ELECTRICAL

CONTENTS

	Page		Page
ALTERNATOR AND VOLTAGE REGULATOR	15	INSTRUMENT PANELS	51
BATTERY	1	POWER SEATS	76
ELECTRIC WINDOW LIFT AND ELECTRIC DOOR LOCKS	73	SPECIFICATIONS	84
EXTERIOR LIGHTING	37	STARTING MOTOR	5
CONCEALED HEADLAMPS	65	TAIL GATE WINDOW LIFT	75
HEADLIGHTS	37	TOP LIFT (CONVERTIBLE TOP)	76
TAIL AND STOP LIGHTS	46	TURN SIGNALS	79
HORNS	81	WINDSHIELD WIPER SYSTEM	66
IGNITION SYSTEM	28	WINDSHIELD WASHERS	71
		WIRING DIAGRAMS	89

BATTERY

INDEX

	Page		Page
Adjustment of Acid Gravity	3	High Rate Discharge Test of Battery Capacity	4
Battery Visual Inspection	1	Specifications	84
Charging the Battery	4	Specific Gravity Test	1

SERVICE PROCEDURES

BATTERY VISUAL INSPECTION

(1) Protect paint finish with fender covers.

(2) Disconnect battery cables at battery.

(3) Remove battery hold-down clamp and remove battery from vehicle.

(4) Inspect battery carrier and fender side panel for damage caused by loss of acid from battery.

(5) Clean top of battery with a solution of clean warm water and baking soda. Scrub areas with a stiff bristle brush being careful not to scatter corrosion residue. Finally wipe off with a cloth moistened with ammonia or baking soda in water.

CAUTION: Keep cleaning solution out of battery cells to eliminate weakening the electrolyte.

(6) Replace damaged or frayed cables.

(7) Clean battery terminals and inside surfaces of clamp terminals with Cleaning Tool MX-75.

(8) Examine battery case and cover for cracks.

(9) Install battery.

(10) Tighten battery hold-down screw nuts to 3 foot-pounds. **Observe polarity of battery terminals to be sure the battery is not reversed.**

(11) Connect cable clamps to battery posts and tighten securely. Coat all connections with light mineral grease or petrolatum after tightening.

(12) If electrolyte level is low, fill to recommended level with mineral-free water.

SPECIFIC GRAVITY TEST

A hydrometer Tool 40-B is used to measure specific gravity of electrolyte in battery cells. This gives an indication of how much unused sulphuric acid remains in the solution.

A hydrometer should be graduated to read from 1.160 to 1.320, in graduations of .005 specific gravity. Graduated markings should be not less than 1/16 inch apart and accurate to within .002 specific gravity. Graduated portion of stem should be about two inches long. Clearance between float and glass barrel, at smallest diameter, should be a minimum of 1/8" around all sides and barrel must be clean.

Liquid level of battery cell should be at normal height and electrolyte should be thoroughly mixed with any battery water which may have just been added by charging battery before taking hydrometer readings. See "Adjustment of Acid Gravity."

In reading a hydrometer, the gauge barrel must be held vertically and just right amount of fluid be drawn up into gauge barrel with pressure bulb fully expanded to lift float freely so it does not touch the sides, top or bottom of the barrel. Take a reading with eye on level with liquid level in the gauge barrel. **DO NOT TILT** hydrometer.

Hydrometer floats are calibrated to indicate correctly only at one fixed temperature.

Specific gravity of battery electrolyte strength or density varies not only with the quantity of the acid in solution but also with temperature. As temperature increases, the density of the electrolyte decreases, and specific gravity is reduced. As temperature drops, the density of the electrolyte increases and the specific gravity increases.

Specific gravity variations caused by temperatures must be considered and corrected to 80°F. in the analysis of the battery, otherwise specific gravity readings will not give a true indication of state of charge.

Use a battery immersion type thermometer of the mercury-in-glass type, having a scale reading as high as 125° F. and designed for not over a 1-inch bulb immersion. A suitable dairy type thermometer may prove satisfactory for the purpose.

Draw electrolyte in and out of the hydrometer barrel several times to bring the temperature of the hydrometer float to that of the acid in the cell and then measure the electrolyte temperature in the cell.

The temperature correction in specific gravity reading at 80° Fahrenheit is zero. Add .004 specific gravity points for every 10° degrees over 80° F. and subtract .004 specific gravity points for every 10 degrees under 80° F. All readings must be corrected to 80 degrees Fahrenheit. Refer to Figure 1 and examples one and two as follows:

Example 1—
Hydrometer Reading 1.260
Acid Temperature ..... 20 degrees Fahrenheit
Subtract Specific Gravity ..... .024
Correct Specific Gravity is 1.236

Example 2—
Hydrometer Reading 1.255
Acid Temperature ..... 100 degrees Fahrenheit
Add Specific Gravity ..... .008
Corrected Specific Gravity is 1.263

A fully charged relatively new battery has a specific gravity reading of 1.260 plus .015 minus .005.

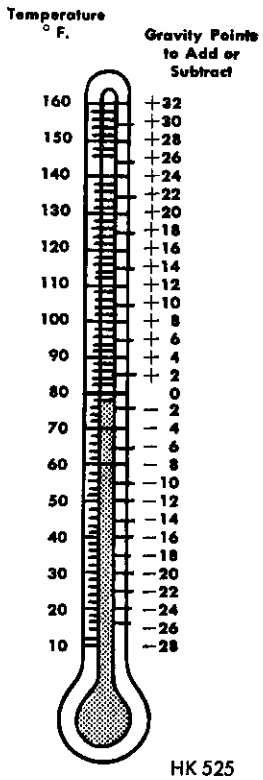


Fig. 1—Hydrometer Reading Correction Chart

Test Conclusions

(a) Battery specific gravity is less than 1.220 battery should be recharged. Make a high rate discharge test for capacity. If battery cells test O.K., recharge and adjust gravity of all cells uniformly. Test voltage regulator setting. Thoroughly test the electrical system for short circuits, loose connections and corroded terminals.

(b) **Cells show more than 25 points (.025 Specific Gravity) Variation**—Short circuit in low cell. Loss of electrolyte by leakage or excessive overcharge; try to recharge battery. See "Charging the Battery". See "Adjustment of Acid Gravity."

(c) Battery specific gravity is above 1.220 and all cells are even. Battery state of charge may be satisfactory. Test by making "High Rate Discharge Test of Battery Capacity". Test voltage regulator setting, and that all electrical connections are clean and tight.

TEST BATTERY CONDITION AND STATE OF CHARGE WITH CAD-TIP ANALYZER Part Number 1-369 (Fig. 2).

(1) Check electrolyte level in all cells and add mineral-free water to proper level. **When a car is running, the battery is receiving a charge from the alternator. This charge builds up a "surface charge" in the battery that must be removed before an accurate test can be made.**

(2) Remove the surface charge by turning the headlights "on" for one minute before testing battery. **If the battery has not been operating in a car for at least 8 hours prior to testing, Step 2 is not necessary. IMPORTANT: Be sure that headlights, ignition and all accessories are "off" during test.**

(3) Remove battery filler plugs and place the RED probe in the POSITIVE (+) CELL and the BLACK probe in the SECOND CELL. NOTE READING. (There will be no meter reading if the probes are

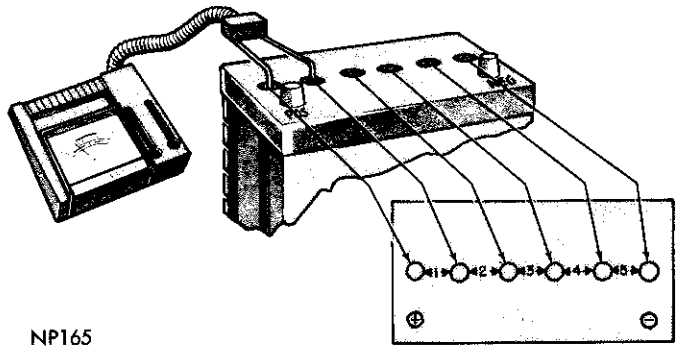


Fig. 2—Testing Battery Cells with Cad-Tip Battery Cell Analyzer

reversed.) **A manual set index pointer is provided to assist in making cell comparisons. Set the manual index pointer for reference.**

(4) Move RED probe to SECOND CELL and BLACK probe to THIRD CELL; then move RED probe to THIRD CELL and BLACK probe to FOURTH CELL, etc., until all cells have been tested. Note each cell reading so that CELL COMPARISONS CAN BE MADE. **Always store probe assembly in the space provided in the meter case.**

TEST READING INTERPRETATIONS (Fig. 3)

(A) If the readings of any two cells vary FIVE scale divisions or more on the TOP scale—regardless of the colored sections in which they may fall on the bottom scale—**The battery is at or near the point of failure and should be replaced.**

(B) If all cells vary LESS than five scale divisions on the TOP scale and all are in the GREEN section of the Bottom Scale—**The battery is in good condition and a safe state of charge.**

(C) If all cells vary LESS than five scale divisions on the TOP scale but if any of the cells test in the RED section of the BOTTOM scale—the battery is in good condition but is in a low state of charge—**Recharge at once to avoid a starting failure.**

(D) If ANY cell readings are in the "RECHARGE AND RETEST" section of the TOP SCALE and the balance of the readings are within the first four scale divisions—the battery is too low to make an accurate condition test—Recharge battery and retest.

CAUTION: Be certain to remove "surface charge" after recharge and before retesting. See "Step 2."

ADJUSTMENT OF ACID GRAVITY

Hydrometer floats usually are not calibrated below 1.160 specific gravity and cannot indicate the condition of a battery in a very low state of charge. Therefore, it may be necessary to give the battery several hours charge before a hydrometer reading will indicate that the battery is taking a charge.

If the specific gravity of all cells are not within .015 points of specified value, corrected to 80°F, at the end of a full charge, remove some of the electrolyte with a hydrometer and add a like amount of distilled water to reduce the gravity if too high, or add 1.400 Specific Gravity acid to raise specific gravity, if too low. Continue the charge so as to give the electrolyte a chance to mix and then read the gravity after another hour of charge to note the effect of the additions. Continue this adjusting procedure until gravity is brought to the desired value by charging for one hour after each adjustment.

Never adjust the specific gravity of any battery cell which does not gas freely on charge. Unless electrolyte has been lost through spilling or leaking, it

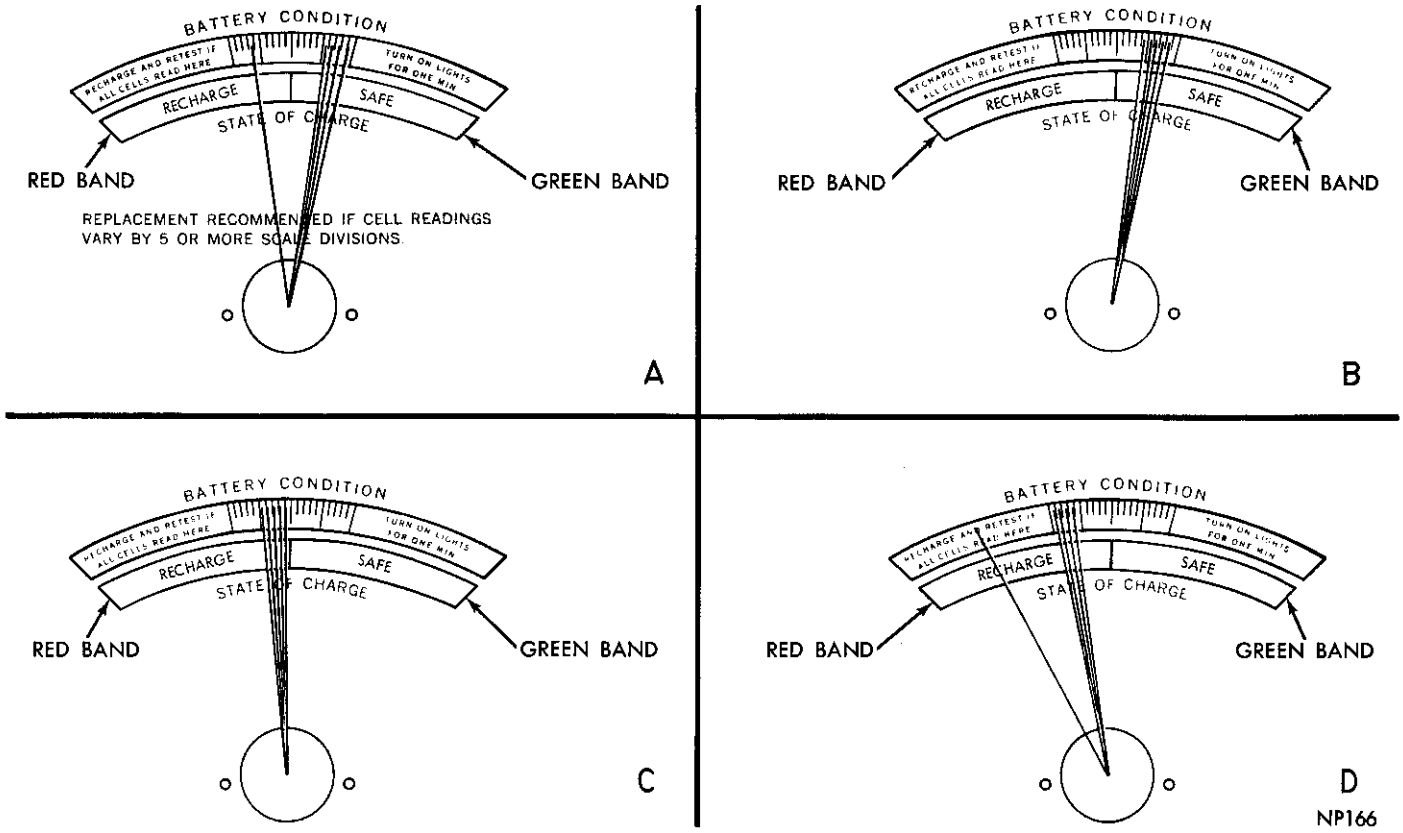


Fig. 3—Battery State of Charge

should not be necessary to add acid to a battery during its life. Acid should never be added unless one is certain that the cell will not come up to normal gravity by continued charging. Always make the temperature correction for hydrometer readings, as warm electrolyte will read low and this might be mistaken for failure of the battery to rise normally in gravity. It could also be falsely concluded that the battery would not take a full charge.

HIGH RATE DISCHARGE TEST OF BATTERY CAPACITY

Satisfactory capacity tests can be made only when battery equals or exceeds 1.220 specific gravity at 80 degrees Fahrenheit. If the reading is below 1.220 the battery should be slow charged until fully charged in order to secure proper test results.

Test Procedure

(1) Turn control knob of Battery-Starter-Tester to **OFF** position.

(2) Turn Voltmeter Selector Switch to the 16 volt position on test units so equipped.

(3) Connect test ammeter and voltmeter positive leads to battery positive terminal. Connect ammeter and voltmeter negative leads to battery negative terminal (Fig. 4). **Voltmeter clips must contact battery posts or cable clamps and not ammeter lead clips.**

(4) Turn control knob clockwise until ammeter reading is equal to three times ampere hour rating of battery.

(5) Maintain this load for 15 seconds; voltmeter should read 9.5 volts or more, which will indicate that the battery has good output capacity.

(6) After the 15 second test, turn Battery-Starter-Tester control knob to the **OFF** position.

If the voltage in the "High Rate Discharge Test" was under 9.5 volt, the battery should be test charged to determine whether the battery can be satisfactorily charged.

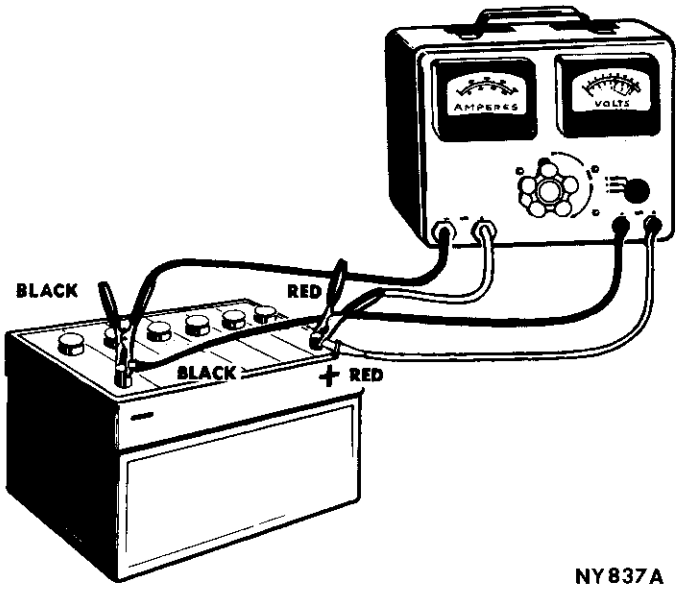


Fig. 4—High Rate Discharge Test

Charging the Battery

Three Minute Charge Test (Fig. 5)

This test should not be used if battery temperature is below 60 degree F.

(1) Connect Battery Charger positive (+) lead to battery positive terminal and negative (—) lead to battery negative terminal.

IMPORTANT: Be sure of correct polarity when charging batteries.

(2) Trip Battery Charger Power Switch to **ON** position. Turn timer switch past three minute mark then back to the three minute mark.

(3) Adjust Battery Charger Switch to highest possible rate not exceeding 40 amperes.

(4) When timer switch cuts off at the end of 3 minutes, turn timer switch back to fast charge.

(5) Use the 16 volt scale of the Battery Starter Tester and measure total voltage of battery posts while battery is being fast charged. If total voltage during charge exceeds 15.5 volts, battery is sulphated and should be cycled and slow-charged until specific gravity reaches 1.260 (See "Slow Charging"). **A slow charge is preferable to bring the battery up to a full charge.**

If specific gravity remains constant after testing battery at one hour intervals for three hours, battery is at its highest state of charge.

(6) Make another capacity test. If capacity test does not meet specifications, replace battery.

Fast Charging the Battery (Fig. 6)

If adequate time for a slow charge is not available, a high rate (FAST) charge is permissible and will give a sufficient charge in one hour enabling the battery and alternator to continue to carry the electrical load.

Connect Battery Charger positive (+) lead to battery positive terminal and negative (—) lead to battery negative terminal. If battery is not removed from

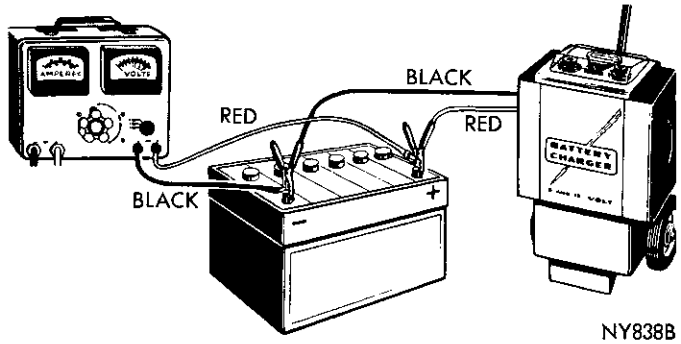


Fig. 5—Three Minute Charge Test

vehicle, **BE SURE** ignition switch is turned off and all electrical accessories are turned off during charging.

CAUTION: The battery can be damaged beyond repair unless the following precautions are taken:

(1) Battery electrolyte temperature must **NEVER** exceed 125 degrees Fahrenheit.

If this temperature is reached, battery should be cooled by reducing charging rate or remove battery from the circuit.

(2) As batteries approach full charge electrolyte in each cell will begin to gas or bubble. Excessive gassing must not be allowed.

(3) Do not fast charge longer than one hour.

If battery does not show a significant change in specific gravity after one hour of "FAST" charge, the slow charge method should be used.

Remember to use temperature correction when checking specific gravity. **The manufacturers of high rate charging equipment generally outline the necessary precautions and some models have thermostatic temperature limiting and time limiting controls.**

WARNING: When batteries are being charged an explosive gas mixture forms beneath the cover of each cell. Do not smoke near batteries on charge or which have recently been charged. Do not break live circuits at the terminals of the batteries on charge. A spark will occur where the live circuit is broken. Keep all open flames away from the battery.

Slow Charging Batteries

Many discharged batteries can be brought back to good condition by slow charging; especially batteries that are sulphated.

Battery should be tested with a hydrometer and a record kept of the readings taken at regular intervals throughout the charge. When a cell has a specific gravity reading that is 25 points (.025) or more below other cells, that cell is faulty and battery should be replaced.

Safe slow charging rates are determined by allowing one ampere per positive plate per cell. Proper slow charging rate would be 5 amperes for a 59 ampere hour battery; and 6 amperes for a 70 ampere hour battery.

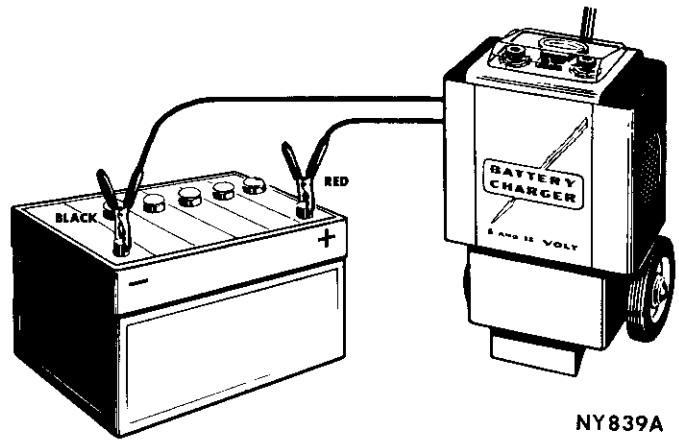


Fig. 6—Fast Charging the Battery

The average length of time necessary to charge a battery by the slow charge method at normal rates is from 12 to 16 hours, however, when a battery continues to show an increase in specific gravity, battery charge should be continued even if it takes 24 hours or more. **Watch the temperature of batteries carefully and if the temperature of any one of them reaches 110°F., lower the charging rate.**

Battery will be fully charged when it is gassing freely and when there is no further rise in specific gravity after three successive readings taken at hourly intervals. Make sure hydrometer readings are corrected for temperature.

The rate of charge for a sulphated battery should be no more than 1/2 the normal slow charge rate. Many sulphated batteries can be brought back to a useful condition by slow charging at half the normal charging rate from 60 to 100 hours. This long charging cycle is necessary to reconvert crystalline lead sulphate into active materials. **When a battery takes a full charge, but is returned several times in need of a recharge, check for a cracked cell partition with a syringe to provide air pressure; bubbles will appear in an adjacent cell if a crack is present.**

REDUCTION GEAR STARTER

INDEX

	Page
Amperage Draw Test	7
Assembling the Starter	13
Brushes and Springs Replacement	11
Bushings Replacement	12
Cleaning the Starter Parts	10
Disassembling the Starter	9
Field Coils Replacement	12
General Information	6
Ground Circuit Test	8
Insulated Circuit Test	8
Installing the Starter	15
Removing the Starter	8
Resistance Test	8
Service Diagnosis	6
Servicing the Starter Clutch Unit	12
Specifications	84
Testing the Starter (Bench Test)	9
Testing Armature	11
Testing Field Coils for Ground	11

GENERAL INFORMATION

The starter has a 3.5 to 1 reduction gear set built into the starter assembly, which is housed in an aluminum die casting, Fig. 1. The starter utilizes a solenoid shift device, the housing of the solenoid is integral with the starter drive end housing.

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
STARTER FAILS TO OPERATE	(a) Weak battery or dead cell in battery.	(a) Test specific gravity. Recharge or replace battery as required.
	(b) Ignition switch faulty.	(b) Test and replace switch if necessary.
	(c) Loose or corroded battery cable terminals.	(c) Clean terminals and clamps, replace if necessary. Apply a light film of petrolatum to terminals after tightening.
	(d) Open circuit, wire between the ignition—starter switch and ignition terminal on starter relay.	(d) Inspect and test all the wiring.
	(e) Starter relay defective.	(e) Test relay and replace if necessary.
	(f) Faulty starter.	(f) Test and repair as necessary.
	(g) Armature shaft sheared.	(g) Test and repair.
	(h) Open solenoid pull-in wire.	(h) Test and replace solenoid if necessary.
STARTER FAILS AND LIGHTS DIM	(a) Weak battery or dead cell in battery.	(a) Test for specified gravity. Recharge or replace battery as required.
	(b) Loose or corroded battery cable terminals.	(b) Clean terminals and clamps, replace if necessary. Apply a light film of petrolatum to terminals after tightening.
	(c) Internal ground in windings.	(c) Test and repair starter.
	(d) Grounded starter fields.	(d) Test and repair starter.
	(e) Armature rubbing on pole shoes.	(e) Test and repair starter.
STARTER TURNS, BUT ENGINE DOES NOT ENGAGE	(a) Starter clutch slipping.	(a) Replace clutch unit.
	(b) Broken clutch housing.	(b) Test and repair starter.
	(c) Pinion shaft rusted, dirty or dry, due to lack of lubrication.	(c) Clean, test and lubricate.
	(d) Engine basic timing wrong.	(d) Check engine basic timing and condition of distributor rotor and cap.
	(e) Broken teeth on engine ring gear.	(e) Replace ring gear. Inspect teeth on starter clutch pinion.
STARTER RELAY DOES NOT CLOSE	(a) Battery discharged.	(a) Recharge or replace battery.
	(b) Faulty wiring.	(b) Test for open circuit, wire between starter relay ground terminal post and neutral starter switch (automatic transmission only). Also test for open circuit; wire between ignition-starter switch and ignition terminal and starter relay.
	(c) Neutral starter switch on automatic transmission faulty.	(c) Test and replace the switch if necessary.
	(d) Starter relay faulty.	(d) Test and replace if necessary.
RELAY OPERATES BUT SOLENOID DOES NOT	(a) Faulty wiring.	(a) Test for open circuit wire between starter-relay solenoid terminal and solenoid terminal post.
	(b) Faulty solenoid switch or connections.	(b) Test for loose terminal connections between solenoid and starter field.
	(c) Solenoid switch contacts corroded.	(c) Test and replace solenoid if necessary.
	(d) Broken lead or a loose connection inside solenoid switch (brush holder plate).	(d) Test and replace solenoid if necessary.

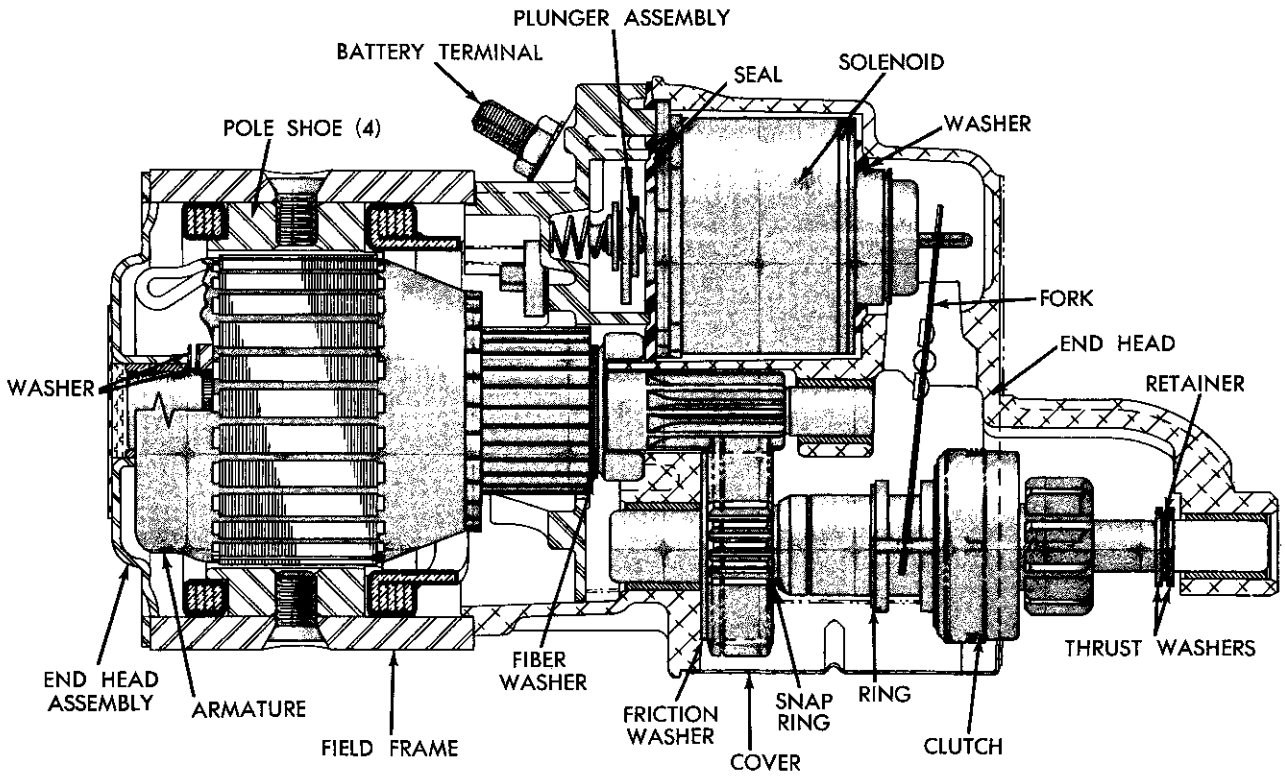


Fig. 1—Starter Cross Section

Condition	Possible Cause	Correction
SOLENOID PLUNGER VIBRATES BACK AND FORTH WHEN SWITCH IS ENGAGED	(a) Battery low.	(a) Test for specific gravity of battery. Replace or recharge battery.
	(b) Faulty wiring.	(b) Test for loose connections at relay, ignition-starter switch and solenoid.
	(c) Lead or connections broken inside solenoid switch cover (brush holder plate) or open hold-in wiring.	(c) Test and replace solenoid if necessary.
	(d) Check for corrosion on solenoid contacts.	(d) Test and clean the contacts.
STARTER OPERATES BUT WILL NOT DISENGAGE WHEN IGNITION STARTER SWITCH IS RELEASED	(a) Broken solenoid plunger spring or spring out of position.	(a) Test and repair.
	(b) Faulty ignition-starter switch.	(b) Test and replace the switch if necessary.
	(c) Solenoid contact switch plunger stuck in solenoid.	(c) Remove contact switch plunger, wipe clean of all dirt, apply a film of SAE-10 oil on plunger, wipe off excess.
	(d) Insufficient clearance between winding leads to solenoid terminal and main contactor in solenoid.	(d) Test and repair.
	(e) Faulty relay.	(e) Test and replace relay if necessary.

SERVICE PROCEDURES

AMPERAGE DRAW TEST (with Starter Tester)

Check battery electrolyte gravity with a reliable hydrometer. Gravity should be not less than 1.220 (temperature corrected). Or see that battery passes the High Rate Discharge Test shown in the "Battery" section of this manual.

Turn Battery—Starter Tester **CONTROL KNOB** to "OFF" position.

Turn voltmeter Selector Switch to 16 Volt position.

Connect heavy **Positive** ammeter lead (Red) to **Positive** battery terminal. Connect heavy **Negative** ammeter lead (Black) to **Negative** battery terminal.

Connect **Positive** voltmeter lead (Red) to **Positive** battery terminal. Connect **Negative** voltmeter lead (Black) to **Negative** battery terminal.

DISCONNECT ignition primary lead from ignition ballast resistor, or primary wire from either side of coil, to prevent engine from starting.

Crank engine with a remote control starter switch and observe **Exact** reading on Voltmeter. Stop cranking engine. Without cranking engine, turn tester **CONTROL KNOB** clockwise until voltmeter reads **Exactly** the same as when engine was being cranked with the remote control starter switch. Ammeter now indicates starter amperage draw. Check specifications. **Engine should be up to operating temperature. Extremely heavy oil or a tight engine will increase starter amperage draw.**

INSULATED CIRCUIT TEST

(1) Test battery electrolyte specific gravity. Specific gravity should be 1.220 or above. If battery specific gravity is below 1.220, recharge battery to full charge before proceeding with test.

(2) Turn voltmeter selector switch to 4 volt position.

(3) Disconnect ignition coil secondary cable.

(4) Connect voltmeter positive lead to battery positive post and voltmeter negative lead to solenoid connector which connects to the starter field coils.

The voltmeter will read off scale to the right until starter is actuated.

(5) Connect remote control switch to battery and solenoid terminal of starter relay.

(6) Crank engine with a remote starter control starter switch and observe voltmeter reading. Voltmeter reading should not exceed .3 volt. A voltmeter reading .3 volt or less indicates voltage drop is normal in cables, starter relay switch solenoid switch and connections between battery and starter motor. See "Starter Ground Circuit Test."

If voltmeter reading is more than .3 volt, it indicates high resistance in starter insulated circuit. Make following tests to isolate point of excessive voltage loss:

(A) Remove voltmeter lead from solenoid connector and connect to the following points, repeating test at each connection. Starter terminal of solenoid, battery terminal of solenoid, battery cable terminal at solenoid, starter relay and cable clamp at the battery.

(B) A small change will occur each time a normal portion of the circuit is removed from test. A definite change in the voltmeter reading indicates that the last part eliminated in test is at fault.

Maximum allowable voltage loss is as follows:

Battery insulated cable	.2 volt
Solenoid switch	.1 volt
Each connection	.0 volt

Replace faulty cables. Clean and tighten all connections.

RESISTANCE TEST

(1) Test battery electrolyte specific gravity. Specific gravity should be 1.220 or above.

(2) Disconnect positive battery lead from battery terminal post. Connect an 0 to 300 scale ammeter between disconnected lead and battery terminal post.

(3) Connect a test voltmeter with 10 volt scale division between battery positive post and starter switch terminal at starter solenoid.

(4) Crank engine and observe reading on voltmeter and ammeter. Voltage should not exceed .3 volt. A voltage reading that exceeds .3 volt indicates there is high resistance caused from loose circuit connections, a faulty cable, burned starter relay or burned solenoid switch contacts. A current that is high and is combined with slow cranking speed, indicates starter should be removed and repaired.

GROUND CIRCUIT TEST

(1) Connect test voltmeter positive lead to starter housing and voltmeter negative lead to battery negative post.

(2) Crank engine with a remote control starter switch and observe voltmeter reading. Voltmeter reading should not exceed .2 volt. A reading of .2 volt or less indicates the resistance of the ground cable and connections is normal. If voltmeter reading is more than .2 volt, it indicates excessive voltage loss in starter ground circuit. Make the following tests to isolate point of excessive voltage loss. Repeating test at each connection.

(a) Starter drive housing.

(b) Cable terminal at engine.

(c) Cable clamp at battery.

A small change will occur each time a normal portion of circuit is removed from the test. A definite change in voltmeter reading indicates that last part eliminated in the test is at fault.

Maximum allowable voltage loss is as follows:

Battery ground cable	.2 volt
Engine ground circuit	.1 volt
Each connection	.0 volt

REMOVING THE STARTER

(1) Disconnect ground cable at battery.

(2) Remove cable at starter.

(3) Disconnect solenoid lead wires at solenoid terminals.

(4) Remove one stud nut and one bolt attaching starter to flywheel housing, slide automatic transmission oil cooler tube bracket off the stud (if so equipped) and remove the starter. **Do not damage cylinder block seal.**

TESTING THE STARTER (Bench Test)

Free Running Test

(1) Place starter in a vise and connect a fully charged, 12 volt battery to starter as follows:

(a) Connect a test ammeter (100 amperes scale) and a carbon pile rheostat in series with battery positive post and starter terminal.

(b) Connect a voltmeter (15 volt scale) across starter.

(c) Rotate carbon pile to full resistance position.

(d) Connect battery cable from battery negative post to starter frame.

(e) Adjust the rheostat until battery voltage shown on voltmeter reads 11 volts. Amperage draw should be as shown in specifications.

Locked-Resistance Test

(1) Install starter in a test bench.

(2) Follow instructions of test equipment manufacturers and test starter against following specifications. With applied battery voltage adjusted to 4 volts. Amperage draw should be as shown in specifications.

DISASSEMBLING THE STARTER

(1) Place the starter gear housing in a vise equipped with soft jaws. Use the vise as support fixture only. **DO NOT** clamp.

(2) Remove two through bolts and starter end head assembly.

(3) Carefully pull armature up and out of gear housing and starter frame and field assembly. Remove steel and fiber thrust washer. **The wire of shunt field coil is wrapped on the brush terminal. One set of brushes are connected to this terminal. The other pair of brushes is attached to the series field coils by means of a terminal screw. Carefully pull frame and field assembly up just enough to expose terminal screw and wire wrap connection of shunt field at brush terminal. Place two wood blocks between starter frame and starter gear housing to facilitate removal of terminal screw, Fig. 2.**

(4) Support brush terminal by placing a finger behind the terminal and remove terminal screw.

(5) Unwrap shunt field coil lead from starter brush terminal. **Starter brush holder plate with starter brush terminal, contact and brushes is serviced as an assembly.**

(6) Unwrap solenoid lead wire and unwind wire

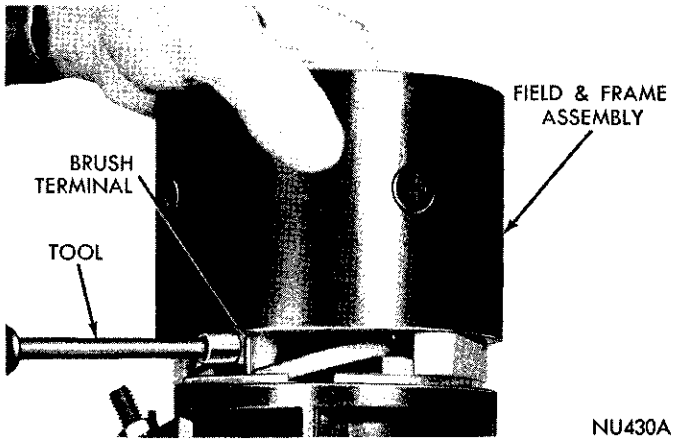


Fig. 2—Removing or Installing Terminal Screw

from starter brush terminal (Fig. 3).

(7) Remove nut (11/32 wrench), steel washer and insulating washer from solenoid terminal.

(8) Straighten solenoid wire and remove brush holder plate with brushes and solenoid as an assembly.

(9) Remove solenoid assembly from gear housing well (Fig. 4).

(10) Remove nut from starter battery terminal.

(11) Remove starter battery terminal from holder plate.

(12) Remove solenoid contact and plunger from solenoid.

(13) Remove solenoid return spring from well of solenoid housing moving core.

(14) Remove dust cover from gear housing (Fig. 5).

(15) Release retainer clip that positions driven gear on pinion shaft (Fig. 6).

CAUTION: Retainer is under tension and a cloth should be placed over the retainer to prevent it from springing away after removal.

(16) Release retainer ring at front of pinion shaft (Fig. 7). **Do not spread retainer ring any greater than outside diameter of pinion shaft otherwise lock ring can be damaged.**

(17) Push pinion shaft towards rear of housing (Fig. 8) and remove retainer ring and thrust washers,

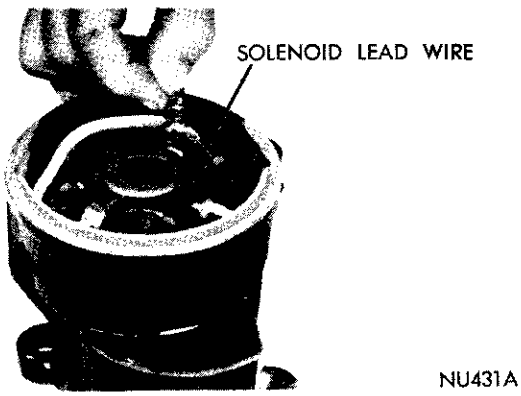


Fig. 3—Unwinding or Winding Solenoid Lead Wire

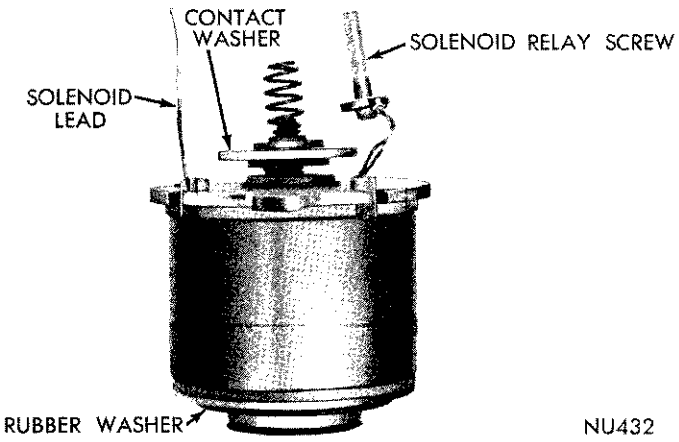


Fig. 4—Solenoid Assembly

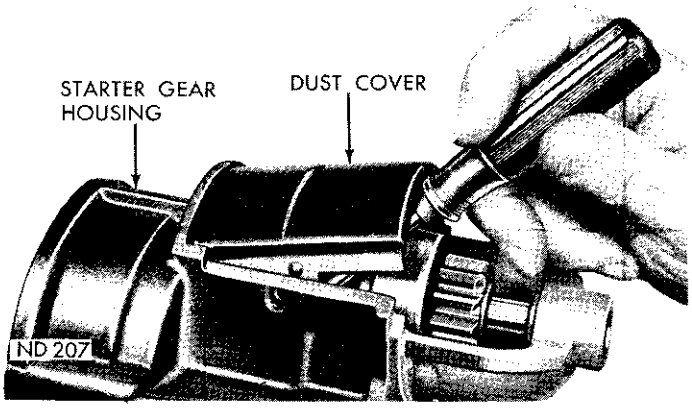


Fig. 5—Removing Dust Cover

clutch and pinion assembly, with the two shift fork nylon actuators as an assembly (Fig. 9).

(18) Remove driven gear and friction washer.

(19) Pull shifting fork forward and remove solenoid moving core (Fig. 10).

(20) Remove shifting fork retainer pin (Fig. 11) and remove clutch shifting fork assembly.

CLEANING THE STARTER PARTS

(1) Do not immerse parts in cleaning solvent. Immersing field frame and coil assembly and/or armature will damage insulation. Wipe these parts with a clean cloth **only.**

(2) Do not immerse clutch unit in cleaning solvent. The clutch is pre-lubricated at the factory and solvent will wash lubricant from the clutch.

(3) The starter-clutch outer housing and pinion gear may be cleaned with a cloth moistened with cleaning solvent and wiped dry with a clean dry cloth.

(4) Clean all corrosion from solenoid assembly and inside of solenoid housing. These metal parts are part of the solenoid hold-in ground circuit and must be clean.

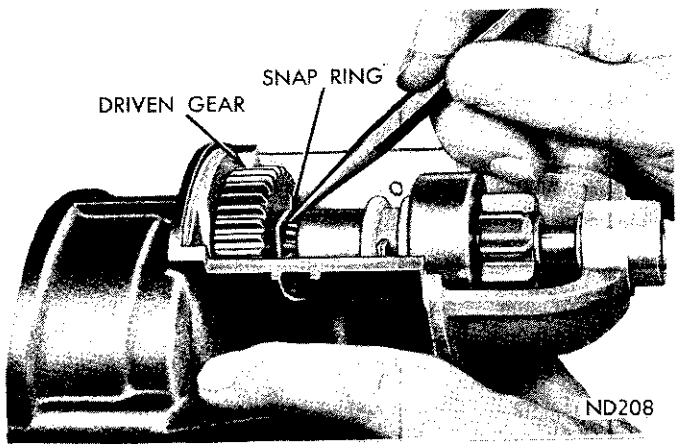


Fig. 6—Removing the Driven Gear Snap Ring

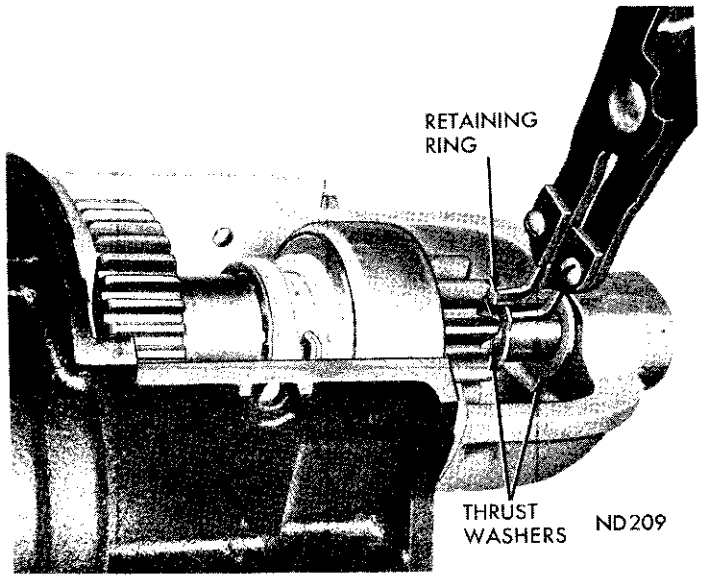


Fig. 7—Removing or Installing Piston Shaft Retainer Ring

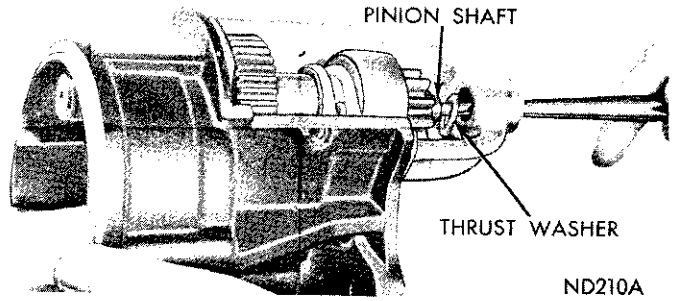


Fig. 8—Removing Pinion Shaft

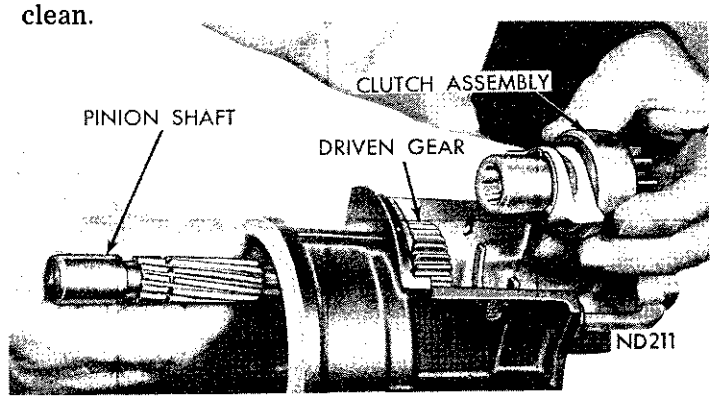


Fig. 9—Removing or Installing Clutch Assembly

(5) Clean terminal contacts and contactor with crocus cloth.

(6) Thoroughly clean outside area of brush plate to remove all oil and dirt.

REPLACEMENT OF BRUSHES AND SPRINGS

(1) Brushes that are worn more than 1/2 the length of new brushes, or are oil-soaked, should be replaced.

(2) When **resoldering** the shunt field and solenoid lead, make a strong low resistance connection using a high temperature solder and resin flux. **Do not use acid** or acid core solder. **Do not** break the shunt field wire units, when removing and installing brushes.

(3) Measure brush spring tension with a spring scale hooked under the spring near the end. Pull scale on a line parallel to the edge of brush and take a reading just as spring end leaves the brush. Spring tensioon should be 32 to 36 ounces. Replace springs that do not meet specifications.

TESTING ARMATURE

Testing Armature for Short Circuit

Place armature in growler and hold a thin steel blade parallel to the core and just above it, while slowly rotating armature in growler. A shorted armature will cause blade to vibrate and be attracted to the core. Replace armature if shorted.

Testing Armature for Ground

Contact armature shaft and each of the commutator riser bars with a pair of test lamp test probes. If lamp lights, it indicates a grounded armature. Replace grounded armature.

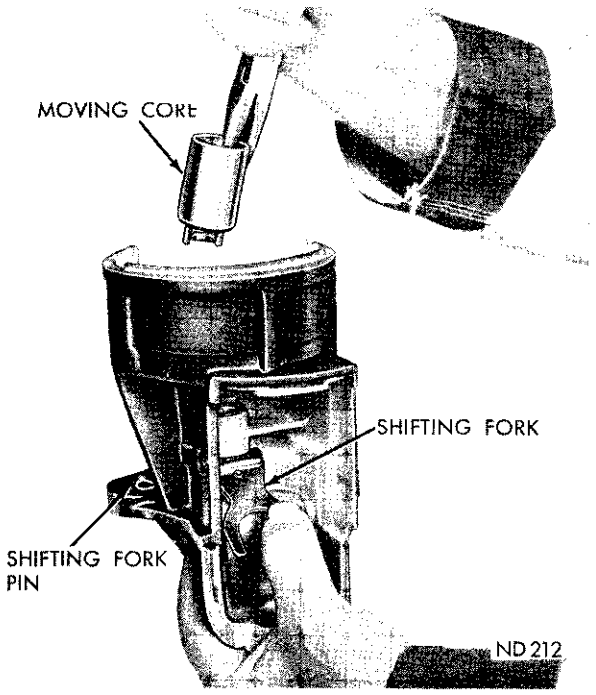


Fig. 10—Removing or Installing Moving Core

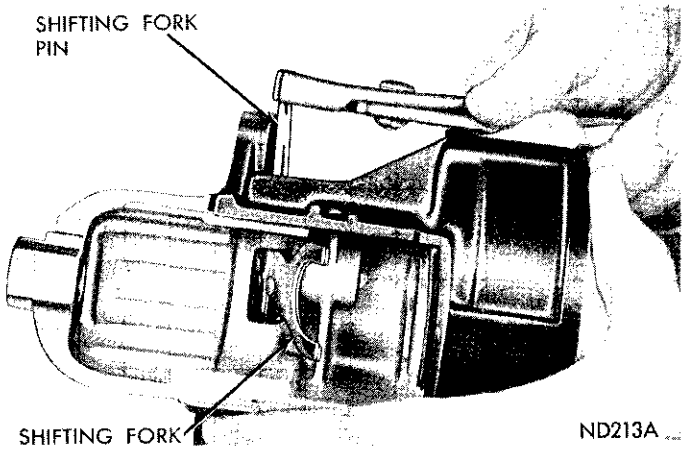


Fig. 11—Removing or Installing Shifting Fork Pin

Testing Commutator Run-Out, and Refacing

Place armature in pair of "V" blocks and measure runout with dial indicator. Measure both shaft and commutator. A bent shaft requires replacement of armature. When commutator runout exceeds .003 inch, commutator should be refaced. Remove only a sufficient amount of metal to provide a smooth, even surface.

Testing Field Coils for Ground

(1) Remove field frame assembly from starter.

(2) Carefully drill out the rivet attaching the series field coil ground lead and shunt field coil lead to field frame.

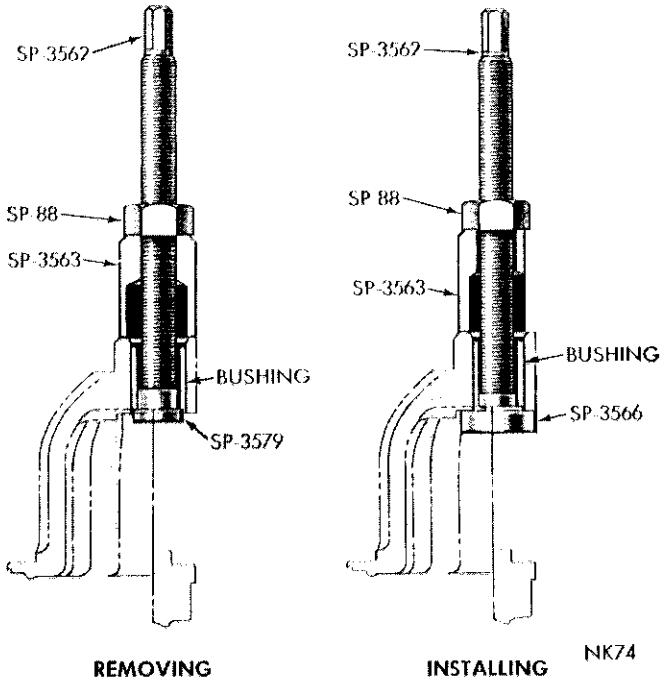


Fig. 12—Removing and Installing Pinion Housing End Bushing

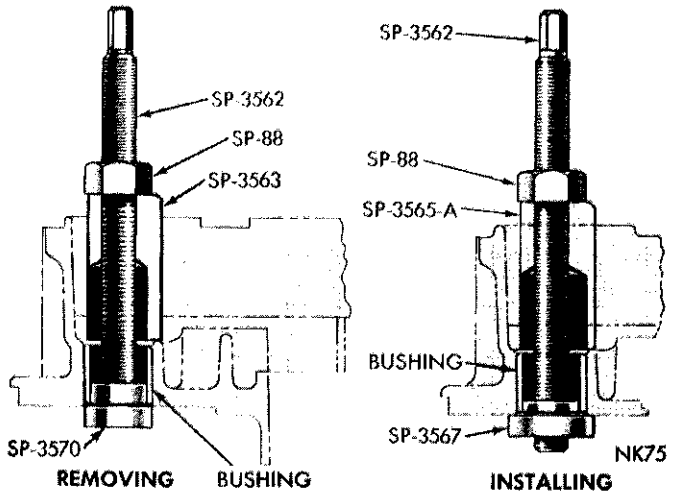


Fig. 13—Removing and Installing Pinion Housing Drive Shaft Bushing

(3) Insulate field coil leads from field frame.

(4) Test for ground using a 110 volt test lamp. Touch one probe of test lamp to series field coil lead and other probe to field frame. Lamp should not light. Repeat the procedure for shunt field coil.

If lamp lights, it indicates that field coils are grounded and require replacement.

REPLACING THE FIELD COILS

A pole shoe impact screwdriver Tool C-3475 should be used to remove and install field coils to prevent damage to pole shoe screws and for proper tightening. Pole shoes that are loose and not properly seated may cause armature core to rub on pole shoes. **Make sure area between the leads and starter frame is clean. Peen new rivet securely to insure a good electrical contact.**

SERVICING THE STARTER BUSHINGS

Inspect armature shaft bearing, pinion shaft surfaces and bushings for wear. Try the bushings for wear by inserting the shafts and test for side play. **Pre-sized starting motor bushings are available as service bushings. Use Tool C-3944 to remove old bushings and install the new. No burnishing or reaming is required to fit pre-sized bushings.**

The C-3944 Tool and its adaptors are designed to service all of the gear reduction motor bushings with the exception of the end head bushing. End head bushing and end head are serviced as an assembly.

Remove and install bushings, (Figs. 12, 13 and 14).

SERVICING THE STARTER CLUTCH UNIT

Do not immerse starter clutch unit in a cleaning solvent. Starter clutch is pre-lubricated at the factory and a solvent will wash lubricant from the clutch.

The starter clutch outer housing and pinion gear may be cleaned with a cloth moistened with a cleaning solvent and wiped dry with a clean dry cloth.

Rotate the pinion. Pinion gear should rotate smoothly in one direction (not necessarily easily), but should not rotate in opposite direction. If starter clutch unit does not function properly, or pinion is worn, chipped or burred, replace starter clutch unit.

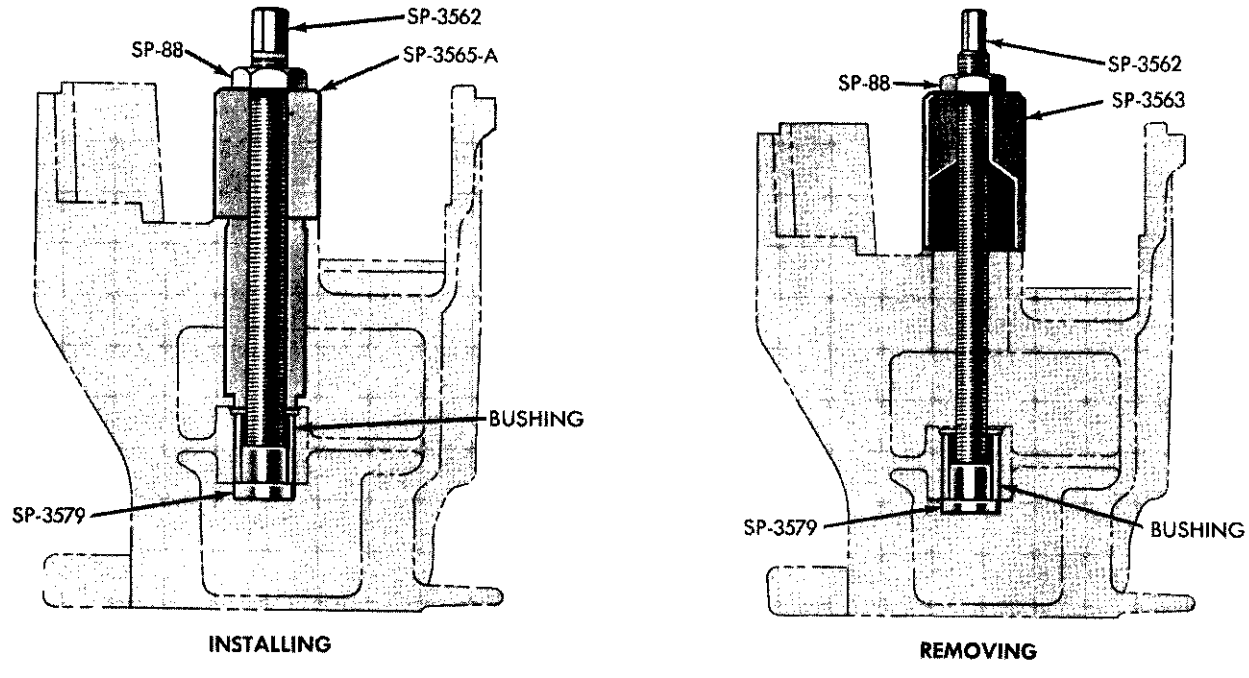


Fig. 14—Removing and Installing Pinion Bushing Armature Shaft Bushing

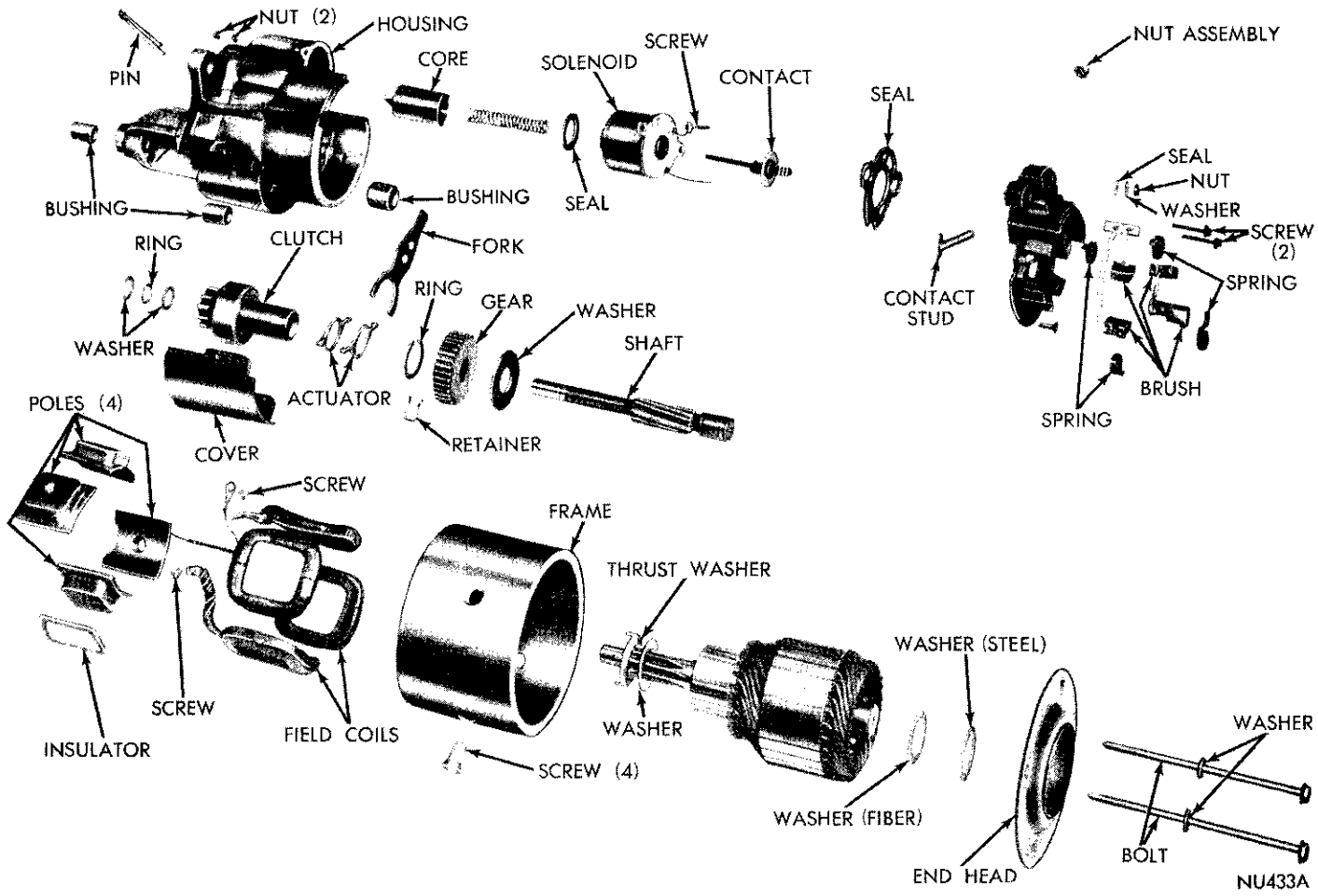


Fig. 15—Starter (Exploded View)

ASSEMBLING THE STARTER (Fig. 15)

The shifter fork consists of two spring steel plates assembled with two rivets. There should be approximately 1/16 inch side movement as shown in Figure 16 to insure proper pinion gear engagement. Lubricate between the plates sparingly with SAE 10 engine oil.

(1) Position shifter fork in drive housing and install shifting fork retainer pin. One tip of pin should be straight, the other tip should be bent at a 15 degree angle away from the housing. The fork and retainer pin should operate freely after bending tip of pin.

(2) Install solenoid moving core and engage shifting fork (Fig. 10).

(3) Enter pinion shaft into drive housing and install friction washer and drive gear.

(4) Install clutch and pinion assembly, thrust washer, retaining and thrust washer (Fig. 9).

(5) Complete installation of pinion shaft, engaging shifting fork with clutch actuators. Figure 17 shows correct relation of parts at assembly. **The friction washer must be positioned on shoulder of splines of the pinion shaft before driven gear is positioned.**

(6) Install driven gear snap ring (Fig. 6).

(7) Install pinion shaft retaining ring (Fig. 7).

(8) Install starter solenoid return spring into bore of movable core.

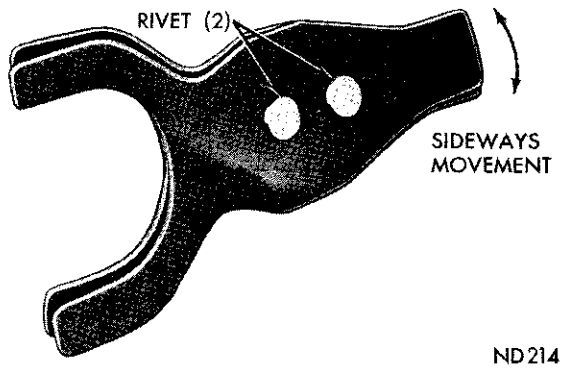


Fig. 16—Shifter Fork Assembly

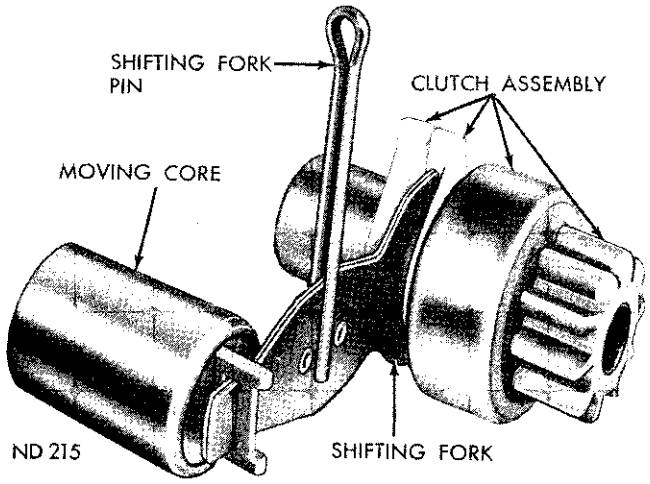


Fig. 17—Shifter Fork and Clutch Arrangement

Inspect condition of starter solenoid switch contacting washer, if top of washer is burned from arcing, disassemble contact switch plunger assembly and reverse the washer.

(9) Install solenoid contact plunger assembly into solenoid and reform double wires to allow for proper entry of terminal stud into brush holder with the double wires curved around the contactor.

CAUTION: The contactor must not touch the double wires when solenoid is energized after assembly is completed (Fig. 4).

Make sure contact spring is positioned on the shaft of the solenoid contact plunger assembly.

(10) Assemble battery terminal stud in brush holder.

Inspect condition of the contacts in brush holder plate. If contacts are badly burned, replace brush holder with brushes and contacts as an assembly.

(11) Position seal on brush holder plate.

(12) Enter solenoid lead wire through hole in brush holder (Fig. 18) and install solenoid stud, insulating washer, flat washer and nut.

(13) Wrap solenoid lead wire tightly around brush terminal post as shown in Figure 19 and solder securely with a high temperature resin core solder and resin flux.

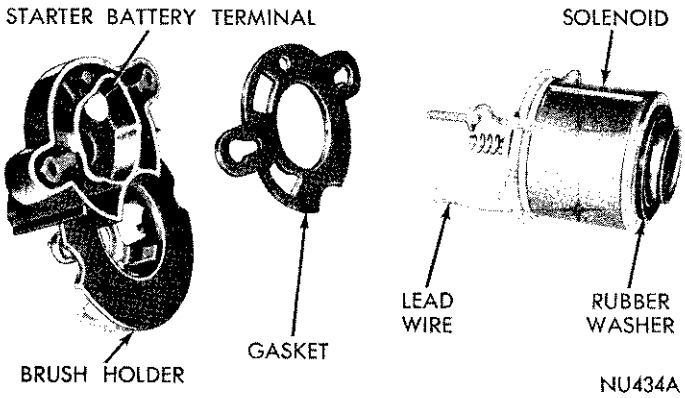


Fig. 18—Assembling Solenoid to Brush Holder Plate

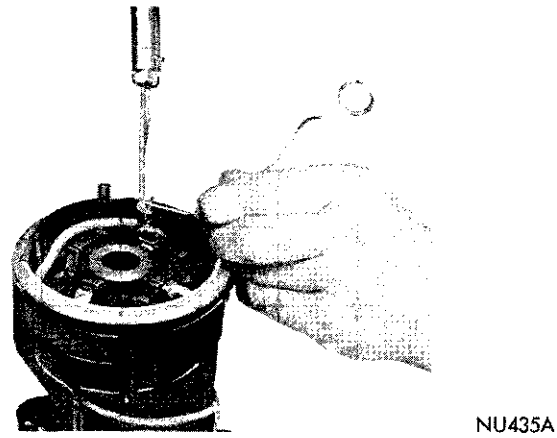


Fig. 19—Soldering Solenoid Winding Lead to Brush Terminal

(14) Install brush holder to solenoid attaching screws.

(15) Carefully enter solenoid coil and brush plate assembly into bore of gear housing and position brush plate assembly into starter gear housing (Fig. 20) and install housing attaching nuts. Tighten securely.

(16) Position brushes with armature thrust washer as shown in Figure 19. This will hold brushes out and facilitate proper installation of armature.

(17) Solder shunt coil lead wire to starter brush terminal (Fig. 21).

(18) Install brush terminal screw (Fig. 2).

(19) Position field frame to the exact position on gear housing and enter armature into field frame and starter gear housing (Fig. 22); carefully engaging splines of shaft with reduction gear by rotating armature slightly to engage the splines.

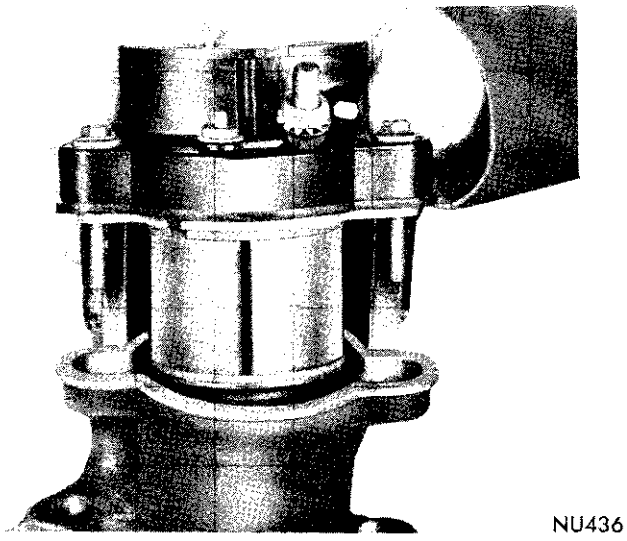


Fig. 20—Installing Solenoid and Brush Holder Into Gear Housing

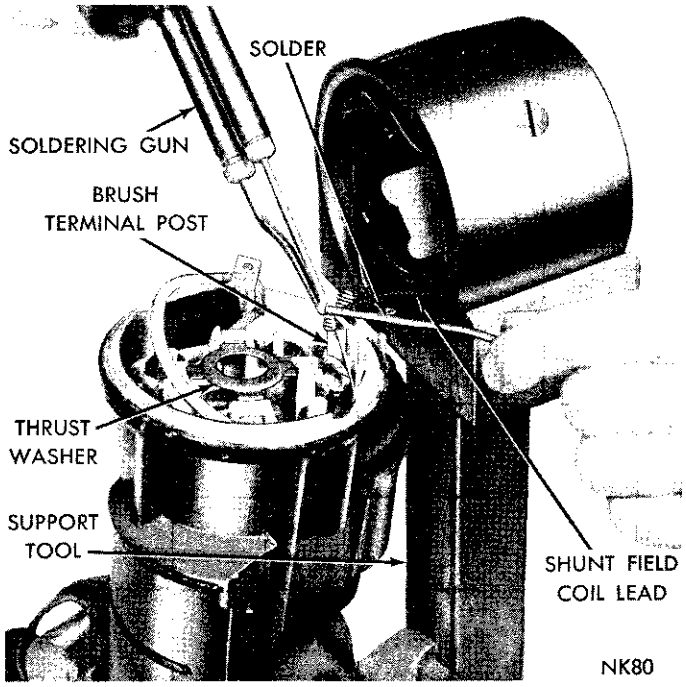


Fig. 21—Soldering Shunt Coil Lead Wire

(20) Install thrust washer (fiber) and washer (steel) on armature shaft.

(21) Position starter end head assembly and install starter frame lockwashers and through bolts. Tighten through bolts securely.

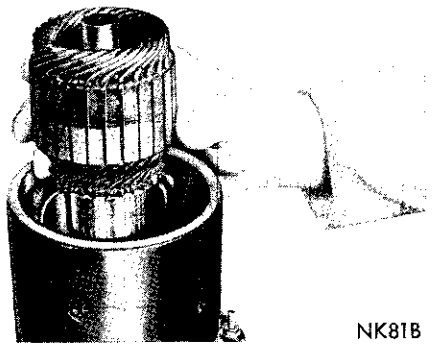


Fig. 22—Installing Starter Armature

INSTALLING THE STARTER

(1) Before installing the starter, make sure starter and flywheel housing mounting surfaces are free of dirt and oil, to insure a good electrical contact.

(2) Position starter to flywheel housing removable seal (if removed).

(3) Install the starter, washer and bolt, the automatic transmission oil cooler tube bracket (if so equipped) and washer and nut. **When tightening attaching bolt and nut be sure to hold the starter pulled away from the engine to insure proper alignment.**

(4) Attach wire at solenoid switch terminal, and cable to starter terminal.

(5) Connect battery ground cable and test operation of the starter for proper engine cranking.

ISOLATED FIELD ALTERNATOR AND ELECTRONIC VOLTAGE REGULATOR

INDEX

	Page		Page
Assembling the Alternator	26	Regulator Testing	19
Bench Tests	21	Replacing Slip Rings	25
Disassembling the Alternator	21	Service Diagnosis	15
General Information	15	Specifications	84
Output Tests	15	Voltage Regulator (Electronic)	16
Rectifier (Diode) Testing	21		

GENERAL INFORMATION

The alternator (Figs. 1 and 2) is fundamentally an A.C. current generator, with six (6) built-in silicon rectifiers, that convert A.C. current to D.C. current. D.C. current is available at the "output" "BAT" terminal.

The main components of the alternator are the rotor, stator, rectifiers, the end shields and the drive pulley.

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
ALTERNATOR FAILS TO CHARGE (No Output or Low Output)	(a) Alternator drive belt loose.	(a) Adjust drive belt to Specifications.
	(b) Worn brushes and/or slip rings.	(b) Install new brushes and/or slip rings.
	(c) Sticking brushes.	(c) Clean slip rings and brush holders. Install new brushes if necessary.
	(d) Open field circuit.	(d) Test all the field circuit connections, and correct as required.

Condition	Correction	Possible Cause
	(e) Open charging circuit.	(e) Inspect all connections in charging circuit, and correct as required.
	(f) Open circuit in stator windings.	(f) Remove alternator and disassemble. Test stator windings. Install new stator if necessary.
	(g) Open rectifiers.	(g) Remove alternator and disassemble. Test the rectifiers. Install new rectifiers if necessary.
LOW, UNSTEADY CHARGING RATE	(a) High resistance in body to engine ground lead.	(a) Tighten ground lead connections. Install new ground lead if necessary.
	(b) Alternator drive belt loose.	(b) Adjust alternator drive belt.
	(c) High resistance at battery terminals.	(c) Clean and tighten battery terminals.
	(d) High resistance in charging circuit.	(d) Test charging circuit resistance. Correct as required.
	(e) Open stator winding.	(e) Remove and disassemble alternator. Test stator windings. Install new stator if necessary.
LOW OUTPUT AND A LOW BATTERY	(a) High resistance in charging circuit.	(a) Test charging circuit resistance and correct as required.
	(b) Shorted rectifier. Open rectifier.	(b) Perform current output test. Test the rectifiers and install new rectifiers as required. Remove and disassemble the alternator.
	(c) Grounded stator windings.	(c) Remove and disassemble alternator. Test stator windings. Install new stator if necessary.
EXCESSIVE CHARGING RATE TO A FULLY CHARGED BATTERY	(a) Faulty ignition switch.	(a) Install new ignition switch.
	(b) Regulator base improperly grounded.	(b) Connect regulator base to a good ground.
	(c) Faulty voltage regulator.	(c) Test voltage regulator. Replace as necessary.
NOISY ALTERNATOR	(a) Alternator mounting loose.	(a) Properly install and tighten alternator mounting.
	(b) Worn or frayed drive belt.	(b) Install a new drive belt and adjust to specifications.
	(c) Worn bearings.	(c) Remove and disassemble alternator. Install new bearing as required.
	(d) Interference between rotor fan and stator leads or rectifiers.	(d) Remove and disassemble alternator. Correct interference as required.
	(e) Rotor or rotor fan damaged.	(e) Remove and disassemble alternator. Install new rotor.
	(f) Open or shorted rectifier.	(f) Remove and disassemble alternator. Test rectifiers. Install new rectifiers as required.
	(g) Open or shorted winding in stator.	(g) Remove and disassemble alternator. Test stator windings. Install new stator if necessary.
EXCESSIVE AMMETER FLUCTUATION	(a) High resistance in the alternator and voltage regulator circuit.	(a) Clean and tighten all connections as necessary.

