ACCESSORIES

CONTENTS

ELECTRIC CLOCK

GENERAL INFORMATION

The electric clocks have a self-regulating mechanism for automatically correcting time gain or lag when the hands are reset to the correct time. Clocks should be reset as follows:

(1) If the clock runs fast, pull the time set shaft out and reset the hands in a "counterclockwise" direction to the correct time. Push in the time set shaft.

(2) If the clock runs slow, pull the time set shaft out and reset the hands in a "clockwise" direction to the correct time. Push in the time set shaft.

(3) Repeat steps (1) and/or (2) frequently for several days until the correct rate of time is achieved.

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
CLOCK DOES NOT OPERATE	(a) Wire loose or off terminal.	(a) Install connector on terminal.
	(b) Internal short.	(b) Repair or replace the clock as necessary.
	(c) Faulty ground.	(c) Tighten clock retaining screws on cluster housing and/or cluster.

SERVICE PROCEDURES

Removal—(Chrysler)

(1) Remove wiring connector from clock terminal.

(2) Remove clock time set stem and the one screw, then roll the bottom of the clock back and down out of cluster.

Installation

(1) Carefully enter clock (working under instrument panel), position clock in cluster panel and install attaching screw.

(2) Install time set stem.

(3) Connect electrical lead to clock terminal.

Removal—(Imperial)

(1) From under instrument panel remove electrical lead from clock terminal.

(2) Loosen the two right mounting screws.

(3) Remove the two left mounting screws, move the clock to the left, and remove the right side from the cluster housing and remove the clock.

Installation

(1) Install the clock with the slotted holes to the right and under the two screws previously loosened, then install the two left screws. Tighten securely.

(2) Connect electrical lead to clock terminal.

RADIO AND ANTENNA

INDEX

GENERAL INFORMATION
CHRYSLER

Four radios are offered as optional equipment for Chrysler models:

AM Pushbutton

To operate the radio the ignition switch must be in the **ON** or **Accessory** position. Operation is by two rotary controls and five push buttons.

Left Center Knob—On-Off and Volume
Left Outer (Ring) Knob—Tone Control
Right Center and Outer (Ring)
Knob or Push Buttons—Station Selection

Combination AM Radio and Stereo Tape Player

To operate: Ignition switch must be at "On" or "Acc" position.

The operating controls consist of four thumbwheels and a tape program selector button. The left outside thumbwheel turns on the radio and controls the volume. The right outside thumbwheel is for station selection. The right inside thumbwheel controls tone quality. The left inside thumbwheel controls balance between the left and right channel. At mid-rotation a detent is provided as a reference point to obtain approximately equal output from each channel.

The four program—eight-track stereo tape player provides full stereo reproduction.

To operate, insert the tape cartridge, label side up, into the tape chamber. The door will swing inward and the tape player will begin to play when the cartridge is in position. The tape player unit will play all four programs automatically and in sequence unless manually changed.

Depressing the program selector push button will manually override the automatic sequence of the tape player and allow the driver to change programs at will.

When the tape player is shut off by either the ignition switch or the volume on/off switch, the tape cartridge is automatically ejected. Automatic ejection can also be accomplished by pulling outward on the program selector button.

CAUTION: Avoid removing the cartridge without using automatic eject mechanism.

AM/FM Radio

To operate: Ignition switch must be at "On" or "Acc" position.

Turn the left hand knob clockwise to "On" position. This same knob adjusts the volume tone control, ring behind left knob, provides selection of tone quality.

AM or FM can be selected by pressing either of the two bars located directly above the radio dial marked AM or FM to give the desired band of operation. Automatic station selection is accomplished either by pressing the push buttons fully in, or by turning knob at right or, automatically by pressing the bars marked "Loc" (local) or "DIST" (distant) or by foot-operated button located to the left of the brake pedal.

AM/FM Multiplex with Tape

Operating controls consists of four thumbwheels, five push buttons and AM/FM selector switch:

Left Outside Thumbwheel—On-Off and Volume
Left Inside Thumbwheel—Balance
Center Switch—AM-FM Selector Switch
Right Inside Thumbwheel—Tone Quality
Right Outside Thumbwheel
and Push Buttons—Station Selection

IMPERIAL

Three radios are offered as optional equipment for Imperial models:

AM—Search Tune

To operate: Ignition switch must be at the "On" or "Acc" position. Turn the left hand knob clockwise to "On" position. This same knob adjusts volume. Tone control ring, behind left knob, provides selection of tone quality. Stations can be tuned either by pressing the push buttons fully in, by turning knob at right or by automatic searching.

To operate the search tune, press the bars marked "Loc" (local) or "Dist" (distant). The radio will then automatically search and select a local or distant station.

A foot-operated button located to the left of the brake pedal is provided for searching stations by remote control. Its function is identical to the search bars.

Even though the radio plays immediately when turned on, it will be several seconds before the automatic tuning sections will operate.

AM/FM—Search Tune

Operation is the same as the AM-FM Search Tune for Chrysler models (optional equipment).

AM/FM—Multiplex with Tape and With Push Buttons

Operating controls consist of four thumbwheels:

Left Outside—On-Off and Volume
Left Inside—Speaker Balance
Right Inside—Tone Quality
Right Outside—Station Selection

Push buttons may be set for either AM or FM stations. Mode switch iis between left and right controls. Multiplex stereo light is on the right side of the

dial. The tape program automatic ejection button is in the lower left area of the radio. Depressing this button will manually select the next tape program while automatic ejection of cartridge can be accomplished by pulling the button outward.

Tape Cartridge

(1) Stereophonic tape players are designed to use a pre-recorded, four program (eight-track) stereophonic tape contained in a special tape cartridge. **Do Not Use Four-Track Cartridges.**

(2) Protect open end of the cartridge from damage, dirt, water, oil, grease, etc.

(3) Do not attempt to pull out the tape from the cartridge.

(4) Do not attempt to open up the cartridge.

(5) To assure maximum life, tape cartridges should be stored in a **cool, clean** and **dry** place, with the open (tape) end down to keep dust out of the cartridge.

(6) Do not expose cartridge to direct sunlight or other temperature extremes.

(7) Remove or disengage cartridge when not in use.

PLAYBACK HEAD AND CAPSTAN CLEANING

The playback head and capstan in your tape player may accumulate tape coating residue (oxide) as the tape passes over the head. This accumulation should be periodically removed, as part of normal maintenance. Clean the playback head with a cotton swab, slightly moistened with alcohol while holding the player cartridge door open. To clean the capstan, hold the player cartridge door open and swab the surface of the capstan with alcohol. **Do not use carbon tetrachloride.** Dry parts with a clean rag.

Rear Speaker Fader Control

The speaker fader control, located remotely from the stereo unit, serves to proportion the sound level between the front and rear speakers.

AM-FM Reception

The following items should be noted for proper AM-FM radio operation:

(1) If antenna trimming is required, place the band selector control in the AM position and proceed with the antenna trimming procedure as outlined in "Antenna Trimming" in this section of manual.

(2) The antenna should be extended to a height of 31-1/2 inches for maximum FM reception.

(3) The radio push button adjustment is the same as the standard AM radio. It should be noted that a push button adjustment is only good for one station (either AM or FM) not both at the same time.

(4) Should a malfunction occur, the trouble shooting procedures are the same as for the standard AM radio.

Fader Control (Optional)

The fader control is used only when the vehicle is equipped with a rear seat speaker. Fully rotated one way allows operation of the front speaker. Fully rotated in the opposite direction the control allows operation of the rear seat speakers. Partial rotation of the control blends the volume of the speakers.

In **Imperial models** (Service Installation only), the reverberator control on the instrument panel replaces the fader control. Pull the control knob "OUT" to turn "ON" the reverberator unit and push "IN" to turn "OFF". In the "OFF" position, the reverberator switch provides normal fader control.

In **Chrysler models** (Service Installation only), a thumbwheel type control under the cowl pad next to the map light provides the desired blend between the front and rear speakers. If the vehicle is equipped with a reverberator, a toggle switch is added to control "ON"-"OFF" operation of the reverberator and the thumbwheel control still provides fader control.

Foot Switch For Search Tuning

The foot switch for search tuning is located on the left forward end of the floor panel. By depressing the foot switch, it will select a station on the radio.

Push Buttons

(1) Extend antenna fully and turn radio on for fifteen minutes.

(2) Unlock push button by pulling it out and manually tune in desired station.

(3) Push button back into position to lock adjustment.

(4) Repeat operation on the other push buttons.

The radio push button adjustment is the same as the standard AM radio. It should be noted that a push button adjustment is only good for one station either (AM or FM) not both at the same time.

Schematic Wiring Diagrams

The manufacturers of the radios and reverberators make repair service available through their authorized service depots. If a schematic wiring diagram is desired, it should be obtained from the manufacturer of the particular unit.

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
RADIO INOPERATIVE	(a) Blown fuse.	(a) Replace fuse, check for short or open in wiring harness.

Condition	Possible Cause	Correction
	(b) Antenna open or shorted.	(b) Test with an auxiliary antenna with lead-in plugged into the receiver set and test antenna head outside of car. If radio plays with test antenna, use original antenna and check antenna mostly for shorts to ground while rocking antenna slightly. Unplug antenna lead from radio and use ohmmeter to check from center contact of antenna to outside of case. If reading on ohmmeter is less than 500,000 ohms, replace antenna. See "Windshield Antenna Test" for Imperial windshield antenna.
	(c) Receiver or speaker connections loose or faulty.	(c) Test the voltage at the fuse and tighten all connections. With speaker control tuned to either stop, rotate control to other stop. If radio plays, replace faulty speaker. If radio does not play, remove radio receiver for servicing.
RADIO RECEPTION WEAK	(a) Unbalanced antenna trimmer.	(a) Carefully adjust the antenna trimmer.
	(b) Shorted antenna lead-in.	(b) Turn on radio and wiggle antenna. If speaker static is heard, check for antenna mounting tightness. If speaker static is still heard after tightening, disassemble antenna and test for faulty insulators or presence of moisture. Make an ohmmeter check step (b) under "Radio Inoperative." If no static is heard, test for faulty or loose receiver or antenna connections at receiver. Also check antenna lead-in at antenna. If antenna checks OK, remove radio receiver for servicing.
RADIO NOISY	(a) Outside electrical interference.	(a) Move the car or eliminate interference.
	(b) Insufficient or faulty interference suppression.	(b) Install effective capacitor in ignition system or voltage limiter.
	(c) Faulty antenna.	(c) Turn on radio and wiggle antenna lead and listen for speaker static. If static is heard, disassemble antenna and check for faulty insulators or presence of moisture. Make an ohmmeter test, Step (b) "Radio Inoperative". If static is heard, check for a loose or faulty capacitor. If capacitor is OK, remove antenna plug from radio receiver and bump receiver with heel of hand. If no static is heard, start engine, turn on headlights and slowly, accelerate engine speed. If a whining noise is heard, turn off headlights and if whining noise is still present, tune in AM to a weak station at left end of dial. Run antenna up and down; if a loud whirring noise is present in the radio unit, the antenna cable connection is loose and should be tightened to 20 to 40 inch pounds. Check alternator for burned out diodes, and voltage regulator setting. If O.K. remove radio receiver for servicing.

Condition	Possible Cause	Correction
RADIO RECEPTION DISTORTED	(a) Speaker voice coil leads rubbing on speaker cone.	(a) Install an auxiliary speaker and compare. Replace if improved.
	(b) Torn speaker cone.	(b) Replace the speaker.
	(c) Faulty radio.	(c) Send radio to authorized radio service station for repair.
	(d) Foreign material in speaker.	(d) Clean or replace speaker.
	(e) Torn cover.	(e) Replace speaker.
INTERMITTENT RECEPTION	(a) Broken or shorted antenna lead-in wire.	(a) Test with a substitute antenna and replace if necessary.
	(b) Faulty radio.	(b) Send radio to authorized radio service station for repair.

SERVICE PROCEDURES

Interference Elimination

Capacitors are used to suppress engine interference. The alternator is equipped with an internal capacitor integral with the output stud. A second capacitor is mounted on the back of the instrument cluster with a self tapping screw.The lead wire of capacitor is connected to the input terminal of the voltage limiter (Figs. 1 and 2). A third capacitor is installed on the ignition coil with the lead connected to the positive primary terminal of the coil (Fig. 4)

On Imperial models equipped with the windshield antenna, a choke capacitor is mounted in series with the voltage limiter. See Group 8 Electrical "Instruments and Gauges".

Radio resistance type wires in the high tension circuit of the ignition system complete the interference suppression.

If radio noises are evident, be sure the capacitor lead wires are making good contact on their respective terminals and are securely mounted. Faulty or deteriorated spark plug wires should be replaced.

ANTENNAS

The power operated radio antenna (Fig. 1) is a telescoping type antenna, extended and retracted by a coiled nylon cord actuated by a reversible electric motor. The main components of the power antenna are the motor and drive assembly, the mast assembly and the support tube assembly. The antenna is serviced as a mast assembly, motor and the drive assembly, connector, pad and pin assembly, lead-in assembly and the necessary switches.

Many antenna problems may be avoided by frequent cleaning of the antenna mast telescoping sections. This may be performed when the vehicle is being washed by cleaning the antenna mast sections with a clean soft cloth. In the winter, wipe the clean antenna sections with a cloth moistened with light oil.

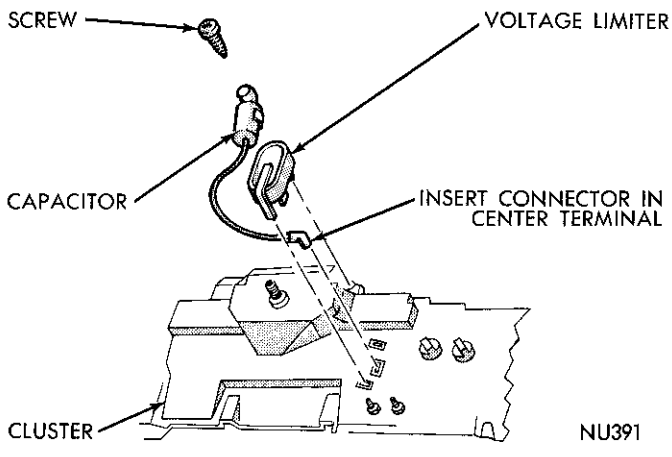


Fig. 1—Installing Radio Interference Capacitor to Cluster—Chrysler

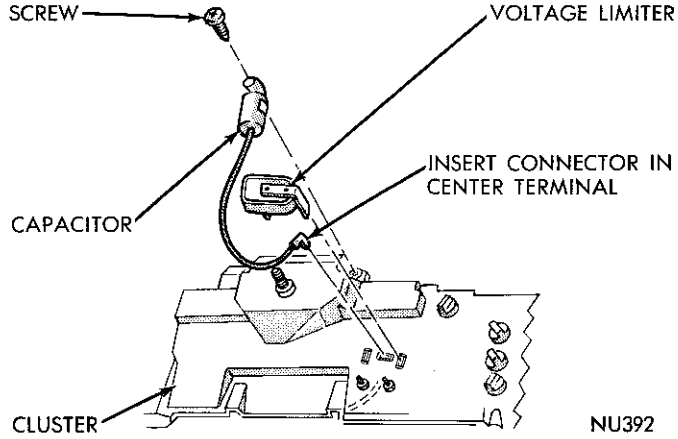


Fig. 2—Installing Radio Interference Capacitor Cluster—Chrysler

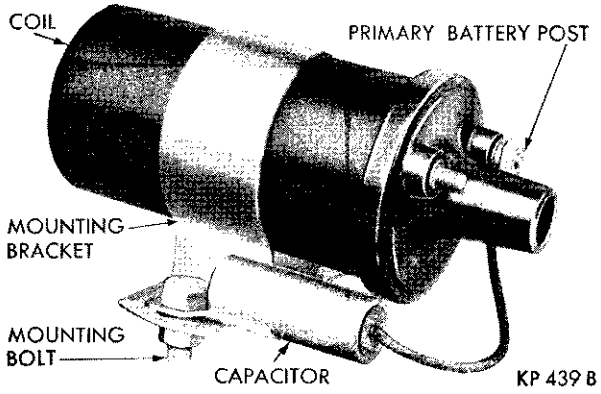


Fig. 3—Ignition Coil Capacitor

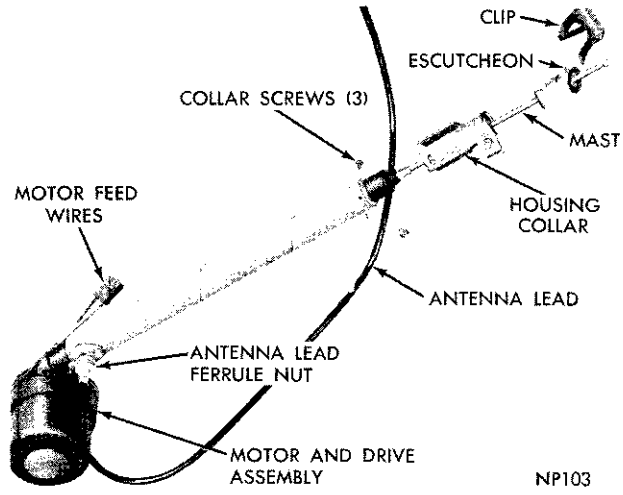


Fig. 4—Power Antenna

Before an antenna is removed, the antenna performance should be tested to determine whether it is a reception problem or an operational problem.

