



# SERVICE NEWS

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## SERVICING THE CORVAIR HEATER

This issue provides a summary of service information on the gasoline heater used in the 1960 model Corvaire. Detailed are all noteworthy heater modifications and changes in service recommendations made since start of production.

Theory of heater operation, trouble diagnosis, and detail service procedures for the gasoline heater are published in Section 11 of the 1960 Chevrolet Corvaire Shop Manual. A booklet and slide film titled, "Servicing The Corvaire Heater," was also made available as part of the "T-O-P" Program subscribed to by most Chevrolet Dealers.

### PURGE SWITCH CHANGES

- Early production purge switches were attached to the heater case with either one or two screws. Later production and service replacement switches are attached with one screw and a key-type locking tang. The new mounting provides better reinforcement and eliminates the possibility of the combustion blower electrical circuit accidentally closing and running down the battery. Refer to Page 4 of the January, 1960, issue of Service News for Purge Switch replacement procedure.

- The purge switch may not operate properly if the contacts are dirty. To clean the contacts pass a piece of hard, smooth paper between the contacts while manually holding them closed. Only gentle pressure is required. Never use emery or other abrasives.

- Service purge switches are now provided with pigtail leads fitted with terminals, therefore soldering of the switch leads at installation will no longer be necessary.

### HIGHER TEMPERATURE THERMOSTAT

Early production heaters were equipped with 140° thermostats. Later production heaters are

equipped with 150° thermostats, resulting in increased heat output. The 150° thermostat is available for service under Part No. 3149513.

**CAUTION:** *Under no circumstances ever attempt to raise the temperature or otherwise alter the factory setting of a thermostat. Thermostat replacement is recommended in all cases where an improperly operating thermostat is detected.*

### EXHAUST NOISE REDUCTION

On cars built prior to November 5, 1959, heater combustion noise, particularly noticeable at idle, may be reduced by drilling two holes in the underside of the heater exhaust pipe (Fig. 1). The holes should be located as accurate as possible to insure maximum noise reduction.

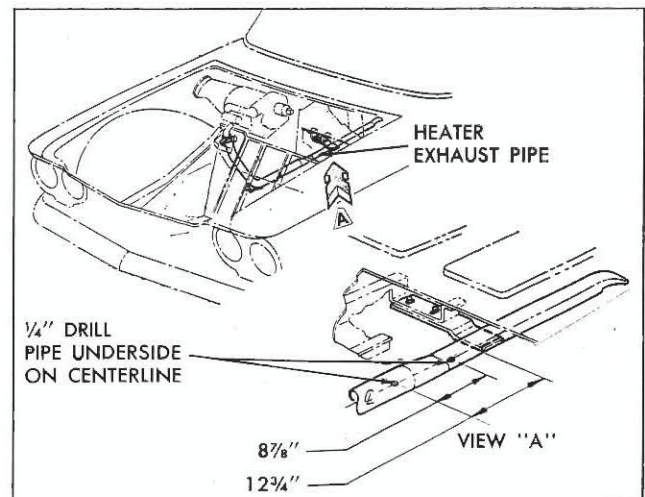


Fig. 1—Drilling Heater Exhaust Pipe

## FAN CONTROL SWITCH OVERTRAVEL

It should not be possible to depress the FAN control lever farther than the HEAT control. On some installations FAN control overtravel can reduce combustion blower speed when the FAN control is fully depressed. Insufficient combustion air would then result in carbon bridging of the spark plug, which could make the heater inoperative. This condition, which might occur on early model heaters, can be corrected as shown on Page 4 of the March, 1960, issue of Service News.

## BURNER MIXER CUP CHANGES

To eliminate hot spots and increase burner life, the target plate used in later production mixer cups was rotated 60 degrees, as shown in Figure 2.

