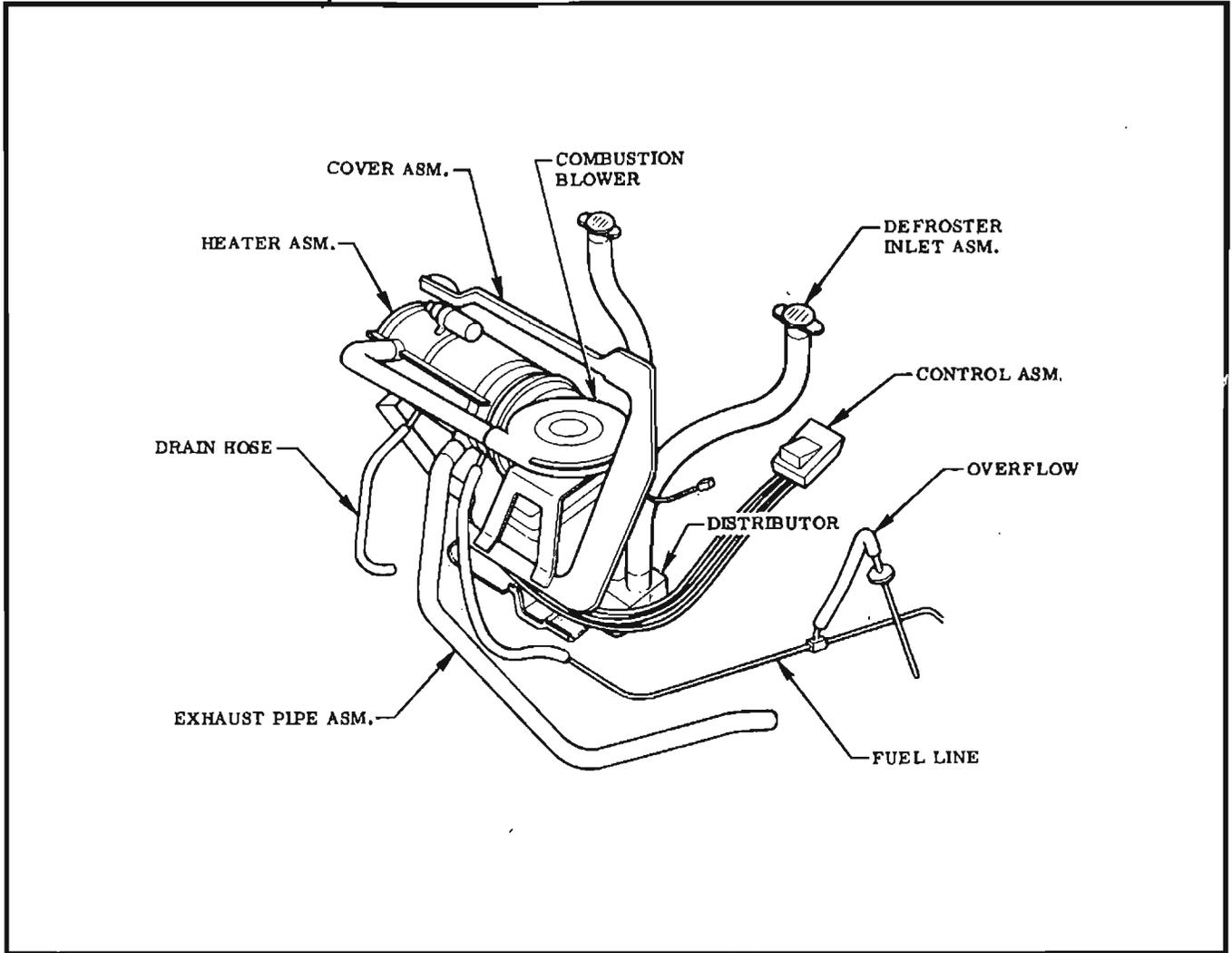


988367
CAR HEATER & DEFROSTER INSTRUCTION SHEET

R-10 SERIES



GENERAL MOTORS PARTS DIVISION
GENERAL MOTORS CORPORATION
DETROIT 2, MICH.

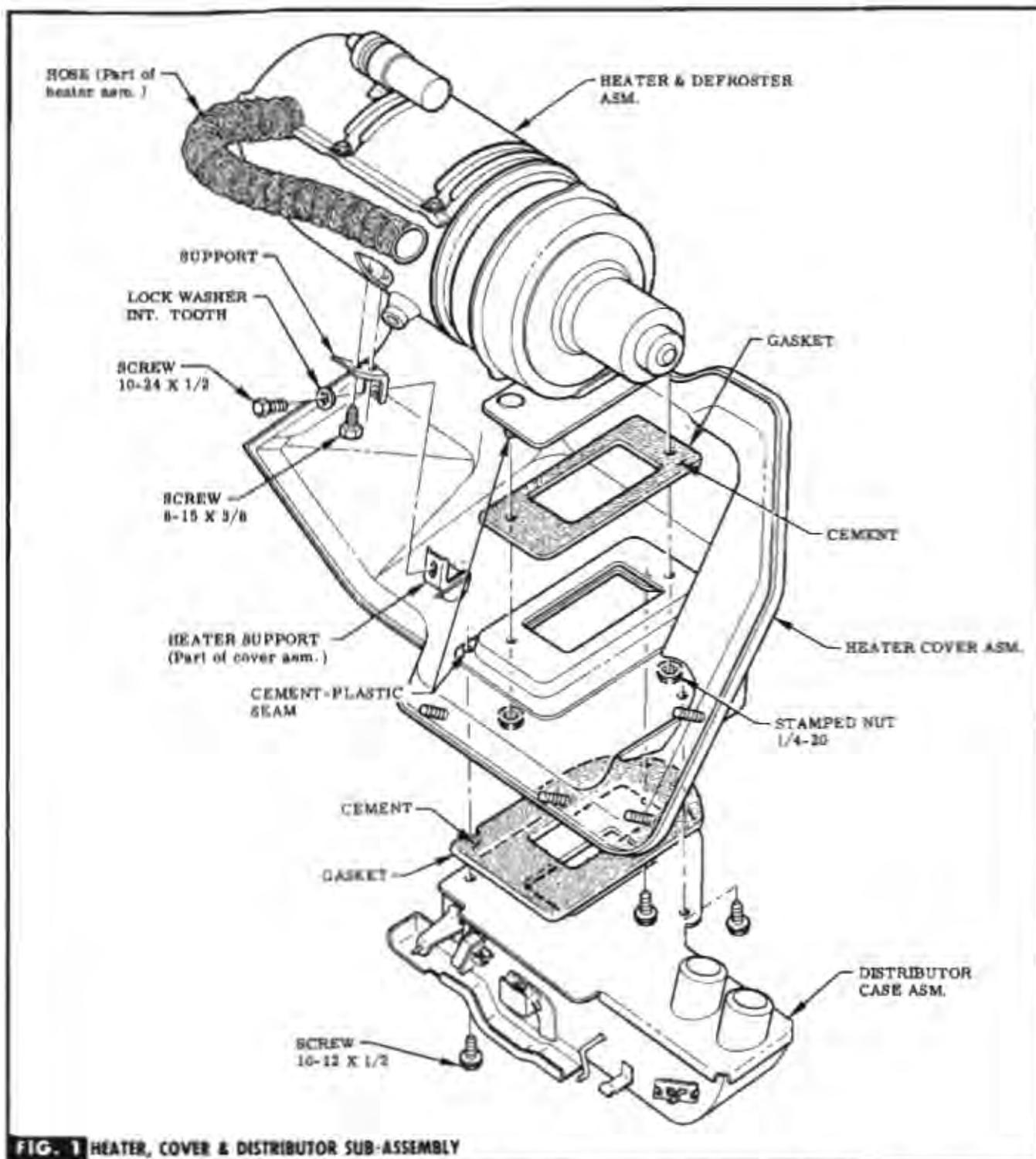


FIG. 1 HEATER, COVER & DISTRIBUTOR SUB-ASSEMBLY

NOTE Vehicle must be equipped with a F. O. A. or accessory harness before heater can be installed. If neither exists, purchase accessory harness unit No. 988350 from service & install.

STEP 1 DISCONNECT BATTERY CABLE.