SERVICE PROCEDURES

DESCRIPTION OF ELECTRONIC VOLTAGE REGULATOR OPERATION

The silicon transistor voltage regulator is a switching voltage regulator which regulates voltage by varying the duty cycle of a series of voltage pulses to the alternator field. The frequency of the voltage pulses is controlled by the ignition frequency of the engine, because the voltage regulator is a peak sensing regulator and the feedback from the ignition system is the highest level ripple on the car electrical system. Once the frequency of operation is established by the ignition system, the voltage regulator controls the voltage by varying the on and off time between the ignition firings. While the voltage across the field and tho current through the output transistor is switching

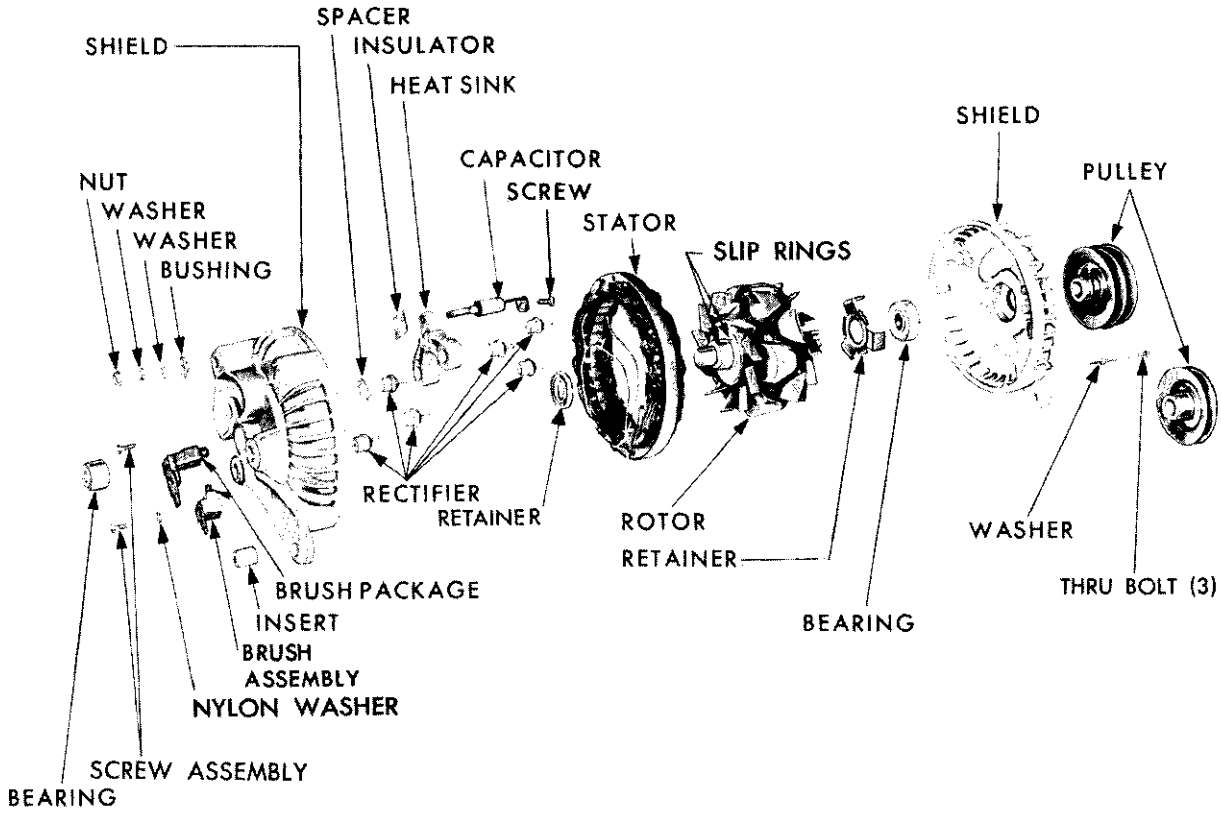


Fig. 1—Isolated Field Alternator (Disassembled View)

completely on and off, the field current of the alternator is only cycling through incremental changes. Since the inductance of the alternator field has a relatively long time constant with respect to the operating frequency of the voltage regulator, there is only enough time allowed for a incremental decrease in field current through the suppression diode during the off time of the transistor.

ISOLATED FIELD ALTERNATOR

CHARGING CIRCUIT RESISTANCE TEST AND CURRENT OUTPUT TEST

(1) Disconnect the battery ground cable.

(2) Disconnect the "Batt" lead at the alternator output terminal.

(3) Connect a 0-75 ampere scale D.C. ammeter in series between the alternator "Batt" terminal and the disconnected "Batt" lead (Fig. 3).

(4) Connect the positive lead of a test voltmeter to the disconnected "Batt" lead. Connect the negative lead of the test voltmeter to battery positive terminal.

(5) Disconnect the field lead from the alternator.

(6) Connect a "jumper" lead from the alternator field terminal to ground.

(7) Connect an engine tachometer. Connect the battery ground cable.

(8) Connect a variable carbon pile to the battery terminals.

(9) Start and operate the engine at idle. **Immediately after starting, reduce engine speed to idle.**

(10) Adjust the engine speed and carbon pile to obtain 20 amperes flowing in the circuit. Observe the voltmeter reading. The voltmeter reading should not exceed .7 volts. If a higher voltage drop is indicated, inspect, clean and tighten all connections in the charging circuit. A voltage drop test may be performed at each connection to locate the connection

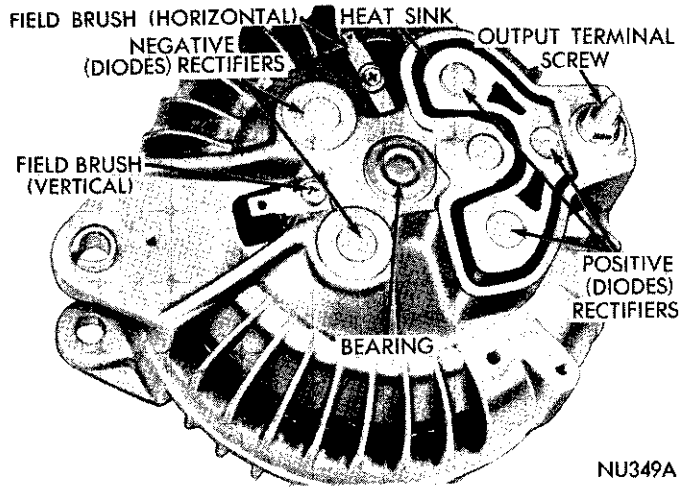


Fig. 2—Alternator Assembly

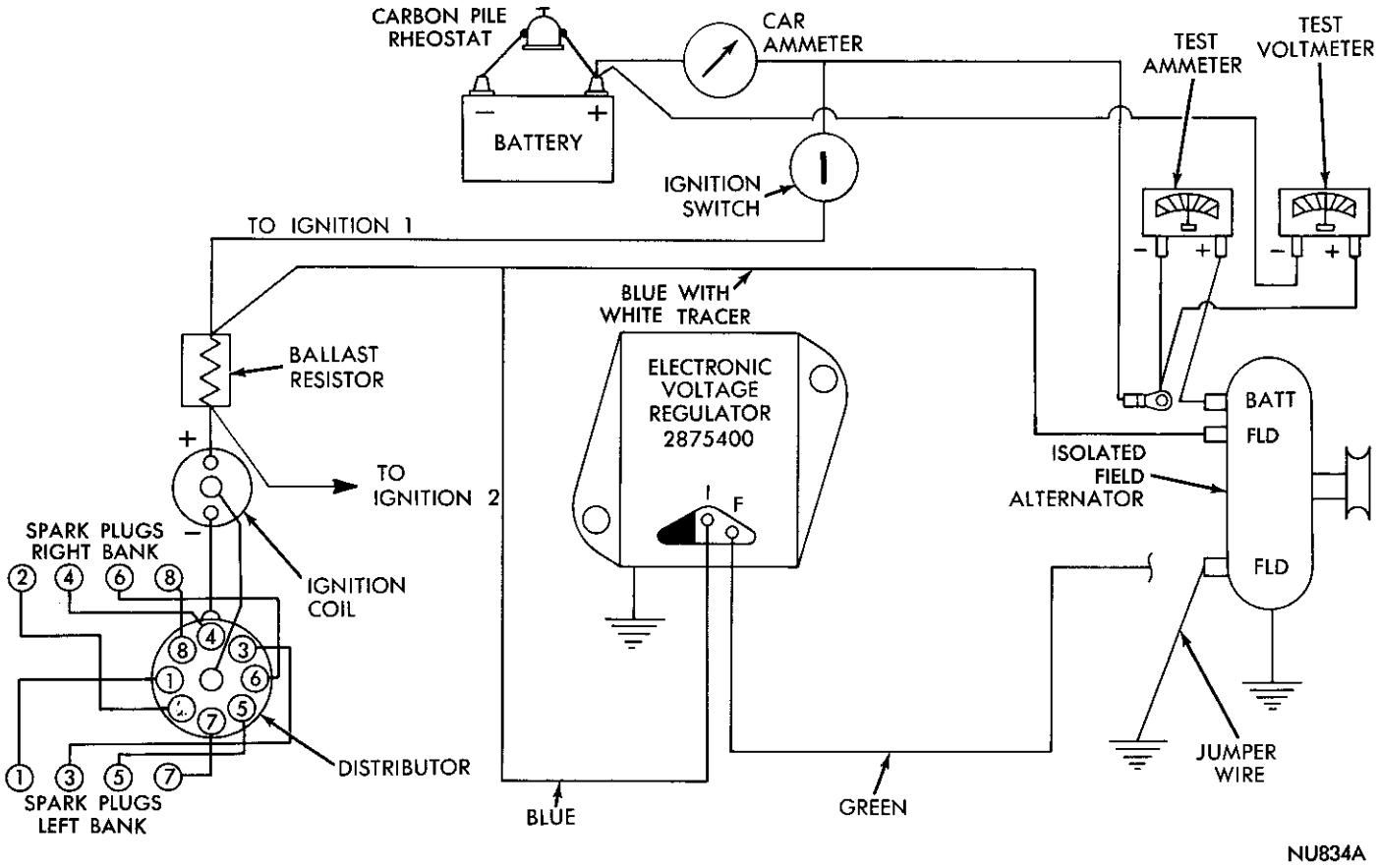


Fig. 3—Charging Circuit Resistance Test

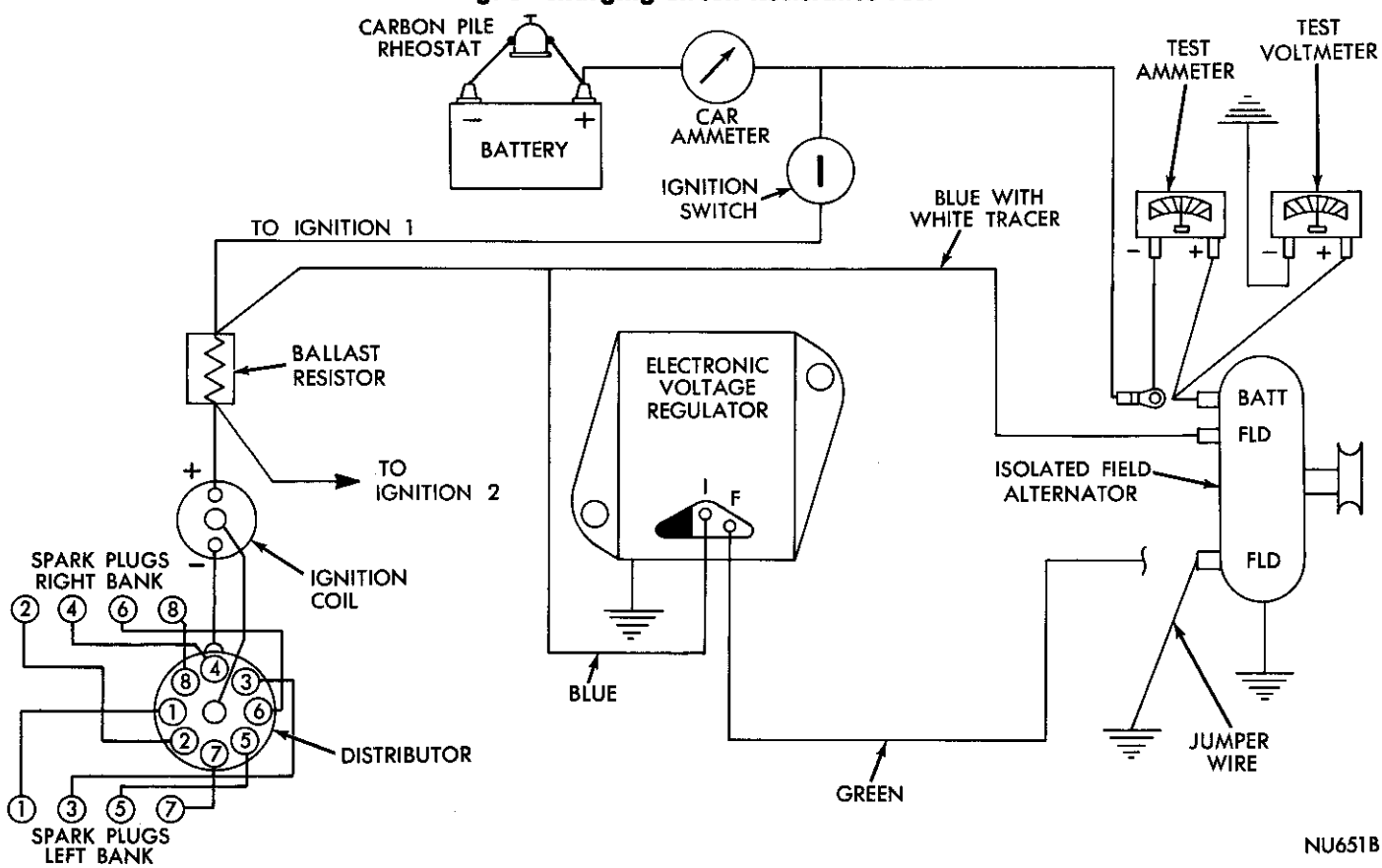


Fig. 4—Current Output Test

with excessive resistance. If the charging circuit resistance tested satisfactorily, reduce engine speed, turn off carbon pile and turn off ignition switch.

(11) Then, to make the current output test, move the negative lead of the voltmeter to a good ground. Move the positive lead of the voltmeter to "Batt" terminal of the alternator (Fig. 4).

(12) Start and operate the engine at idle. **Immediately after starting, reduce engine speed to idle.**

(13) Adjust the carbon pile and engine speed in increments until a speed of 1250 rpm and a voltmeter reading of 15 volts is obtained.

(14) **CAUTION: Incremental increases in engine speed should not be large enough to allow voltage to go above 16 volts.**

(15) Observe the reading on the test ammeter. The output current should be within the limits shown in the "Specifications". If the output is slightly less (5 to 7 amperes) than specified, it may be an indication of possible "open" rectifier or other alternator internal problems. If the output is considerably lower than that specified, it may be an indication of a possible "shorted" rectifier or other internal problems. In either case, the alternator should be removed and tested on the bench before disassembly. If the alternator current output tested satisfactorily, reduce engine speed, turn off carbon pile, and turn off ignition switch.

(16) Disconnect battery ground cable.

(17) Remove test ammeter, voltmeter, tachometer, and carbon pile.

(18) Remove jumper between alternator field and ground. Connect the field wire to the alternator field terminal.

(19) Connect the battery ground cable.

ELECTRONIC VOLTAGE REGULATOR

VOLTAGE REGULATOR TEST (When Tester C-4133 is Not Available)

(1) Clean the battery terminals and check the specific gravity. It should be above 1.200 to allow a prompt regulated voltage check.

If the specific gravity is below 1.200, charge or use another battery and do not leave the uncharged battery in the circuit.

(2) Connect the positive lead from a voltmeter to the ignition Number one (1) terminal of the ballast resistor. (The Ignition Number one (1) terminal of the ballast resistor is the end which has one or two blue wires connected to it.) The other end, Ignition Number two (2), will have a brown and blue wire or just a brown wire connected to it (Fig. 5).

(3) Connect the negative lead from the voltmeter to a good vehicle body ground.

(4) Start and operate engine at 1250 rpm with all lights and accessories turned off. Check voltmeter, the regulator is working properly if the voltage readings are in accordance with the following chart.

AMBIENT TEMPERATURE NEAR VOLTAGE REGULATOR	VOLTAGE RANGE
—20°F	14.3 15.3
80°F	13.8 14.4
140°F	13.3 14.0
Above 140°F	Less than 13.8

It is normal for the car ammeter to show an immediate charge and then gradually return to normal position. The duration the ammeter hand remains to the right will be dependent on the length of cranking time.

(5) If the voltage is below limits, proceed as follows:

(a) Check for a good voltage regulator ground. Check for voltage drop between cover of voltage regulator and body on low voltage scale of voltmeter.

(b) Turn off ignition switch and disconnect voltage regulator connector.

(c) Turn on the ignition switch, but do not start car, check for battery voltage at the wiring harness terminal connected to the blue and green leads. **Disconnect wiring harness from voltage regulator when checking the leads.**

Turn off ignition switch. If voltage is not present at either lead, the problem is in the vehicle wiring or alternator field circuit. **DO NOT DISTORT TERMINALS WITH VOLTMETER PROBE.**

(d) If the previous steps, 5(a) through 5(c) tested satisfactorily, change the voltage regulator and repeat step 4.

(6) If the voltage is slightly above the limits shown in chart or is fluctuating, proceed as follows:

(a) Check ground between voltage regulator and vehicle body.

(b) Check ground between vehicle body and engine.

(c) Check ignition switch circuit between battery terminal of ignition switch and voltage regulator.

(7) If the voltage is more than one-half (1/2) a volt above limits shown in chart, change the voltage regulator and repeat step 4.

(8) Remove the test voltmeter.

ELECTRONIC VOLTAGE REGULATOR TEST (With Tester Tool C-4133)

(1) Remove connector from Electronic Voltage Regulator on vehicle.

(2) Plug in power cord of Voltage Regulator Tester to 110 Volt A.C. 60 cycle source.

(3) Connect the ground wire from the voltage regulator tester to a good body ground near the voltage

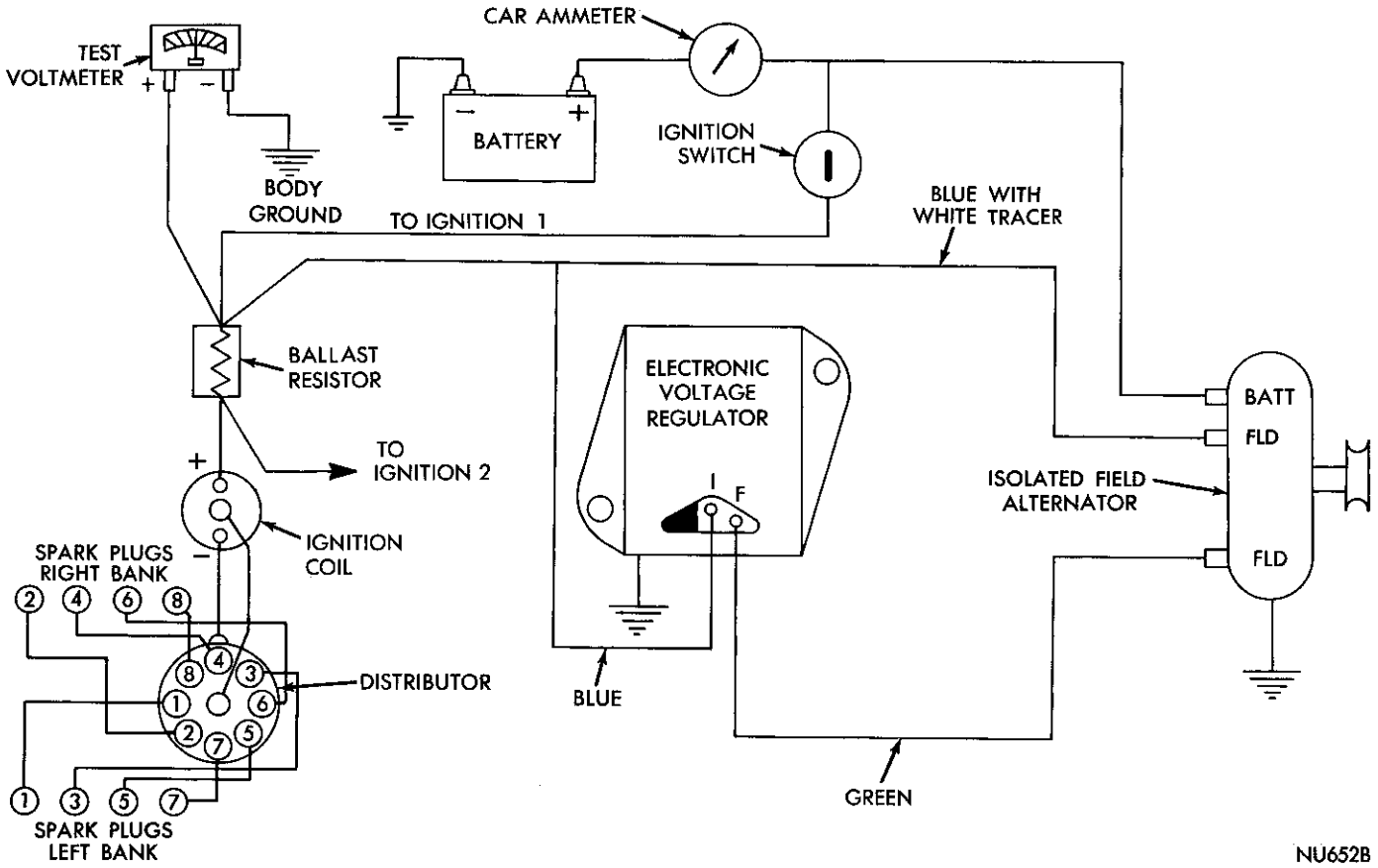


Fig. 5—Voltage Regulator Test (Without Tester Tool C-4133)

regulator (at voltage regulator mounting screws Figs. 6 and 7).

(4) Plug connector of voltage regulator tester on voltage regulator on vehicle.

(5) Place knob on the tester to the regulator test position.

(6) Press the test button on the voltage regulator tester. The voltage reading should be in accordance with the following:

(a) If the voltage regulator temperature is at room temperator (80°F.) or above, the meter reading should be in the green or yellow range.

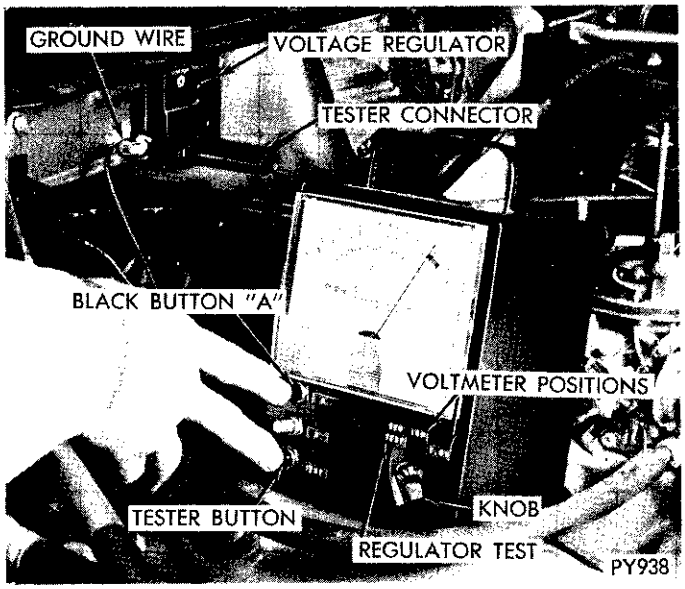


Fig. 6—Voltage Regulator Test (Depressing Test Button and Black Button "A")

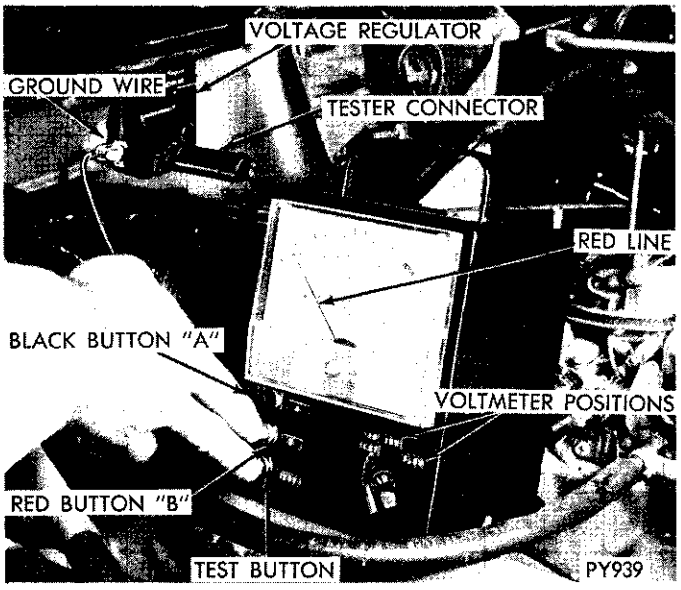


Fig. 7—Voltage Regulator Test (Depressing Test Button "B")

(b) If the voltage regulator is at room temperature (80°F.) or below, the meter reading should be in the green or blue range.

(7) While holding the test button in, depress **Black Button** (A) (Fig. 6), the meter reading should remain within the limits of step 6.

(8) While holding the test button in, depress **Red Button** (B) (Fig. 7), the meter should read above the red line.

(9) If all tests remain within limits the voltage regulator is good.

The tester may be used as a D.C. Voltmeter by placing tester knob in either the 18 volt or 1.8 volt position. Use the red probe and black clip leads for testing.

ALTERNATOR SERVICE PROCEDURES

If alternator performance does not meet current output specifications limits, it will have to be removed and disassembled for further test and servicing.

(1) Disconnect battery ground table at battery negative terminal.

(2) Disconnect alternator output "BATT" and field "FLD" leads and disconnect ground wire.

(3) Remove alternator mounting bolts and remove alternator.

BENCH TESTS

Field Coil Draw

If alternator field coil draw has not been tested on vehicle it may be tested on test bench as follows:

(1) Connect a wire between one field terminal of the alternator and the positive terminal of a fully charged battery. Connect test ammeter positive lead to the other field terminal of the alternator and the negative lead to the battery negative terminal.

(2) Slowly rotate alternator rotor by hand. Observe ammeter reading. Field coil draw should be 2.3 amperes to 2.7 amperes at 12 volts. **A low rotor coil draw is an indication of high resistance in field coil circuit, (brushes, slip rings, or rotor coil). A higher rotor coil draw indicates possible shorted rotor coil or grounded rotor.**

Testing Alternator Internal Field Circuit for Ground

(1) To test internal field circuit for ground, touch one test probe from a 110 volt test lamp to one of the alternator field brush terminals and remaining test probe to the end shield. If rotor assembly or field brush is not grounded, lamp will not light.

(2) If lamp lights, remove field brush assemblies (noting how the parts are assembled) and separate the end shields by removing the three through bolts.

(3) Again test by placing one of the test probes to a slip ring and remaining test probe to the end shield. If lamp lights, rotor assembly is grounded and requires replacement. If lamp does not light after removing the field brush and separating the end shields, the cause of the ground at the first ground test was a grounded brush.

(4) Examine plastic insulator and screw. Screw is a special size and must not be substituted.

(5) Install brush holders, terminals, insulated washers, shake proof washers and screws. If the parts were not assembled in this order; this could be the cause of the ground condition.

DISASSEMBLING THE ALTERNATOR

To prevent possible damage to brush assemblies, they should be removed before proceeding with disassembly of the alternator. The field brushes are mounted in plastic holders that position the brushes against the slip rings of the rotor.

(1) Remove retaining screw lockwasher, insulated washer, and field terminal, and carefully lift plastic holder containing spring and brush assembly from end housing (Fig. 8).

(2) Remove the brush screws, insulating nylon washers and lift brush assemblies from end shield.

CAUTION: Stator is laminated, do not burr stator or end shield.

(3) Remove through bolts and pry between the stator and drive end shield with blade of a screwdriver (Fig. 9). Carefully separate drive end shield, pulley and rotor assembly away from stator and rectifier shield assembly.

Testing the Rectifiers with Tool C-3829

The Rectifier Tester Tool C-3829 provides a quick, simple and accurate test of the alternator rectifiers without the necessity of disconnecting soldered rectifier leads. With alternator rectifier end shield sepa-

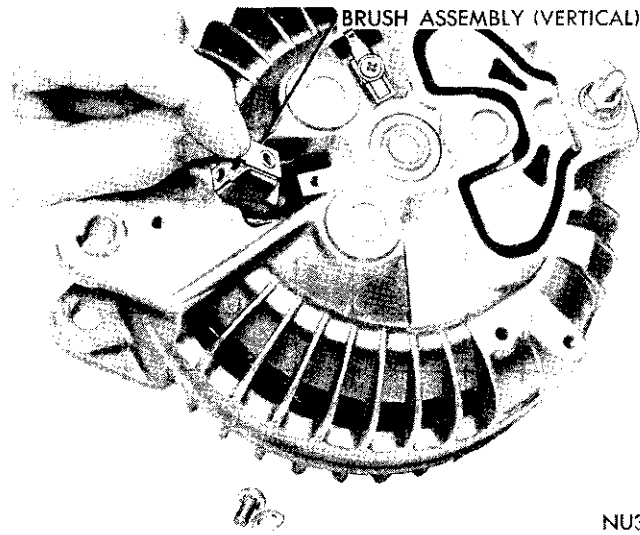


Fig. 8—Removing or Installing Field Brushes

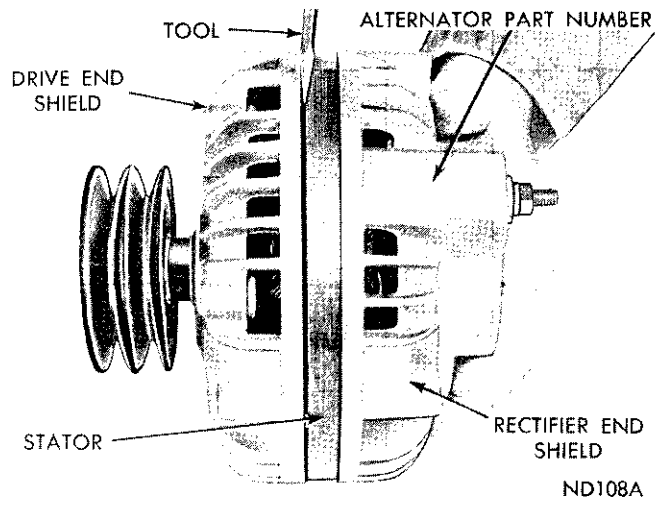


Fig. 9—Separating Drive End Shield From Stator

rated from drive end housing proceed with rectifier test as follows:

Positive Case Rectifier Test (Fig. 10)

(a) Place alternator on an insulated surface. Connect test lead clip to the alternator (BAT) output terminal.

(b) Plug in Tool C-3829 power source lead into a 110 volt A.C. power supply. Touch exposed bare metal connections of each of the positive case rectifiers, with test prod.

The reading for satisfactory rectifiers will be 1-3/4 amperes or more. Reading should be approximately the same for three rectifiers.

When two rectifiers are good and one is shorted, reading taken at the good rectifiers will be low, and reading at shorted rectifier will be zero. Disconnect lead to the rectifier reading zero and retest. The reading of the good rectifiers will now be within satisfactory range.

When one rectifier is open it will read approximately one ampere, and two good rectifiers will read within satisfactory range.

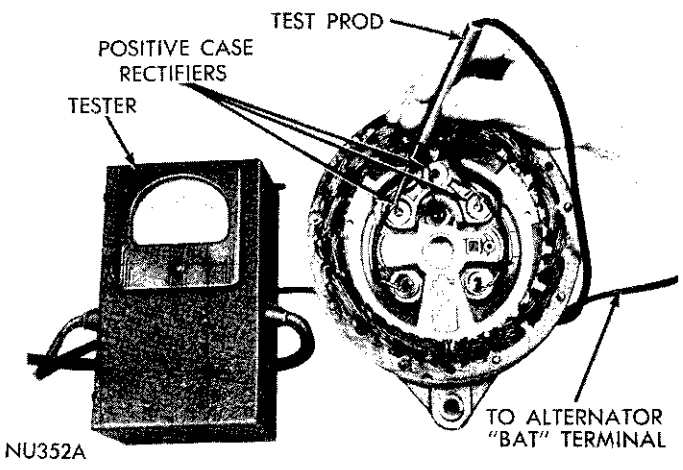


Fig. 10—Testing Positive Rectifiers

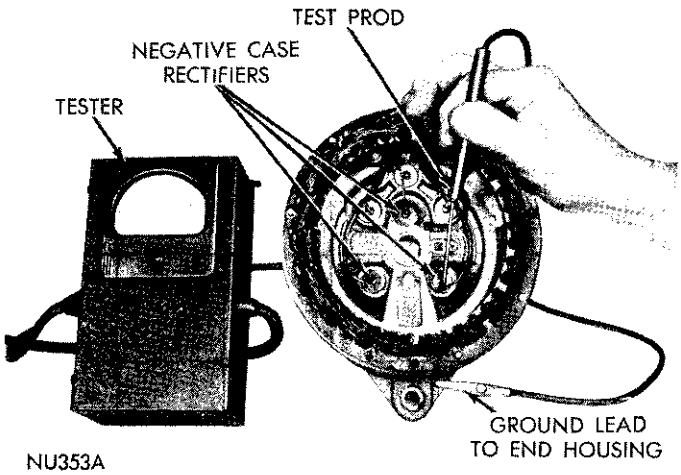


Fig. 11—Testing Negative Rectifiers

Negative Case Rectifier Test (Fig. 11)

(a) Connect test lead clip to rectifier end housing.

(b) Touch exposed connection of each of the negative case rectifiers with test probe.

CAUTION: Do not break the sealing around rectifier lead wire. The sealing material is for protection against corrosion. Always touch test probe to exposed metal connection nearest rectifier.

Test specifications are the same, and test results will be approximately the same as for positive case rectifiers, except meter will read on opposite side of scale.

TESTING RECTIFIERS AND STATOR (When Tool C-3829 is not available)

(a) Separate the three (3) stator leads at "Y" connection (Fig. 12). **Cut stator connection as close to**

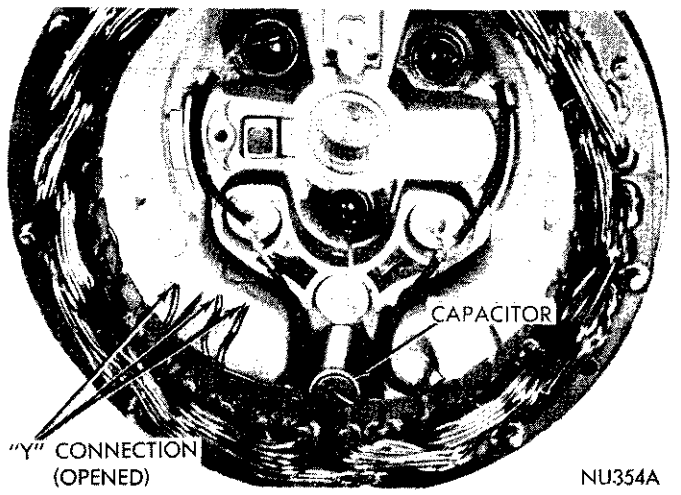


Fig. 12—Separating the Three Stator Leads

connector as possible. If they are cut too short it may be difficult to get them together again for soldering.

(b) Test rectifiers with a 12 volt battery and a test lamp equipped with a number 67 bulb (4 candle power) by connecting one side of test lamp to positive battery post; other side of test lamp to a test probe with other test probe connected to the negative battery post.

(c) Contact outer case of rectifier with one probe and other probe to wire in center of rectifier (Fig. 13).

(d) Reverse the probes, moving probe from rectifier outer case to rectifier wire, and the probe from rectifier wire to rectifier outer case.

If test lamp "lights" in one direction but does "not light" in other direction, rectifier is satisfactory. If lamp lights in "both directions," **rectifier** is "shorted." If test lamp does "not light" in either direction, rectifier is "open." **Possible cause of an open or blown rectifier is a faulty capacitor or a battery that has been installed in reverse polarity. If battery is installed properly and the rectifiers are open, test capacitor capacity—.50 microfarad (plus or minus 20%).**

(e) Unsolder rectifier leads from stator leads. **Do not blow solder off with air—fine particles of solder can short other rectifiers.**

(f) Test stator for grounds using a 110 volt test lamp (Fig. 14). Use wood slats to insulate the stator from rectifier shield. Contact one prod of test lamp to stator pole frame, and contact the other prod to each of the three stator leads. Test lamp should "not light." If test lamp lights, stator windings are "grounded."

(g) Test stator windings for continuity, by contacting one prod of test lamp to **all** three stator leads at "Y" connection. Contact each of the three stator leads (disconnected from rectifiers). Test lamp should "light" when prod contacts each of the three leads. If lamp does not light stator winding is "open" (Fig. 15).

(h) Install a new stator if stator tested is "grounded" or "open." If stator tested satisfactorily, tin the

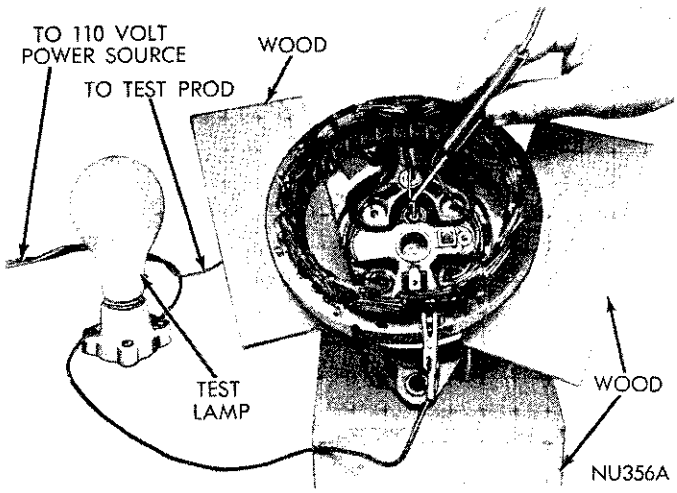


Fig. 14—Testing Stator for Ground

three stator wires and resolder. Tape connector and cement down to stator to make sure the "Y" connector does not short out to end shield. If the rectifiers must be replaced, unsolder the rectifier wire from the stator lead wire at the soldered joint. **When removing rectifiers, it is necessary to support end shield and/or heat sink to prevent damage to these castings.**

(4) Place Rectifier Removing and Installing Press in a vise and support end shield on clamp anvil under rectifier to be removed (Fig. 16). **Make sure bore of tool completely surrounds rectifier during removal process.**

(5) Carefully apply pressure with tool pressure screw until support tool, rectifier end shield, and remover pin, and remover adapter are in alignment then press the rectifier out of end shield or heat sink.

(6) The pully is an interference fit on rotor shaft. Remove pulley with Puller Tool C-4068, (Fig. 17).

(7) Pry drive end bearing spring retainer from end shield with a screwdriver (Fig. 18).

(8) Support end shield and tap rotor shaft with a plastic hammer to separate rotor from end shield. **The**

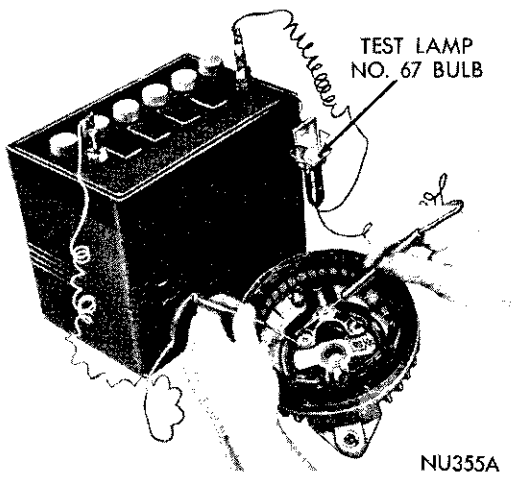


Fig. 13—Testing Rectifiers with Test Lamp

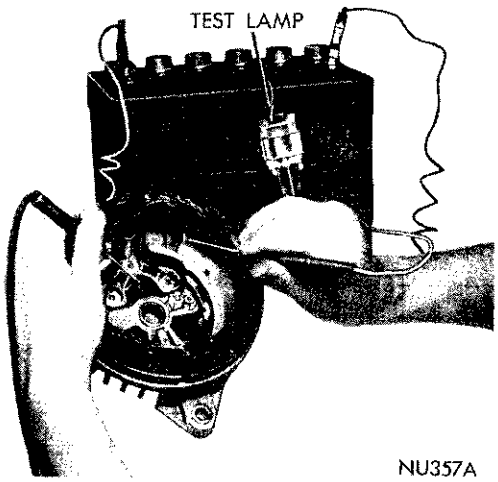


Fig. 15—Testing Stator Windings for Continuity

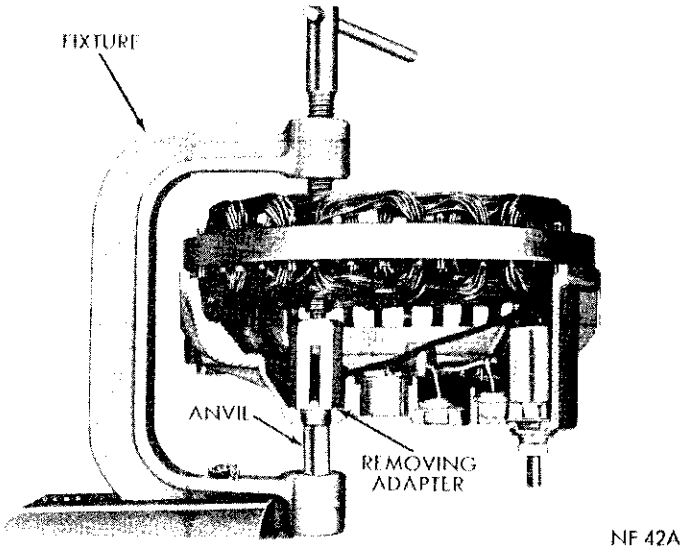


Fig. 16—Removing the Rectifiers

new bearing is lubricated with a predetermined amount of special lubricant and does not require additional lubrication.

(9) The drive end ball bearing is an interference fit with the rotor shaft. Remove bearing with Puller Tool C-4068, (Fig. 19).

(10) Remove output terminal nuts and washers and remove terminal screw and inside capacitor. **The heat sink is also held in place by the terminal screw.**

(11) Remove insulator (Fig. 20).

(12) The needle roller bearing in rectifier end shield is a press fit. If necessary to remove rectifier

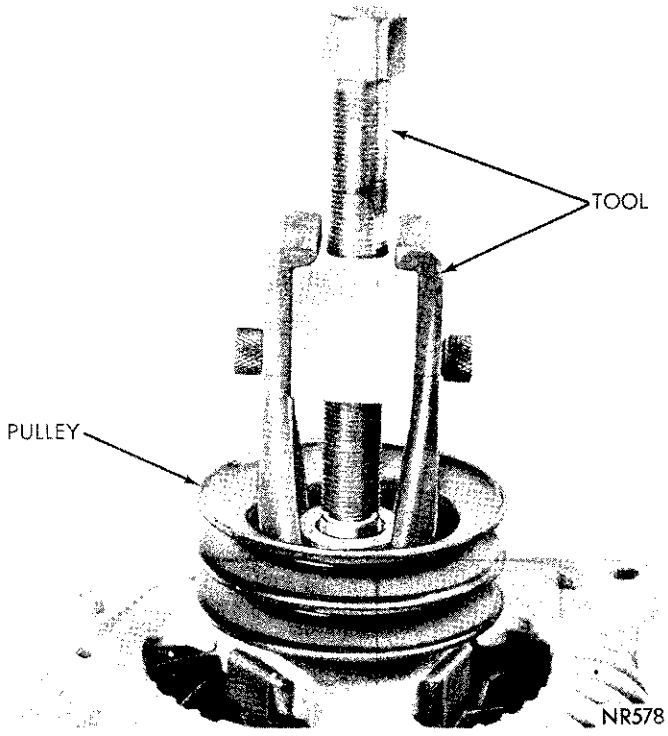


Fig. 17—Removing the Pulley

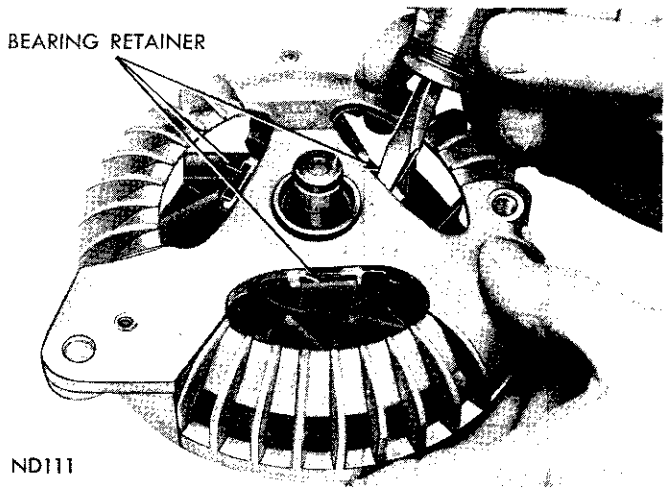


Fig. 18—Disengaging Bearing Retainer from End Shield

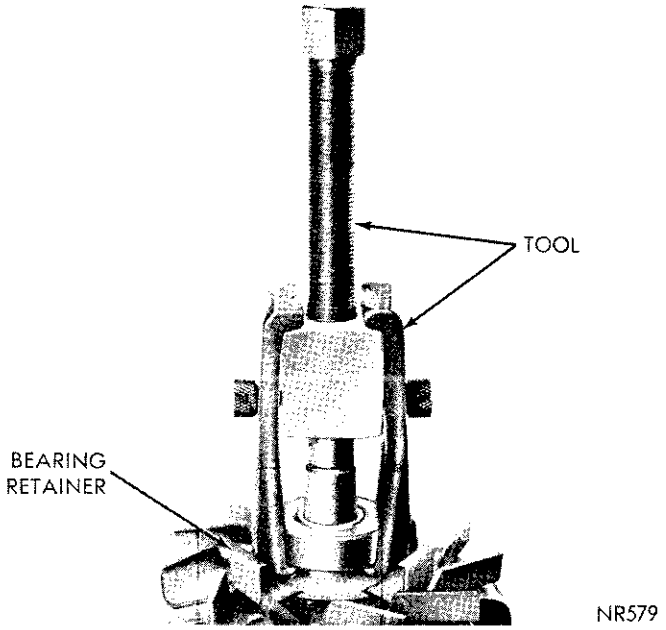


Fig. 19—Removing Bearing from Rotor Shaft

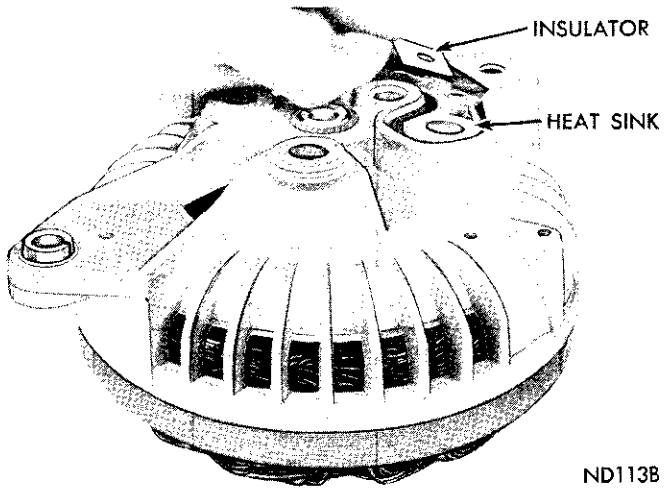


Fig. 20—Removing Heat Sink Insulator

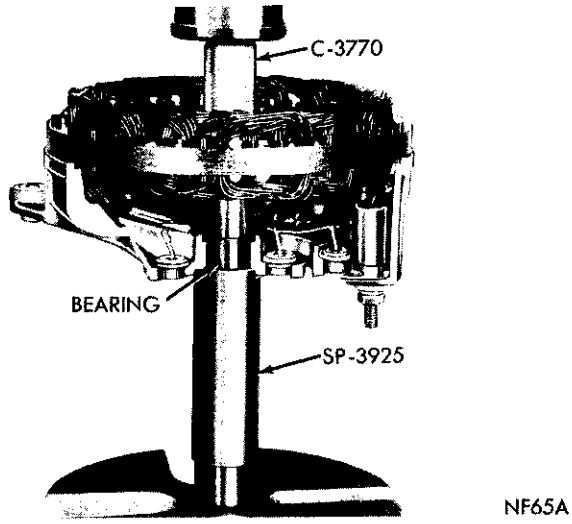


Fig. 21—Removing Rectifier End Shield Bearing

end frame needle bearing, protect end shield by supporting shield with Tool C-3925 when pressing bearing out with Tool C-3770A (Fig. 21). Make sure notches in tool clear raised section of heat sink. **The new bearing is prelubricated and no additional lubricant should be added, as an excessive amount of lubricant will contaminate the slip rings and cause premature brush and rotor failures.**

REPLACING SLIP RINGS

Slip rings that are damaged can be replaced as follows:

(a) Remove rotor plastic grease retainer.

(b) Unwind field coil leads from slip ring lugs (Fig. 22) being careful not to break the wire leads.

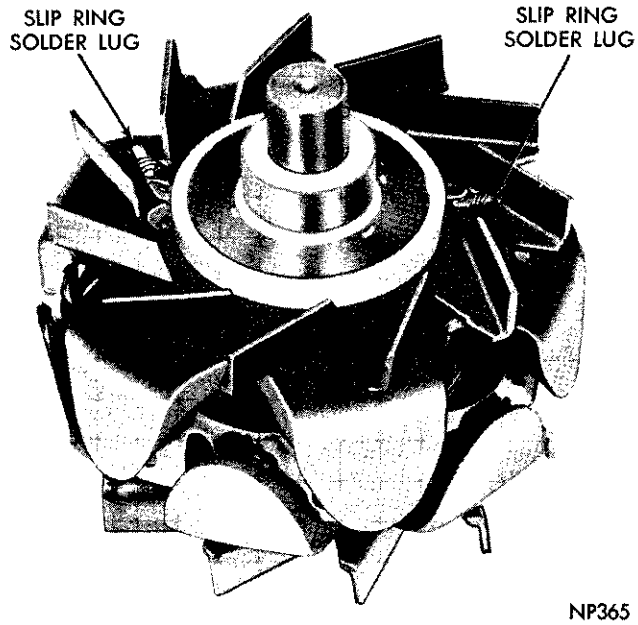


Fig. 22—Solder Points—Slip Ring Installed

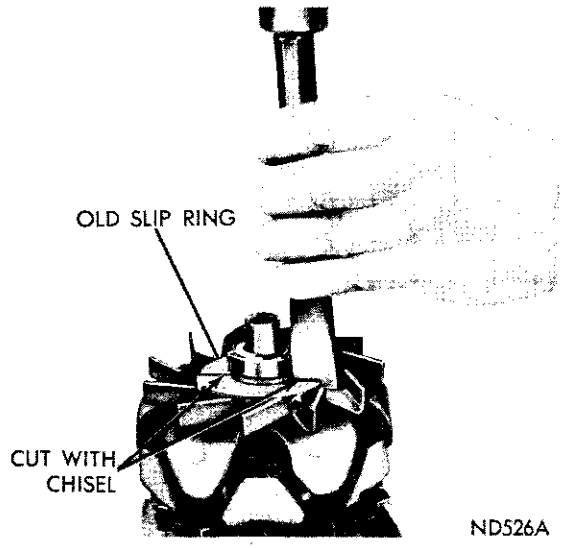


Fig. 23—Cutting Old Slip Rings

(c) Use a chisel to cut through the copper of both slip rings at opposite points (180° apart) (Fig. 23).

(d) Break the plastic insulator and remove the old slip ring.

(e) Clean away dirt and particles of old slip ring from rotor.

(f) Scrape ends of field coil wires clean for good electrical contact.

(g) Position field coil wires so as to clear path for new slip ring.

(h) Position new slip ring carefully on rotor shaft to insure that slip ring lugs will be in proper position for connecting field coil wires (Fig. 24).

(i) Place installing Tool C-3900 over rotor shaft and position rotor, slip ring and tool assembly in arbor press (Fig. 25). Press slip ring on shaft. **When slip ring is bottomed on rotor fan, the field lead wire (insulated brush ring) should clear the access hole through the fan and pole piece.**

(j) Tin field coil lead wires.

(k) Coil each field lead wire around the slip ring lug, starting first wrap against shoulder of lug and winding outward. Solder with resin core solder (Fig. 26).

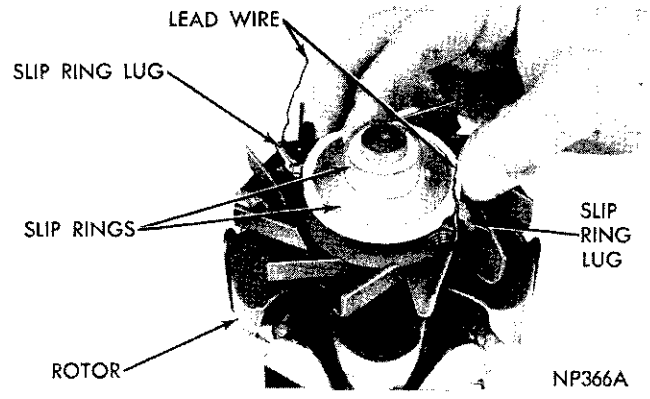


Fig. 24—Aligning Slip Ring with Field Lead Wires

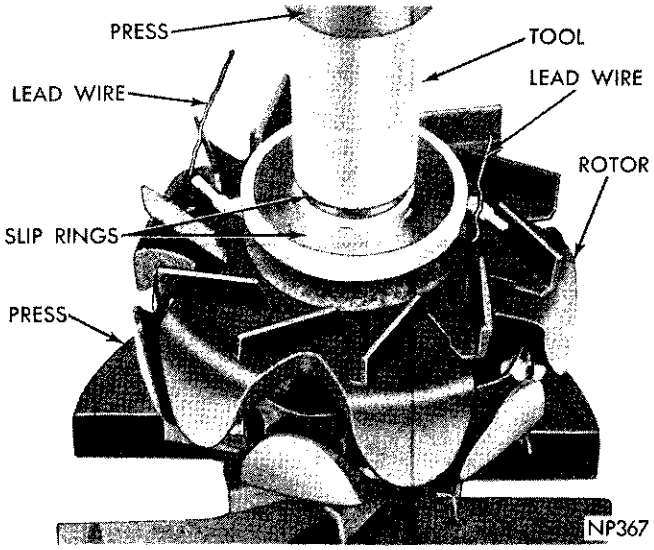


Fig. 25—Installing Slip Rings

(l) Test slip rings for ground with a 110 volt test lamp by touching one test lead prod to rotor pole piece and remaining prod to slip ring. Test lamp should not light. If lamp lights, slip rings are shorted to ground.

(m) Test slip ring for continuity by placing one test prod on the positive and the other test prod on the ground slip ring. Light should go on showing the field circuit is completed.

(n) If rotor is not grounded and field circuit is continuous, lightly clean slip rings surface with 00 sandpaper.

(o) Position grease retainer on rotor shaft and press retainer on shaft with installer Tool C-3921 (Fig. 27). The plastic retainer is properly positioned

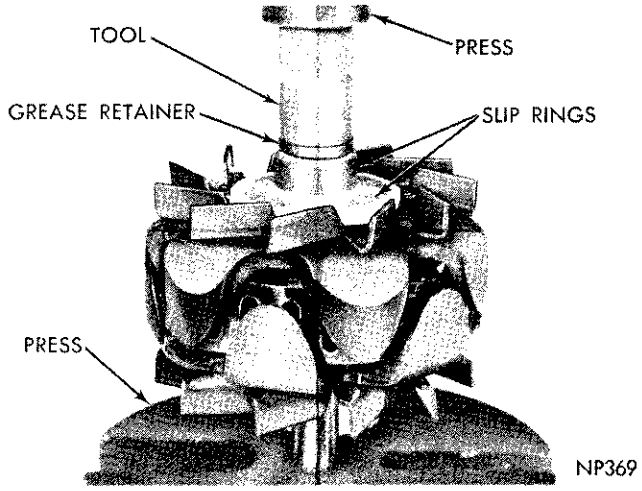


Fig. 27—Installing Grease Retainer

when the inner bore of the installer tool bottoms on the rotor shaft.

ASSEMBLING THE ALTERNATOR

(1) Check rectifier identification to make sure correct rectifier is being installed. Refer to Parts List for rectifier identification.

(2) Start rectifier squarely into mounting hole.

(3) Support heat sink or rectifier end shield on installer adapter of Tool C-3928. With the installing adapter positioned on the rectifier, carefully apply pressure with tool pressure screw until the installer tool, rectifier, rectifier end shield or heat sink are in alignment and after determining that rectifier is started squarely in the casting, slowly apply pressure with tool pressure screw until you feel the collar of rectifier bottom against casting (Fig. 28). **Make sure installer support adapter fits square around the rectifier inner boss and that pressure is applied on outer rim of rectifier.**

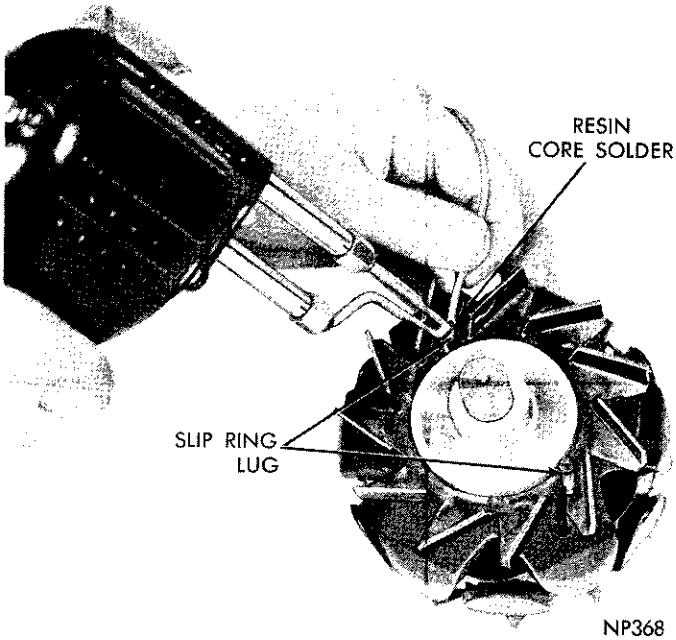


Fig. 26—Solderng Field Coil Leads

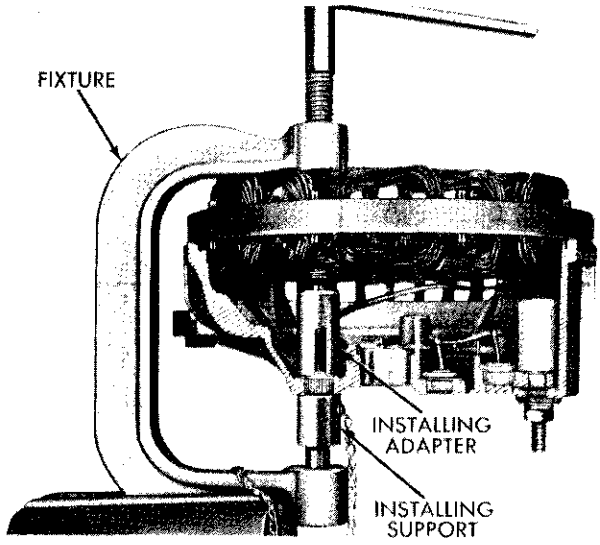


Fig. 28—Installing a Rectifier

CAUTION: DO NOT USE a hammer to start the rectifier into its bore in end shield. DO NOT HAMMER OR SHOCK the rectifier in any manner as this will fracture the thin silicon wafer in the rectifier causing complete rectifier failure.

(4) Clean the leads and mate stator lead with rectifier wire and bend the loop snugly around stator lead to provide a good electrical and mechanical connection. Solder wires with resin core solder. Hold rectifier lead wire with pliers just below the joint while soldering (Fig. 29). Pliers will absorb heat from the soldering operation and protect rectifier. **After soldering, quickly cool soldered connection; touch a dampened cloth against it. This will aid in forming a solid joint.**

(5) After soldering, stator leads must be pushed down into the slots cast into the end shield and cemented with Cement Part Number 2299314 or equivalent to protect the leads against possible interference with the rotor fans. Test each replacement rectifier to make certain rectifier was not damaged by the soldering or pressing operations.

(6) Support end shield on Tool C-3925 so that notches in the support tool will clear the raised section of the heat sink and press the bearing into position with Tool SP-3381 (Fig. 30), until bottomed on support tool. **New bearings are pre-lubricated, additional lubrication is not required.**

(7) Insert drive end bearing in drive end shield and install bearing retainer plate to hold bearing in place.

(8) Position bearing and drive end shield on rotor shaft and, while supporting base of rotor shaft, press bearing and shield into position on rotor shaft with arbor press and Tool C-3858 (Fig. 31).

CAUTION: Make sure bearing is installed squarely at installation; otherwise, damage to bearing will result. Press bearing on rotor shaft until bearing contacts shoulder on rotor shaft fan hub.

(9) Install pulley on rotor shaft. Shaft of rotor must be supported in a manner so all pressing force is on pulley hub and rotor shaft (Fig. 32). **Press pulley on rotor shaft until pulley contacts inner race of drive and bearing. Do not exceed 6800 pounds pressure. Do not hammer.**

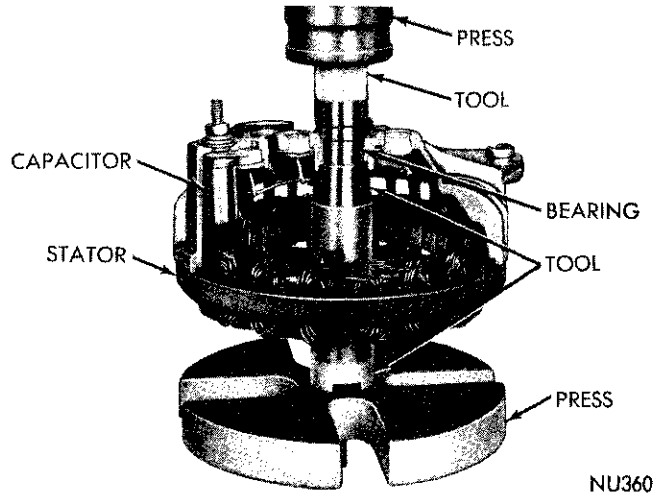


Fig. 30—Installing Rectifier End Shield Bearing

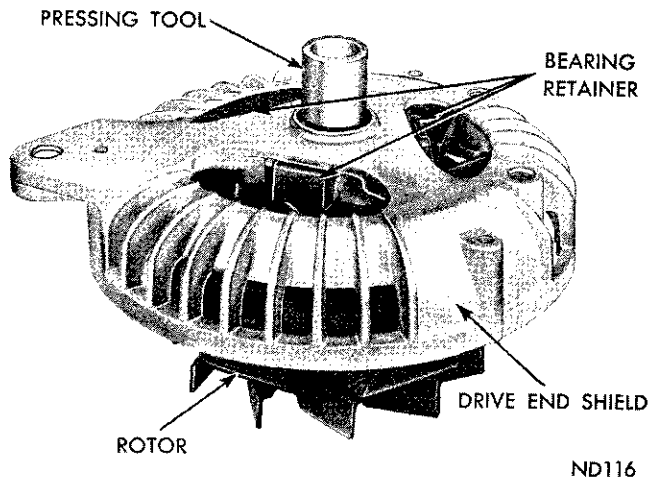


Fig. 31—Installing Drive End Shield Bearing

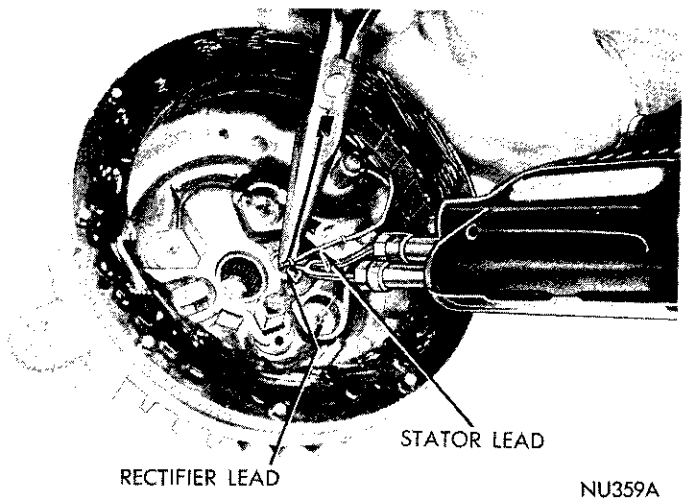


Fig. 29—Soldering Rectifier and Stator Leads

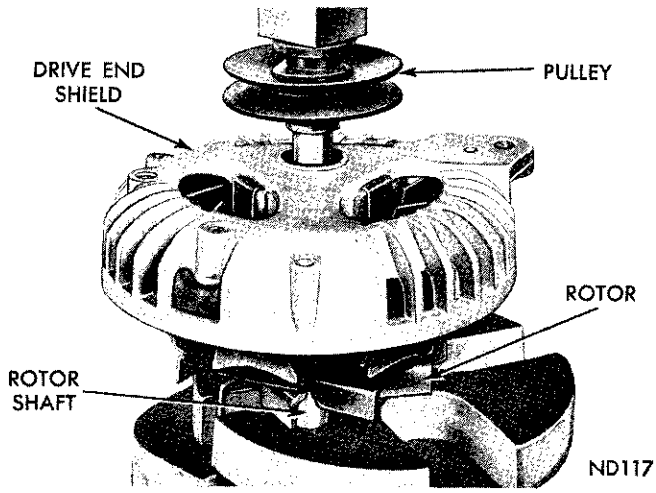


Fig. 32—Installing Alternator Pulley

(10) The alternators have the capacitor mounted internally. Make sure heat sink insulator is in place (Fig. 20).

(11) Install output terminal screw and capacitor through heat sink and end shield.

(12) Install insulating washers, lockwashers and lock nuts.

(13) Make sure heat sink and insulator are in position then tighten lock nut.

(14) Position stator on rectifier end shield.

(15) Position rotor and end shield assembly on stator and rectifier end shield assembly. Align through bolt holes in the stator, rectifier end shield and drive end shield.

(16) Compress stator and both end shields by hand and install through bolts, washers and nuts. Tighten bolts evenly to 20-30 inch-pounds.

(17) Install field brushes in holder. Place one vertical and one horizontal holder in rectifier and shield.

(18) Place nylon washer on each terminal and install lockwashers and attaching screws.

(19) Rotate pulley slowly by hand to be sure rotor fans do not hit rectifiers, capacitor lead, and stator connections.

(20) Install alternator and adjust drive belt to specifications.

(21) Connect (output) "BAT" and (field) "FLD" leads and connect ground wire.

(22) Connect battery ground cable.

(23) Start and operate engine, and observe alternator operation.

(24) Test current output and regulator setting.

IGNITION SYSTEM—8 CYLINDER

INDEX

	Page		Page
Assembling the Distributor	32	Idle R.P.M. Test	30
Ballast Resistor	36	Ignition Coil	36
Contact Arm Spring Tension	32	Ignition Timing	31
Distributor Contact Dwell	31	Installation and Aligning Contacts	34
Distributor Contacts	33	Lubrication	35
Distributor Disassembly	32	Secondary Circuit Inspection	29
Distributor Lubrication	35	Service Diagnosis	28
Distributor Installation	35	Shaft and Bushing Wear Test	32
Distributor Removal	32	Spark Plugs	36
Distributor Resistance Test	30	Specifications	85
Dwell Variation	31	Testing Distributor Advance	35
General Information	28		

GENERAL INFORMATION

The ignition system consists of two separate circuits. The battery, ammeter, ignition switch, ballast resistor, primary winding of the ignition coil, distributor contacts and condenser, vehicle frame, and primary wiring make up the low voltage primary circuit. The secondary high voltage circuit includes the coil secondary winding, distributor cap and rotor, spark plug cables, spark plugs and vehicle frame.

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
BURNED OR PITTED DISTRIBUTOR CONTACTS	(a) Dirt or oil on contacts.	(a) If oil is on contact face, determine cause and correct condition. Clean distributor cam of dirt and grease, apply a light film of distributor cam lubricant to cam lobes; wipe off excess. See "Distributor Lubrication." Replace contact set and adjust as necessary.
	(b) Alternator voltage regulator setting too high.	(b) Test alternator voltage regulator setting. Replace distributor contact set and adjust as necessary.
	(c) Contacts misaligned or gap too small.	(c) Align and adjust contacts.
	(d) Faulty coil.	(d) Test and replace coil if necessary. Replace and adjust contacts.
	(e) Ballast resistor not in circuit.	(e) Inspect conditions, and correctly connect the coil.

Condition	Possible Cause	Correction
	(f) Wrong condenser or faulty condenser.	(f) Test condenser and replace if necessary. Replace and adjust contacts.
	(g) Faulty ignition switch.	(g) Replace ignition switch.
	(h) Bushings worn.	(h) Replace housing.
	(i) Touching contacts with the hands during installation.	(i) Replace and adjust contacts.
IGNITION COIL FAILURE	(a) Coil damaged by excessive heat from engine.	(a) Replace coil. Inspect condition of the distributor contacts.
	(b) Coil tower carbon-tracked.	(b) Replace the coil.
	(c) Oil leak at tower.	(c) Replace the coil.

SERVICE PROCEDURES

SECONDARY CIRCUIT INSPECTION

Check high tension cable connections for good contact at the coil and distributor cap towers and at the spark plugs. Terminals should be fully seated. The nipples and spark plug covers should be in good condition. Nipples should fit tightly on the coil cap towers and spark plug covers should fit tight around spark plug insulators. Cable connections that are loose will corrode and increase the resistance and permit water to enter the towers causing ignition malfunction. **To maintain proper sealing between the towers and nipples, cable and nipple assemblies should not be removed from the distributor or coil towers unless nipples are damaged or cable testing indicates high resistance or broken insulation.**

Clean high tension cables with a cloth moistened with a non-flammable solvent and wipe dry. Bend cables to check for brittle or cracked insulation.

When testing secondary cables for punctures and cracks with an oscilloscope follow the instructions of the equipment manufactures.

If an oscilloscope is not available, secondary cables can be tested as follows:

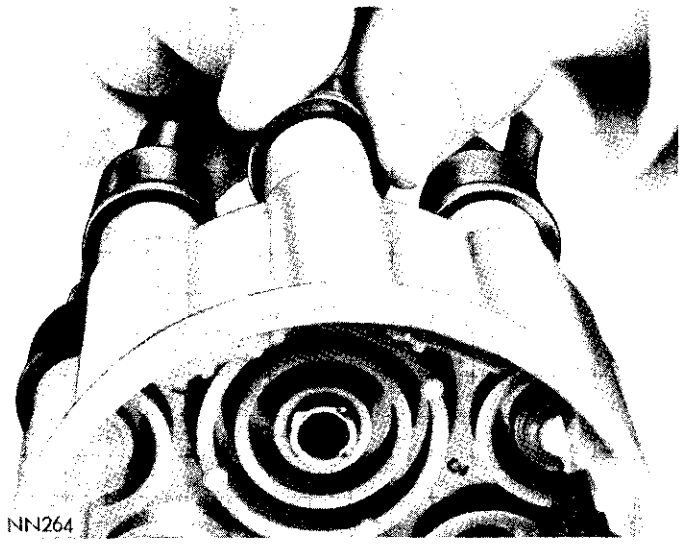


Fig. 1—Installing Secondary Cable and Nipple at Distributor Cap Tower

(a) Engine not running, connect one end of a test probe to a good ground, other end free for probing.

(b) Disconnect cable at spark plug end. Insulate cable end from grounding.

(c) With engine running, move test probe along entire length of wire. If punctures or cracks are present there will be a noticeable spark jump from the faulty area to the probe. Secondary coil wire may be checked in the same manner, be sure one spark plug cable is disconnected from spark plug while running probe along coil wire secondary cable. Cracked, leaking or faulty cables should be replaced.

When installing new cable assemblies, install new high tension cable and nipple assembly over cap or coil tower, entering the terminal into the tower, push lightly, then pinch the large diameter of the nipple (Fig. 1) to release trapped air between nipple and tower. Continue pushing on the cable and nipple until cables are properly seated in the cap towers. Use the same procedure to install cable in coil tower (Fig. 2).

Use the following procedure when removing the high tension cable from the spark plug. First, remove the cable from the retaining bracket. Then grasp the insulator as close as possible to the spark plug and use a straight and steady pull (Fig. 3). **Do not use pliers and do not pull the cable at an angle.** Doing so will damage the insulation, cable terminal or the

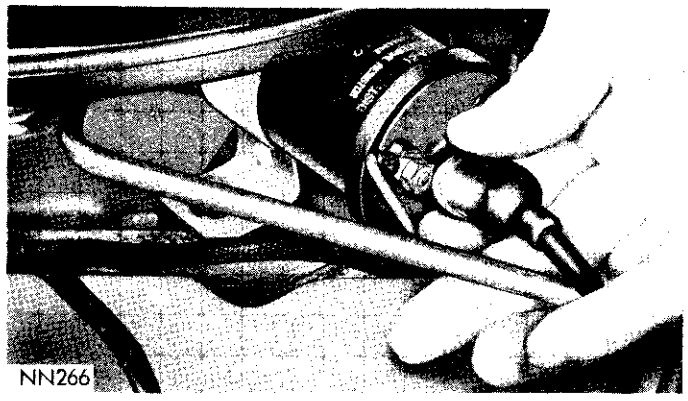


Fig. 2—Installing Secondary Cable and Nipple at Coil Tower

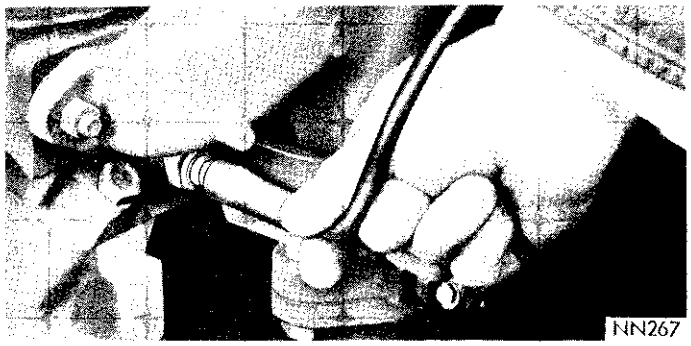


Fig. 3—Removing Secondary Cable and Cover from Spark Plug (Typical)

spark plug insulator. **Wipe spark plug insulator clean before reinstalling cable and cover.**

Resistance type cable is identified by the words "Electronic Suppression" printed on the cable jacket. No additional resistors are necessary.

Use an ohmmeter to check resistance type cable for open circuits, loose terminals or high resistance as follows:

(a) Remove cable from spark plug and install the proper adapter between cable and spark plug.

(b) Lift distributor cap from distributor with cables intact. **Do not remove cables from cap.**

(c) Connect the ohmmeter between spark plug adapter and the corresponding electrode inside the cap, making sure ohmmeter probes are in good contact. If resistance is more than 30,000 ohms, remove cable at cap tower and check the cable resistance. If resistance is more than 30,000 ohms on cables under twenty-five inches long or 50,000 ohms on cables over twenty-five inches long, replace cable assembly. Test all spark plug cables in same manner.