Antenna Trimming

All radios are trimmed at the factory and should require no further trimmer adjustment. However, whenever a radio is being installed after repair, or if verification of trimmer adjustment is desired, proceed as follows:

(1) Operate radio for 15 minutes.

(2) Extend mast type antenna 31-1/2 inches.

(3) Manually tune radio to a weak signal between 1400 and 1600 K.C.

(4) Increase radio volume to full volume and set tone control to maximum treble (fully clockwise) on knob controlled radios or upward position on thumbwheel radios. Use a short screwdriver under instrument panel and adjust antenna trimmer in bottom right hand corner of radio chassis for AM and AM tape radios. Behind right hand knob for Search Tune radios. AM/FM Multiplex-Chrysler—right hand lower corner. AM/FM-Imperial—inside tape door (right hand side).

Adjust antenna trimmer by carefully tuning back and forth until position is found that gives a peak response in volume. Maximum output indicates proper point of antenna trimmer adjustment.

Power Antenna

Clean the antenna and drive assembly before test or disassembly.

(1) With a source of 12 volt (D.C.) power, test the operation of the drive mechanism by grounding the negative (—) lead to the drive housing and with the positive (+) lead, contact the "yellow" (up) lead terscoping sections or bent telescoping mast rods. Clean minal to extend the antenna, and contact the "brown" (down) lead terminal to retract the antenna.

If the motor will not operate, replace the motor and drive assembly. If the motor runs freely and the antenna does not extend or retract, mast or drive assembly is at fault and should be replaced by either a new mast or motor and drive assembly. If the motor labors and the antenna extends and retracts very slowly, it may be caused by excessive dirt on the tele- and straighten the telescoping mast rods.

(2) Occasionally poor reception can be corrected by proper adjustment of radio antenna trimmer. If this fails to produce desired results, a substitute antenna known to be satisfactory may be plugged into radio with extended mast held out of car window. (Do not ground mast.)

Upon establishing that the fault is in antenna assembly, it may be traced to one or more of the following conditions:

(a) Broken lead-in wire or shielding.

(b) Grounded lead-in wire or mast assembly.

(c) Moisture in support tube or lead-in assembly.

(3) Poor connection (antenna lead-in assembly or shielding ground).

If preliminary testing indicates removal of the antenna is necessary for repairs or parts replacement, proceed as follows:

Removal—(Figs. 5 and 6)

(1) Disconnect battery cable at battery negative post.

(2) Fully lower antenna.

(3) Turn front wheels all the way to the left and remove the right front fender splash shield screws and pull shield away from the wheel housing.

(4) Disconnect motor leads at the connector.

(5) Remove antenna lead ferrule nut at antenna mast and disconnect lead.

(6) Remove one screw attaching antenna to antenna brace on Chrysler models, and dash bracket for Imperial models.

(7) Loosen screw from clamp attaching antenna to antenna fender adapter.

(8) Remove antenna from under fender being careful not to bend antenna mast.

Installation

(1) Position antenna from under fender and through fender adapter.

(2) Tighten screw on power antenna clamp. Tighten to 25 inch pounds plus or minus 10 inch pounds.

(3) Position antenna on antenna brace (Chrysler), bracket (Imperial), and install attaching screw. Tighten to 25 inch pounds plus or minus 10 inch pounds.

(4) Connect antenna lead to antenna housing. Tighten antenna lead ferrule nut to 20 to 40 inch pounds.

(5) Connect motor leads at connector.

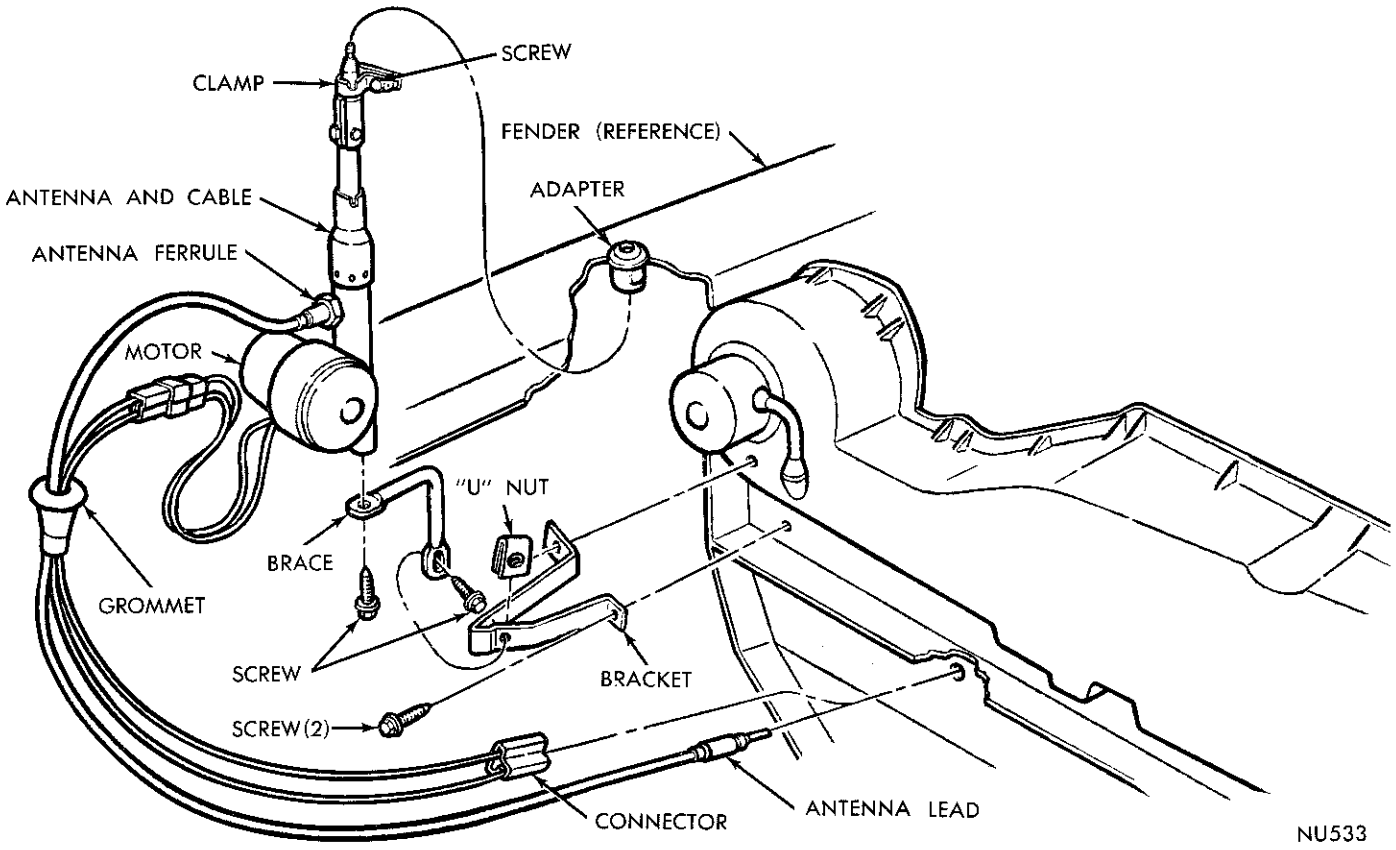


Fig. 5—Removing or Installing Power Antenna—Chrysler

(6) Position right front fender splash shield and install attaching screws.

(7) Connect battery cable at battery and test operation of antenna.

Bench Test for Reception Malfunction

(1) With test lamp and battery in circuit attach one test lead to concentric pin on "lead-in" connector and other test lead to mast sections. The lamp should "light" indicating continuity.

(2) Keeping one lead on connector pin, clip other lead on antenna support tube assembly. The lamp should "not light." If it does, look for a ground between mast and support tube or inner conductor from pin and pad.

(3) Remove clip lead from connector pin and clip on outer shell of connector. Connect other clip lead to antenna support tube assembly. The lamp should "light" again. If it does not "light," antenna shielding has an open circuit.

(4) Locate ground or open circuit and repair or replace component parts as required.

DO NOT attempt to service the details of the Motor and Drive Assembly. This sub-assembly must be serviced as a complete unit.

Disassembly

(1) Remove two screws holding "lead-in" receptacle.

(2) Unsolder pin from wire.

(3) Remove three screws which hold support tube to motor and drive assembly.

(4) Holding motor and drive assembly in one hand and support tube in other hand, pull (applying back and forth rotary motion at same time) until support tube assembly is removed from antenna.

(5) Holding motor and drive assembly in one hand and mast assembly in other hand (grasp near bottom of mast assembly), rock the mast assembly back and forth and pull at the same time to remove housing from motor assembly.

(6) Apply 12 volts D.C. to "yellow" (up) power lead and ground, until entire length of nylon cord has been expelled from the drive. To prevent a kink or bend in nylon cord, keep it taut by pulling on mast.

CAUTION: DO NOT DISASSEMBLE MOTOR AND DRIVE ASSEMBLY FOR ANY PURPOSE.

In order to remove nylon cord from disabled motor and drive assembly, place assembly in a vise so that normal plane of nylon cord is parallel with floor, then using both hands pull on nylon cord until completely expelled from drive.

(7) Remove bottom insulator and water seal washer (Fig. 7) from tubular fitting using a wire hook and long nose pliers.

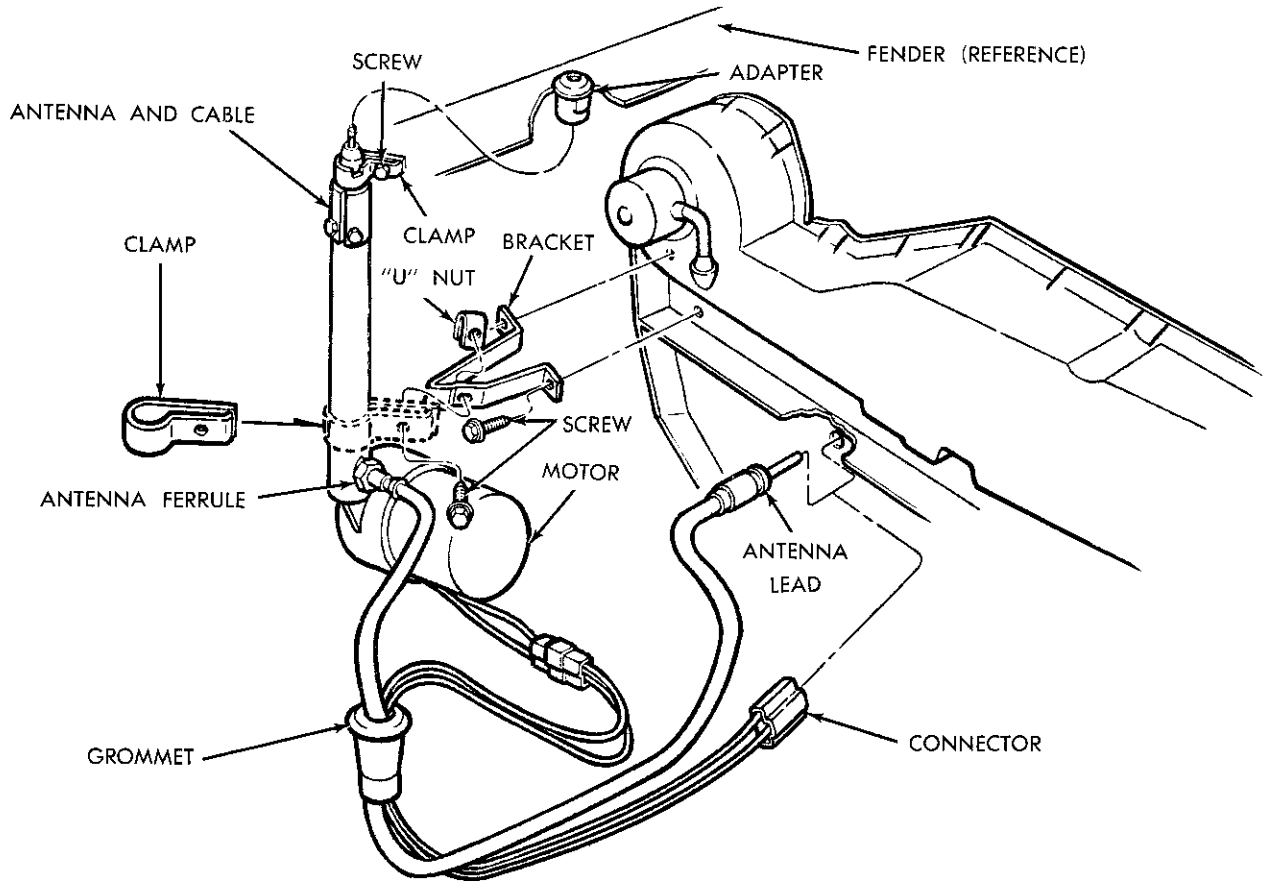


Fig. 6—Removing or Installing Power Antenna—Imperial (Service Only)

Assembly

(1) If original mast assembly is reused, thread nylon cord through bottom insulator with tubular projection down (Fig. 8). Then thread nylon cord through water seal washers.

The bottom insulator and water seal washer are included on service replacement mast assembly.

(2) Apply 12 volts D.C. to "brown" (down) power lead and ground. Feed approximately 12 inches of nylon cord into the drive. Push water seal washer and bottom insulator all the way down into the tubular fitting. Apply 12 volts D.C. power until nylon cord disappears.

(3) Push housing down onto tubular fitting. Make sure upper edge of flange on insulator bushing is be-

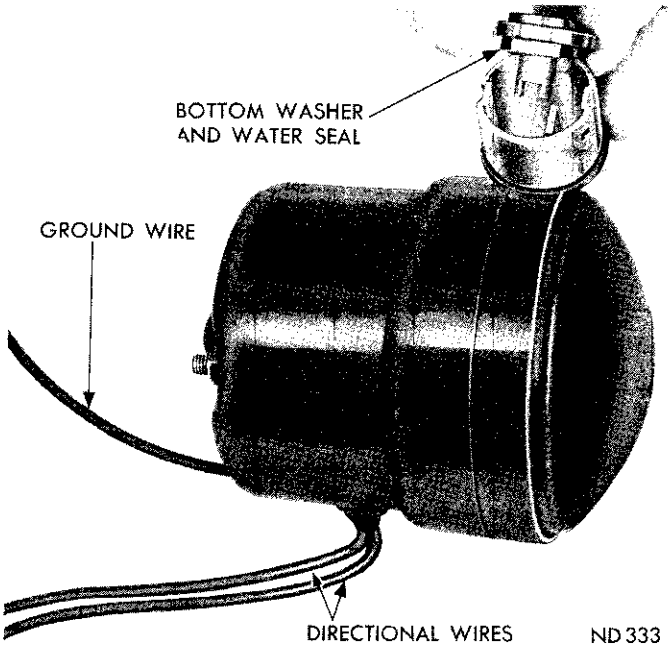


Fig. 7—Removing Bottom Insulator and Water Seal Washer (Typical)

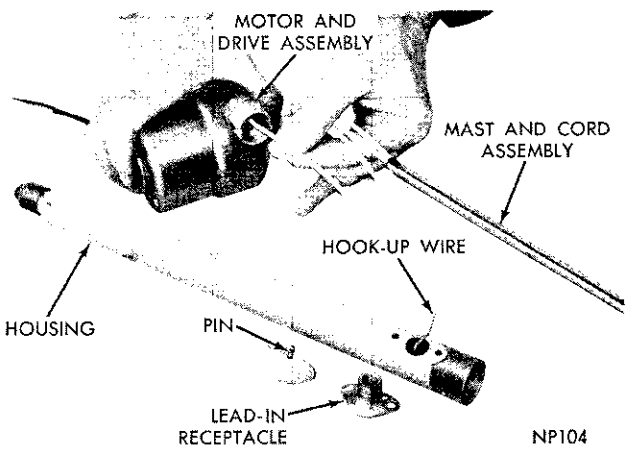


Fig. 8—Assembling Power Antenna (Typical)

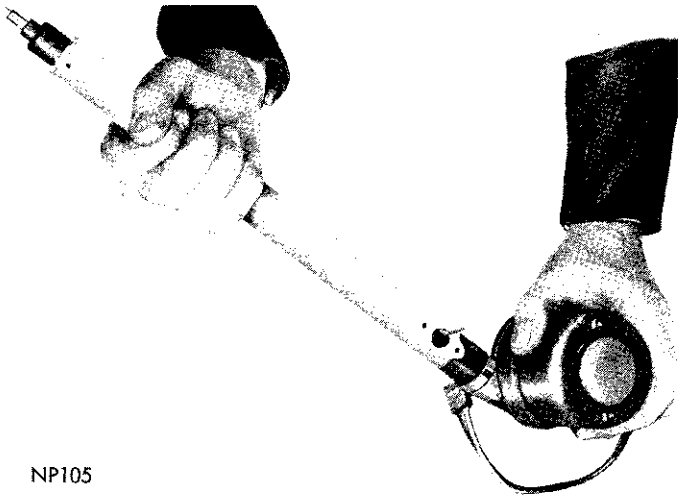


Fig. 9—Installing Antenna Housing (Typical)

low center of the three holes in tubular fitting.