STEP 2 REMOVE GLOVE BOX, RADIO, HEATER HOLE COVER, FRONT GRILLE & R. H. HEADLAMP ASSEMBLY. DISCARD HEATER HOLE COVER, BUT RETAIN ATTACHING SCREWS & PLUG LOCATED NEAR UPPER L. H. CORNER.

STEP 3 ATTACH SUPPORT TO HEATER WITH SCREWS PROVIDED (IN BAG A). SEE FIG. 1.

STEP 4 CEMENT GASKET TO HEATER, APPLY PLASTIC SEAM CEMENT TO STUDS & ATTACH HEATER TO COVER WITH ATTACHING PARTS PROVIDED (IN BAG B). SEE FIG. 1.

STEP 5 CEMENT GASKET TO DISTRIBUTOR, APPLY PLASTIC SEAM CEMENT TO THREE (3) HOLES IN COVER ASM. & ATTACH DISTRIBUTOR TO COVER ASM. WITH SCREWS PROVIDED (IN BAG B). SEE FIG. 1.

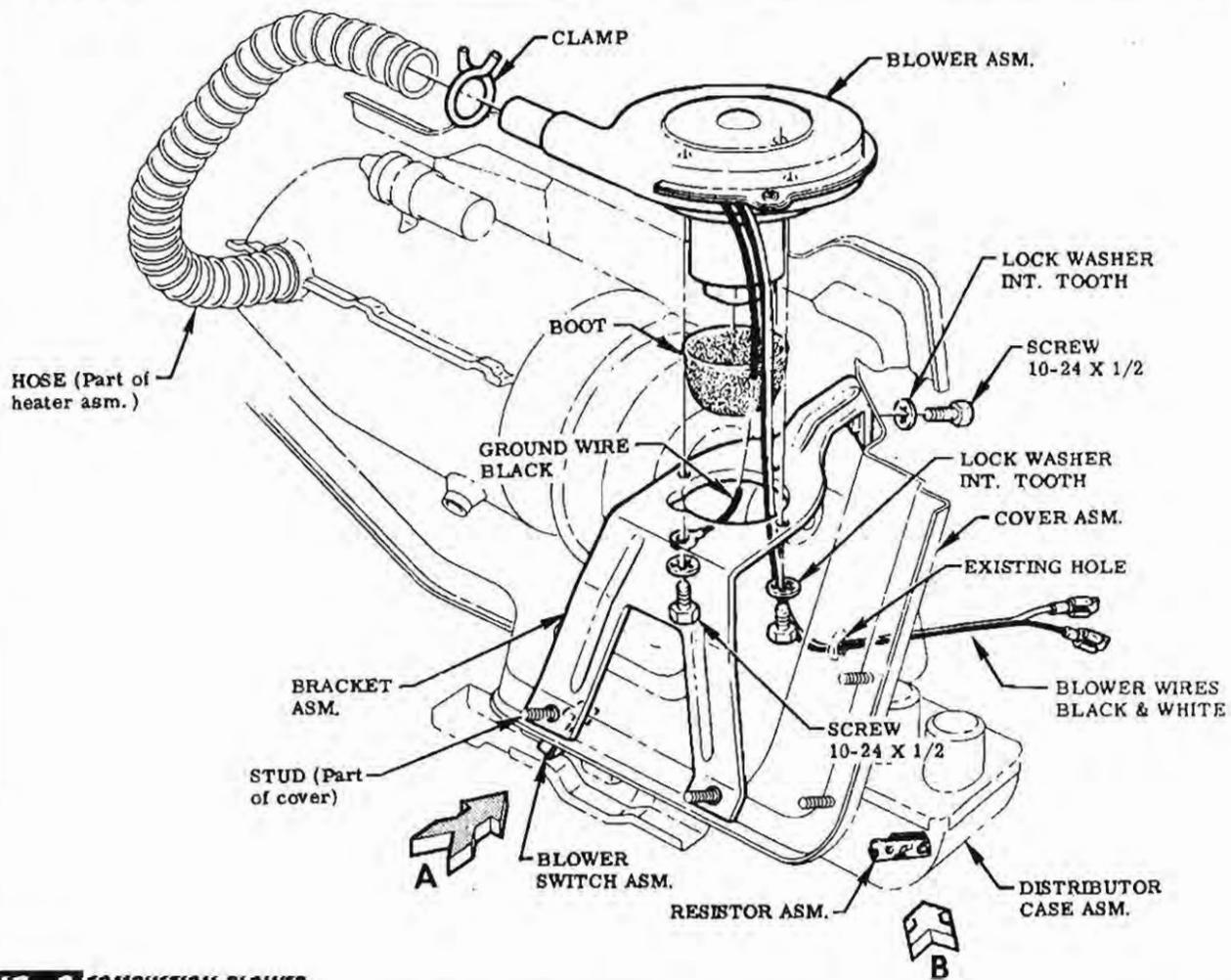
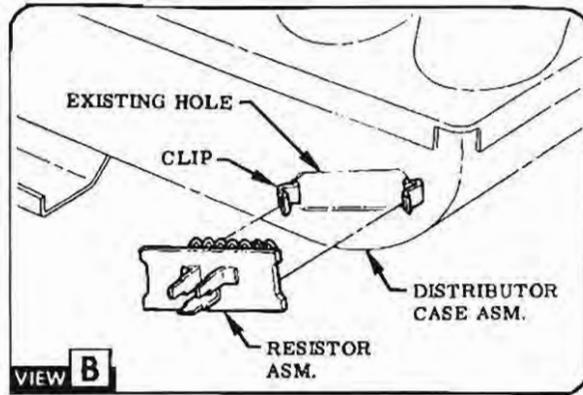
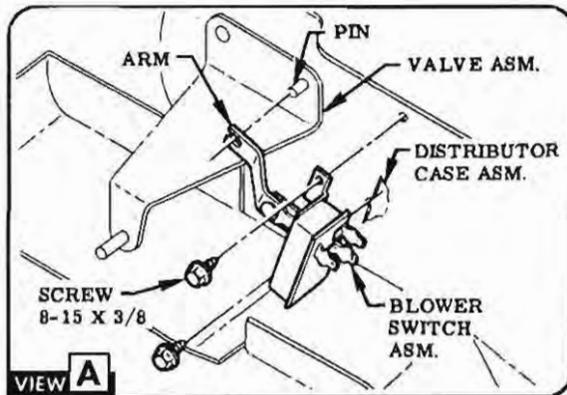


FIG. 2 COMBUSTION BLOWER

STEP 6 PLACE BLOWER SWITCH ARM ON VALVE PIN & ATTACH TO DISTRIBUTOR CASE WITH ATTACHING SCREWS PROVIDED (IN BAG A). SEE VIEW A.

STEP 7 INSTALL CLIPS PROVIDED (IN BAG A) ON DISTRIBUTOR CASE & ATTACH RESISTOR TO CLIPS. SEE VIEW B.

STEP 8 INSTALL BOOT ON BLOWER & ATTACH BLOWER & GROUND WIRE TO BLOWER BRACKET WITH ATTACHING

PARTS PROVIDED (IN BAG B). SEE FIG. 2.

STEP 9 ATTACH BLOWER BRACKET TO COVER WITH ATTACHING PARTS PROVIDED (IN BAG B). SEE FIG. 2.

STEP 10 ROUTE BLOWER WIRES UNDER BLOWER BRACKET & THRU HOLE IN COVER. SEE FIG. 2.

STEP 11 ATTACH HEATER HOSE TO BLOWER WITH CLAMP PROVIDED (IN BAG C). SEE FIG. 2.