To test coil to distributor cap high tension cable, remove distributor cap with the cable intact. **Do not remove cable from the coil or cap.** Connect the ohmmeter between center contact in the cap and either primary terminal at coil. If the combined resistance of coil and cable is more than 25,000 ohms, remove the cable at coil tower and check cable resistance. If resistance is more than 15,000 ohms, replace the cable. If resistance is less, check for a loose connection at the tower or for a faulty coil.

Inspect coil tower for cracks, carbon tracking or oil leaks.

DISTRIBUTOR RESISTANCE TEST

This test indicates the resistance of the ignition primary circuit from the distributor side of the coil, through the points and the distributor ground. Excessive resistance in this portion of the ignition system will prevent the coil from producing sufficient output for good over-all ignition. To perform test, proceed as follows:

(1) Turn Selector Switch of a Tach-Dwell unit to CALIBRATE position and adjust Dwell Calibrator until Dwell Meter reads on the set line (test leads separated).

(2) Leave Selector Switch in CALIBRATE position. connect Tach-Dwell red lead to distributor terminal of coil and black lead to a good ground.

(3) Turn ignition switch "ON." Observe dwell meter reading. Meter pointer should be well within bar marked "DISTRIBUTOR RESISTANCE." If reading is zero or outside of bar, crank engine with the starter until meter pointer moves as far to right as possible. (This will indicate that contacts are closed.) A reading now within the bar indicates a normal distributor primary circuit.

If reading is outside the bar, high resistance is present in distributor primary circuit.

(4) Remove test lead from distributor terminal of coil and connect to the following points:

(a) Distributor primary terminal (outside).

(b) Distributor primary terminal (inside).

(c) Contact terminal bracket (insulated bracket).

(d) Ground side of the contacts.

(e) Distributor housing.

(5) Repeat test at each connection until a noticeable change occurs in the meter reading. If a poor connection or faulty lead in indicated, clean, tighten or replace as necessary and repeat test (3).

If faulty contacts are indicated remove distributor for complete inspection, service, testing and calibration.

IDLE RPM TEST

Engine idle rpm setting should be tested and recorded as it is when the vehicle is first brought into the shop for testing. This will assist in diagnosing complaints of engine stalling, creeping and hard shifting on vehicles equipped with automatic transmissions.

Test procedures are as follows:

(1) Turn Selector Switch to CALIBRATE position and adjust Dwell Calibrator until Dwell Meter reads on SET line (test leads separated).

(2) Connect red lead of the test unit to distributor primary terminal at coil and black lead to a good ground.

(3) Turn Selector Switch to 8 LOBE position.

(4) Turn the Tach-Dwell RPM Switch to the 1000 rpm position.

(5) With engine at normal operating temperature (off fast idle), momentarily open the throttle and release to make sure there is no bind in the linkage and that idle speed screw is against its stop.

(6) Note engine RPM on 1000 RPM scale and adjust carburetor idle speed to specifications. See "Fuel System" specifications.

DISTRIBUTOR CONTACT DWELL

The degrees of distributor dwell are the degrees of rotation through which the contacts remain closed. This is also commonly referred to as "dwell angle" or "cam angle."

The correct distributor point dwell is essential for good ignition performance and contact point life.

Test procedures are as follows:

(1) Disconnect vacuum line.

(2) Connect Tach-Dwell red lead to distributor terminal of coil and black lead to a good ground.

(3) Turn Selector Switch to 8 LOBE position.

(4) Start engine and operate engine at idle speed.

(5) Observe dwell meter reading. If the dwell reading is within "Specifications" the contact gap, cam rubbing block and contact arm are all in satisfactory condition.

If dwell reading is not within specifications, incorrect contact gap, worn cam, worn rubbing block or distorted contact arm may be indicated.

DWELL VARIATION

This test indicates the mechanical condition of the distributor. Excessive wear in distributor mechanical parts cause dwell variations which will affect ignition timing.

Test procedures are as follows:

(1) With engine at idle speed, **vacuum hose disconnected,** and test leads connected as in "Contact Dwell Test," turn Tach-Dwell RPM Switch to the 5,000 RPM position.

(2) Slowly increase engine speed to 1500 RPM then slowly reduce to idle speed while observing dwell meter reading.

If dwell reading varies more than 2 degrees from initial reading between idle speed and 1500 RPM, probable wear in the distributor shaft, bushings or contact plate bearing and pivot pin is indicated. Remove distributor for complete inspection and testing on a distributor tester. **Dwell variation at speeds above 1500 does not necessarily indicate distributor wear. Dwell and gap of the contacts must both be within their specified limits at the same time. If this cannot be accomplished, it is probable that wrong contacts are installed or the rubbing block or cam lobes are badly worn or movable contact is distorted.**

IGNITION TIMING (383 Cu. In. 440 Cu. In)

(Solenoid Distributor—Fig. 4)

To obtain maximum engine performance, the distributor must be correctly positioned on the engine to give proper ignition timing. The ignition timing test will indicate the timing of the spark at No. 1 cylinder at curb idle (Hot only).

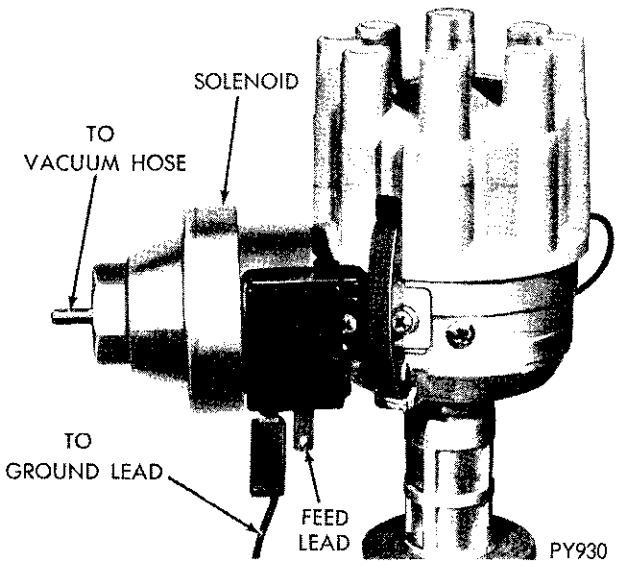


Fig. 4—Solenoid Retard Distributor Connections

Test procedures are as follows:

(1) Disconnect vacuum hose at distributor, and plug hose.

(2) Connect the secondary lead of a power timing light to No. 1 spark plug, red primary lead to positive terminal of the battery and the black primary lead to the negative battery terminal. **Do not puncture cables, boots or nipples with test probes. Always use proper adapters. Puncturing the spark plug cables with a probe will damage the cables. The probe can separate the conductor and cause high resistance. In addition breaking the rubber insulation may permit secondary current to arc to ground.**

(3) Loosen the distributor hold-down mounting screw just enough so distributor housing can be rotated in its mounting.

(4) Start the engine and set the curb idle as shown in "Specifications." (Transmission in Neutral and Engine Hot).

(5) Aim the power timing light at the timing marks on the chain case cover. If the timing light flash occurs when the timing mark on the vibration damper is located ahead of specified degree mark on the timing plate. The timing is advanced. To adjust turn distributor housing **(Not Vacuum Chamber)** Counter clockwise. **Do not use vacuum chamber as a turning handle.** If the timing light flash occurs when the timing mark on the vibration damper is located past the specified degree mark on the timing plate. The timing is retarded. **To adjust turn distributor housing clockwise.** Timing may vary from the specified specifications a plus or minus 2-1/2° and still fall within range, but if the timing is checked it should be adjusted to the specification shown on the distributor charts.

(6) To check the distributor solenoid for proper operation, disconnect the wire at the carburetor. Aim

the power timing light at the timing marks on the chain case. The timing should advance at least 5-1/2° and the engine speed should increase.

(7) Stop the engine and tighten the distributor hold-down screw.

(8) Reconnect the wire at the carburetor throttle stop.

(9) Reconnect the vacuum hose to the distributor.

(10) Remove the timing light.

Ignition Timing (with C-744 Test Lamp)

(1) Connect C-744 test lamp between distributor primary terminal and battery positive post.

(2) Turn engine until number 6 exhaust valve is just closing; continue turning engine slowly until specified degree mark on the crankshaft pulley is at specified degree mark at timing case cover.

(3) Loosen distributor clamp bolt so distributor housing can be rotated with a slight drag, then turn distributor in the normal rotation until test lamp lights.

(4) Turn distributor against normal distributor rotation until test lamp goes out. **If test lamp lights immediately when connected, turn distributor against normal distributor rotation until light goes out.**

(5) Tighten distributor clamp bolt securely and remove test lamp. If the operation is performed properly the engine is timed to specifications. **If engine is turned beyond the timing mark, continue turning engine for two full revolutions of the crankshaft; this will place the distributor rotor in approximately the initial position.**

CAUTION: DO NOT reverse rotation of the crankshaft, if you have passed the timing mark as this would affect valve timing and distributor timing.

DISTRIBUTOR REMOVAL

(1) Disconnect vacuum hose at distributor.

(2) Disconnect primary lead wire at coil.

(3) Unfasten distributor cap retaining clips and lift off distributor cap.

(4) Scribe a mark on the edge of distributor housing to indicate position of the rotor as reference when reinstalling distributor.

(5) Remove distributor hold-down clamp screw and clamp.

(6) Carefully lift distributor from engine.

SHAFT AND BUSHING WEAR TEST

(1) Remove distributor rotor.

(2) Disconnect primary lead wire at distributor terminal. DO NOT LOOSEN inner nut that holds movable contact arm tension spring to terminal post.

(3) Clamp the ribbed section of distributor housing lightly in a vise equipped with soft jaws and attach dial indicator to body of distributor with the indicator plunger arm resting against movable contact arm at the rubbing block and with the rubbing block of contact arm on the highest point of cam lobe (Fig. 5).

(4) Place one end of a wire loop around the top of distributor shaft. Hook a spring scale in the other end of wire loop and pull on a line with the plunger of indicator gauge. Be sure wire loop on shaft end is down on the shaft to insure a straight pull and also that wire loop does not interfere with indicator or holding bracket. Apply a five pound pull and read the movement of plunger on indicator dial. (Be sure rubbing block of contact arm is on highest point of the cam lobe during this test.) If plunger movement exceeds .006 inch, replace bushings and/or distributor shaft, see "Distributor Disassembly."

DISTRIBUTOR DISASSEMBLY (Figs. 4 and 6)

(1) Remove distributor rotor. **The distributor cap clamp springs on Chrysler built distributors are held in place by peened metal around the openings and should not be removed.**

(2) Remove the two screws and lockwashers attaching vacuum advance unit to distributor housing and remove the advance unit.

(3) Remove primary lead wire and rubber grommet as an assembly. Push grommet towards inside of distributor to remove. **Do not pull on the wire.**

(4) Remove two screws, and lockwashers attaching the contact plate to housing and lift out the contact plate, contacts and condenser as an assembly.

(5) If side play exceeded .006 inch in "Shaft and Bushing Wear Test," replace housing and bushings or shaft and cam assembly as necessary.

ASSEMBLING THE DISTRIBUTOR

(1) Test operation of governor weights and inspect weight springs for distortion. Lubricate governor weights.

(2) Inspect all bearing surfaces and pivot pins for roughness, binding or excessive looseness.

(3) Install contact plate assembly. Align condenser lead, contact point spring, primary lead and install attaching screw.

(4) Install vacuum unit attaching screws and washers.

(5) Test contact arm spring tension, and adjust contact gap.

(6) Lubricate felt pad in the top of distributor cam with 1 drop of light engine oil and install rotor.

CONTACT ARM SPRING TENSION

(1) Hook a spring scale Tool MTU-36 on the breaker arm and pull in a straight line at a right angle

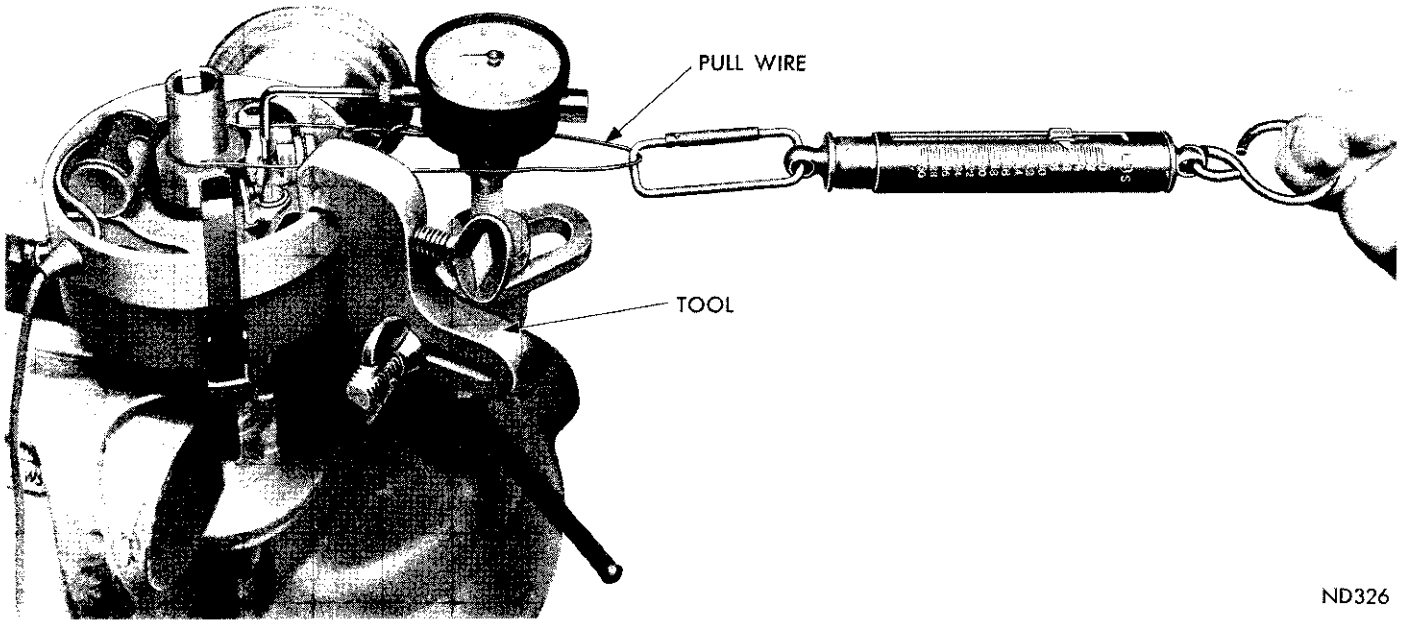


Fig. 5—Shaft and Bushing Wear Test

to the contact surfaces (Fig. 7). Take a reading as the contacts start to separate under the slow and steady pull of the scale. Spring tension should be as shown in specifications. If the reading is outside these limits, loosen the screw which holds the end of the contact arm spring, and slide the end of the spring in or out, as necessary.

(2) Tighten the screw and measure the spring tension. **Just the right amount of contact spring tension is very important for effective ignition and efficient engine performance. Spring tension that is too great, will cause excessive wear on the distributor cam and on the nylon block of the movable contact arm. Spring tension that is too weak, is unable to keep the contacts in contact with each other when they close. This is particularly true as engine speed is increased, causing high-speed misfiring.**

DISTRIBUTOR CONTACTS

Contact Wear

Contacts which have undergone several thousand miles of operation will have a rough surface, but this should not be interpreted as meaning that the contacts are worn out. If the contact area has a gray color and the roughness between the contacts matches so that a large contact area is maintained, the contacts will continue to provide satisfactory service.

However, if the contact area is oily, mottled or dark in color, or is badly pitted, the contacts will soon become unsatisfactory for further operation. Not only must they be replaced, but the ignition system and engine must be checked to determine the cause of the trouble so it can be eliminated. **Unless the condition causing contact burning or excessive pitting is corrected, new contacts will provide no better service than the old contacts.**

Burning of Contacts

Contact burning will result from high primary voltage, presence of oil or other foreign material, defective condenser and improper contacts adjustment. High voltage causes an excessively high current flow through the contacts which burns them rapidly. High voltage can result from an improperly adjusted or inoperative voltage regulator.

Oil or crankcase vapors which work up into the distributor and deposit on the contact surfaces will cause them to burn rapidly. This is easy to detect since the oil produces a smudgy line under the contacts. Clogged engine breather pipes permit crankcase pressure to force oil or vapors up into the distributor. Over-oiling of the distributor will also cause burning of the contacts.

If the contact opening is too small (cam angle too large), arcing will occur between the contacts resulting in low secondary voltage and engine miss.

High series-resistance in the condenser circuit will prevent normal condenser action so the contacts will burn rapidly. This resistance may be caused by a loose condenser mounting or lead connection, or by poor connections inside the condenser.

Pitting of Contacts

Contact pitting results from the transfer of material from one contact to the other so that a tip builds up on one contact while a pit forms in the other.

A small amount of pitting in several thousand miles is normal and does not affect the distributor operation. However, excessive pitting such as long sharp

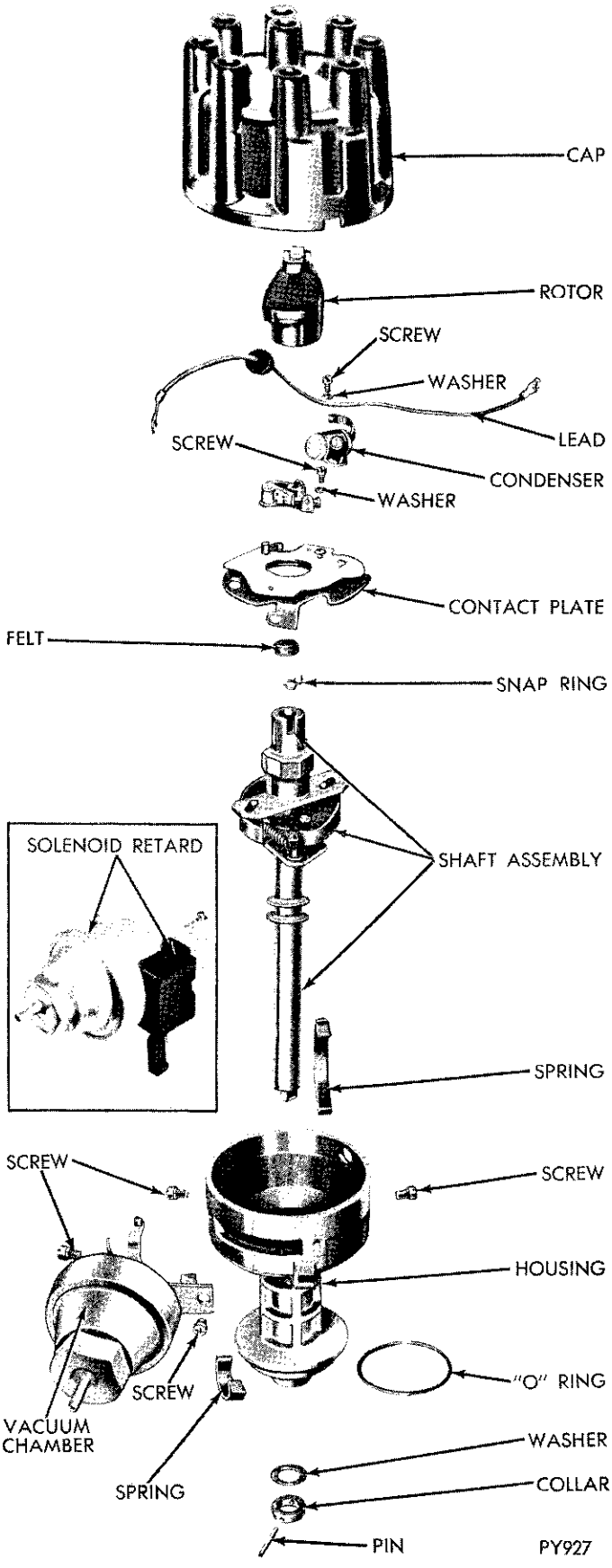


Fig. 6—Distributor (Disassembled View) (Typical)

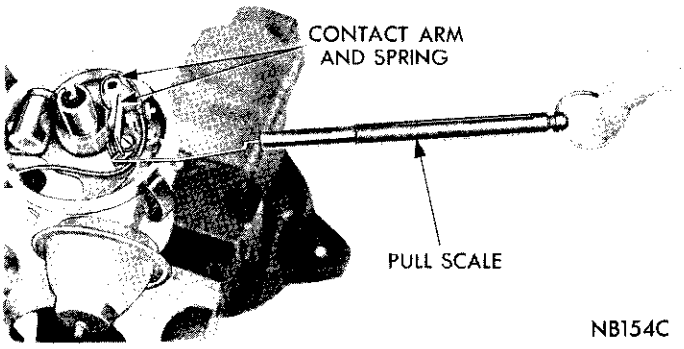


Fig. 7—Testing Contact Arm Spring Tension

spikes is harmful and causes arcing and voltage loss. Contacts with this condition should be replaced.

Excessive pitting can be due to too small a contact opening, high primary voltage or wrong condenser capacity. Inspect to be certain the condenser capacity, contact spring tension and contact gap are within specified ranges. See "Specifications".

INSTALLING AND ALIGNING CONTACTS

(1) Loosen terminal screw nut, and remove primary lead and condenser lead.

(2) Remove stationary contact lock screw and remove old contact set.

(3) Install a new contact set; the sleeve at one end of adjustable bracket fits over and pivots on upper contact plate mounting pin.

(4) Connect condenser and primary leads.

(5) Align contacts, if necessary, by bending stationary contact bracket only. **Never bend** movable contact arm to obtain alignment.

(6) After aligning contacts, adjust contact clearance to "Specifications," using dial indicator (Fig. 8). Recheck contact arm spring tension.

(7) Test dwell angle to show proper degree of closure. See Paragraph, "Distributor Contact Dwell."

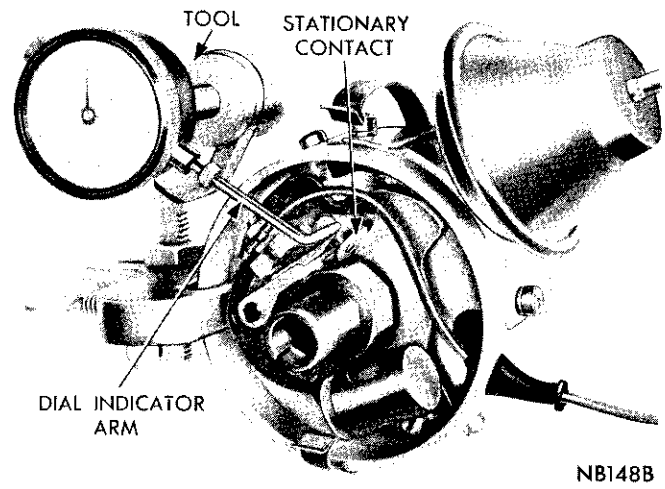


Fig. 8—Adjusting Contact Clearance with Indicator

The lock screw should be loosened just enough so stationary contact bracket can be moved with a slight drag; otherwise, it will be difficult to set contacts accurately. After setting contacts to the correct gap, tighten stationary bracket lock screw.

DISTRIBUTOR LUBRICATION

(1) Lubricate felt wick under the rotor in top of distributor cam with 1 drop of SAE 10W oil.

(2) Wipe the distributor cam free of dirt and old grease with a clean lintless cloth. Apply a light film of new distributor cam lubricant Number 1473595 or equivalent over the entire cam surface. Lubricant must be able to adhere to the cam surface thereby resisting being thrown from the cam by centrifugal force, must not melt at operating temperatures and must not harden or dry out with age, must not chemically react or be affected by ozone or cause corrosion or pitting of the metal, must possess moisture control properties to prevent rust formation on the cam.

CAUTION: A thin film is all that is required. Do not over-lubricate. Excess grease will be thrown from the distributor cam when engine is running. If this grease strikes the contacts, arcing and burning of contacts will result.

TESTING DISTRIBUTOR ADVANCE

Centrifugal Advance Curve

Mount distributor assembly (less cap and rotor) in a reliable stroboscope-type distributor tester and proceed with tests as follows: **Clamp around ribbed section of distributor housing. The bottom section of distributor housing is not a machined surface and concentricity would be affected, causing a wobble.**

(1) Turn Tach-Dwell switch to 8 "LOBE" position and Motor Switch to correct direction of rotation. Refer to "Distributor Specifications" in this manual.

(2) Turn battery switch "ON."

(3) Regulate tester speed control to operate distributor at 200 distributor rpm.

(4) Align the "O" of the distributor tester degree ring with any one of the arrow flashes.

(5) Adjust tester speed control to operate distributor at speeds called for under "Specifications" and observe arrow flashes opposite tester degree ring to determine degrees of advance.

(6) If advance is not according to specifications, replace with a new distributor shaft with correct calibration (shaft, cam, yoke, governor weights and springs as an assembly) or with a new distributor assembly, less cap and rotor.

Do Not attempt calibration of Chrysler Built distributors.

Vacuum Diaphragm Leak Test

With distributor mounted in distributor tester and with vacuum unit attached to distributor, proceed as follows:

(1) Place thumb over end of vacuum pump and hose and adjust regulator control knob to give a reading of 20 inches with hose closed off to be sure tester hose does not leak.

(2) Attach tester vacuum pump hose to the tube on the distributor vacuum unit. The vacuum gauge should hold on maximum vacuum obtainable if no leak exists.

(3) Observe contact plate while performing leak test to test response of contact plate. There should be instant response to the pull of the diaphragm, moving the plate without a drag or bind.

(4) If leakage is indicated, replace vacuum unit assembly.

Vacuum Advance Curve

Connect tester vacuum pump hose to the distributor vacuum advance unit and perform operations 1 through 4 under "Centrifugal Advance Curve." Then proceed as follows:

(1) Turn tester vacuum pump "ON." Adjust vacuum pump regulator to vacuum test specifications. See "Specifications" and observe arrow flashes on tester degree ring to determine degrees of advance.

(2) If vacuum advance is above or below specifications, replace vacuum advance unit. Retest vacuum advance curve.

DISTRIBUTOR INSTALLATION

(1) Position distributor on engine. Align rotor with marks previously scribed on distributor housing. **Clean top of cylinder block to insure a good seal between distributor base and block.**

(2) Engage tongue of distributor shaft with slot in distributor and oil pump drive gear. **If engine has been cranked while distributor is removed, it will be necessary to establish the proper relationship between distributor shaft and NO. 1 piston position as follows:**

(a) Rotate crankshaft until number one piston is at top of compression stroke.

(b) Rotate rotor to the position of number one distributor cap terminal.

(c) Lower distributor into the opening, connect primary lead and install distributor cap. Make sure all high tension wires "snap" firm in cap towers. Install distributor hold-down clamp screw. Tighten screw finger tight.

(d) Connect secondary lead of a Power Timing Light to NO. 1 spark plug (using proper adapter). Connect red primary lead to positive terminal of battery and black primary lead to negative battery terminal.

(e) Start and operate engine at idle speed. Rotate distributor housing so that specified timing mark and pointer are in alignment (Moving the distributor housing against shaft rotation advances timing and with shaft rotation retards timing).

(f) Tighten distributor clamp screw after timing has been set and recheck timing adjustment with a Power Timing Light.

(g) If timing is correct, connect vacuum hose to distributor and remove timing light from engine.

IGNITION COIL

The ignition coil is designed to operate with an external ballast resistor. When testing the coil for output, include resistor in tests.

Inspect coil for external leaks and arcing. Always make two tests when testing the coil. One when the coil is cold, the other after the coil has been warmed up.

Test coil according to coil tester Manufacturer's instructions. Test coil primary resistance. Test ballast resistor resistance. Test coil secondary resistance. Replace any coil and ballast resistor that does not meet specifications.

Every time an ignition coil is replaced because of a burned tower, carbon tracking or any evidence of arcing at the tower, the nipple or boot on the coil end of the secondary cable, replace cable. Any arcing at the tower will carbonize the nipple so that placing it on a new coil will invariably cause another coil failure.

If the secondary cable shows any signs of damage, the cable should be replaced with a new cable with a neoprene nipple since the old cable can cause arcing, and therefore, ruin a new coil.

BALLAST RESISTOR

The ballast resistor is a compensating resistance in the ignition primary circuit. During low speed operation, when the primary circuit current flow is high, ballast resistor temperature rises, increasing resistance. This reduces current flow, thereby prolonging ignition contact life. At high speed operation, when primary current flow is low, the ballast resistance cools off allowing more current flow, which is required for high speed operation. During starter operation, the ballast resistor is bypassed, allowing full battery voltage to the ignition primary circuit.

SPARK PLUGS

Spark plug appearance or conditions can reflect a wide variety of engine conditions as follows:

Normal Conditions

Normal conditions (Fig. 9). This plug has been running at the correct temperature in a "healthy" engine. The few deposits present will probably be light tan or gray in color with most regular grades of commercial gasoline. Electrode burning will not be in evidence; gap growth will average not more than about .001"/1000 miles. Chances are the plug, as pictured, could be cleaned, the gap electrodes filed, regapped and reinstalled with good results.

Cold Fouling

Cold fouling or carbon deposits (Fig. 10). This dry black appearance is fuel carbon and can be due to over rich fuel-air mixture, possibly resulting from a faulty choke, clogged air cleaner, improper carburetor idle adjustment, or dirty carburetor. However, if only one or two plugs in a set are fouled like this it is a good idea to check for sticking valves or faulty ignition cables. This condition also results from prolonged operation at idle. If the vehicle is operated extensively at idle and low speeds, improved plug service will be obtained by using the next step hotter spark plugs.

Wet Fouling

Wet fouling (Fig. 11) tells you that the plug has drowned in excess oil. In an old engine, suspect worn rings or excessive cylinder wear. Use of a hotter plug may relieve such fouling, but plugs can't take the place of needed engine overhaul. **Remember that "break-in" fouling of new engines may occur before normal oil control is achieved. In new or recently overhauled jobs, such fouling plugs can be cleaned and reinstalled.**

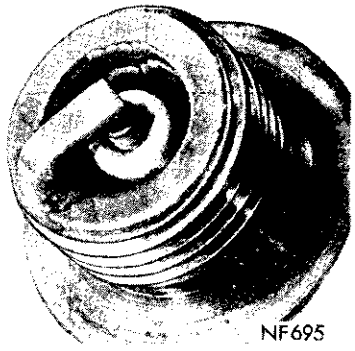


Fig. 9—Normal Conditions

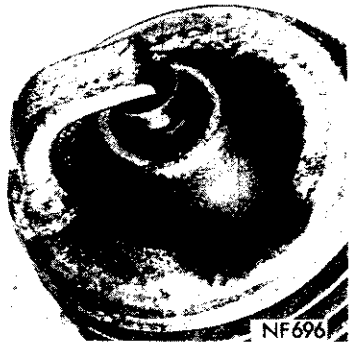


Fig. 10—Cold Fouling

Fig. 11—Wet Fouling

Fig. 12—Overheating

Overheating

Overheating (Fig. 12) is indicated by a white or light gray insulator which appears "blistered." Electrode gap wear rate will be considerable in excess of .001"/1000 miles. This suggests that a cooler heat range should be used . . . however, over-advanced ignition timing detonation and cooling system stoppages can also overheat the correct spark plug heat ranges.

Cleaning and Regapping

Carefully clean the spark plugs in an abrasive type cleaner. Use a pin type feeler gauge to check spark plug gap. Reset gaps to .035 inch. **Before setting spark plug gap, file center electrode flat, make adjustment by bending ground (side) electrode, never bend the center electrode.**

When installing spark plugs, tighten to 30 foot-pounds.

EXTERIOR LIGHTING

HEADLIGHTS

INDEX

	Page		Page
Concealed Headlamps	65	Pre-Aiming Instructions	38
Compensating the Aimers	38	Service Diagnosis	37
General Information	37	Switch	See "Instrument Panel"
Headlight Sealed-Beam Replacement	40	Testing Aimer Calibration	38
Measuring Headlight Aim	39	Visual Headlight Adjustment (Without Aimers)	40
Mounting and Adjusting the Aimers	39		

GENERAL INFORMATION

The dual headlight system consists of four sealed beam bulbs.

The two outboard bulbs are of the two filament type for low and high beam and are marked by a numeral 2 molded in the lens.

The two inboard bulbs have only one filament and are marked with a numeral 1 molded in the glass.

The bulbs cannot be installed wrong as mounting lugs for number one (1) and number two (2) bulbs are offset at different angles.

On high beam, the number one (1) bulbs provide high intensity "reach" down the highway and an off focus filament in number 2 bulbs provide "body" light which illuminates the side of the road, ditches, etc. On low beam only, number 2 bulbs operate.

Manual on and off operation is controlled by a switch mounted on the far left of the instrument panel, while manual operation of the high-low beam is controlled with a foot operated dimmer switch mounted on the left side of the floor pan.

Two automatic controls are offered as optional equipment on all models to control the on-off, high-low operation of the headlight system. When both units are installed on the vehicle, the operation of the headlights becomes completely automatic. The device to control on-off operation is called "Safeguard Sentinel". See Accessories, Group 1. The automatic control for the high-low beam operation is called "Automatic Headlight Beam Changer". See Accessories, Group 1.

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
HEADLIGHTS DIM (engine running above idle)	(a) High resistance in lighting circuit.	(a) Test lighting circuit including ground connection. Make necessary repairs.
	(b) Faulty sealed beam units.	(b) Replace sealed beam units.
	(c) Faulty voltage regulator.	(c) Test voltage regulator and alternator. Make necessary repairs.
LIGHTS FLICKER	(a) Loose connections or damaged wires in lighting circuit.	(a) Tighten connections and check for damaged wiring.
	(b) Light wiring insulation damaged producing momentary short.	(b) Test wiring and replace or tape damaged wires.
LIGHTS BURN OUT FREQUENTLY	(a) High voltage regulator setting.	(a) Adjust or replace voltage regulator.
	(b) Loose connections in lighting circuit.	(b) Tighten connections.

Condition	Possible Cause	Correction
LIGHTS WILL NOT LIGHT	(a) Discharged battery.	(a) Recharge battery and correct cause.
	(b) Loose connections in lighting circuit.	(b) Tighten connections.
	(c) Burned out lamps.	(c) Replace bulbs or sealed beam unit.
	(d) Open or corroded contacts in headlight switch.	(d) Replace headlight switch.
	(e) Open or corroded contact in dimmer switch.	(e) Replace dimmer switch.
HEADLIGHTS DIM (engine idling or shut off)	(a) Partly discharged battery.	(a) Charge battery.
	(b) Faulty battery.	(b) Test battery. Replace if necessary.
	(c) High resistance in light circuit.	(c) Test headlight circuit including ground connection. Make necessary repairs.
	(d) Faulty sealed beam units.	(d) Replace sealed beam units.
	(e) Corroded battery terminals.	(e) Clean terminals.

SERVICE PROCEDURES

PRE-AIMING INSTRUCTIONS

(1) Test dimmer switch operation.

(2) Observe operation of high beam indicator light mounted in instrument cluster.

(3) Inspect for badly rusted or faulty headlight assemblies. These conditions must be corrected before satisfactory adjustment can be made.

(4) Place vehicle on level floor.

(5) Adjust front suspension height as necessary.

(6) Inspect tire inflation.

(7) Rock vehicle sideways to allow vehicle to assume its normal position.

(8) If gasoline tank is not full, place a weight in trunk of vehicle to simulate weight of a full tank (6-1/4 pounds per gallon).

(9) There should be no other load in vehicle other than driver or a substituted weight of approximately 150 pounds placed in driver's position.

(10) Remove each headlight trim panel. Do not remove sealed beam retainer rims.

(11) Thoroughly clean headlight lenses.

COMPENSATING THE AIMERS

(1) Place transit on floor in line with vertical centerline of right front wheel (Fig. 1). Place split image target in like position at right rear wheel.

(2) Adjust range screw on transit until target split image coincides or merges into one unbroken line.

Make sure that line of sight is perpendicular from eye to viewing port of transit and that target image is centered in viewing port of transit.

(3) Turn dial on side of transit until bubble in spirit level is centered.

(4) When bubble is centered, note "plus" or "minus" reading on compensator scale. This figure indicates degree of slope of floor and must be transferred to each aimer.

(5) With a screw driver, turn adjusting slot of floor level compensator in each aimer, until correct plus or minus figure (or fractional part) appears in proper window (Fig. 2).

TESTING AIMER CALIBRATION (Fig. 3)

(1) Using carpenter or stone mason level of known accuracy, locate a true vertical plate glass window or smooth surface.

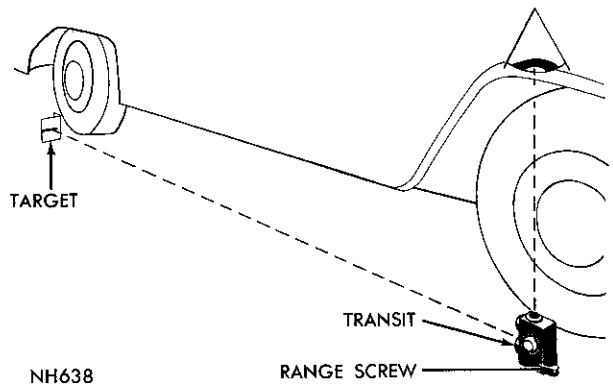


Fig. 1—Determining Slope of Floor

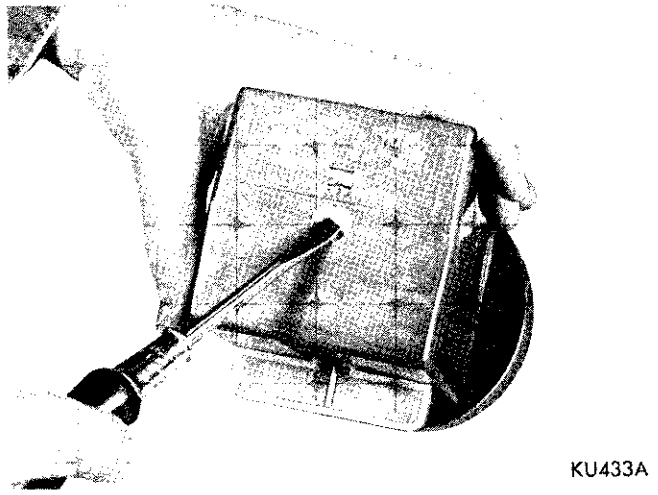


Fig. 2—Adjusting Floor Level Compensators

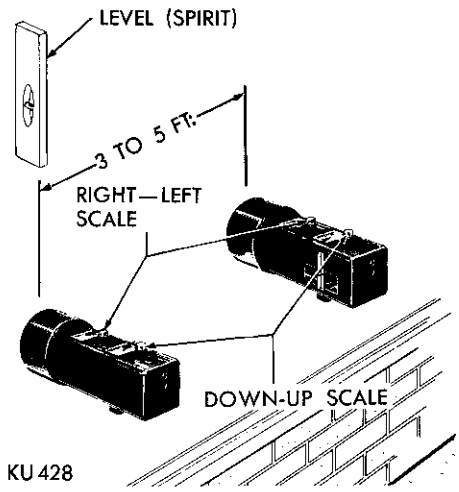


Fig. 3—Checking Aimer Calibration

(2) Set **DOWN-UP** pointer on **DOWN 2.**

(3) Set **RIGHT-LEFT** pointer and floor level compensator at "O."

(4) Secure aimers to glass or smooth surface three to five feet apart so split image targets can be located in viewing ports.

(5) If bubble is centered in glass dial, vertical calibration is correct. If bubble is not centered, make **DOWN-UP** adjustment by rotating level adjusting screw until bubble is centered in spirit level.

(6) The horizontal aim is correct if targets on opposite aimers are aligned in viewing ports. If targets are not aligned in viewing ports, rotate mirror adjusting screw until target split image becomes aligned.

MOUNTING AND ADJUSTING THE AIMERS

(1) While holding an aimer in alignment with lens of one outer headlight, bring aimer up to and against headlight lens.

Make certain that headlight lens pads are making full contact with aimer mounting flange and that aimer target is facing inboard.

(2) Push release lever forward (to expel air from suction cup) and while holding aimer firmly against headlight aiming pads, slowly pull release lever back until spring lock engages in the slot, (Fig. 4).

(3) Mount second aimer on other side of vehicle, in the same manner.

(4) On each aimer, set pointer to numeral 2 on **DOWN** side of **DOWN-UP** scale.

(5) On each aimer position pointer, of **RIGHT-LEFT** scale, at **2-RIGHT.**

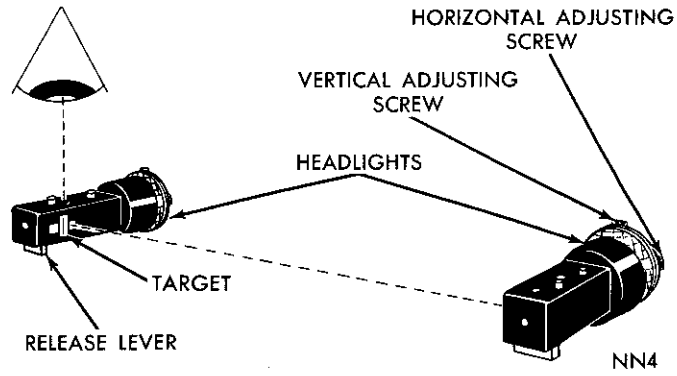


Fig. 4—Mounting and Adjusting Aimers

MEASURING HEADLIGHT AIM

Horizontal Test

Turn the RIGHT-LEFT scale knob until the split image is in alignment. If the **RIGHT** or **LEFT PORTION** of scale exceeds the following values, lights should be aimed.

Values given represent inches at 25 feet.

	Left	Right
No. 1 Unit	4	4
No. 2 Unit	0	4

Vertical Test

Turn **DOWN-UP** scale knob until the spirit level is centered. If **DOWN** or **Up** portion of the scale exceeds the following values, the lights should be aimed.

No. 1 Unit	1/2 down to 3-1/2 down
No. 2 Unit	1/2 down to 3-1/2 down

Horizontal Adjustment

(1) With pointer of **RIGHT-LEFT** scale still set at **2-RIGHT,** sight through aimer viewing port.

Make sure that line of sight is perpendicular from eye to viewing port of aimer and that target image is centered in viewing port of aimer.

(2) While sighting through viewing port of aimer, turn horizontal adjusting screw on headlight until split target image line merges into one unbroken line. To remove backlash, be sure to make a final adjustment by turning headlight horizontal adjusting screw in a clockwise direction (Fig. 5).

(3) Make horizontal adjustment on other side of vehicle in same manner.

Vertical Adjustment

(1) Turn vertical adjusting screw on headlight in a counterclockwise direction to bring bubble of spirit level on aimer to vehicle side of center. Use care to avoid disturbing installed position of aimers. Then turn screw clockwise until bubble is centered for correct aim and elimination of backlash.

(2) Make vertical adjustment on other side of vehicle in same manner.

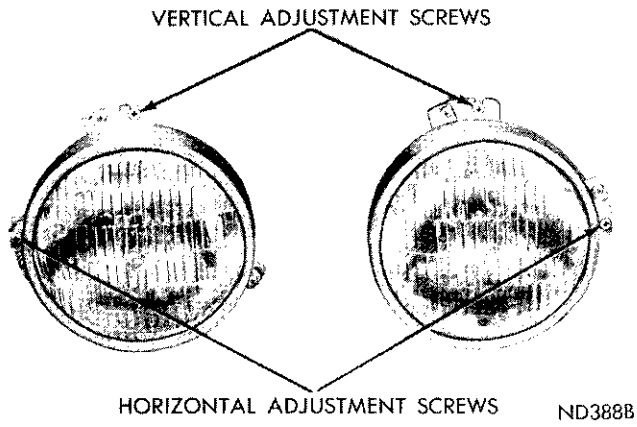


Fig. 5—Headlight Adjusting Points

(3) Inspect target alignment on each side and readjust horizontal aim, if necessary.

Proceed to adjust inboard units by repeating outlined procedure. Install headlight trim panels.

Remove aimers by releasing spring lock at rear (bottom) of aimer and pushing release lever forward. Do not attempt to remove aimers by pulling them away from headlight lens—slide suction cup downward and away from lens.

SEALED BEAM REPLACEMENT (ALL MODELS)

The lens, filament and reflector are sealed into one unit which can be removed as follows:

(1) Remove screws from headlight panel and remove panel.

(2) Remove screws from interior retaining ring, and remove ring. **Do not disturb headlight aimer screws.**

(3) Pull out sealed beam unit and unplug connector, pulling it straight off.

(4) Install new sealed beam unit.

(5) Install unit retaining ring.

(6) Aim the headlight and install headlight panel.

VISUAL HEADLIGHT ADJUSTMENT

Low Beam

Place vehicle on a known level floor 25 feet from aiming screen or light colored wall.

Four lines are required on screen or wall (Fig. 6).

(a) A horizontal line at the level of centers of headlights, line number 3.

(b) A center vertical line which must be lined up with center of hood, line number 5.

(c) A vertical line on left of screen or wall in line with center line of left headlight line number 4.

(d) A vertical line on right of screen or wall in line with center line of right headlight, line number 6.

Remove headlight door. Adjust top adjusting screw for vertical adjustment, adjust side screw for horizontal adjustment. (See Fig. 5).

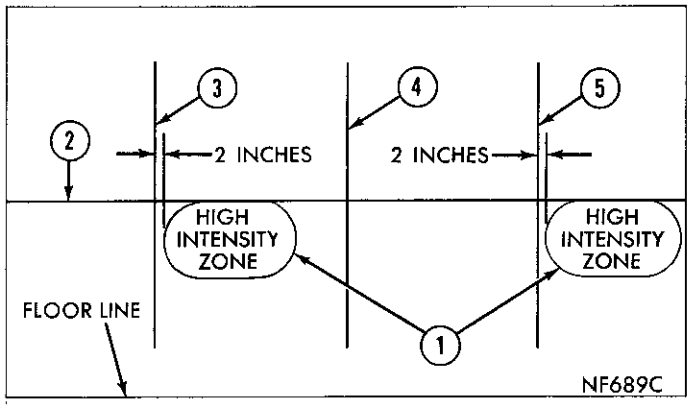


Fig. 6—Low Beam Adjustment Pattern

Adjust low beam of headlights to match the patterns in Figure 6 and the corresponding numbers listed below:

(1) Lower beam pattern of both headlights.

(2) Horizontal line at level of headlight centers.

(3) Vertical line in line with center of left headlight.

(4) Vertical line in line with center of hood.

(5) Vertical line in line with center of right headlight.

High Beam

Adjust high beam of headlights to match the patterns in Figure 7 and the corresponding numbers listed below:

(1) High beam pattern of both headlights.

(2) Horizontal line at level of headlight centers.

(3) Vertical line in line with center of left headlight.

(4) Vertical line in line with center of hood.

(5) Vertical line in line with center of right headlight.

FRONT FENDER TURN SIGNAL INDICATOR LAMPS—CHRYSLER (Fig. 8)

Removal

(1) From under front fender remove one cap nut attaching lamp to fender.

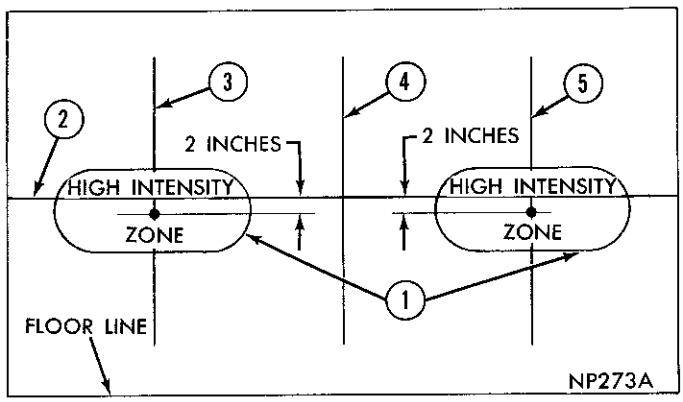


Fig. 7—High Beam Adjustment Pattern

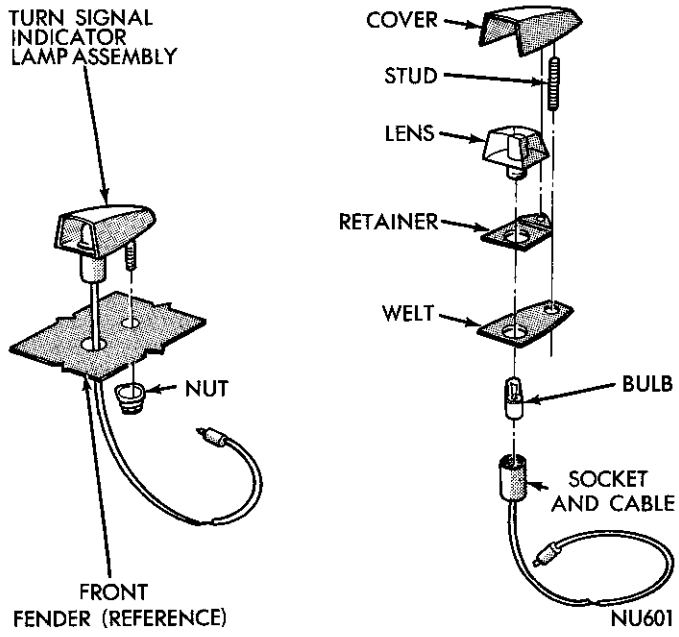


Fig. 8—Front Fender Turn Signal Indicator Lamps—Chrysler

(2) Disconnect lamp socket connector from harness connector and lift lamp up to remove.

To replace bulb, unscrew lamp socket from lens and lift out bulb.

Installation

(1) Enter lamp connector through hole in fender and position lamp and gasket on fender.

(2) Install attaching nut and connect lamp connector to harness.

FRONT FENDER TURN SIGNAL INDICATOR LAMP—Chrysler—Except Station Wagons (Fig. 9)

Removal

(1) Disconnect lamp connector from front end lighting harness.

(2) Remove one screw attaching lamp cover to fender.

(3) Pull lamp and wire assembly up and out of fender.

To replace lamp bulb, remove one screw attaching lamp bracket to lamp cover; snap out lamp lens insert and replace bulb.

Installation

(1) Enter wire and lamp connector through opening in top of fender.

(2) Connect lamp connector to harness connector.

(3) Position lamp on fender and install attaching screw.

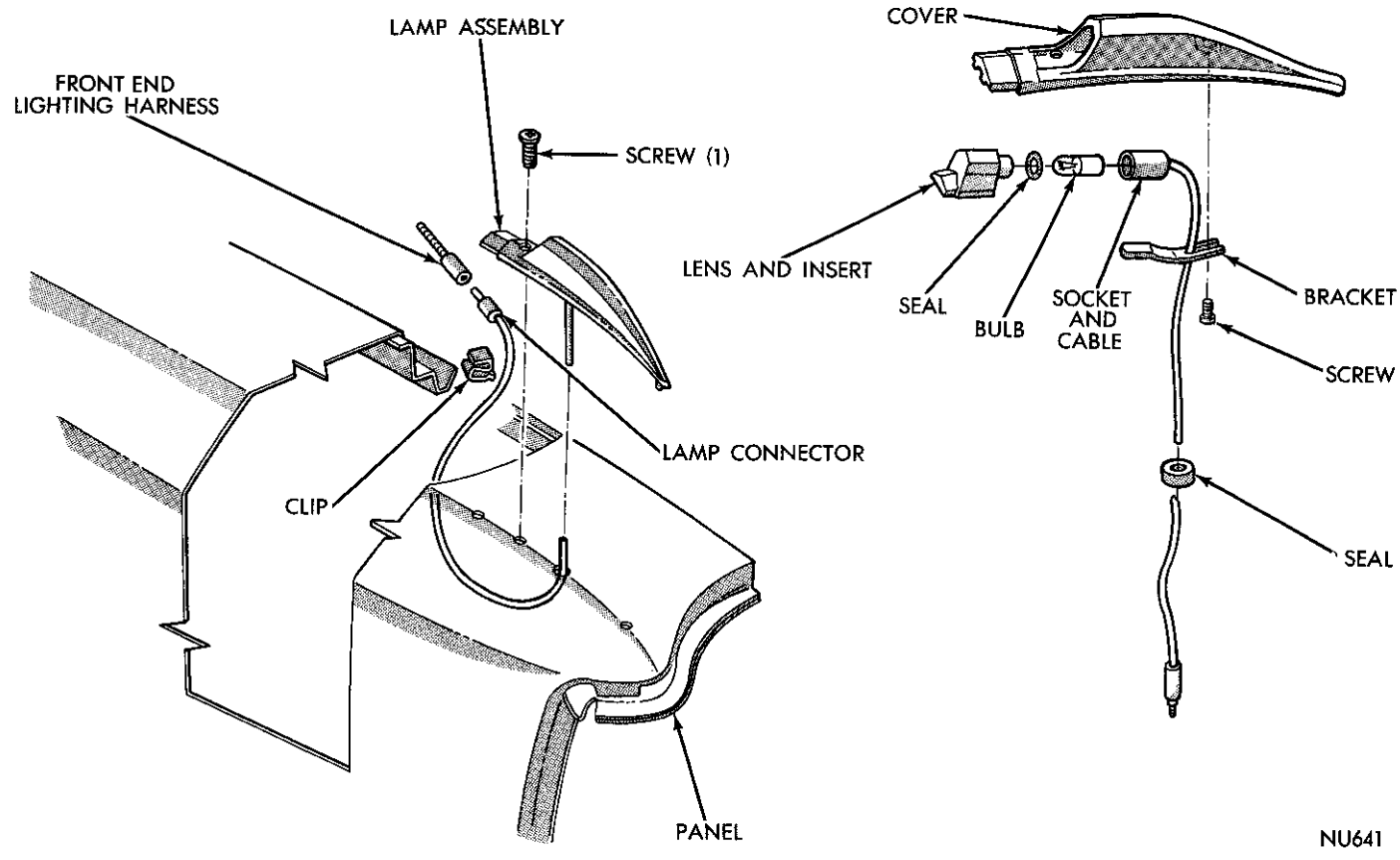


Fig. 9—Front Fender Turn Signal Indicator Lamps—Chrysler—Except Station Wagons

FRONT FENDER TURN SIGNAL INDICATOR LAMPS—Imperial (Fig. 10)

Removal

(1) From under front fender, remove two nuts from indicator lamp cover studs.

(2) Disconnect lamp socket connector from harness connector.

(3) Pull lamp and wiring connector up through top of fender.

To replace lamp bulb, remove two screws attaching lamp lens to housing, unscrew bushing from harness connector and remove bulb.

Installation

(1) Position lamp and wiring connector on fender and install attaching nuts to housing studs.

(2) Connect lamp wiring connector to harness connector.

FRONT BUMPER, PARK AND TURN SIGNAL LAMPS—Chrysler (Fig. 11)

Removal

(1) From under front bumper, disconnect lamp socket connector from harness connector, remove two screws and remove lamp.

To remove lens or bulb, remove two screws from face of lens and remove lens.

Installation

(1) Position lamp on bumper, install attaching screws and connect lamp connector to harness.

FRONT BUMPER, PARK AND TURN SIGNAL LAMPS—Imperial (Fig. 12)

Removal

(1) Remove two screws and lamp bezel.

(2) Remove two screws and pull out lamp assembly, disconnect lamp connector and remove lamp.

To replace lens or bulb, remove bezel and the two screws attaching lens to lamp housing.

Installation

(1) Position lamp on front bumper, connect lamp connector to harness connector.

(2) Install lamp bezel and two attaching screws.

FRONT GRILLE, PARK AND TURN SIGNAL LAMPS—Chrysler (Fig. 13)

Removal

(1) Remove three screws and washers and pull lamp

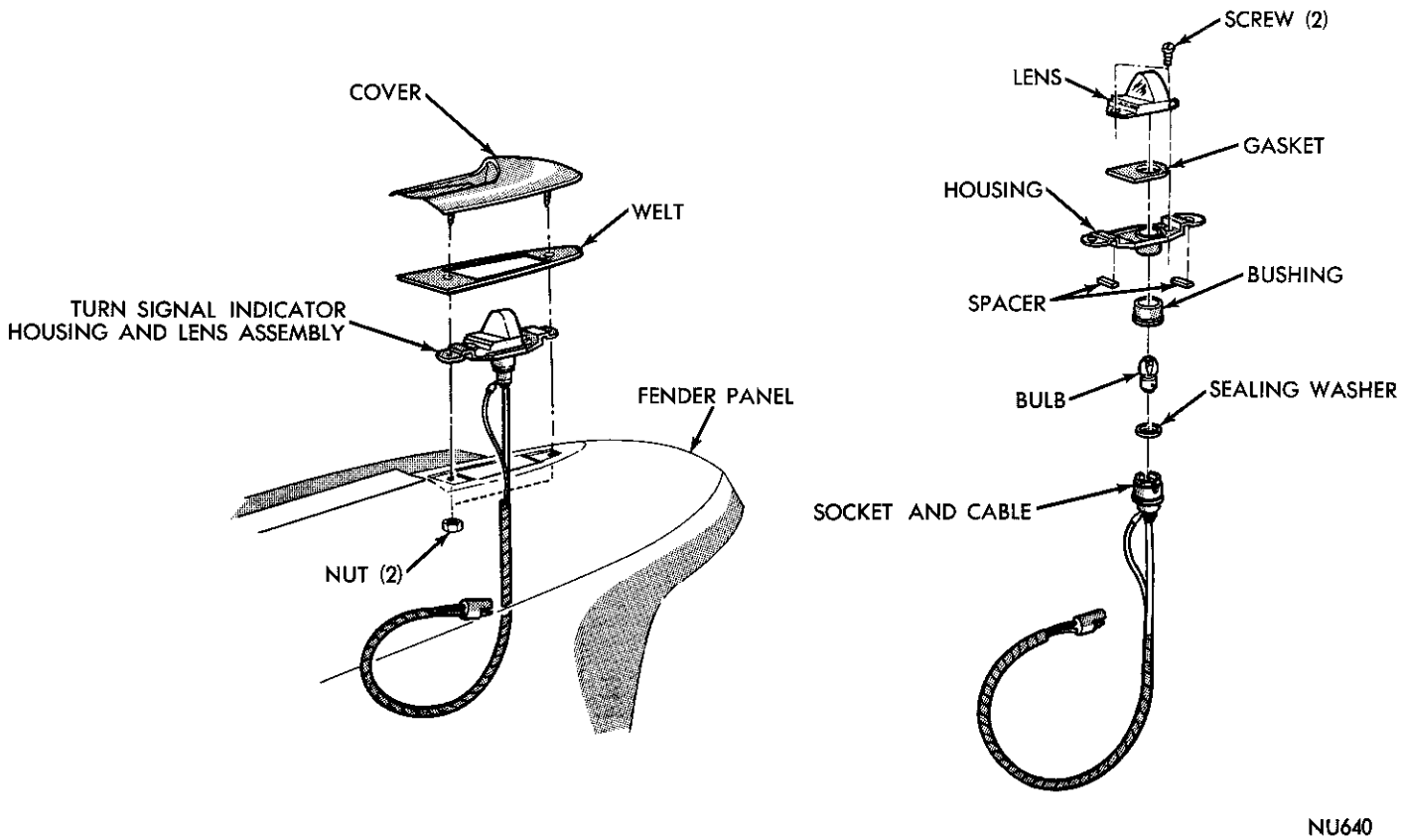


Fig. 10—Front Fender Turn Signal Indicator Lamps—Imperial

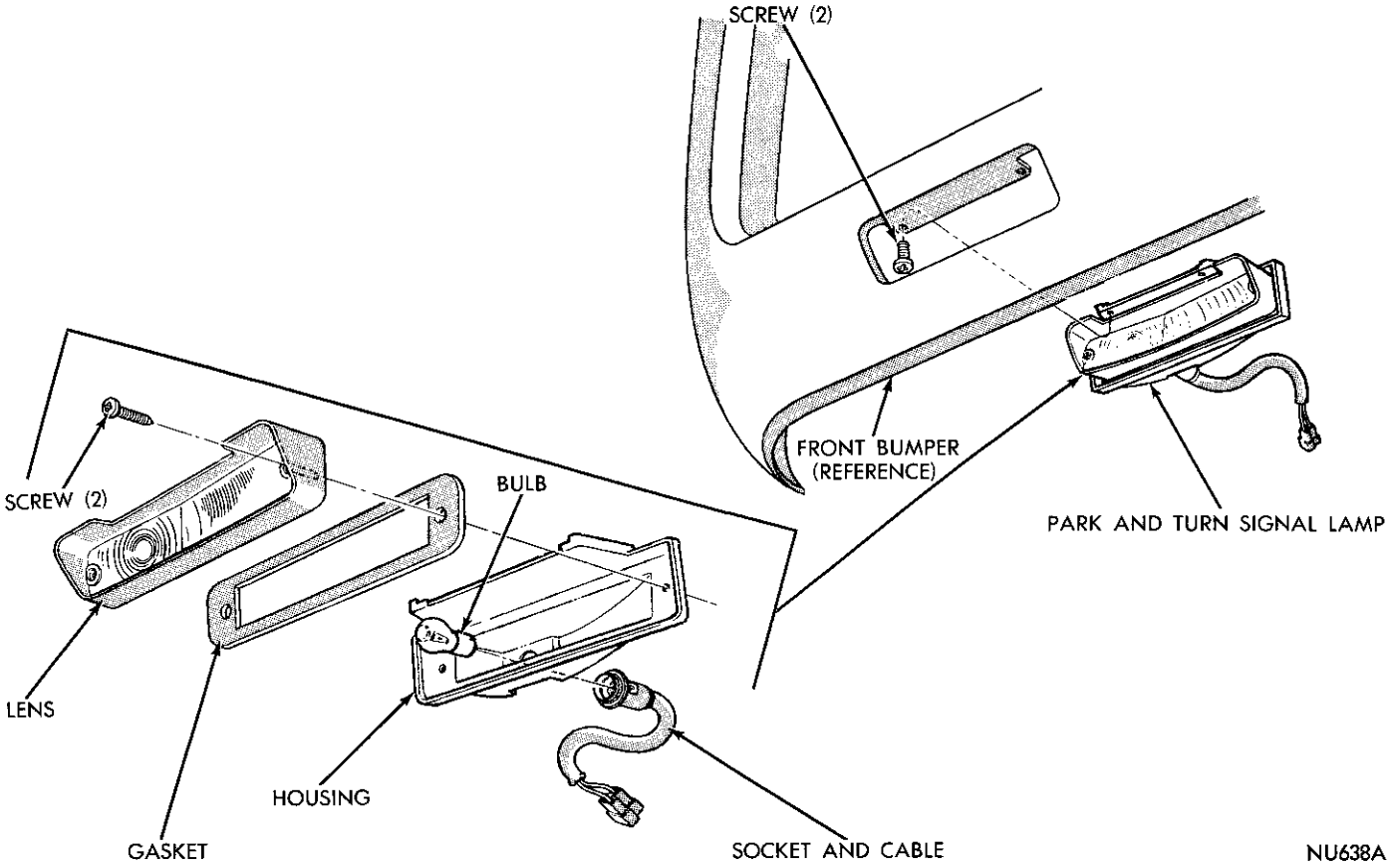


Fig. 11—Front Bumper, Park and Turn Signal Lamps—Chrysler

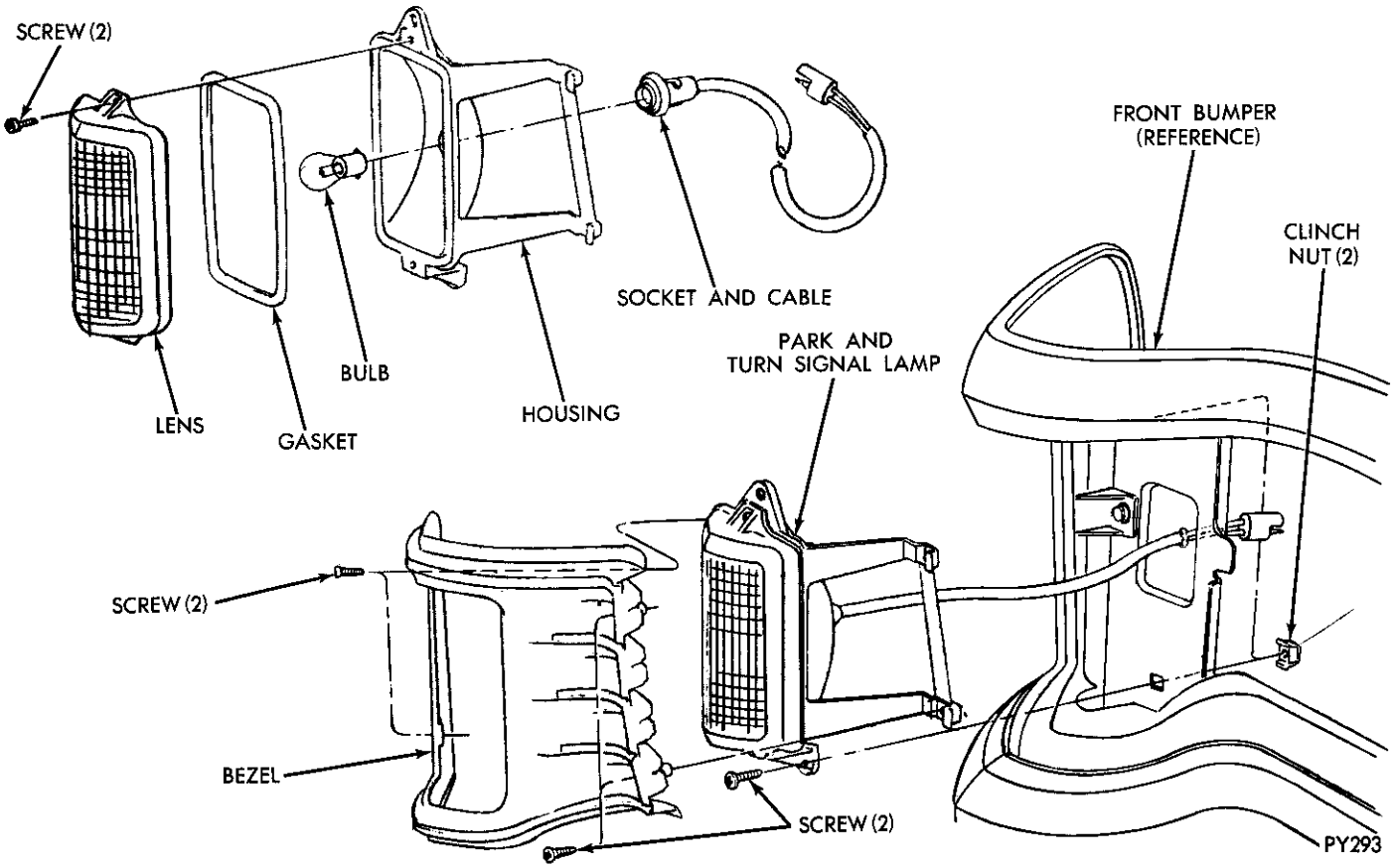


Fig. 12—Front Bumper, Park and Turn Signal Lamps—Imperial

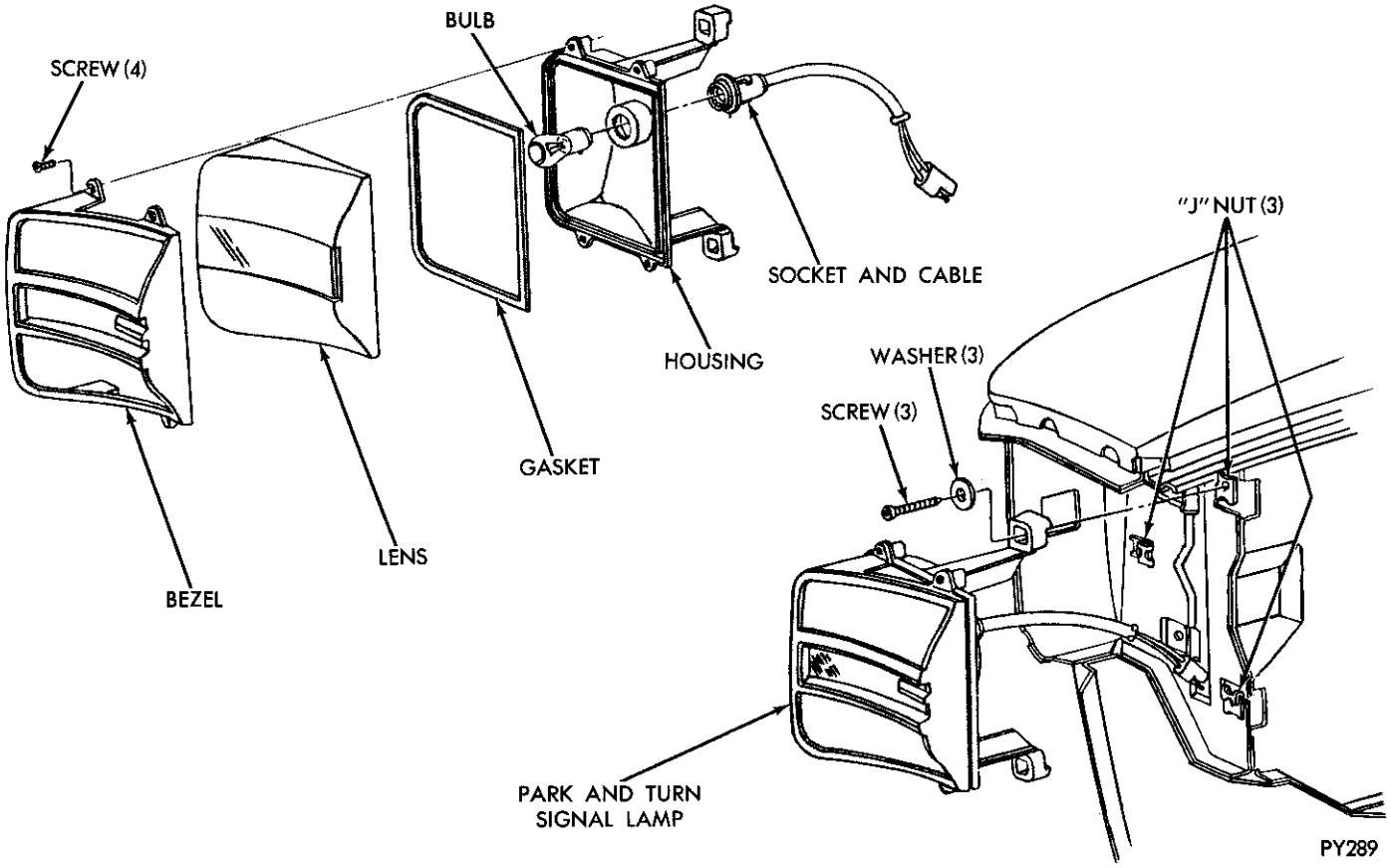


Fig. 13—Front Grille, Park and Turn Signal Lamps—Chrysler

away from grille to disconnect lamp socket connectors from harness connector.

To replace lens or bulb, remove four screws attaching lens and bezel to lamp housing.

Installation

(1) Position lamp on front grille, connect lamp connector to harness connector and install lamp attaching screws.

FRONT FENDER CORNERING AND SIDE MARKER LAMPS—Chrysler (Fig. 14)

Removal

(1) Remove two nut assemblies and remove lamp bracket.

(2) Pull lamp away from fender and disconnect lamp connectors from front end harness and remove lamp.

To replace lens or bulbs, remove two screws from lens face and remove lens.

Installation

(1) Position bracket over lamp studs and install nut assemblies.

(2) Position lamp and connect lamp socket connectors to harness.

FRONT FENDER CORNERING AND SIDE MARKER LAMPS—Imperial (Fig. 15)

Removal

(1) From under front fender remove two nut assemblies and remove lamp bracket.

(2) Pull lamp away from fender, disconnect lamp socket connectors from harness connectors and remove lamp.

To replace lens or bulb, remove two screws attaching bezel and lens to lamp and remove bezel and lens.

Installation

(1) Position lamp on fender and install lamp bracket and two attaching nuts.

(2) Connect lamp connectors to harness connectors.

FRONT FENDER SIDE MARKER LAMP AND REFLECTOR—Chrysler (Fig. 16)

Removal

(1) From under the fender remove two capnuts and remove lamp bracket.

(2) Pull lamp away from fender and disconnect socket connector from harness connector and remove lamp.

To replace lens or bulb, remove two lens attaching screws.