(4) Install support tube assembly in proper position making sure hook-up wire is extended through large hole in body (Fig. 9).

(5) Install three screws to attach support tube assembly to motor and drive assembly.

(6) Solder hook-up wire to pin.

(7) Assemble lead-in receptacle with the two screws.

(8) Apply 12 volt power to "yellow" and "brown" antenna leads and test for up and down operation.

Power Antenna Location

The power antenna, mounted in the right front fender (Figs. 10 and 11). On Imperial models (service only) use the template found in the parts package for locating the antenna mounting hole.

ANTENNAS—MANUAL

Removal—All Models

(1) Unplug antenna lead from radio receiver.

(2) Remove antenna by unscrewing from antenna body (Fig. 12).

(3) Remove capnut (Fig. 13).

(4) Remove the antenna snap-on fender adapter and gasket.

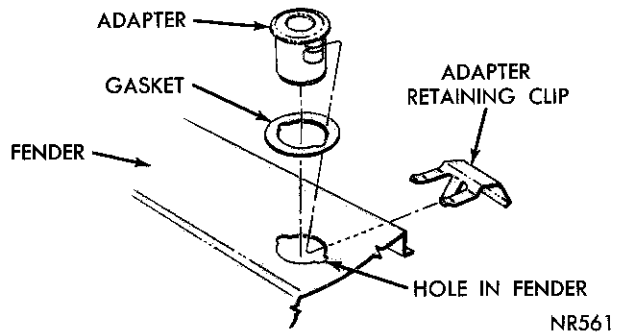


Fig. 10—Installing Power Antenna Adapter—Chrysler

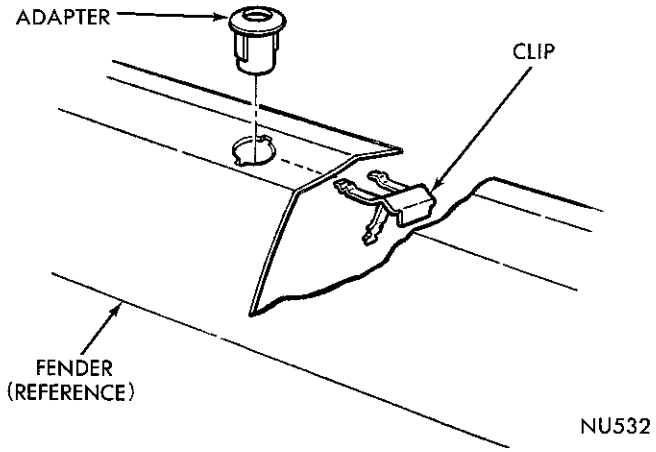


Fig. 11—Installing Power Antenna Adapter—Imperial (Service Only)

(5) From under fender remove the lower adapter mounting collar, antenna body and lead assembly.

Installation—All Models

(1) Assemble mounting collar to antenna body.

(2) Enter antenna body from underneath fender and insert through mounting hole in fender.

(3) Install gasket adapter and capnut. Tighten capnut to 155 inch pounds, plus or minus 25 inch pounds with Tool C-4085 (Fig. 14).

(4) Install antenna mast into antenna until sleeve bottoms on antenna body.

(5) Reroute antenna lead as shown in Figure 15.

Winshield Antenna (Imperial Only)

The Imperial radio antenna is concealed in the windshield glass (Fig. 16). The antenna consists of two of very fine copper wire positioned between the center laminate material of the windshield and the inner glass surface. One wire starts at the right top corner of the windshield glass, the other wire starts at the left top corner and run along the upper part of the windshield glass approximately two inches from the top then down to the center of the glass to a copper termination strip where they are joined by

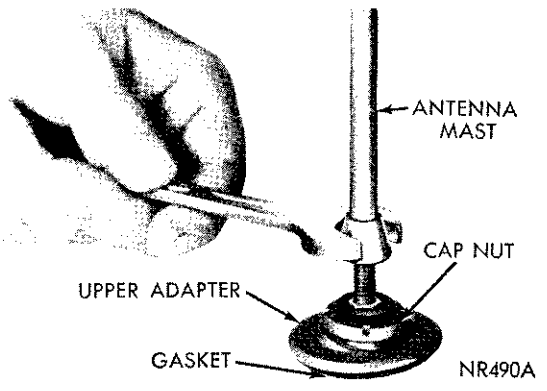


Fig. 12—Antenna Mast—Removing or Installing—Manual

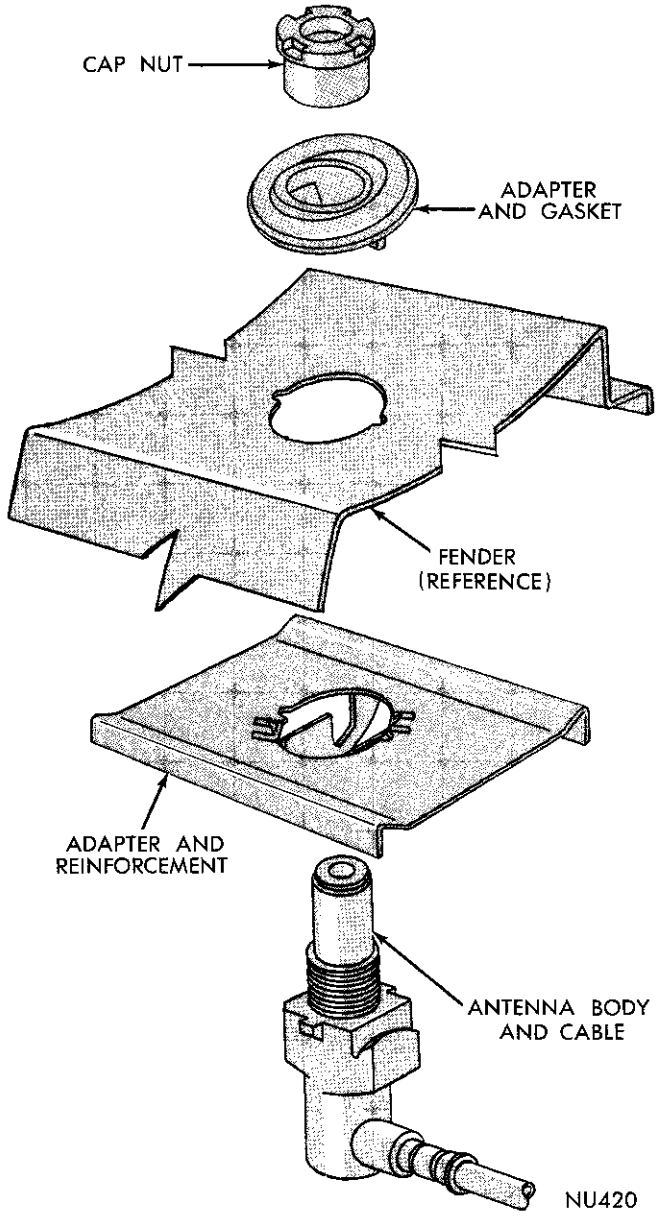


Fig. 13—Antenna Disassembled—Manual

a pigtail terminal which is part of the windshield assembly.

Figure 17 illustrates how the pigtail plugs into the separate rado cable assembly just to the left of the front speaker (Fig. 18). **The radio and defroster grille assembly must be removed before the pigtail can be removed or installed on the cable.** The molded pigtail is installed by placing it over the cable connector and carefully pushing on the connector with the fingers. It must be removed by carefully lifting this molded terminal from the cable connector without tugging at the pigtail as its connection to the windshield **is very fragile.** The bracket end of the radio cable is mounted to the instrument panel with two hexagon head screws, the other end of cable is plugged into the radio as shown in Figure 18.

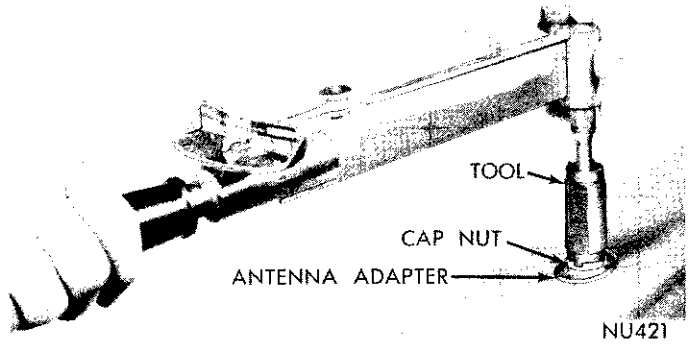


Fig. 14—Tightening Antenna Capnut

Windshield Antenna Electrical Test

If radio is inoperative, check for blown fuse, if fuse is O.K. and radio receiver and speaker connections are proven satisfactory, see "Service Diagnosis" for method for testing, test with an auxiliary antenna with lead-in plugged into the radio receiver and with test antenna mast outside of car.

If radio plays, the antenna cable or pigtail may be the cause of the low resistance to ground and should be checked after carefully unplugging the windshield pigtail at the cable lead bracket. If the resistance of the antenna cable is less than 500,000 ohms, replace this cable and recheck radio performance. If antenna system is still bad even on strong signals, check pigtail for breaks in the insulation which may be exposed to metal contact, if O.K. it will be necessary to replace the windshield. See Group 23 "Windshield Replacement".

Windshield replacement should be made only after radio receiver, speaker, antenna cable or suppression have been eliminated as the source of poor reception. This can be done by substituting known good components.

RADIOS

CAUTION: Do not operate the radio with the speaker detached since damage to the transistors may result.

Removal—(Figs. 16, 17 and 18)

(1) Disconect battery ground cable.
(2) Remove left ash receiver.
(3) Remove steering column cover.
(4) Unscrew stereo tape reset knob (so equipped).
(5) Disconnect battery lead, crossover lead and speaker leads (on top of radio).
(6) Disconnect antenna lead.
(7) Loosen defroster vacuum actuator (dash pad) mounting screws.
(8) Move defroster vacuum actuator to facilitate radio removal.
(9) Remove two radio mounting screws through access openings in the lower instrument panel; (on

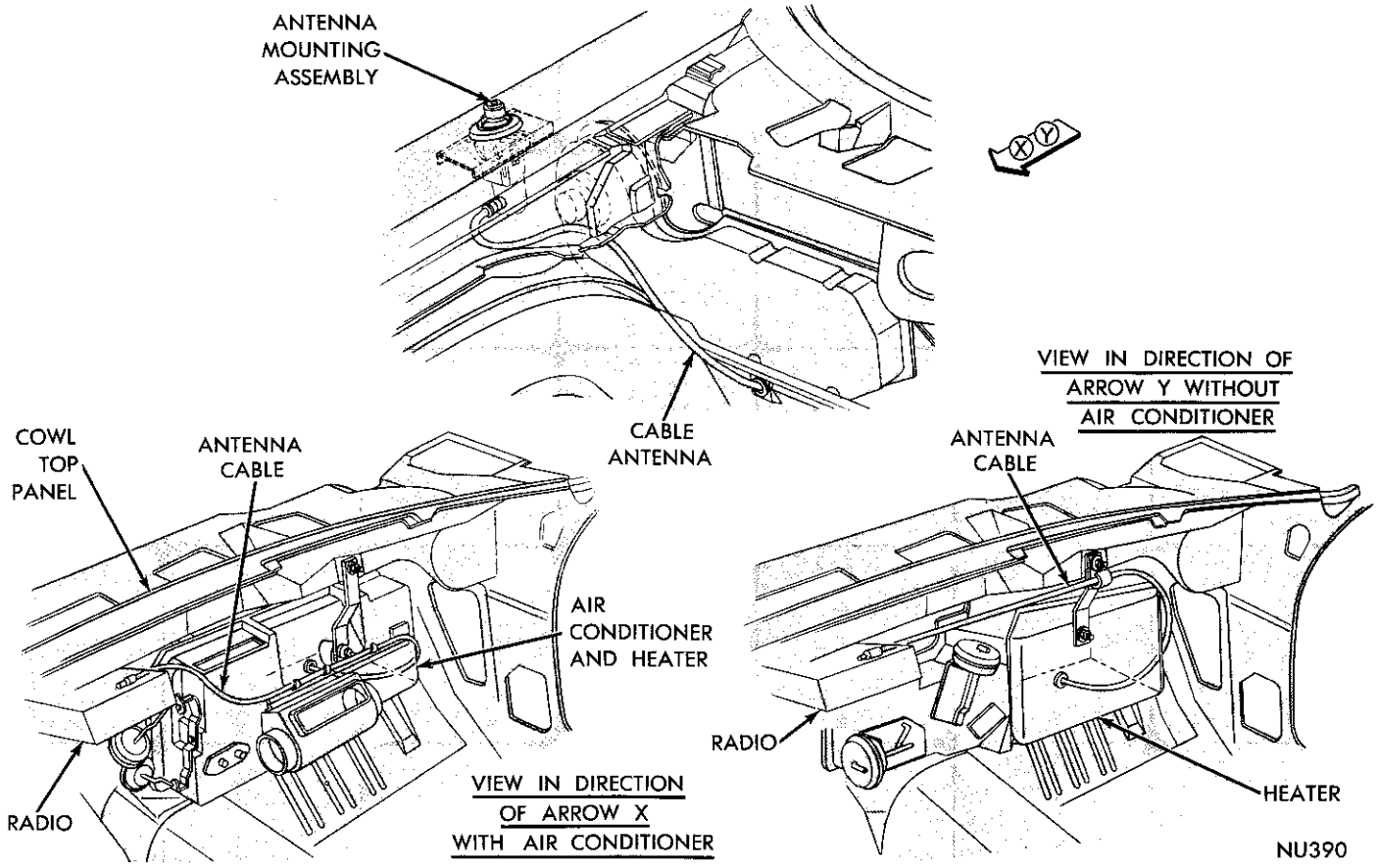


Fig. 15—Antenna Cable Routing—Manual

search-tune, and AM radios; remove knobs, bezels and nuts).

(10) Remove radio support bracket mounting screw from the lower reinforcement. Radio must be supported to prevent dropping.

(11) Working through ash receiver opening, remove radio support bracket from the radio by loosening the support bracket mounting nut at the base of radio.

(12) Remove radio from under instrument panel.