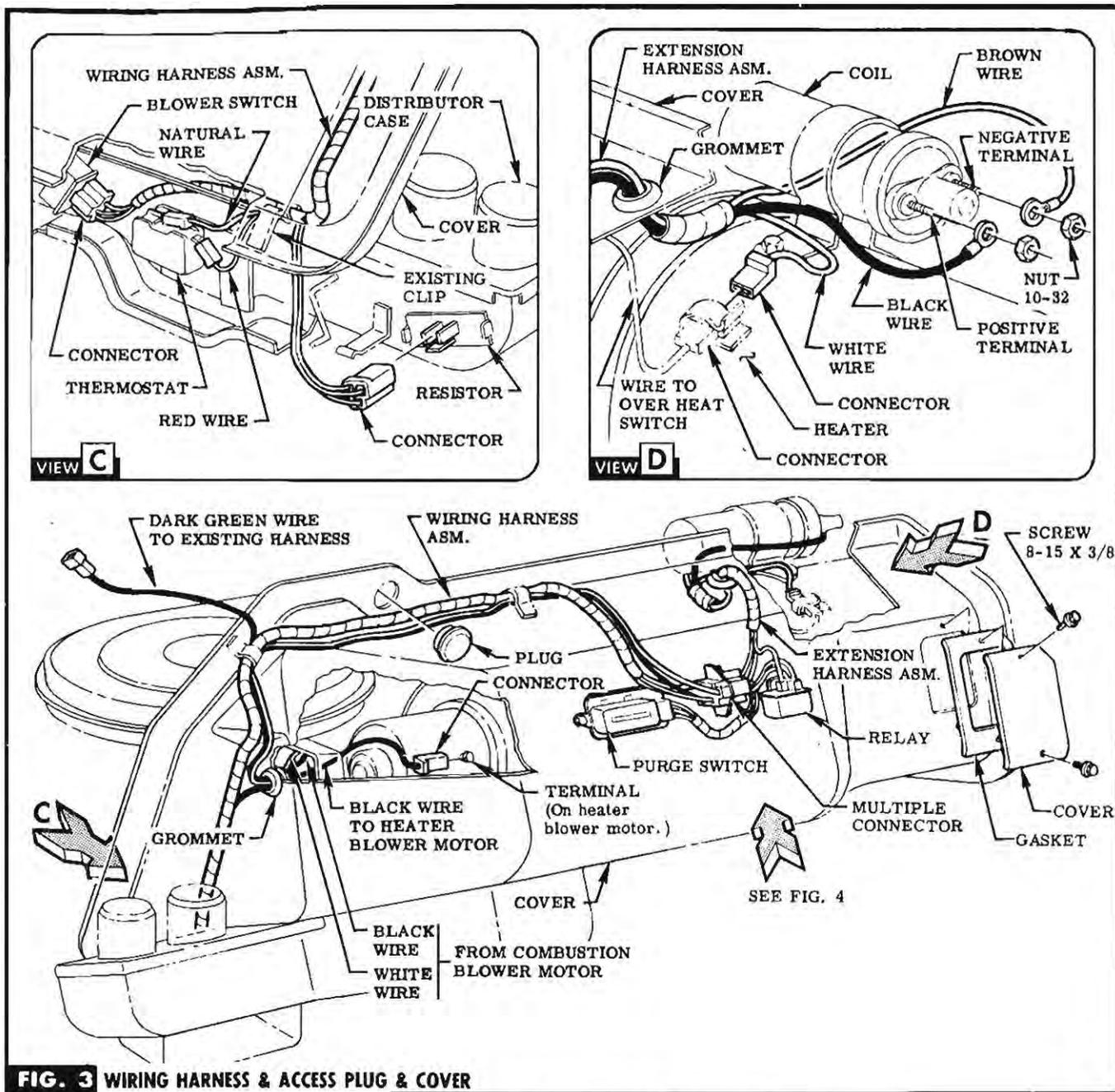


FIG. 3 WIRING HARNESS & ACCESS PLUG & COVER

STEP 12 PLUG HARNESS CONNECTORS ONTO BLOWER SWITCH & RESISTOR. SEE VIEW C.

STEP 13 PLUG RED & NATURAL WIRE CONNECTORS ONTO THERMOSTAT & SNAP HARNESS INTO EXISTING CLIP UNDER COVER FLANGE. SEE VIEW C.

STEP 14 INSTALL GROMMETS PROVIDED (IN BAG B) IN COVER. SEE FIG. 3 & VIEW D.

STEP 15 ROUTE BLACK WIRE CONNECTOR FROM HARNESS, THRU GROMMET & PLUG ONTO BLOWER MOTOR TERMINAL. SEE FIG. 3.

STEP 16 ROUTE BLACK & WHITE COMBUSTION BLOWER MOTOR WIRES THRU GROMMET & ACROSS TOP OF COVER ALONG WITH HARNESS. FIT INTO EXISTING CLIPS ON TOP OF COVER ASM. SEE FIG. 3.

STEP 17 REMOVED.

STEP 18 REMOVED.

STEP 19 ROUTE EXTENSION HARNESS THRU GROMMET TO HEATER COIL. SEE FIG. 3 & VIEW D.

STEP 20 PLUG WHITE JUMPER WIRE CONNECTOR INTO OVERHEAT SWITCH WIRE CONNECTOR. SEE VIEW D.

STEP 21 ATTACH BROWN & BLACK WIRES TO COIL TERMINALS WITH ATTACHING NUTS PROVIDED. SEE VIEW D.

STEP 22 INSTALL PLUG (RETAINED FROM DISCARDED HEATER HOLE COVER) & ATTACH ACCESS COVER USING SCREWS & GASKET PROVIDED (IN BAG C). SEE FIG. 3.

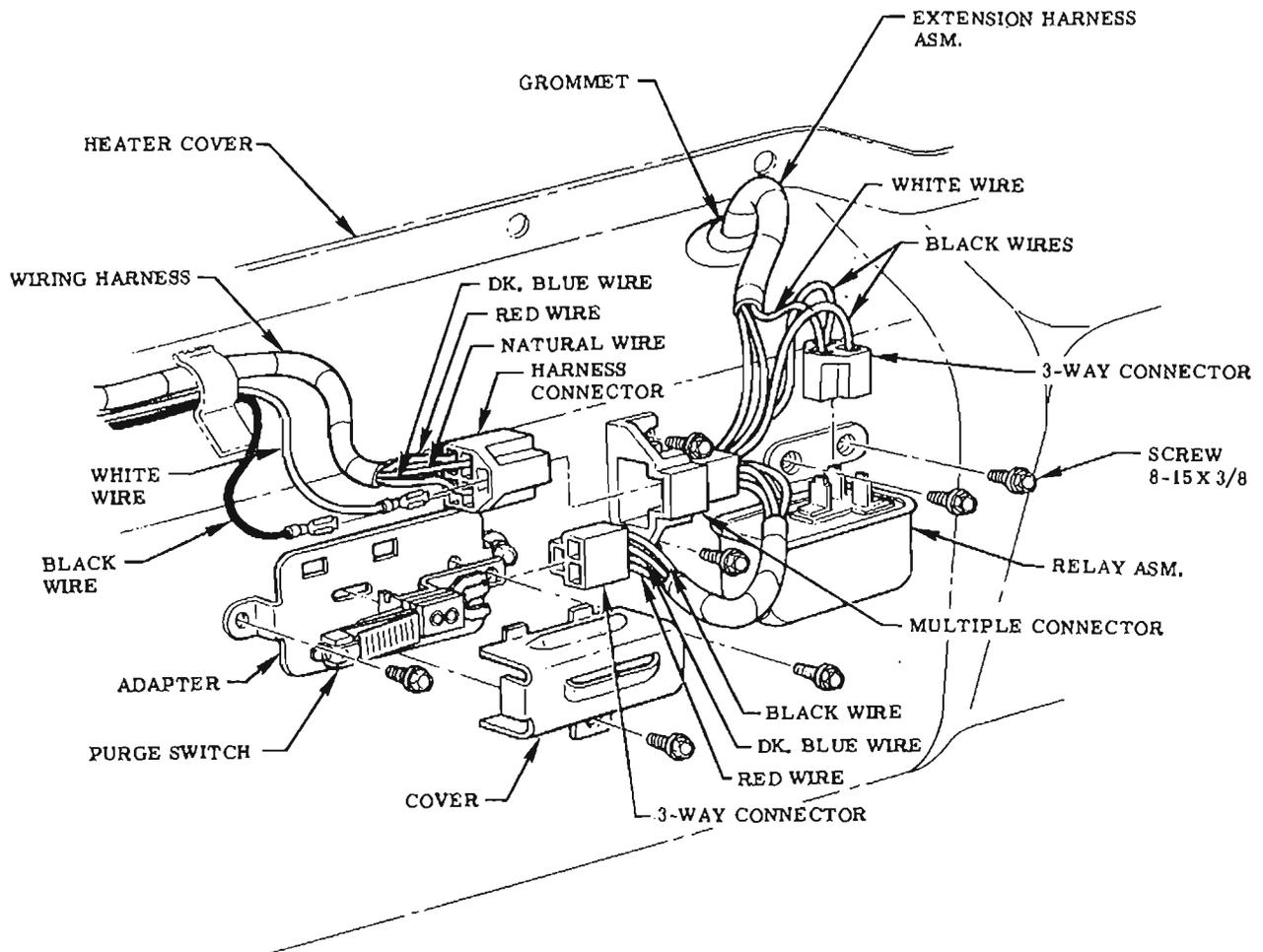


FIG. 3a PURGE SWITCH, MULTIPLE CONNECTOR & RELAY

STEP 23.1 SUB ASSEMBLE PURGE SWITCH & COVER TO ADAPTER WITH SCREWS (IN BAG A). SEE FIG. 3a.