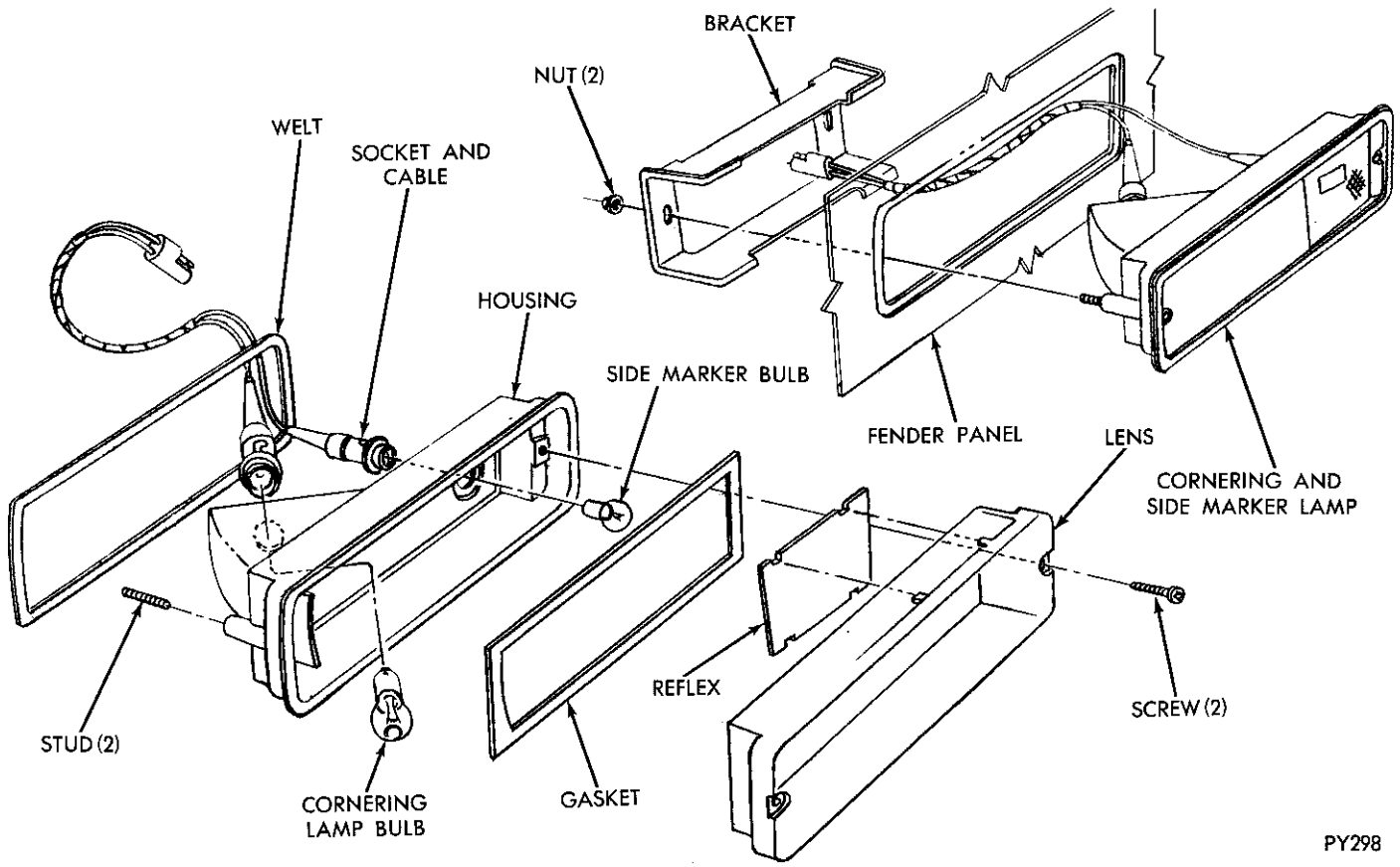


Fig. 14—Front Fender Cornering and Side Marker Lamps—Chrysler

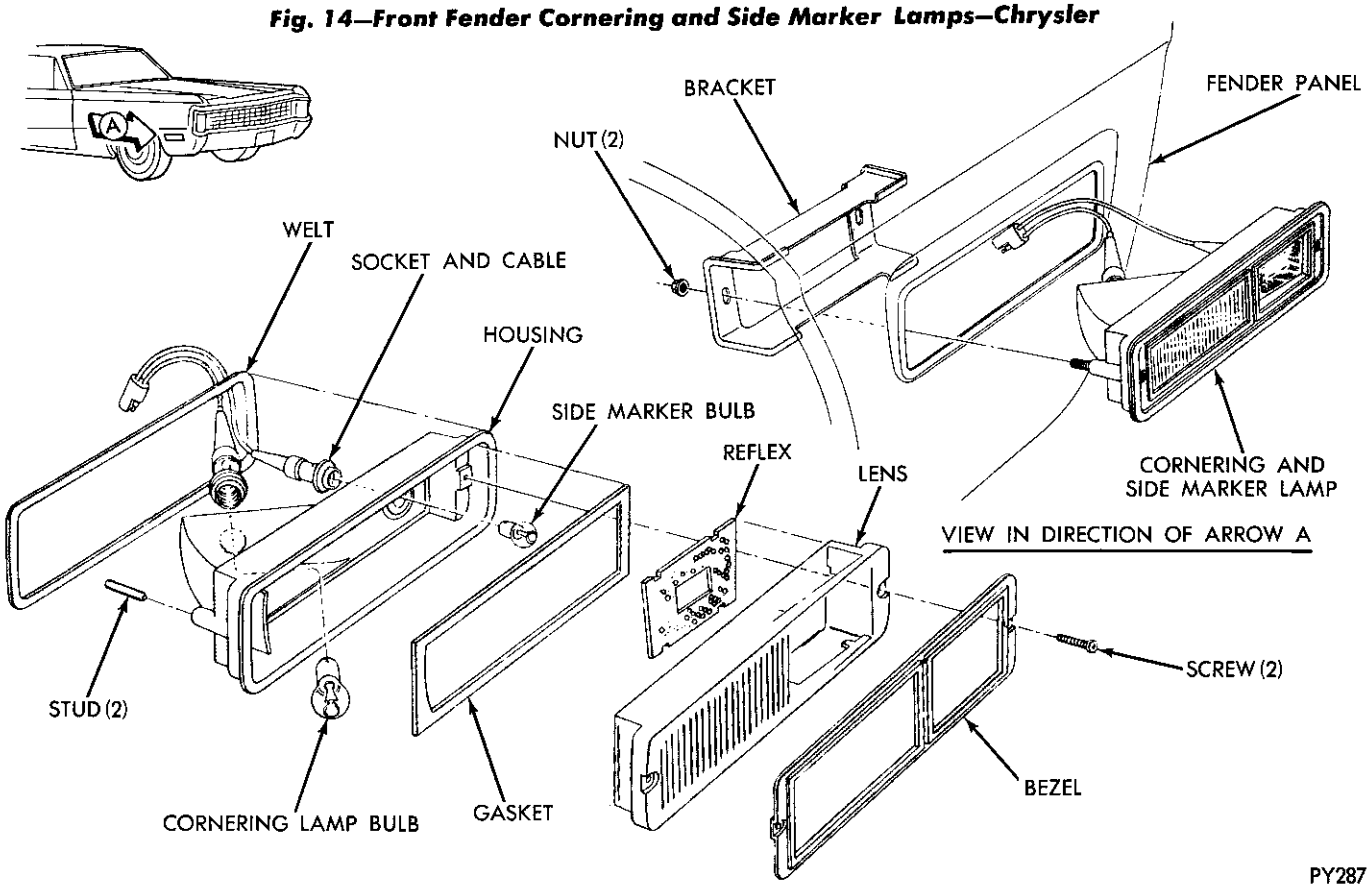


Fig. 15—Front Fender Cornering and Side Marker Lamps—Imperial

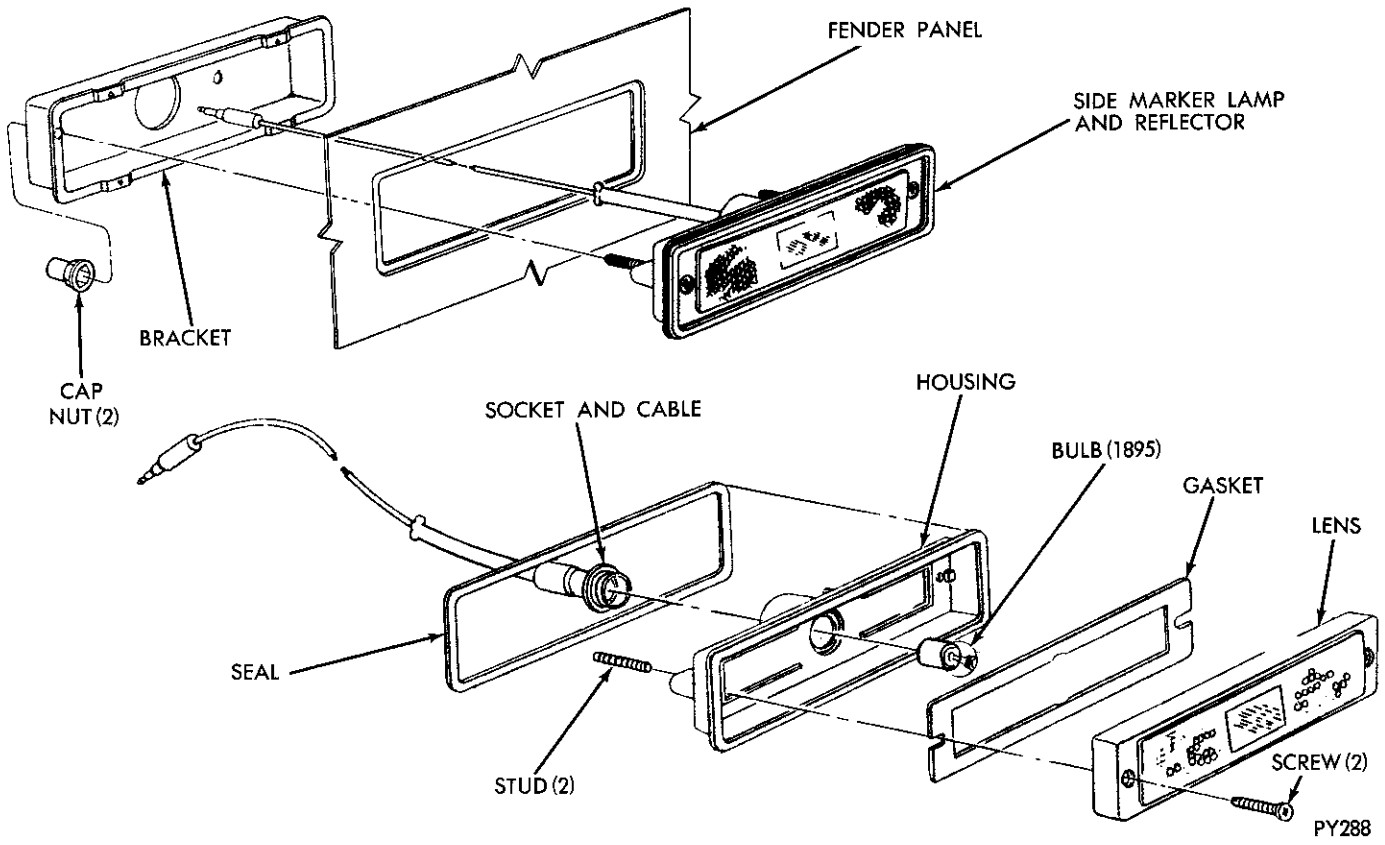


Fig. 16—Front Fender Side Marker Lamp and Reflector—Chrysler

Installation

(1) Position lamp and connector on fender and install lamp bracket and capnuts.

(2) Connect lamp connector to harness connector.

REAR BUMPER, TAIL, STOP, TURN SIGNAL AND BACK-UP LAMPS—Chrysler 300 (Fig. 17)

To remove lamp lens or bulbs, remove eight screws attaching lens to lamp housing.

To remove lamp housing, remove four attaching nuts, disconnect lamp connector from harness connector.

REAR BUMPER, TAIL, STOP, TURN SIGNAL AND BACK-UP LAMPS—Chrysler (Fig. 18)

Removal

(1) From under fender, disconnect lamp connector from harness connector.

(2) Remove four nut assemblies and three capnuts and remove lamp assembly.

To replace lamp lens and bulbs, remove six screws attaching lens to lamp housing.

Installation

(1) Position lamp on rear bumper and install attaching nuts.

(2) Connect lamp connector to harness connector.

REAR BUMPER, TAIL, STOP, TURN SIGNAL AND BACK-UP LAMPS—Chrysler—(Typical) (Fig. 19)

Removal

(1) From under rear bumper, disconnect lamp socket connector from harness connector.

(2) Remove three nut assemblies attaching lamp to bumper and remove lamp assembly.

To replace lamp lens or bulbs, remove four screws from lens and bezel face and remove lens assembly.

Installation

(1) Position lamp assembly on rear bumper and install attaching nuts.

(2) Connect lamp connector to harness connector.

REAR BUMPER, TAIL, STOP AND TURN SIGNAL LAMPS—Imperial (Fig. 20)

Removal

(1) Remove six screws attaching lamp bezel to lamp and remove bezel.

(2) Remove three nuts from lamp studs, disconnect lamp socket and side marker connector and remove lamp.

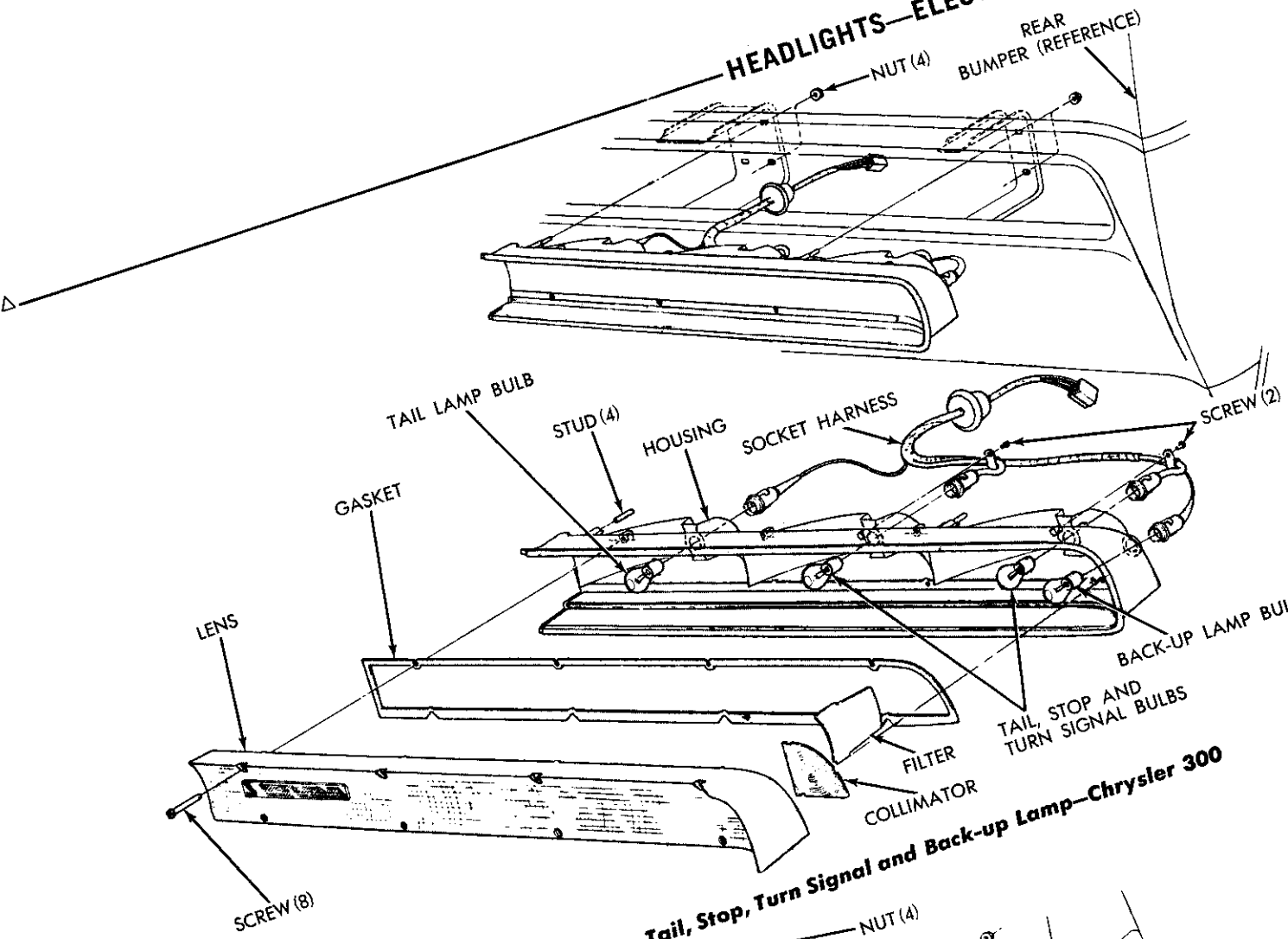


Fig. 17—Rear Bumper, Tail, Stop, Turn Signal and Back-up Lamp—Chrysler 300

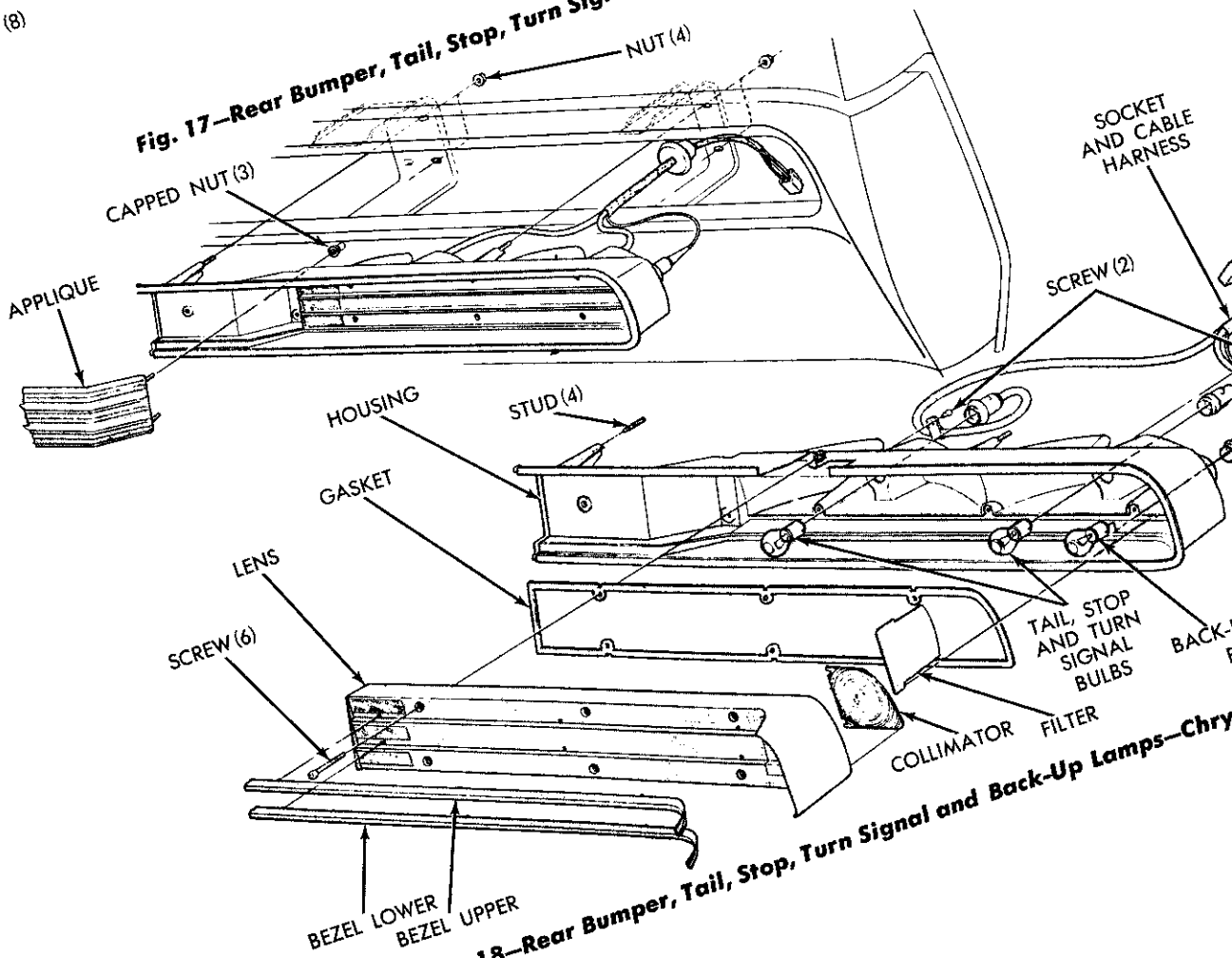


Fig. 18—Rear Bumper, Tail, Stop, Turn Signal and Back-Up Lamps—Chry

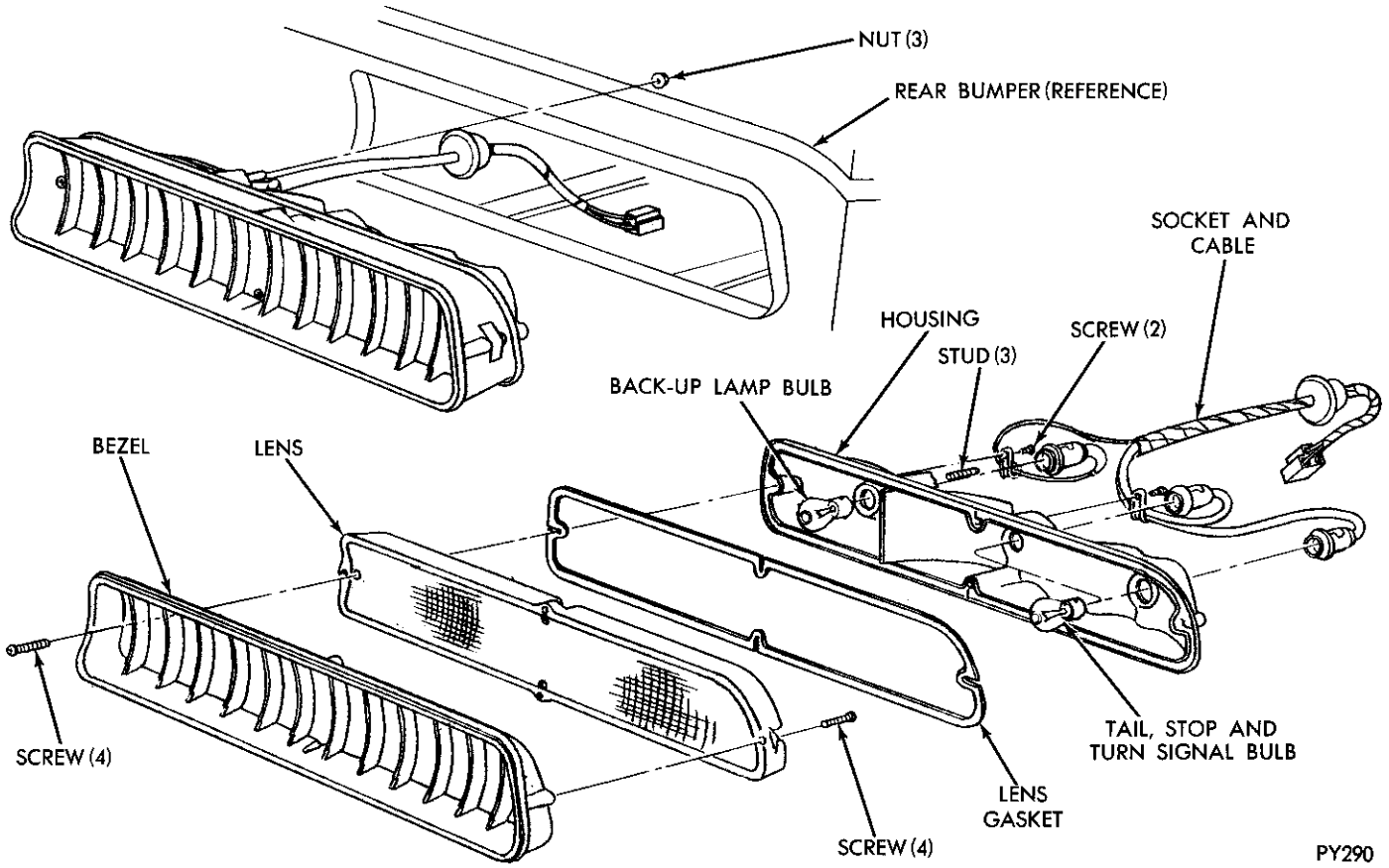


Fig. 19—Rear Bumper, Tail, Stop, Turn Signal and Back-Up Lamps—Chrysler—(Typical)

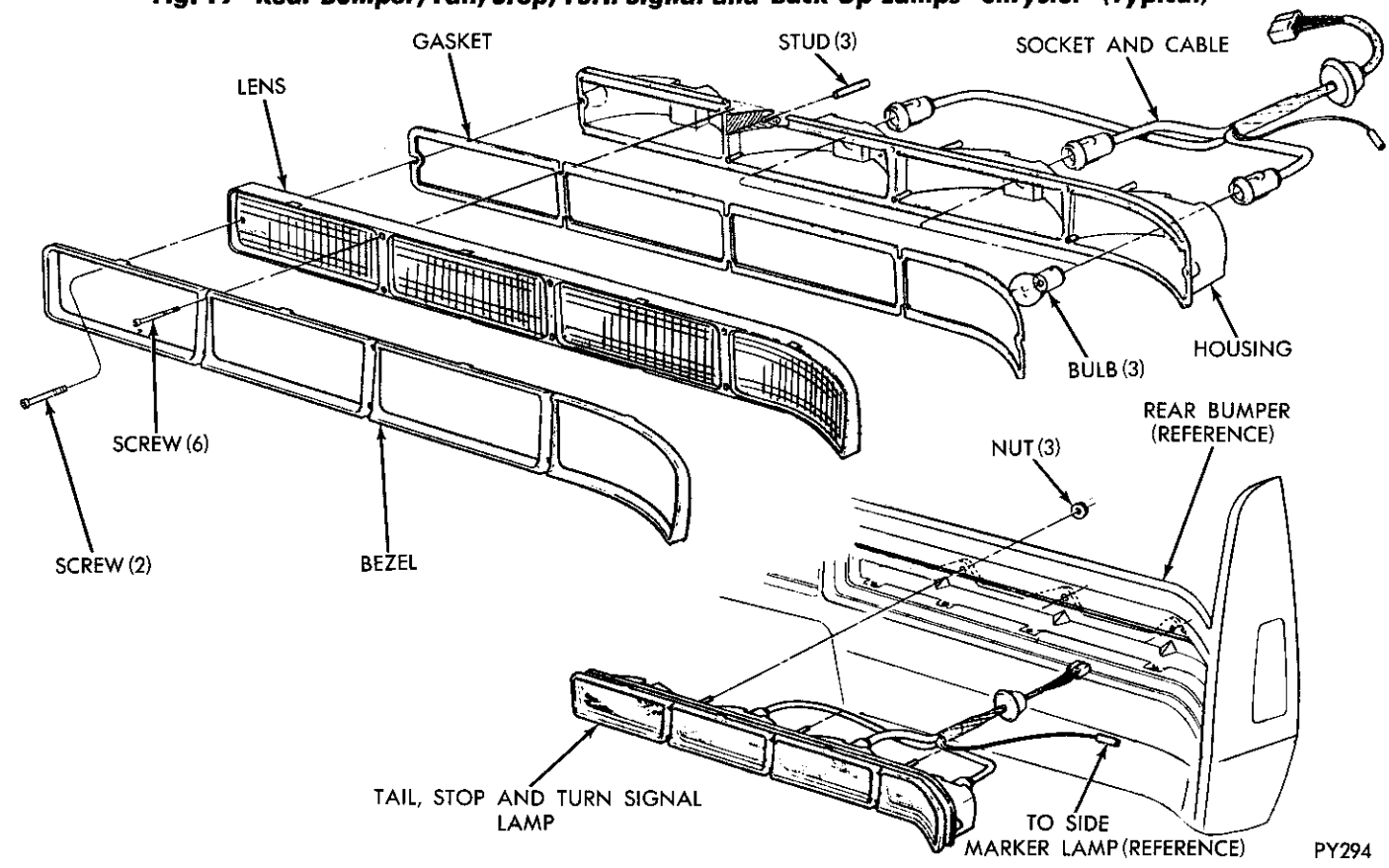


Fig. 20—Rear Bumper, Tail, Stop and Turn Signal Lamps—Imperial

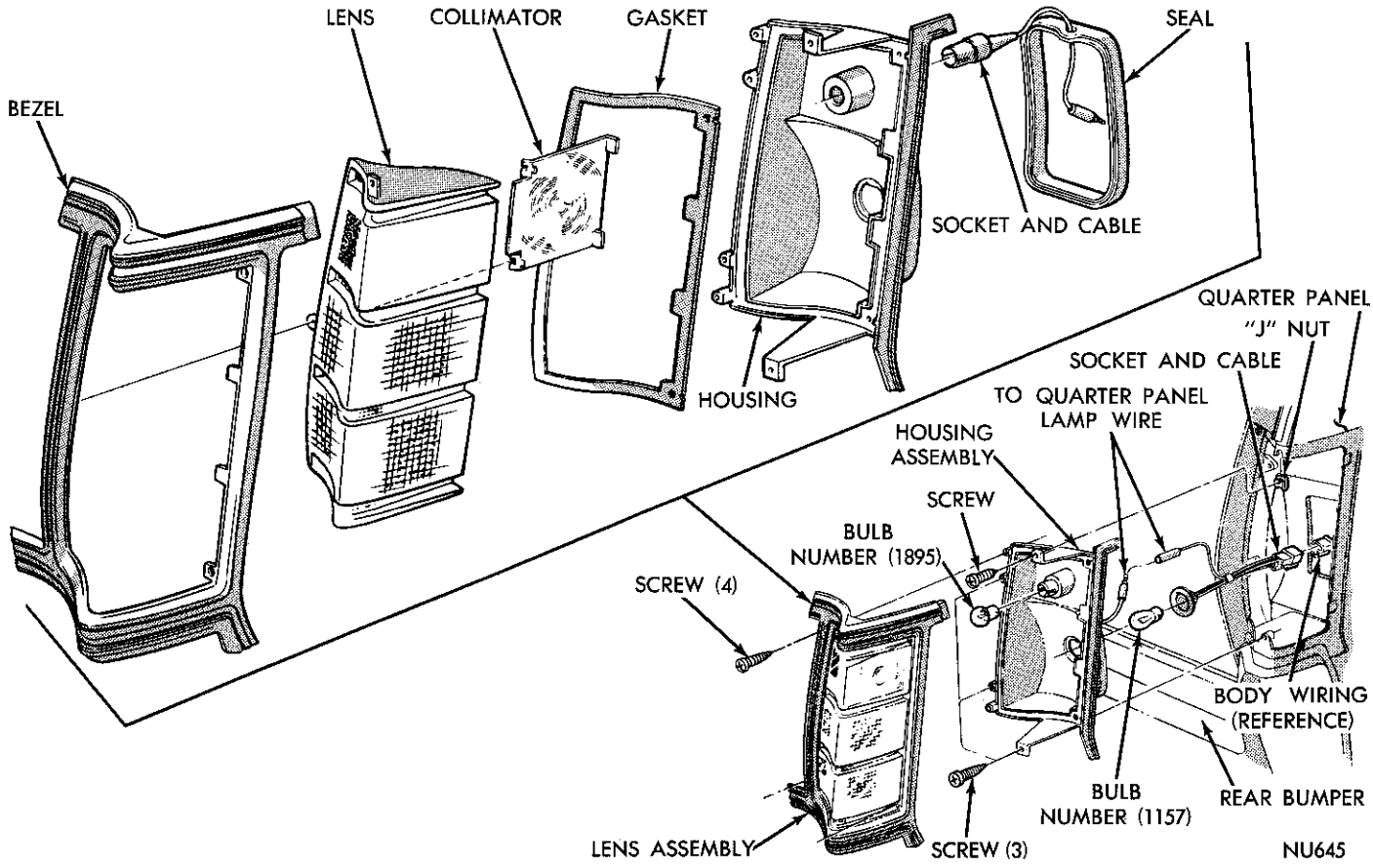


Fig. 21—Quarter Panel, Tail, Stop, Turn Signal and Side Marker Lamps—Chrysler—Station Wagons

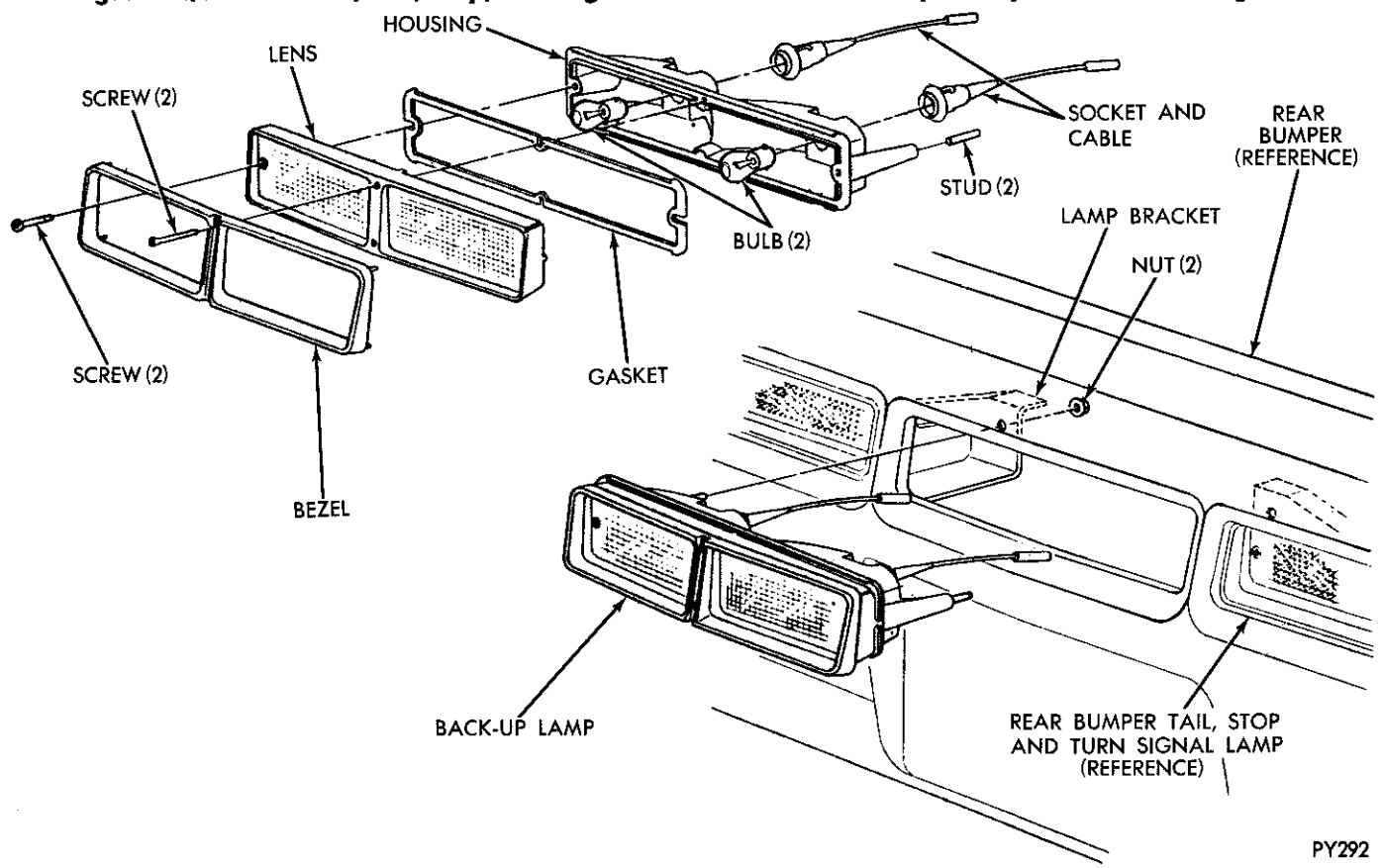


Fig. 22—Rear Bumper Back-Up Lamp—Imperial

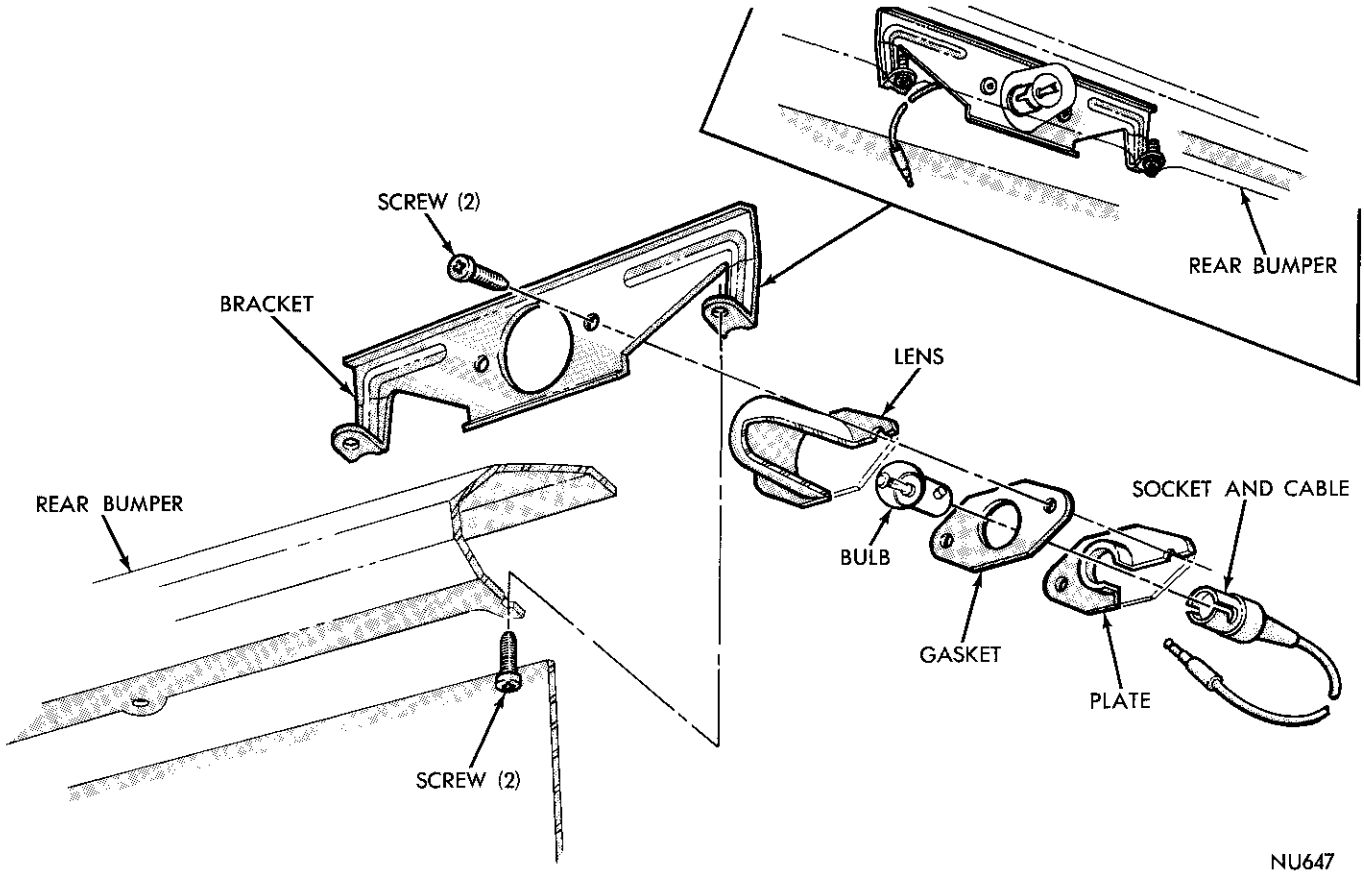


Fig. 23—Rear Bumper License Lamp—All Models

Bezel, lens and bulbs can be removed from lamp without removing lamp.

Installation

(1) Position lamp on bumper and install attaching nuts.

(2) Install lamp bezel and six attaching screws.

(3) Connect lamp connector to harness connector and lead to side marker lamp.

QUARTER PANEL, TAIL, STOP, TURN SIGNAL AND SIDE MARKER LAMP—Chrysler Station Wagons—Typical (Fig. 21)

Removal

(1) Remove four screws attaching lens assembly to lamp housing.

(2) Remove two screws attaching lamp housing to quarter panel.

(3) Disconnect lamp socket and wire and quarter panel lamp wire from body wiring harness.

Installation

(1) Connect lamp socket and panel lamp wire to body harness connectors.

(2) Position lamp housing on quarter panel and install attaching screws.

(3) Install lamp lens, gasket and lens and four attaching screws.

REAR BUMPER BACK-UP LAMP—Imperial (Fig. 22)

Refer to Figure 22, remove two nut assemblies, pull

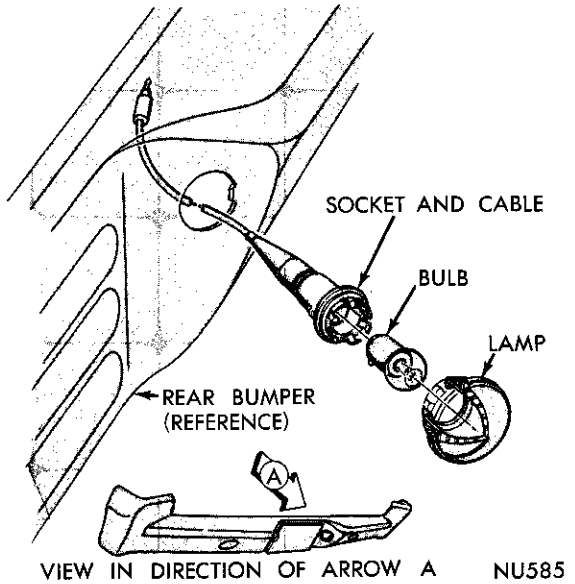


Fig. 24—Rear Bumper License Lamp— Station Wagons—Chrysler

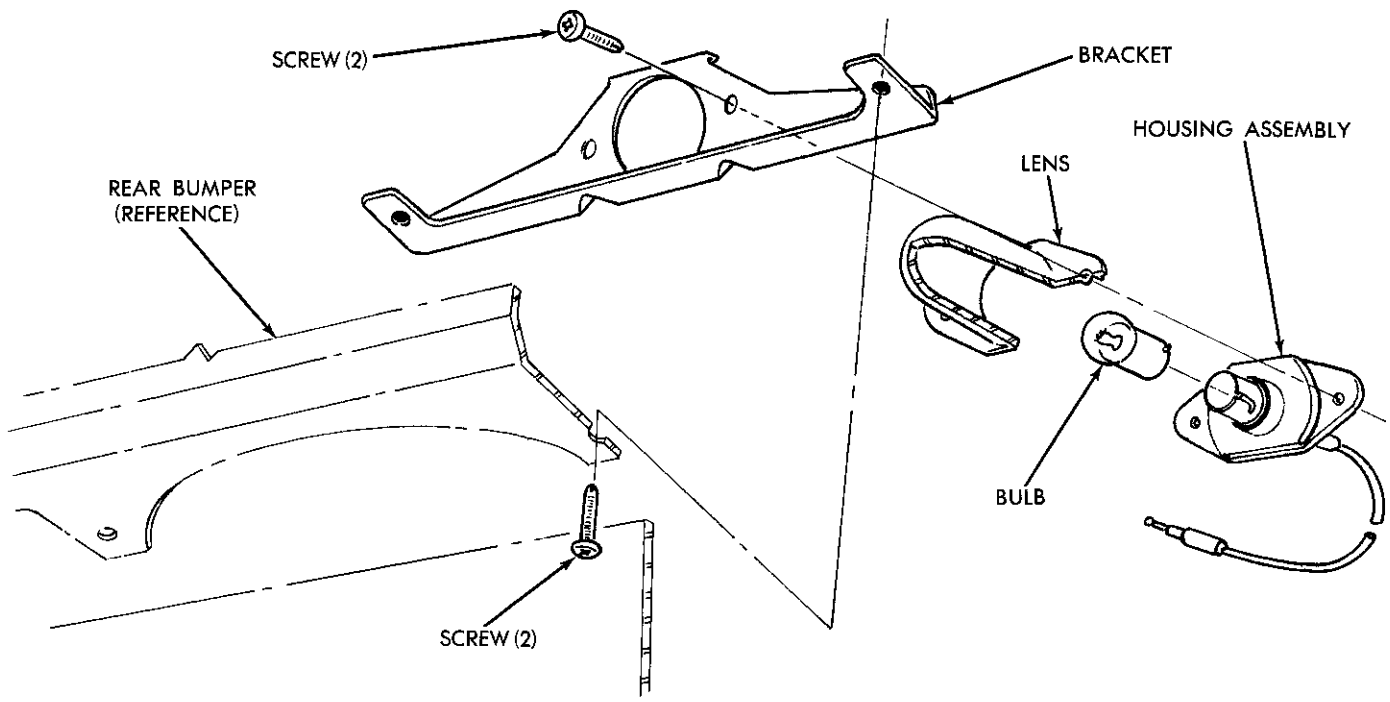


Fig. 25—Rear Bumper License Lamp—Except Station Wagons

lamp away from bumper to disconnect lamp connectors from harness connector and remove lamp.

To remove lens or bulbs, remove four screws attaching lens to lamp housing and remove lens.

REAR BUMPER LICENSE LAMP—All Models (Fig. 23)

(1) From under rear bumper, remove two screws attaching lamp bracket, disconnect lamp socket connector from harness connector and remove lamp.

REAR BUMPER LICENSE LAMP—Station Wagons Chrysler (Fig. 24)

Refer to Figure 24 and snap lamp lens off socket to replace lens or bulb.

REAR BUMPER LICENSE LAMP—Except Station Wagons—Chrysler (Fig. 25)

Removal

(1) Remove two screws attaching lamp to lamp bracket, (Fig. 25).

(2) Disconnect lamp wiring connector to body harness connector and remove lamp and bracket assembly.

To replace lamp bulb, remove two screws attaching lamp lens to lamp bracket and replace lens and bulb as necessary.

Installation

(1) Position lamp and bracket assembly on rear bumper and install attaching screws.

(2) Connect lamp wiring connector to body wiring harness connector.

INSTRUMENT PANELS

INDEX

	Page
Brake System Warning Light	55
Emergency Flasher	60
Fuse Block	63
General Information	52
Instruments and Gauges	61
Instrument Cluster	58-60
Instrument Panel Bezels	62
Instrument Panel Trim Pad	62
Lamp Panel	57
Light Bulb Replacement	60

	Page		Page
Service Diagnosis	52	Tests in Vehicle	53
Speedometer	62	Tests out of Vehicle	62
Switches	61	Warning Lamp Bulbs	60

GENERAL INFORMATION

Imperial models are equipped with a "Sentry Signal Light" which serves as a warning to the driver if the oil pressure is low, the engine coolant temperature is above normal or the fuel level is to low. Separate sending units for the oil pressure and temperature indicating operation of the Sentry Signal are mounted on the engine and are connected to a low fuel warning relay (Fig. 1) located on the right lower instrument panel reinforcement channel near the glove box.

Chrysler instrument clusters are equipped with two temperature indicator lights; one green for cold indication and a red one for overheating indication. When the engine temperature is low the green light will remain lighted until engine temperature reaches normal operating range. If the engine should overheat, the red light will illuminate.

In the fuel level indicating system in all models, a hinged float arm in the fuel tank raises or lowers dependent on the fuel level. The float arm contacts a variable resistor in the gauge sending unit that provides a change of resistance in the fuel gauge circuit with any up or down movement of the float. This resistance registers on the instrument panel gauge, metered to the capacity of the tank.

When the fuel level in the tank is low, the resistance of the circuit is increased restricting current flow and consequently positions the instrument panel gauge pointer to low (Fig. 1).

Resistance in the circuit is at a minimum when the tank is full and the float arm is raised. With resistance at a minimum, current flow is high registering full on the instrument panel gauge.

Constant voltage is provided to the gauges through the use of a voltage limiter mounted externally on the back of the instrument cluster on Chrysler and Imperial models. The voltage limiter is connected in parallel to provide regulated voltage to the gauges (Fig. 1).

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
ALL GAUGES READ HIGH ("against the peg") AFTER IGNITION SWITCH IS TURNED "ON"	(a) Faulty voltage limiter (stuck points or an open heater coil).	(a) Test voltage limiter.
	(b) Cluster not properly grounded to panel.	(b) Tighten cluster mounting screws.
GAUGE POINTERS DO NOT MOVE WHEN IGNITION SWITCH IS TURNED "ON"	(a) Faulty voltage limiter or an open circuit on battery side (input of limiter).	(a) Test voltage limiter. Test wiring, repair or replace as necessary.
TEMPERATURE AND OIL GAUGES* INDICATE NORMAL OPERATION BUT THE FUEL GAUGE INDICATES A HIGHER OR LOWER FUEL LEVEL THAN ACTUALLY EXISTS	(a) Fuel tank sending unit or instrument panel fuel gauge is faulty.	(a) Test sending unit and gauge.
	(b) Fuel tank is improperly grounded.	(b) Test fuel tank for a good ground. NOTE: Testing the system with the tank sending unit positioned for both "empty" and "full" is usually sufficient to determine the calibration in the range between these positions.
	(c) Low fuel warning relay faulty.	(c) Test relay.
FUEL AND OIL GAUGES* INDICATE CORRECTLY BUT TEMPERATURE GAUGE INDICATES HIGHER OR LOWER TEMPERATURE THAN ACTUAL ENGINE TEMPERATURE	(a) Faulty instrument panel temperature gauge, wiring or faulty temperature sending unit in engine.	(a) Test wiring, repair or replace as necessary. Test gauge and sending unit.
ERRATIC TEMPERATURE GAUGE OPERATION*	(a) Loose or dirty electrical connections.	(a) Clean and tighten all electrical connections and test the gauge operation.

Condition	Possible Cause	Correction
ERRATIC OPERATION OF FUEL GAUGE	(a) Loose or dirty electrical connections or faulty tank sending unit.	(a) Test fuel gauge sending unit, and proceed as follows: (1) Clean and tighten all electrical connections. (2) Make sure that the fuel tank sending unit is grounded to the tank and that the tank is grounded to the frame.
	*(b) Faulty Low Fuel Warning Relay.	(b) Test Relay.
ERRATIC OIL GAUGE OPERATION*	(a) Loose or dirty electrical connections.	(a) Clean and tighten all electrical connections and test the gauge operation.

*Imperial Models Only

SERVICE PROCEDURES

TESTS IN VEHICLE

Voltage Limiter—All Models

The voltage limiter can be tested in the vehicle or with the instrument cluster removed. To quickly test the voltage limiter in the vehicle, connect one lead of a voltmeter or test light to the temperature sending unit and the other lead to a good ground. Leave the sending unit lead wire attached to the sending unit.

Turn the ignition switch to the "ON" position. A fluctuating voltmeter or a flashing light indicates the voltage limiter is operating. The Imperial model has an in-line choke for radio noise suppression.

Fuel Gauge Circuit—Imperial Models

Imperial models incorporate a Low Fuel Warning Sentry Signal on the instrument panel. A relay is used in the circuit to feed the fuel gauge separately. The tank unit is a standard tank unit, connected to the one terminal of the fuel gauge (Fig. 1). The relay has a built in limiter to supply 5 volts to the fuel gauge. A choke is built in the relay for radio noise suppression.

Fuel Gauge and Low Fuel Warning Relay—Imperial

(1) Disconnect wire at the fuel tank unit. Connect one lead of tester C-3826 to wire terminal and other lead to a good ground.

(2) Turn ignition key on, turn tester knob to "H" position and observe instrument panel gauge. Gauge should read full plus 3/32 inch or minus 1/32 inch.

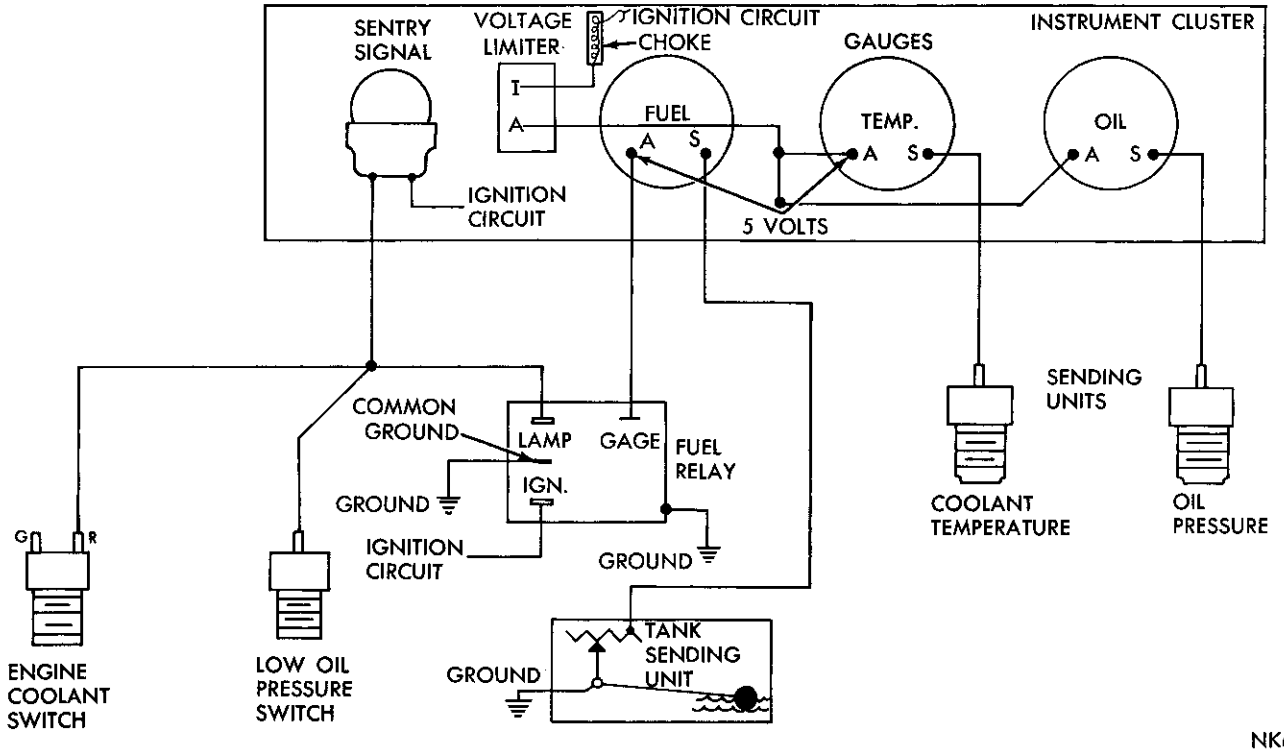


Fig. 1—Sentry Signal Circuit

Turn tester knob to "M", gauge should read 1/2. **Thermal gauges are slow in operation and time should be allowed for gauge to respond.**

(3) Turn tester knob to "L", panel gauge should read empty plus 1/32 inch or minus 3/32 inch.

The low fuel warning relay will trigger the Sentry Signal Lamp when the gauge pointer is moving from the 1/2 position to the "E" position. **Temperature and oil switches must be disconnected for this test or engine must be running.**

(4) If instrument panel gauge does not perform as described, check output of relay (terminal marked gage) use procedure outlined under Voltage Limiter Test.

(5) To check sentry signal position of relay (light will not trigger) use a jumper wire to ground terminal marked lamp. Light should illuminate. If no light, check bulb and wiring. If lamp lights, relay is faulty and should be replaced.

Fuel Gauge Testing—Chrysler Models

(1) Disconnect wire at fuel tank sending unit. Connect one lead of Tester C-3826 to wire terminal and other lead to a good ground. Turn ignition key on.

(2) Turn knob on dial of tester to "H" and observe gauge on panel. It should read "Full," plus 3/32″ or minus 1/32″.

With dial knob on "M", panel gauge should read 1/2.

(3) With dial knob on "L", panel gauge should read "Empty," plus 1/32″ or minus 3/32″. On units equipped with Low Fuel Warning lamp, lamp should light when gauge goes from 1/2 to "E".

(4) If lamp does not light when gauge pointer is between 1/2 capacity and empty, use a jumper wire between cavities 2 and 3 of low fuel warning connector, bulb should illuminate. If no light, check bulb and wiring, if bulb and wiring are O.K. and lamp lights, relay is faulty and should be replaced.

(5) If panel gauge does not perform as described, continuity of circuit from tank sending unit to panel unit should be tested, with special attention to printed circuit board. If continuity has been established, the gauge should be replaced.

(6) On units equipped with Low Fuel Warning System, the output of the relay can be checked by using the procedure outlined under "Voltage Limiter Test".

Oil Pressure Gauge—Imperial Models

Disconnect wire from the oil pressure sending unit on the engine. Connect one test lead of Tester Tool C-3826 to the removed wire terminal the other test lead to a good ground. Place the pointer of the gauge tester on the "L" position and turn the ignition switch to "on." Do not start engine. The oil pressure gauge should show "L" plus or minus 1/8 inch. **Thermal gauges are slow in operation. Allow time for gauge to heat up.** When the tester is in the "L" position the "Sentry Signal" on the cluster should be illuminated.

Place the pointer on the tester on the "M" position and the oil pressure gauge should advance to the 1/2 position of the dial. Place the pointer of the tester in the "H" position and the gauge should advance to the "H" position of the dial.

Should the gauge respond to the above tests, but not operate when the wire is attached to the sending unit, it should be replaced. Should the gauge fail to respond to the above tests indications are of possible loose connections, broken wire, or faulty gauge. The instrument cluster should be removed for further tests. See "Instrument Cluster."

Oil Pressure Warning Light—Chrysler Models

To test the oil pressure warning light, remove the terminal from the oil pressure sending unit. Connect one lead of the gauge tester to the terminal and the other test lead to a good ground.

With the ignition switch in the "on" position and the gauge tester in the "L" position, the indicator light should not light. With the gauge tester in the "M" position, the indicator light should show a dull glow. With the gauge tester in the "H" position, the indicator light should show full brilliance.

Should the oil pressure warning light fail to respond to the above tests, indications are of possible loose connections, broken wire, or burned out lamp.

Low Oil Pressure Warning Switch

The operation of the oil pressure warning switch, mounted on the engine, is dependent on variances in the engine oil pressure.

When the engine oil pressure is high (normal operating condition of the engine) the switch is held in the "OFF" or "OPEN" position allowing no current to flow to the oil pressure warning lamp on the instrument panel.

When the engine oil pressure is low, the switch is in the "ON" or "CLOSED" position allowing current to flow to the oil pressure warning lamp on the instrument panel. This causes the warning lamp to be illuminated.

Temperature Indicating System—Imperial Models

Disconnect the terminal from the temperature sending unit on the engine. Connect one test lead of Tester C-3826 to the terminal and the other test lead to a good ground. Place the pointer of the gauge tester on the "L" position and turn the ignition switch to "on." The temperature gauge should show "C" plus or minus 1/8 inch. **Thermal gauges are slow in operation. Allow time for gauge to heat up.**

Place the pointer on the tester on the "M" position and the temperature gauge should advance to the

driving range left of 1/2 position of the dial. Place the pointer of the tester in the "H" position and the gauge should advance to the "H" position of the dial.

Should the gauge respond to the above tests, but not operate when the terminal is attached to the sending unit, indications are of a faulty sending unit and it should be replaced. Should the gauge fail to respond to the above tests, indications are of possible loose connections, broken wire, defective printed circuit board or faulty gauge. The instrument cluster should be removed for further tests. See "Instrument Clusters."

Temperature Indicating System—Chrysler Models

To test the temperature indicator turn the ignition key to the "Acc" or left position. Disconnect the wires from the temperature sensing switch on the engine and one at a time touch the wires momentarily to ground. When the wire from the "G" terinal is grounded the "Cold" (green) bulb of the indicator should light. When the wire from the "R" terminal is grounded the "Hot" (red) bulb of the indicator should light. If one of the bulbs fail to light, the bulb that did not light is faulty and should be replaced. If both of the bulbs fail to light indications are of a faulty circuitry in the system or possibly both of the indicator bulbs are faulty. Repair or replace as necessary.

BRAKE SYSTEM WARNING LIGHT

The brake warning light flashes only when the parking brake is applied with the ignition key turned "ON." The same light will also illuminate should one of the two service brake systems fail when the brake pedal is applied. To test the system turn the ignition key "ON", and apply the parking brake. If the light fails to light, inspect for a burned out bulb, disconnected socket, a broken or disconnected wire at the switch.

To test the service brake warning system, raise the car on a hoist and open a wheel cylinder bleeder while a helper depresses the brake pedal and observes the warning light. If the light fails to light, inspect for a burned out bulb, disconnected socket, a broken or disconnected wire at the switch. If the bulb is not burned out and the wire continuity is proven, replace the brake warning switch in the brake line Tee fitting mounted on the frame rail in the engine compartment below the master cylinder.

LEFT ASH RECEIVER—All Models

Removal

(1) Disconnect cigar lighter and ash receiver lamp wiring.

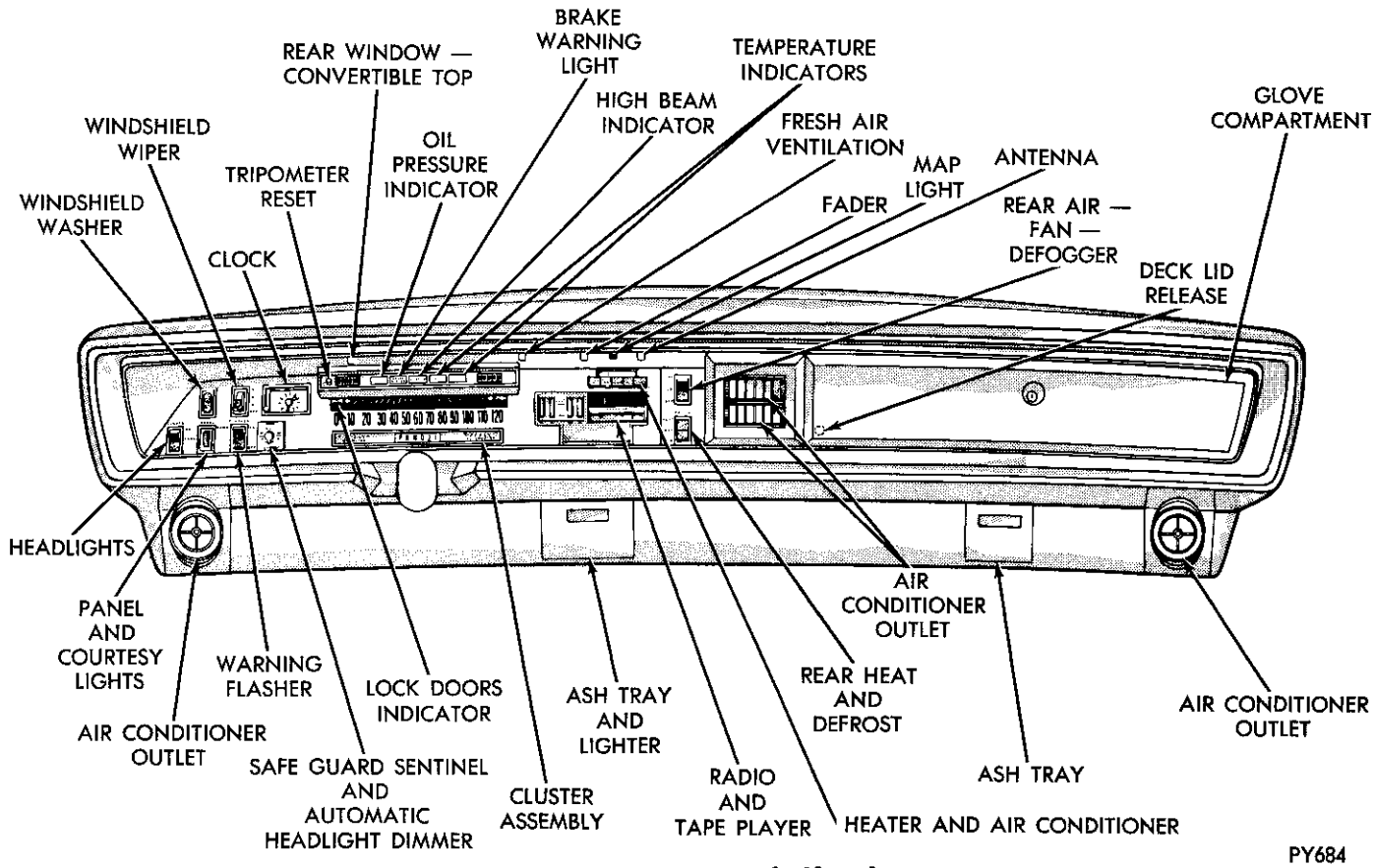


Fig. 2—Instrument Panel—Chrysler

(2) Remove ash receptacle from ash receiver housing.

(3) Remove ash receiver four mounting screws and remove ash receiver housing.

Installation

(1) Position ash receiver housing and install four mounting screws.

(2) Install ash receiver receptacle.

(3) Connect cigar lighter and ash receiver lamp wiring.

HEATER CONTROL—All Models

Removal

(1) Disconnect battery ground cable.

(2) Remove left ash receiver.

(3) Remove the radio. See "Radio Removal", Accessories Group 1.

(4) Remove the two heater control mounting nuts from under instrument panel.

(5) Remove heater control support screw from support bracket.

(6) Disconnect heater switch vacuum hose harness from heater switch.

(7) Disconnect heater control wiring connectors.

(8) Disconnect heater control cable and remove heater control assembly.

Installation

(1) Position heater control and connect control cable.

(2) Connect heater control wiring connectors.

(3) Connect heater switch vacuum hose harness to heater switch.

(4) Install and tighten heater control support bracket attaching screw.

(5) Install and tighten heater control mounting nuts.

(6) Install radio. See "Radio Installation", Accessories Group 1.

(7) Install left ash receiver.

(8) Connect battery ground cable and check operation of radio and heater controls. For adjustments of heater control cable refer to "Heaters" Group 24.

VENT CONTROLS—Chrysler Models

Removal

(1) Remove lower left and right kick pads.

(2) Remove vent control mounting screws.

(3) Disconnect the lower left and right control cables at the fresh air doors and remove vent controls.

Installation

(1) Connect vent control cables at fresh air doors

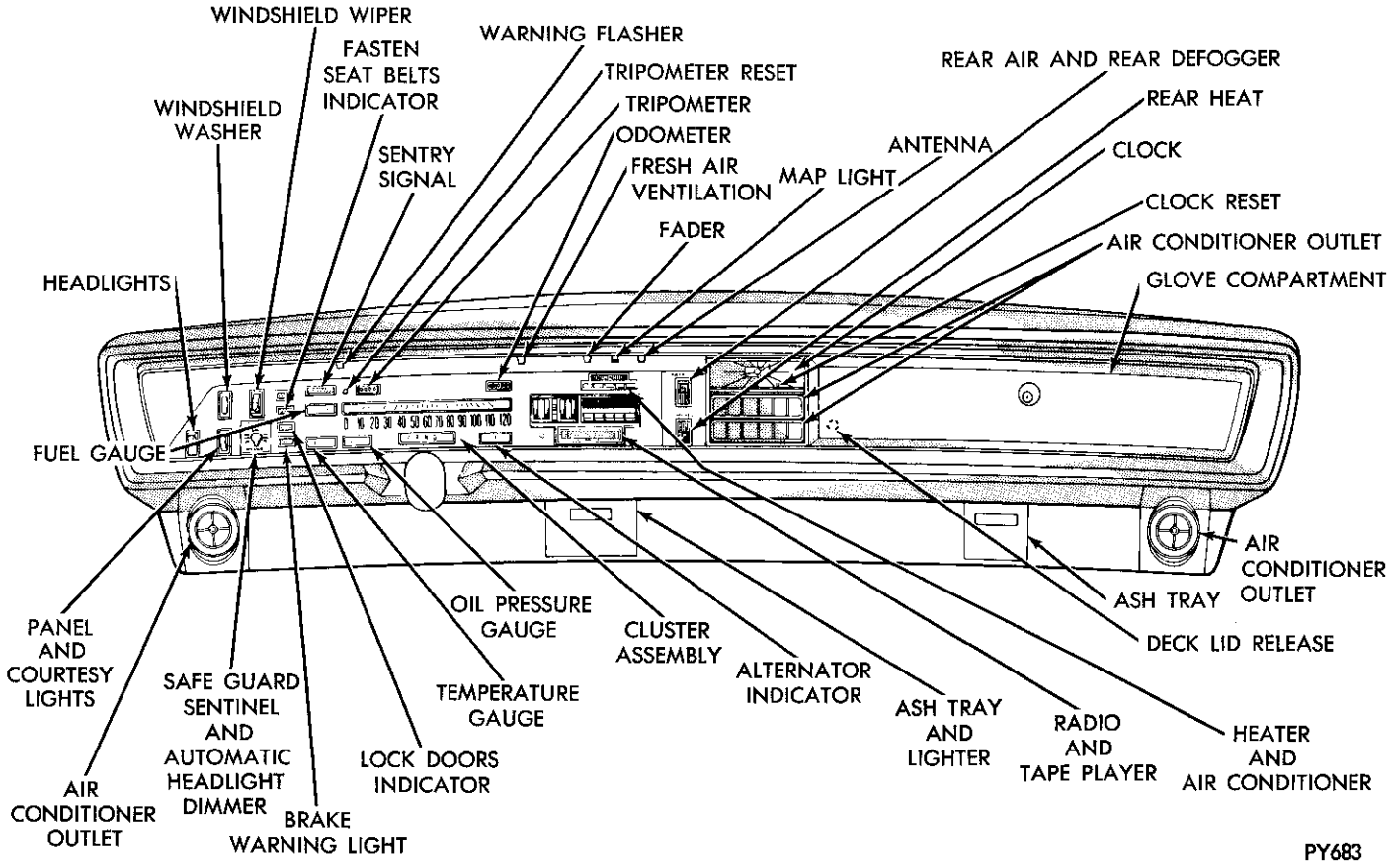


Fig. 3—Instrument Panel—Imperial

install vent controls mounting screws. Adjust cables as necessary. See "Air Conditioning" Group 24.

(2) Install lower left and right kick pads.

VENT CONTROLS—Imperial Models

Removal

(1) Remove two mounting screws.

(2) Disconnect the lower left and right control cables at fresh air doors and remove vent controls.

Installation

(1) Position vent controls, connect control cables and install two mounting screws.

(2) Adjust cables as necessary. See "Air Conditioning", Group 24.

MAP LAMP—All Models

Removal

(1) Remove the two vent control mounting screws and allow assembly to hang free.

(2) Remove the four map lamp mounting screws.

(3) Disconnect fader control wiring connector.

(4) Disconnect map lamp wiring connector and remove map lamp.

Installation

(1) Position map lamp on instrument panel and connect map lamp wiring connector.

(2) Connect fader control wiring connector.

(3) Install map lamp mounting screws.

(4) Install vent control assembly and mounting screws.

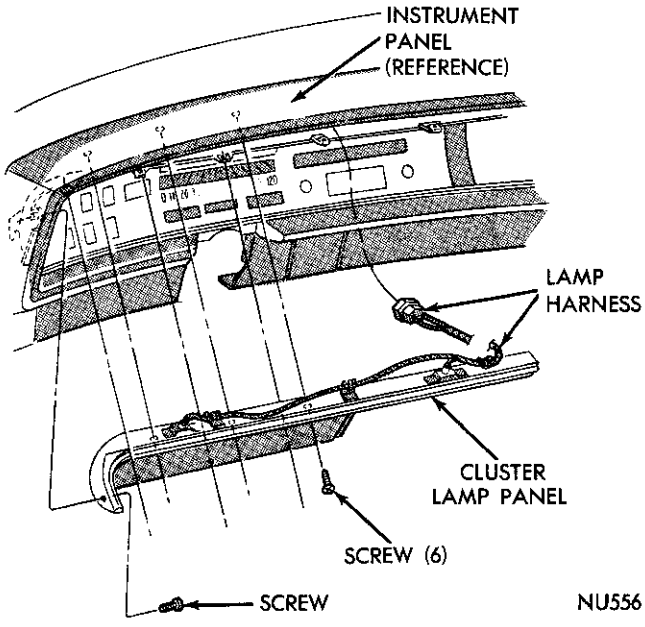


Fig. 4—Lamp Panel—Removing and Installing—Chrysler

LAMP PANEL—Chrysler Models (Fig. 4)

Removal

(1) Disconnect battery ground cable.

(2) Remove two vent control mounting screws and allow assembly to hang free.

(3) Remove map lamp.

(4) Remove the seven lamp panel attaching screws.

(5) Move lamp panel to the right and tilt it down to remove it.

Installation

(1) Move lamp panel up and to the left to position it on the instrument panel.

(2) Install lamp panel attaching screws.

(3) Install map lamp.

(4) Position vent control and install mounting screws.

(5) Connect battery ground cable and check operation of lamp panel.

LAMP PANEL—Imperial Models

Removal

(1) Disconnect battery ground cable.

(2) Remove the two vent control mounting screws and move the control to allow sufficient clearance for lamp panel removal.

(3) Remove the map lamp.

(4) Remove two screws and remove lamp panel end plate.

(5) Remove the seven lamp panel mounting screws.

(6) Move the lamp panel to the right and down disconnecting the hazard warning switch connector and lamp panel wiring connector, then remove lamp panel.

Installation

(1) Position lamp panel on instrument panel and connect hazard warning switch and lamp panel wiring connectors.

(2) Install lamp panel mounting screws.

(3) Install lamp panel end plate.

(4) Install map lamp.

(5) Install vent control assembly.

(6) Connect battery ground cable and check operation of warning lamp system.

RIGHT END CLUSTER ACCESSORY BEZEL—Imperial

Removal

(1) Disconnect battery ground cable.

(2) Disconnect vacuum hose harness from rear heater switch.

(3) Disconnect wiring connector from rear fan switch.

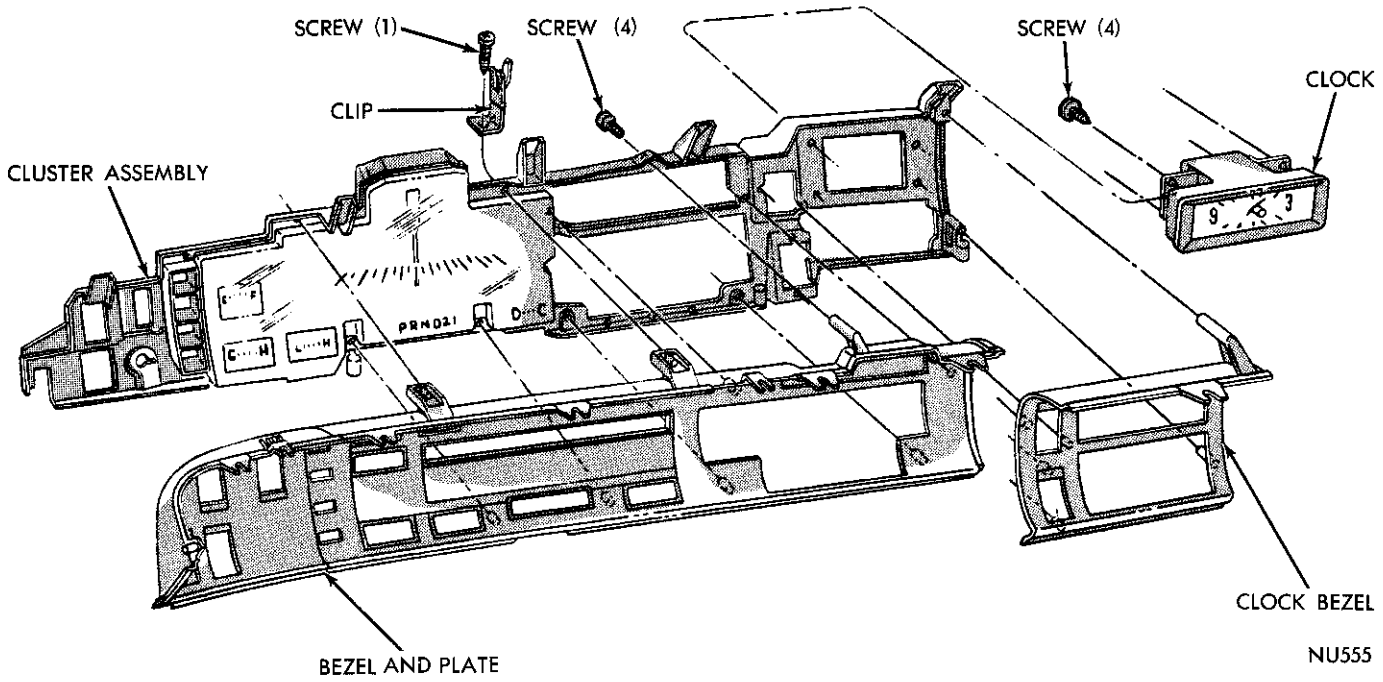


Fig. 5—Cluster Bezels and Cluster—Removing and Installing—Imperial

(4) Remove rear heater switch (two screws).
(5) Remove rear fan switch (two screws).
(6) Remove two bezel mounting screws and remove bezel from front of panel.

Installation

(1) Position bezel on instrument panel and install the bezel mounting screws.
(2) Install rear fan switch and mounting screws.
(3) Install rear heater switch and mounting screws.
(4) Connect rear fan switch wiring connector and rear heater switch vacuum hose harness.
(5) Connect battery ground cable and test operation of switches.

INSTRUMENT CLUSTER—Chrysler Models (Figs. 2, 7 and 8)

Removal

(1) Disconnect battery ground cable.
(2) Remove lower steering column cover (four screws).
(3) Remove the gear shift indicator pointer.
(4) Remove the three outside floor plate mounting bolts.

