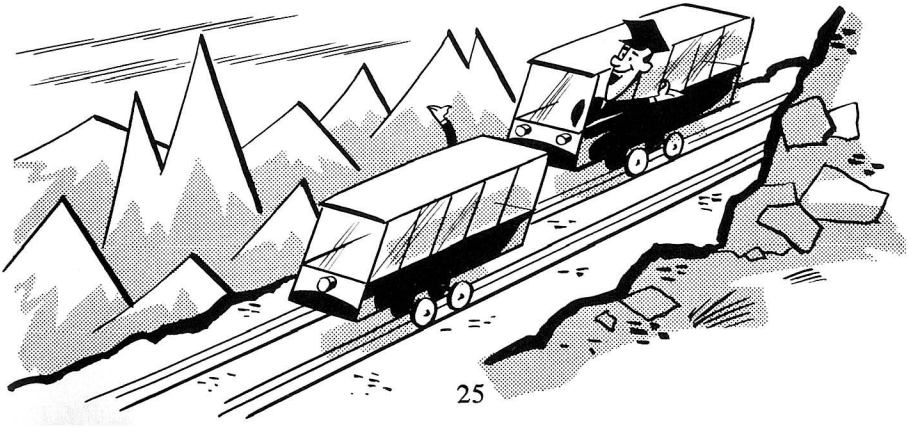
Remove the second rivet from in front of the slide. Replace it with a 5/16"-18 x ½" cap screw to retain proper roller position. When you reassemble the guide, place one roller at the front of the slide, the other at the rear.

NOTE: Frayed drive cables can be repaired by applying a light coating of solder and then grinding them to cable size.

TWO-WAY POWER SEATS

Two-way power seats are available as optional equipment only on Plymouth cars. This arrangement consists of reversible motor, two adjuster mechanisms, and a connecting flexible cable. The wiring circuit includes a 30-ampere circuit breaker, a control switch and connecting wires.

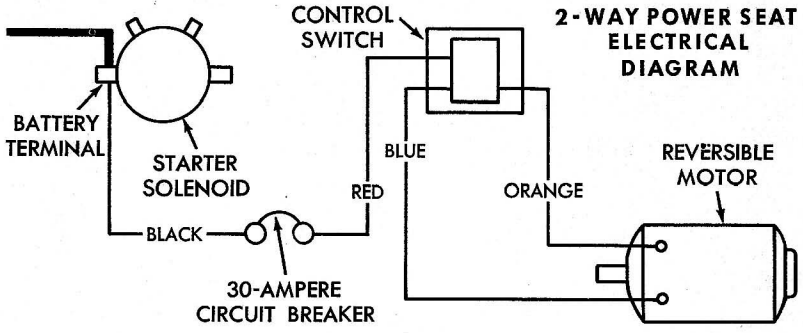




The seat has a power-operated range of about five inches fore and aft, and about one inch up or down. Elevation is provided by the seat as it moves forward on inclined guides.

Operation

Here's how the seat moves. The motor, through a coupling on the end of its armature shaft, connects with a worm gear. This gear, in turn, meshes with a worm shaft and tube that make up the left-hand adjuster mechanism. The left-hand adjuster mechanism is pinned to a bracket welded to the foot of the seat track. This provides the fore-and-aft movement to the seat guide. A flexible cable attached to the right end of the motor shaft drives a similar mechanism on the right side.



On the left side of the seat a control switch actuates the reversible motor. Current comes from the battery terminal of the starter solenoid. This terminal is connected by a black wire to the 30-ampere circuit breaker mounted on the left-hand cowl panel.

From the circuit breaker, current passes through a red wire to the control switch. An orange wire leads to the back windings of the motor. A dark blue wire connects to the forward motor windings.

Service Diagnosis

Electrical Conditions. Use a test light or jumper wire to check out any suspected electrical condition. To check the circuit breaker, connect the jumper across the two breaker terminals. If the test light lights, or the motor operates, the breaker is faulty and should be replaced.

Check out the control switch the same way. Connect the jumper between the red wire terminal and either the orange or dark blue wire terminals. If the motor operates, the switch is faulty and should be replaced. If the motor doesn't operate and the circuit is complete through the switch, the motor is faulty and should be replaced.

Mechanical Conditions. If you find any mechanical failures in parts of the adjuster mechanisms, replace the individual units involved. Separate parts cannot be serviced.

A FINAL WORD . . .

Unless we stay on top of swivel and power seat service, we won't maintain our advantage in scooping the field on these customer comfort features. Public interest, naturally, is high on these items as they are proving to be popular new accessories. Public interest in our ability to service seats is bound to be equally great. Your close attention to the suggestions outlined in this reference book will help you capitalize on this newest of service opportunities.

RECORD YOUR ANSWERS TO THESE QUESTIONS ON QUESTIONNAIRE NO. 134

If the fixed center cushion interferes with the swivel seat cushion, replace the swivel seat assembly.

RIGHT **1** WRONG

In a case of swivel seat interference at the rear inside seat corner and rear cross-member kick-up, realign the trim or file off the edge of the seat strainer.

RIGHT **2** WRONG

Noise in swivel seat installation can be caused by too much clearance between the rollers and track, loose pivot nut, or looseness at the seat base frame mountings.

RIGHT **3** WRONG

When you install the rear pivot nut, tighten it enough to permit free pivot movement, but absolutely no vertical movement.

RIGHT **4** WRONG

Outboard racks on 6-way power seats move to provide up-and-down movement at the rear of the seat; inboard racks are fore-and-aft seat movers.

RIGHT **5** WRONG

The power seat always moves in the direction opposite that in which the switch actuating bar is moved.

RIGHT **6** WRONG

Twisting the switch of the 6-way power seat mechanism will tilt the front and rear of the seat in opposite directions at the same time.

RIGHT **7** WRONG

Before you replace a power seat switch, check for a short in the wiring harness that might have caused the switch to burn out.

RIGHT **8** WRONG

Before you disassemble a drive unit assembly for further checking, be sure to disconnect the red feed wire.

RIGHT **9** WRONG

If a seat doesn't move but the motor runs, use a jumper between the red feed wire and each solenoid terminal to see if each solenoid "clicks".

RIGHT **10** WRONG

Litho in U.S.A.