STEP 23.2 ATTACH ADAPTER SUB ASSEMBLY, MULTIPLE CONNECTOR & RELAY TO EXISTING HOLES IN COVER WITH SCREWS (IN BAG A). SEE FIG. 3a.

STEP 23.3 INSERT TERMINALS OF WHITE & BLACK WIRES

INTO HARNESS CONNECTOR. SEE FIG. 3a.

CAUTION White wire to top receptacle on connector.

STEP 23.4 PLUG HARNESS CONNECTOR TO MULTIPLE CONNECTOR, 3-WAY CONNECTOR (BLACK & WHITE WIRES) TO RELAY & REMAINING 3-WAY CONNECTOR (BLACK, DK. BLUE & RED WIRES) TO PURGE SWITCH. SEE FIG. 3a.

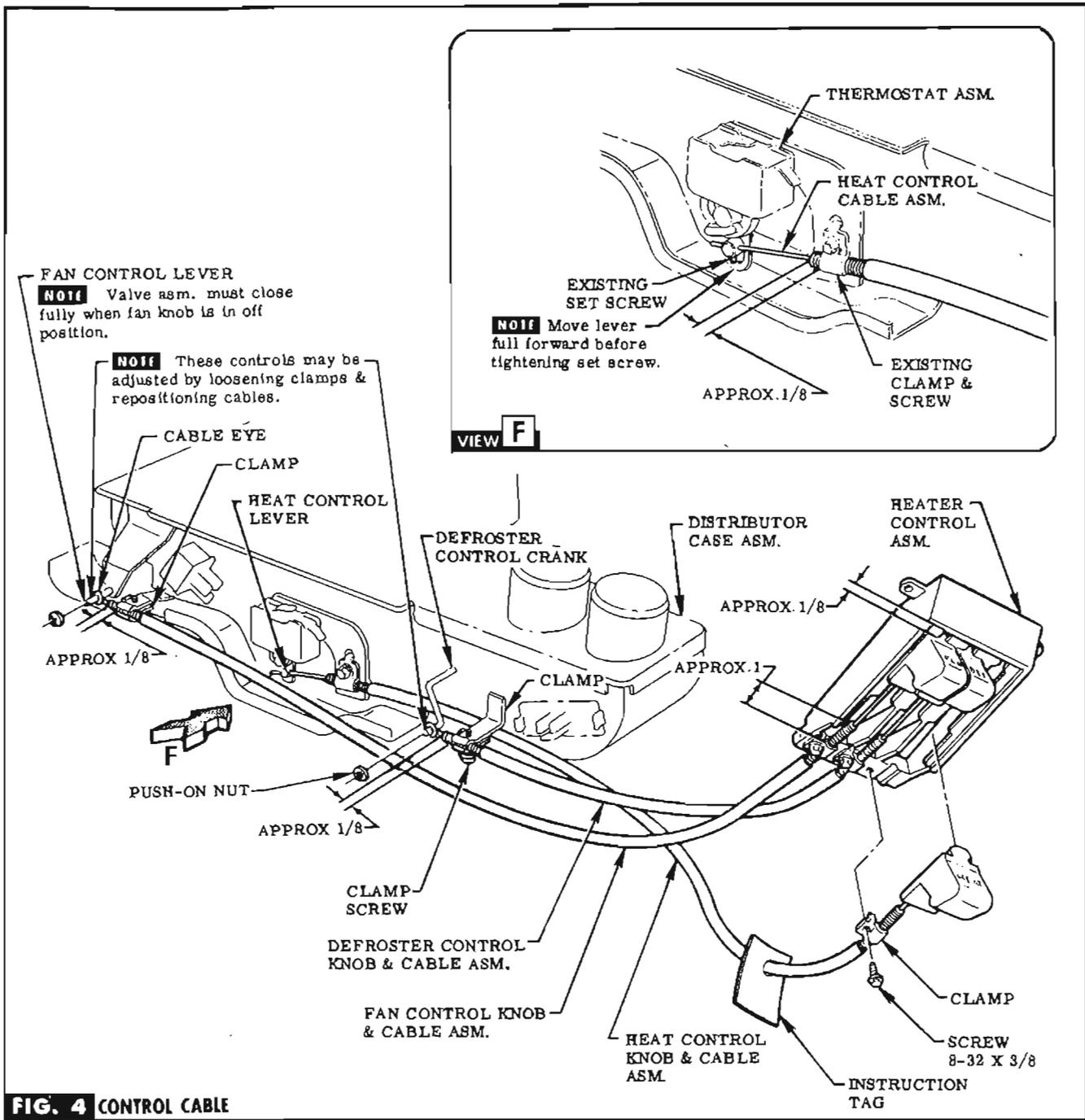


FIG. 4 CONTROL CABLE

STEP 24 INSERT FAN, DEFROSTER & HEAT CONTROL KNOB & CABLE ASSEMBLIES INTO SLOTS OF HEATER CONTROL. SLIDE CABLE SHEATHS UP INTO SLOTS & SECURE TO DIMENSION SHOWN WITH CLAMPS & SCREWS (IN BAG A). SEE FIG. 4.

STEP 24.1 MOVE HEAT CONTROL KNOB INTO DOWN POSITION, WITHIN 1/4 INCH OF CABLE SHEATH. ROUTE HEAT CONTROL CABLE THRU LEVER (ON THERMOSTAT). SECURE CABLE TO DISTRIBUTOR WITH EXISTING CLAMP & SCREW TO DIMENSION SHOWN. MOVE LEVER (ON THERMOSTAT) FULL FORWARD & TIGHTEN SET SCREW. SEE FIG. 4 & VIEW F.

STEP 25 ROUTE FAN & DEFROSTER CONTROL CABLES TO DISTRIBUTOR. ATTACH FAN CONTROL TO LEVER & DEFROSTER CONTROL TO CRANK WITH PUSH-ON NUTS (IN BAG A). SEE FIG. 4.

STEP 26 SECURE FAN & DEFROSTER CONTROLS TO DISTRIBUTOR WITH EXISTING CLAMPS & SCREWS TO DIMENSION SHOWN. SEE FIG. 4.

STEP 27 ATTACH INSTRUCTION TAG TO HEAT CONTROL CABLE NEAR CONTROL. SEE FIG. 4.