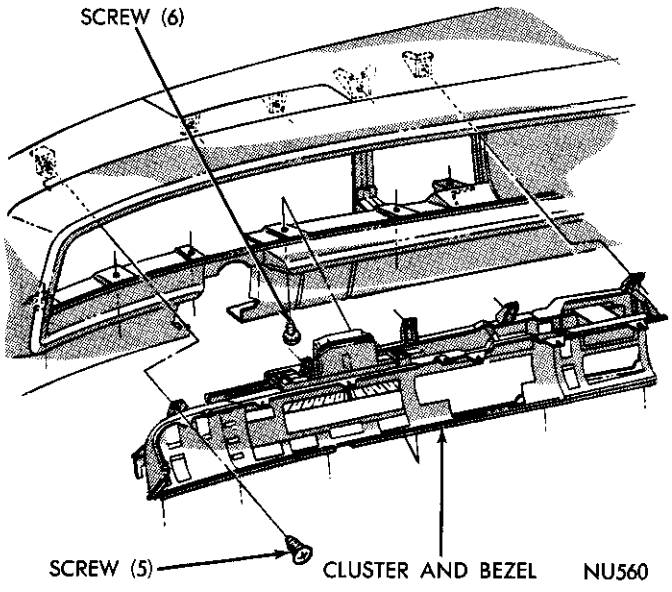


Fig. 6—Cluster and Bezel—Removing and Installing—Imperial

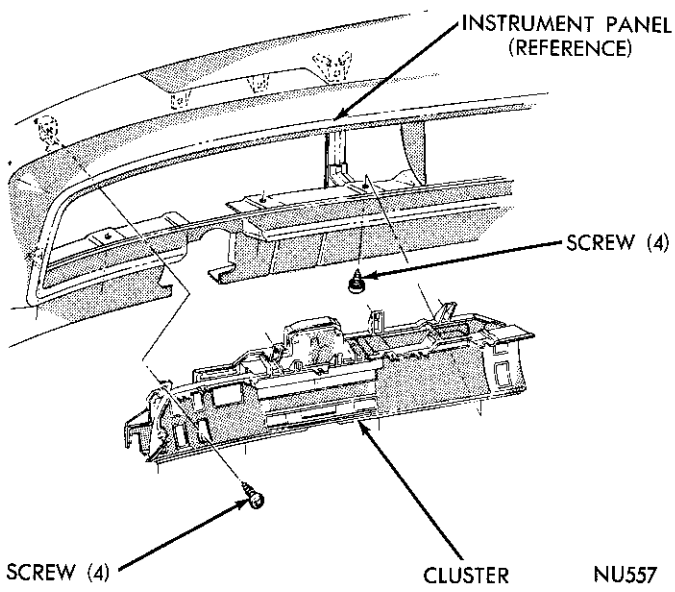


Fig. 7—Cluster Panel—Removing and Installing—Chrysler

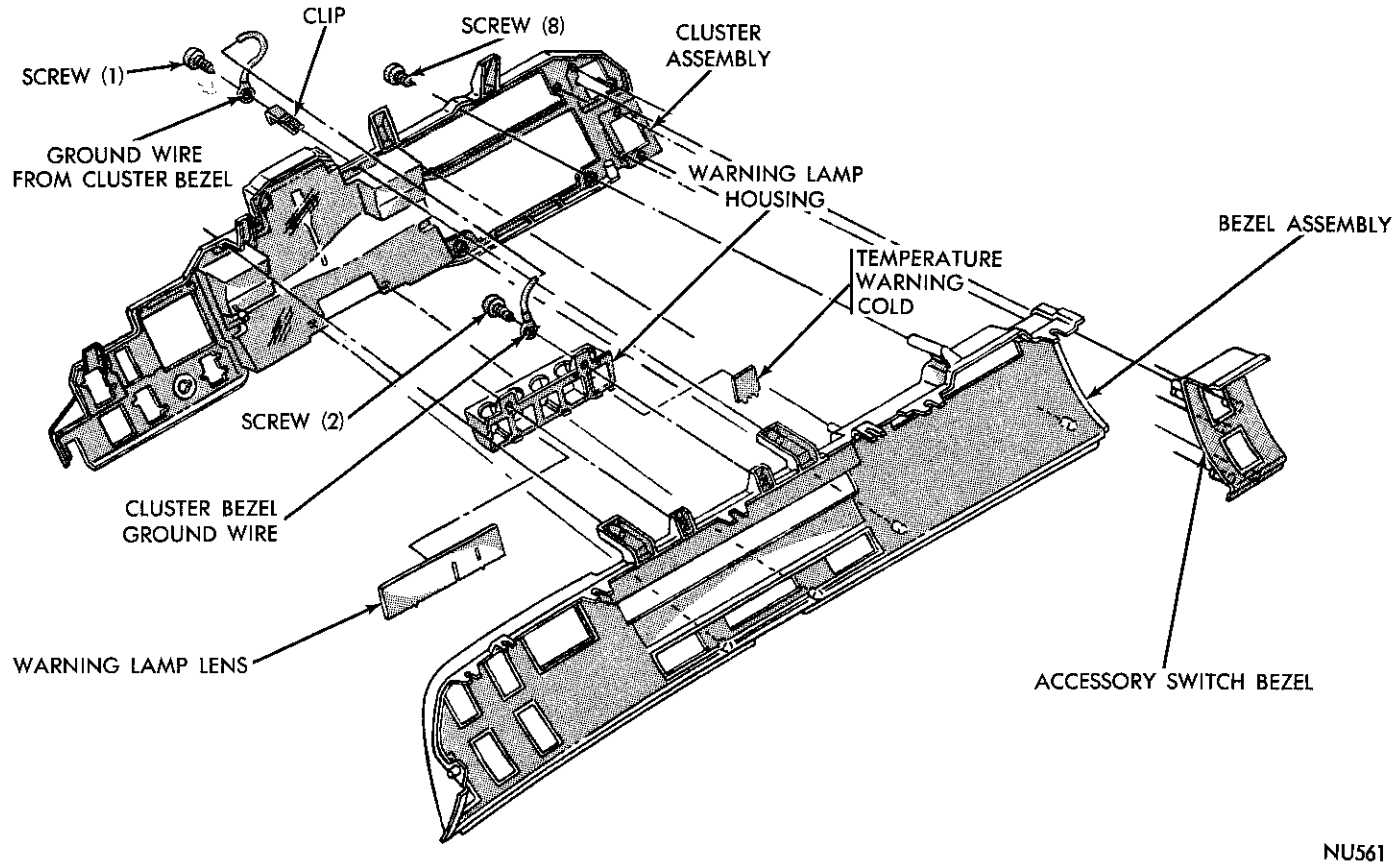


Fig. 8—Installing or Removing Bezel From Cluster—Chrysler

(5) Remove the ground strap nut from the steering column support and remove ground strap.

(6) Remove the three steering column clamp support nuts.

(7) Carefully lower the steering column and allow steering wheel to rest on front seat cushion.

(8) Remove left ash receiver.

(9) Remove radio. See "Accessories", Group 1.

(10) Remove heater controls.

(11) Remove the two vent control mounting screws and allow assembly to hang free.

(12) Remove map lamp.

(13) Remove lamp panel and lay it on top of instrument panel.

(14) From under the instrument panel remove four mounting screws from the right end accessory switch cover.

(15) Disconnect speedometer cable at speedometer.

(16) Remove the wiring harness from the harness clip on the left side of the column support.

(17) Remove four upper cluster mounting screws.

(18) Remove four lower cluster mounting screws (through access holes in the lower panel).

(19) Move the cluster to the right, rotating the right end of cluster towards the front of car and down.

(20) Roll the top of the cluster down and rock panel cluster slightly to the left to gain access to wiring.

(21) Disconnect wiring from the switches and instrument cluster and roll cluster out from instrument panel.

CAUTION: Perform this operation carefully as the connector pins on the printed circuit board may be easily destroyed.

Installation

(1) Carefully enter cluster into instrument panel opening and connect wiring to switches and cluster.

(2) With all wiring connected, tip the cluster up slightly and move cluster to the left and up into position on the panel.

(3) Install the four upper cluster mounting screws but do not tighten.

(4) Install the four lower mounting screws, (through access holes in the lower panel) then tighten all eight mounting screws securely.

(5) Place wiring harness into harness clip and clamp securely.

(6) Connect speedometer cable at speedometer.

(7) From under lower front of instrument panel install the accessory switch cover mounting screws.

(8) Install lamp panel.

(9) Install map lamp.

(10) Install vent control.

(11) Install heater controls.

(12) Install radio.
(13) Install left ash receiver.
(14) Carefully raise steering column into position; install column clamp support nuts (finger tight).
(15) Install floor support plate mounting bolts and tighten securely. Tighten steering column clamp support nuts.
(16) Install ground strap at steering column support.
(17) Install gear shift indicator pointer.
(18) Install steering column cover.
(19) Connect battery ground cable and test operation of all instruments, gauges and controls.

INSTRUMENT CLUSTER—Imperial Models (Figs. 3, 5 and 6)

Removal

(1) Disconnect battery ground cable.
(2) Remove left ash receiver.
(3) Remove the radio. See "Accessories" Group 1.
(4) Remove heater controls from instrument panel and let hang free.
(5) Disconnect the vent control cables at fresh air doors.
(6) Remove vent control mounting screws and move the control to allow for lamp panel removal.
(7) Remove map lamp.
(8) Remove lamp panel assembly.
(9) Remove cluster accessory bezel.
(10) Remove steering column cover.
(11) Remove gear shift indicator pointer.
(12) Remove steering column clamp at instrument panel and cover screws at floor panel.
(13) Lower steering column and rest steering wheel on front seat cushion.
(14) Disconnect speedometer cable from speedometer.
(15) Remove five upper cluster mounting screws.
(16) Remove five lower cluster mounting screws, working through the access holes in the lower instrument panel.
(17) Move the cluster to the right, pushing the right end of the cluster toward the front of the car while turning the top of cluster down, then pull the left end of the cluster out of the panel.
(18) Disconnect all wiring and connectors from back of cluster.
(19) Complete cluster removal.

Installation

(1) Position cluster on instrument panel and connect all wiring and connectors.
(2) Enter left side of cluster and raise top of cluster while moving cluster towards rear of car into position on the instrument panel.
(3) Install the five cluster lower mounting screws but do not tighten.
(4) Install the five upper mounting screws then tighten all screws securely.
(5) Connect speedometer cable to speedometer.
(6) Carefully raise steering column into position and install upper clamp and floor cover screws.
(7) Install gearshift indicator pointer.
(8) Install steering column cover.
(9) Install cluster accessory bezel.
(10) Install lamp panel assembly.
(11) Install map lamp.
(12) Install vent control assembly.
(13) Connect vent control cables at fresh air doors.
(14) Install heater controls.
(15) Install radio.
(16) Install ash receiver assembly.
(17) Connect battery ground cables and test operation of all lights, gauges, controls and radio.

WARNING LAMP BULBS—Chrysler Models

All of the lamp panel warning lights bulbs can be replaced as follows:
(1) Remove two vent control mounting screws and allow assembly to hang free.
(2) Remove map lamp.
(3) Remove lamp panel and place it on top of the instrument panel.
(4) Reaching over the instrument cluster, remove the lamp socket from the housing and the bulb from the socket.
Oil Warning, Brake System, High Beam, Engine Temperature-Hot and Engine Temperature-Cold.
(5) The following cluster indicator bulbs are serviceable from underneath the panel.
Right Turn Signal and Left Turn Signal.
Fasten Belt Indicator.
Locked Door Indicator.

WARNING LAMP BULBS—Imperial Models

(Replaced from under the instrument panel without removing instrument cluster).
Signal Sentry Bulb
Fasten Seat Belt Bulb
Lock Door Bulb
Brake System Bulb
High Beam Bulb can be removed after rocking the instrument cluster out far enough to gain acess to the printed circuit and bulb. (Not necessary to drop steering column).

EMERGENCY FLASHER—Chrysler Models

(1) Remove lower steering column cover for access.
(2) Remove wiring harness from wiring clip on left

side of steering column support.

(3) Remove wiring connectors from cluster printed circuit board, emergency flasher switch, panel lamp dimmer switch and headlamp switch.

(4) Remove two flasher switch mounting screws and remove flasher switch.

With instrument cluster removed, the following Chrysler Model switches replaced by removing the switch mounting screws and replacing the switch.

Panel Lamp Dimmer Switch
Head Lamp Switch
Windshield Wiper Switch
Windshield Washer Switch
Voltage Limiter

SWITCH REPLACEMENT—Imperial Models

Panel Lamp Dimmer Switch

(1) Remove lamp panel.

(2) Remove instrument cluster to gain access to the switch.

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

Windshield Wiper Switch

(1) Remove instrument cluster to gain access to the switch.

(2) Remove two switch mounting screws and remove the switch.

Windshield Washer Switch

(1) Remove instrument cluster to gain access to the switch.

(2) Remove two switch mounting screws and remove the switch.

Headlamp Switch

(1) Remove instrument cluster to gain access to the switch.

(2) Remove two switch mounting screws and remove the switch.

The following switches and lamps can be removed from underneath the instrument panel by removing the switch attaching screws.

Rear Heater Vacuum Switch.
Rear Blower Switch.
Voltage Limiter.

INSTRUMENT AND GAUGES REPLACEMENT All Models

(Cluster Removed from Instrument Panel) Printed Circuit Boards

(1) Remove gauge mounting nuts.

(2) Remove printed circuit board mounting screws.

(3) Remove printed circuit board.

Alternator (Ammeter)

(1) Remove tripometer reset knob.

(2) Remove switch mounting screws.

(3) Remove cluster bezel mounting screws.

(4) Remove instrument cluster lens (held by snap pins).

(5) Remove two ammeter gauge mounting nuts and remove the gauge.

Oil Pressure Gauge

(1) Remove tripometer reset knob.

(2) Remove switch mounting screws.

(3) Remove cluster bezel mounting screws.

(4) Remove instrument cluster lens (held by snap pins).

(5) Remove two oil pressure gauge mounting nuts and remove the gauge.

Temperature and Fuel Gauge

(1) Remove tripometer reset knob.

(2) Remove switch mounting screws.

(3) Remove instrument cluster lens (held by snap pins).

(4) Remove four gauge assembly mounting nuts and remove the gauge assembly.

Speedometer

(1) Remove tripometer reset knob.

(2) Remove speedometer mounting screws.

(3) Remove instrument cluster lens.

(4) Remove speedometer.

Glove Box Light Replacement—All Models

(1) Remove the glove box light and switch assembly from the instrument panel bezel.

(2) Remove the bulb from the switch assembly.

Left Ash Receiver Light Replacement—All Models

(1) Remove the left ash receiver from the instrument panel.

(2) Remove the lamp socket from the housing and remove the bulb.

GLOVE BOX—All Models

Removal

(1) Remove the four upper glove box to lower glove box attaching screws.

(2) Remove the six glove box to instrument panel attaching screws.

(3) Separate the upper and lower glove box.

(4) Disconnect the stereo crossover wiring connectors (so equipped) and remove the lower glove box.

(5) Remove the upper glove box.

Installation

(1) Carefully install the upper glove box.

(2) Install the lower glove box and connect the stereo crossover wiring connectors (so equipped).

(3) Install the upper and lower glove box screws.

INSTRUMENT PANEL BEZEL—Chrysler Models

Removal

(1) Remove glove box door.

(2) Remove glove box.

(3) Remove vacuum lid switch bezel (so equipped).

(4) Remove glove box lamp and switch assembly.

(5) Remove four lower mounting screws through glove box opening.

(6) Remove four upper mounting screws through glove box opening.

(7) Remove instrument panel bezel.

Installation

(1) Position instrument panel bezel and install the four upper and lower mounting screws.

(2) Install glove box lamp and switch assembly.

(3) Install vacuum deck lid switch bezel.

(4) Install glove box and mounting screws.

(5) Install glove box door.

INSTRUMENT PANEL BEZEL—Imperial Models

Removal

(1) Remove the glove box door.

(2) Remove the glove box.

(3) Disconnect the glove box lamp and switch assembly wiring connector.

(4) Remove the eight bezel attaching screws and remove bezel.

Installation

(1) Position the instrument panel bezel and install the eight attaching screws.

(2) Connect the glove box lamp and switch wiring connector.

(3) Install glove box.

(4) Install glove box door.

INSTRUMENT PANEL TRIM PAD

Removal

(1) Remove steering column covers, upper and lower.

(2) Remove gear shift indicator pointer (one screw).

(3) Remove the three outside floor plate mounting screws.

(4) Remove the three steering column clamp support nuts.

(5) Carefully lower the steering column and allow steering wheel to rest on front seat cushion.

(6) Remove glove box door.

(7) Remove glove box.

(8) Remove instrument panel bezel.

(9) Remove two vent control mounting screws and allow assembly to hang free.

(10) Remove map lamp.

(11) Remove lamp panel.

(12) From under the instrument panel, remove the six lower trim pad mounting nuts.

(13) Through lamp panel and glove box openings, remove four upper trim pad mounting nuts and remove trim pad.

(14) Through the instrument cluster and glovebox openings, remove three upper trim pad mounting screws and remove trim pad.

Installation

(1) Position trim panel on instrument panel and install the ten attaching screws.

(2) Install lamp panel.

(3) Install map lamp.

(4) Position vent control and install attaching screws.

(5) Install instrument panel bezel.

(6) Install glove box and glove box door.

(7) Position steering column and install upper column attaching nuts, **finger tight.**

(8) Install the three outside floor plate mounting screws and tighten securely, then tighten the three upper column nuts securely.

(9) Install gear shift indicator pointer.

(10) Install steering column cover upper and lower.

TESTS OUT OF VEHICLE

Printed Circuit Board—All Models

A visual inspection of the conductors should be

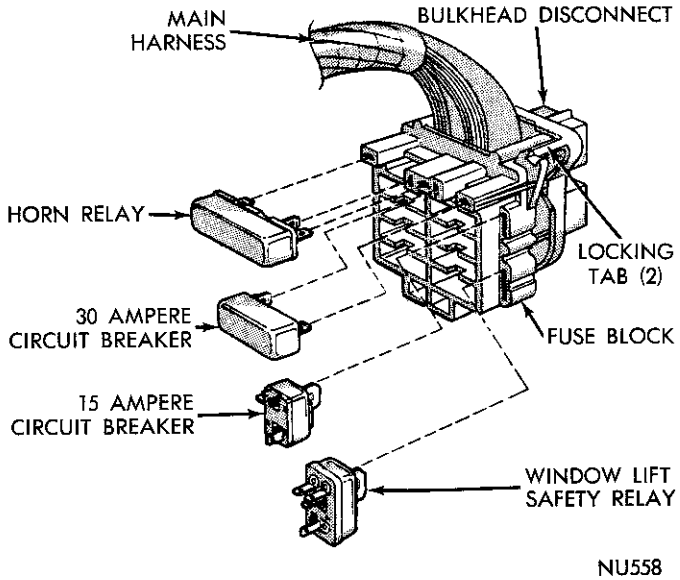


Fig. 9—Removing or Installing Circuit Breakers and Relays to Fuse Block

made for cracks or damaged circuits. If no visual damage is evident, each circuit should be tested for continuity with an ohmmeter or a test light. Should an open circuit be detected, the printed circuit board should be replaced.

Instruments—All Models

(1) Connect a jumper wire to voltage limiter input terminal. Connect other end of the jumper wire to positive post (+) of a 12 volt test battery.

(2) Connect a jumper wire from negative (—) post of battery to instrument cluster base (ground).

(3) Connect one lead from Tester C-3826 to gauge sending terminal being tested.

(4) Connect remaining tester lead to instrument cluster base (ground).

When the gauge tester is in "L" position, the gauge being tested should read on the low side of dial. With gauge tester on "M", the gauge should read in the center of the dial scale and on the high end of the dial when pointer of tester is placed on "H". If gauges do not perform as stated, inspect for an open printed circuit before replacing gauge.

CAUTION: A direct connection from a 12 volt battery will damage the gauges or printed circuit board.

Fuel Tank Sending Unit—All Models

Before removing any unit of the fuel level indicating system, the panel fuel gauge should be tested first. See "Tests in Vehicle". If the panel gauge performs properly **make sure the fuel tank ground strap on the fuel line at the tank is making a good ground.** Should the gauge perform properly and the ground strap be properly installed, remove the fuel tank sending unit as outlined in "Fuel System", Group 14 and test as follows:

(1) Using an ohmmeter with a 0 to 100 ohm scale, connect one lead to body of sending unit and the other lead to terminal in center of unit.

(2) Hold unit so float arm contacts "Empty Stop." The reading on ohmmeter scale should be 73 ohms, plus or minus 12.0 ohms for Chrysler models or 66 ohms plus or minus 11.5 ohms for Imperial models.

(3) Raise arm to "Full Stop." The reading should now be 9.6 ohms, plus or minus 1 ohm for Chrysler models or 2.2 ohms plus or minus .5 ohm for Imperial models.

If the unit does not perform to these specifications, inspect the stops or arm for possible distortion. If the stops or arm cannot be repaired or are not damaged, the unit should be replaced.

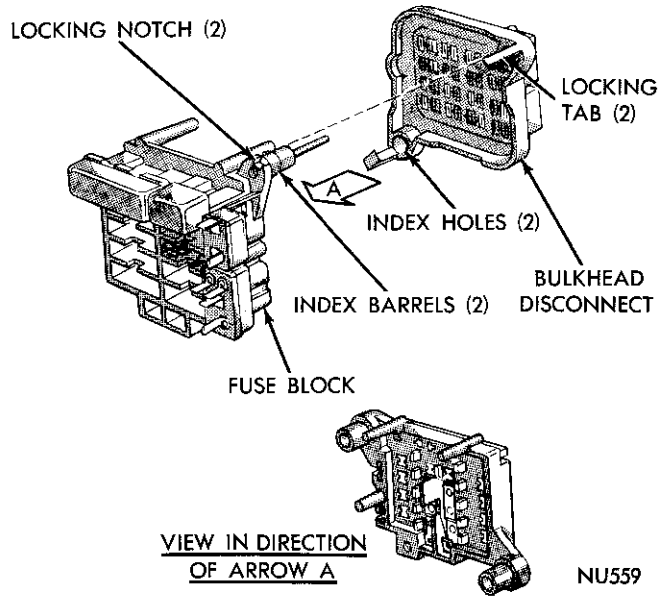


Fig. 10—Removing and Installing Fuse Block

FUSE BLOCK

The fuse block is located under the instrument panel to the left of the brake pedal and is retained to the bulkhead disconnect by two locking tabs (Figs. 9 and 10).

Alignment of fuse block to bulkhead disconnect is maintained by two indexing barrels on the fuse block. The fuse name and capacity is printed on the front face of the fuse block. Refer to "Specifications".

CIRCUIT BREAKERS

Use only identical type and value circuit breakers as replacement when servicing. See "Specifications" for locations and values of circuit breakers.

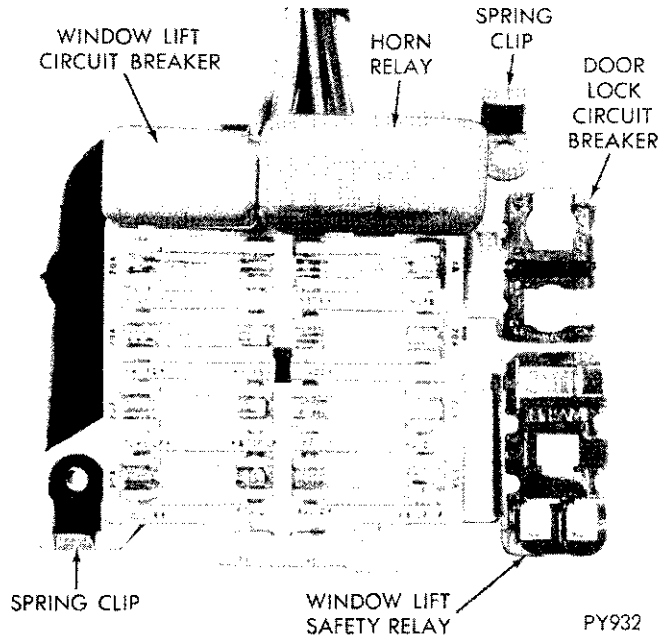


Fig. 11—Bulkhead Disconnect and Fuse Block Assembly

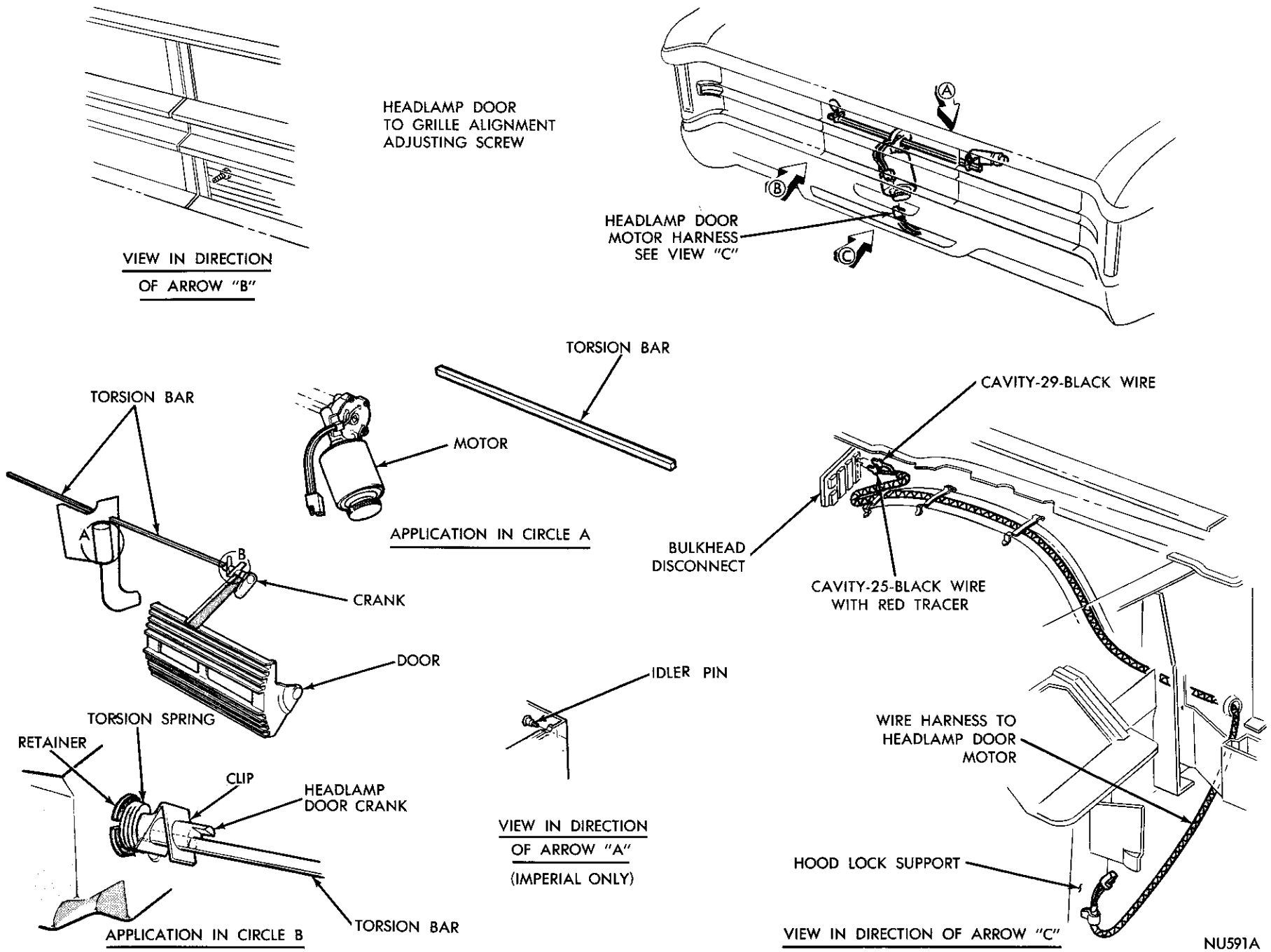


Fig. 1—Concealed Headlamps Adaptation

CONCEALED HEADLAMPS

INDEX

	Page		Page
Headlamp Doors	65	Torsion Bar and Motor	66
Tests	65		

GENERAL INFORMATION

The headlamp doors (Fig. 1) are electrically operated. A single electric motor mounted on the hood lock vertical support is a series-wound type with two field windings. The motor has a worm gear drive and internal limit switches. A relay and circuit breaker assembly is mounted to the instrument panel lower reinforcement left of the steering column.

To open the headlamp doors in the event of an electrical failure, disconnect the motor leads FIRST, then rotate the hand wheel located at the lower end of the motor clockwise until the headlamp doors are fully opened.

CAUTION: Rotating the wheel after the doors reach the end of travel will permanently damage the motor.

SERVICE PROCEDURES

TESTS

(1) If headlamp doors do not operate and headlights and ignition switch are on **not accessory position),** before starting any tests, first check for good ground continuity; terminals fully seated, and connectors free of dirt and corrosion and that the wire from motor terminal is connected to a good body ground.

CAUTION: Do not operate motor with headlamp doors disconnected as operating the motor without load will damage motor.

(2) Using jumper wires, test motor operation. Using the car battery as a direct source of power, apply power to motor leads at terminal. **(Not the ground terminal).** If motor operates, perform Step (3).

(3) Use jumper wires at bulkhead disconnect to see if there is voltage at the terminal for both lights on and off. If there is no voltage for either door position, perform Step (4).

(4) Test for loose wire at the "H" terminal of headlamp switch, loose wires on headlamp motor relay, or faulty circuit breaker or relay; replace, relay and circuit breaker as required.

HEADLAMP DOORS

Removal

(1) Disconnect motor leads at harness connector (Fig. 1).

(2) Rotate the motor hand wheel clockwise if doors are closed; or counterclockwise if doors are open; until headlamp doors are at the halfway open position (indicator lug on motor switch plate and lug on gear near rectangular hole are in alignment Fig. 2). (Imperial only). On Chrysler 300, rotate door to full open position in order to remove door.

(3) Compress torsion bar to headlamp door crank clip and slide clip from crank (Fig. 1).

(4) Force the torsion bar from the crank arm slot by wiggling the door up and down with one hand while pulling the bar out from the slot with your other hand (Fig. 3).

(5) Remove inboard sealed beam units.

(6) Remove torsion spring and retainer clip from crank assembly (Fig. 1).

(7) Remove screw holding the crank assembly to the door arm at the inboard side of door.

(8) Remove crank assembly from headlamp door.

(9) Remove idler pin from outboard side of door, (Imperial only).

(10) Remove door from opening.

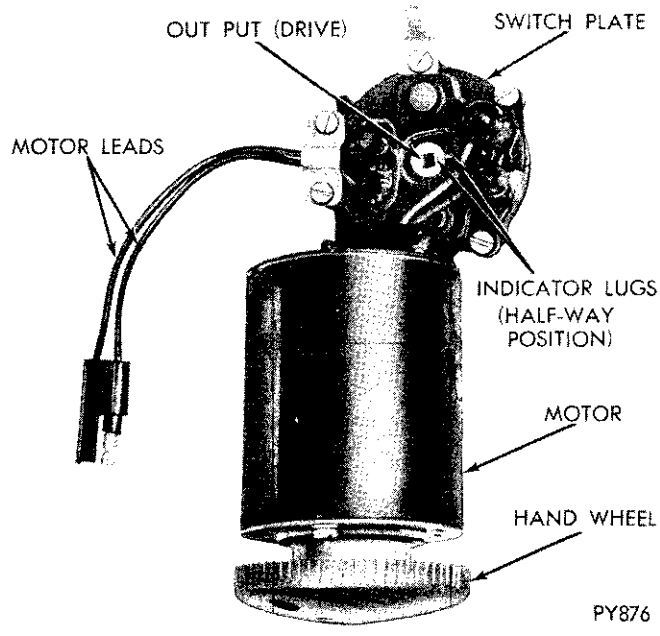


Fig. 2—Manually Aligning Indicator Lugs

Installation

(1) Position door in grille opening, align crank assembly holes and insert crank.

(2) Align idler pins holes and install idler pin, (Imperial only).

(3) Install retainer on crank.

(4) Install screw on side of door, attaching the crank assembly to the door.

(5) While holding door in open position, slide spring into position on crank.

(6) Wind spring up approximately 180° and hook in hole (Chrysler) or on the upper rear corner of the housing (Imperial). Check that spring preloads door in open position.

(7) Position and fully seat torsion bar in slotted area of crank. (Check that the motor is in halfway open position, Fig. 2).

(8) Compress and position clip over crank and torsion bar.

(9) Install headlamp sealed beam units and connect battery ground strap.

(10) Connect motor leads at harness connector (Fig. 1).

TORSION BAR AND MOTOR

The torsion bar and motor is removed as an assembly.

Removal

(1) Disconnect battery ground strap.

(2) Disconnect motor leads including ground wire from harness (Fig. 2).

(3) Rotate the hand wheel on the motor clockwise if doors are closed, or counterclockwise if doors are open until headlamp doors are at the halfway open position, (Fig. 2).

(4) Compress and remove clips from crank assemblies (Fig. 1).

(5) Remove torsion bar from slotted areas in cranks as described in headlamp door removal (Fig. 3).

(6) Remove motor mounting bracket (2 bolts) from vertical lock support (Imperial only).

(7) Remove motor (3 screws) from motor mounting bracket (Imperial) or vertical lock support (Chrysler).

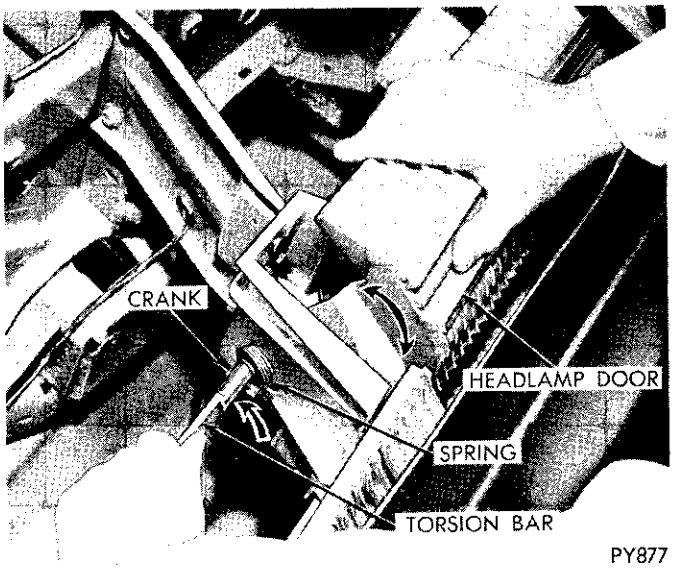


Fig. 3—Removing Torsion Bar from Headlamp Door Crank

(8) Remove torsion bar from motor.

Installation

CAUTION: Do not bench test new motor. Operating motor without load will damage the motor.

(1) Insert torsion bar in motor and position clips on bar. **The torsion bar and the hole in the motor are slightly rectangular and can be assembled only one way.**

(2) Position motor on motor mounting bracket (Imperial) or vertical lock support (Chrysler) and install mounting screws. Verify that the motor is in the halfway open position (Fig. 2), then tighten attaching screws to 95 inch pounds, plus or minus 20 inch pounds.

(3) Position motor mounting bracket on vertical lock support and tighten, attaching bolts to 220 inch pounds (Imperial only).

(4) Position and fully seat torsion bar in slotted areas of cranks. Compress clips and position over cranks and torsion bar.

(5) Connect motor to harness and connect battery ground strap.

(6) Test operation of doors.

WINDSHIELD WIPER SYSTEM

INDEX

	Page		Page
End Play Adjustment	68	Motor Removal	69
General Information	67	Panel Switch Tests	68
Linkage	69	Pivot Replacement	69
Lubrication	69	Service Diagnosis	67
Motor Installation	69	Wiper Arm Adjustment	68

GENERAL INFORMATION

The windshield wipers can be operated with the windshield wiper switch only when the ignition switch is in the **Accessory** or **Ignition** position. A circuit breaker, integral with the wiper switch protects the circuitry of the wiper system and the vehicle.

Two speed wipers are standard on Chrysler Newport and 300 models while three speed wipers are standard on Chrysler Town and Country and New Yorker models and on all Imperials. The three speed wipers are available as an option on Chrysler Newport and 300 models.

The three speed motor is controlled by resistors in the field circuit. The high speed resistor is mounted on the switch and the resistance wire is in the harness for medium speed.

Two speed motors have permanent magnet fields and are controlled by feeding power to two different brushes for low and high speed. For low speed operation, the current first flows through the torque limiting resistor and then to the low speed brush (terminal "L", Fig. 3). For high speed operation, the high speed brush (terminal "H") is fed directly.

The depressed parking feature in the three speed system is accomplished by reversing the rotation of the motor and the use of an eccentric motor shaft. When the wiper switch is turned "Off", the motor rotation is reversed, the motor inner shaft stops and the outer rotates 180° degrees, lengthening the linkage slightly to park the blades beneath the rear edge of the hood in the depressed position. The linkage shortens again when the motor is turned "On" by reversing the action.

The depressed parking feature of the two speed system is accomplished by reversing the rotation of the motor and the use of a parking cam on the motor crank pin. When the wiper is turned "Off", the motor direction is reversed and at the same time, the parking cam rotates 180° degrees, lengthening the drive link slightly to park the blades beneath the rear edge of the hood in the depressed position. Motor operation in the wipe direction returns to run position to restore the normal link length and wipe pattern.

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
WIPER FAILS TO OPERATE	(a) Binding Linkage.	(a) Relieve binding condition.
	(b) Faulty instrument panel switch.	(b) Test switch. See "Panel Switch Tests".
	(c) Linkage disconnected.	(c) Repair as necessary.
	(d) Faulty motor.	(d) Test motor. See "Motor Testing".
	(e) Open or grounded wiring.	(e) Test wiring for continuity. Repair as necessary.
WIPER BLADES NOT PARKING PROPERLY	(a) Arm set at incorrect position.	(a) Adjust arm. See "Wiper Arm Adjustment."
BLADES SLAP AGAINST WINDSHIELD MOULDINGS ON DRY GLASS	(a) Improperly adjusted wiper arm.	(a) See "Wiper Arm Adjustment."
	(b) Looseness of the motor crank or other drive parts.	(b) Tighten or replace the part.
BLADES CHATTER	(a) Twisted arm holds blade at wrong angle to glass.	(a) Replace wiper arm. Do not attempt to straighten bent or twisted arm.
	(b) Bent or damaged blades.	(b) Replace blades.
	(c) Foreign substances such as body polish on glass or blades.	(c) Clean the glass or blades.
MOTOR WILL NOT STOP WHEN INSTRUMENT PANEL SWITCH IS TURNED "OFF"	(a) Motor park switch failure in the "closed" position.	(a) Replace motor assembly.
MOTOR STOPS IN ANY POSITION WHEN INSTRUMENT PANEL SWITCH IS TURNED	(a) Motor park switch failure in the "open" position.	(a) Replace motor assembly.
	(b) Open parking circuit or open field circuit.	(b) Test continuity of blue, red and green wiring circuit and correct as necessary.
NO SPEED CONTROL	(a) Open circuit in red or green wiring (3-speed). Open circuit in brown or red wiring (2-speed only).	(a) Test continuity and correct as necessary.
	(b) Faulty control switch.	(b) Replace switch.

SERVICE PROCEDURES

WIPER ARM ADJUSTMENT

To determine if an adjustment is required, apply a constant **upward** force of 50 ounces parallel to the windshield glass at the end of the wiper arm (where the blade is attached to the arm). With the force applied, pull the wiper blade away from the windshield glass once or twice to prevent glass friction from affecting upward movement of the wiper arm and blade. With the force applied, the clearance between the side of the wiper blade and the blade stop should be as follows:

Clearance in Inches Between Side of Blade and Blade Stop	
Right	Left
.75 to 2.50	.25 to 2.00

If the clearance is not in the specified range lift the wiper arm and insert a .090 inch diameter pin or drill (Fig. 1). With the pin inserted, pull the wiper arm off wiper pivot with a rocking motion and reposition. Remove pin after repositioning. (If necessary to remove left pivot, refer to "Linkage and Pivots" Paragraph.)

CAUTION: The use of a screwdriver or other prying tool to remove an arm may distort it in a manner that will allow it to come off the pivot-shaft in the future, regardless of how carefully it is reinstalled. NEVER under any circumstances push or bend the spring clip in the base of the arm in an attempt to release the arm. This clip is self-releasing.

END PLAY ADJUSTMENT (Three Speed Only)

To adjust the armature shaft end play, turn the adjustment screw in until it bottoms and back-off 1/8 turn (Fig. 2). This adjustment can be made without removing the wiper motor from the vehicle.

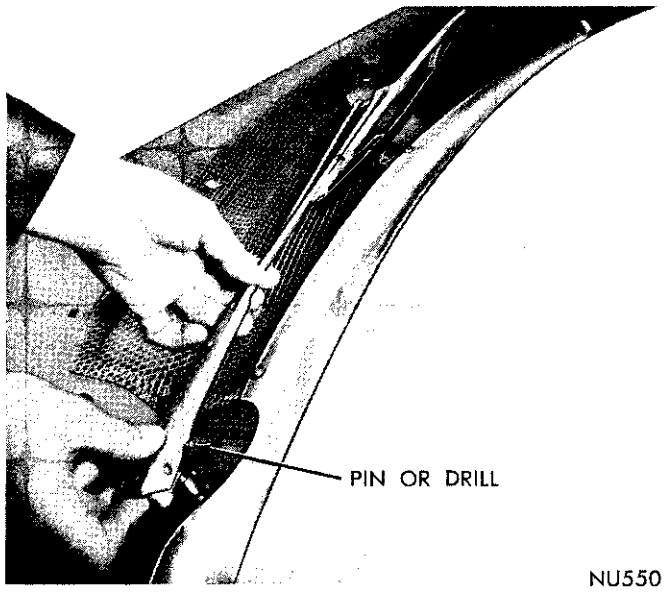


Fig. 1—Removing Wiper Arm and Blade

PANEL SWITCH TESTS (Three Speed Only)

The switch contains the high speed resistor with a medium speed resistor in the wire harness to provide means of controlling the current flow to the motor. In the off position the switch is designed to provide a circuit to the motor to reverse the current to the field winding which reverses the direction of the armature. A circuit breaker, built into the switch, protects the circuitry.

To test the switch, disconnect the wiring to the switch and remove the switch from the instrument panel. For removal and installation of the wiper switch, see "Instrument Panels".

Using a continuity tester or an ohmmeter, test for continuity (no resistance between the contact terminals of the switch as shown in the following chart.

For test purposes, the "Park" position is the "Off" position. The "Low" position is the first detent past the "Off" position. The "High" position is the second detent of the switch. The bench test of the switch does not require the use of a twelve volt battery.

SWITCH CONTINUITY CHART
(3-Speed Wiper Motors)

Off	Low	Medium	High
B to B/U	B to B/U	B to B/U	B to B/U
B/U to P	B/U to A	B/U to A	B/U to A
A to F2	A to F1	F1 to R1	A through the resistor to F1
F1 to Ground	F2 to Ground P-Open	F2 to Ground P-Open	F2 to Ground P-Open F1 to R2

PANEL SWITCH TEST (Two Speed)

This switch contains a circuit breaker between

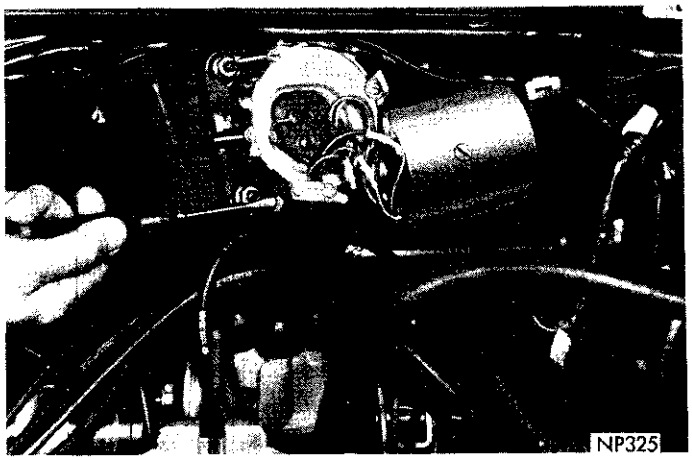


Fig. 2—End Play Adjustment (3 Speed Only)

terminals B and P. To test the switch, disconnect the wiring and remove from the instrument panel.

For removal and installation of the wiper switch, see "Instrument Panels".

Using a continuity tester or an ohmmeter, test for continuity (no resistance) between the contact terminals of the switch as shown in the following chart.

For test purposes, the "Park" position is the "Off" position. The "Low" position is the first detent past the "Off" position. The "High" position is the second detent of the switch. The bench test of the switch does not require the use of a twelve volt battery. **In the test chart the reference "Ground" means to attach one lead of the continuity tester or ohmmeter to the switch case.**

SWITCH CONTINUITY CHART

(Chrysler Manufactured 2-Speed)

Off	Low	High
B to B/U	B to B/U	B to B/U
B to P	B to A	B to F1
A to Ground	P-Open	F2 to Ground
F2-Open	F1-Open	A-Open
F1-Open	F2-Ground	

MOTOR TESTING

(Two Speed) (Fig. 3)

(1) Disconnect motor leads at motor. Connect jumper from battery positive terminal to motor terminal "H". Connect second jumper from terminal "P2" to ground. Motor should run at high speed. Remove jumpers.

(2) Connect jumper from battery positive terminal to resistor terminal. Connect second jumper from terminal "L" to second resistor terminal. Connect a third jumper from terminal "P2" to ground. The motor should run forward at low speed. Remove jumpers.

(3) Connect jumper from battery positive terminal to motor terminal "P1". Connect a second jumper from motor terminal "L" to ground. The motor should run in reverse rotation for at least a half revolution and park. Remove jumpers.

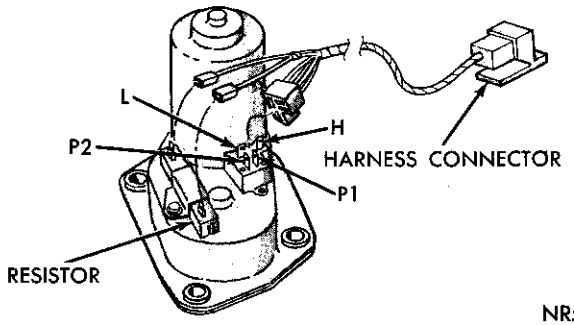


Fig. 3—Wiper Motor—Two Speed

(Three Speed)

Disconnect motor leads at bulkhead disconnect.

(1) Connect a jumper wire from the green lead to ground. Connect a second jumper from battery positive terminal to brown and red leads in bulkhead disconnect. (The ground circuit is completed through the car body.) The motor should run continuously. Disconnect leads.

(2) Connect jumper wire from green lead to brown lead. Connect red lead to ground. Connect third jumper wire from battery positive terminal to blue lead. The wiper should run to the park position.

CAUTION: Motor can be damaged if not wired correctly.

LINKAGE AND PIVOT REMOVAL

To service drive link, connecting link or either pivot, it is necessary to remove the wiper arms and blade assemblies, and the cowl screen to provide access to the wiper system.

(1) Disconnect battery ground cable.

(2) Remove the crank arm nut and crank arm from motor shaft.

(3) Remove bolts mounting left and right pivots to body (Fig. 5).

(4) Remove links and pivots through cowl top opening. The linkage and pivots can be serviced on bench after removal from the vehicle. (Refer to Figure 4).

LUBRICATION

Should it be necessary to service the wiper system for any reason, the parking spring in the two speed parking mechanism should be lubricated with Mopar Lubricant provided with service package. Apply the lubricant to inside coils of spring first and to the outside of the spring coils after installation of the spring.

The three speed crank arm pin and the pivot pins for all systems should be lubricated with Automotive Multi-Purpose Lubricant NLGI 2.

LINKAGE AND PIVOT INSTALLATION

If servicing of the mechanism on the 2-speed motor crank is required, be certain that during reassembly, the link is positioned between the ears of the cover retainer. Seat the rubber cover fully in the groove provided for it on the cover retainer.

Any retainer clips distorted during removal should be replaced.

When installing connecting link on pivot pin place spring washer on pin and lubricate pin. Install connecting link and retaining clip. Place foam rubber washer and flat metal washer on pin. Lubricate pin and install links and retaining clips.

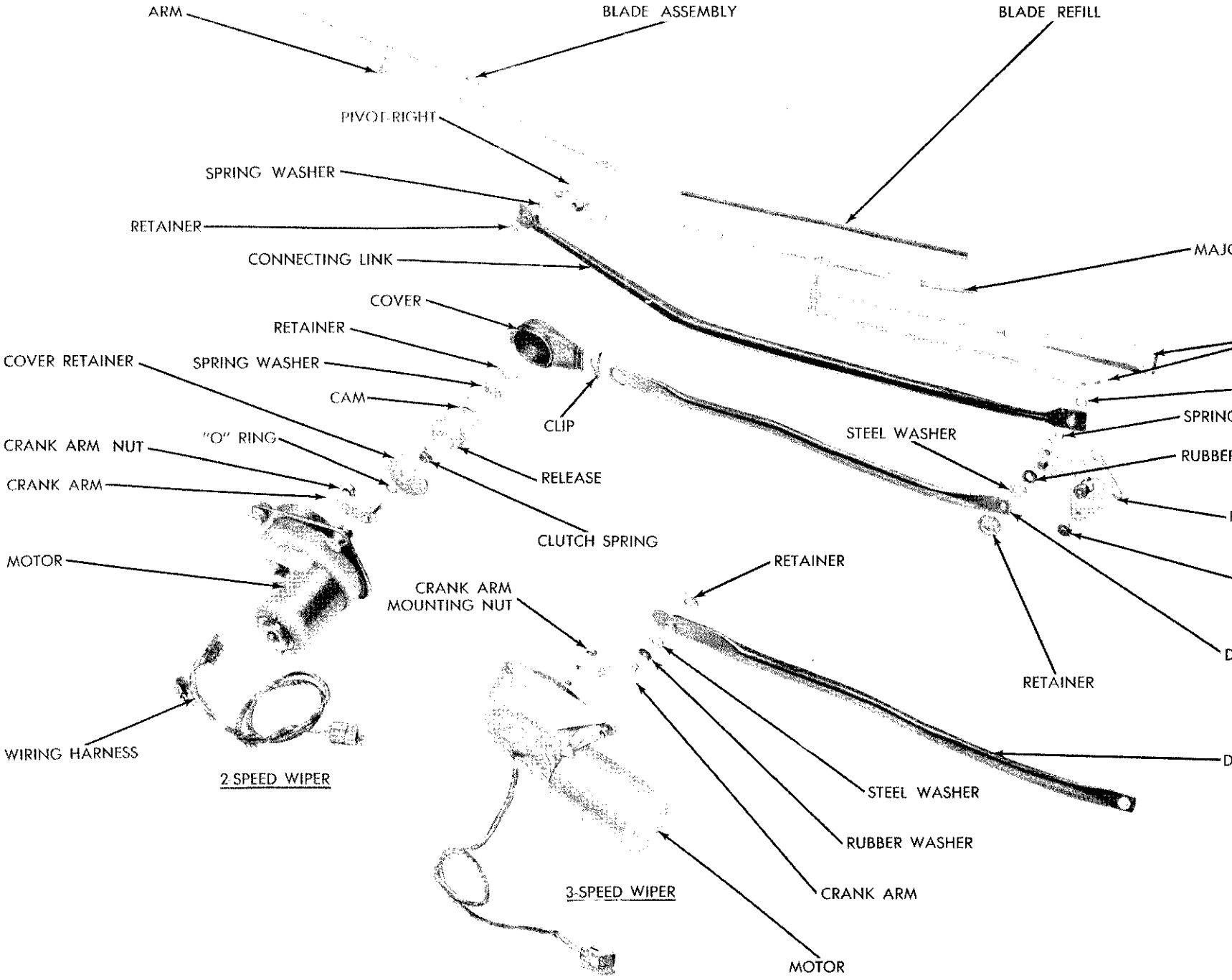


Fig. 4—Wiper System

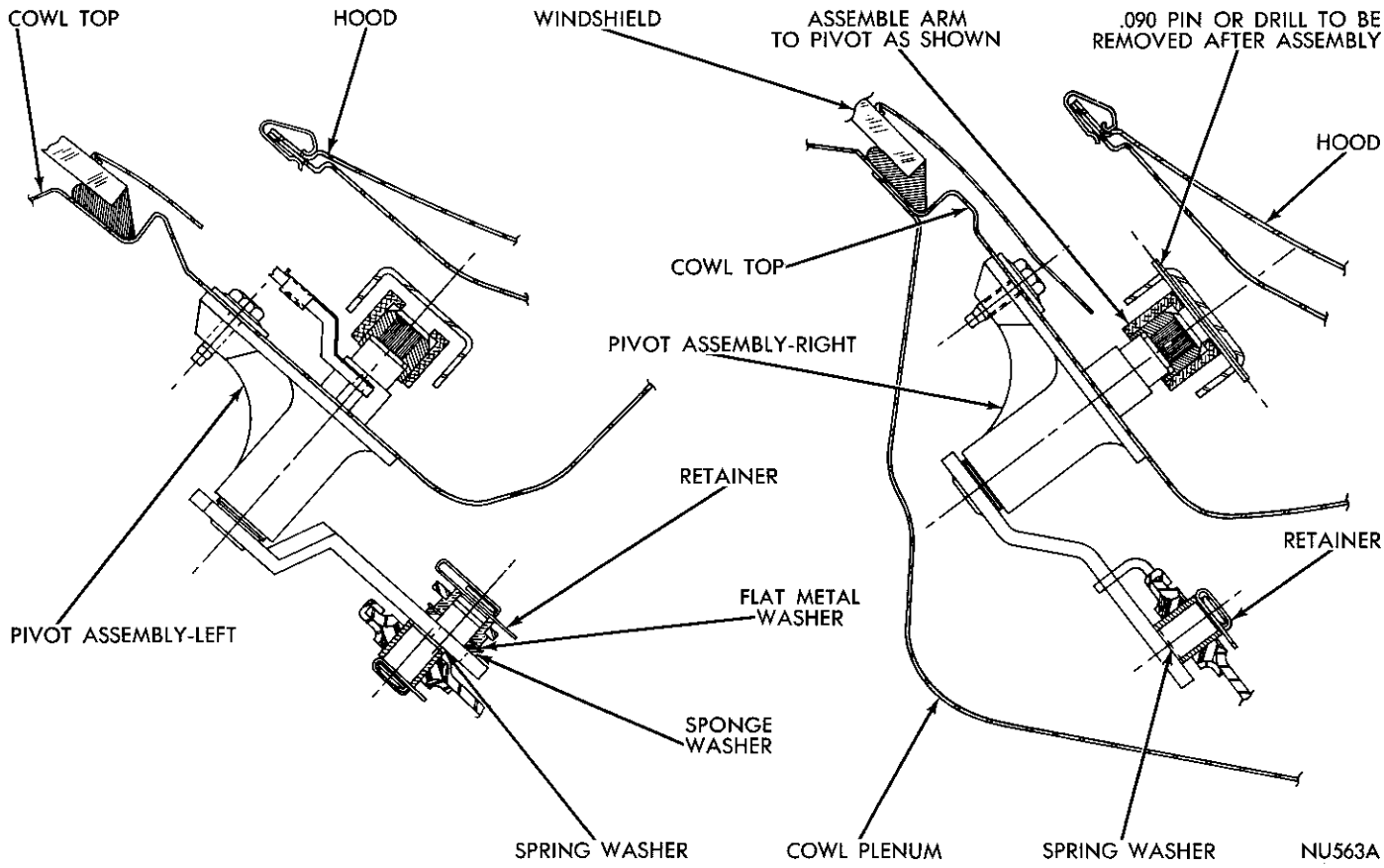


Fig. 5—Pivot, Arm and Link (Sectional)

(1) Insert the linkage and pivots, assembled as a unit, through the cowl panel opening.

(2) Bolt pivots in position.

(3) Position crank arm on motor shaft and tighten mounting nut to 140 inch-pounds.

(4) Connect battery ground cable.

(5) Test wiper system operation.

(6) Install cowl screen.

(7) Using a .090 inch diameter pin or drill (Fig. 1) carefully install wiper arm and blade assemblies. (See Wiper Arm Adjustments).

WINDSHIELD WASHERS

GENERAL INFORMATION

Chrysler and Imperial models are equipped with push button electric washers as standard equipment.

The electric pump assembly is mounted directly to the reservoir. A permanently lubricated sealed motor is coupled to a rotor type pump. Fluid, gravity fed from the reservoir, is forced by the pump through rubber hoses to the nozzles which direct the streams to the windshield.

The pump and reservoir are serviced as separate assemblies.

SERVICE DIAGNOSIS

As an aid to determine if the pump assembly is defective, connect a jumper wire from the blade terminal of the pump (Fig. 2), to the positive terminal of the battery. If pump operates, check wiring and switch. If pump does not operate, it may be defective of frozen. Replace the pump and motor assembly if defective.

Condition	Possible Cause	Correction
INTERMITTENT OPERATION OF SYSTEM	(a) Loose wiring connections. (b) Faulty switch. (c) Faulty motor.	(a) Repair as necessary. (b) Replace switch. (c) Replace motor and pump assembly.

Condition	Possible Cause	Correction
MOTOR RUNS DOES NOT PUMP FLUID	(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) Corroded terminals.	(c) Clean and tighten terminals.
	(d) Broken wires.	(d) Repair or replace the wires.
	(e) Faulty switch.	(e) Replace switch assembly.
	(f) Faulty motor.	(f) Replace motor and pump assembly.
LOW OUTPUT	(a) Low aimed nozzles.	(a) Adjust nozzles.
	(b) Poor electrical connections.	(b) Clean and tighten terminals.
	(c) Pinched or leaky hoses.	(c) Correct as necessary.
	(d) Defective motor.	(d) Replace motor and pump assembly.

SERVICE PROCEDURES

Nozzle Adjustment

The nozzles are mounted on the underside of the hood. Vertical and lateral adjustment is obtained by bending the nozzle tube with the fingers. **Caution: To prevent possible injury, do not adjust the nozzles while the wipers are operating.**

Adjust nozzles so that the centers of the streams contact the windshield glass (Fig. 1). The oval pattern formed by the stream striking the windshield glass is not "centered" on the center of the stream. The stream is toward the bottom of the oval pattern.

ELECTRIC PUMP

Removal

(1) Remove reservoir mounting screws, remove reservoir and pump assembly. Empty fluid from reservoir.

(2) Disconnect motor feed wire connector and rubber hose from bottom of pump.

(3) Using a suitable extension and a 7/8 inch deep-well socket through filler neck, remove pump mounting nut inside reservoir. Remove ground wire. **It may be necessary in some older pumps to use a 15/16 in. deep-well socket due to the expansion of the nylon nut through absorption of windshield washer fluid.**

(4) Remove pump from bottom of reservoir and discard rubber gasket.

Installation

Any time the pump is removed from the reservoir, always replace the rubber gasket.

(1) Install new rubber gasket on reservoir.

(2) Install pump assembly through gasket. Place plastic washer under screen and nut assembly and tighten securely (approximately 25 inch pounds). **Do not overtighten.**

(3) Reconnect ground wire. Ground wire may be spliced, soldered or recrimped.

Crimping may be facilitated by making small cuts along the brass barrel, using diagonal cutters and then peening using a center punch and hammer.

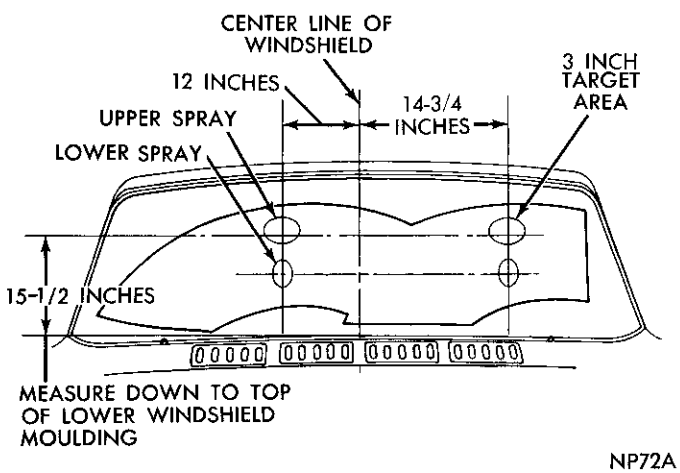


Fig. 1—Washer Aiming Diagram

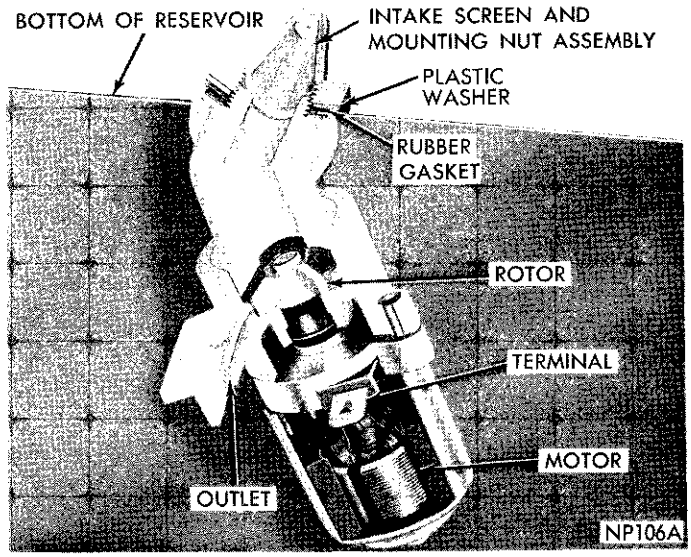


Fig. 2—Reservoir and Pump Assembly

(4) Install pump and reservoir in vehicle with mounting screws **making sure motor ground wire is installed under one of the mounting screws.**

(5) Connect motor feed wire connector and rubber hose to pump. Fill reservoir, inspect for leaks and test operation of washer system making sure the nozzles are adjusted properly.

ELECTRIC WINDOW LIFT, POWER VENTS and ELECTRIC DOOR LOCKS

INDEX

	Page
Electric Door Locks	
Adjustment	73
Electrical Tests	73
Vent Wing Motor	74
Vent Wing Regulator	73
Vent Wing Switch	
Circuit Breaker	74
Electrical Tests	73
Window Regulator	
Circuit Breaker	74
Electrical Tests	74
Motor Bench Test	74
Motor Lubrication	74

ELECTRIC DOOR LOCK SYSTEM

All doors can be locked or unlocked electrically by operating either of the front door locking buttons. The rear door locking buttons will lock or unlock the rear doors mechanically.

IN THE EVENT OF A POWER FAILURE

The right front door can be locked or unlocked mechanically.

The left front door can be unlocked mechanically by means of the inside remote handle, but cannot be locked from inside the car.

Adjustment

(1) Loosen solenoid to mounting screws (Fig. 1) and slide solenoid to full down position.

(2) Extend solenoid rod until latch is in locked position.

(3) Tighten solenoid to mounting screws and test operation of lock.

Electrical Tests

The battery must be fully charged before testing. Make certain solenoids are correctly adjusted before circuits are tested. The circuit breaker is located behind the left side cowl trim panel. The relay is located behind the right side cowl trim panel.

Connect the positive lead of a voltmeter to the buss bar on the relay assembly and the negative lead of the voltmeter to a good ground (Fig. 2). With no load, voltage should be 12.6 volts and 9.4 volts when locks are activated. If no reading is obtained at relay, the circuit breaker should be tested next. See "Wiring Diagrams" for appropriate schematic wiring diagram.

Connect voltmeter positive lead to light green terminal of circuit breaker and other lead to a good ground. If a reading of 12.4 volts is not obtained, inspect for a broken wire or loose connection at ammeter. Replace circuit breaker only if continuity of input wire has been established.

To determine which solenoid is faulty, check each individual door for electrical lock and unlock, or disconnect the solenoid connectors one at a time, while operating the door lock switch. When faulty solenoid is disconnected, the remaining door locks will operate. If necessary to replace solenoid, refer to Group 23 "Body and Frame".

If the solenoid failure was caused by overheating (sticking switch), the remaining solenoids should be checked for proper operation and replaced if necessary.

VENT WING REGULATORS

Electrical Tests

The battery should be fully charged and the ter-

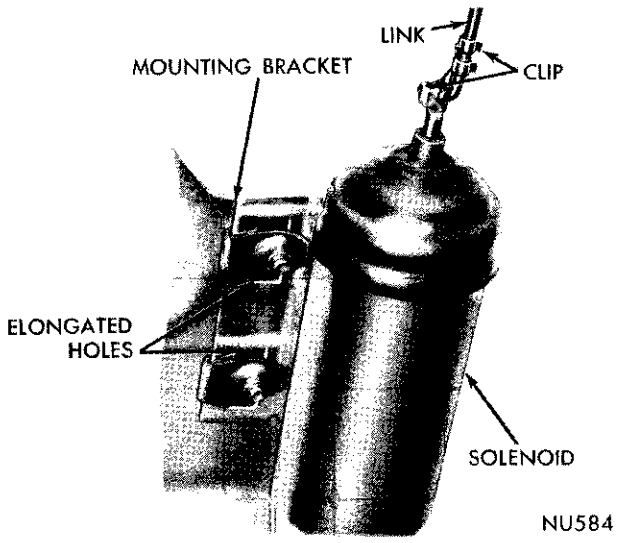


Fig. 1—Solenoid Adjustment

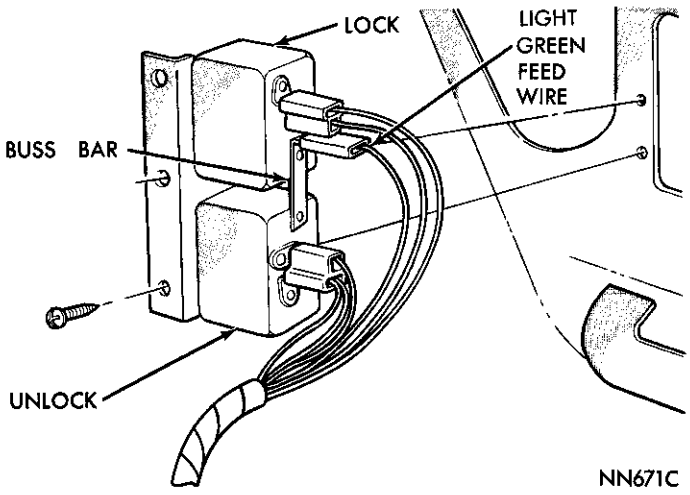


Fig. 2—Door Lock Relay

minal clean and tight before any tests are performed. Wire connections at the ammeter and accessory circuit breaker, mounted on the left cowl panel, should be tight.

Vent wing motors have two separate field windings, known as split series. Direction of rotation is controlled by energizing either field with the switch. The fields are grounded to body through the motor housing with the switch completing the particular circuit back to ground when it is actuated.

Circuit Breaker Test

Connect one lead of a test light to output terminal of circuit breaker and other lead to a good ground. The test bulb should light, if not and wire continuity has been established, replace the circuit breaker.

Vent Wing Switch

Slide a thin blade behind switch housing (front and back) to depress retaining clips and pull switch out from trim panel. Carefully separate multiple terminal block from switch body. Connect lead of a test light to tan feed wire terminal of multiple terminal block and other lead to a good ground. If bulb does not light, inspect for broken or loose wires to circuit breaker.

If bulb does light, remove and connect a jumper wire between tan feed wire in multiple connector and "open" terminal wire (Fig. 1). If vent operates properly, replace switch body. If vent fails to operate inspect for broken, loose or disconnected wires or a faulty motor. See "Bench Test". Repeat above test on "close" terminal if first test opens vent wing. Refer to Group 23 "Body and Frame" for removal and replacement of components.

Vent Wing Motor

Connect a jumper wire from positive post of a test battery to white wire terminal of motor and connect a second jumper from battery negative post to motor housing. The motor should run in one direction unless it is against regulator stop. In that event remove positive jumper wire from white terminal and touch it to dark blue wire terminal. Should motor fail to run in either direction, it should be replaced.

WINDOW REGULATORS

Electrical Tests

Electric window lift motors are the permanent magnet type. The motors are grounded through the master switch by a black wire attached to the left cowl panel (Fig. 1).

Circuit Breaker Test

Connect one lead of a test light to output terminal of circuit breaker and other lead to a good ground. The test bulb should light, if not and wire continuity has been established, replace the circuit breaker.

Window Lift Switch

Remove switch from trim panel for testing purposes. Slide a thin blade behind the switch housing (front and back) to depress retaining clips and pull switch out from panel. Carefully separate multiple terminal block from switch body. Connect one lead of a test light to black wire terminal and touch other lead to tan wire terminal. The test bulb should light, if not, test wires for an open circuit. Use two jumper wires to test continuity of circuits. Connect one jumper to the tan lead and the other end to the **Up** or **Down** terminal (opposite of glass position). Connect the other jumper to a good ground and to the opposite terminal (Fig. 1).

If motor runs, install switch body on multiple connector and activate switch. Should motor fail to run, replace switch body. Each switch is tested in same manner.

The motor should run, if not, test continuity of wiring. Should continuity be established and motor still does not run, replace motor.

Motor Bench Test

Connect a jumper from positive terminal of a test battery to one of the motor leads. Connect another jumper from the test battery negative terminal to the other motor lead and the motor should run. To reverse direction of motor rotation, switch leads of jumper wires at test battery terminals.

Motor Lubrication

With motor removed from regulator. Remove seal (Fig. 2) from the motor gearbox housing. Apply a liberal amount of the lubricant in the gearbox housing to the entire inside diameter of seal marked "A" and the outside diameter of the gear and pinion assembly

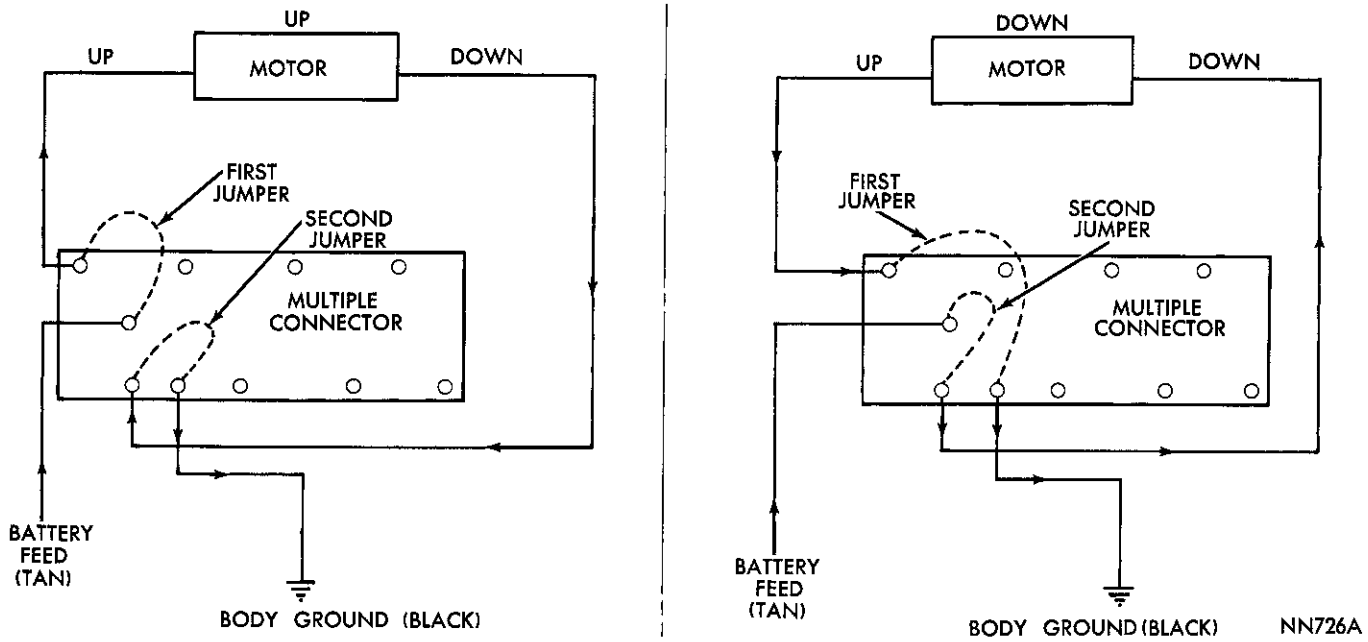


Fig. 1—Testing Electrical Switch

marked "B", and diameter "C" where the seal contacts the rubber coupling.

If there is no lubricant in the gear box, fill to top of gear with Mopar 2525035 Multi-Mileage Lubricant or Mopar 1064768 Lubri-plate.

STATION WAGON—TAIL GATE WINDOW LIFT

Electrical Tests

A tail gate glass may not move due to a binding condition between the glass and run channels. Correct the binding condition before making electrical tests.

CONTROL SWITCH

Disconnect black wire at control switch and hold firmly against yellow wire terminal on control switch. The glass (if raised) should lower. Repeat test with brown wire. The glass (in lowered position) should rise. If glass operates during tests, but fails to operate when the control switch lever is moved, the switch is at fault. If glass fails to move during these tests, perform the wire harness tests.

WIRE HARNESS AND REGULATOR MOTOR

Disconnect wire harness connector at motor. Connect one wire of a test light to brown wire and the other to a good body ground. Position instrument panel switch in the "UP" position. The bulb should light. Repeat test with the yellow wire, but position switch in the "DOWN" position. If bulb fails to light either time, and all wire terminals are tight, replace the circuit breaker. See "Wiring Diagrams" for appropriate schematic wiring diagram.

Should bulb light on one wire but not the other, inspect harness for a broken wire. If bulb lights in both tests, place one wire of test light to black wire terminal on motor and other wire to a good body ground. Position switch in either "UP" or "DOWN" position. If bulb lights, inspect for a bad ground connection or broken black wire. If test bulb does not light and the wire harness continuity has been established, replace the motor. See "Group 23" for replacement and adjustments of tail gate components.

Pump Motor

Should the test bulb light on one wire but not the other, inspect wire harness for a broken wire. If the bulb lights in both tests, place one wire of the test light to the black wire terminal (ground) on the motor and the other wire to a good body ground. Position the switch in either "UP" or "DOWN" position. If bulb should light inspect for a poor ground connection or broken black wire. If the bulb does not light and wire harness continuity has been established,

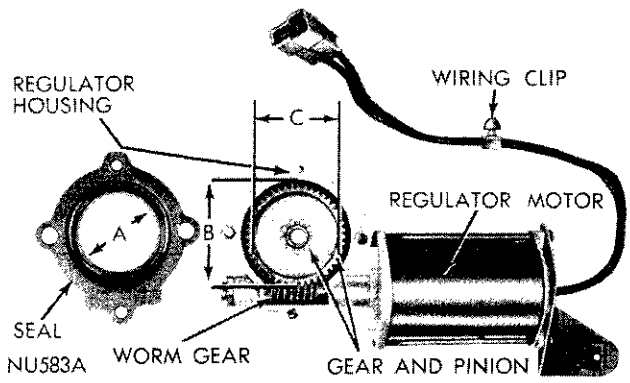


Fig. 2—Window Lift Motor Lubrication

test black wire with a needle type connector as close to motor as possible without touching motor. If bulb fails to light, replace the motor (refer to Group 23, "Body and Frame").

TOP LIFT (CONVERTIBLE)

Electrical Tests

Control Switch

Refer to Figure 1 and appropriate wiring diagram (See "Wiring Diagrams") and disconnect red wire at switch. Hold firmly against yellow wire terminal on switch. The top (if raised) should start to lower. Repeat test with the brown wire. The top (in lowered position) should start to rise. If top operates during these tests, but fails to operate when the control switch lever is moved to "UP" or "DOWN" position, the switch is at fault and should be replaced. If the top fails to operate during these tests, inspect and test wires between switch and motor.

Circuit Breaker

Disconnect the wire harness connector at the motor and connect one wire of test light to brown wire and the other to a good body ground. Position the instrument panel switch in the "UP" position. The bulb should light. Repeat this test with the yellow wire but position the switch in the "DOWN" position. If the bulb fails to light either time and wire continuity has been established, replace the circuit breaker.