Installation

(1) From under instrument, position radio in instru-

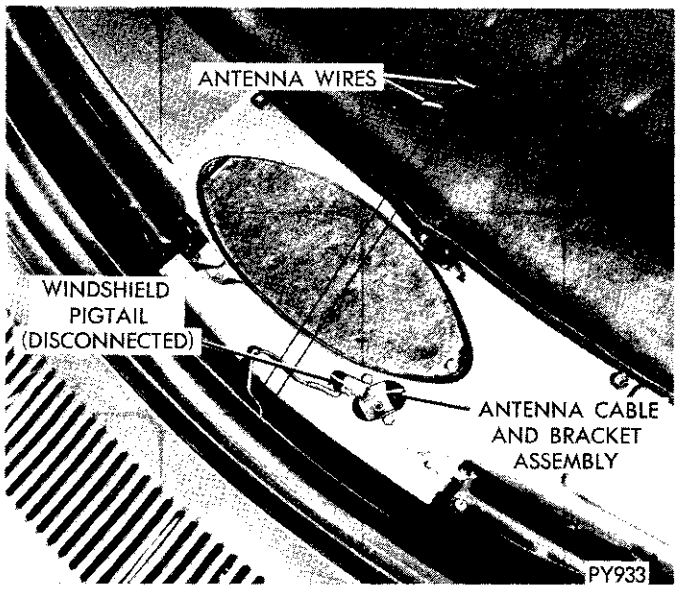


Fig. 16—Windshield Mounted Antenna (With Antenna Pigtail Disconnected from Radio Lead)

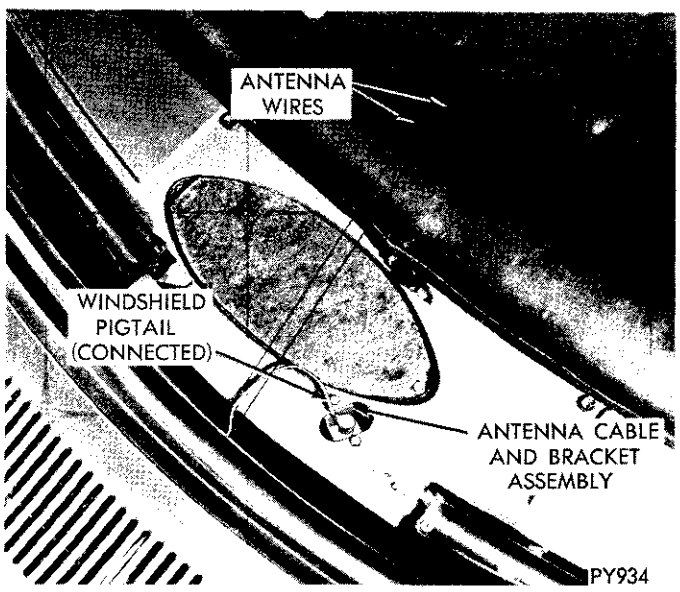


Fig. 17—Windshield Mounted Antenna with Windshield Pigtail Connected to Radio Cable

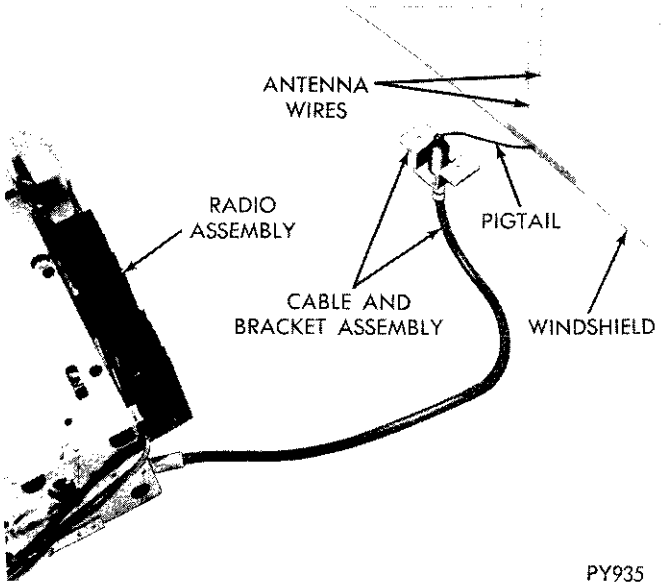


Fig. 18—Antenna Lead and Radio Cable and Bracket Installation

ment panel opening and install the two radio mounting screws, radio support bracket and bracket mounting nut. On Search-Tune radios; install the nuts, bezels and control knobs.

(2) Attach defroster vacuum actuator.

(3) Connect antenna lead, battery lead, cross over lead and speaker leads.

(4) Install stereo tape reset knob (so equipped).

(5) Install steering column cover.

(6) Install left ash receiver.

(7) Connect battery ground cable and test operation of radio and speaker.

Radio Speaker

Removal

(1) Remove the radio speaker and defroster grille (seven screws).

(2) Remove the radio speaker mounting screws (two) and lift the speaker from the top instrument panel.

(3) Disconnect the speaker leads and remove the speaker.

Installation

(1) Position the speaker and attach speaker leads.

(2) Install speaker attaching screws.

(3) Install speaker and defroster grille and attaching screws.

STEREO SPEAKER LEFT

Removal

(1) Remove the instrument cluster, (See "Group 8 Electrical").

(2) Remove the four stereo speaker grille mounting nuts from under the instrument panel.

(3) Remove the stereo speaker grille from top of instrument panel.

(4) Remove four mounting screws and remove speaker from grille.

Installation

(1) Position speaker on speaker grille and install four mounting screws.

(2) Position speaker grille and speaker on instrument panel, indexing speaker and grille studs with holes in instrument panel and install mounting nuts.

(3) Install instrument cluster, (See "Group 8—Electrical").

STEREO SPEAKER RIGHT

Removal

(1) Remove the glove box, (See "Group 8—Electrical).

(2) Remove the four stereo speaker grille mounting nuts from under the instrument panel.

(3) Remove the stereo speaker grille from the top of instrument panel.

(4) Remove four mounting screws and remove speaker from grille.

Installation

(1) Position speaker on speaker grille and install four mounting screws.

(2) Position speaker grille and speaker on instrument panel, indexing speaker and grille studs with holes in instrument panel and install mounting nuts.

(3) Install glove box, (See "Group 8—Electrical").

STEREO MULTIPLEX CROSSOVER

Removal

(1) Remove glove box door.

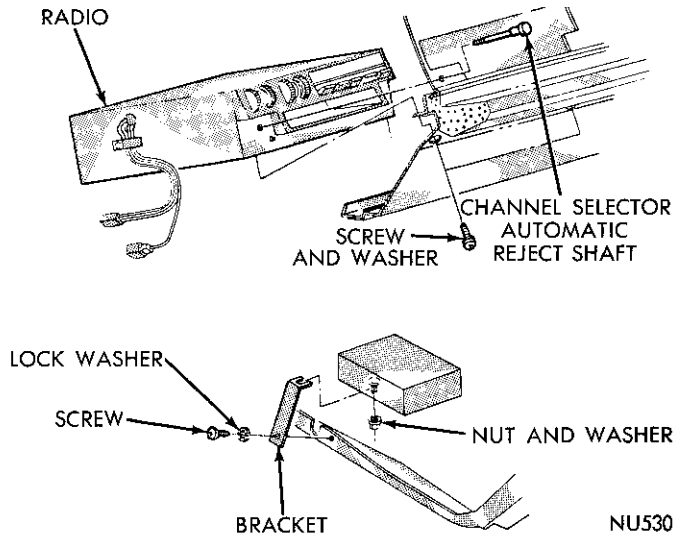


Fig. 19—Radio-Multiplex AM/FM and Stereo Tape

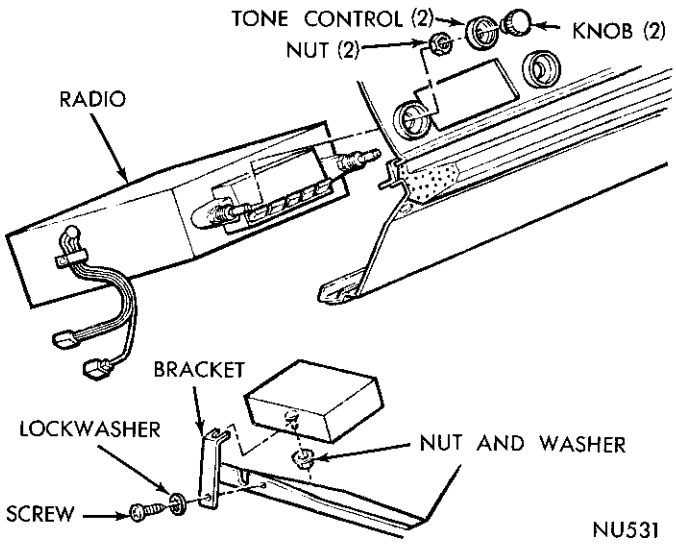


Fig. 20—Radio-Search-Tune—(Typical for AM Radio except Location of Knobs)

(2) Remove glove box door check arm (two screws).
(3) Remove glove box mounting screws (six).
(4) Remove latch catch.
(5) Remove glove box through glove box opening.
(6) Disconnect electrical leads.
(7) Remove crossover attaching screws at panel upper retainer (two).
(8) Carefully remove crossover assembly.

Installation

(1) Carefully install crossover and attaching screws.
(2) Connect electrical leads.
(3) Install glove box and attaching screws.
(4) Install latch catch.
(5) Install glove box door check arm.
(6) Install glove box door.

REAR SEAT SPEAKER

Removal

(1) Working through trunk compartment, disconnect speaker leads.
(2) Remove the four sheet metal screws holding speaker to shelf panel.

Installation

(1) Position speaker under shelf panel and install the four mounting screws.
(2) Connect speaker leads and test operation of speaker.

AUTOMATIC HEADLIGHT BEAM CHANGER

GENERAL INFORMATION

The automatic beam changer is an automatic headlight control unit which senses the light intensity from approaching vehicles and automatically adjusts the headlights to a high or low beam.

The automatic beam changer will dim the headlights when an oncoming car with headlights on low beam is seen at a distance of approximately 1200 feet. The unit will return the headlights to high beam within approximately one-half second after the approaching car has passed.

Major components of the automatic beam changer are: a photo-amplifier unit, a power relay, a foot switch, a sensitivity control (driver control), and an interconnecting wire harness (Fig. 1).

The photo-amplifier unit combines a light sensing optical device and a transistorized amplifier into one unit with sufficient power to operate a power relay for switching headlight beams. The unit is mounted under the hood just ahead of the radiator cradle assembly. A level assembly for use in setting correct vertical aim is attached as part of the unit. **Do Not Disturb** Factory Calibration of level.

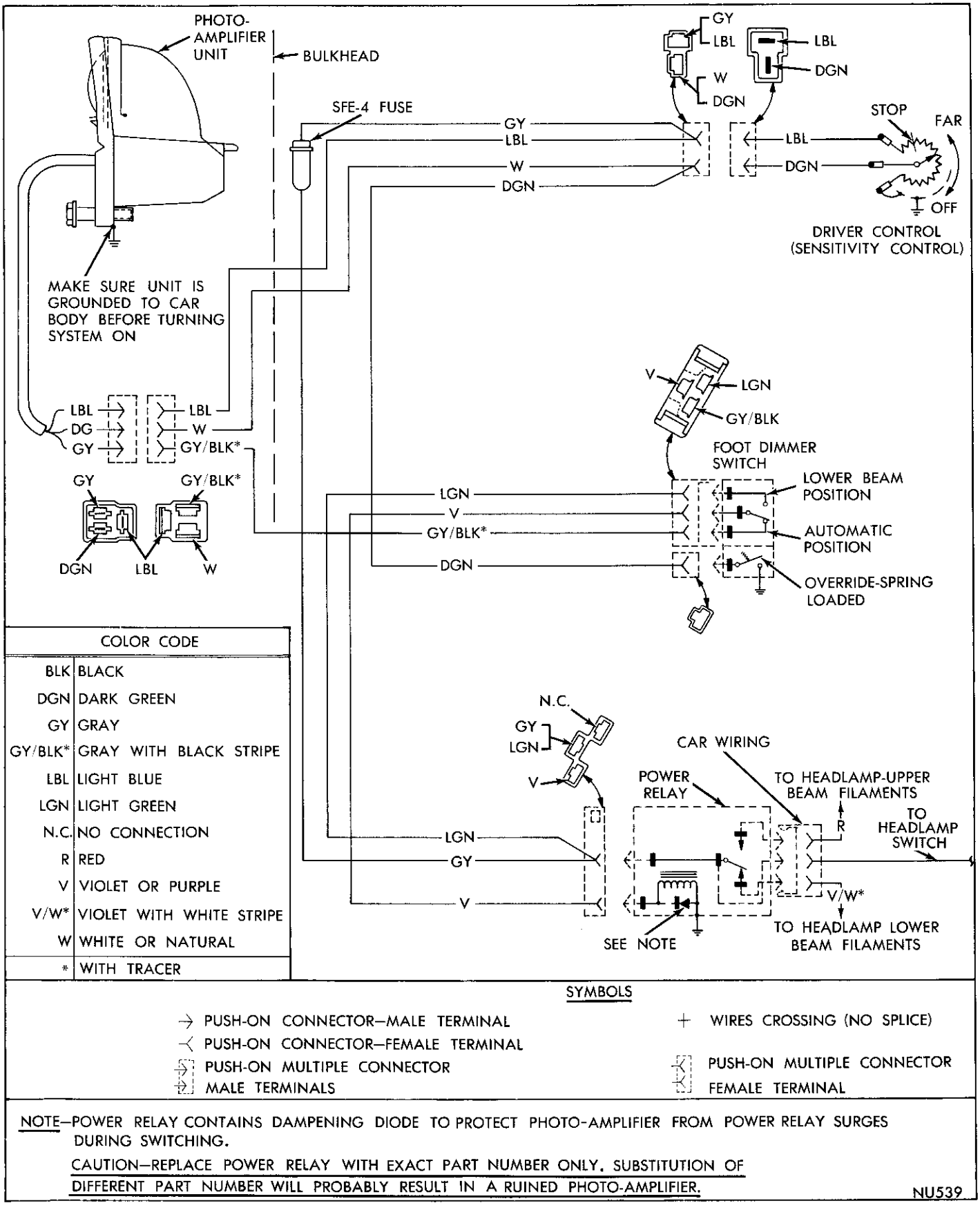
The power relay is a single pole, double throw twelve volt unit which provides for switching the headlight beams. The upper beam position is the "normally closed" position. The power relay is mounted on the front floor pan just above the combination dimmer—over-ride type foot switch mounted on the conventional dimmer switch location.

The over-ride foot switch replaces the standard foot dimmer switch. One position of the over-ride foot switch provides automatic control of the headlight beams. The other position provides low beam only.

In the automatic position, partially depressing the foot switch provides an over-riding high beam as long as the switch is held in this position. Automatic operation is restored when the driver releases the foot switch.

An in-line 4 ampere fuse is also incorporated into the wire harness. If this fuse should blow, the circuit will revert to manual control of the headlight beams by means of the foot switch.

A sensitivity control is located on the instrument panel to the right of the light switch. See Fig. 1 and Headlamp Sentinel and Headlamp Dimmer Wiring diagrams under "Wiring Diagrams." This unit provides a driver sensitivity adjustment. Rotating the knob clockwise increases sensitivity and headlights will switch to low beam when an approaching car is farther away. Rotating the knob counterclockwise toward the word off decreases sensitivity, allowing an approaching car to come nearer before switching occurs. The extreme counterclockwise position of the control is an "Off" position and gives manual control of the headlight beams by means of the foot switch.



COLOR CODE	
BLK	BLACK
DGN	DARK GREEN
GY	GRAY
GY/BLK*	GRAY WITH BLACK STRIPE
LBL	LIGHT BLUE
LGN	LIGHT GREEN
N.C.	NO CONNECTION
R	RED
V	VIOLET OR PURPLE
V/W*	VIOLET WITH WHITE STRIPE
W	WHITE OR NATURAL
*	WITH TRACER

SYMBOLS

- → PUSH-ON CONNECTOR—MALE TERMINAL
- ≺ PUSH-ON CONNECTOR—FEMALE TERMINAL
- PUSH-ON MULTIPLE CONNECTOR MALE TERMINALS
- + WIRES CROSSING (NO SPLICE)
- PUSH-ON MULTIPLE CONNECTOR FEMALE TERMINAL

NOTE—POWER RELAY CONTAINS DAMPENING DIODE TO PROTECT PHOTO-AMPLIFIER FROM POWER RELAY SURGES DURING SWITCHING.

CAUTION—REPLACE POWER RELAY WITH EXACT PART NUMBER ONLY. SUBSTITUTION OF DIFFERENT PART NUMBER WILL PROBABLY RESULT IN A RUINED PHOTO-AMPLIFIER.

NU539

Fig. 1—Automatic Headlamp Beam Changer Wiring Diagram—Schematic

SERVICE DIAGNOSIS

Place the vehicle in a well lighted area. Start the engine and operate at fast idle (Note this transistorized unit does not require a warm-up time). Trouble shoot the wiring, foot switch, driver sensitivity control and power relay with a 12 volt battery and test lamp equipped with a number 53 bulb (one candle power). The test procedures must be performed in the sequence as outlined below:

(1) Set the sensitivity control knob to approximate center of its rotation.

(2) Turn the headlight switch "On"; headlights should remain on lower beam in both positions of the foot dimmer switch. If not see "Condition 1."

(3) Depress foot switch slightly. If high beams come on, the switch is in "Automatic" position. If high beams do not come on, completely depress and release foot switch to put it in "Automatic" position. Depressing foot switch slightly should cause lights to switch to high beam. If not see "Condition 2".