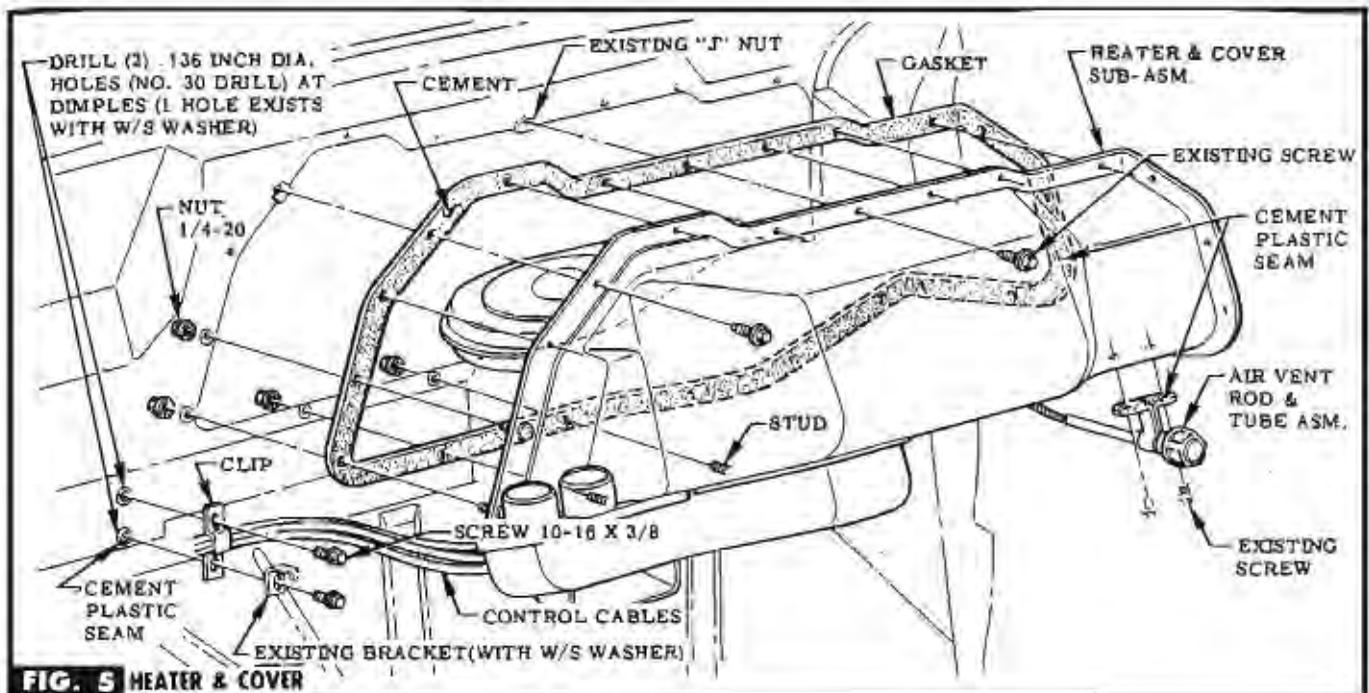


FIG. 5 HEATER & COVER

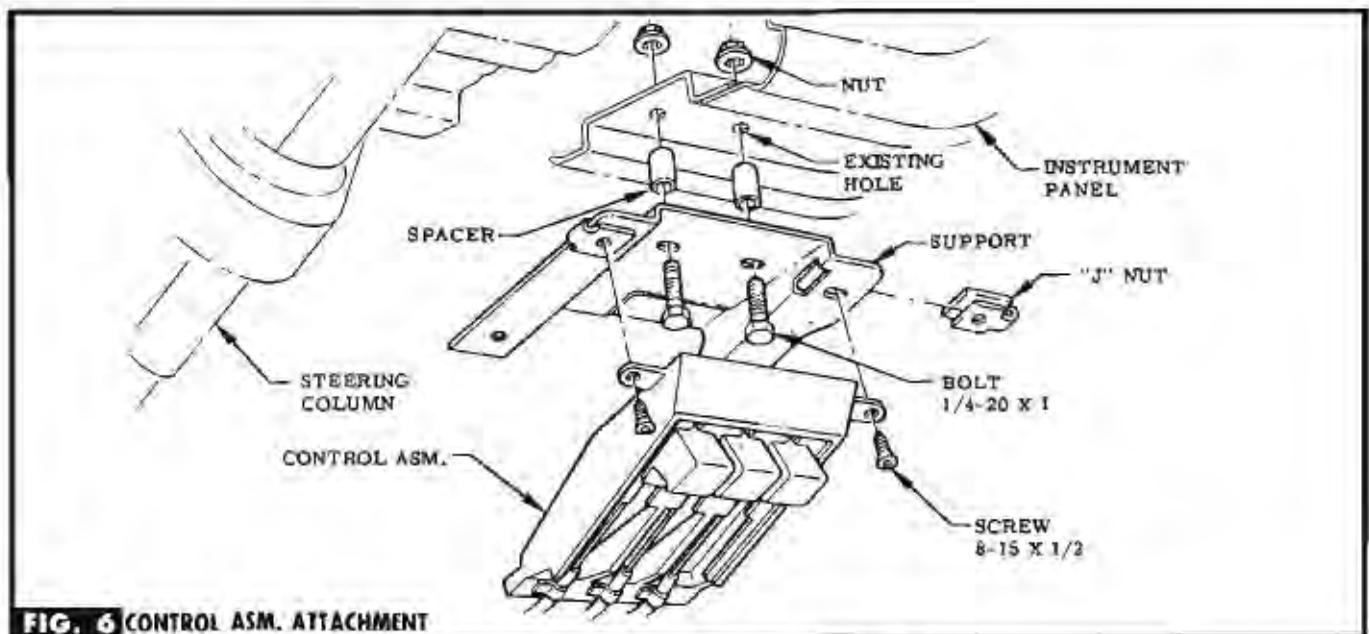


FIG. 6 CONTROL ASM. ATTACHMENT

STEP 28 REMOVE EXISTING R.H. AIR VENT ROD & TUBE ASM. & DISCARD. RETAIN ATTACHING PARTS.

STEP 29 CEMENT GASKET TO COVER & APPLY PLASTIC BEAM CEMENT TO GASKET AT ATTACHING HOLES & TO DASH AT STUD HOLES. ATTACH COVER TO DASH PANEL WITH EXISTING "J" NUTS, RETAINED SCREWS & PROVIDED NUTS (IN BAG B). SEE FIG. 5.

STEP 30 APPLY PLASTIC BEAM CEMENT BETWEEN AIR VENT ROD & TUBE ASM. & COVER, THEN ATTACH WITH RETAINED SCREWS. SEE FIG. 5.

STEP 31 IF W/S WASHER EXISTS, REMOVE & RETAIN RESERVOIR BRACKET, DISCARD SCREW, LOCATE DIMPLE & DRILL

HOLE. SEE FIG. 5.

STEP 32 IF W/S WASHER DOES NOT EXIST, LOCATE DIMPLES & DRILL HOLES. SEE FIG. 5.

STEP 33 APPLY PLASTIC SEAM CEMENT TO HOLES & ATTACH CONTROL CABLES TO DASH PANEL WITH CLIP & SCREWS PROVIDED (IN BAG A). **NOTE** U W/S washers exist, attach retained bracket to bottom of clip. See Fig. 5.

STEP 34 ATTACH SUPPORT TO INSTRUMENT PANEL WITH SPACERS & ATTACHING PARTS PROVIDED (IN BAG A). SEE FIG. 6.

STEP 35 ATTACH CONTROL ASM. TO SUPPORT WITH ATTACHING PARTS PROVIDED (IN BAG A). SEE FIG. 6.