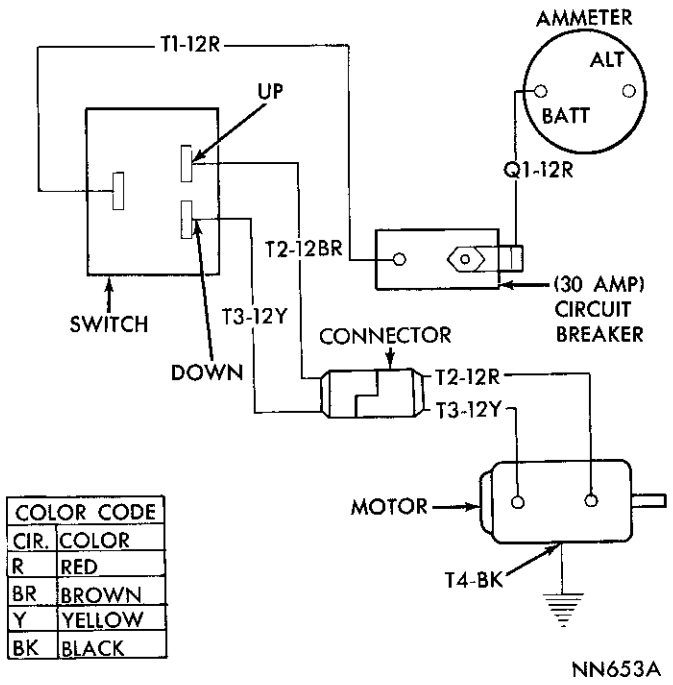


Fig. 1—Wiring Circuit

POWER SEATS

INDEX

	Page
General Information	76
Service Procedures	76
Adjuster	77
Installation	77
Removal	77
Cable and Housing	78
Installation	78
Removal	78
Electrical Tests	76
Horizontal and Vertical Transmissions	78
Installation	79
Removal	78
Motor	78
Installation	78
Removal	78
Seat Assembly and Adjuster	77
Installation	77
Removal	77
Wiring Diagrams	(At Rear of Group)

GENERAL INFORMATION

This power seat can be adjusted in six different directions—up, down, forward, back, tilt forward, or tilt rearward.

The control switch is located on the lower outboard side of the seat. The front lever on the switch (Fig. 1) raises or lowers (tilts) the front of the seat, the center lever raises or lowers the complete seat, and also moves it forward or backward, the rear lever raises or lowers (tilts) the back of the seat.

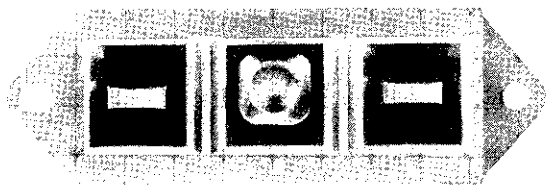
A three armature permanent magnet reversible motor is coupled through cables to rack and pinion assemblies located in the seat tracks, providing the various seat movements.

The electrical circuit is protected by a 30 amp circuit breaker located on the fuse block on the inside of the cowl panel to the left of the steering column.

SERVICE PROCEDURES

ELECTRICAL TESTS

Before any testing is attempted the battery should be fully charged and all connections and terminals cleaned and tightened to insure proper continuity and grounds. With everything connected and the dome



NU523

Fig. 1—Switch Assembly

light on, apply switch in direction of failure, if dome light dims the seat motion is trying to work indicating mechanical jamming. If dome light does not dim then proceed with the following electrical tests.

(1) Disconnect wire from instrument panel feed at fuse block side cowl circuit breaker.

(2) Connect test lamp C-744 in series between instrument panel feed and good ground. If test lamp lights feed in wiring is good.

(3) Remove test lamp and connect feed to circuit breaker.

(4) Disconnect wiring from other side of circuit breaker. Connect test lamp C-744 in series between circuit breaker and good ground, if test lamp lights circuit breaker is good.

(5) Remove test lamp and connect wiring harness.

(6) Disconnect wiring harness at connector under seat. Connect test lamp C-744 between red (R) and black (BK) wire in female connector on harness, if test lamp lights harness to seat is good.

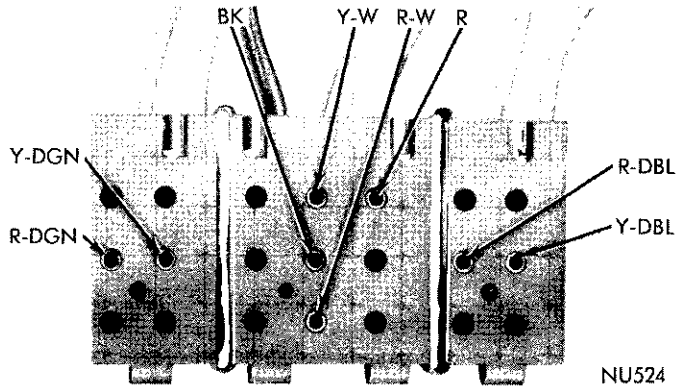
(7) Remove test lamp and connect harness.

(8) Remove switch from seat harness.

(9) To check front motor connect a covered jumper wire between the red (R) terminal in the center section (Fig. 2) either the red with dark green (R-DGN) tracer, or yellow with dark green (Y-DGN) tracer connection in the front section. Connect a second covered jumper wire between the black (BK) terminal in the center section and the open connection in the front section, if motor does not operate, reverse the jumpers in the front section. If motor still does not operate, either the harness or complete three motor assembly should be replaced.

(10) To check center motor connect a covered jumper wire between the red (R) terminal of the center section (Fig. 2) and either the red with white tracer (R-W) tracer, or yellow with white (Y-W) tracer connection in the center section. Connect a second covered jumper wire between the black (BK) terminal in the center section and the open connection in the center section, if motor does not operate, reverse the jumpers (R-W) and (Y-W). If motor still does not operate, either the harness or complete three motor assembly should be replaced.

(11) To check rear motor connect a covered jumper wire between the red (R) terminal in the center section (Fig. 2) and either the red with dark blue (R-DBL) tracer, or yellow with dark blue (Y-DBL) tracer connection in the rear section. Connect a second covered jumper wire between the black (BK) terminal in the center section and the open connection in the rear section, if motor does not operate, reverse the jumpers in the rear section. If motor still does not operate, either the harness or complete three motor assembly should be replaced.



NU524

Fig. 2—Electrical Test Area Location

(12) If all motors and the seat operate properly this indicates that the switch is bad and should be replaced. For additional wiring diagrams see "Wiring Diagram" section at end of this group.

SEAT ASSEMBLY AND ADJUSTER

Removal

(1) Disconnect battery ground cable.

(2) From underneath vehicle remove mounting nuts holding seat assembly to floor pan.

(3) Tilt seat and disconnect wiring harness.

(4) Remove assembly from vehicle.

Installation

(1) Position seat assembly in vehicle.

(2) Connect wiring harness.

(3) From underneath vehicle install and tighten mounting nuts.

(4) Connect battery ground cable and check seat operation.

ADJUSTER

Removal

(1) Remove seat assembly from vehicle following procedure outline under, "Seat Assembly and Adjuster."

(2) Lay seat on its back on some clean object.

(3) Remove bolts attaching adjuster to seat assembly.

Installation

(1) Lay seat on its back on some clean object.

(2) Position adjuster to seat assembly and install attaching bolts.

(3) Install seat assembly following procedure outlined under "Seat Assembly and Adjuster."

MOTOR

Removal

CAUTION: Anytime the motor, cable and housing assemblies or vertical and horizontal transmission assemblies require maintenance, the assemblies must be synchronized to insure easy and proper operation.

(1) Remove seat assembly from vehicle following procedure outlined under "Seat Assembly and Adjuster."

(2) Lay seat assembly on its back on some clean object.

(3) Remove bolt which holds motor to support (Fig. 3). Then remove mounting (Fig. 4) screws.

(4) Carefully disconnect housings and cables from motor assembly.

Installation

(1) Place motor assembly into position.

(2) Carefully connect cables and housings to motor assembly.

(3) Install mounting screws.

(4) Install bolt holding motor assembly to adjuster.

(5) Install seat assembly following procedure outlined under, "Seat Assembly and Adjuster."

CABLE AND HOUSING

Removal

CAUTION: Anytime the motor, cable and housing assemblies or vertical and horizontal transmission assemblies require maintenance, the assemblies must be synchronized to insure easy and proper operation.

It is recommended that anytime a cable is to be replaced that the motor assembly be removed also for ease of replacement.

(1) After motor has been disconnected. Remove corbin clamp from cable housing then slide cable and housing out of connector (Fig. 5).

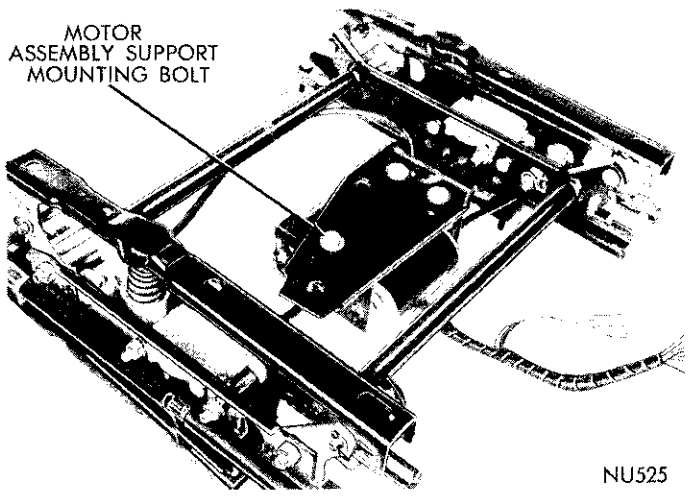


Fig. 3—Mounting Bolt Location

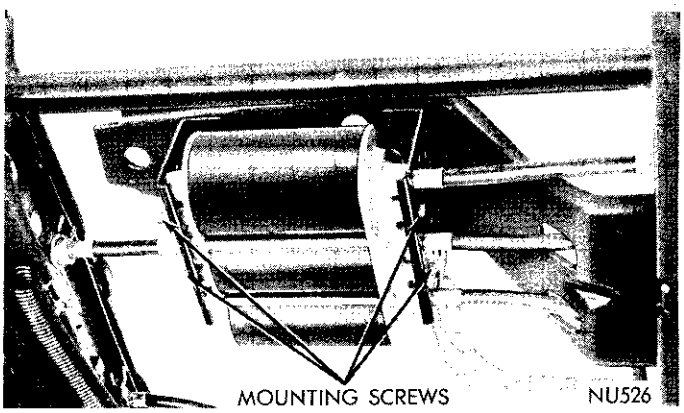


Fig. 4—Motor Mounting Screw Locations

Installation

(1) Insert cable and housing into connector and install corbin clamp.

(2) Install motor assembly.

HORIZONTAL AND VERTICAL TRANSMISSIONS

Removal

CAUTION: Anytime the motor, cable and housing assemblies or vertical and horizontal transmission assemblies require maintenance, the assemblies must be synchronized to insure easy and proper operation.

(1) Remove seat assembly from vehicle following procedure outlined under, "Seat Assembly and Adjuster."

(2) Remove motor assembly following procedure outlined under, "Motor."

(3) Fasten a 10 inch "C" clamp from the mounting base assembly to the upper channel assembly just

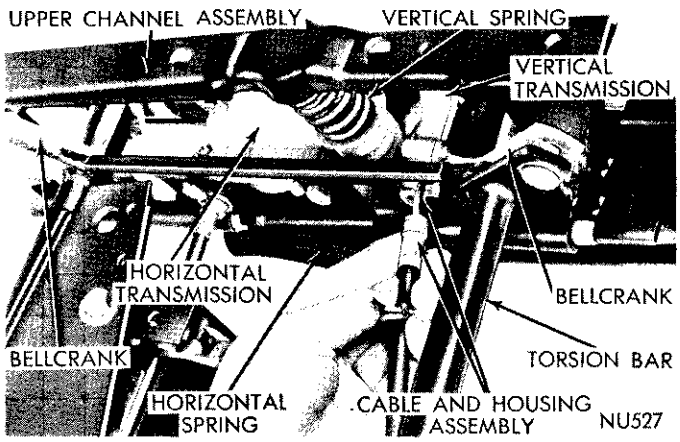


Fig. 5—Removing or Installing Cable and Housing

tight enough to keep it in place while removing cotter key and the front (5/16″) clevis pin.

(4) After clevis pin is removed, slowly release the tension on the vertical spring.

(5) Remove cotter key and rear (3/8″) clevis pin and upper channel assembly.

(6) Remove horizontal spring.

(7) Remove the through bolts from each end of the side rail assembly.

(8) Remove the through bolts from the transmission assemblies and separate rails and transmission assemblies (Fig. 6).

Installation

During assembly constant care should be exercised to keep both track and rail assemblies synchronized.

(1) Position transmission assemblies between side rails and install through bolts and nuts.

(2) Locate roll pin and install through bolts in each end of assembly.

(3) Install horizontal spring.

(4) Position rail assemblies at end of torsion bars. Line up holes and upper channel and install rear (3/8″) clevis pin and cotter key.

(5) Insert vertical spring and apply pressure with "C" clamp just enough to align holes in mounting base and upper channel. Install front (5/16″) clevis pin and cotter key.

(6) Install motor assembly following procedure outlined under, "Motor."

(7) Install seat assembly following procedure outlined under, "Seat Assembly and Adjuster."

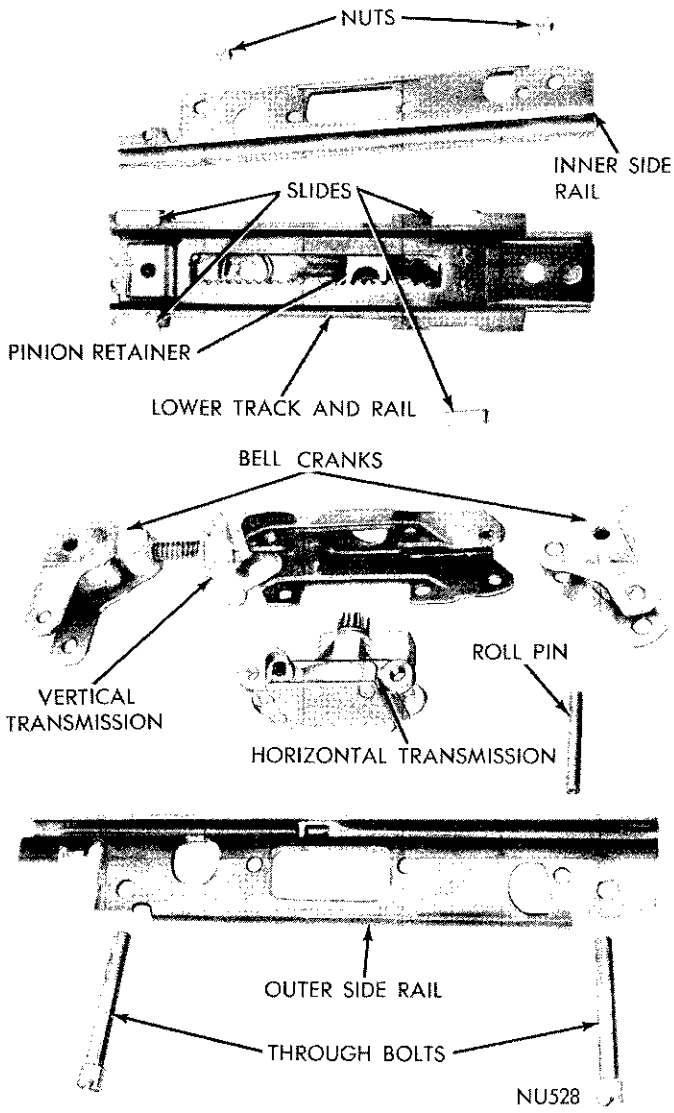


Fig. 6—Side Rail (Disassembled)

TURN SIGNALS AND EMERGENCY FLASHER

INDEX

	Page		Page
Emergency Flasher	80	Service Diagnosis	80
General Information	79	Turn Signal Switch	80

GENERAL INFORMATION

The turn signals are activated with a lever mounted on the left side of the steering column just below the steering wheel. When the driver wishes to signal his intentions to change direction of travel, moving the lever up causes the right turn signals to flash. Moving the lever down causes the left turn signals to flash.

After completion of a turn the system is deactivated automatically. As the steering wheel returns to the straight ahead position, a lobe mounted to the underside of the steering wheel contacts one of two canceling cams in the turn signal switch mounted in the steering column upper housing. Contact of the lobe with the canceling cam returns the switch to the off position.

When the system is activated, one of two indicator lights mounted in the instrument cluster or on the front fender flashes in unison with the turn signal lights indicating to the driver that the system is operating.

The turn signal flasher is a plug in type mounted on the instrument panel lower reinforcement to the left of the steering column.

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
EXTERNAL LAMPS OPERATE NORMALLY, NO INDICATIONS ON INSTRUMENT CLUSTER	(a) Faulty pilot bulb in instrument cluster.	(a) Replace bulb.
SYSTEM DOES NOT FLASH	(a) Faulty flasher unit. (b) Faulty external bulb. (c) Faulty contact in switch.	(a) Replace flasher. (b) Replace faulty bulb. (c) Replace switch.
SYSTEM DOES NOT CANCEL AFTER COMPLETION OF TURN	(a) Broken or loose cancelling finger. (b) Improperly aligned cancelling finger. (c) Broken or faulty switch.	(a) Replace cancelling finger. (b) Align cancelling finger properly. (c) Replace switch.
ENTIRE SYSTEM DOES NOT OPERATE	(a) Open circuit in feed wire to switch. (b) Faulty fuse. (c) Faulty flasher unit.	(a) Check wiring circuits. Refer to "Wiring Diagrams." (b) Replace fuse. (c) Replace flasher.
PILOT LAMP ILLUMINATES BRIGHTLY, EXTERNAL LAMPS GLOW DIMLY WITH NO FLASH	(a) Loose or corroded external lamp ground connection.	(a) Clean and tighten ground connection.

SERVICE PROCEDURES

TURN SIGNAL SWITCH

Removal

(1) Disconnect negative battery terminal at battery.

(2) Remove steering column cover and remove two screws attaching wiring trough (cover) from steering column.

(3) Disconnect wiring connectors at steering column.

(4) Remove horn ring ornament, horn ring or rim blow switch pad and ornament (if so equipped).

(5) Disconnect horn wires at steering wheel hub.

(6) Remove horn ring.

(7) Loosen steering wheel nut several turns and install steering wheel puller Tool C-3428B. Loosen steering wheel first, then remove steering wheel nut and steering wheel.

(8) Remove screw attaching turn signal operating lever and remove lever. **On Tilt Columns, the lever screws out. See "Wiring Adaptations". Page 8-114.**

Attach a piece of string or fine wire to turn signal switch wiring before removing switch from steering column. When switch is removed leave string or wire in steering column jacket tubes as an aid to replacement of wiring.

(9) Remove screws attaching turn signal switch and upper bearing retainer screws and remove retainer and turn signal switch and flasher switch.

Installation

(1) Attach string or wire left in steering column jacket tube during removal, to turn signal switch wiring and carefully pull string on wire down through column jacket tube until directional switch wires can be connected. Position turn signal switch in steering column jacket tube and install switch retainer and attaching screws.

(2) Install turn signal switch actuating lever.

(3) Install steering wheel, on steering shaft with master splines aligned.

(4) Install washer and nut. Tighten nut to 27 foot-pounds.

(5) Install horn switch parts previously removed from steering wheel.

(6) Connect horn switch wires.

(7) Connect wiring connectors at steering column.

(8) Install wiring trough (cover) and steering column cover.

(9) Connect battery ground cable, test operation of turn signals and horns.

EMERGENCY FLASHER

The emergency flasher system is energized by a switch mounted in the steering column and is part of the turn signal switch. When the switch is activated all turn signal lights and the turn signal indicators flash simultaneously.

Before the switch is activated, the turn signal

switch should be in the neutral position to prevent a characteristic feed back through the accessory circuit causing intermittent operation of the accessories.

When the flasher is operating, application of the brake pedal will override the system and interrupt the flasher. All lights will remain on bright until the brake pedal is released.

The system consists of a switch and flasher unit. The flasher is taped to the main wiring harness leading to the bulkhead disconnect.

The flasher is a plug-in type and is not to be confused with the turn signal flasher.

HORNS

GENERAL INFORMATION

The horn circuit consists of a horn switch located in the steering wheel hub and a horn relay is mounted in the passenger compartment under the instrument panel at left kick pad. Battery current from the "B" terminal of the starter relay flows to the "B" terminal of the horn relay. When the horn ring or steering wheel rim horn switch (standard on Imperial models, optional on Chrysler models) is depressed, the horn ring completes a ground circuit to the horn relay closing a set of points in the relay and allowing battery current to flow from the relay to the horns which are grounded to the sheet metal of the vehicle.

The steering wheel rim horn switch is a full circle rubber insert mounted on the inside rim of the steering wheel, (Fig. 1). The insert has two metal contact strips running through the center of the strip with a plastic insulator at each end. When any portion of the insert is depressed the contacts touch, completing the circuit causing the horns to sound.

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
HORNS WILL NOT SOUND	(a) Improper adjustment.	(a) See "Adjusting."
	(b) Broken or faulty wiring.	(b) See "Testing."
	(c) Faulty horn.	(c) See "Testing." Replace horn if necessary.
	(d) Faulty relay.	(d) See "Testing." Replace relay if necessary.
HORNS SOUND CONTINUOUSLY (Immediately disconnect wires from horns and wire from the "B" terminal of horn relay).	(a) Shorted wiring.	(a) See "Testing."
	(b) Horn switch sticking.	(b) See "Testing"; Replace horn switch if necessary.
	(c) Relay sticking.	(c) See "Testing"; Replace relay if necessary.

SERVICE PROCEDURES

Testing

A. Horns will not sound

Should the horns fail to sound, disconnect wire connector at horn and connect one lead of a test light to the connector terminal and the other lead of test light to a good body ground. Depress the horn ring or button. Should the test light illuminate, the horns are faulty. Replace or adjust horns.

If the test light fails to light, reconnect the connector to the horn terminal and connect one lead of test light to the horn relay "B" terminal and the other test light lead to a good body ground. If the light fails to illuminate, inspect for corroded battery terminals, dead battery or an open circuit in the wire from the starter relay to the "B" terminal of the horn relay.

Should the test light illuminate, touch a jumper wire from relay "S" terminal to good body ground. Sounding of the horns will indicate a poor ground circuit in the horn switch, an open wire from the "S" terminal of the horn relay or a poorly grounded steering column.

To determine if the horn relay is defective, connect a jumper wire from "B" to "H" terminals. If horns operate, the horn relay is faulty and should be replaced.

B. Horns sound continuously

Should the horns sound continuously, disconnect wires from horns and the positive wire from "B" terminal of horn relay. Remove wire from "S" terminal of horn relay and place one lead of a test light (with its own battery) to the wire connector and the other lead to a good ground. If the light illuminates; either the wire is shorted to ground or the horn switch

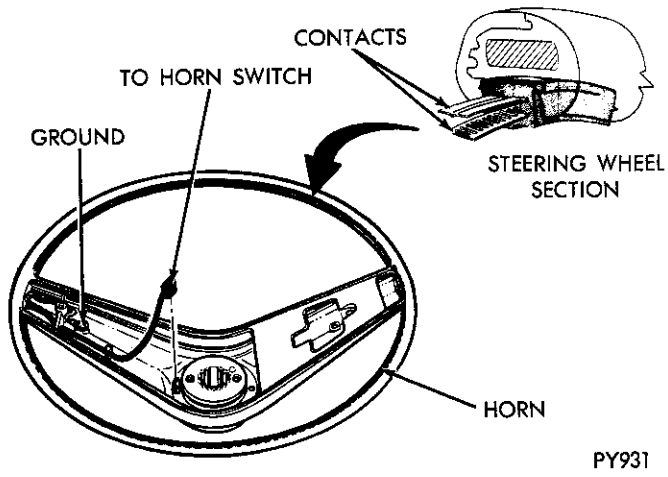


Fig. 1—Steering Wheel-Rim Horn Switch

is faulty. Remove steering wheel and disconnect wire from horn switch. Repeat above test and if light still illuminates; wire is shorted to ground. Repair or replace wire.

If light does not illuminate; horn switch is grounded. Replace horn switch.

If the light does not illuminate on the first test; connect one lead of a test light (without integral battery) to the horn wire connector (green wire) and the other lead to a good body ground. If test light illuminates, there is a short in the horn wiring. Repair or replace wire. If the test light does not illuminate; connect the positive lead back on the "B" terminal of the horn relay and repeat above test. If the light now illuminates, then the relay contacts are sticking. Replace horn relay.

Adjusting

(1) Disconnect connections at each horn to determine which horn is not operating.

(2) Remove horn and bracket assembly.

(3) With a suitable tool (Fig. 2), turn tone adjuster counterclockwise until there is no vibration (sound).

(4) Turn tone adjuster clockwise, approximately 1/4 turn at a time until tone has a clear mellow sound. Do not turn tone adjuster while horn is sounding. **Adjustment will only clear up sound and cannot change horn tone frequency.**

(5) Connect a test ammeter between positive post of a 12 volt battery and horn terminal post. Connect a jumper lead from negative battery post to horn base. Clean paint from horn bracket where connection is made. Turn adjusting screw to obtain a reading of six amperes minimum to eight amperes maximum for Sparton horns, four amperes minimum to six amperes maximum for Prestolite horns.

Amperage must not exceed eight amperes maximum for Sparton horns, six amperes maximum for Prestolite horns.

IGNITION AND STEERING LOCK

The ignition lock is located on the right side of the steering column. See "Wiring Adaptations", Page 8-114.

The ignition switch has five positions. Starting from the first counterclockwise position they are:

Accessory, Lock, Off, On and Start. In "Lock" or "Accessory" positions, the steering and ignition systems are locked to provide anti-theft protection for the car.

The ignition key cannot be turned to the lock position until the gear selector is placed in the Park (P) position for automatic transmissions or reverse gear position for manual transmissions.

The Accessory position permits the operation of the electrical accessories when the engine is not running.

The "Off" position allows the engine to be turned off without locking the steering.

The key can be inserted or withdrawn only on the "Lock" position. Do not attempt to pull the shift lever out of Reverse or Park after the key has been turned to the lock position.

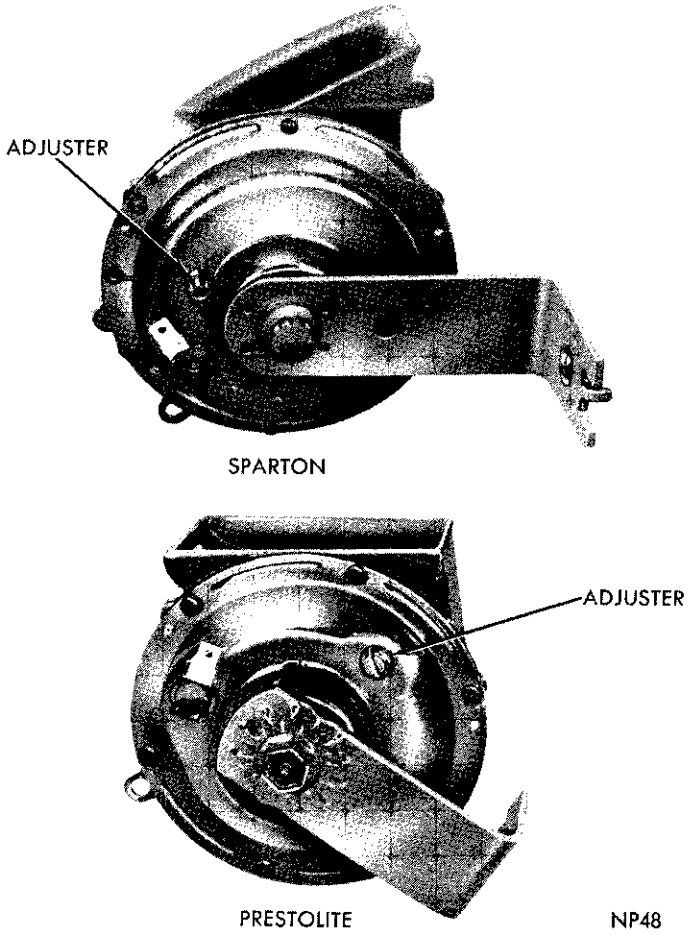


Fig. 2—Horn Adjustments

Removal

(1) Disconnect negative battery terminal at battery.

(2) Remove steering column cover and remove two screws attaching wiring trough (cover) from steering column.

(3) Disconnect wiring connectors at steering column.

(4) Remove horn ring ornament, horn ring or rim blow switch pad and ornament (if so equipped).

(5) Disconnect horn wires at steering wheel hub.

(6) Remove horn ring.

(7) Loosen steering wheel nut several turns and install steering wheel puller Tool C-3428B. Loosen steering wheel first, then remove steering wheel nut and steering wheel.

(8) Remove screw attaching turn signal operating lever and remove lever. **On Tilt Columns, lever screws out.**

Attach a piece of string or fine wire to turn signal switch wiring before removing switch from steering column. When switch is removed leave string or wire in steering column jacket tubes as an aid to replacement of wiring.

(9) Remove screws attaching turn signal switch and upper bearing retainer screws and remove retainer and turn signal switch and flasher switch.

(10) Remove two retaining screws and lift out the ignition key lamp assembly. **DO NOT scuff light tube coating as this will result in some loss of light.**

(11) Remove snap ring from upper end of steering shaft.

(12) Remove three bearing housing attaching screws.

(13) With Tool C-3044 attached to the three threaded holes for the turn signal switch retaining screws, pull bearing and housing from steering shaft.

(14) Remove the lower snap ring from the steering shaft.

(15) Remove the lock plate pin retaining ring from the lock plate hub. Some resistance may be encountered due to the friction of the ring retaining tangs.

(16) Use Tool C-4113 pin removing and installing tool and press the steering shaft lock plate retaining pin out of the shaft and plate and remove the lock plate. **DO NOT attempt removal of the plate by hammering as damage to the collapsible column may result.**

(17) Remove the lock lever guide plate screws and plate.

(18) With a small probe tool inserted in the access hole provided in the housing boss, depress the key cylinder retainer toward the cylinder to disengage it from the slot in the housing bore, then withdraw the key cylinder from the lock housing.

IGNITION AND STEERING LOCK

Installation

Before installing ignition switch and key cylinder make sure the shift housing is in a lockable position (park with automatic, or reverse with manual transmission). When installing the key cylinder it must be turned to "lock" position, key removed. Also make sure ignition switch is turned to the "lock" position to index its cam with the lock cylinder position.

(1) Install ignition switch and screws.

(2) Install ignition switch lock cylinder.

(3) Install lock lever guide plate and two screws.

(4) Install warning buzzer switch if removed.

(5) Install the steering shaft bearing lower snap ring and place the bearing and housing assembly on the steering shaft.

(6) Use Tool C-3879 and a steering wheel nut and flat washer to draw the steering shaft up into the bearing and housing assembly until the lower snap ring contacts the bearing, then install the upper snap ring.

(7) Install the three bearing housing to lock housing attaching screws.

(8) Install lock plate and retaining pin.

(9) Install bearing housing on steering shaft.

(10) Install bearing housing attaching screws.

(11) Install bearing upper snap ring.

(12) Install key lamp assembly, retainer and two screws.

(13) Attach string or wire left in steering column jacket tube during removal, to turn signal switch wiring and carefully pull string on wire down through column jacket tube until directional switch wires can be connected. Position turn signal switch in steering column jacket tube and install switch retainer and attaching screws.

(14) Install turn signal switch actuating lever.

(15) Install steering wheel, on steering shaft with master splines aligned.

(16) Install washer and nut. Tighten nut to 27 foot-pounds.

(17) Install horn switch parts previously removed from steering wheel.

(18) Connect horn switch wires.

(19) Connect wiring connectors at steering column.

(20) Install wiring trough (cover) and steering column cover.

(21) Connect battery ground cable, test operation of turn signals and horns.

SPECIFICATIONS

ELECTRICAL

BATTERY

Engine-Cubic Inch Displacement	Standard Equipment Battery Part Number	Special Equipment Battery Part Number
383	2875320	2642967
440	2642969	2642967

Battery Part Number	Capacity (Amperes)	Number Plates Per Cell
2875320	59	11
2642969	70	13
2444564	70	11
2642967	70	13

All Batteries are 12 Volts with Negative Ground Terminal.

GEAR REDUCTION STARTING MOTOR

Starting Motor Model	2875560
Make	Chrysler
Voltage	12
No. of Fields	4 (3 Series, 1 Shunt)
No. of Poles	4
Brushes	4
Spring Tension	32 to 36 Ounces
Drive	Solenoid Shift Overrunning Clutch
End Play	.010"-.045"
*Cranking Amperage Draw	180 to 200 Amps. 383, 440 Cu. In.
Free-Running Test	
Voltage	11
Amperage Draw Maximum	90
Speed RPM	1925 to 2600
Locked-Resistance Test	
Voltage	4
Amperage Draw	400 to 450
Solenoid Switch	
Pull-In Coil	13.3 to 14.9 Amps. @ 6.0 Volts at 77°F.
Hold-In Coil	8.0 to 9.0 Amps. @ 6.0 Volts at 77°F.

*Engine at normal operating temperature.

ALTERNATOR

Rotation	Clockwise at Drive End
Voltage	12 Volt System
Current Output	Designed Controlled
Voltage Output	Limited by Voltage Regulator
Brushes (Field)	2
Condenser Capacity	.50 Microfarad plus or minus 20%
Field Current Draw—	
Rotating Rotor by Hand @ 12 Volts	2.38 to 2.75 Maximum amperes
Current Output -	
Standard	34.5 plus or minus 3 amperes*
Special Equipment,	
Heavy Duty and/or Air Conditioning	44.5 plus or minus 3 amperes*
Special Equipment (Fleets)	51 plus or minus 3 amperes*

*Plus or minus three ampere tolerance is provided to allow for temperature variation. Current output is measured at 1250 engine RPM and 15 volts at the alternator. If measured at the battery, current output will be approximately 5 amperes lower than above values.
Voltage is controlled by variable load (carbon pile) across the battery.

ELECTRONIC VOLTAGE REGULATOR

Part Number 3438150

The battery specific gravity should be above 1.200 when checking the regulated voltage.

The Voltage Regulator is working properly if the voltage is in accordance with the following chart:—

Ambient Temperature 1/4" from Voltage Regulator	Voltage Range
—20°F.	14.3 - 15.3
80°F.	13.8 - 14.4
140°F.	13.3 - 14.0
Above 140°F.	Less than 13.8

IGNITION SYSTEM

WITH CLEANER AIR SYSTEM

Engine Application	383 2-Barrel Carburetor Manual Transmission	383 2-Barrel Carburetor Automatic Transmission
Engine Displacement	383 Cu. In.	383 Cu. In.
Distributor Part No.—(Chrysler Built)	3438231	3438231
Advance—Centrifugal (Distributor Degrees at Distributor RPM)	0° to 3.8° @ 550 RPM 7.5° to 9.5° @ 850 RPM 14° to 16° @ 2200 RPM	0° to 3.8° @ 550 RPM 7.5° to 9.5° @ 850 RPM 14° to 16° @ 2200 RPM
Advance—Vacuum (Distributor Degrees at Inches of Mercury)	0.5° to 4° @ 7.5" 9.3° to 11.8° @ 12"	0.5° to 4° @ 7.5" 9.3° to 11.8° @ 12"
Contact Gap	.016" to .021"	.016" to .021"
Dwell Angle	28.5° to 32.5°	28.5° to 32.5°
Contact Arm Spring Tension	17 to 20 oz.	17 to 20 oz.
Condenser Capacity	.25 to .285 mfd.	.25 to .285 mfd.
Shaft Side Play (New or Rebuilt)	.000" to .003" *	.000" to .003" *
Shaft End Play (After Assembly)	.003" to .017"	.003" to .017"
Rotation	Counterclockwise	Counterclockwise
Timing	TDC**	2.5° BTC**
Spark Plug Type	J-14Y Champion or P-3-6P Mopar	J-14Y Champion or P-3-6P Mopar
Size	14MM 3/8" Reach	14MM 3/8" Reach
Gap	.035"	.035"
Firing Order	1-8-4-3-6-5-7-2	1-8-4-3-6-5-7-2
Coil	Chrysler-Essex —or— Chrysler-Prestolite	
Identification Number	2444241	2444242
Primary Resistance @ 70°-80°F	1.41 to 1.55 Ohms	1.65 to 1.79 Ohms
Secondary Resistance @ 70°-80°F	9200 to 10700 Ohms	9400 to 11700 Ohms
Ballast Resistor	2095501	
Resistance @ 70°-80°F	0.5 to 0.6 Ohms	
Current Draw (Coil and ballast resistor in circuit) Engine Stopped	3.0 Amperes	
Engine Idling	1.9 Amperes	

* Service wear tolerance should not exceed .006 inch.

** Plus or minus 2-1/2°. Set at curb idle; See "Fuel System."

IGNITION SYSTEM
WITH CLEANER AIR SYSTEM

Engine Application	383 4-Barrel Carburetor Manual Transmission	383 4-Barrel Carburetor Automatic Transmission
Engine Displacement	383 Cu. In.	383 Cu. In.
Distributor Part No.—(Chrysler Built)	3438233	3438233
Advance—Centrifugal (Distributor Degrees at Distributor RPM)	0° to 4.6° @ 600 RPM 5.6° to 7.6° @ 800 RPM 10° to 12° @ 2300 RPM	0° to 4.6° @ 600 RPM 5.6° to 7.6° @ 800 RPM 10° to 12° @ 2300 RPM
Advance—Vacuum (Distributor Degrees at Inches of Mercury)	0.5° to 4.3° @ 10.5″ 9.7° to 12.0° @ 15.5″	0.5° to 4.3° @ 10.5″ 9.7° to 12.0° @ 15.5″
Contact Gap	.016″ to .021″	.016″ to .021″
Dwell Angle	28.5° to 32.5°	28.5° to 32.5°
Contact Arm Spring Tension	17 to 20 oz.	17 to 20 oz.
Condenser Capacity	.25 to .285 mfd.	.25 to .285 mfd.
Shaft Side Play (New or Rebuilt)	.000″ to .003″*	.000″ to .003″ *
Shaft End Play (After Assembly)	.003″ to .017″	.003″ to .017″
Rotation	Counterclockwise	Counterclockwise
Timing	TDC**	2.5° BTC**
Spark Plug Type	J-11Y Champion or P-3-4P Mopar***	J-11Y Champion or P-3-4P Mopar***
Size	14MM-3/8″ Reach	14MM-3/8″ Reach
Gap	.035″	.035″
Firing Order	1-8-4-3-6-5-7-2	1-8-4-3-6-5-7-2
Coil	Chrysler-Essex —or—	Chrysler-Prestolite
Identification Number	2444241	2444242
Primary Resistance @ 70°-80°F	1.41 to 1.55 Ohms	1.65 to 1.79 Ohms
Secondary Resistance @ 70°-80°F	9200 to 10700 Ohms	9400 to 11700 Ohms
Ballast Resistor	2095501	
Resistance @ 70°-80°F	0.5 to 0.6 Ohms	
Current Draw (Coil and ballast resistor in circuit) Engine Stopped	3.0 amperes	
Engine Idling	1.9 amperes	

* Service wear tolerance should not exceed .006 inch.

** Plus or minus 2-1/2°. Set at curb idle. See "Fuel System."

*** If J-11Y Champion are not available, use Mopar P-3-4P or Champion J-10-Y.

IGNITION SYSTEM
WITH CLEANER AIR SYSTEM

Engine Application	440 Std. Cam 4-Barrel Carburetor Automatic Transmission
Engine Displacement	440 Cu. In.
Distributor Part No.—(Chrysler Built)	3438219
Advance—Centrifugal (Distributor Degrees at Distributor RPM)	0.5° to 3.7° @ 650 RPM 5.7° to 7.7° @ 900 RPM 12° to 14° @ 2300 RPM
Advance—Vacuum (Distributor Degrees at Inches of Mercury)	0.5° to 4.3° @ 10.5″ 9.7° to 12° @ 15.5″
Contact Gap	.016″ to .021″
Dwell Angle	28.5° to 32.5°
Contact Arm Spring Tension	17 to 20 oz.
Condenser Capacity	.25 to .285 mfd.
Shaft Side Play (New or Rebuilt)	.000″ to .003″ *

Shaft End Play (After Assembly)	.003" to .017"		
Rotation	Counterclockwise		
Timing	5° BTC**		
Spark Plug Type	J-13Y Champion or Mopar P-3-5P***		
Size	14MM-3/8" Reach		
Gap	.035"		
Firing Order	1-8-4-3-6-5-7-2		
Coil	Chrysler-Essex		Chrysler-Prestolite
Identification Number	2444241		2444242
Primary Resistance @ 70°-80°F	1.41 to 1.55 Ohms		1.65 to 1.79 Ohms
Secondary Resistance @ 70°-80°F	9200 to 10700 Ohms		9400 to 11700 Ohms
Ballast Resistor	2095501		
Resistance @ 70°-80°F	0.5 to 0.6 Ohms		
Current Draw (Coil and ballast resistor in circuit) Engine Stopped	3.0 amperes		
Engine Idling	1.9 amperes		

* Service wear tolerance should not exceed .006 inch.

** Plus or minus 2-1/2°. Set at curb idle; See "Fuel System".

IGNITION SYSTEM
WITH CLEANER AIR SYSTEM

Engine Application	440 Special Cam 4-Barrel Carburetor Manual Transmission		440 Special Cam 4-Barrel Carburetor Automatic Transmission
Engine Displacement	440 Cu. In.		440 Cu. In.
Distributor Part No.—(Chrysler Built)	3438222		3438222
Advance—Centrifugal (Distributor Degrees at Distributor RPM)	0° to 4.6° @ 600 RPM 5.6° to 7.6° @ 800 RPM 10° to 12° @ 2300 RPM		0° to 4.6° @ 600 RPM 5.6° to 7.6° @ 800 RPM 10° to 12° @ 2300 RPM
Advance—Vacuum (Distributor Degrees at Inches of Mercury	0.5° to 4.3° @ 10.5" 9.7° to 12° @ 15.5"		0.5° to 4.3° @ 10.5" 9.7° to 12° @ 15.5"
Contact Gap	.016" to .021"		.016" to .021"
Dwell Angle	28.5° to 32.5°		28.5° to 32.5°
Contact Arm Spring Tension	17 to 20.0 oz.		17 to 20 oz.
Condenser Capacity	.25 to .285 mfd.		.25 to .285 mfd.
Shaft Side Play (New or Rebuilt)	.000" to .003" *		.000" to .003" *
Shaft End Play (After Assembly)	.003" to .017"		.003" to .017"
Rotation	Counterclockwise		Counterclockwise
Timing	TDC **		2.5° BTC**
Spark Plug Type	J-11Y Champion or P-3-4P Mopar***		J-11Y Champion or P-3-4P Mopar***
Size	14MM - 3/8" Reach		14MM - 3/8" Reach
Gap	.035"		.035"
Firing Order	1-8-4-3-6-5-7-2		1-8-4-3-6-5-7-2
Coil	Chrysler-Essex	—or—	Chrysler-Prestolite
Identification Number	2444241		2444242
Primary Resistance @ 70°-80°F	1.41 to 1.55 Ohms		1.65 to 1.79 Ohms
Secondary Resistance @ 70°-80°F	9200 to 10700 Ohms		9400 to 11700 Ohms
Ballast Resistor	2095501		
Resistance @ 70°-80°F	0.5 to 0.6 Ohms		
Current Draw (Coil and ballast resistor in circuit) Engine Stopped	3.0 amperes		
Engine Idling	1.9 amperes		

* Service wear tolerance should not exceed .006 inch.

** Plus or minus 2-1/2°. Set at curb idle; See "Fuel System".

LIGHT BULBS

	Chrysler	Imperial
Arm Rest Lamp		1445
Ash Receiver	1445 (2)	* 1445 (2)
Auto-Temp	* (168)	* (704)
Back-up Lights	1156 (2)	1156 (2)
Brake System Warning Light	57	57
Clock	* (168)	* (704)
Cornering Light	1293	1293
Dome and/or "C" Pillar Light	550	
Door and Pocket Panel and/or Reading Light	90	90
Fasten Belts Indicator	57	57
Fender Mounted Turn Signal Indicator	330 (2)	1813 (2)
Gear Selector Indicator (Column)	* (168)	* (704)
Gear Selector with Console	57	—
Glove Compartment	1891	1891
Heater and/or A/C Control	* 168	* (704)
High Beam Indicator	57	57
Instrument Cluster and Speedometer Illumination	* (168)	* (704) (4)
Ignition Lamp	1445	1445
License Light	67 (1)-67 (2) Station Wagon	67
Lock Doors Indicator	158	
Map Lamp	90	90
Oil Pressure Indicator	57	Gauge
Open Door Indicator		57
Panel Rheostat Valve	24 Ohms	12 Ohms
Park and Turn Signal (Front)	1157 (2)	1157NA
Portable Reading Light		89
Radio	* (168)	* (704)
Sealed Beam—Hi-Beam (No. 1)	4001	4001
Sealed Beam—Hi-Low Beam (No. 2)	4002	4002
Sentry Signal	57	57
Side Marker	1895 (4)	1895 (4)
Stereo Indicator	1445	1445
Switch Lighting	* (168)	* (704)
Tail Light (only)	1095 (2)	
Tail, Stop and Turn Signal	1157 (2)	1157 (6)
Temperature Indicator	57 (2)	—
Trunk and/or Under Hood Light	1004	1004
Turn Signal Indicator (Panel)	**57-168	—

*Included in Instrument Cluster Lighting.
**Optional.

NOTE: All of the above bulbs are brass base. Aluminum base bulbs are not approved and not to be used.

FUSES

Circuit	Car Model and Ampere Rating Chrysler	Imperial
Accessories	20	
Accessory and Turn Signal		20
Cigar Lighter/Console Model 300 Only or Headlamp Sentinal	20	—
Cigar Lighter	—	20
Console (Newport, New Yorker without Headlamp Sentinel)	20	—
Emergency Flasher	20	—
Emergency Flasher and Stop Lamps	—	20
Headlamp Dimmer (In-Line Fuse)	4	4
Heater or Air Conditioning (Blower Motor)	20	20
Instrument Lights	3	5
Low Fuel Warning Relay	—	5
Radio and Back-up Lamps	20	20

	Chrysler	Imperial
Rear Blower (Accessory Fuse)	20	20
Tail Lamps (Model 300 or Headlamp Sentinel)	20	
Tail Lamps and Cigar Lighter (Newport and New Yorker Without Headlamp Sentinel)	20	—
Tail Lamps and Cornering	—	20

CIRCUIT BREAKERS

Circuit	Location	Car Model and Ampere Rating Chrysler	Imperial
Cigar Lighter (Door or Rear)	On fuse block	30	15
Concealed Headlamps	Integral With Relay—Left End of Instrument Panel	5	5
Convertible Top	On fuse block	30	—
Door Locks	On fuse block	15	15
Headlights	Integral with headlight switch	20	20
Power Seats	On fuse block	30	30
Power Tailgate	On fuse block	30	—
Power Windows	On fuse block	30	30
Windshield Wipers	Integral with wiper switch		
	2-Speed Wipers	6.0	—
	3-Speed Wipers	7.5*	7.5

* Optional

WIRING DIAGRAMS

INDEX

	Page
Automatic Beam Changer and Headlamp Sentinel Wiring Diagram—Chrysler	110
Automatic Beam Changer and Headlamp Sentinel Wiring Diagram—Imperial	111
Body Wiring Diagram—Except Station Wagons—Chrysler	90
Body Wiring Diagram—Station Wagon—Chrysler	91
Body Wiring Diagram—Imperial Console	92
Console Wiring Diagram—Chrysler	91
Electric Seat Adjuster Wiring Diagram—Chrysler	103
Electric Seat Adjuster Wiring Diagram—Imperial	100
Electric Window Lift, Power Vent and Door Lock Wiring Diagram—Chrysler	101
Electric Window Lift, Power Vent and Door Lock Wiring Diagram—Imperial	102
Engine Compartment Wiring Diagram—Chrysler	93
Engine Compartment Wiring Diagram—Imperial	94
Front End Lighting—Chrysler	95
Front End Lighting—Imperial	95
Headlamp Delay Relay Wiring—Chrysler	113
Instrument Panel Wiring—Chrysler	96-97
Instrument Panel Wiring—Imperial	98-99
Map Lamp With Powered Antenna Wiring—Imperial	109
Map Lamp With Powered Antenna Wiring—Chrysler	109
Power Assist—Window Lifts—Door Locks and Electric Seat Wiring Diagram—Chrysler	103
Power Assist—Window Lifts—Door Locks and Electric Seat Wiring Diagram—Imperial	104
Radio Rear Speaker Wiring Diagram—Chrysler—Imperial	108
Rear Speaker Fader Control Switch Wiring Diagram—Chrysler	108
Rear Speaker Fader Control Switch Wiring Diagram—Imperial	113
Speed Control Wiring Diagram—Chrysler	104
Stereo Wiring Diagram—Chrysler	106
Stereo Wiring Diagram—Imperial	107
Tilt Steering Column Wiring—Chrysler, Imperial	105
Toplift or Tail Gate Window Lift With and Without Rear Window Washer Wiring Diagram—Chrysler	112

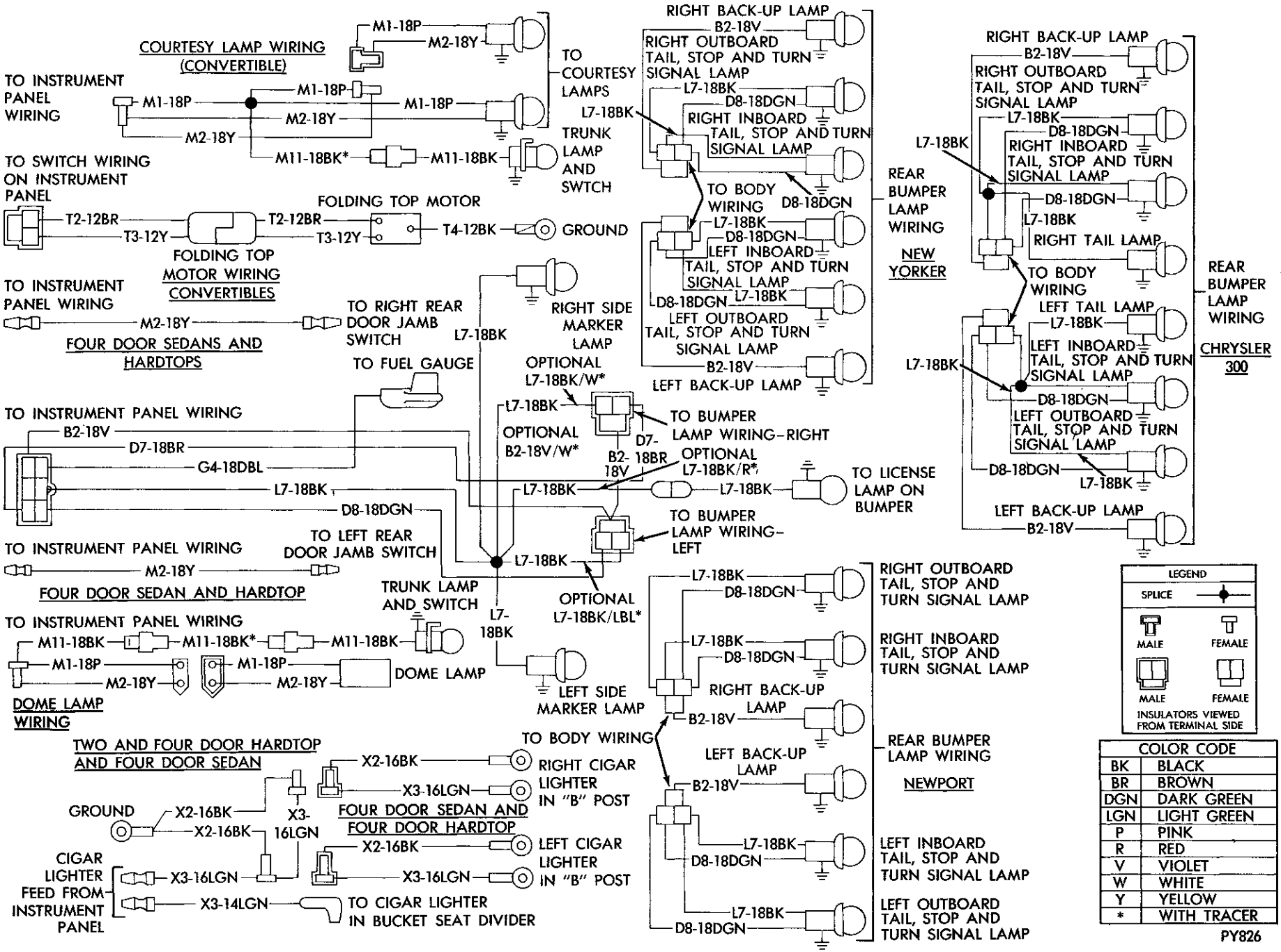


Fig. 1—Body Wiring Diagram—Except Station Wagons—Chrysler

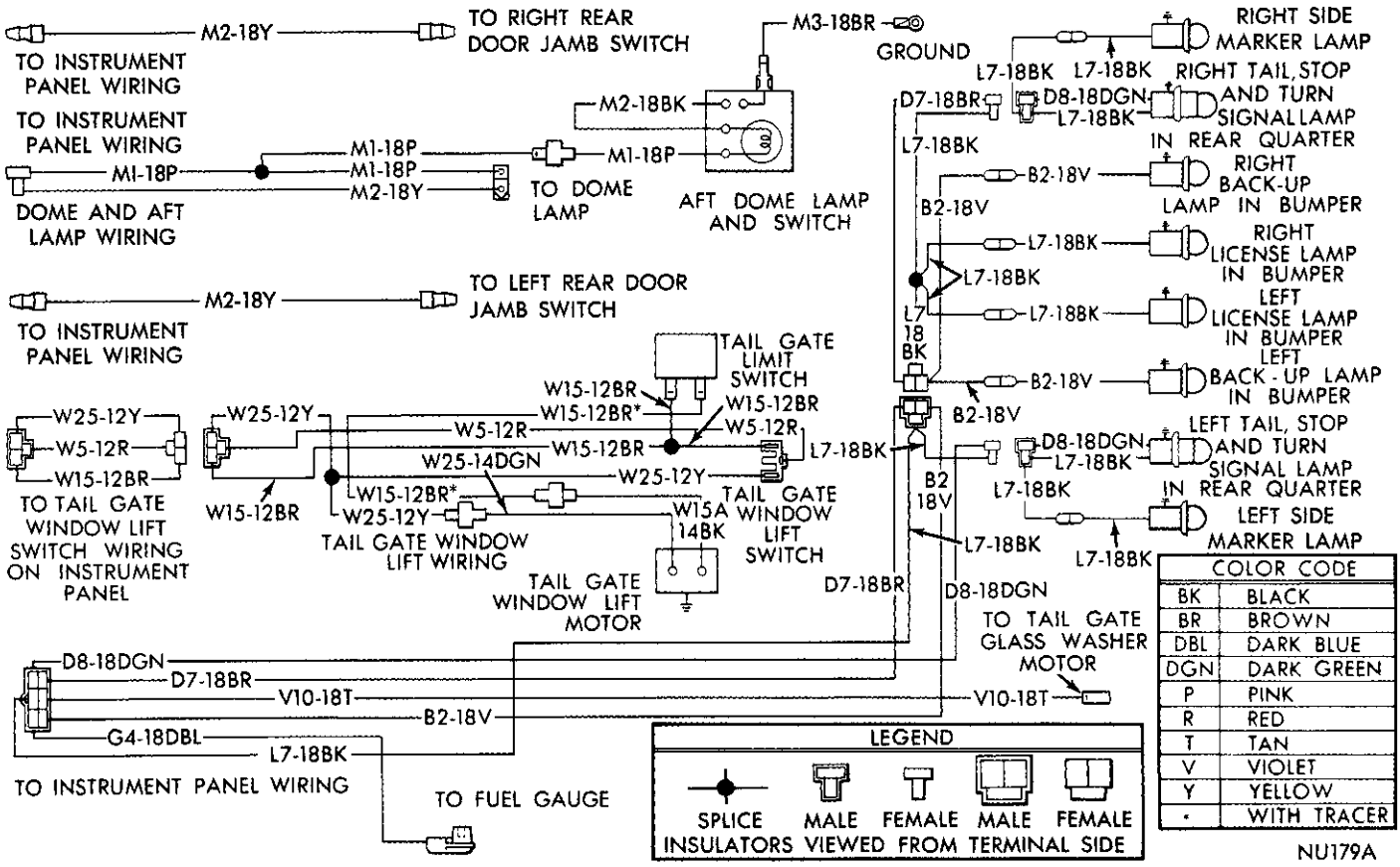


Fig. 2—Body Wiring Diagram—Station Wagon—Chrysler

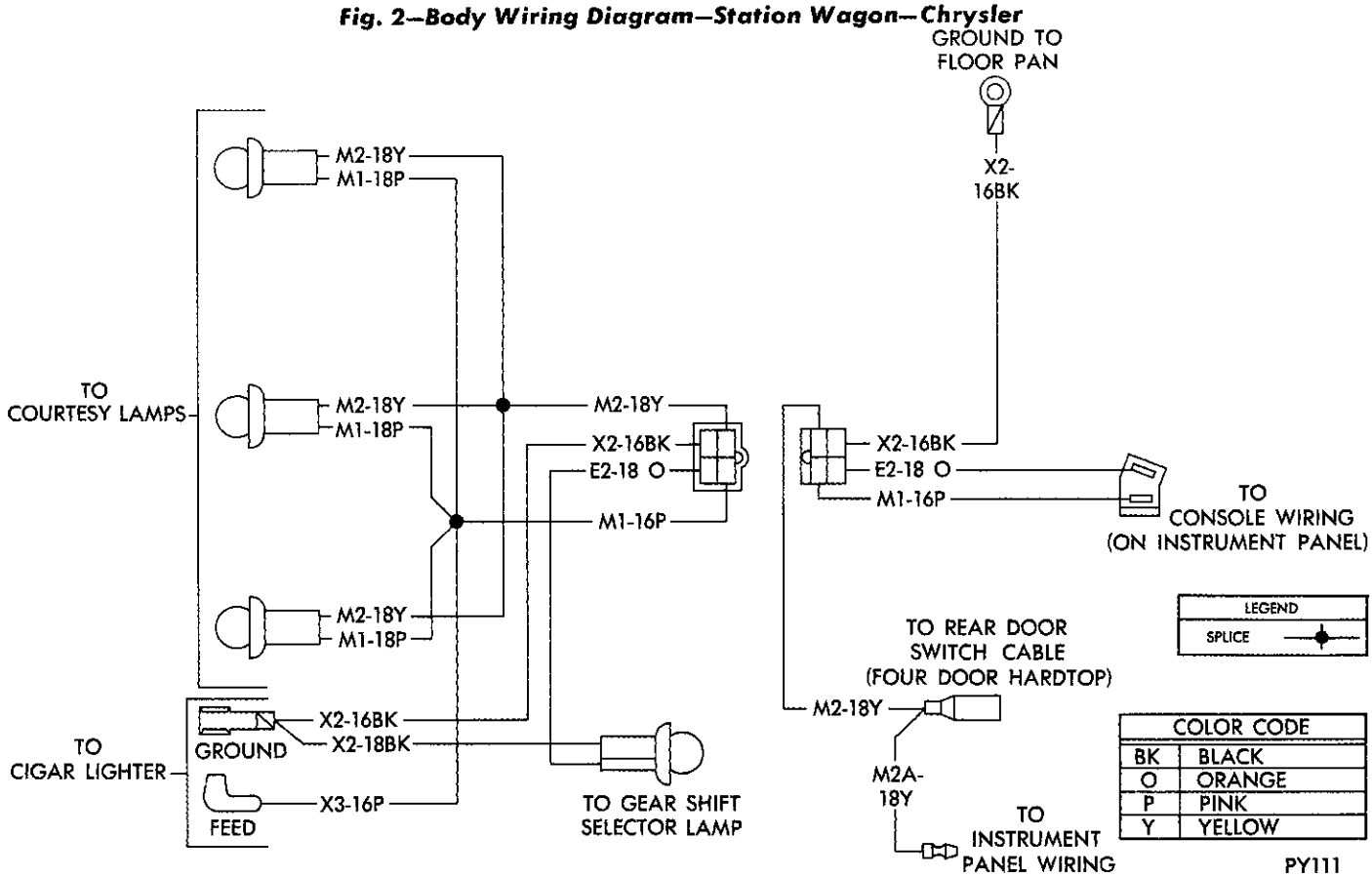


Fig. 3—Console Wiring Diagram—Chrysler

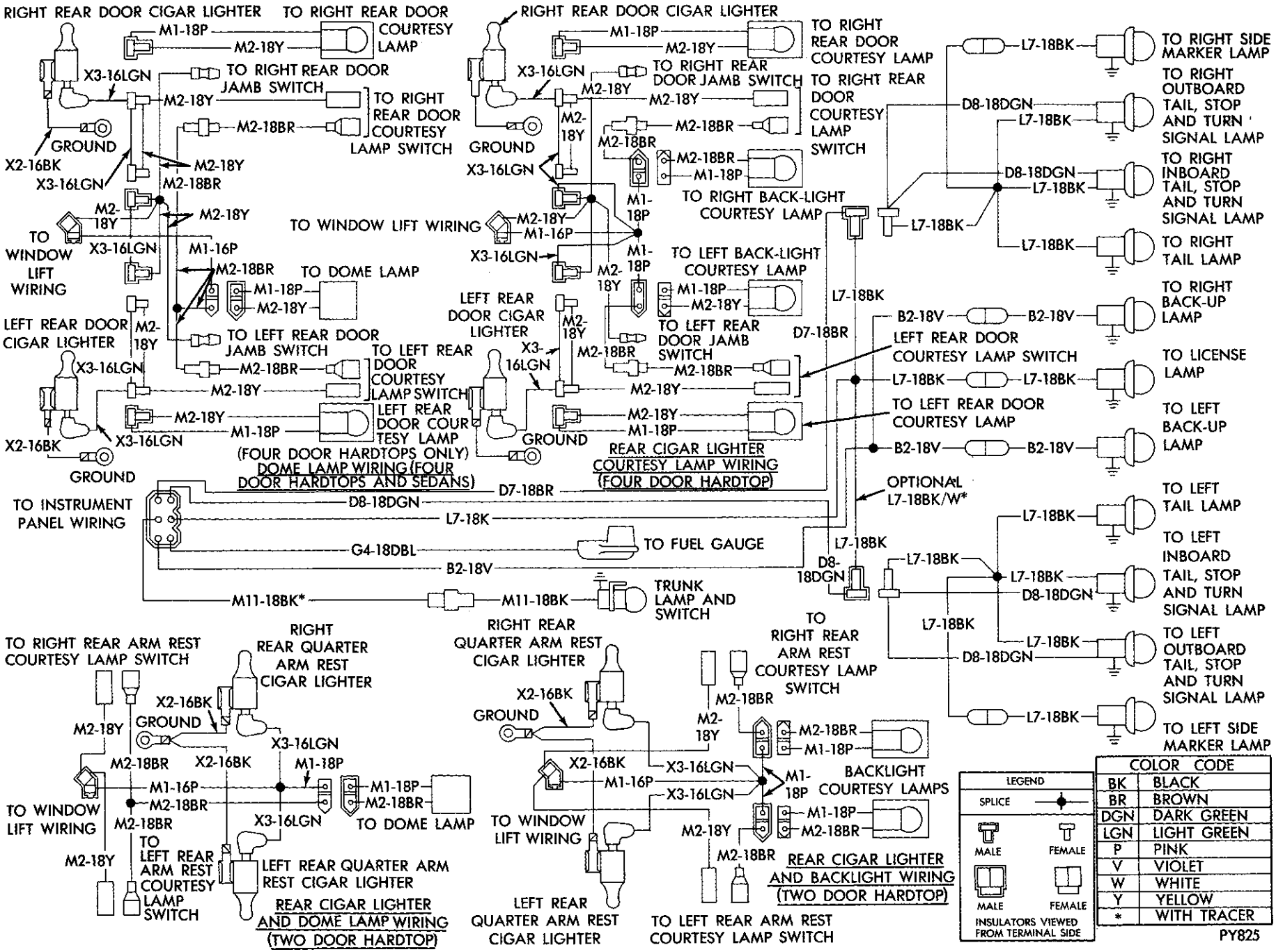


Fig. 4—Body Wiring Diagram—Imperial Console

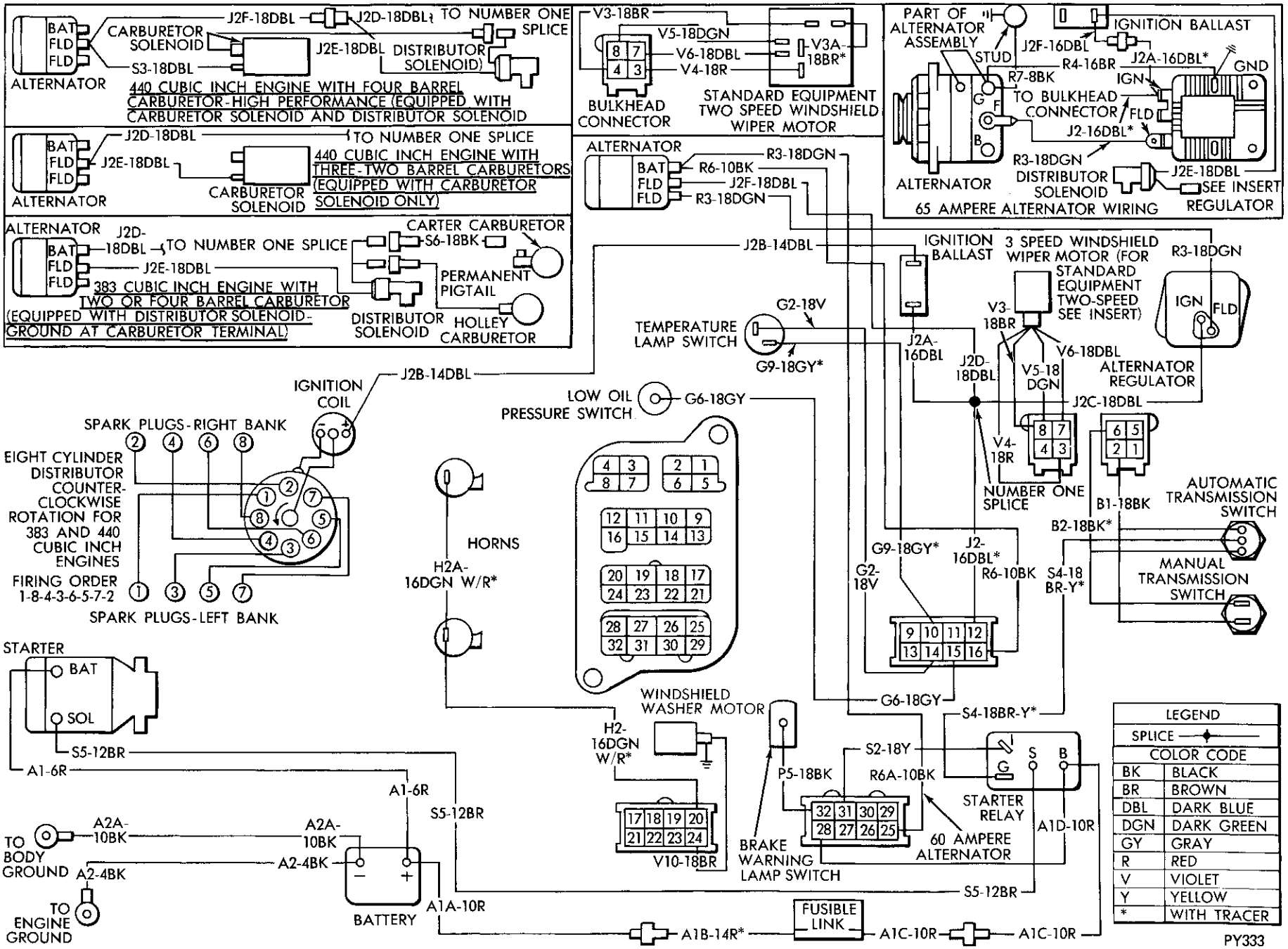


Fig. 5—Engine Compartment—Wiring Diagram—Chrysler

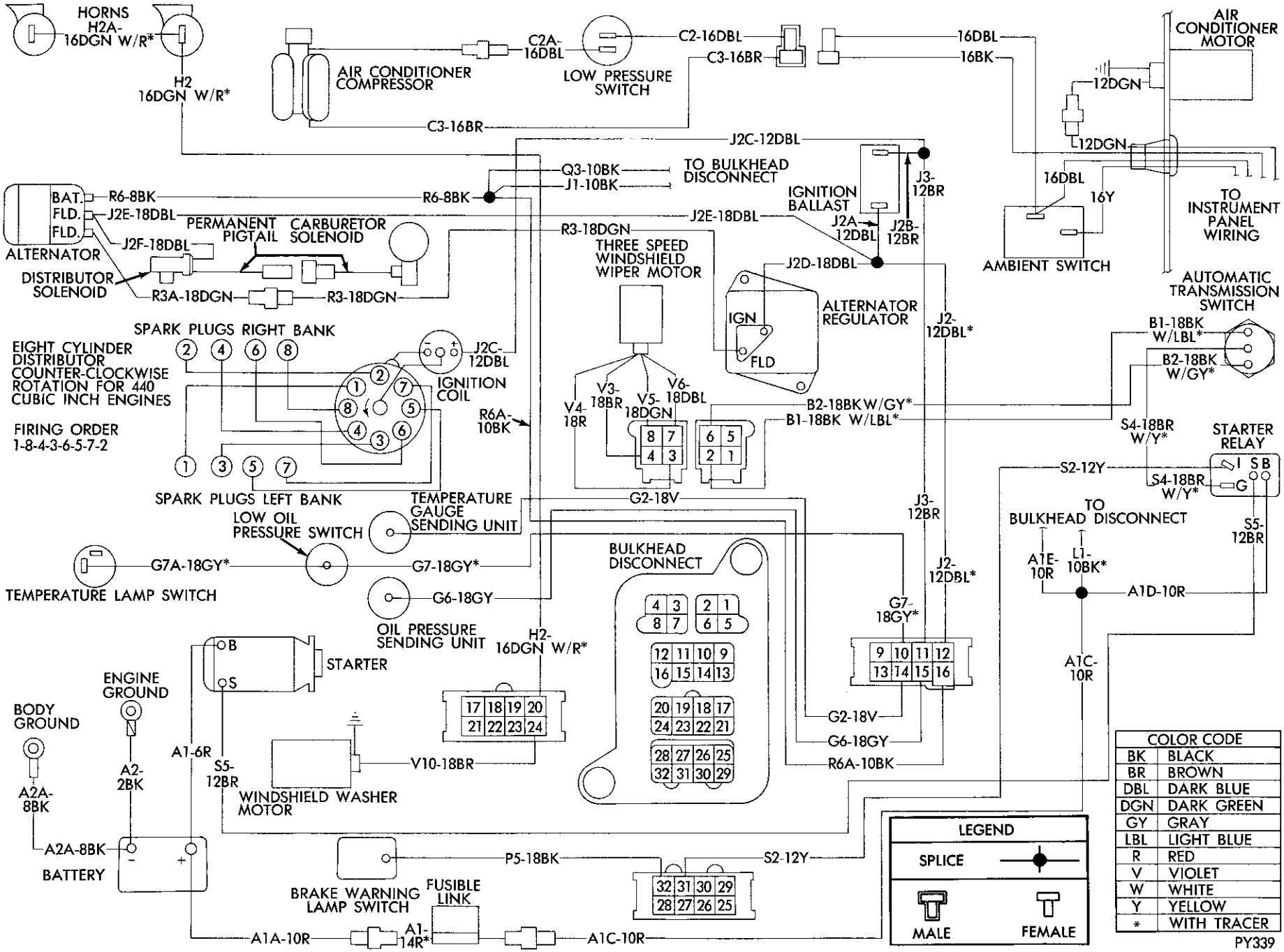


Fig. 6—Engine Compartment—Wiring Diagram—Imperial

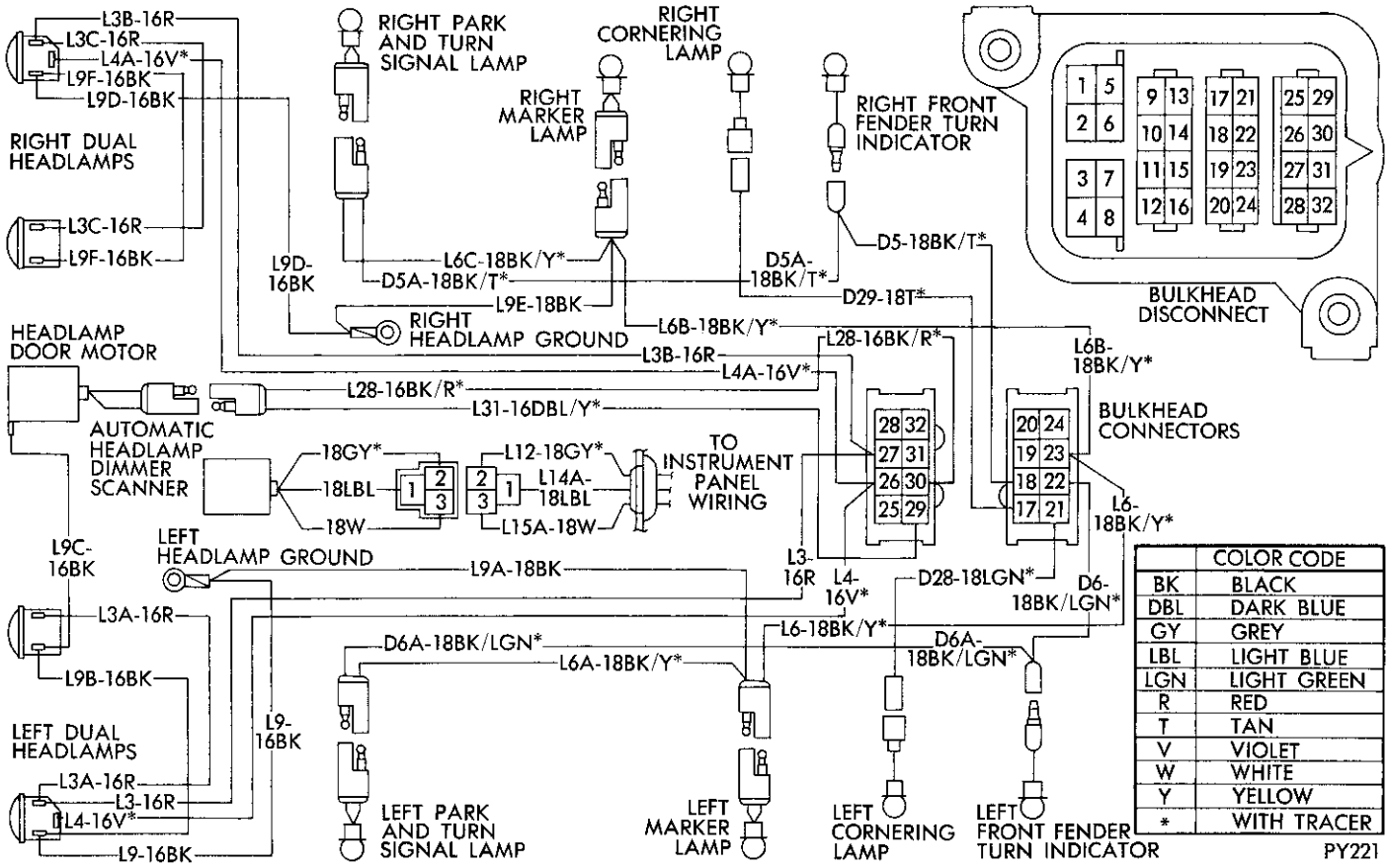


Fig. 7—Front End Lighting—Chrysler

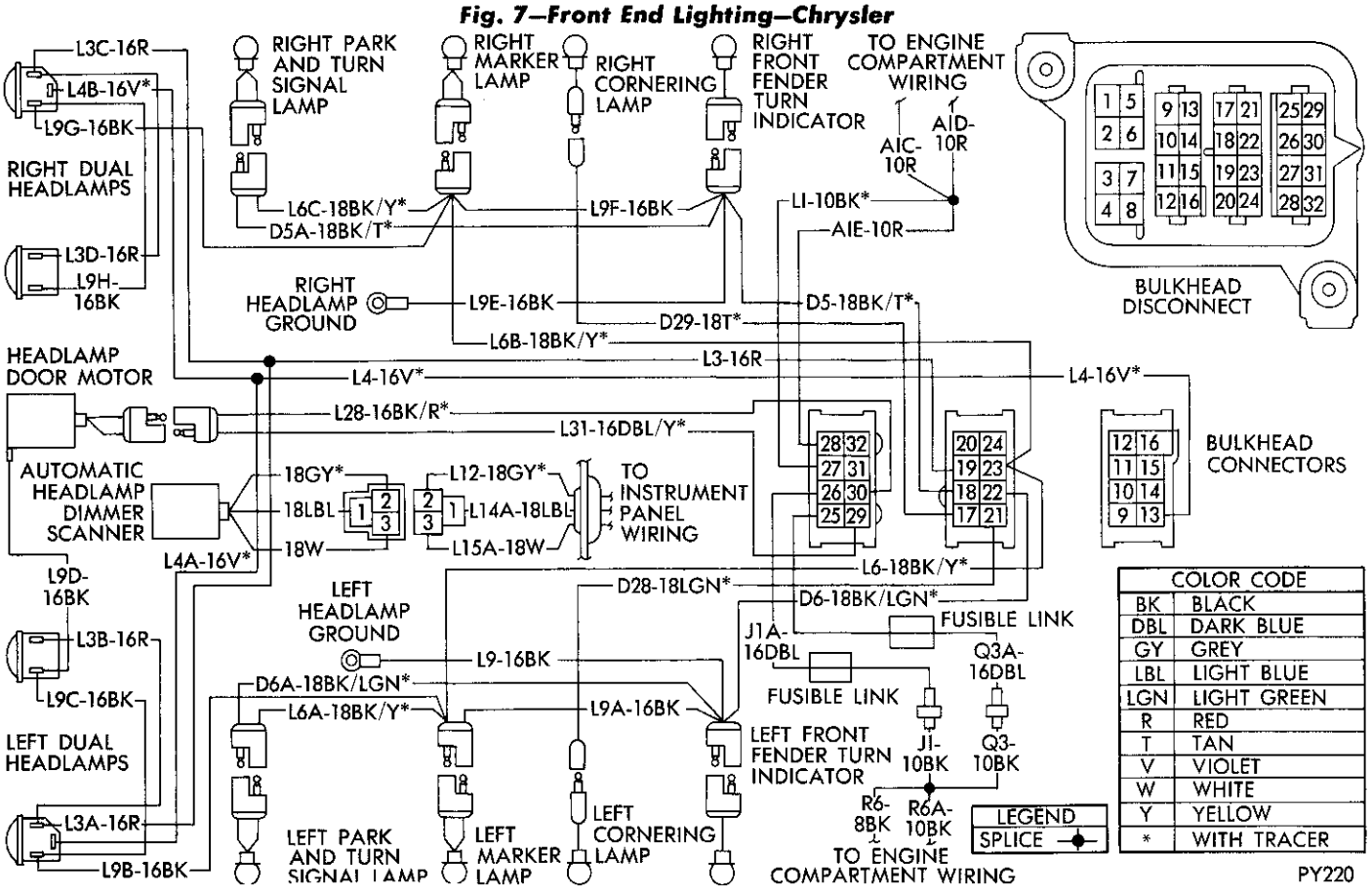
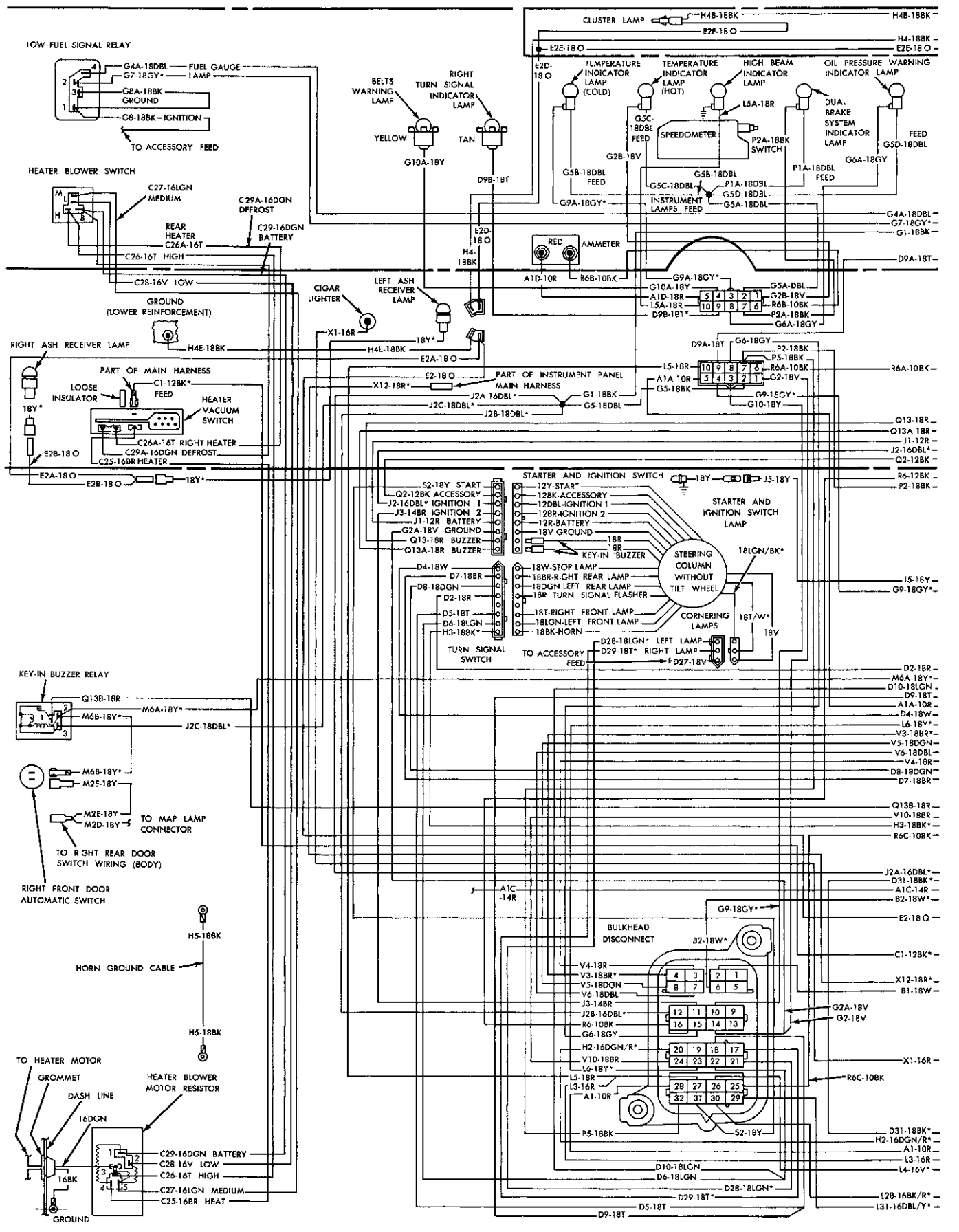