(4) With the foot switch in "Automatic" position, cover the photo-amplifier with a black cloth; headlights should switch to high beam. If not see "Condition 3".

(5) Remove the black cloth from the photo-amplifier; headlights should return to low beam. If not see "Condition 4".

(6) With headlights on "Automatic" lower beam, rotate driver control counterclockwise to "off" position; headlights should switch to high beam. If not see "Condition 5."

(7) Fully depress foot switch to the manual position; headlights should switch to low beam. If not see "Condition 6".

Condition	Possible Cause	Correction
1. WHEN HEADLIGHT SWITCH IS TURNED "ON", AND LOW BEAM IS NOT OBTAINED IN BOTH POSITIONS OF FOOT DIMMER SWITCH.	(a) Driver control rotated to "off" position.	(a) Set control to center of rotation and check owner understanding.
	(b) Loose or wrong connection at foot switch, power relay, and driver control or photo-amplifier connectors.	(b) See Fig. 1 and check all connections.
	(c) Incomplete ground on photo-amplifier.	(c) Check ground.
	(d) Poor ground at power relay or defective power relay.	(d) (1) Check ground. (2) Replace defective power relay.
	(e) Blown fuse.	(e) See Fig. 1 and continuity check for blown fuse.
	(f) Defective connection to driver control or defective driver control.	(f) See Fig. 1 and continuity check for: (1) Defective connection. (2) Open driver control.
	(g) Faulty photo-amplifier.	(g) Replace faulty photo-amplifier.
2. FOOT SWITCH FAILS TO GIVE OVERRIDE HIGH BEAM WHEN SLIGHTLY DEPRESSED.	(a) Faulty foot switch.	(a) Ground L-9 (Dark Green) wire at foot switch; if lights go to high beam, replace foot switch.
	(b) Driver control not grounded.	(b) Check ground.
	(c) Faulty photo-amplifier.	(c) Replace photo-amplifier.
3. HEADLIGHTS DON'T GO TO HIGH BEAM WHEN PHOTO-AMPLIFIER IS IN COMPLETE DARKNESS (WITH FOOT SWITCH IN AUTOMATIC POSITION)	(a) Wrong connection at power relay.	(a) Check for reversed connection at power relay.
	(b) Faulty photo-amplifier.	(b) Disconnect photo-amplifier at three way connector. If headlights switch to high beam replace faulty photo-amplifier.
4. HEADLIGHTS FAIL TO GO TO LOW WHEN MEETING OTHER HEADLIGHTS.	(a) Photo-amplifier improperly aimed.	(a) Aim photo-amplifier.
	(b) Loose, disconnected or broken photo-amplifier wiring.	(b) Check all connectors. See Figure 1.
	(c) Blown fuse.	(c) Replace fuse. Correct condition causing fuse to blow.
	(d) Faulty foot switch wiring.	(d) Check for loose connections or open circuit in foot switch wiring. Replace if necessary. See Figure 1.
	(e) Faulty wiring.	(e) Check wiring for open circuit, loose or incorrect connections.
	(f) Faulty photo-amplifier.	(f) Replace faulty photo-amplifier.

Condition	Possible Cause	Correction
5. HEADLIGHTS ON "AUTOMATIC" LOWER BEAM, ROTATING DRIVER'S CONTROL COUNTERCLOCKWISE TO "OFF" POSITION, HEADLIGHTS WILL NOT SWITCH TO HIGH BEAM.	(a) Faulty ground on drivers control.	(a) Check ground to instrument panel.
6. HEADLIGHTS FAIL TO GO TO LOW BEAM WHEN FOOT SWITCH IS COMPLETELY DEPRESSED TO MANUAL POSITION.	(a) Faulty wiring in foot switch circuit. (b) Faulty foot switch.	(a) Inspect for loose connections or open circuit, in wiring from foot switch to power relay. (b) Replace faulty foot switch.

SERVICE PROCEDURES

PHOTO-AMPLIFIER (Fig. 2)

Aiming

Performance of the automatic beam changer is dependent on the proper vertical adjustment of the photo-amplifier. If the unit is aimed too low, reflected road light from the car's own headlights will cause the unit to "Hold" the headlight on lower beam.

(1) Place the vehicle on level floor.

(2) Check tire inflation: tire pressure should not vary more than 3 to 5 pounds.

(3) Rock the vehicle sideways to allow the springs and other suspension parts to assume normal position.

(4) Fuel tank must be at least half full with trunk empty except for spare tire.

(5) Raise car hood.

(6) Adjust vertical aiming screw at front of photo-amplifier unit until level bubble is centered, (Fig. 3).

Always make final adjustment while turning screw clockwise.

Removal

(1) Disconnect battery ground cable.

(2) Disconnect photo-amplifier harness at connector.

(3) Remove two screws attaching photo-amplifier mounting bracket to radiator grille yoke bracket brace (Chrysler), fender headlamp mounting plate (Imperial) and remove photo-amplifier and mounting bracket to work bench for disassembly.

(4) Remove the adjusting screw from the photo-amplifier.

(5) Remove the tension spring and remove the photo-amplifier.

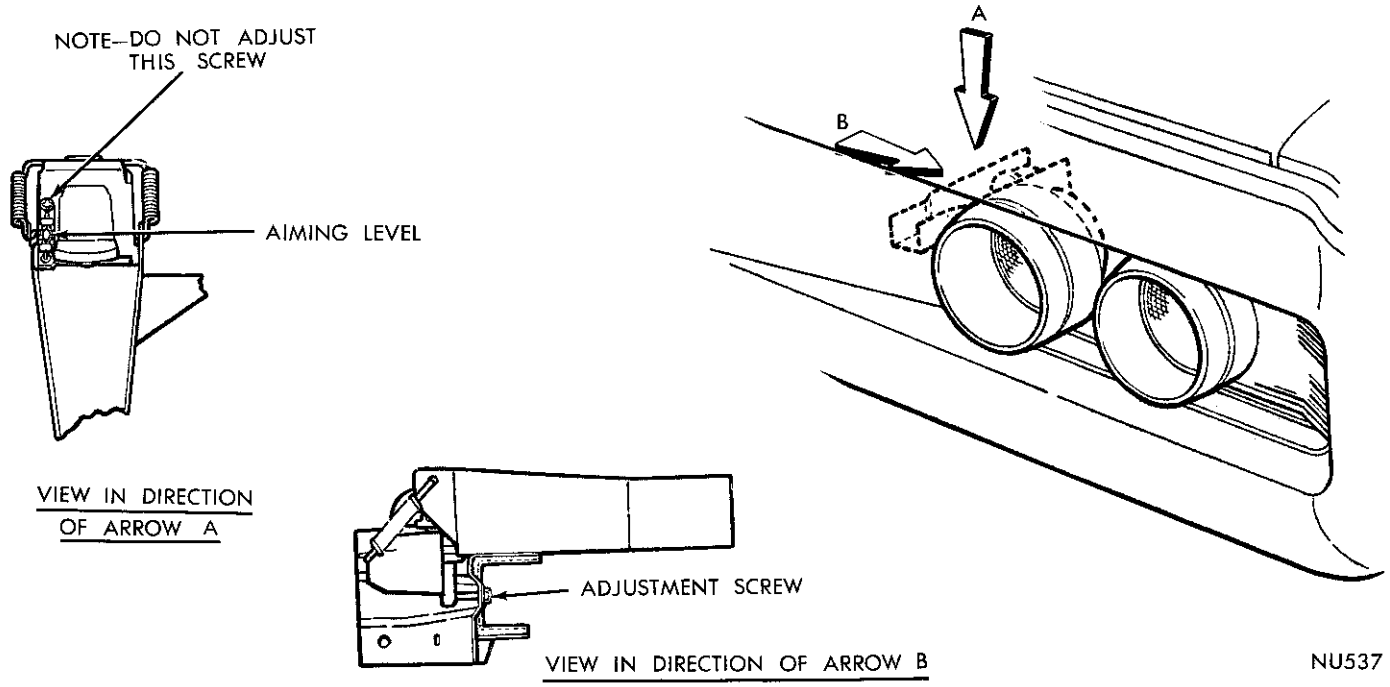


Fig. 2—Photo-Amplifier Installed

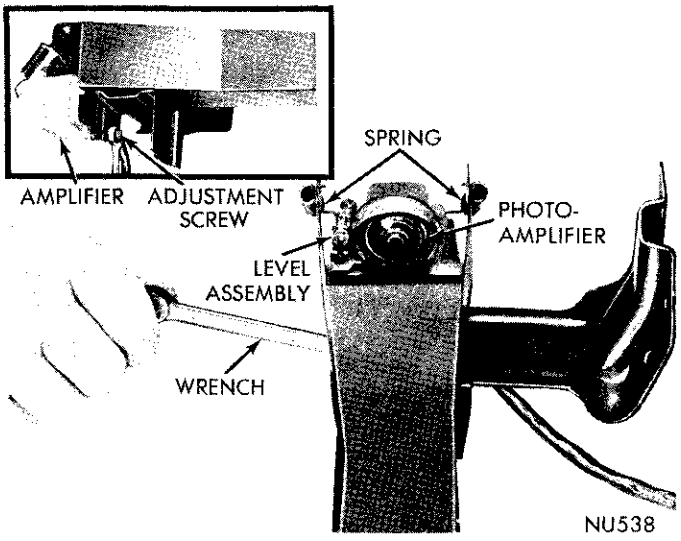


Fig. 3—Aiming the Scanner

Installation

(1) Position the photo-amplifier on the mounting bracket and install adjusting screw.

(2) Install the tension spring.

(3) Install the photo-amplifier and support bracket to fender headlamp mounting plate (Imperial); radiator grille yoke bracket brace (Chrysler). Tighten screws to 35 inch-pounds plus or minus 10 inch-pounds.

(4) Aim photo-amplifier see "Aiming".

(5) Connect harness at connector.

(6) Connect battery ground cable and test operation of system.

POWER RELAY (Fig. 4)

Removal

(1) Disconnect battery ground cable.

(2) Disconnect harness from relay.

(3) Remove two screws attaching relay to dash panel and remove relay.

Installation

(1) Position relay on dash panel and install the two attaching screws.

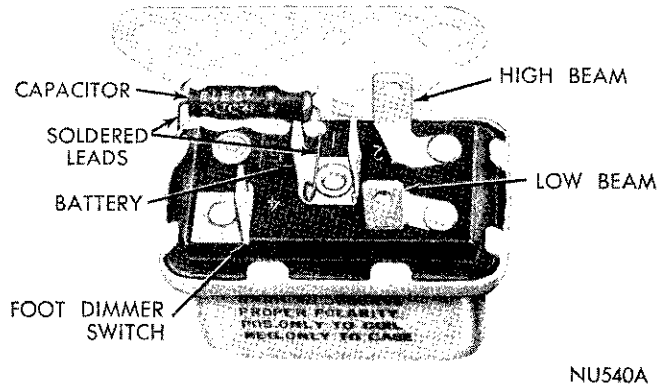


Fig. 4—Power Relay

(2) Connect harness connector at relay.

(3) Connect battery ground cable and test operation of system.

FOOT SWITCH

Removal

(1) Disconnect battery ground cable.

(2) Raise carpet and disconnect wire harness connectors from switch.

(3) Remove the switch mounting screws and remove switch.

Installation

(1) Connect wire harness connectors to switch.

(2) Position switch on floor pan and install attaching screws.

(3) Connect battery ground cable and test operation of system.

SENSITIVITY CONTROL SWITCH REPLACEMENT

This switch is coaxial with the Safeguard Sentinel Time Delay Control Switch. For replacement see instructions under "Safeguard Sentinel."

SAFEGUARD SENTINEL LIGHTING SYSTEM

INDEX

GENERAL INFORMATION

The Safeguard Sentinel Lighting System is a light sensing device that automatically controls the use of the driving lights after the ignition key is turned on. The system automatically activates the taillights and the headlights when the light intensity outside the car requires road illumination. If light intensity reaches a point (selected by the driver with the sensitivity control located on the photocell), when the lights are no longer needed, the Sentinel turns them off. In periods of darkness, the headlights and taillights will remain

on and the back-up lights will come on for a period of from one to three minutes after the ignition key is turned off depending on the desired setting of the Time Delay Control Switch. The system can be disconnected at anytime by turning the knob to "OFF". Use of the driving lights is then controlled by the headlight switch.

Three units control the system. See "Wiring Diagrams". The time control switch is mounted on the lower part of the instrument panel adjacent to the headlight switch. Turning the knob on activates the system. The headlight switch remains turned off. Rotating the control knob clockwise increases the period of time the driving lights remain on after the ignition key is turned off.

The photocell, mounted on the top left side of the instrument panel pad, may be adjusted by the driver to automatically determine when the degree of light outside of the car will require the use of the driving lights. Turning the control clockwise decreases the sensitivity of the cell to light. Rotating the knob counterclockwise increases the sensitivity and will turn the lights on earlier.

The amplifier is mounted under the right side of the instrument panel on the heater plenum chamber flange. This unit receives the signals from the photocell and control knob and activates the headlight circuit accordingly. The entire Safeguard circuit is grounded through the Time Delay switch. When the switch is in the "OFF" position, a malfunction of any of the sentinel components cannot interfere with normal operation of headlight switch see "Wiring Diagram".

The backup lights will light regardless of the position of the time control switch when the headlight switch is turned on with the ignition key off. They will go out when the ignition key is turned on.

The circuit breaker in the headlight switch protects the headlight circuit during normal manual operation. When the Safeguard time control switch is turned on, the headlight switch is by-passed. Therefore a second circuit breaker, mounted in the amplifier, protects the headlight circuit.

SERVICE DIAGNOSIS

Before any tests are made, it should be determined that all driving lights are operating manually first. It is important that the steps in the service diagnosis be performed in the sequence shown for each condition. Refer to "Wiring Diagrams" for wiring circuits.

Condition	Possible Cause	Correction
LIGHTS FAIL TO LIGHT AUTOMATICALLY IN PERIODS OF DARKNESS	(a) Loose connections.	(a) Test continuity of all circuits and repair as necessary.
	(b) Poorly grounded time control switch.	(b) Remove switch bezel and clean paint from instrument panel under bezel.
	(c) Faulty time control switch.	(c) Jump white wire (X-7) at switch to a good ground. If lights light, replace switch.
	(d) Faulty photocell.	(d) Remove X-19 wire (gray) from black connector. Connect connector and if lights light replace photocell.
	(e) Faulty amplifier.	(e) Disconnect multiple connector at amplifier and jump from red (X-17) to blue (X-5) in body wiring side of connector. If lights light, replace amplifier.
LIGHTS FAIL TO TURN OFF AUTOMATICALLY IN PERIODS OF LIGHT	(a) Photocell covered up.	(a) Instruct owner in the proper use of system.
	(b) Loose connections in photocell circuit.	(b) Check and tighten wire connector at photocell.
	(c) Faulty photocell.	(c) Test photocell by jumping gray (X-19) and black (X-20) wires at amplifier multiple connector. Replace photocell if lights go off.
	(d) Faulty amplifier.	(d) Disconnect multiple connector at amplifier. If lights go out, replace amplifier.
LIGHTS TURN OFF IMMEDIATELY AFTER IGNITION SWITCH IS TURNED OFF	(a) Taillight fuse blown.	(a) Test circuit for short and replace fuse.
	(b) Short circuit between X-16 and X-8 wires of time control switch.	(b) Repair as necessary.
	(c) Faulty time control switch.	(c) Test with switch known to be good. (Be sure to ground switch.) Replace if necessary.

Condition	Possible Cause	Correction
	(d) Faulty amplifier.	(d) Test with amplifier known to be good. Replace if necessary.
LIGHTS REMAIN ON TOO LONG AFTER IGNITION SWITCH IS TURNED OFF	(a) Loose connection in yellow wire (X-16) or light green wire (X-8).	(a) Repair as necessary.
	(b) Faulty time control switch.	(b) Test with switch known to be good. (Be sure to ground switch.) Replace if necessary.
	(c) Faulty amplifier.	(c) Test with amplifier known to be good. Replace if necessary.
BACKUP LIGHTS FAIL TO LIGHT	(a) Loose wire connections.	(a) Test continuity of violet wire (X-9) and violet wire with white tracer (B-2). Repair as necessary.
	(b) Open windshield wiper circuit breaker.	(b) Test operation of windshield wipers. If inoperative, test for short circuit and repair as necessary.
	(c) Faulty amplifier.	(c) Jump violet wire (X-9) to violet wire with white tracer (B2A) at amplifier. If backup lights light, replace amplifier.
BACKUP LIGHTS LIGHT MANUALLY BUT NOT DURING TIME DELAY	(a) Faulty amplifier.	(a) Disconnect violet wire with white tracer (B-2) at amplifier. If lights turn off, replace amplifier.