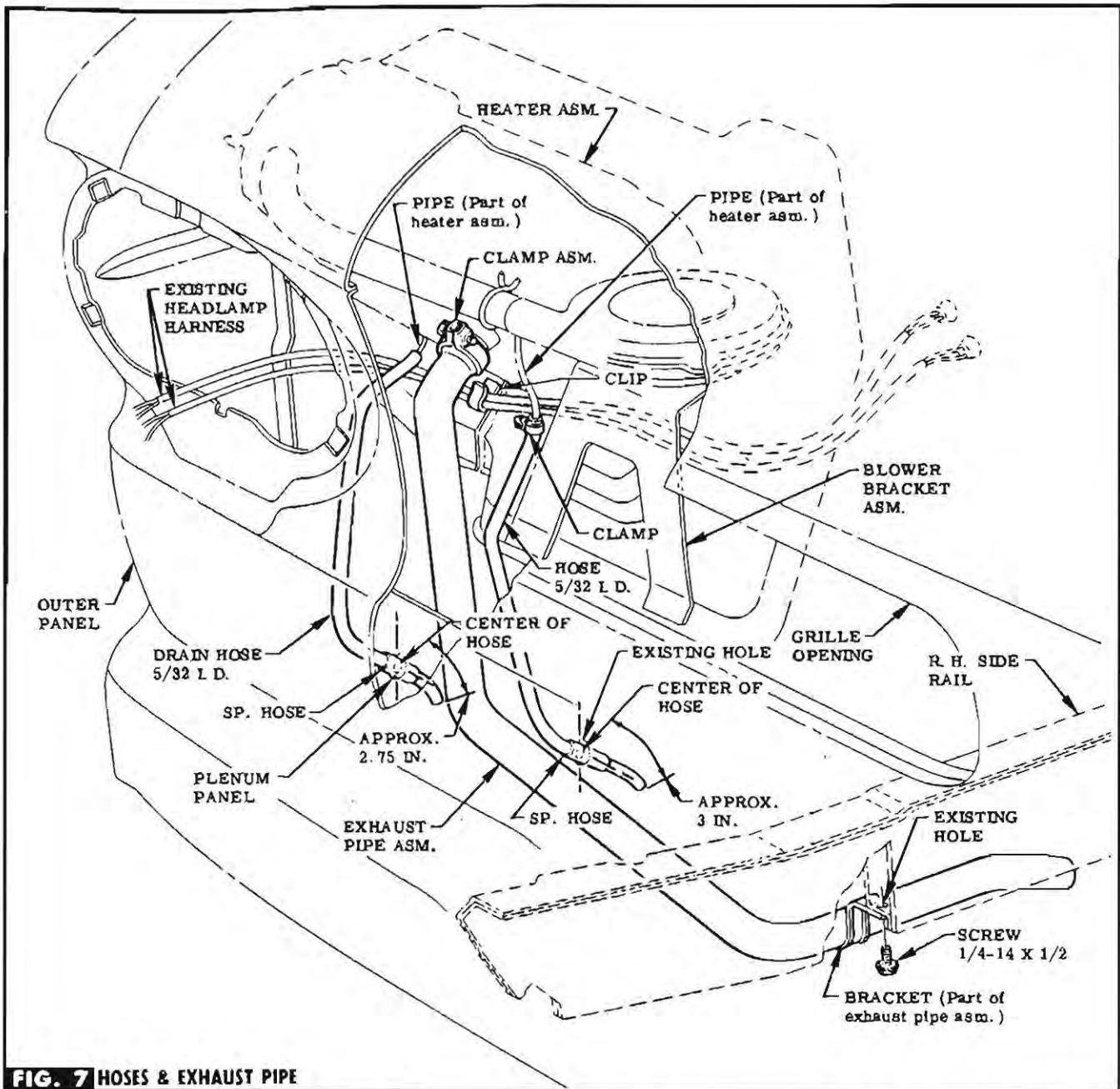


FIG. 7 HOSES & EXHAUST PIPE

STEP 36 INSERT EXHAUST PIPE THRU EXISTING OPENING IN PLENUM PANEL & LOOSELY ATTACH BRACKET TO R.H. SIDE RAIL WITH ATTACHING SCREW PROVIDED (IN BAG A). SEE FIG. 7.

STEP 37 ATTACH EXHAUST PIPE TO HEATER WITH ATTACHING CLAMP PROVIDED. SEE FIG. 7.

STEP 38 TIGHTEN BRACKET SCREW ON R.H. SIDE RAIL. SEE FIG. 7.

STEP 39 ATTACH GASOLINE FRONT PIPE HOSE TO HEATER PIPE WITH ATTACHING CLAMP PROVIDED (IN BAG C). SEE FIG. 7.

STEP 40 ROUTE GASOLINE FRONT PIPE HOSE THRU EXISTING HOLE IN PLENUM PANEL. USING LIQUID SOAP, SLIDE SP. HOSE INTO PLACE OVER FRONT PIPE HOSE. SEE FIG. 7.

STEP 41 ATTACH DRAIN HOSE TO HEATER PIPE & ROUTE THRU EXISTING HOLE IN PLENUM PANEL. USING LIQUID SOAP, SLIDE SP. HOSE INTO PLACE OVER DRAIN HOSE. SEE FIG. 7.

STEP 42 INSTALL PREVIOUSLY REMOVED HEADLAMP. ROUTE WIRES & ATTACH TO CLIP ON COVER ASSEMBLY. SEE FIG. 7.

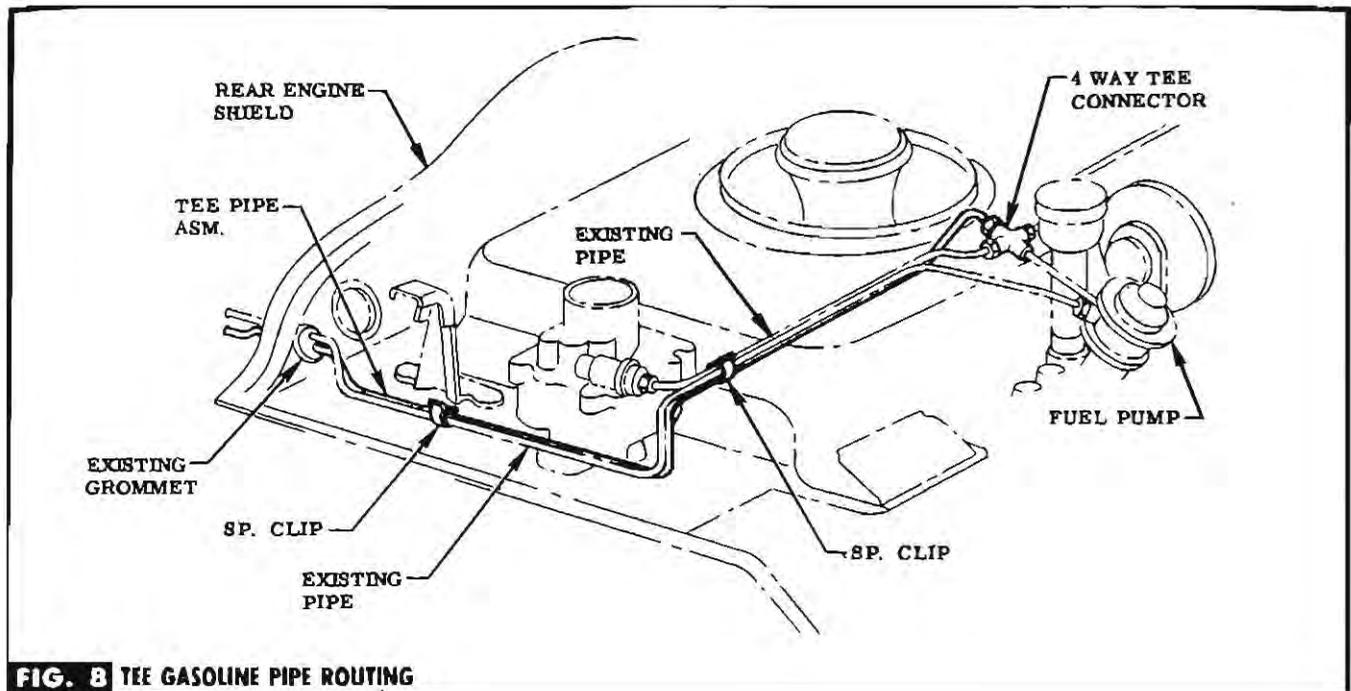


FIG. 8 TEE GASOLINE PIPE ROUTING

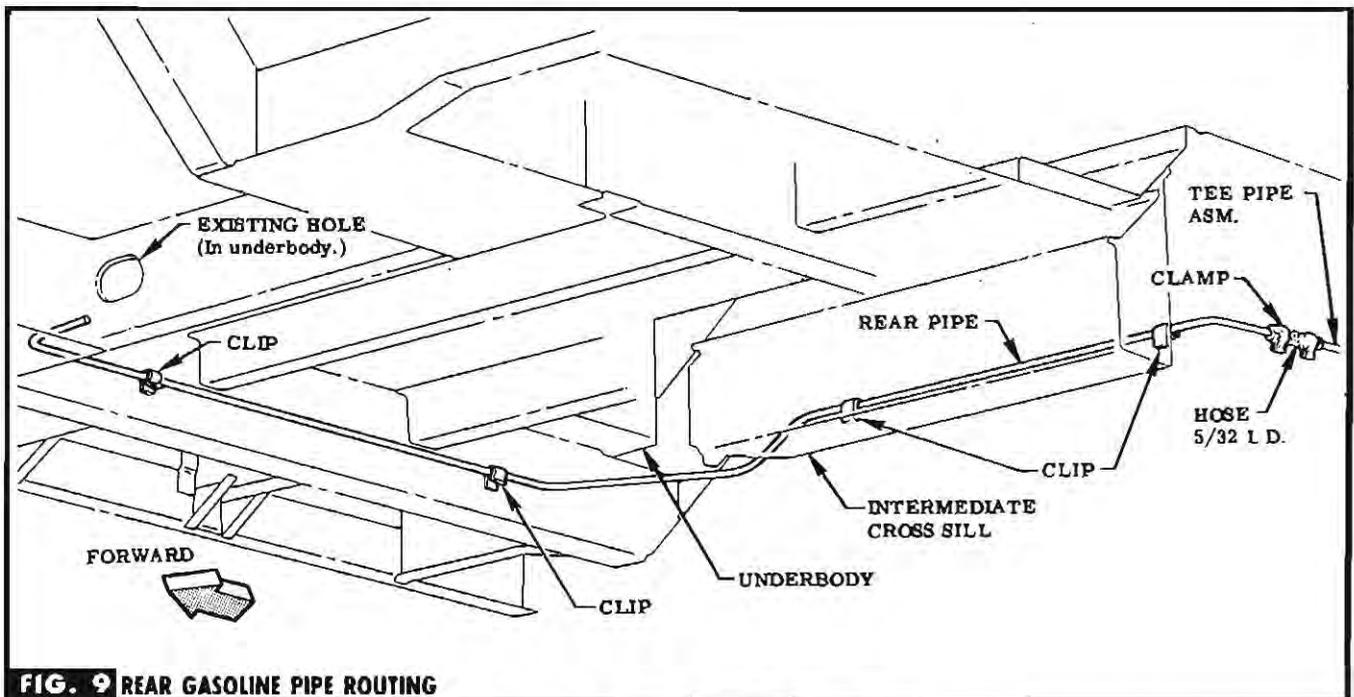


FIG. 9 REAR GASOLINE PIPE ROUTING

STEP 43 REMOVE & DISCARD 3 WAY TEE CONNECTOR & REPLACE WITH 4 WAY TEE CONNECTOR PROVIDED (IN BAG C). SEE FIG. 8.