Fig. 8—Front End Lighting—Imperial


LOW FUEL SIGNAL RELAY
G4A-18DBL FUEL GAUGE
G7-18GY* LAMP
G8A-18BK GROUND
G8-18BK-IGNITION
TO ACCESSORY FEED
HEATER BLOWER SWITCH
C27-16LGN MEDIUM
C29A-16DGN DEFROST
REAR HEATER C26A-16T
C29-16DGN BATTERY
C26-16T HIGH
C28-16V LOW
GROUND (LOWER REINFORCEMENT)
RIGHT ASH RECEIVER LAMP
H4E-18BK
PART OF MAIN HARNESS
LOOSE INSULATOR
C1-12BK* FEED
HEATER VACUUM SWITCH
18Y*
E2B-18O
C26A-16T RIGHT HEATER
C29A-16DGN DEFROST
C25-16BR HEATER
E2A-18O
CIGAR LIGHTER
LEFT ASH RECEIVER LAMP
X1-16R
18Y*
E2A-18O
E2-18O
X12-18R*
PART OF INSTRUMENT PANEL MAIN HARNESS
J2A-16DBL*
J2C-18DBL*
J2B-18DBL*
G1-18BK
G5-18DBL
CLUSTER LAMP
H4B-18BK
E2F-18O
E2E-18O
H4-18BK
E2D-18O
TEMPERATURE INDICATOR LAMP (COLD)
TEMPERATURE INDICATOR LAMP (HOT)
HIGH BEAM INDICATOR LAMP
OIL PRESSURE WARNING INDICATOR LAMP
BELTS WARNING LAMP
YELLOW
RIGHT TURN SIGNAL INDICATOR LAMP
TAN
G10A-18Y
D9B-18T
L5A-18R
SPEEDOMETER
G5C-18DBL FEED
P2A-18BK SWITCH
DUAL BRAKE SYSTEM INDICATOR LAMP
P1A-18DBL FEED
FEED G5D-18DBL
G6A-18GY
G28-18V
G5B-18DBL FEED
G5C-18DBL
G5B-18DBL
P1A-18DBL
G5D-18DBL
G5A-18DBL
INSTRUMENT LAMPS FEED
G9A-18GY*
RED
AMMETER
A1D-10R
R6B-10BK
G10A-18Y
A1D-18R
L5A-18R
D9B-18T*
G5A-DBL
G2B-18V
R6B-10BK
P2A-18BK
G6A-18GY
D9A-18T
G6-18GY
P2-18BK
P5-18BK
R6A-10BK
G2-18V
L5-18R
A1A-10R
G5-18BK
G9-18GY*
G10-18Y
G4A-18DBL
G7-18GY*
G1-18BK
D9A-18T
Q13-18R
Q13A-18R
J1-12R
J2-16DBL*
Q2-12BK
R6-12BK
P2-18BK
J5-18Y
G9-18GY*
STARTER AND IGNITION SWITCH
18Y
J5-18Y
STARTER AND IGNITION SWITCH LAMP
S2-18Y START
Q2-12BK ACCESSORY
J2-16DBL* IGNITION 1
J3-14BR IGNITION 2
J1-12R BATTERY
G2A-18V GROUND
Q13-18R BUZZER
Q13A-18R BUZZER
12Y-START
12BK-ACCESSORY
12DBL-IGNITION 1
12BR-IGNITION 2
12R-BATTERY
18V-GROUND
18R
18R
KEY-IN BUZZER
STEERING COLUMN WITHOUT TILT WHEEL
18LGN/BK*
D4-18W
D7-18BR
D8-18DGN
D2-18R
D5-18T
D6-18LGN
H3-18BK*
18W-STOP LAMP
18BR-RIGHT REAR LAMP
18DGN LEFT REAR LAMP
18R TURN SIGNAL FLASHER
18T-RIGHT FRONT LAMP
18LGN-LEFT FRONT LAMP
18BK-HORN
CORNERING LAMPS
18T/W*
18V
TURN SIGNAL SWITCH
TO ACCESSORY FEED
D28-18LGN* LEFT LAMP
D29-18T* RIGHT LAMP
D27-18V
KEY-IN BUZZER RELAY
Q13B-18R
M6A-18Y*
M6B-18Y*
J2C-18DBL*
M6B-18Y*
M2E-18Y
M2E-18Y
M2D-18Y
TO MAP LAMP CONNECTOR
TO RIGHT REAR DOOR SWITCH WIRING (BODY)
RIGHT FRONT DOOR AUTOMATIC SWITCH
H5-18BK
HORN GROUND CABLE
H5-18BK
TO HEATER MOTOR
GROMMET
DASH LINE
16DGN
HEATER BLOWER MOTOR RESISTOR
16BK
C29-16DGN BATTERY
C28-16V LOW
C26-16T HIGH
C27-16LGN MEDIUM
C25-16BR HEAT
GROUND
A1C-14R
BULKHEAD DISCONNECT
G9-18GY*
B2-18W*
V4-18R
V3-18BR*
V5-18DGN
V6-18DBL
J3-14BR
J2B-16DBL*
R6-10BK
G6-18GY
H2-16DGN/R*
V10-18BR
L6-18Y*
L5-18R
L3-16R
A1-10R
P5-18BK
S2-18Y
G2A-18V
G2-18V
R6C-10BK
X1-16R
C1-12BK*
X12-18R*
B1-18W
D31-18BK*
H2-16DGN/R*
A1-10R
L3-16R
L4-16V*
D10-18LGN
D6-18LGN
D28-18LGN*
D29-18T*
D5-18T
D9-18T
L28-16BK/R*
L31-16DBL/Y*

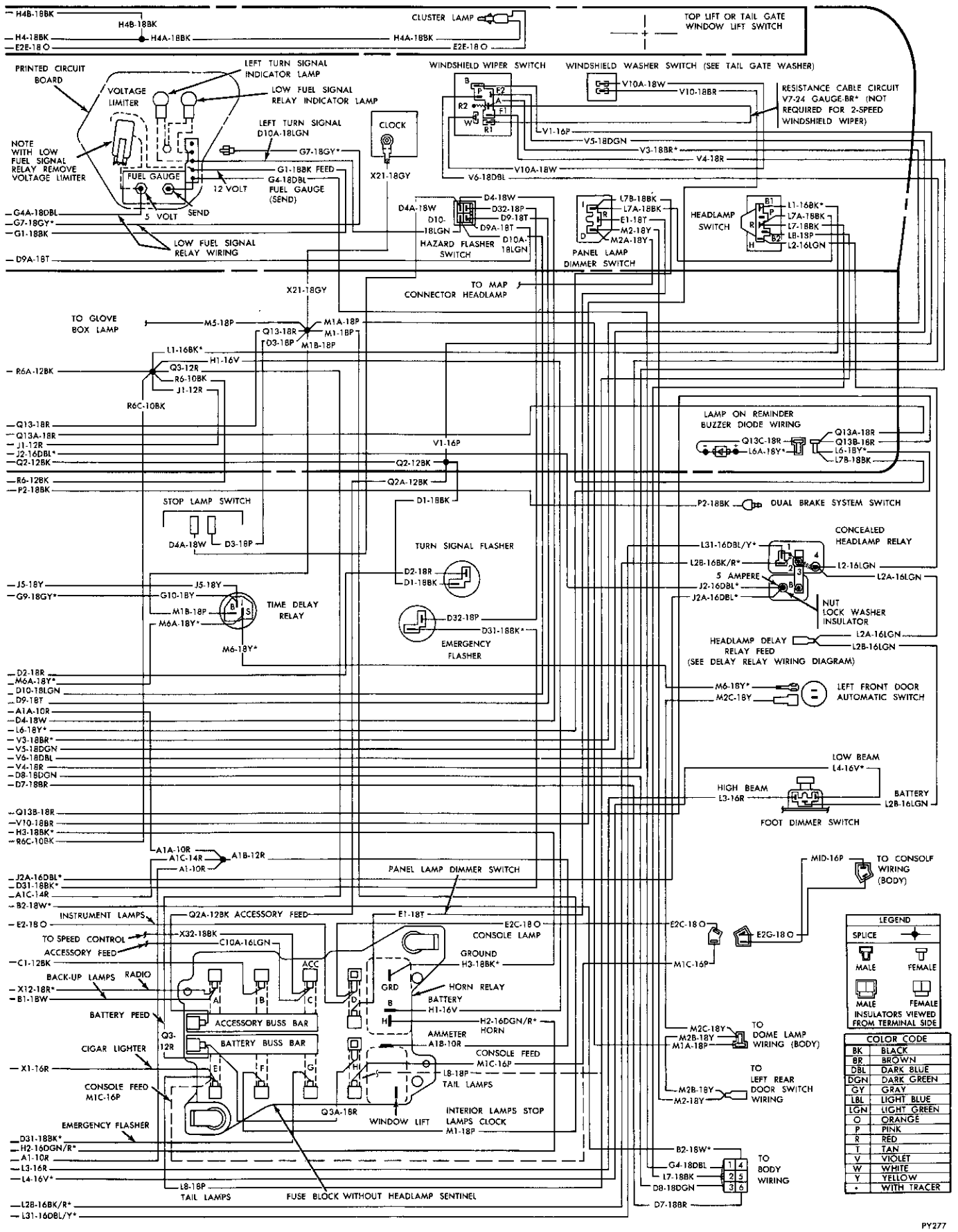
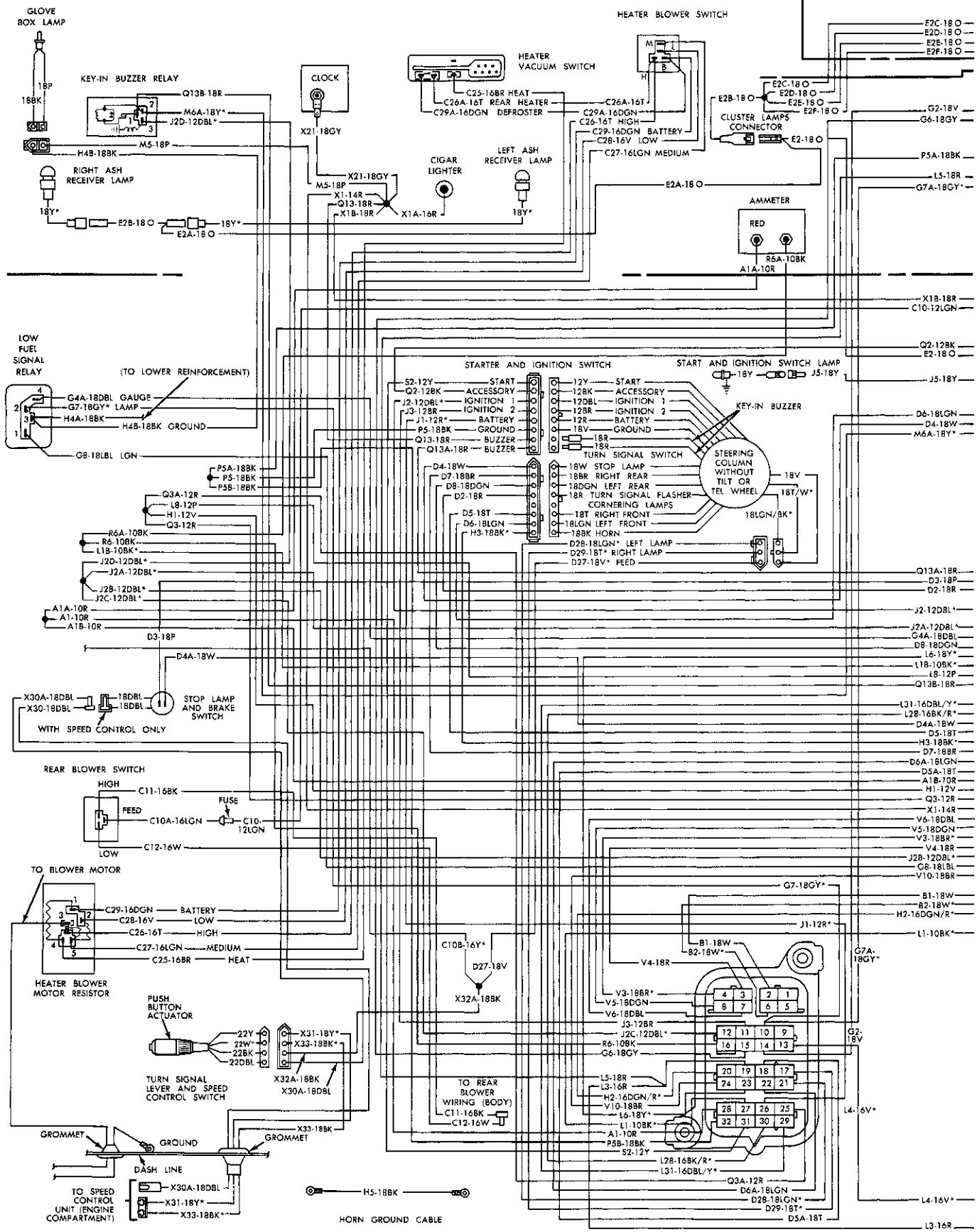


Fig. 9—Instrument Panel Wiring Diagram—Chrysler


GLOVE BOX LAMP
18P
18BK
KEY-IN BUZZER RELAY
Q13B-18R
M6A-18Y*
J2D-12DBL*
M5-18P
H4B-18BK
RIGHT ASH RECEIVER LAMP
18Y*
E2B-18O
E2A-18O
18Y*
CLOCK
X21-18GY
X21-18GY
M5-18P
X1-14R
Q13-18R
X1B-18R
X1A-16R
CIGAR LIGHTER
LEFT ASH RECEIVER LAMP
18Y*
HEATER VACUUM SWITCH
C25-16BR HEAT
C26A-16T REAR HEATER
C29A-16DGN DEFROSTER
C26A-16T
C29A-16DGN*
C26-16T HIGH
C29-16DGN BATTERY
C28-16V LOW
C27-16LGN MEDIUM
HEATER BLOWER SWITCH
E2C-18O
E2D-18O
E2E-18O
E2F-18O
E2B-18O
CLUSTER LAMPS CONNECTOR
E2-18O
E2A-18O
AMMETER
RED
R6A-10BK
A1A-10R
G2-18V
G6-18GY
P5A-18BK
L5-18R
G7A-18GY*
X1B-18R
C10-12LGN
Q2-12BK
E2-18O
J5-18Y
D6-18LGN
D4-18W
M6A-18Y*
LOW FUEL SIGNAL RELAY
(TO LOWER REINFORCEMENT)
G4A-18DBL GAUGE
G7-18GY* LAMP
H4A-18BK
H4B-18BK GROUND
G8-18LBL LGN
STARTER AND IGNITION SWITCH
S2-12Y START
Q2-12BK ACCESSORY
J2-12DBL* IGNITION 1
J3-12BR IGNITION 2
J1-12R* BATTERY
P5-18BK GROUND
Q13-18R BUZZER
Q13A-18R BUZZER
12Y START
12BK ACCESSORY
12DBL IGNITION 1
12BR IGNITION 2
12R BATTERY
18V GROUND
18R
18R
TURN SIGNAL SWITCH
START AND IGNITION SWITCH LAMP
18Y
J5-18Y
KEY-IN BUZZER
STEERING COLUMN WITHOUT TILT OR TEL WHEEL
18V
18T/W*
18LGN/BK*
P5A-18BK
P5-18BK
P5B-18BK
Q3A-12R
L8-12P
H1-12V
Q3-12R
R6A-10BK
R6-10BK
L18-10BK*
J2D-12DBL*
J2A-12DBL*
J2B-12DBL*
J2C-12DBL*
A1A-10R
A1-10R
A1B-10R
D3-18P
D4A-18W
D4-18W
D7-18BR
D8-18DGN
D2-18R
D5-18T
D6-18LGN
H3-18BK*
18W STOP LAMP
18BR RIGHT REAR
18DGN LEFT REAR
18R TURN SIGNAL FLASHER CORNERING LAMPS
18T RIGHT FRONT
18LGN LEFT FRONT
18BK HORN
D28-18LGN* LEFT LAMP
D29-18T* RIGHT LAMP
D27-18V* FEED
Q13A-18R
D3-18P
D2-18R
J2-12DBL*
J2A-12DBL*
G4A-18DBL
D8-18DGN
L6-18Y*
L18-10BK*
L8-12P
Q13B-18R
X30A-18DBL
X30-18DBL
18DBL
18DBL
STOP LAMP AND BRAKE SWITCH
WITH SPEED CONTROL ONLY
L31-16DBL/Y*
L28-16BK/R*
D4A-18W
D5-18T
H3-18BK*
D7-18BR
D6A-18LGN
D5A-18T
A1B-10R
H1-12V
Q3-12R
X1-14R
V6-18DBL
V5-18DGN
V3-18BR*
V4-18R
J2B-12DBL*
G8-18LBL
V10-18BR
REAR BLOWER SWITCH
HIGH
C11-16BK
FEED
C10A-16LGN
FUSE
C10-12LGN
C12-16W
LOW
TO BLOWER MOTOR
C29-16DGN BATTERY
C28-16V LOW
C26-16T HIGH
C27-16LGN MEDIUM
C25-16BR HEAT
HEATER BLOWER MOTOR RESISTOR
PUSH BUTTON ACTUATOR
22Y
22W*
22BK
22DBL
X31-18Y*
X33-18BK*
X32A-18BK
X30A-18DBL
TURN SIGNAL LEVER AND SPEED CONTROL SWITCH
C10B-16Y*
D27-18V
X32A-18BK
TO REAR BLOWER WIRING (BODY)
C11-16BK
C12-16W
G7-18GY*
B1-18W
B2-18W*
H2-16DGN/R*
J1-12R*
L1-10BK*
G7A-18GY*
B1-18W
B2-18W*
V4-18R
V3-18BR*
V5-18DGN
V6-18DBL
J3-12BR
J2C-12DBL*
R6-10BK
G6-18GY
G2-18V
L5-18R
L3-16R
H2-16DGN/R*
V10-18BR
L6-18Y*
L1-10BK*
A1-10R
P5B-18BK
52-12Y
L28-16BK/R*
L31-16DBL/Y*
Q3A-12R
D6A-18LGN
D28-18LGN*
D29-18T*
D5A-18T
L4-16V*
L3-16R
GROMMET
GROUND
GROMMET
DASH LINE
X33-18BK
TO SPEED CONTROL UNIT (ENGINE COMPARTMENT)
X30A-18DBL
X31-18Y*
X33-18BK*
H5-18BK
HORN GROUND CABLE

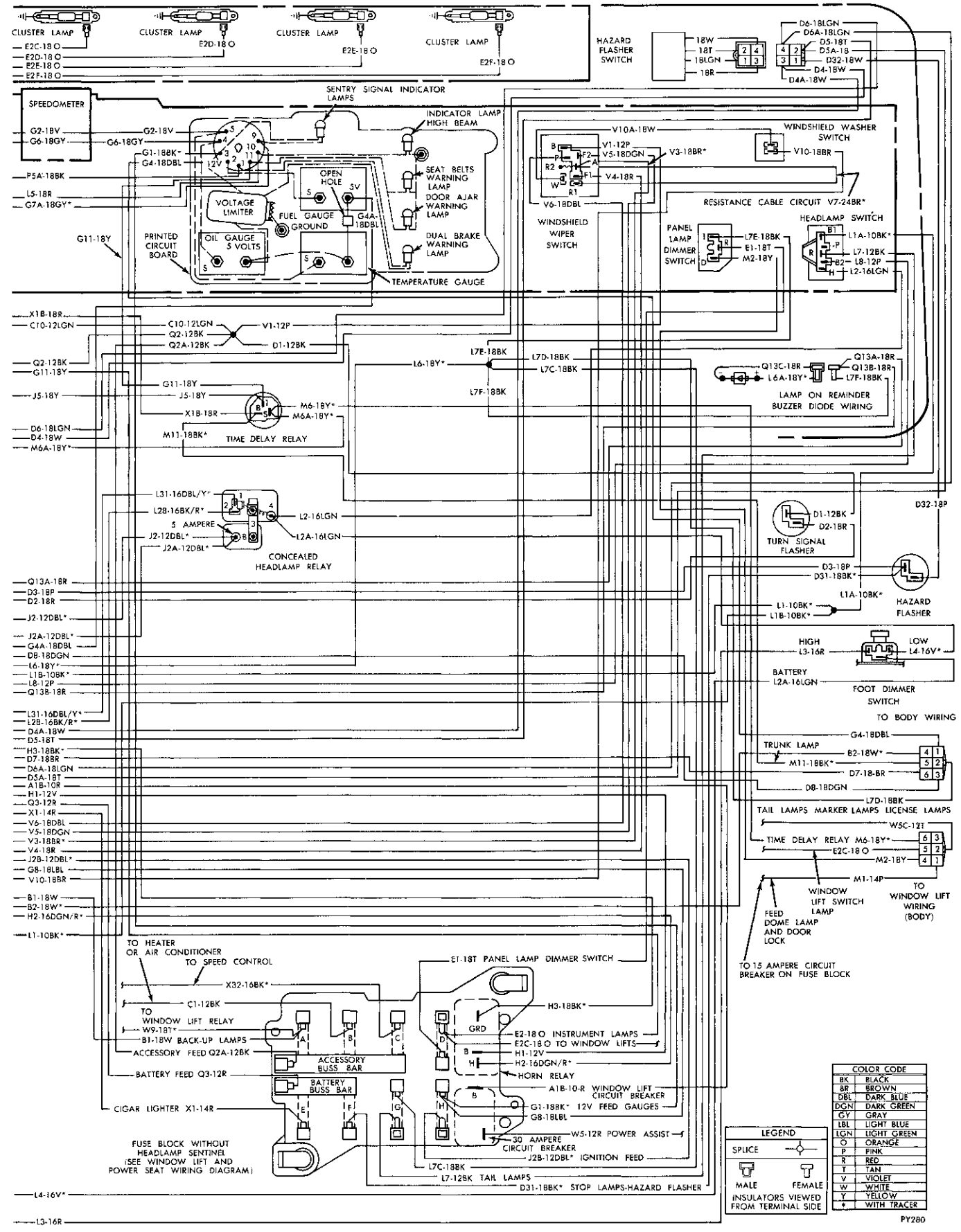


Fig. 10—Instrument Panel Wiring Diagram—Imperial

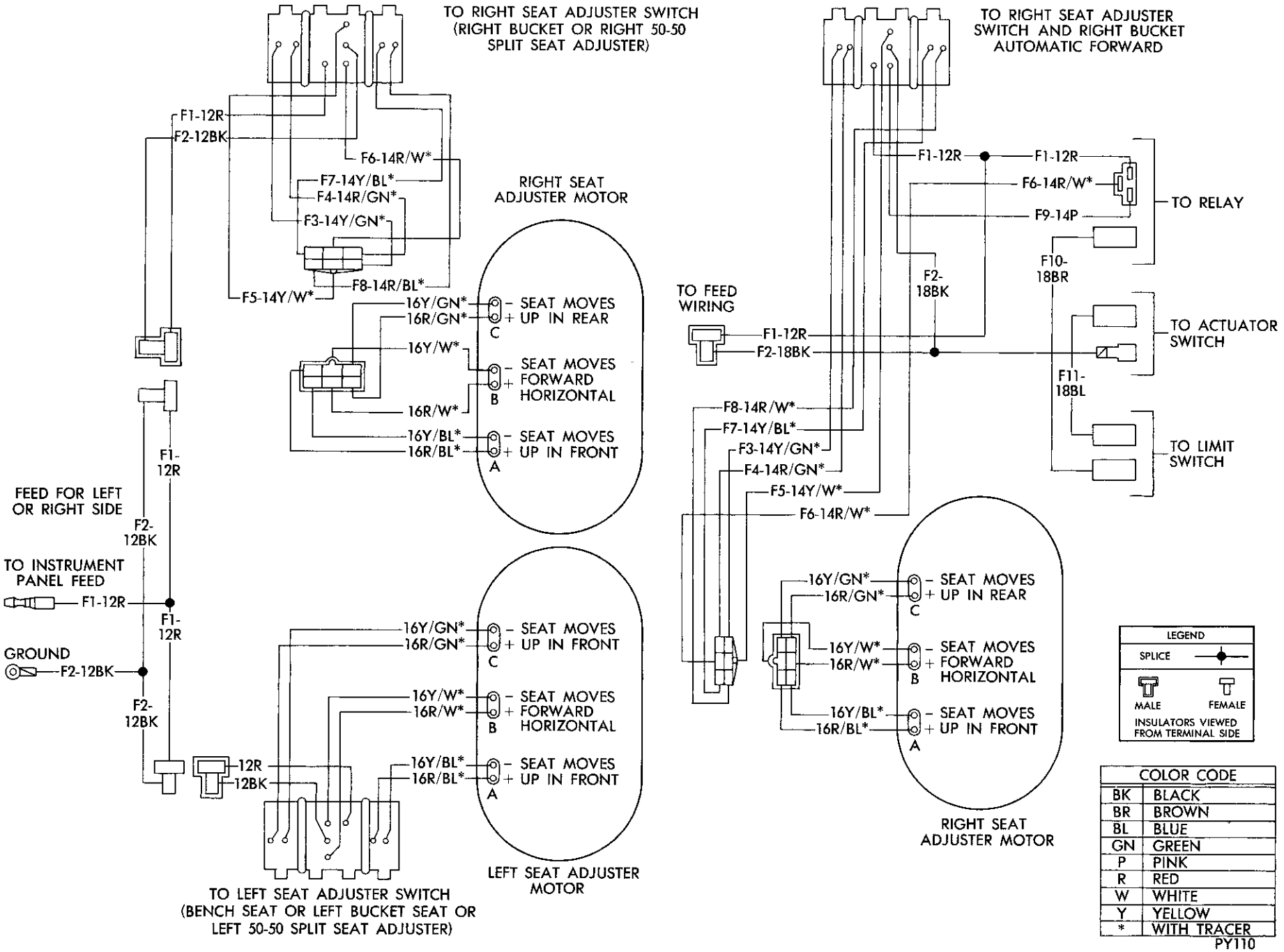


Fig. 11—Electric Seats Wiring Diagram—Imperial

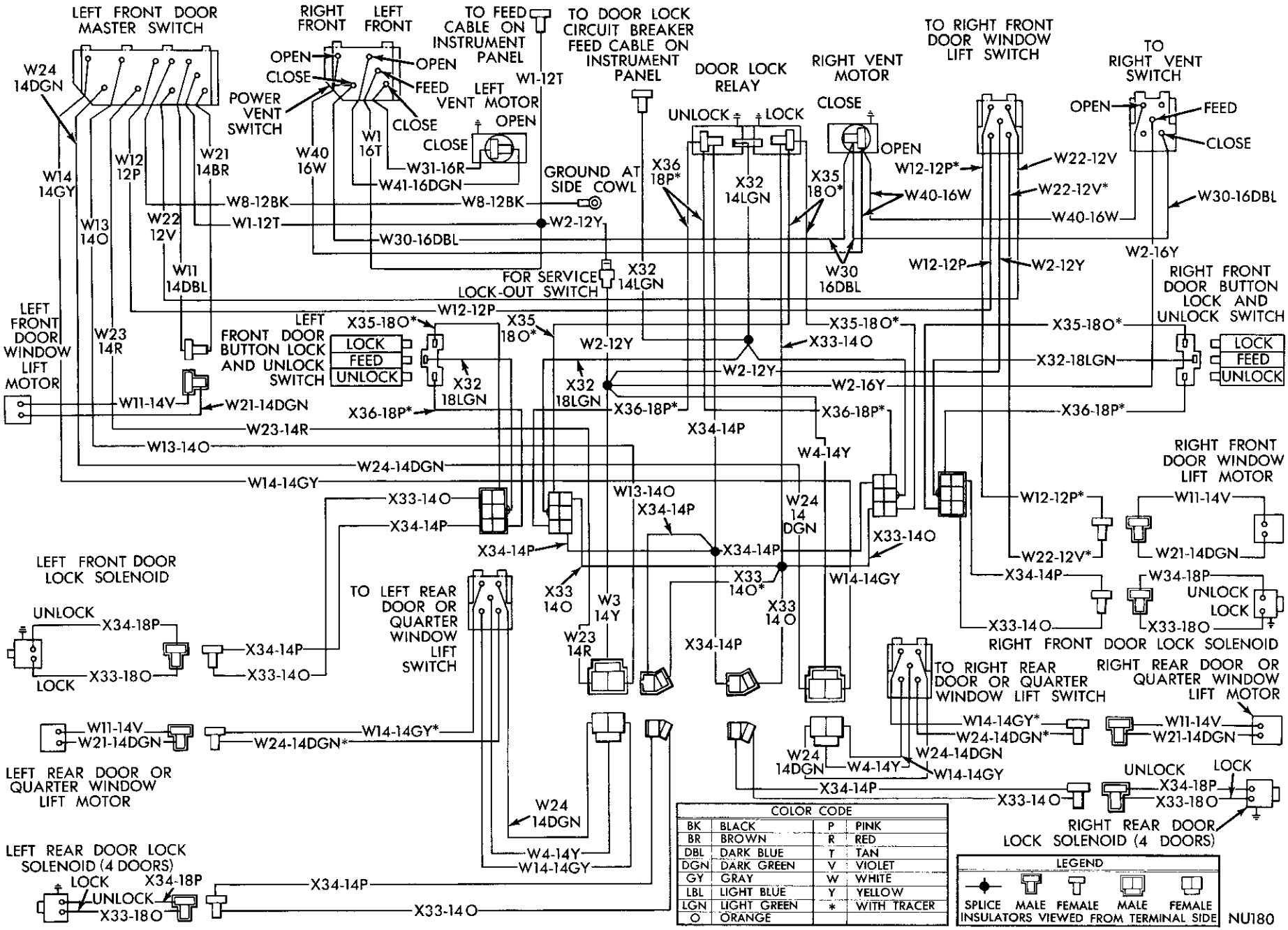


Fig. 12—Electric Window Lift, Power Vent and Door Locks Wiring Diagram—Chrysler

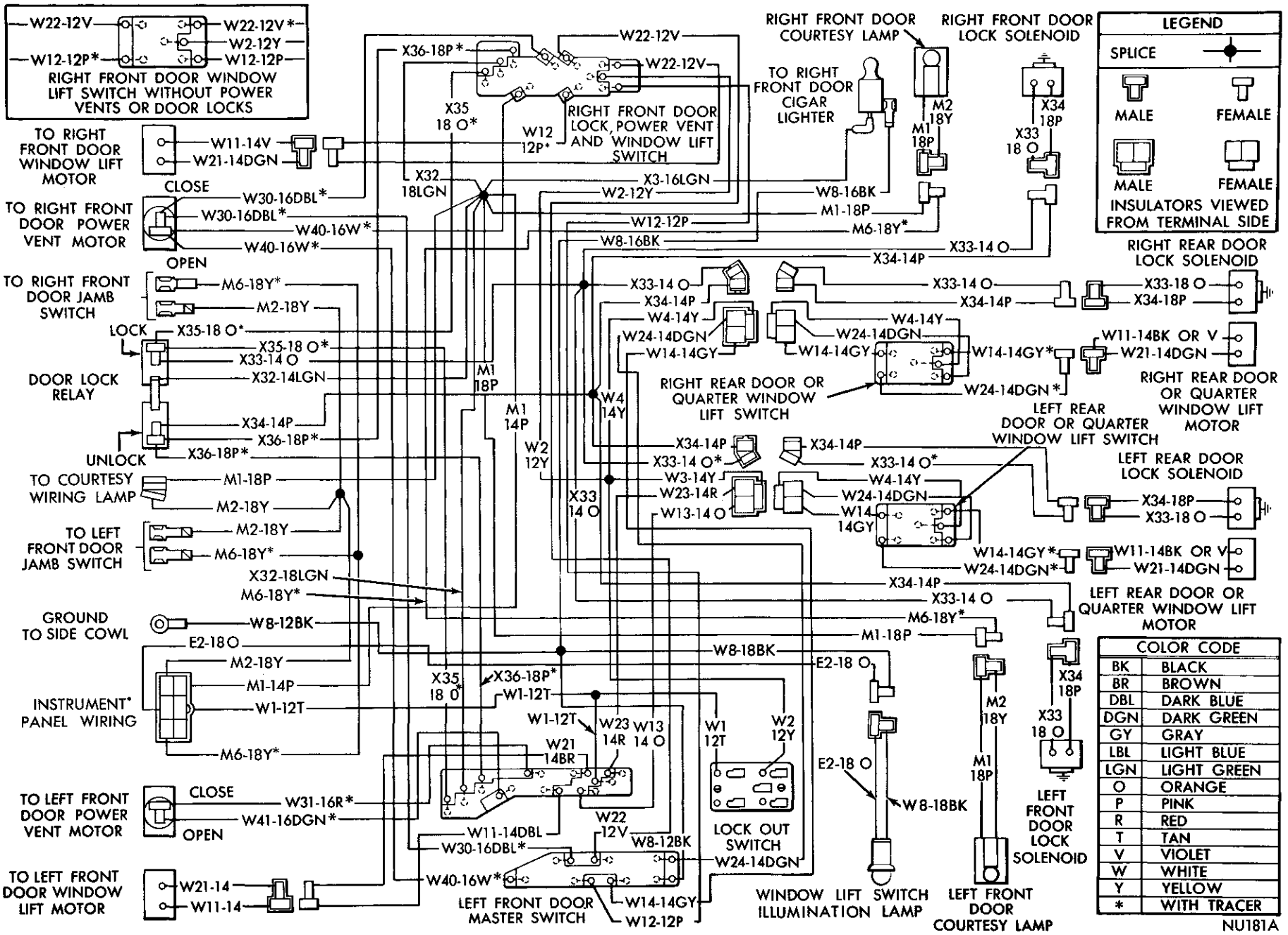


Fig. 13—Electric Window Lift, Power Vent and Door Locks Wiring Diagram—Imperial

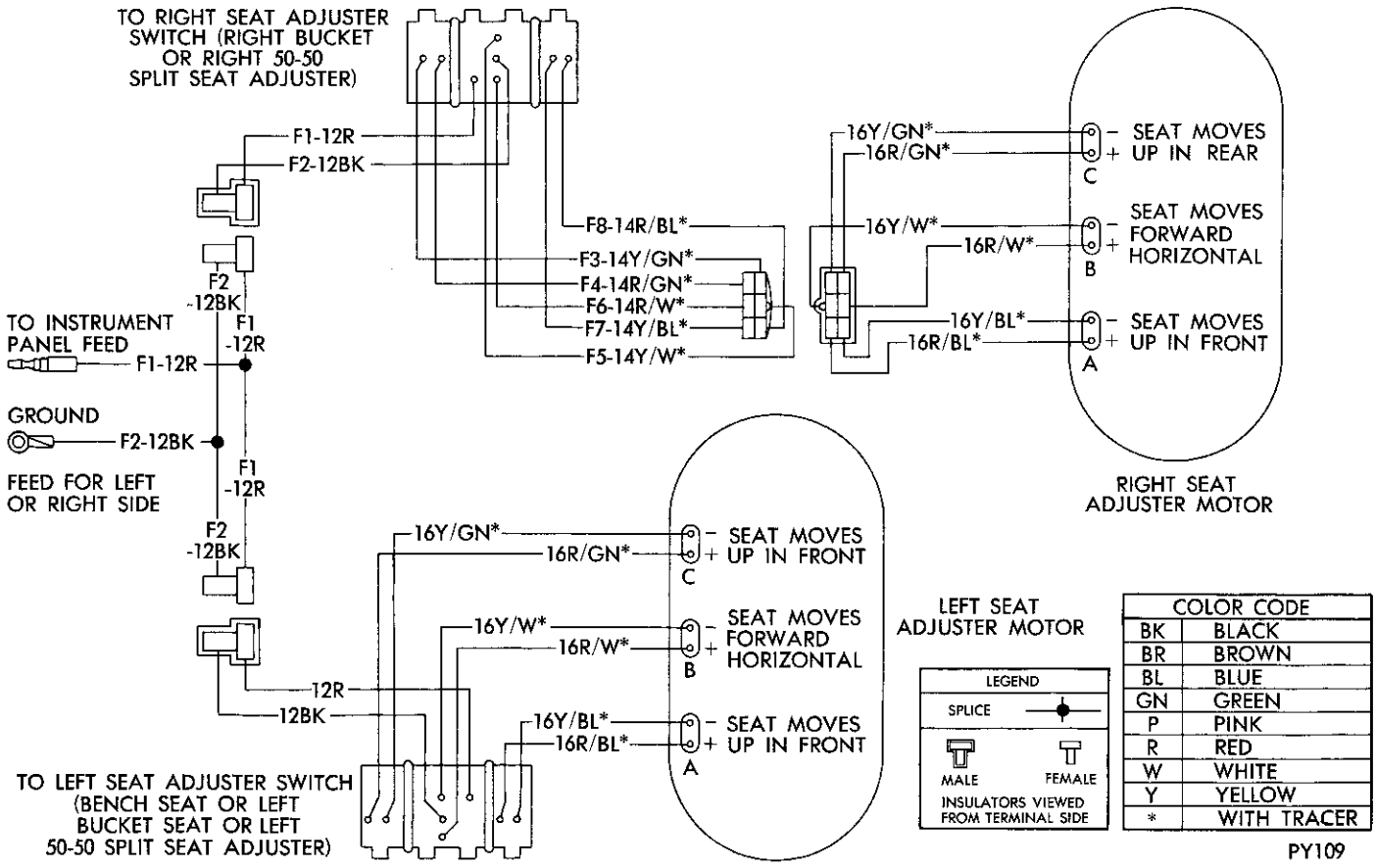


Fig. 14—Electric Seats Wiring Diagram—Chrysler

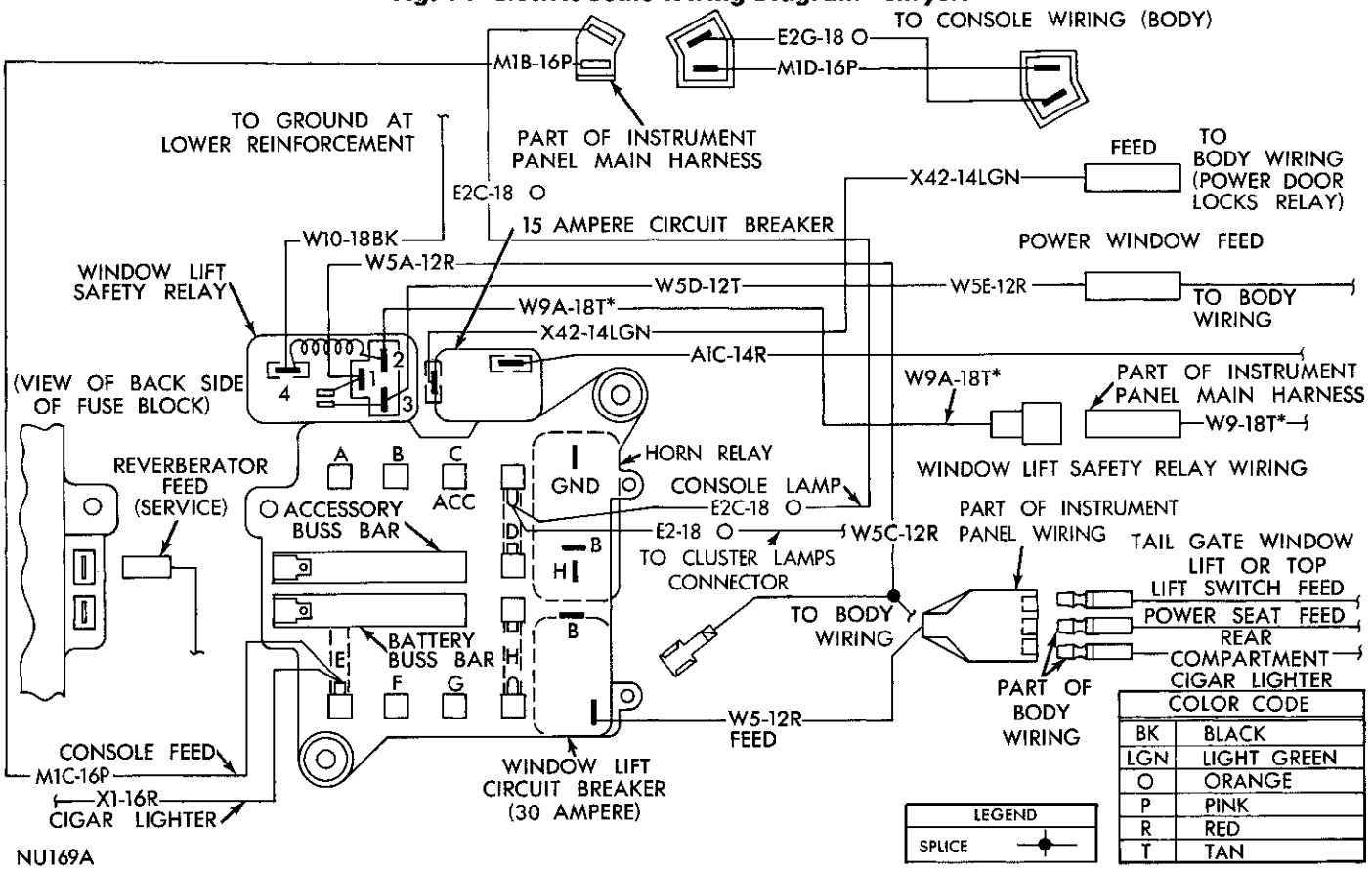


Fig. 15—Power Assist—Window Lifts—Door Locks and Electric Seat Wiring Diagram—Chrysler

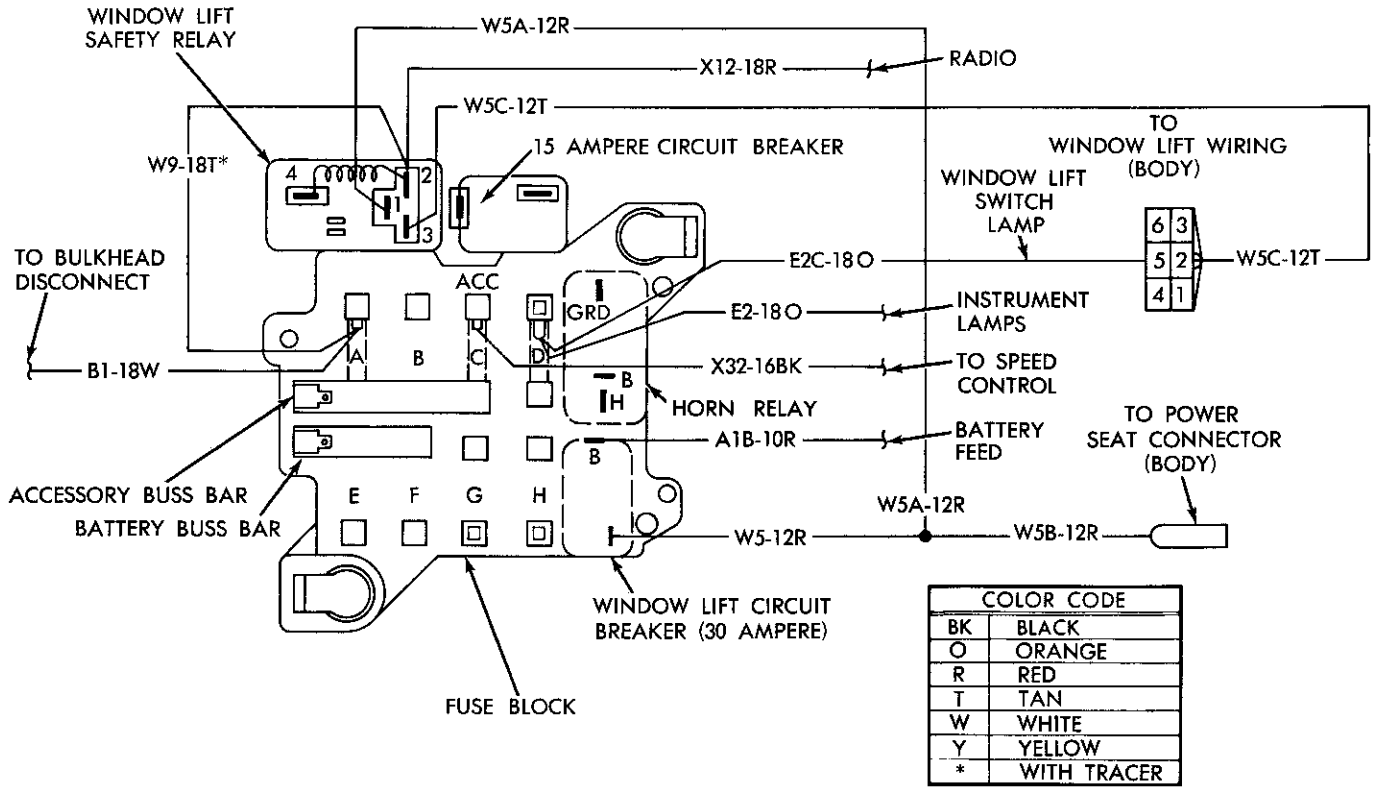


Fig. 16—Power Assist—Window Lifts—Door Locks and Electric Seats Wiring Diagram—Imperial

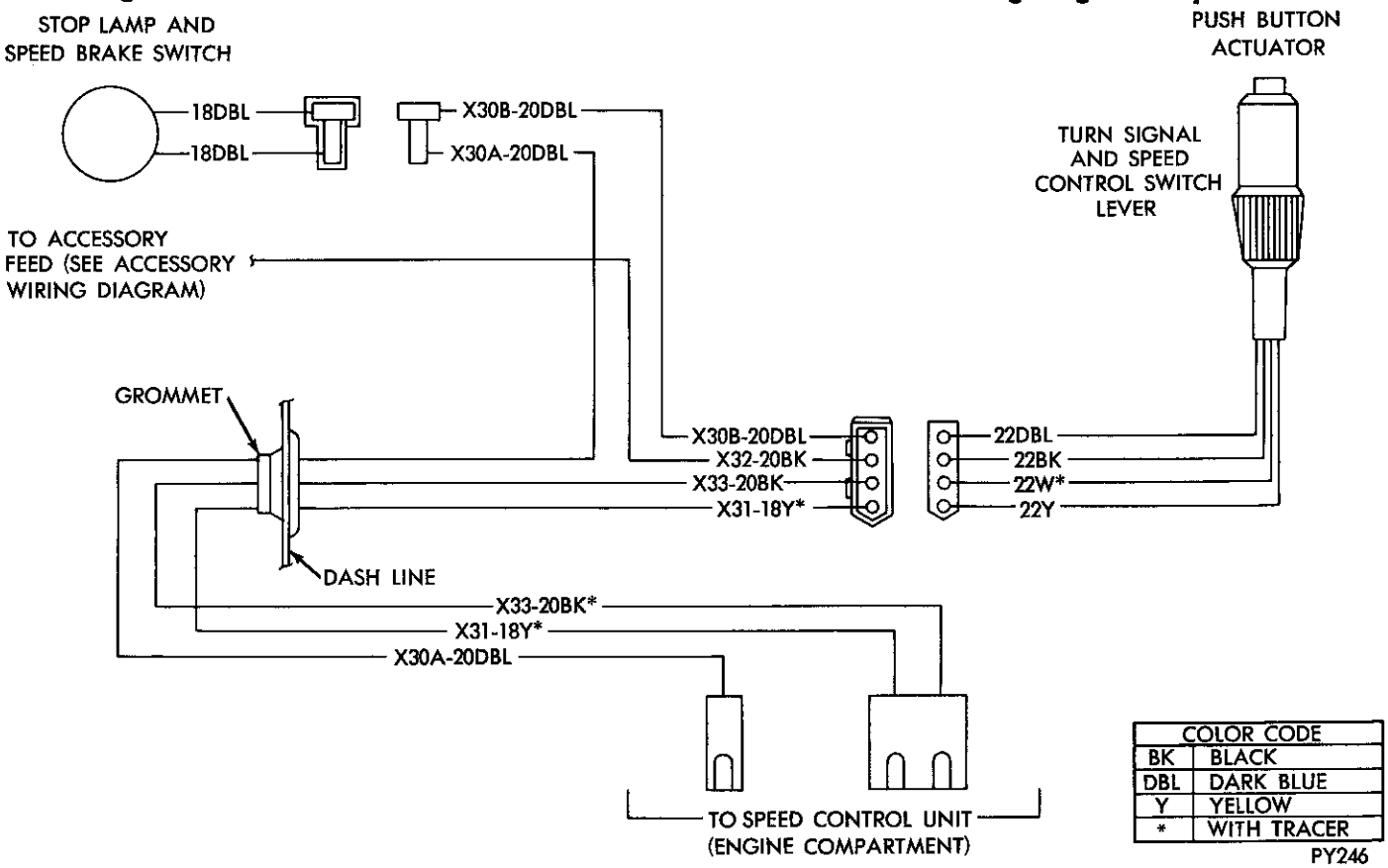
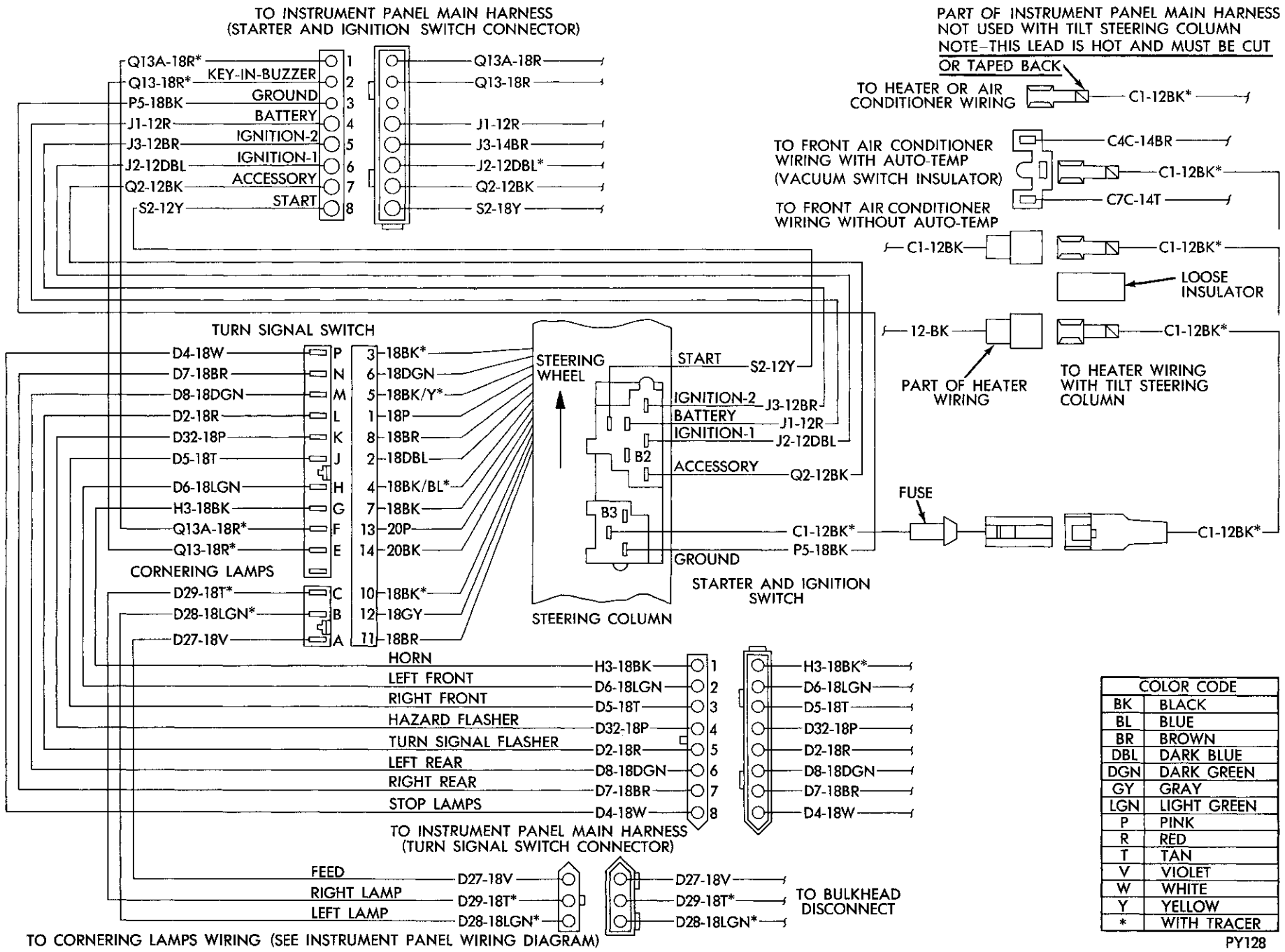


Fig. 17—Speed Control Wiring Diagram—Chrysler



COLOR CODE	
BK	BLACK
BL	BLUE
BR	BROWN
DBL	DARK BLUE
DGN	DARK GREEN
GY	GRAY
LGN	LIGHT GREEN
P	PINK
R	RED
T	TAN
V	VIOLET
W	WHITE
Y	YELLOW
*	WITH TRACER