SERVICE PROCEDURES

TESTS

Before testing any part of the Safeguard Sentinel Lighting System, it should first be determined that the exterior lighting system of the vehicle is operating properly. Turn on the headlights, and visually test the operation of the lights. The backup lights should light regardless of the position of the time control switch or the gear selector and go out when the ignition key is turned on.

After testing the manual operation of the lighting system, inspect the multiple connectors at the amplifier, the photocell and the time control switch to be sure they are tight and making good contact. If connections are tight, continuity of the entire wire harness should be tested with an ohmmeter.

Should the automatic operation fail, test the time control switch for a good ground. Place a jumper wire from the switch bezel or knob to a good body ground and test the operation of the system. If the system operates properly, remove the switch bezel and clean the paint from the instrument panel, under the bezel, and reinstall the bezel.

The photocell, amplifier and control switch are not to be serviced. If one or the other is defective, it should be replaced.

Photocell (Fig. 1)

If the lights fail to light automatically after dark, test the photocell by covering with a dark cloth. Start the engine, turn on the time control switch and turn off the headlight switch. If the headlights and taillights do not light within a few seconds, uncouple the mulitple connector at the amplifier. Remove the gray wire (X-19) from the connector leading to the body wiring and recouple the connector. If the lights light, replace the photocell and reinstall the gray wire (X-19) in the connector.

Should the lights fail to automatically turn off at day break, shine a bright light into the photocell. Rotate the cap to the centered position between the "Early" and "Late" position. If the lights light, the cap was rotated too far blocking off light to the cell through the window in the cap (Fig. 1). Instruct the owner in the proper use of the Safeguard Lighting System.

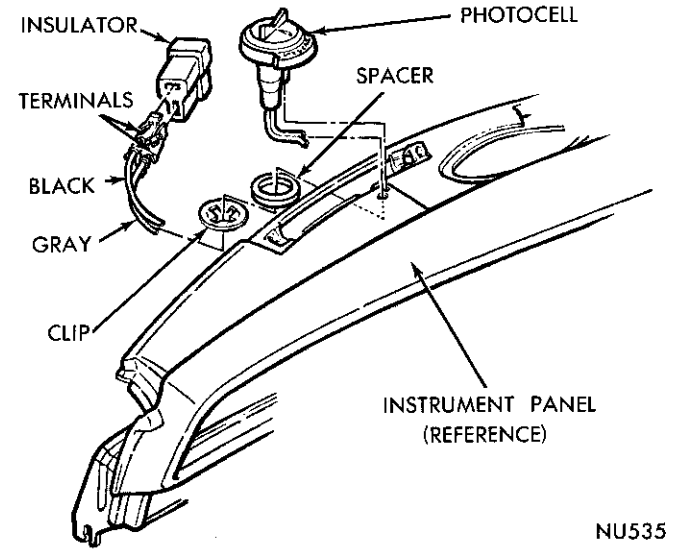


Fig. 1—Photo Cell Installation

If the sensitivity adjustment of the cap still fails to correct the operation, test the photocell by placing a jumper wire from the gray wire (X-19) to the black wire (X-20) at the amplifier. This will close the photocell circuit and the lights should turn off. If they do, replace the photocell.

Time Delay Control Switch

Always test the time delay control switch for a good ground to the instrument panel before condemning the switch.

Ground the switch by connecting a jumper wire from the knob of the switch to a good body ground. Test the operation of the system. If the system operates properly, remove the switch bezel and clean the paint from the panel so a good contact will be made when the bezel is installed.

If the lights fail to turn off automatically after the ignition is turned off and the photocell test is positive, test the switch by jumping the yellow wire (X-16) to the light green wire (X-8) at the switch. If the lights turn off, replace the switch.

Should the lights turn off immediately after the ignition key is turned off, (no time delay) regardless of the time control setting, inspect the taillight fuse. If the fuse is not blown; test for short in switch.

Amplifier

Should the lights fail to light automatically, and the photocell and switch tests are positive, the amplifier should be tested as follows:

Remove the amplifier from the heater plenum chamber flange and disconnect the multiple connector (Fig. 2). Place a jumper wire from the red wire (X-17) to the light blue wire (X-5) in the connector on the body wiring side. If the lights light, replace the amplifier.

Should the lights fail to turn off automatically at day break and the photocell and time delay switch tests are positive, disconnect the multiple connector at the amplifier. If the lights go out, replace the amplifier.

Failure of the lights to turn off automatically when the ignition key is turned off or the lights turn off immediately regardless of time control setting of the switch, test with an amplifier known to be good. If lights operate properly, replace the amplifier.

PHOTOCELL

Removal

(1) Disconnect battery ground cable.

(2) Remove steering column cover and left spot cooler hose from distribution duct if air conditioning equipped.

(3) From under panel, disconnect photocell connector (black and gray wires (Fig. 1), and remove

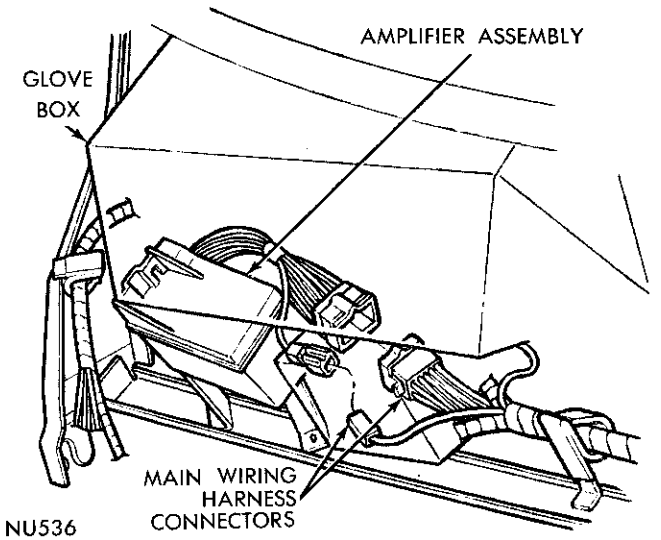


Fig. 2—Amplifier Installation

tinnerman clip from photocell base with a small screw driver. Pull photocell up through mounting hole, cut wires and remove.

Installation

(1) From top of instrument panel, feed photocell wires through mounting hole.

(2) Hold photocell in place on panel, press tinnerman clip on photocell base from under panel (Fig. 1).

(3) Install connector insulator on wire terminals.

(4) Couple connectors and install steering column cover.

(5) Install left spot cooler hose to distribution duct if air conditioning equipped.

(6) Connect battery ground cable and test operation of light system.

TIME DELAY CONTROL SWITCH

Removal

To service the time delay control switch, it is necessary to remove the instrument cluster bezel. See "Instrument Cluster Removal", Electrical Group 8. After removing the cluster bezel proceed as follows:

(1) Rotate knob till set screw is visible, loosen set screw and remove knob.

(2) Remove bezel nut with Tool C-3824 and remove switch from back of bezel.

Installation

(1) Position switch in bezel and install bezel nut with Tool C-3824.

(2) Position knob on switch and tighten set screw.

(3) Install instrument cluster bezel as outlined in "Instrument Cluster Installation" in Electrical, Group 8.

AMPLIFIER

Removal

Remove the two nuts retaining the amplifier bracket to the right fresh air vent flange and lower assembly far enough to disconnect multiple connector. Remove two self tapping screws from bracket to separate from amplifier.

Installation

Assemble the bracket to the amplifier with the two self tapping screws and bolt the assembly to the right fresh air vent flange. Connect the multiple connector and the battery ground cable. Test the operation of the Sentinel.

SPEED CONTROL SYSTEM

INDEX

GENERAL INFORMATION

The speed control system (Fig. 1) is electrically actuated and vacuum operated. The turn signal lever on the steering column incorporates a CONTROL RING which when rotated, turns the system "OFF", "ON" or "RESUME SPEED". A SPEED SET button is located in the end of the lever. This device is designed to operate at speeds above approximately 30 M.P.H.

WARNING: The use of "Speed Control" is not recommended when driving conditions do not permit maintaining a constant speed, such as heavy traffic or on roads that are winding, icy, snow-covered or slippery.

TO ENGAGE: Rotate control ring to the "ON" position, attain desired speed then momentarily depress and release "SPEED SET" button establishing speed memory and engaging system. Remove foot from accelerator. Speed will be maintained at this level. Turning the control ring from "OFF" to "ON" while the vehicle is in motion establishes memory without system engagement at that speed.

TO DISENGAGE: Normal brake application or a soft tap on the brake pedal will disengage control unit without erasing speed memory. Fully rotating the control ring in the "OFF" direction or turning the ignition "OFF" also disengages the system and in addition erases the speed memory.

TO RESUME: Rotate control ring fully in the "RESUME" direction. Vehicle will resume to the previously memorized speed.

TO VARY SPEED SETTING: To increase speed, depress accelerator to desired speed and momentarily depress and release SPEED SET button. When speed control units is engaged, tapping SPEED SET button may increase speed setting incrementally.

To decrease speed, tap brake pedal lightly disengaging system. When desired speed has been obtained depress and release SPEED SET button. Decrease in speed can also be attained by holding set button depressed until desired speed is attained. Releasing the button engages the system at that speed.

TO ACCELERATE FOR PASSING: Depress accelerator as needed, when passing is completed, release accelerator and vehicle will return to previous speed setting.

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
NO SPEED CONTROL WHEN BUTTON PRESSED.	(a) Control ring in "OFF" position.	(a) Turn ring to "ON" position.
	(b) Fuse blown.	(b) Replace fuse.
	(c) Vacuum leak.	(c) Check vacuum lines.
	(d) Speed control throttle cable disconnected.	(d) Connect and adjust control cable. See "Tests and Adjustments".
	(e) Improper stop lamp and speed control switch adjustment.	(e) Adjust stop lamp and speed control switch. See "Tests and Adjustments".
	(f) Faulty electrical circuit.	(f) See "Electrical Tests".
NO RESUME WHEN CONTROL RING IS ROTATED	(a) Insufficient rotation of control ring.	(a) Rotate ring fully toward "Resume".
	(b) Faulty electrical circuit.	(b) See "Electrical Tests".

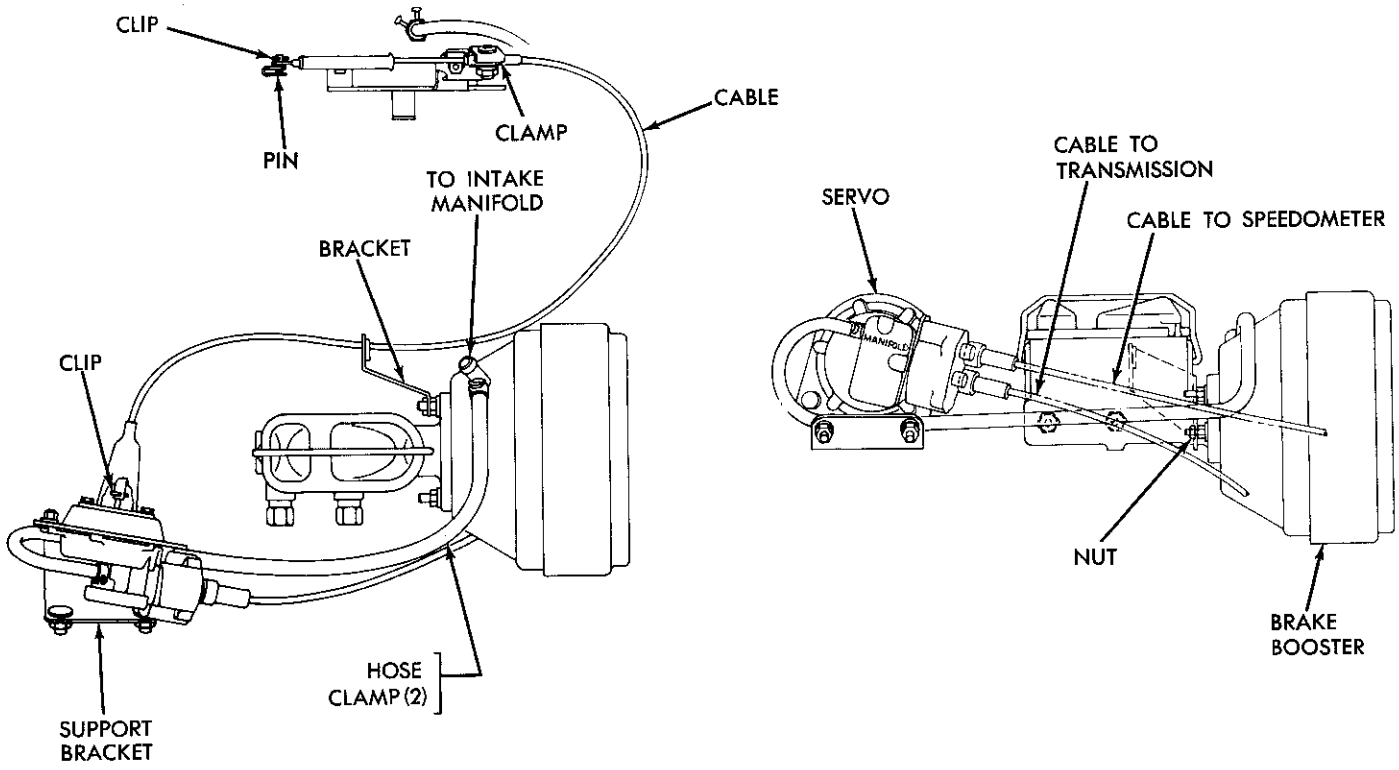


Fig. 1—Speed Control Servo Adaptation—Chrysler and Imperial

Condition	Possible Cause	Correction
NO SYSTEM DISENGAGEMENT WHEN BRAKE PEDAL IS DEPRESSED	(a) Improper adjustment of stop lamp and speed control switch.	(a) Adjust switch. See "Tests and Adjustments".
	(b) Faulty electrical circuit.	(b) See "Electrical Tests".
SPEED CONTROL ENGAGES WITHOUT ACTUATING THE SWITCH	(c) Faulty electrical circuit.	(a) See "Electrical Tests".
CARBURETOR DOES NOT RETURN TO NORMAL IDLE	(a) Speed control throttle cable maladjusted.	(a) Adjust speed control throttle cable. See "Tests and Adjustments".
	(b) Speed control throttle cable kinked or damaged.	(b) Repair or replace cable.
	(c) Standard throttle linkage faulty.	(c) Repair or replace linkage.
SPEEDOMETER NOISE, EXCESSIVE NEEDLE WAIVER OR ERRATIC SERVO LOCK-IN PERFORMANCE	(a) Speedometer cable kinked or damaged.	(a) Align cables to avoid sharp bends or replace cable.
	(b) Cable core bent or too long.	(b) Replace core.
	(c) Cable ferrule nut loose at speedometer head, transmission or speed control servo.	(c) Tighten cable ferrule nuts.
	(d) No lubricant on speedometer cable core.	(d) Lubricate cables.
	(e) Noisy speedometer head assembly.	(e) Repair or replace the speedometer as necessary.
SPEED SETTING AFTER LOCK-IN, TOO HIGH OR TOO LOW.	(a) Improper adjustment of speed control throttle cable.	(a) Adjust speed control throttle cable.
	(b) Vacuum leak.	(b) Check all vacuum hose connections.
	(c) Improper speed control servo lock-in adjustment.	(c) See "Servo Lock-in Screw Adjustment".

Condition	Possible Cause	Correction
UNIT DISENGAGES ON ROUGH ROAD.	(a) Improper adjustment of stop lamp and speed control.	(a) Adjust as necessary. See "Tests and Adjustments".
RESUME SPEED IS POSSIBLE BELOW 20 M.P.H.	(a) Faulty low speed inhibit switch in servo unit.	(a) Replace servo unit.
	(b) Faulty electrical circuit.	(b) See "Electrical Tests".
SPEED CONTROL ENGAGES WHEN ENGINE IS STARTED, OR DOES NOT DISENGAGE WHEN BRAKE PEDAL IS DEPRESSED.	(a) Faulty electrical circuit.	(a) See "Electrical Tests".

SERVICE PROCEDURES

Tests and Adjustments

Servo Lock-in Screw Adjustment

The Lock-in Screw Adjustment (Fig. 2) controls the accuracy of the speed control unit. When the SPEED-SET button is depressed and released at speeds above approximately 30 M.P.H.; the speed control system is activated, the system "locks in" and should hold the vehicle at virtually the same speed at which it is traveling.