STEP 44 CONNECT TEE PIPE TO 4 WAY CONNECTOR. ROUTE ALONGSIDE EXISTING FUEL LINE & THRU GROMMET IN REAR ENGINE SHIELD. SECURE WITH CLIPS PROVIDED (IN

BAG C). SEE FIG. 8.

STEP 45 FROM UNDERSIDE OF VEHICLE, ROUTE REAR PIPE FORWARD & CLIP TO INTERMEDIATE CROSS SILL & TO SIDE RAIL WITH CLIPS PROVIDED (IN BAG C). SEE FIG. 9.

STEP 46 JOIN REAR PIPE & TEE PIPE WITH HOSE & CLAMPS PROVIDED (IN BAG C). SEE FIG. 9.

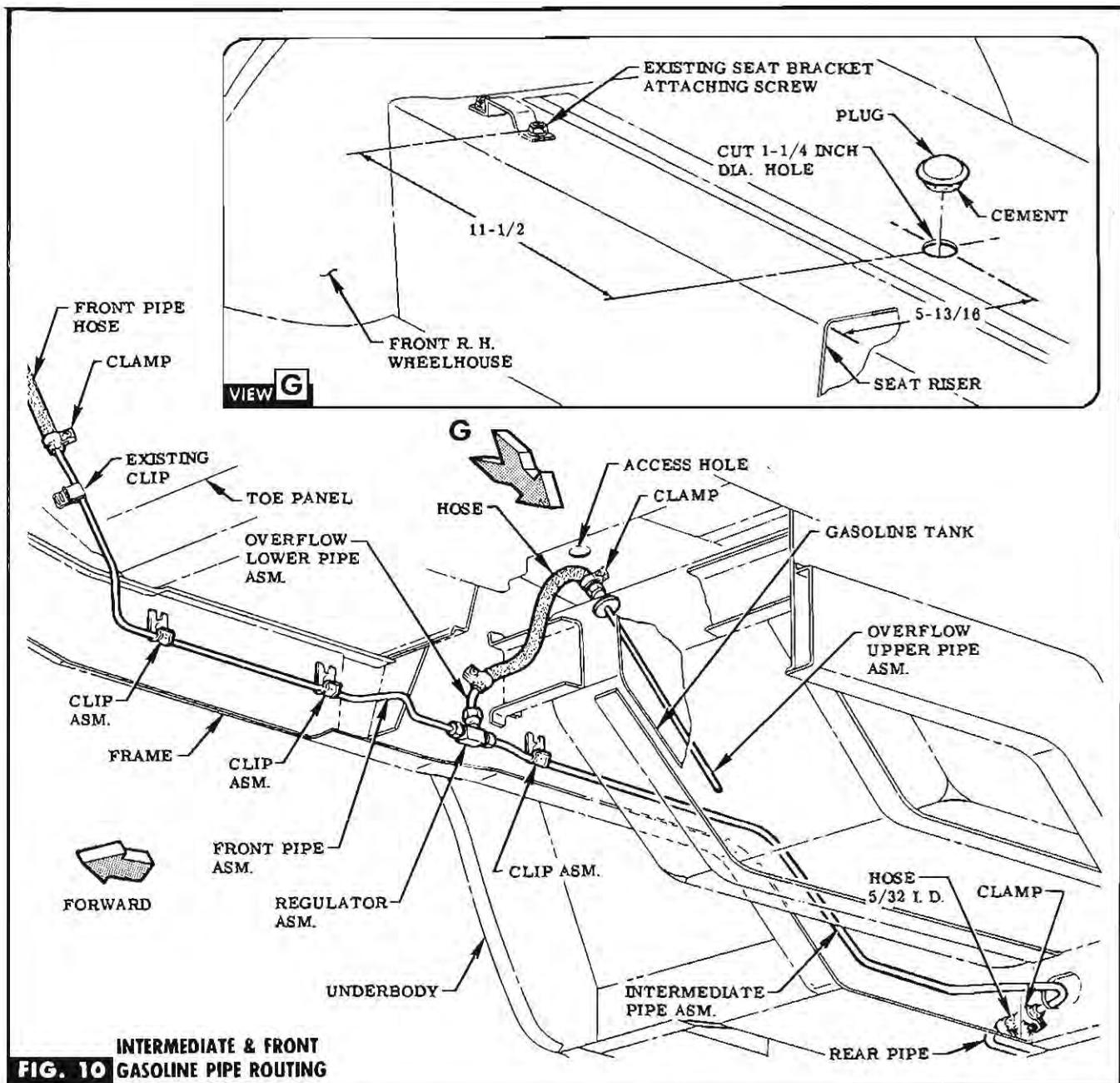


FIG. 10 INTERMEDIATE & FRONT GASOLINE PIPE ROUTING

STEP 47 ROUTE INTERMEDIATE PIPE FORWARD ALONG EXISTING PIPE, ATTACHING TO FRAME WITH EXISTING & PROVIDED CLIPS (IN BAG C). SEE FIG. 10.

STEP 48 JOIN INTERMEDIATE PIPE TO REAR PIPE WITH HOSE & CLAMPS PROVIDED (IN BAG C). SEE FIG. 10.

STEP 49 ATTACH REGULATOR TO INTERMEDIATE PIPE. SEE FIG. 10.

STEP 50 ROUTE FRONT PIPE FORWARD, ATTACHING TO FRAME WITH CLIPS PROVIDED (IN BAG C) & EXISTING CLIP ON TOE PANEL. SEE FIG. 10.

STEP 51 ATTACH FRONT PIPE TO REGULATOR. SEE FIG. 10.

STEP 52 ATTACH FRONT PIPE HOSE TO FRONT PIPE WITH CLAMP PROVIDED (IN BAG C). SEE FIG. 10.

STEP 53 ATTACH OVERFLOW LOWER PIPE TO REGULATOR. SEE FIG. 10.

STEP 54 REMOVE FRONT SEAT CUSHION, LOCATE, CENTER-PUNCH & CUT ACCESS HOLE IN SEAT RISER. SEE VIEW G. **CAUTION** Do not cut into gas tank which is directly below.

STEP 55 REMOVE PLUG FROM GAS TANK & INSTALL OVERFLOW UPPER PIPE. APPLY CEMENT (IN BAG C) TO PROVIDED PLUG & INSTALL IN ACCESS HOLE. SEE FIG. 10 & VIEW G.

STEP 56 JOIN UPPER & LOWER OVERFLOW PIPES WITH HOSE & CLAMPS PROVIDED (IN BAG C). SEE FIG. 10.

STEP 57 REPLACE ALL EXISTING PARTS PREVIOUSLY REMOVED.