PY128

Fig. 18—Tilt Steering Column Wiring—Chrysler, Imperial

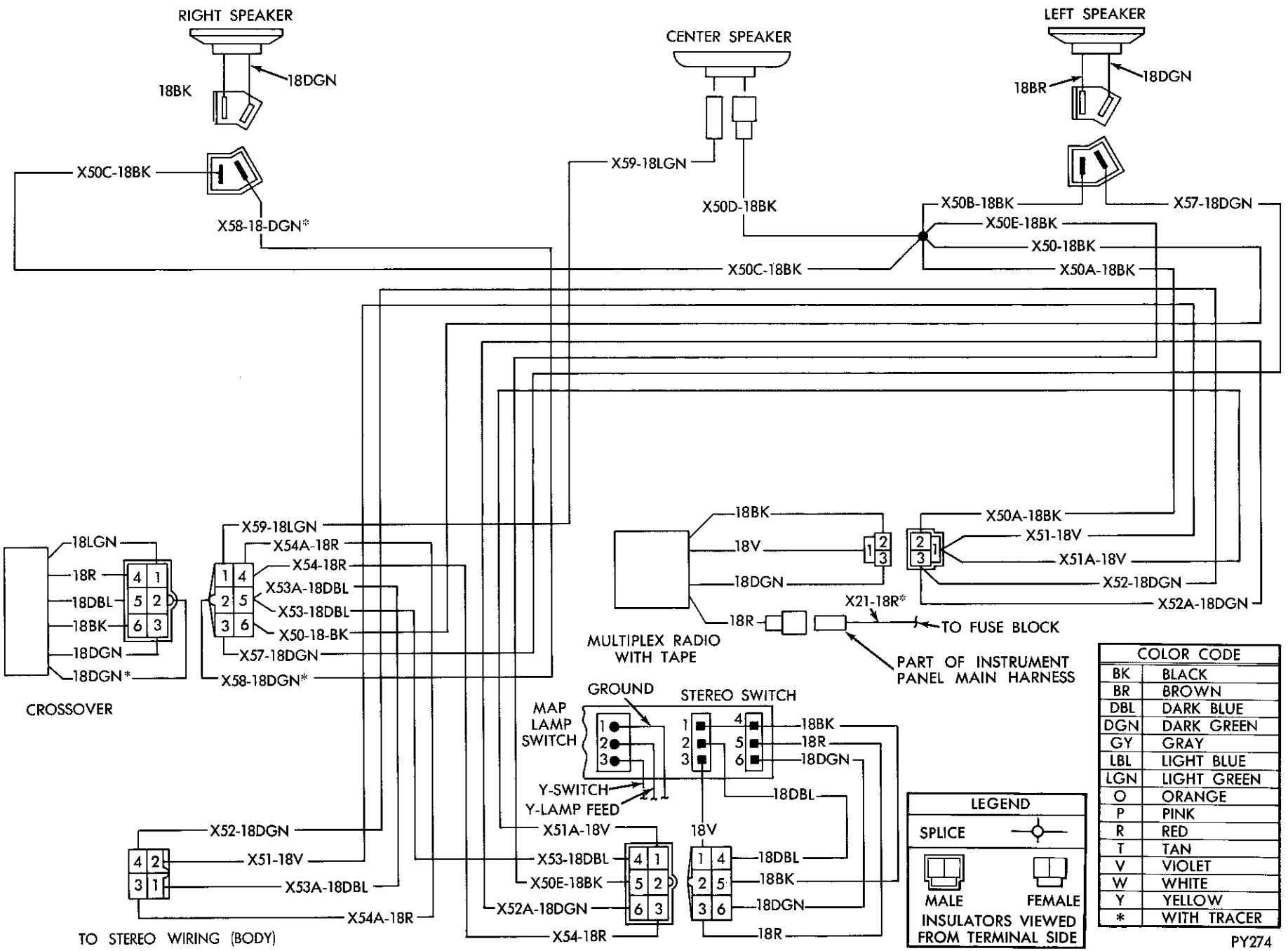


Fig. 19—Stereo Wiring Diagram—Chrysler

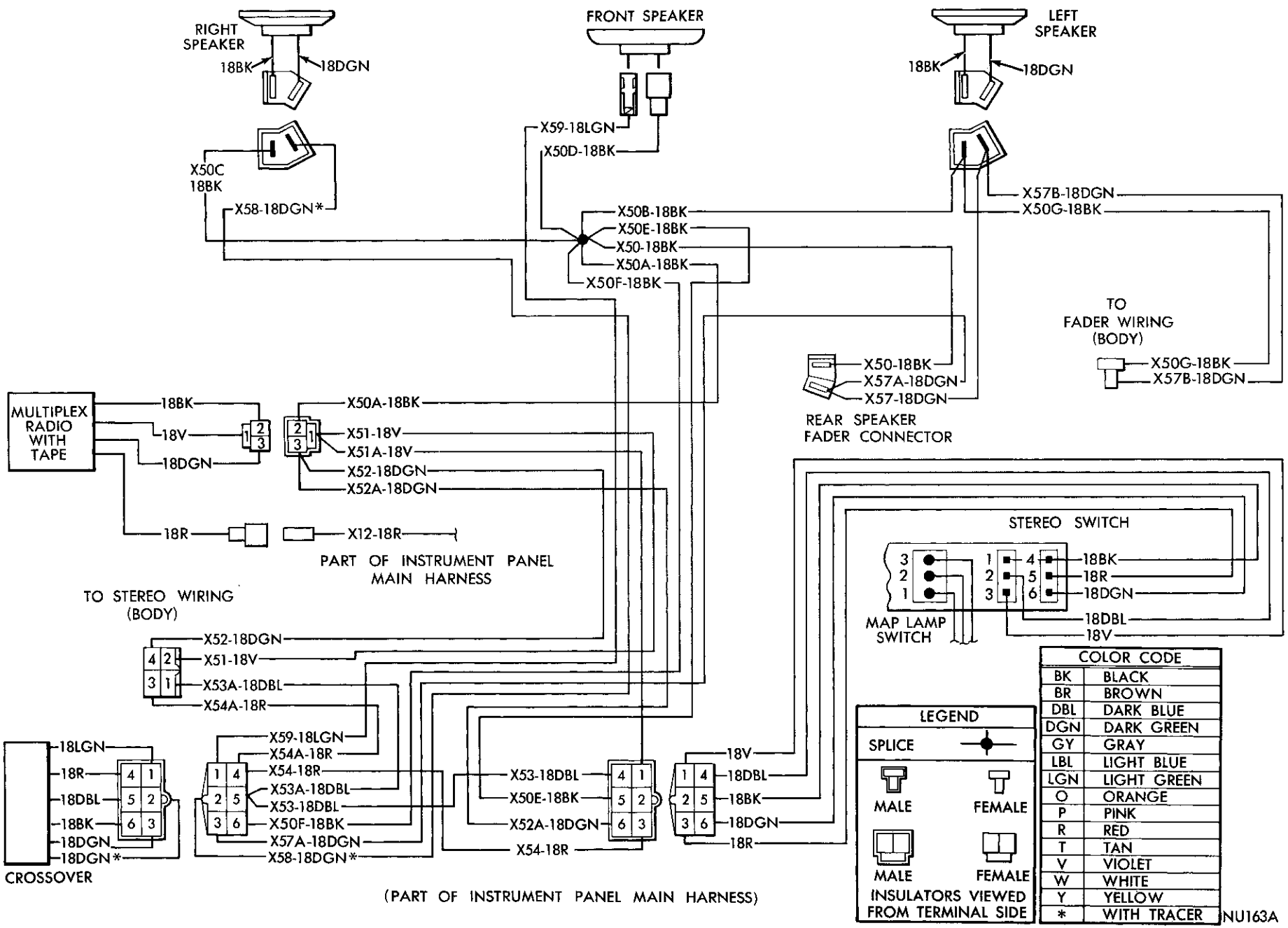


Fig. 20—Stereo Wiring Diagram—Imperial

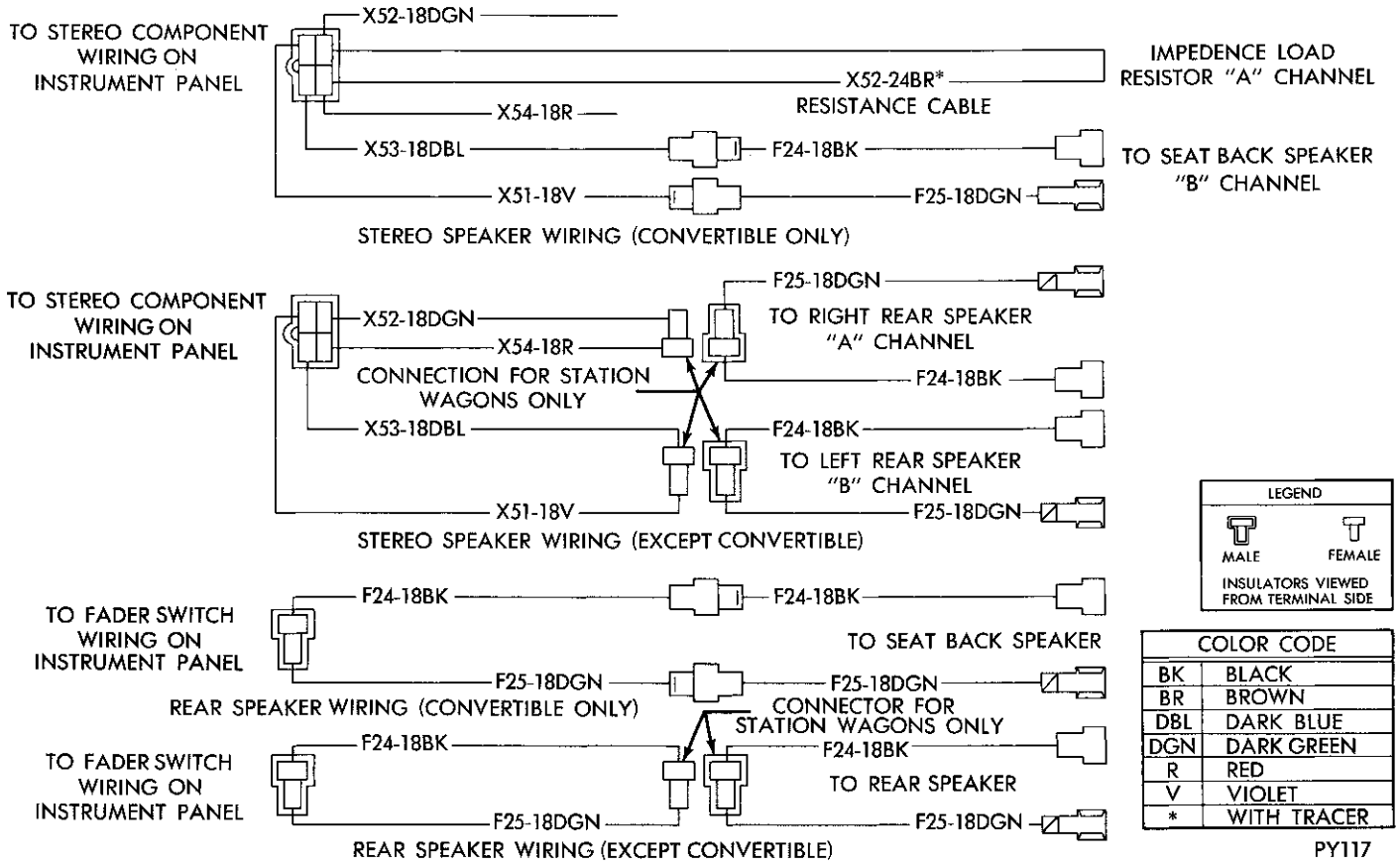


Fig. 21—Radio Rear Speaker Wiring Diagram—Chrysler—Imperial

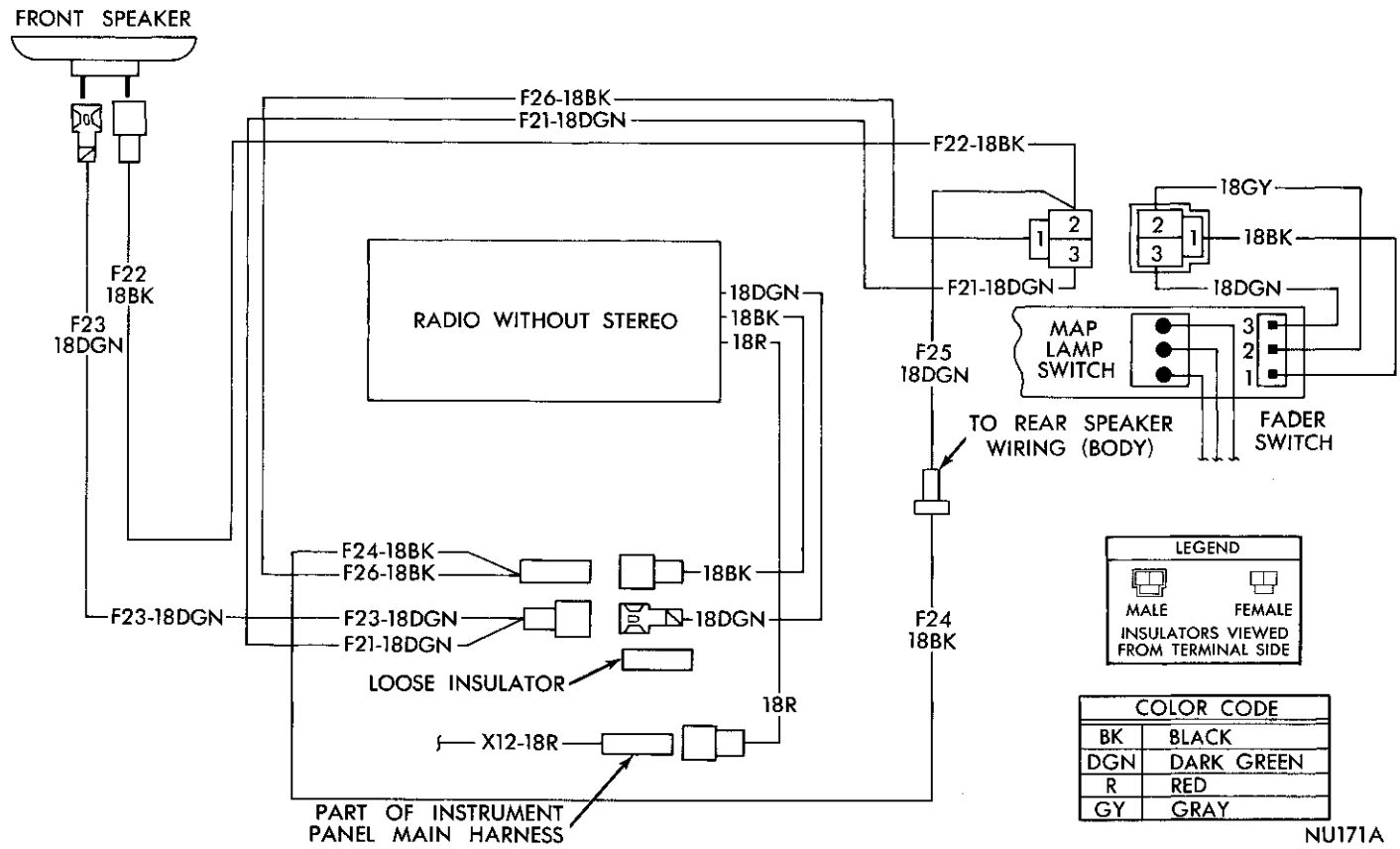


Fig. 22—Rear Speaker Fader Control Switch Wiring Diagram—Chrysler

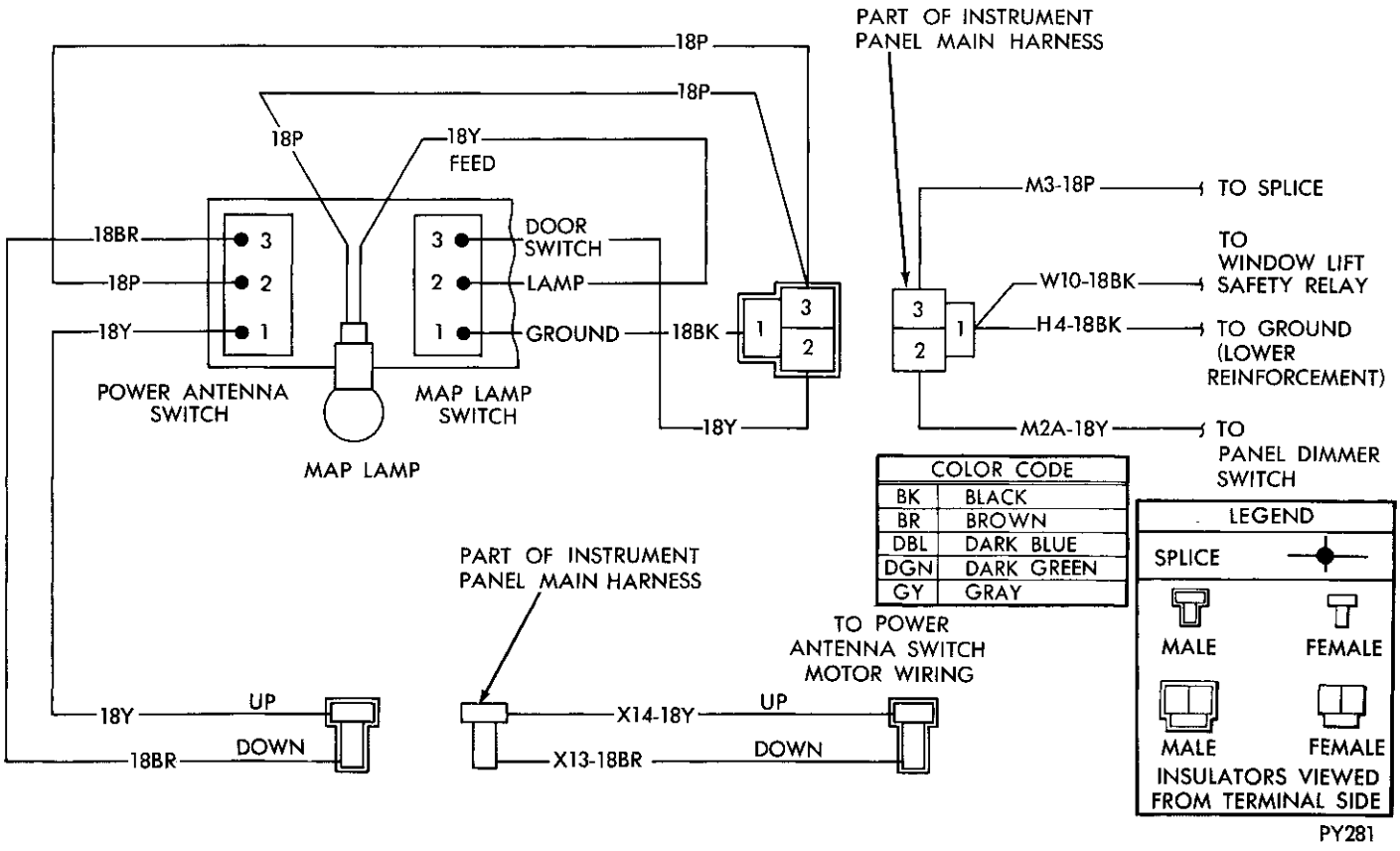


Fig. 23—Map Lamp With Powered Antenna Wiring—Imperial

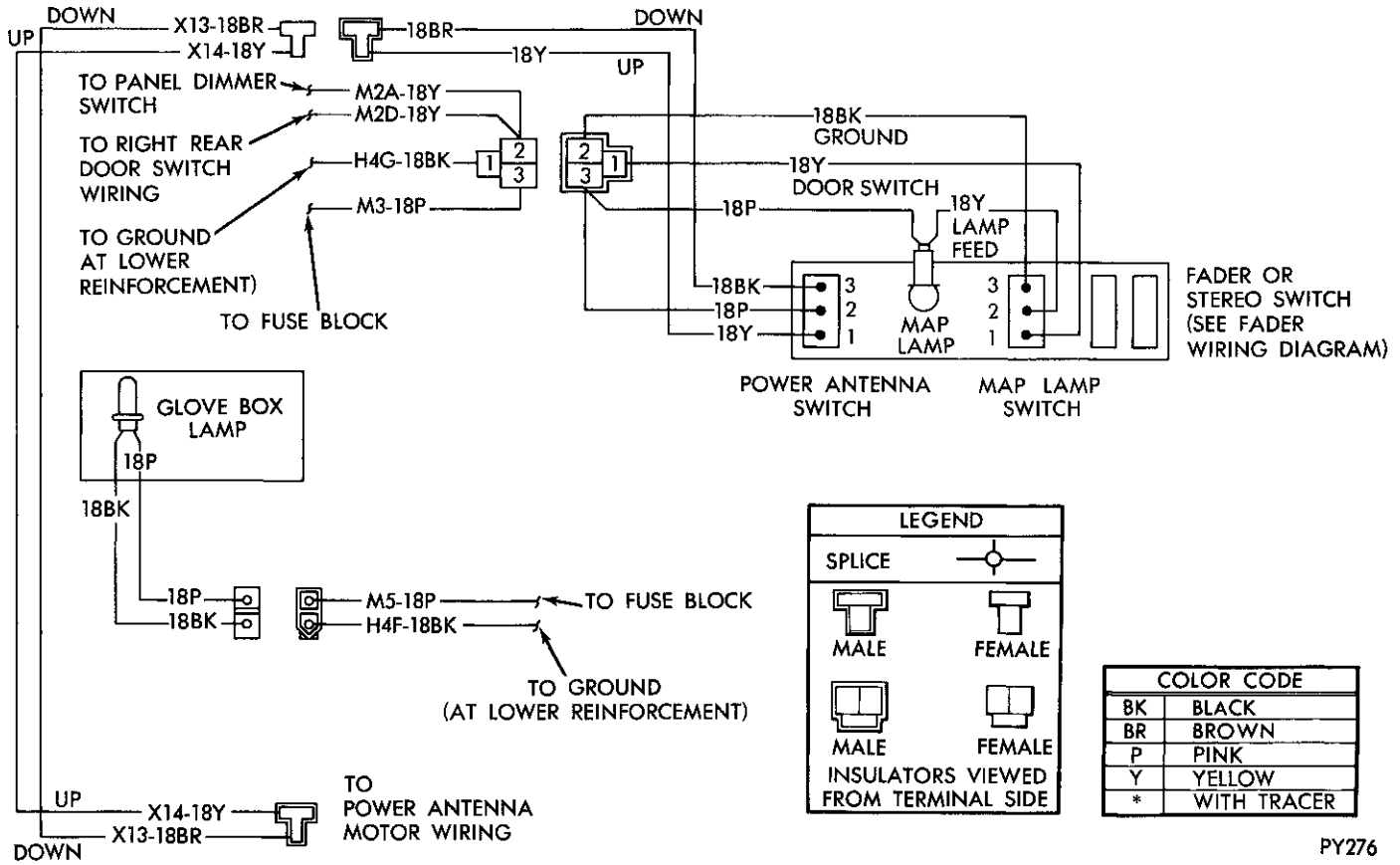


Fig. 24—Map Lamp With Powered Antenna Wiring—Chrysler

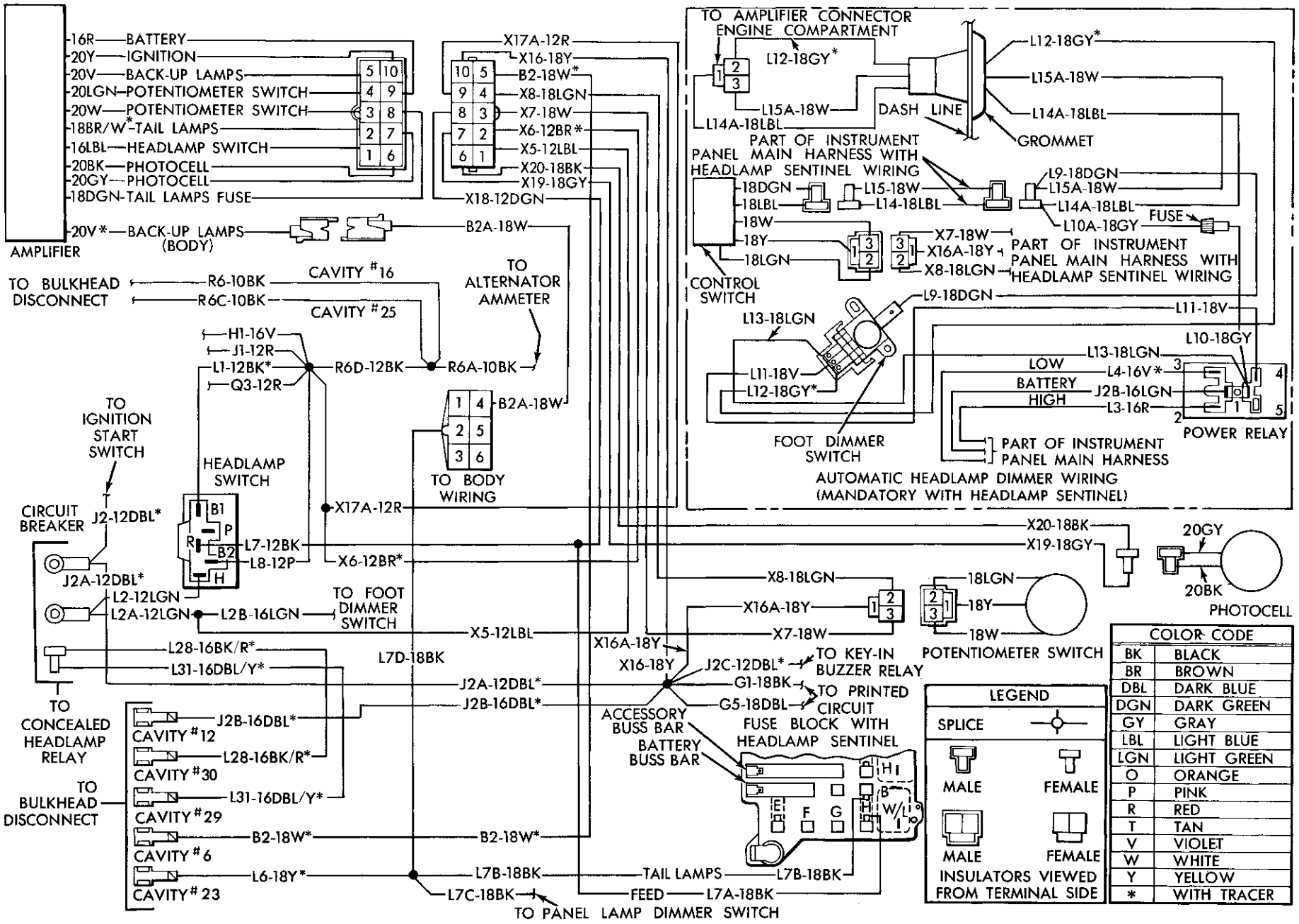


Fig. 25—Automatic Beam Changer and Headlamp Sentinel Wiring Diagram—Chrysler

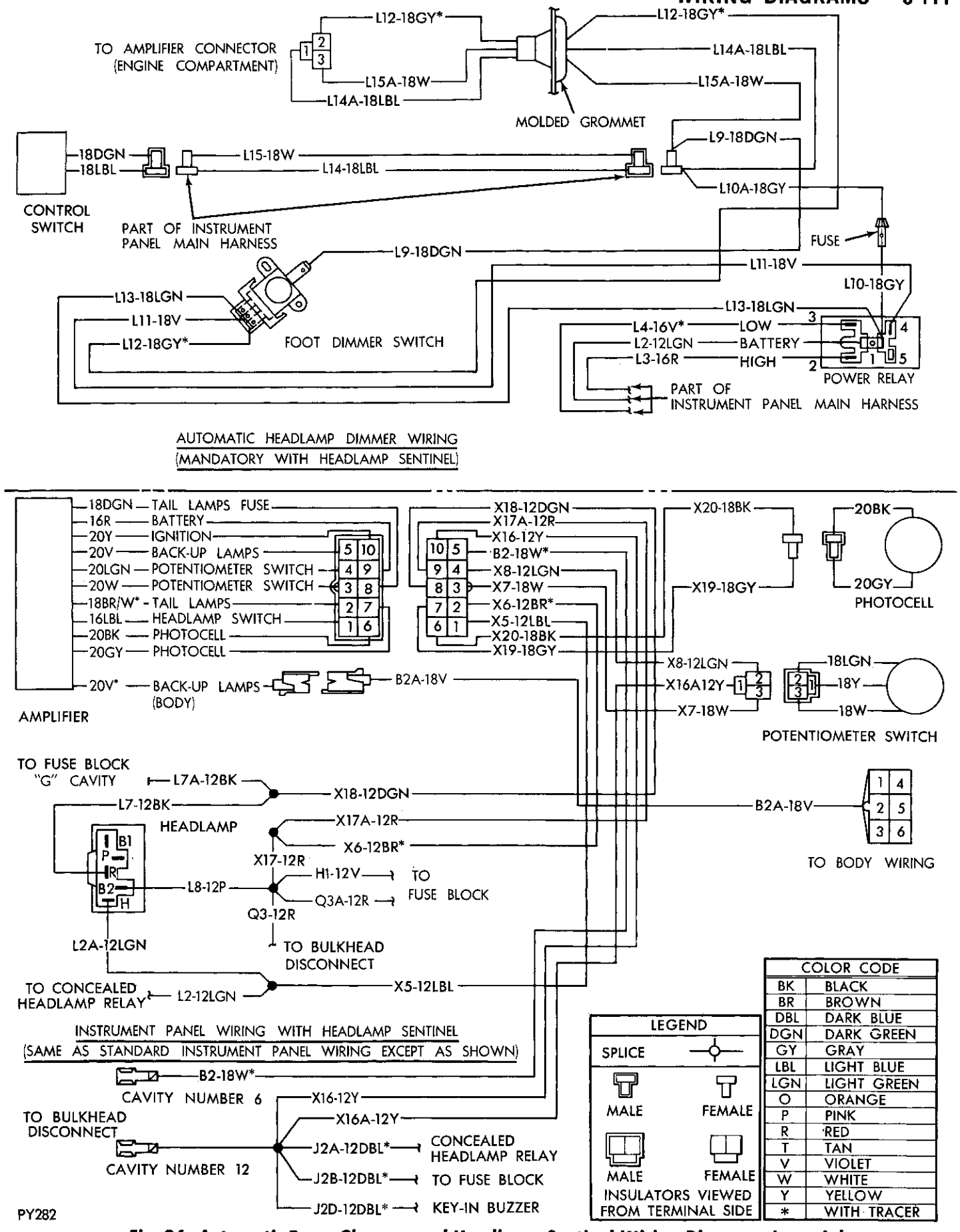


Fig. 26—Automatic Beam Changer and Headlamp Sentinel Wiring Diagram—Imperial

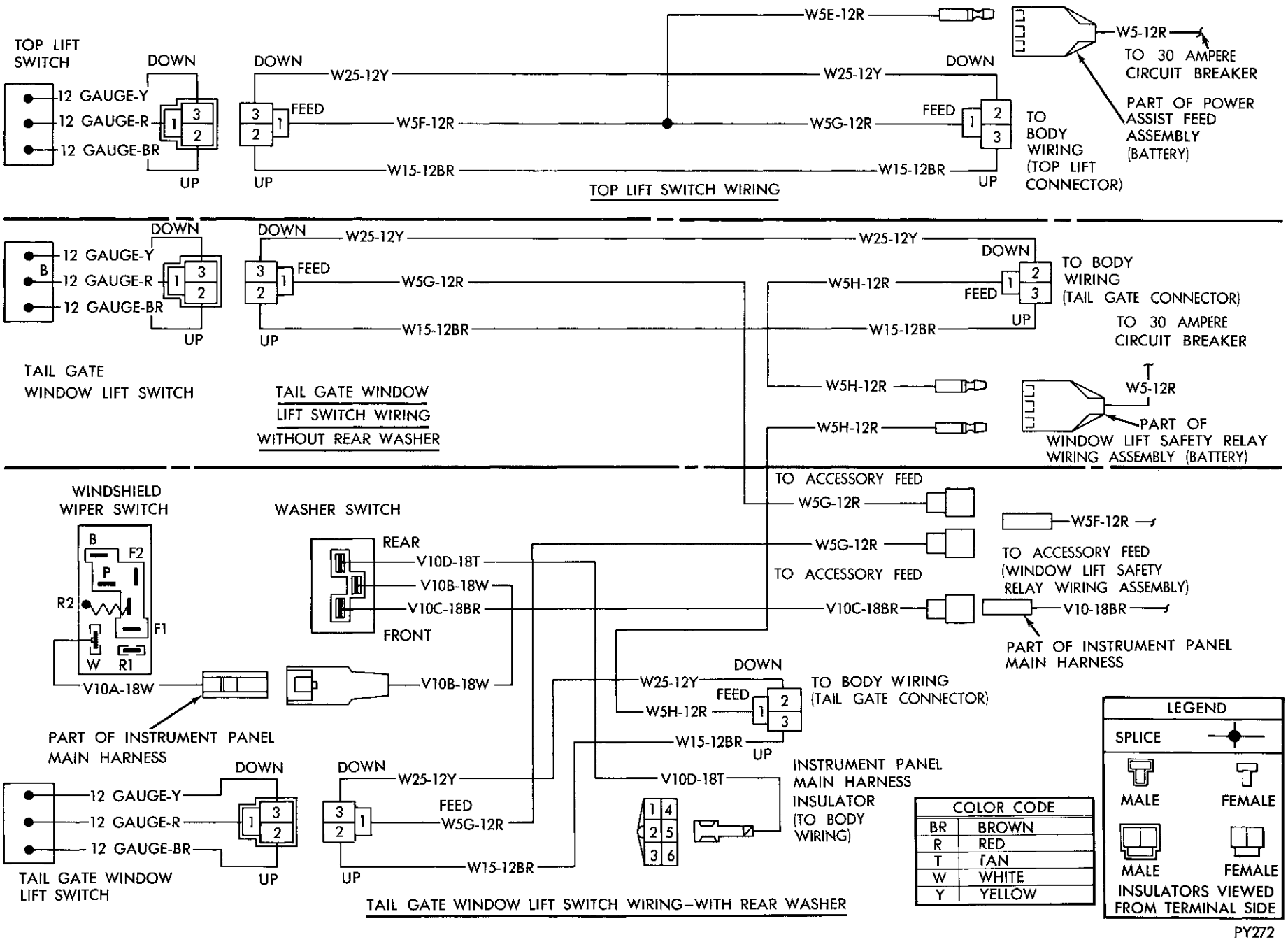


Fig. 27—Top Lift or Tail Gate Window Lift with and Without Rear Window Washer Wiring Diagram—Chrysler

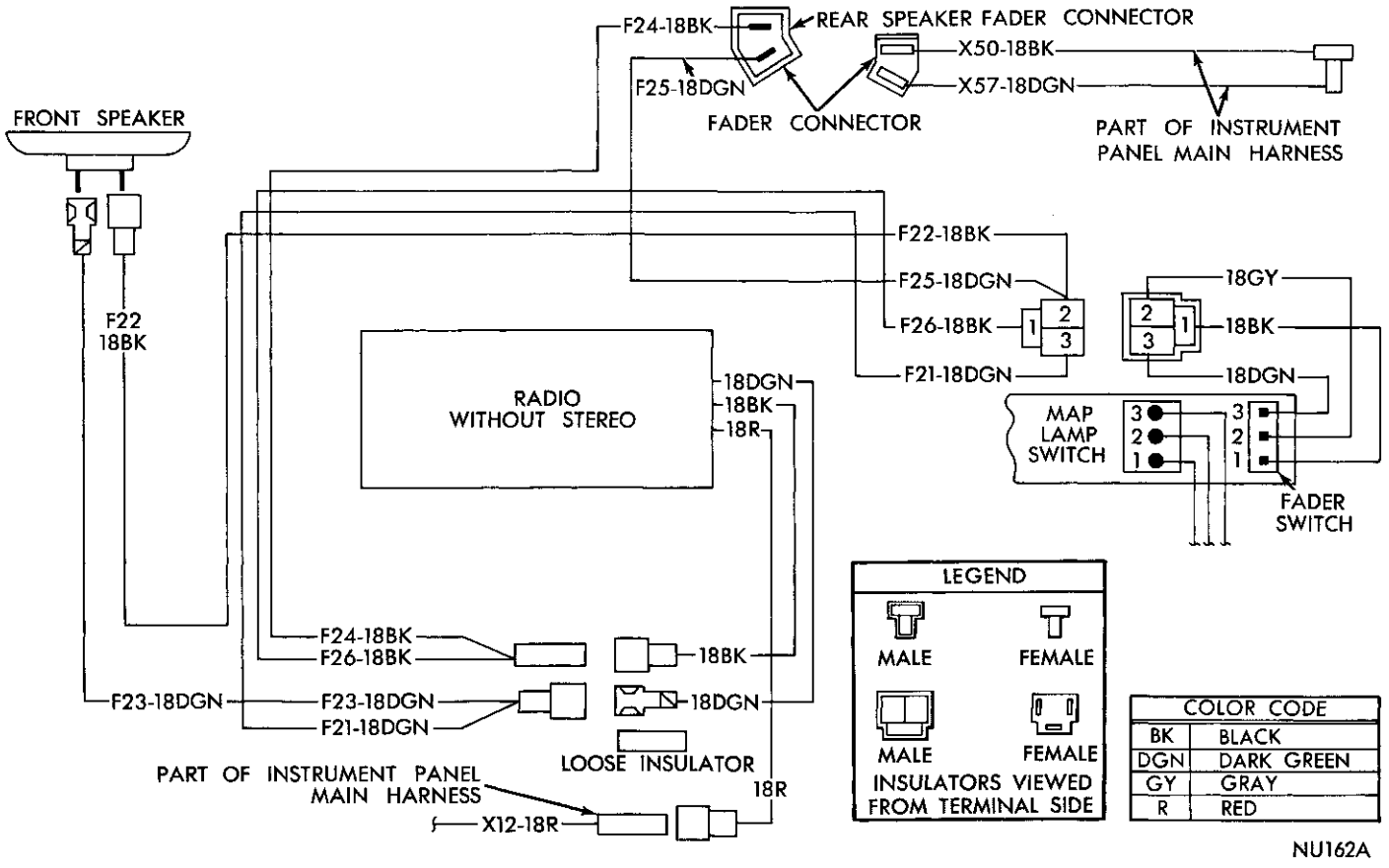


Fig. 28—Rear Speaker Fader Control Switch Wiring Diagram—Imperial

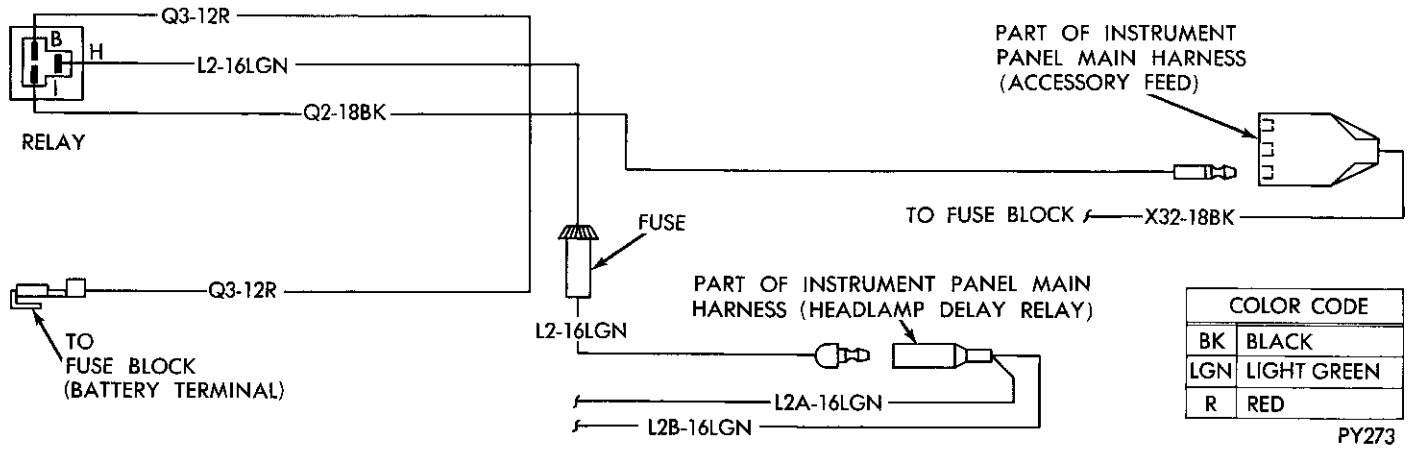


Fig. 29—Headlamp Delay Relay Wiring—Chrysler

WIRING ADAPTATIONS

INDEX

	Page
Air Conditioner with Automatic Temperature Control Wiring—Chrysler and Imperial	119
Air Conditioner and Heater without Auto-Temp., Rear Air Conditioner, Heater Controls, Rear Heater and Rear Window Defogger—Chrysler and Imperial	120
Console Wiring—Chrysler	124
Heater Control, Fader Control, Switch Jumper, Automatic Headlamp Dimmer and Cornering Lamps Jumper Wiring—Imperial	121
Instrument Panel Main Harness Hook-up—Chrysler	115
Instrument Panel Main Harness Hook-up—Imperial	116
Instrument Panel Main Harness Hook-up—Chrysler	117
Map Lamp, Power Antenna, Cornering Lamps, Battery Feed Jumper Cable and Console Wiring—Chrysler and Imperial	123
Power Door Locks, Relay Feed Cable, Window Lift Safety Relay, Automatic Headlamp Dimmer and Lamp-on Reminder Buzzer Wiring—Chrysler	118
Rear Speaker Harness Connections and Routing	124
Steering Column Cross Section Showing Turn Signal, Speed Control and Ignition Switch Installation	125
Stereo and Rear Speaker Wiring—Chrysler and Imperial	122
Top Lift, Tail Gate Window Lift, Speed Control and Power Assist Feed Cable Wiring—Chrysler	114

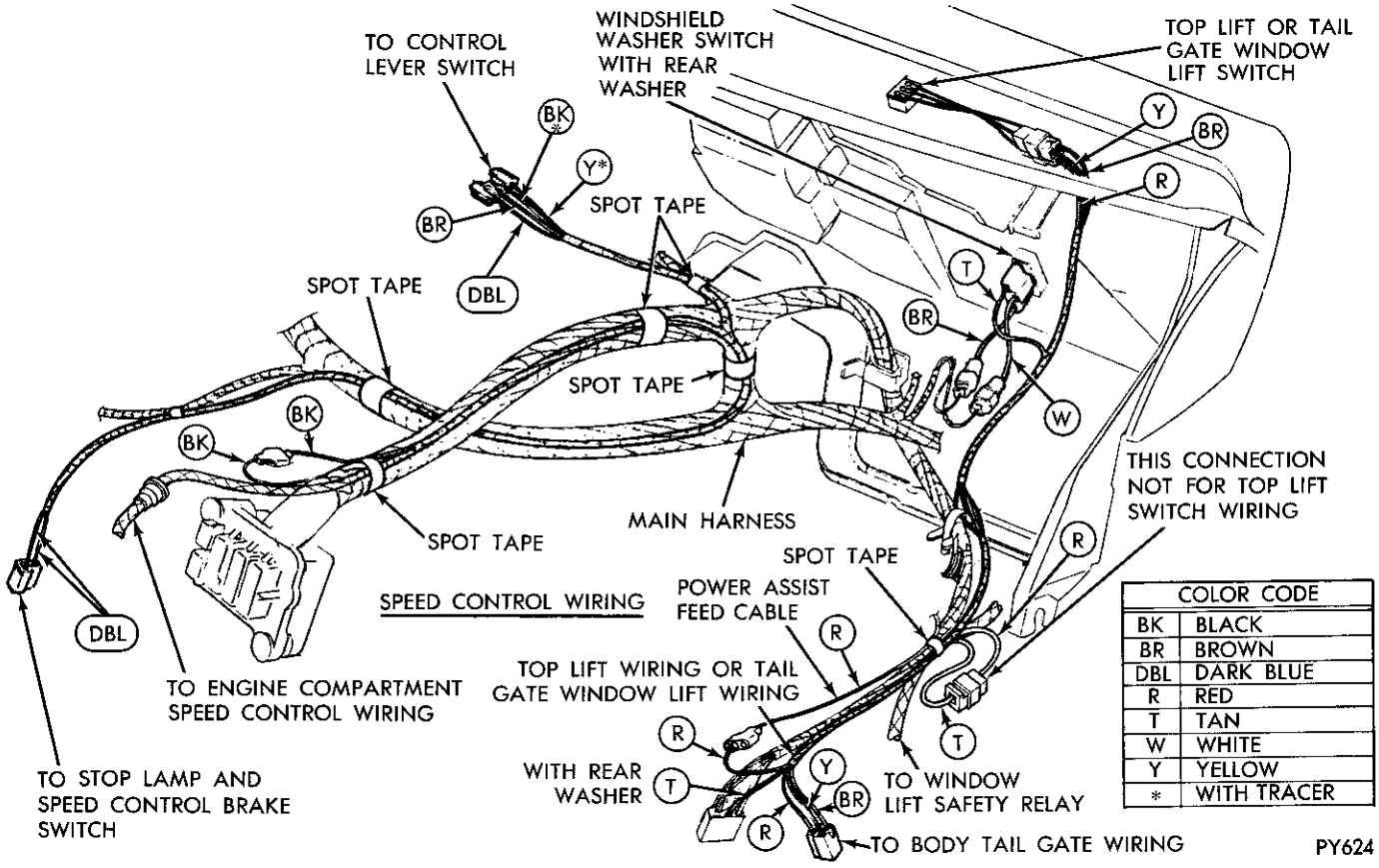
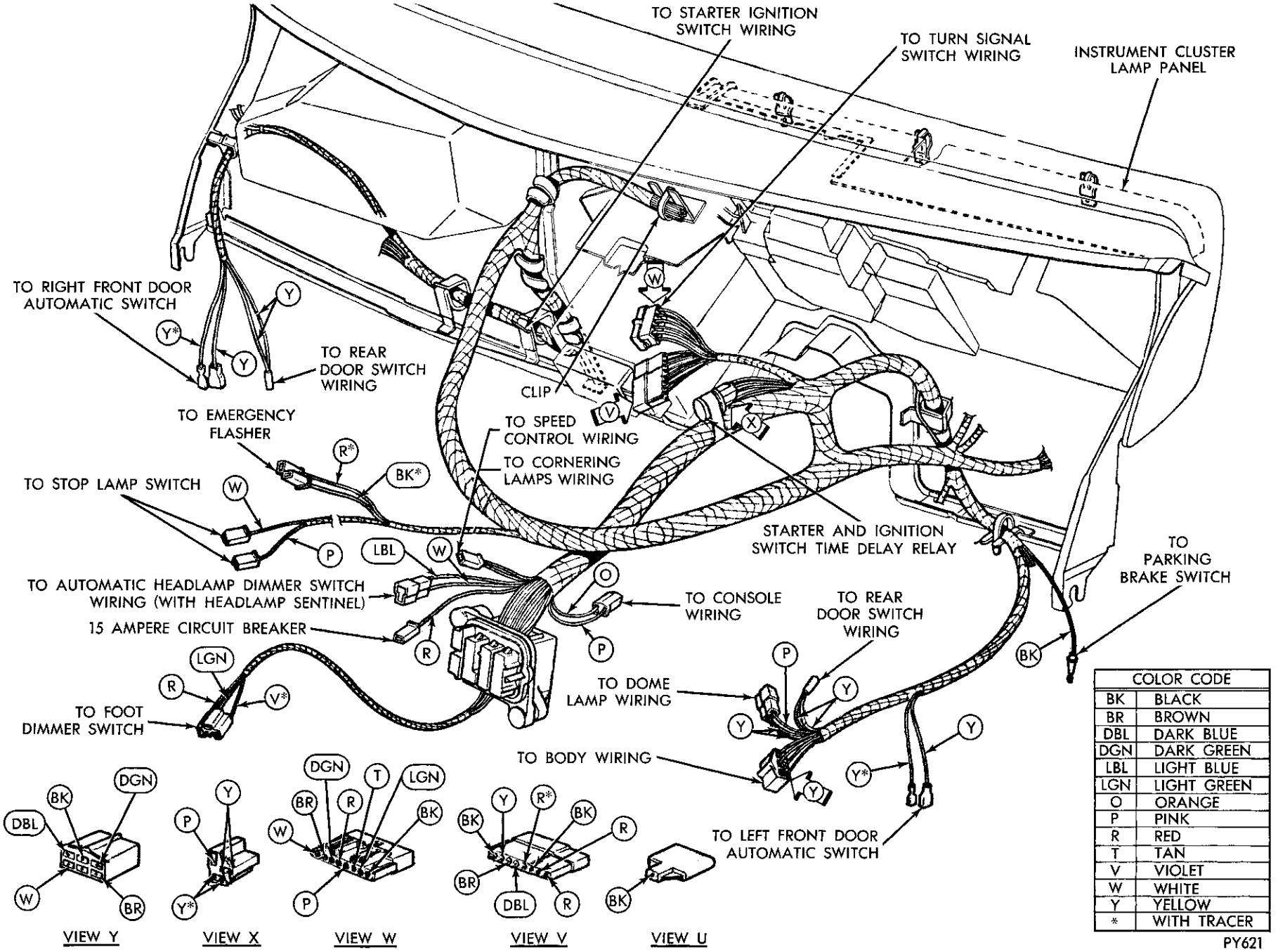


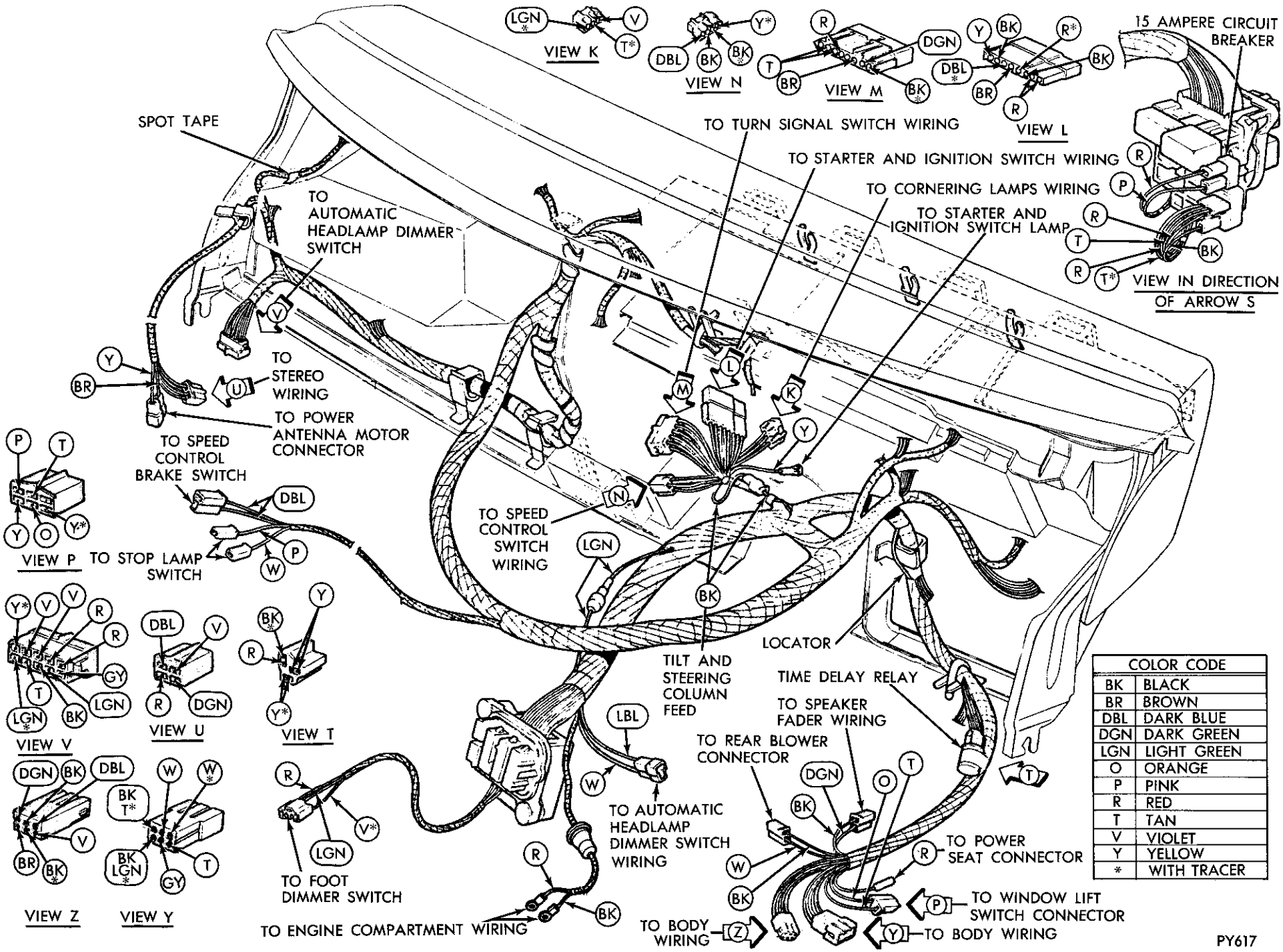
Fig. 1—Top Lift, Tail Gate Window Lift, Speed Control and Power Assist Feed Cable Wiring—Chrysler



COLOR CODE	
BK	BLACK
BR	BROWN
DBL	DARK BLUE
DGN	DARK GREEN
LBL	LIGHT BLUE
LGN	LIGHT GREEN
O	ORANGE
P	PINK
R	RED
T	TAN
V	VIOLET
W	WHITE
Y	YELLOW
*	WITH TRACER

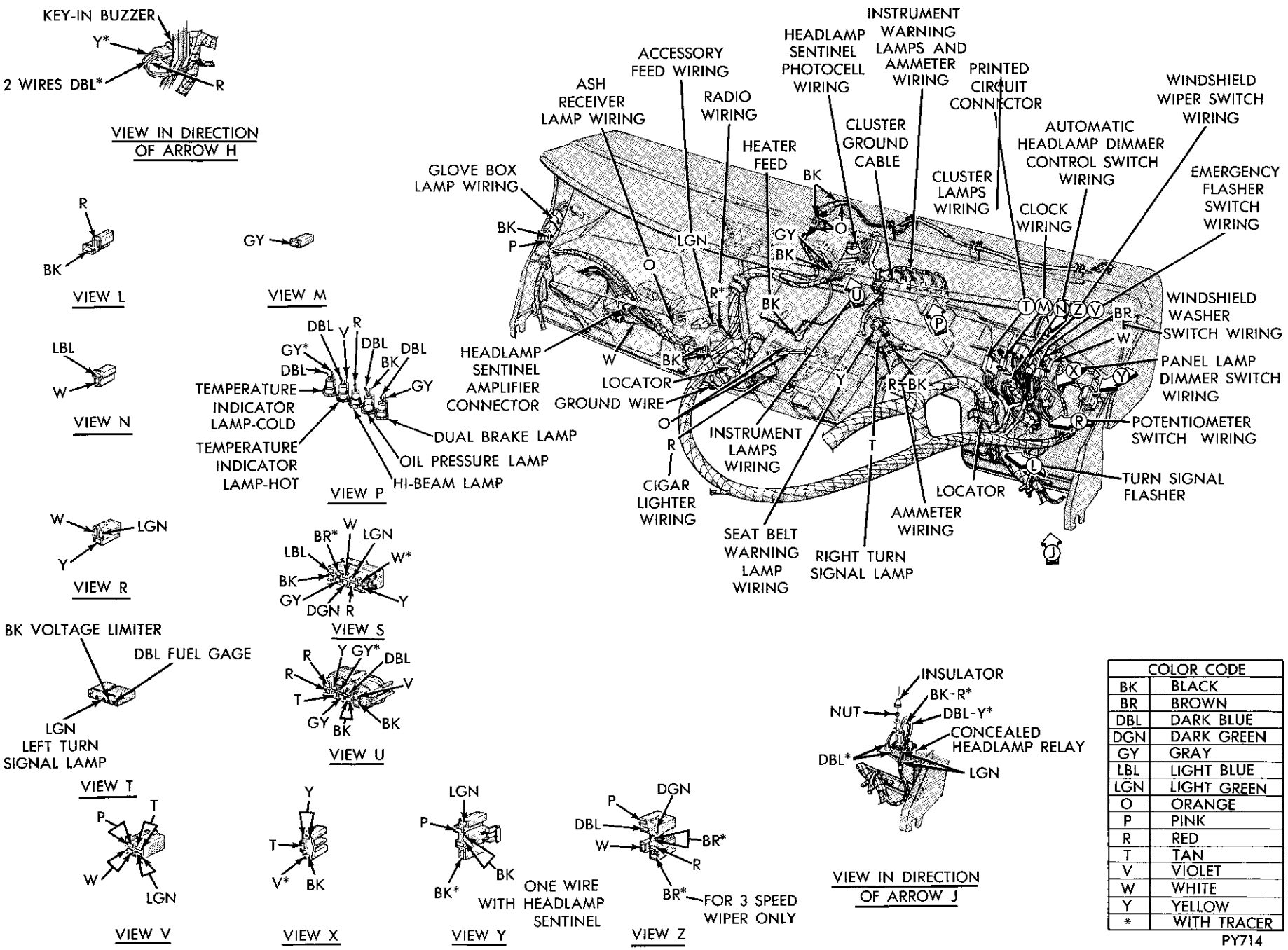
PY621

Fig. 2—Instrument Panel Main Harness Hook-up—Chrysler



COLOR CODE	
BK	BLACK
BR	BROWN
DBL	DARK BLUE
DGN	DARK GREEN
LGN	LIGHT GREEN
O	ORANGE
P	PINK
R	RED
T	TAN
V	VIOLET
Y	YELLOW
*	WITH TRACER

Fig. 3—Instrument Panel Main Harness Hook-up—Imperial



COLOR CODE	
BK	BLACK
BR	BROWN
DBL	DARK BLUE
DGN	DARK GREEN
GY	GRAY
LBL	LIGHT BLUE
LGN	LIGHT GREEN
O	ORANGE
P	PINK
R	RED
T	TAN
V	VIOLET
W	WHITE
Y	YELLOW
*	WITH TRACER

PY714

Fig. 4—Instrument Panel, Main Harness Hook-up—Chrysler

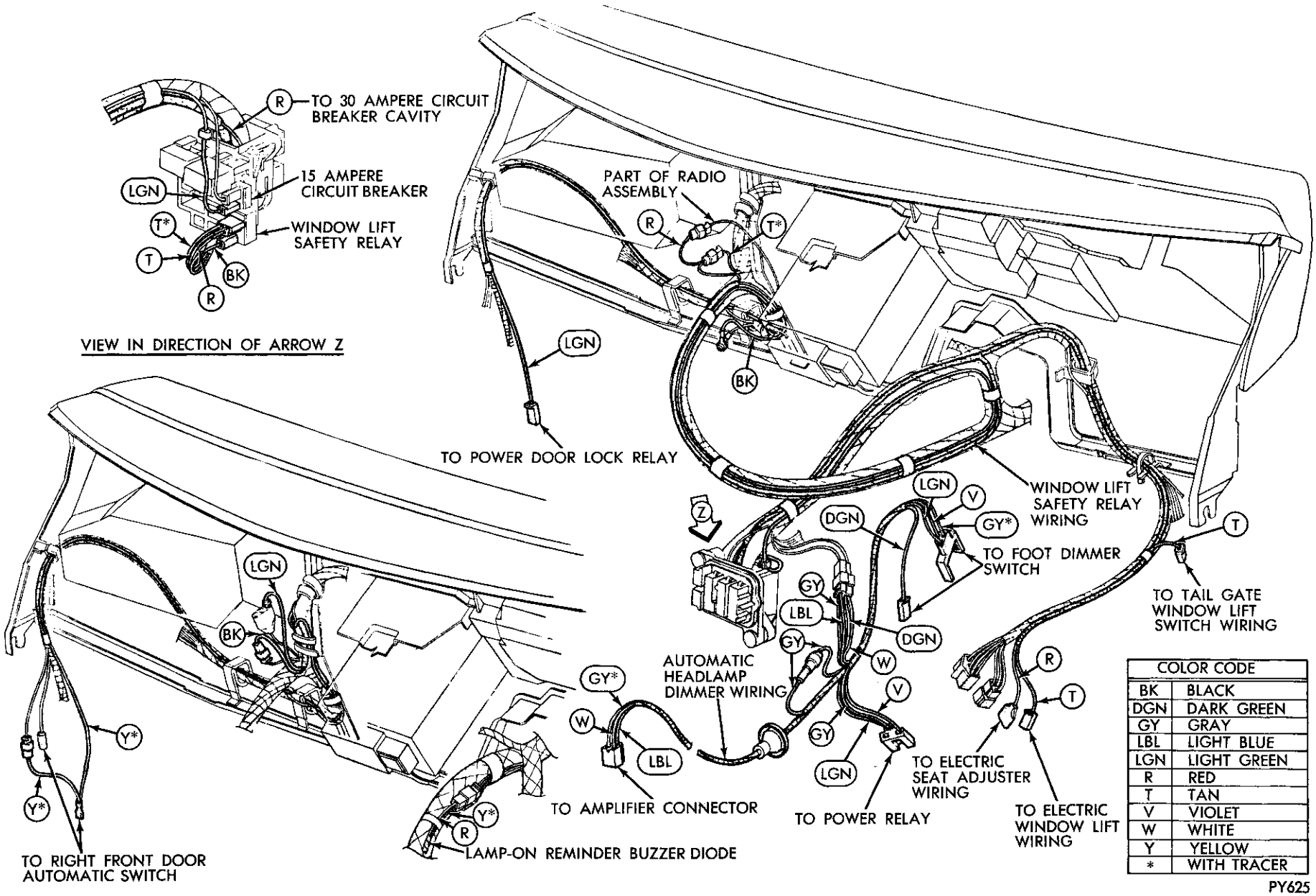


Fig. 5—Power Door Locks, Relay Feed Cable, Window Lift Safety Relay, Automatic Headlamp Dimmer and Lamp-on Reminder Buzzer Wiring—Chrysler

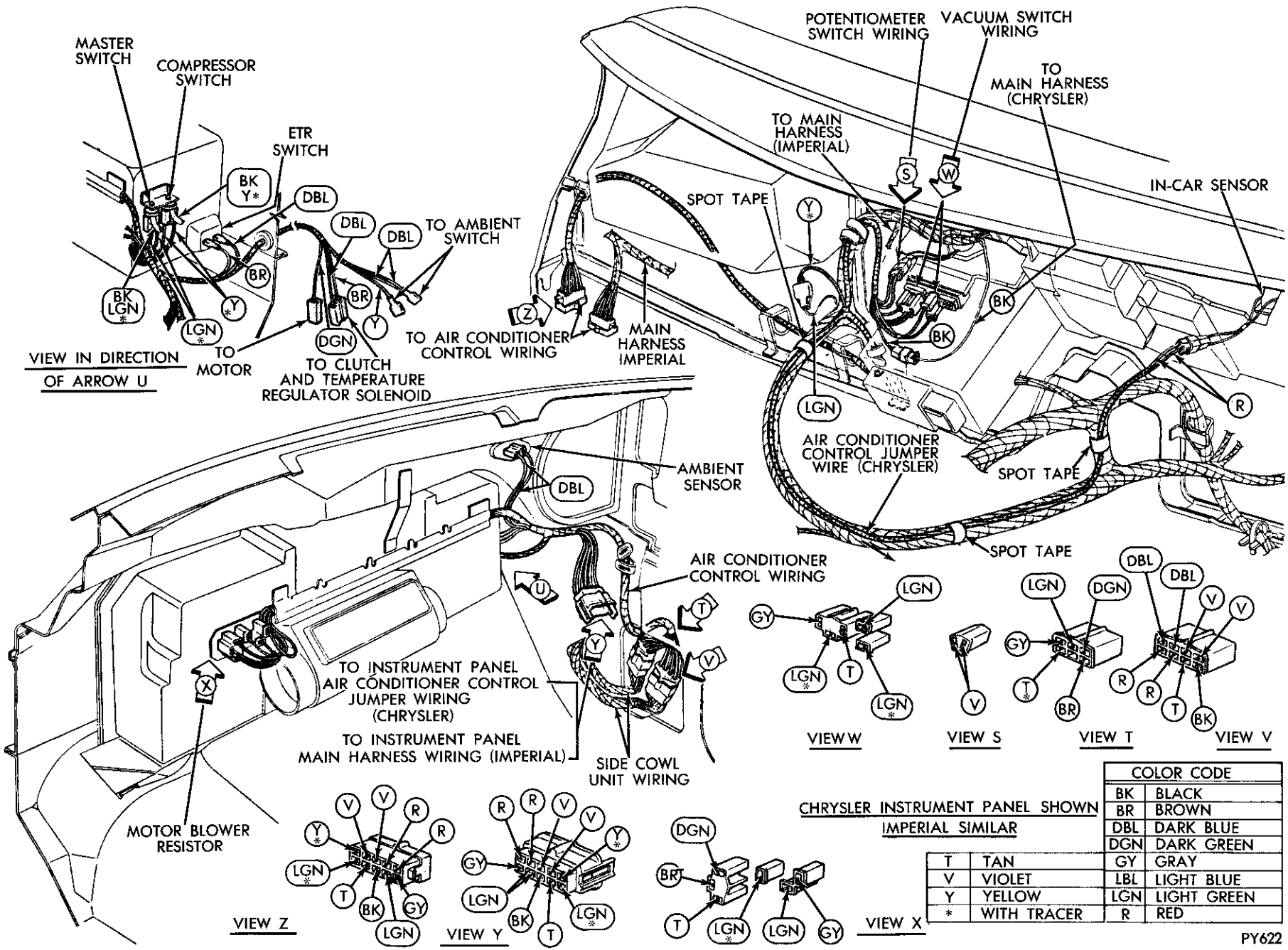


Fig. 6—Air Conditioner with Automatic Temperature Control Wiring—Chrysler and Imperial

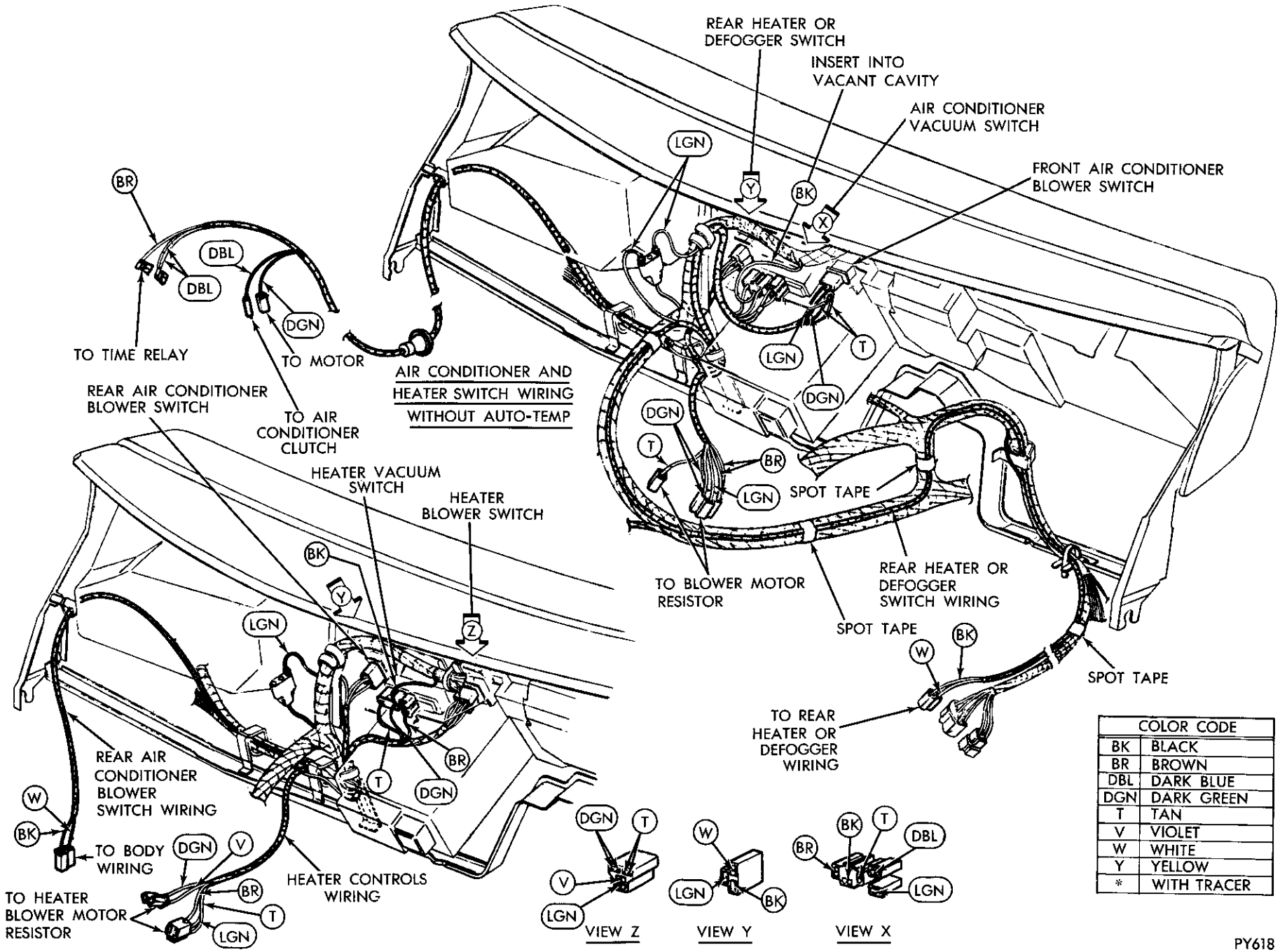
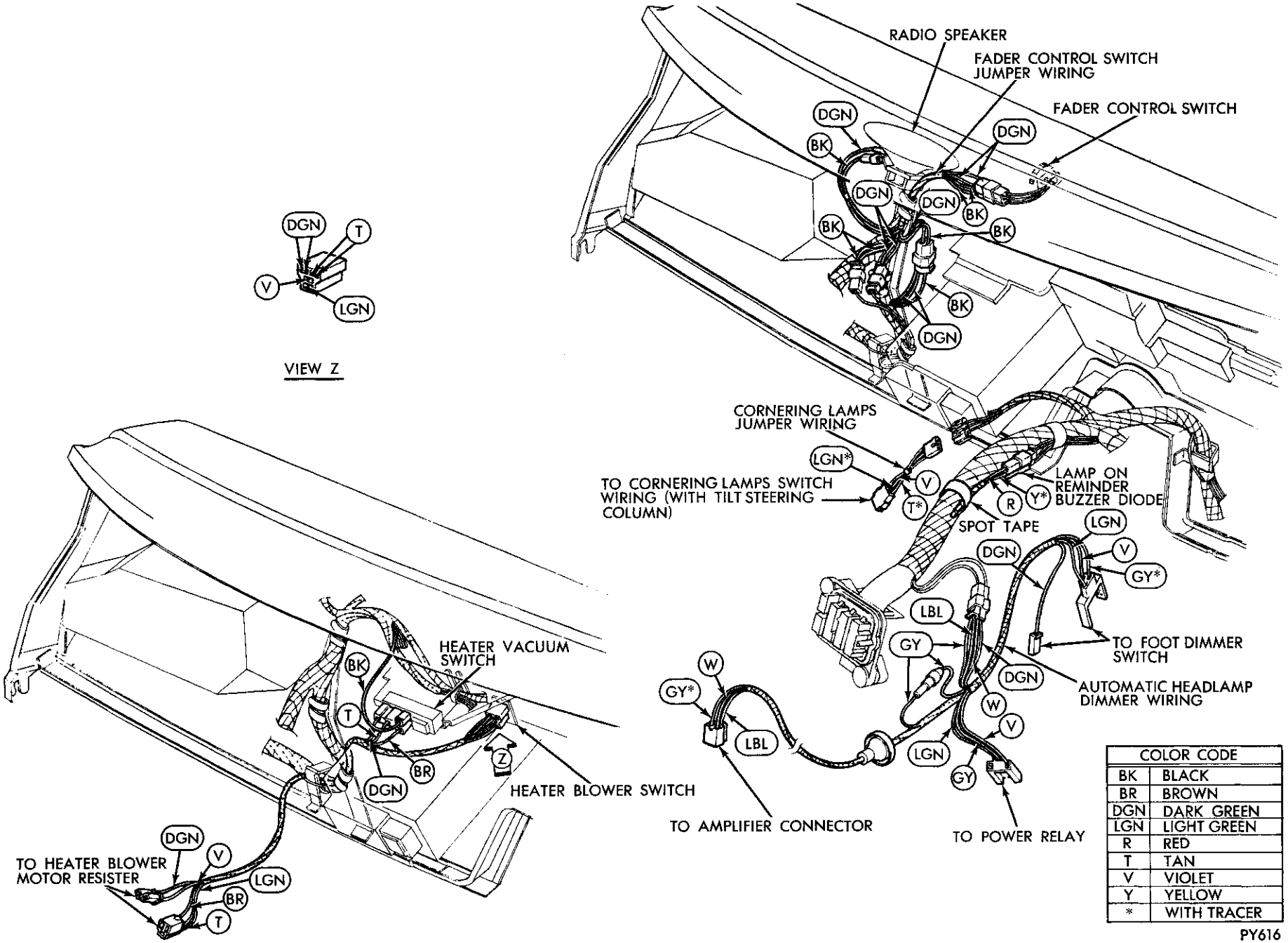


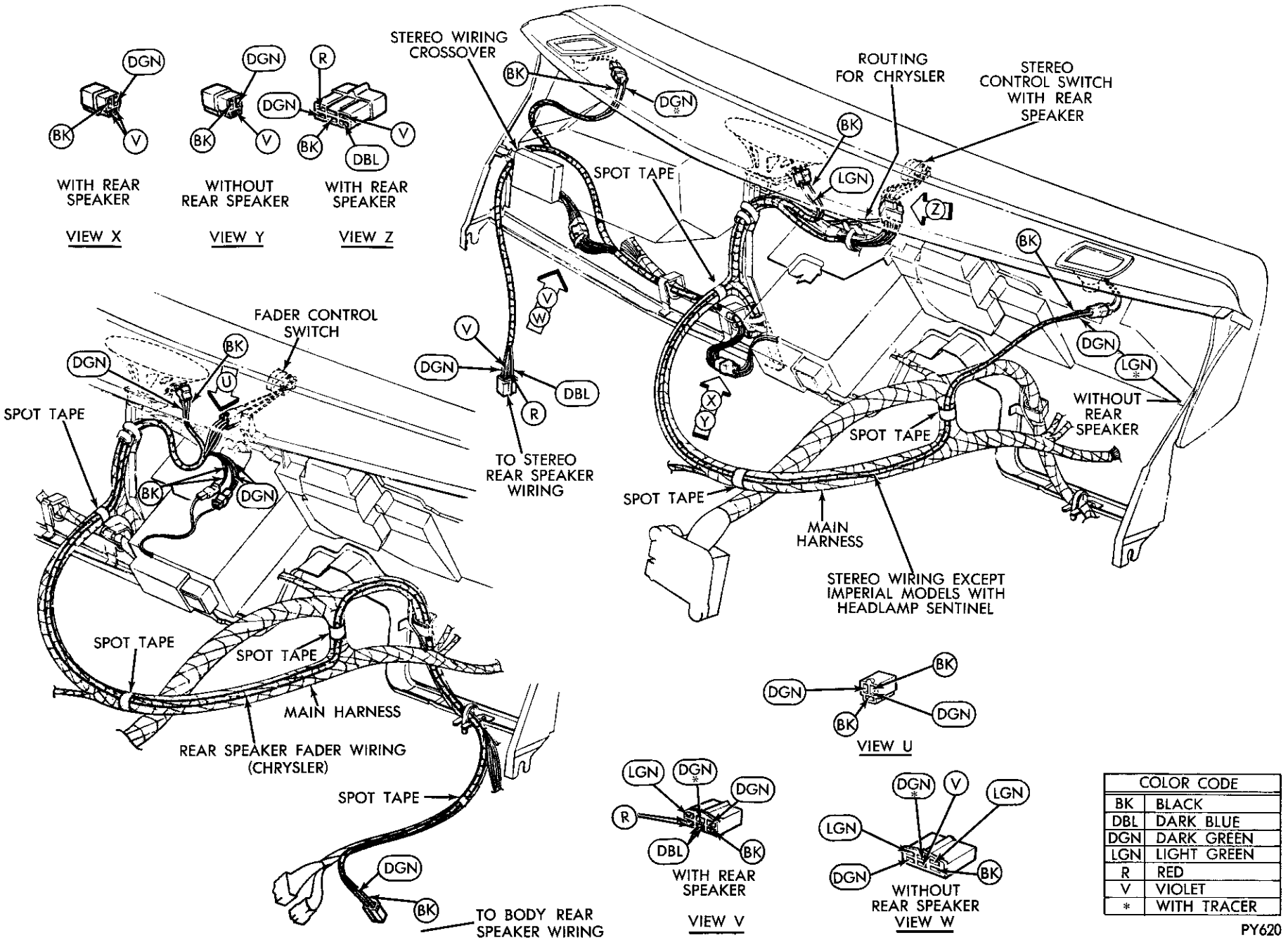
Fig. 7—Air Conditioner and Heater without Auto-Temp., Rear Air Conditioner, Heater Controls, Rear Heater and Rear Window Defogger—Chrysler and Imperial



COLOR CODE	
BK	BLACK
BR	BROWN
DGN	DARK GREEN
LGN	LIGHT GREEN
R	RED
T	TAN
V	VIOLET
Y	YELLOW
*	WITH TRACER

PY616

Fig. 8—Heater Control, Fader Control, Switch Jumper, Automatic Headlamp Dimmer and Cornering Lamps Jumper Wiring—Imperial



COLOR CODE	
BK	BLACK
DBL	DARK BLUE
DGN	DARK GREEN
LGN	LIGHT GREEN
R	RED
V	VIOLET
*	WITH TRACER

PY620

Fig. 9—Stereo and Rear Speaker Wiring—Chrysler and Imperial

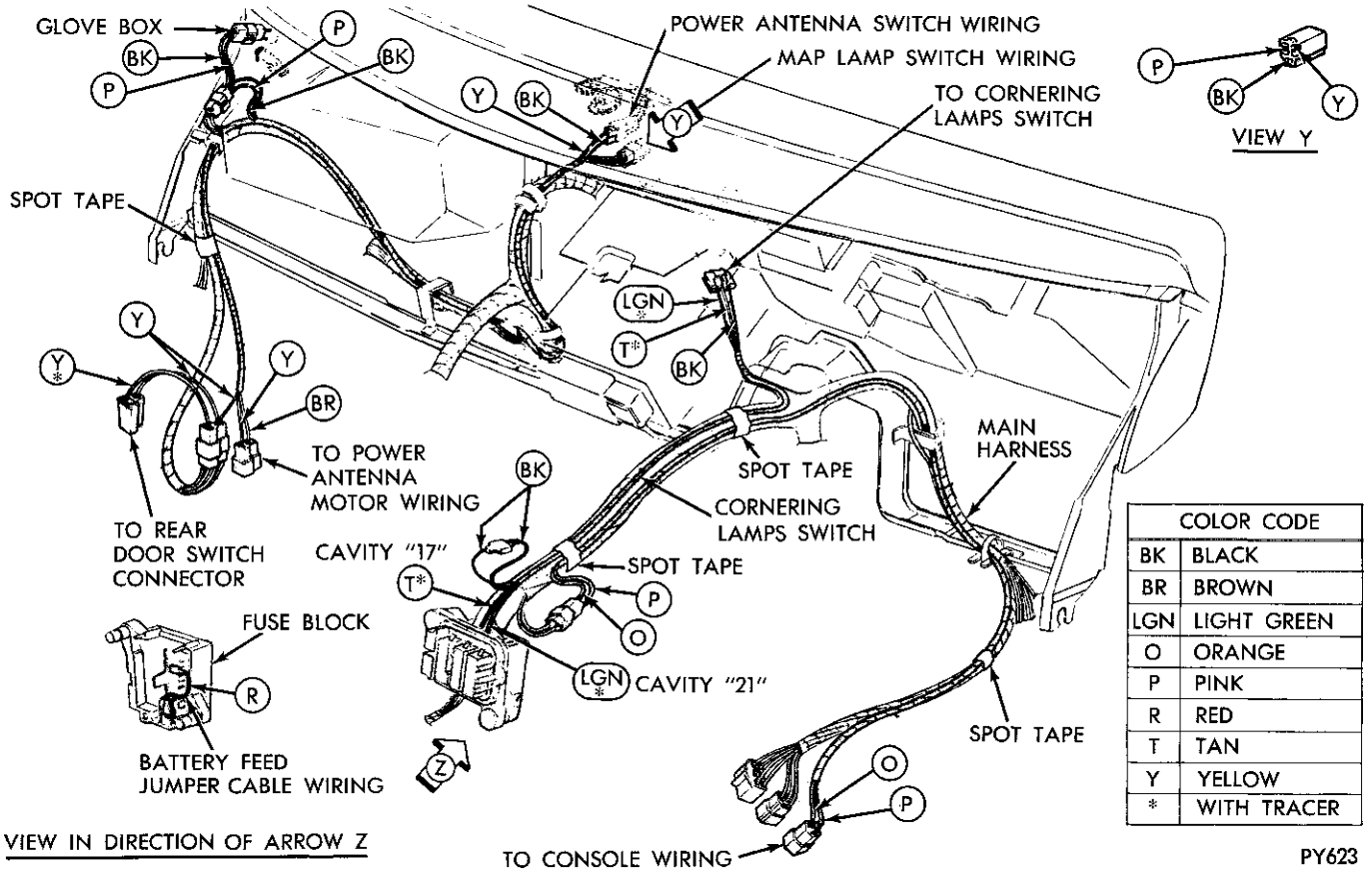


Fig. 10—Map Lamp, Power Antenna, Cornering Lamps, Battery Feed Jumper Cable and Console Wiring—Chrysler and Imperial

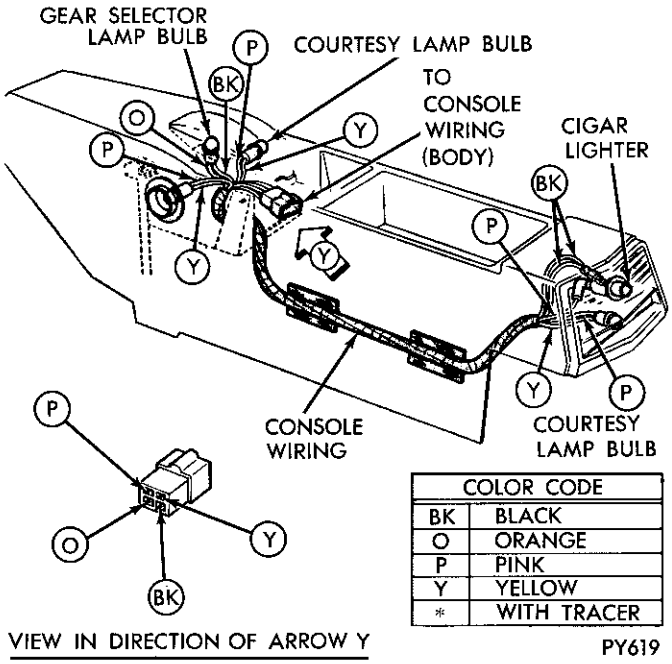


Fig. 11—Console Wiring—Chrysler

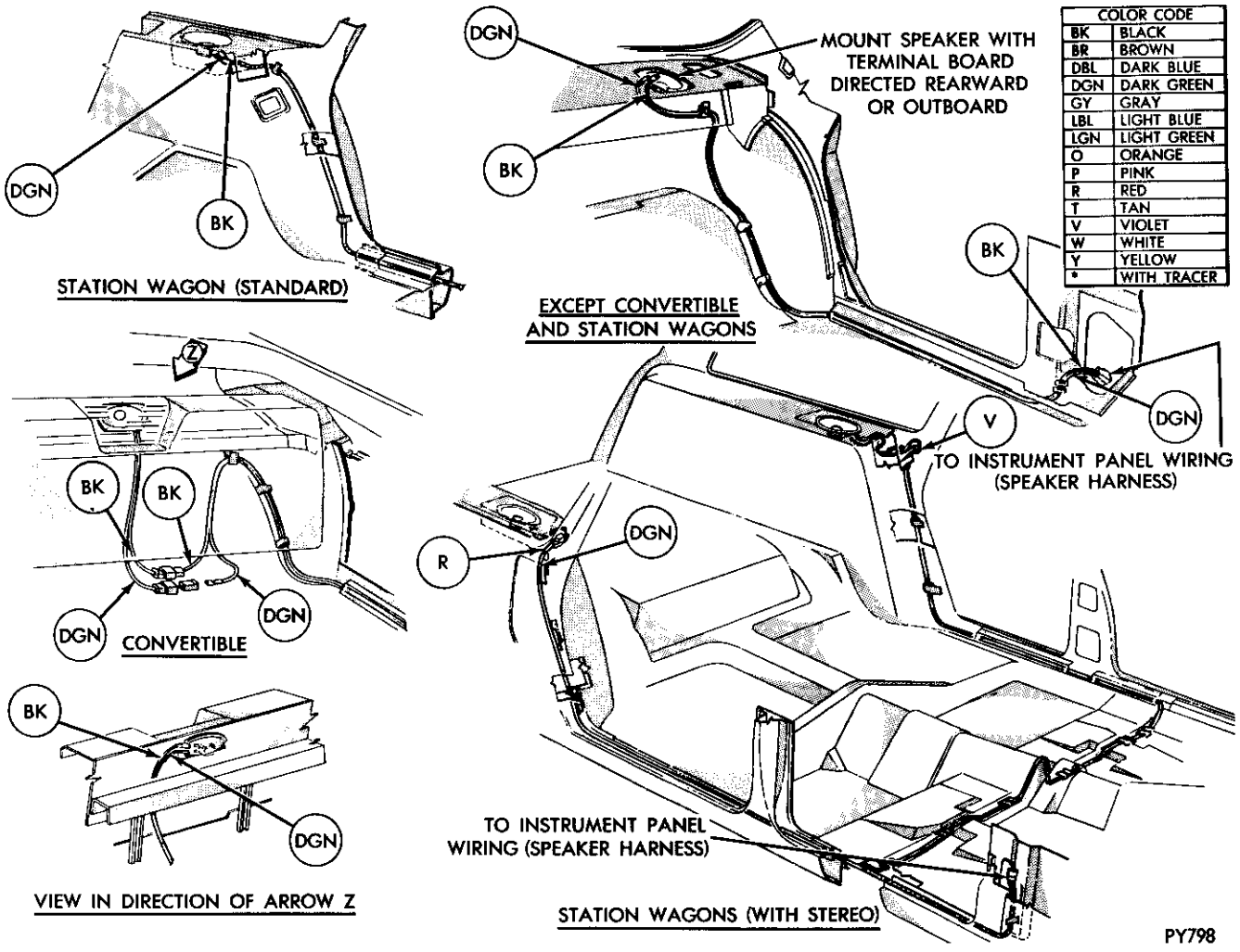


Fig. 12—Rear Speaker Harness Connections and Routing

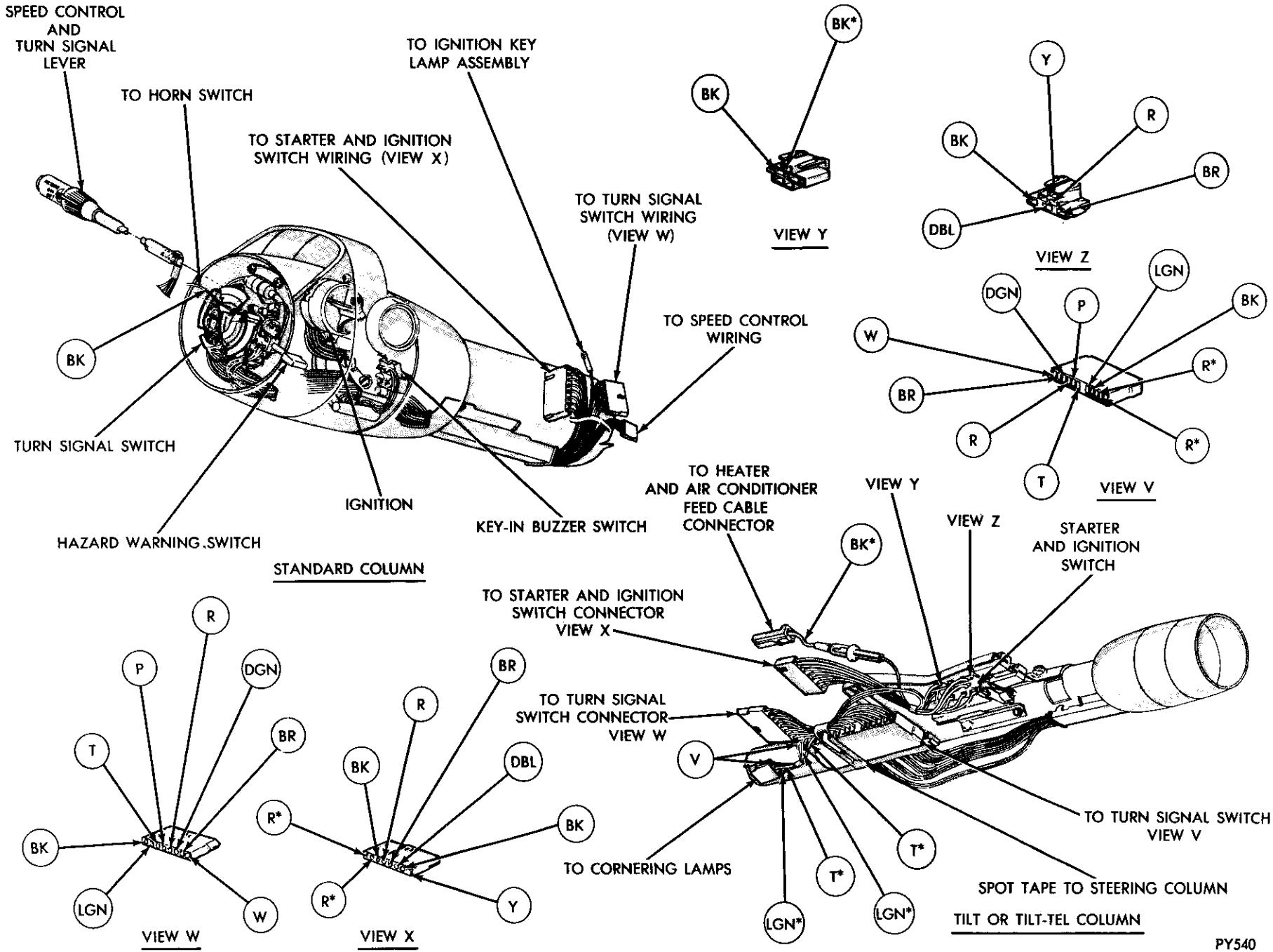


Fig. 13—Steering Column Cross Section Showing Turn Signal, Speed Control and Ignition Switches Installation