IMPORTANT: Lock-in accuracy will be affected by:

(a) **Poor engine performance (need for tune-up etc.)**

(b) **Power to weight ratio (loaded gross weight of car; trailering).**

(c) **Improper slack in throttle control cable, (See "Throttle Control Cable Adjustment").**

This screw should never be adjusted indiscriminately. Need for adjustment can be determined only after accurate diagnosis of the Speed Control System operation.

After the steps (a) (b) and (c) have been considered and speed "sags" (drops) more than 2 to 3 M.P.H. when speed control is activated, the lock-in adjusting screw should be turned counter-clockwise (approximately 1/4 turn per one M.P.H. correction required). If "Pull-up" (speed increase) of more than 2 to 3 M.P.H. occurs, the lock-in adjusting screw should be turned clockwise (approximately 1/4 turn per one M.P.H. correction required. If the screw is loose, stake side of servo housing adjacent to screw to INSURE a snug fit.

CAUTION: This adjustment must not exceed two turns in either direction or damage to unit may occur.

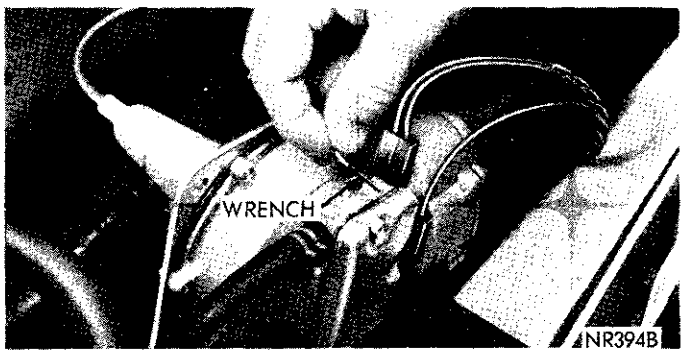


Fig. 2—Lock-in Screw Adjustment

Speed Control Throttle Cable Adjustment

Optimum servo performance is obtained with a given amount of free play in the throttle control cable. To obtain proper free play, insert a 1/16 inch diameter pin between forward end of slot in cable carburetor linkage pin. Use hair pin clip removed from carburetor linkage pin as a gauge (Fig. 3). With choke in full open position and carburetor at curb idle, pull back on cable (toward dash panel) without moving carburetor linkage until all free play is removed. Tighten cable clamp bolt to 45 inch-pounds, remove 1/16 inch diameter pin and install hair pin clip.

Stop Lamp and Speed Control Switch Adjustment

Refer to Figure for proper switch adjustment as follows:

(1) Loosen switch bracket.

(2) Insert proper spacer gauge between brake push

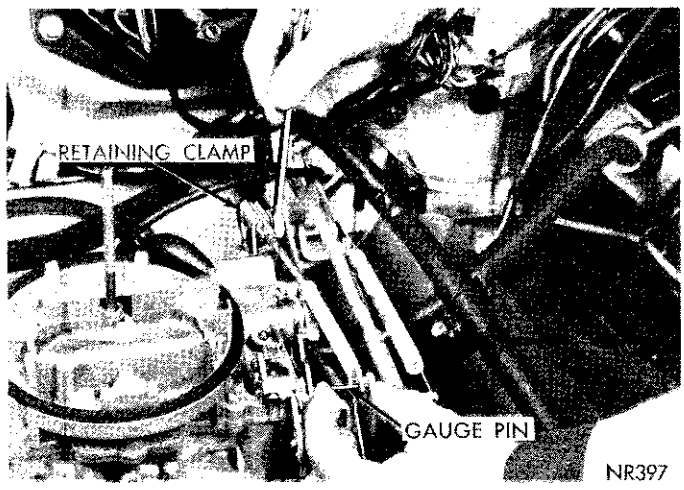


Fig. 3—Servo Throttle Cable Adjustment

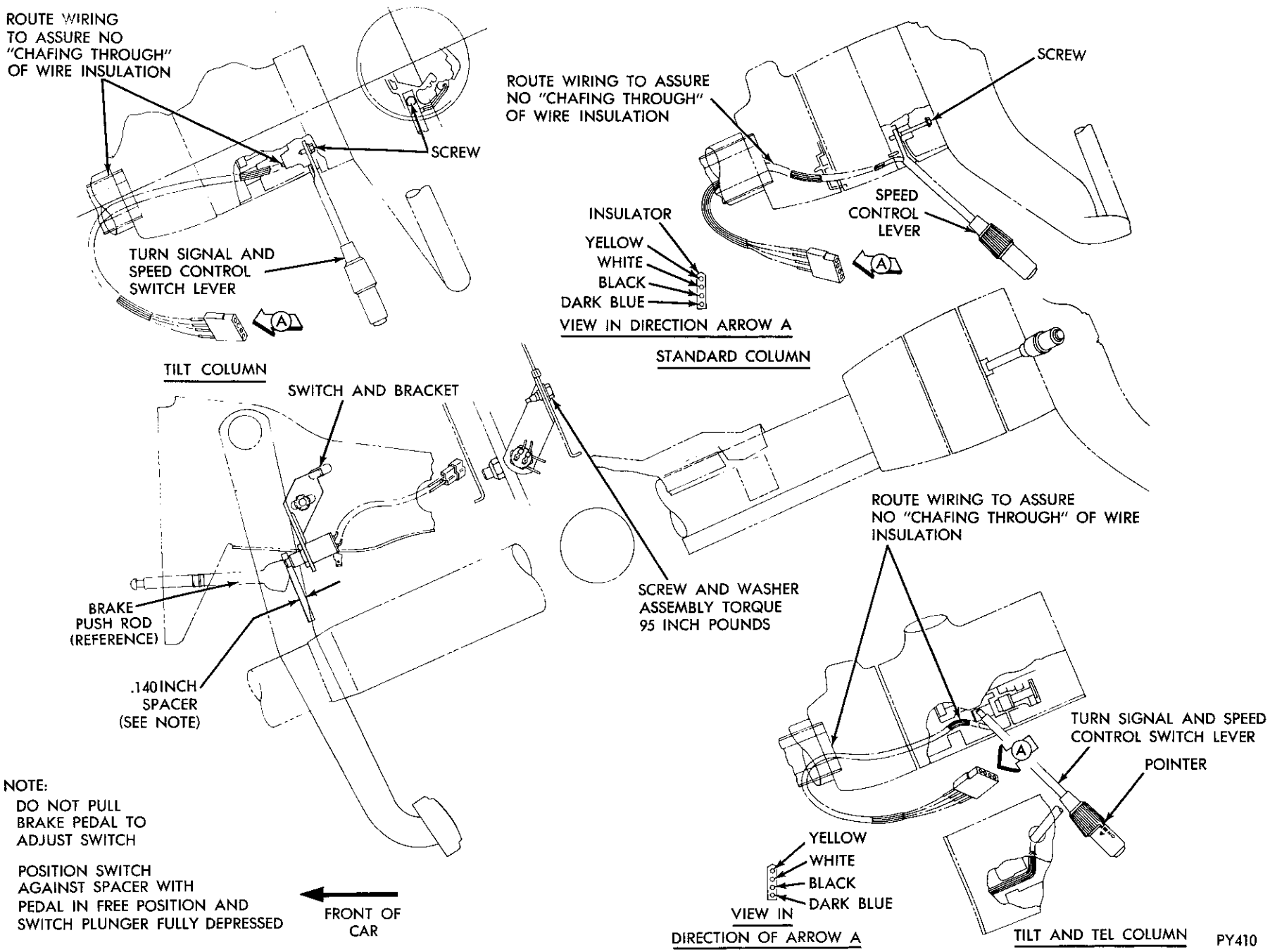


Fig. 4—Stop Lamp and Speed Control Switch Adaptation—Chrysler—Imperial

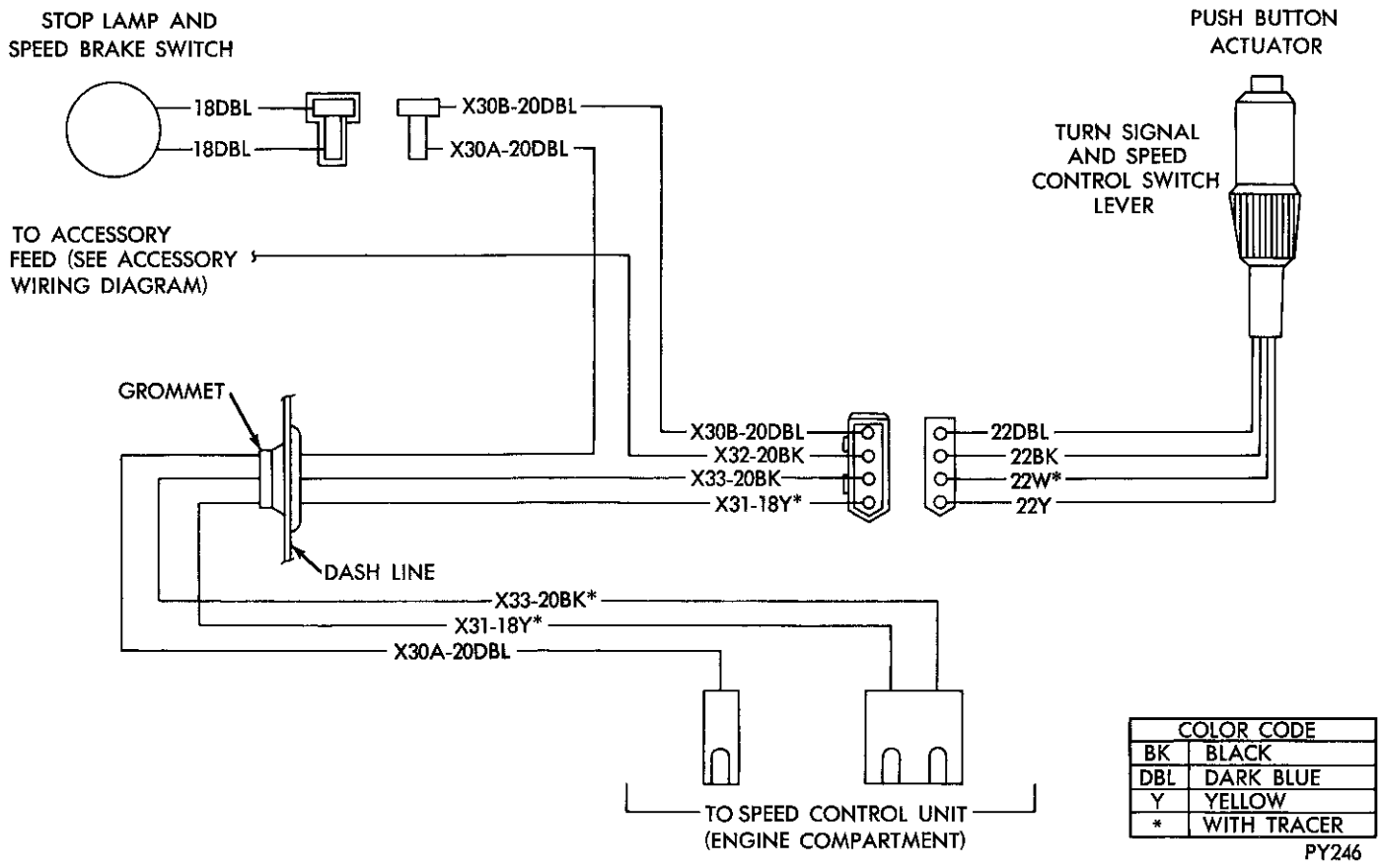


Fig. 5—Speed Control Wiring Diagram

rod and switch with pedal in free position.

(3) Push switch bracket assembly toward brake push rod until plunger is fully depressed and switch body contacts spacer.

(4) Retighten switch bracket bolt to 100 inch-pounds.

(5) Remove spacer.

Electrical Tests:

Refer to "Speed Control Wiring Diagram", (Fig. 5). It is suggested that the electrical tests be made in the following sequence:

(1) **Check accessory fuse for continuity.**

(2) **Speed control switch (turn signal lever) test.**

(a) Disconnect the four wire electrical connector at the steering column.

(b) Connect a twelve volt positive source to the black wire terminal in the speed control harness connector (male).

(c) With the lever rotary switch in the **ON** position, attach one lead of a test lamp to the connector yellow wire, other lead to a good ground; test lamp should light and should go off when the "Speed Set" button is depressed.

(d) Move the test lamp lead to the connector blue wire; test lamp should light and should go off when the rotary switch is turned to the **OFF** position.

(e) With the rotary switch in the **ON** position, move test lamp lead to the connector white wire; test lamp should light by either depressing the Speed Set button or by rotating the rotary switch fully toward the "Resume" position.

(f) Reconnect speed control lever harness connector to harness connector.

(3) **Stop lamp and speed control switch test:**

(a) Disconnect the double connector at the switch pigtail and connect a twelve volt source to either terminal and connect a test lamp from other terminal to a good ground: test lamp should light when brake pedal is in the normal position and should go off when the brake pedal is depressed to a maximum of approximately one half inch after proper adjustment as outlined under "Stop Lamp and Speed Control Switch Adjustment".

(b) Remove test lamp and reconnect pigtail connector to harness connector.

(4) **Servo unit tests:**

(a) **Locking coil test;** turn ignition to the **Accessory** or **ON** position and rotate the speed control rotary switch to the **ON** position.

(b) Momentarily disconnecting and connecting the double connector at the servo terminals should produce a clicking sound in the servo. Replace the servo if no clicking sound is heard.

(c) **Holding coil and Low Speed switch test;** without removing either connector at servo, place a test lamp probe to the black (with tracer) wire terminal of servo, other probe to a good ground. Block front wheels; raise rear wheels and drive rear wheels to 35 miles per hour; with speed control lever rotary switch in the **ON** position and ignition switch in the **ON** position, depress and release "Speed Set" button. The speed should increase above 35 miles per hour and the test lamp should remain **ON** until the brake pedal is depressed to disengage the system and test light should go **off.**

(d) Remove test lamp.

Speed Control Servo (Fig. 1)

Removal

(1) Remove two self-locking nuts attaching the servo cable cover to servo housing. Pull cover away from servo to expose cable retaining clip (Fig. 6) and remove clip attaching cable to servo diaphragm pin.

(2) Disconnect speedometer and transmission drive cables at the servo housing.

(3) Disconnect vacuum hoses at servo housing (Fig. 7) and electrical connectors.

(4) Remove servo from mounting bracket (two self-locking nuts).

Installation

(1) Position servo on mounting bracket studs and install attaching nuts. Tighten to 95 inch-pounds.

(2) Install vacuum hose and clamp. Make sure the hose clamp is locked securely.

(3) Connect speedometer and transmission drive cables at servo.

(4) With choke in full open position, align throttle cable to servo pin and install retaining clip.

(5) Install cable cover on servo studs and install attaching nuts. Tighten nuts securely.

(6) Install electrical connectors at servo.

Servo Throttle Cable Assembly (Servo to Carburetor)

Removal

(1) Remove air cleaner.

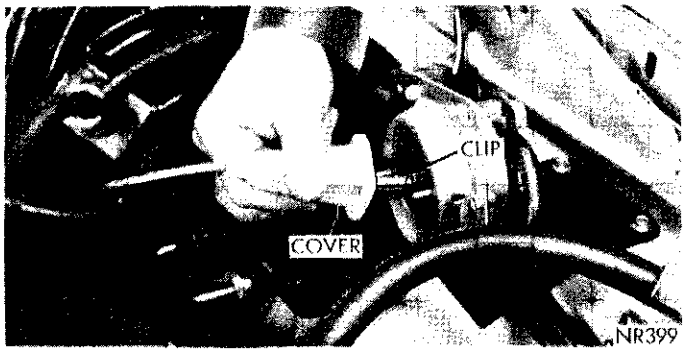


Fig. 6—Removing or Installing Throttle Cable Cover

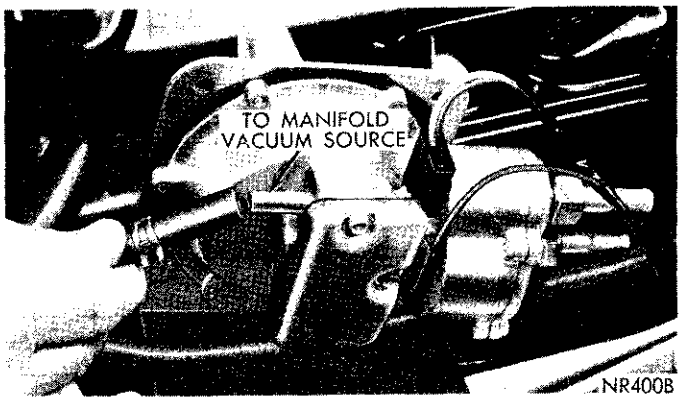


Fig. 7—Removing or Installing Servo Hose

(2) Disconnect cable at retaining clamp and at carburetor lost motion link, removing hair pin clip.