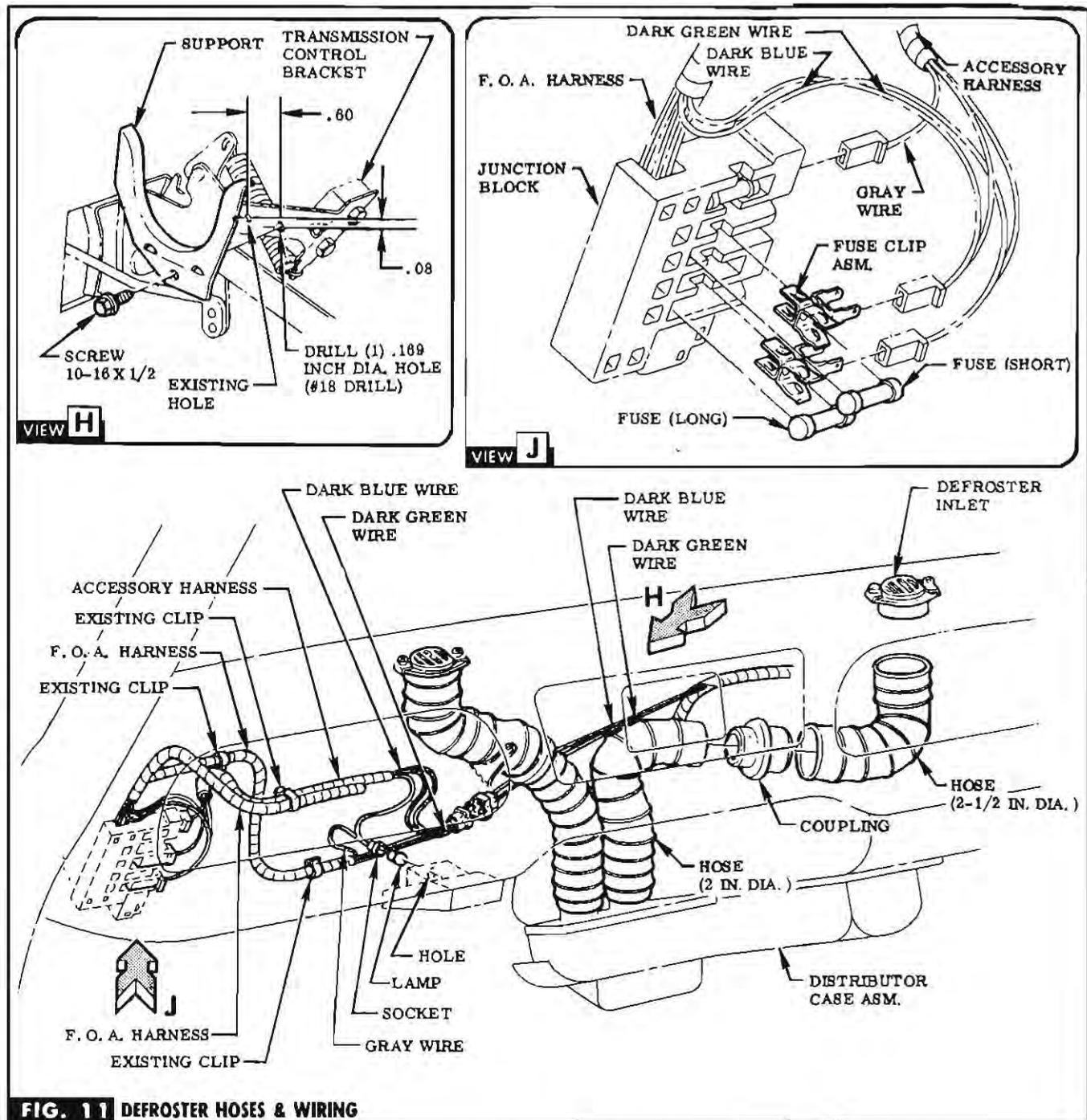


FIG. 11 DEFROSTER HOSES & WIRING

STEP 58 IF AUTOMATIC TRANSMISSION EXISTS, DRILL HOLE & INSTALL HOSE SUPPORT ON TRANSMISSION CONTROL BRACKET WITH SCREW (IN BAG A). SEE VIEW H.

STEP 59 REMOVE GLOVE BOX. ASSEMBLE LONG & SHORT DEFROSTER HOSES USING COUPLINGS PROVIDED. INSTALL DEFROSTER HOSES ON INLETS & DISTRIBUTOR CASE. SEE FIG. 11. REPLACE GLOVE BOX. **NOTE** If automatic transmission exists route L. H. hose over hose support.

STEP 60 INSTALL FUSE CLIP INTO RECEPTACLE MARKED "HEATER-B. U. LPS." & "HEATER BLOW-GL. BOX LP." ON JUNCTION BLOCK. SEE VIEW J.

STEP 61 UNTAPE DARK GREEN & DARK BLUE WIRE CONNECTORS FROM (F. O. A. OR ACCESSORY) HARNESS & PLUG

INTO FUSE JUST INSTALLED. SEE VIEW J.

STEP 62 IF ACCESSORY HARNESS HAS BEEN INSTALLED UNTAPE & PLUG GRAY LEAD CONNECTOR INTO BACK OF JUNCTION BLOCK INTO RECEPTACLE MARKED "PANEL LPS." SEE VIEW J. **NOTE** If radio exists gray wire will always be connected.

STEP 63 UNTAPE GRAY, DARK BLUE & DARK GREEN WIRES FROM HARNESS. INSERT LAMP INTO SOCKET ON GRAY WIRE & PLUG INTO BACK OF CONTROL. CONNECT DARK BLUE & DARK GREEN WIRES TO HEATER HARNESS WIRE. SEE FIG. 11.

STEP 64 INSERT FUSES INTO FUSE CLIPS PREVIOUSLY INSTALLED. SEE VIEW J.

INSPECTION & CHECKING PROCEDURE.

STEP 65 THE CONTROL ASM. FAN KNOB OPERATES THE VENTILATION BLOWER & HAS TWO SPEEDS, LOW-WITH THE KNOB PUSHED HALF WAY IN & HIGH-WITH THE KNOB PUSHED ALL WAY IN. TURN ON IGNITION & PUSH FAN KNOB IN TO BE SURE VENTILATION BLOWER WORKS AT BOTH SPEEDS.

STEP 66 THE COMBUSTION BLOWER HAS ONLY ONE SPEED (HIGH) & SHOULD WORK WHEN FAN IS IN EITHER LOW OR HIGH POSITION.

STEP 67 WHEN TURNING OFF HEATER OR IGNITION SWITCH, THE COMBUSTION BLOWER SHOULD CONTINUE TO OPERATE FOR APPROX. 30 SECONDS. IF THE COMBUSTION BLOWER DOES NOT TURN OFF WITHIN TWO MINUTES AFTER SHUTTING OFF IGNITION OR HEATER, THE PURGE SWITCH IS DEFECTIVE & MUST BE REPLACED.

STEP 68 IF EITHER OR BOTH BLOWERS DO NOT WORK, INSPECT ALL WIRING CONNECTIONS, ESPECIALLY THE FIVE WAY CONNECTOR ON THE COVER. IT IS ESSENTIAL THAT THE WHITE WIRE LEADING FROM THE COMBUSTION BLOWER ASM, BE INSERTED INTO THE CONNECTOR IN THE PROPER SLOT.

STEP 69 START ENGINE & LET IT IDLE. PUSH CONTROL ASM. HEAT KNOB ALL WAY IN. HEATER MUST IGNITE & OPERATE WITHOUT RUMBLING, POPPING, OR HAVING A SMOKY EXHAUST.

STEP 70 INSPECT ALL GASOLINE LINES TO BE SURE THERE ARE NO LEAKS.

STEP 71 HEATER MUST PRODUCE $150^{\circ} \pm 5^{\circ}$ OUTLET TEMPERATURE WITHIN 3 MINUTES WITH ENGINE AT IDLE. IF THE OUTLET TEMPERATURE REACHES 180° THIS INDICATES A FAULTY THERMOSTAT. IF THE OUTLET TEMPERATURE FAILS TO REACH 135° THIS INDICATES INADEQUATE GASOLINE FLOW & MAY BE CAUSED BY BENT PIPES, PLUGGED PIPES, NOZZLES, FITTINGS, OR A FAULTY FUEL PUMP.

STEP 72 GASOLINE PRESSURE AT THE HEATER SHOULD BE WITHIN THE RANGE OF 4.6 TO 5 P. S. I. IF THE PRESSURE IS HIGHER THAN 5 P. S. I. THE OVERFLOW REGULATOR IS FAULTY. IF THE PRESSURE IS LOWER THAN 4.5 P. S. I. THE ENGINE FUEL PUMP IS FAULTY. THE PRESSURE RANGE OF THE FUEL PUMP SHOULD BE WITHIN 8 TO 8 P. S. I.

STEP 73 REFER TO SHOP MANUAL FOR CORRECT HEATER MAINTENANCE & REPAIR.