(3) Disconnect cable at servo (Fig. 6) and remove cable assembly.

Installation

(1) Locate cable through routing brackets on dash panel and on master cylinder studs, (so equipped).

(2) Connect cable at servo housing.

(3) Route cable through retaining clamp and connect at carburetor lost motion link lever pin.

(4) Adjust cable free play as described under "Speed Control Throttle Cable Adjustment".

Speed Control Switch (Turn Signal Lever) (Standard Columns)

Removal

(1) Disconnect battery negative terminal at battery negative post and speed control connector at lower end of column.

(2) Remove steering wheel. See Group 19 "Steering".

(3) Remove turn signal switch and lever attaching screw.

(4) Remove steering column cover plate and support steering column while clamp is removed to prevent column from sagging.

(5) Remove wire harness trough to facilitate reaching the lower end of speed control switch lead wires (Figs. 4 through 5) and remove wires and terminals from connector with Wire Harness Tool C-4135.

CAUTION: Check color coding of wires to insure they are installed in the proper connector at reassembly. See Figures 4 and 5.

(6) Tape terminals, then turn direction indicator lever sideways and pull lever up and wires out through opening between column and tube.

Installation

(1) Make a guide wire and thread the harness through the opening in column. **Make guide wire long enough so that it can be reached at bottom of column before harness is attached to the upper hook.** When

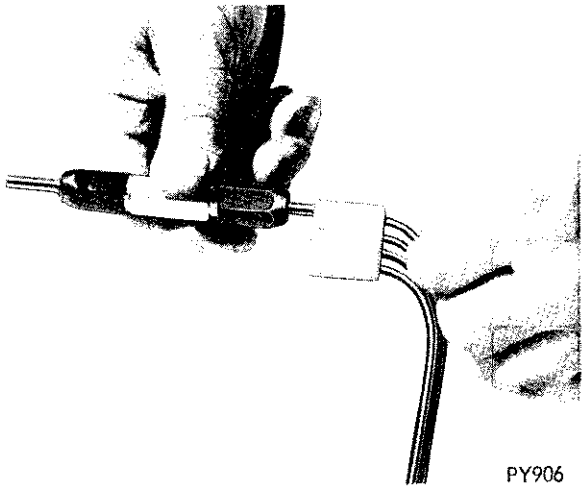


Fig. 8—Removing Wire Terminals with Tool C-4135

harness has been pulled through, install terminal clips into switch connector and connect to harness connector (be sure wires are connected to proper cavity).

(2) Install harness trough, steering column cover plate and column support clamp.

(3) Install turn signal lever (speed control lever switch) and turn signal switch attaching screw.

(4) Install steering wheel, steering column cover plate. See Group 19 "Steering".

(5) Connect battery negative terminal at battery negative post.

Speed Control Switch (Turn Signal Lever) Tilt and Tel Steering Column

Removal

(1) Disconnect battery negative terminal at battery negative post and speed control harness connector from main harness connector at steering column.

(2) Remove wires and terminals from speed control lever harness (male connector) with "Wire Harness" Tool C-4135.

CAUTION: Check color coding of wires to insure they are installed in the proper cavity of connector at installation and assembly. See Figures 4 and 5.

(3) Tape the wire terminals together then make up a guide wire, attaching the hook end to the taped terminals. Make guide wire long enough so that it can be reached at bottom of column tube when harness is withdrawn at speed control lever access hole.

(4) Pull wires out through speed control lever access hole, then unscrew the lever from the turn signal switch.

Installation

(1) With wires held close to speed control lever shank, screw the lever into the turn signal switch until the lever is hand tight.

(2) With a wrench, screw the lever in four full turns, then complete the installation by continuing to turn the lever in the clockwise direction no more than one full turn until the wiring harness has the correct angular index with the steering column. **Do Not turn the lever in a counterclockwise direction at any time during installation.**

(3) Tape terminals of new speed control lever harness and attach the hook of guide wire to wire terminals, pulling on guide wire should guide harness through opening in the steering column hub and down through the hub casting allowing sufficient wire to loop over the end of speed control lever to facilitate screwing the lever into the turn signal switch. Pull wires through to assure there is no wire chafing with hub lever opening.

(4) When wire harness has been pulled through, remove guide wire and install wire terminals in proper cavity of harness connector.

(5) Connect speed control harness connector to main harness and connect battery terminal at battery post.

TAIL GATE WIPER WASHER SYSTEM

INDEX

GENERAL INFORMATION

The tail gate wiper washer system (Fig. 1) is a mechanically activated squeegee wiper with an electric motor driven washer pump for applying water to the tail gate glass.

Operation

The tail gate glass may be cleaned by:

(1) Lowering the glass by activating the tail gate switch.

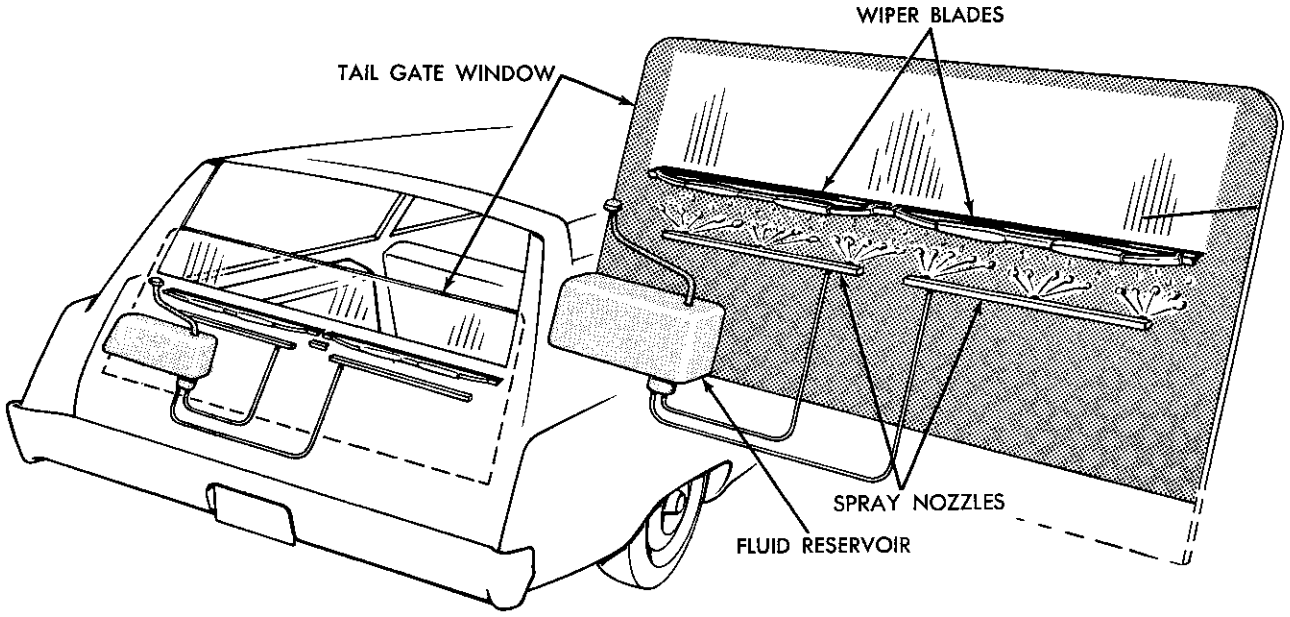


Fig. 1—Tail Gate Window Washer and Wiper System

(2) Activate the tail gate washer switch.

(3) Raising the glass by activating the tail gate switch. The wiped area is accomplished by using two 18″ flexible wiper blades, end to end.

When the glass is lowered to its bottom position an actuator arm is activated which permits the spring loaded blades to move to an "on glass" position. When the glass is raised to its upper limit, the actuator arm is again activated causing the wiper to go to an "off glass" position. This permits the blades to remain in the "off glass" (free) position until the glass is again lowered.

Washer fluid may be applied (as required) to the glass surface (with glass in lower position) by an electric driven pump, supplying nozzle assemblies located inside the upper part of the tail gate.

SERVICE DIAGNOSIS

Condition	Possible Cause	Condition
INTERMITTENT OPERATION OF WASHER.	(a) Loose wiring connection.	(a) Tighten connections and repair as necessary.
	(b) Faulty washer push button switch.	(b) Replace switch.
	(c) Faulty motor.	(c) Replace motor and pump assembly.
PUMP INOPERATIVE MOTOR RUNS.	(a) Nozzle jets plugged.	(a) Clean nozzle jets.
	(b) Broken or loose hose.	(b) Replace hose.
	(c) Faulty pump.	(c) Replace motor and pump assembly.
PUMP ASSEMBLY INOPERATIVE.	(a) Poor ground.	(a) Clean ground wire terminal and tighten mounting screw.
	(b) Loose wiring terminals.	(b) Tighten terminals.
	(c) Broken wires.	(c) Repair or replace wires.
	(d) Faulty switch.	(d) Replace switch.
	(e) Faulty motor.	(e) Replace motor and pump assembly.
WIPER BLADES WILL NOT GO ONTO GLASS.	(a) Loose control arm.	(a) Repair control arm.
	(b) Torsion springs broken.	(b) Replace springs.
WIPER BLADES WILL NOT COME OFF OF GLASS.	(a) Loose control arm.	(a) Repair control arm.
	(b) Actuator pin loose.	(b) Reinstall pin.

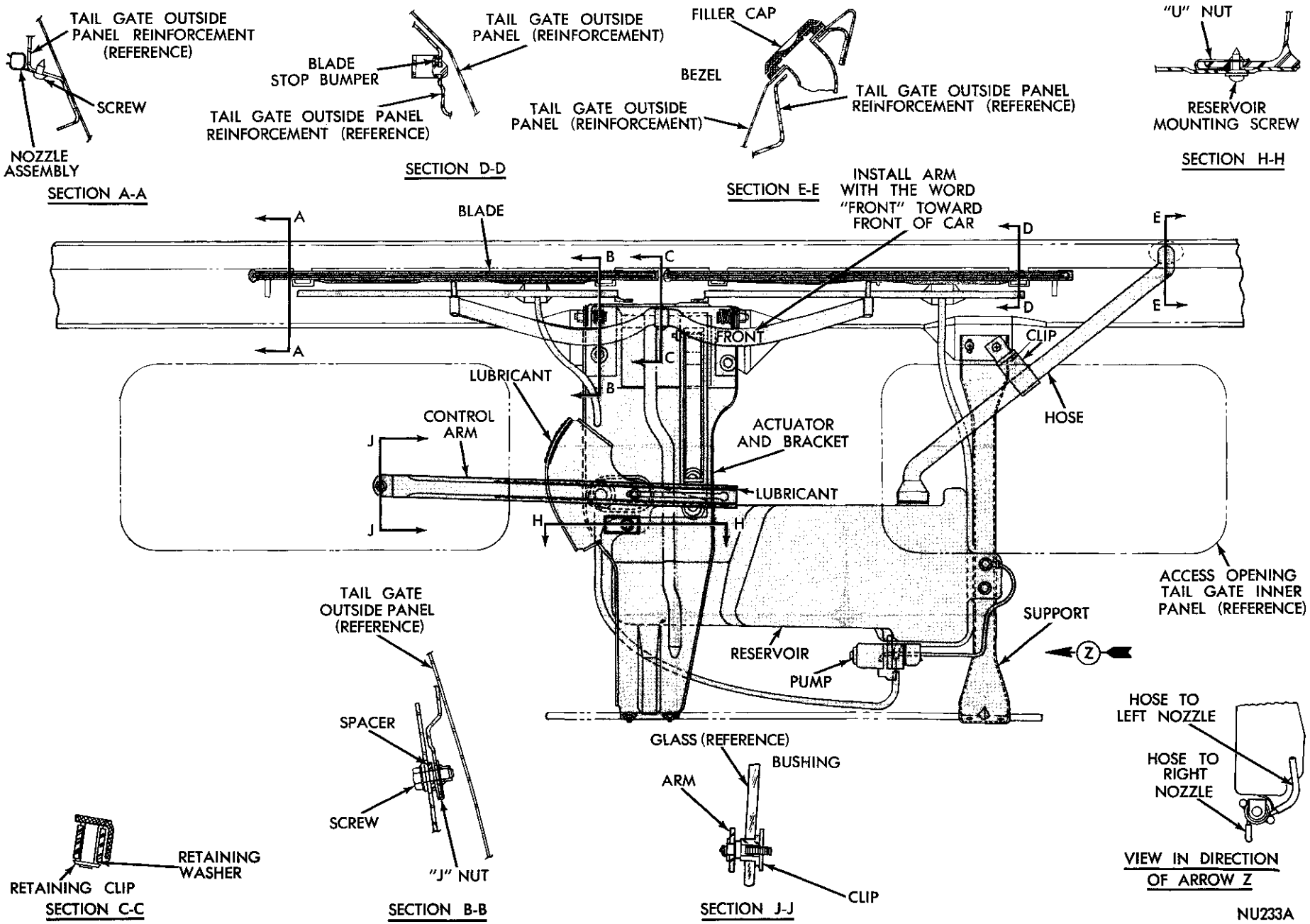


Fig. 2—Tail Gate Window Washer Installed

SERVICE PROCEDURES

Wiper Blade Replacement (18 Inch Blades)

(1) Lower the tail gate glass to full bottom position.
(2) Open tail gate to horizontal position.
(3) Remove inner trim panel of tail gate.
(4) Raise glass approximately half way, after tripping limit switch.
(5) Position the yoke for "off glass" condition.
(6) Remove wiper control arm and pin from glass.
(7) Disengage glass from window regulator arms and remove glass.
(8) Position the yoke for "on glass" condition.
(9) Remove and replace blades, (Locking tab down).
(10) **Do Not get lubricant on new wiper blades.**
(11) Position the yoke for "off glass" condition.
(12) Install glass and assemble to window regulator.
(13) Connect wiper control arm and pin to glass.
(14) Install inner trim panel.
(15) Lower glass to full bottom position and check operation of wiper system.

Water Reservoir and/or Motor Pump Assembly

Removal

(1) Lower tail gate glass to bottom position and open tail gate to horizontal position.
(2) Remove tail gate inner trim panel.
(3) Raise glass sufficient to allow access to reservoir assembly.

CAUTION: Do not exceed normal height of glass travel.

(4) Remove washer hoses from both outlets at washer pump, being careful not to break outlets; identify hoses.
(5) Disconnect one wire to washer motor.
(6) Remove three mounting screws supporting reservoir and remove rubber filler hose at reservoir.

Installation

(1) Position reservoir and install mounting screws.
(2) Connect washer hoses at washer pump, making sure hoses are routed to the correct outlets.
(3) Connect rubber filler hose at reservoir.
(4) Reconnect the wire at washer motor.
(5) Install tail gate inner panel.
(6) Lower tail gate glass to bottom position and recheck motor and pump operation.

Washer Nozzle Replacement

(1) Perform steps 1 through 8 under "Wiper Blade Replacement".
(2) Remove the screws mounting the two nozzle assemblies.
(3) Inspect and clean nozzles. Replace if nozzles are damaged.
(4) Position nozzles and install mounting screws.
(5) Connect washer hose to nozzles.

CAUTION: Do not break nozzle inlets. Do not get lubricant on wiper blades.

(6) Position yoke for "off glass" condition.
(7) Install glass and attach wiper control arm.
(8) Run glass to bottom position.
(9) With tail gate closed, check operation of new nozzles.
(10) If operation is now satisfactory, install inner tail gate trim panel.

REAR WINDOW DEFOGGER

To service the blower motor or fan, the assembly must be removed from the shelf panel from inside the luggage compartment.

After disconnecting the outlet hose and wire connector, remove the mounting screws from the mounting clips and remove the assembly from the vehicle for service.

Disassembly

(1) Remove the blower motor adapter plate to housing mounting screws and withdraw motor and fan assembly from housing.
(2) Loosen fan set screw on fan hub and slide fan from motor shaft.
(3) Remove the motor adapter plate mounting nuts and separate motor from plate.

Assembly

(1) Position adapter plate on motor studs and install the mounting nuts.
(2) Install fan on motor shaft and insert assembly in housing. Check fan to housing clearance and adjust if necessary.
(3) Install the blower motor adapter plate to housing mounting screws.