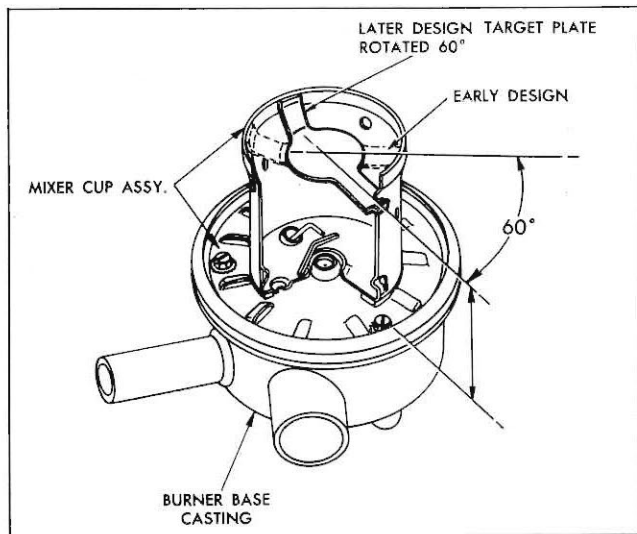


Fig. 2—Mixer Cup Target Plate Rotated

Later design mixer cup assemblies also incorporate an asbestos packing around the spark plug opening to eliminate blow-by of combustion air into the spark electrode area (Fig. 3).

Mixer Cup Assembly, Part No. 3149518, available for service replacement, incorporates both the above modifications.

## NEW TYPE SPARK PLUG

An AC F-12 "series gap" spark plug entered production in heater installations beginning April 15, 1960 at some assembly plants.

The F-12 spark plug, Part No. 3149821, designed to reduce spark plug carbon bridging; replaced the early production spark plug 3147598. Existing service stock of the 3147598 spark plug was then repackaged to include Spark Intensifier, Part No. 5610491. Stock of both the above package and that of the F-12 spark plug was inter-mixed and serviced under Part No. 3149821. The 3147598 spark plug is identifiable by its beige colored porce-

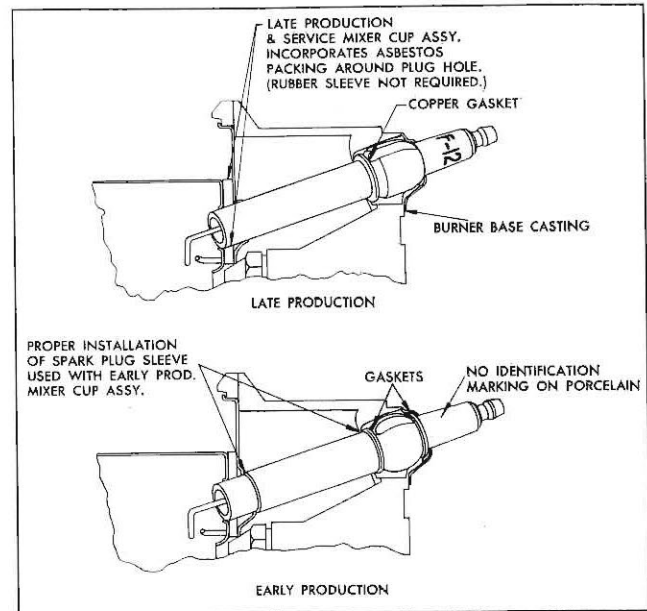


Fig. 3—Spark Plug Installation

lain upper insulator and removable terminal nut.

The F-12 spark plug requires the use of only one copper gasket on the upper porcelain, while the early production plug requires two gaskets (Fig. 3).

It is not necessary to use the neoprene sealing sleeve with either type spark plug if the late design mixer cup assembly having the asbestos packing around the spark plug hole is used.

Procedures for diagnosing a carbon bridged spark plug and removal of carbon from the early production spark plug, No. 3147598, are detailed on Page 3 of the January issue of Service News.

## ADDITION OF SPARK INTENSIFIER

If carbon bridging is evidenced on early production heaters using the 3147598 spark plug, it is recommended that Spark Intensifier Part No. 5610491 be installed. No adverse affect will be noticed if the spark intensifier is inadvertently installed on heaters equipped with the F-12 spark plug—there would simply be no benefit derived.

To install the spark intensifier (Fig. 4) proceed as follows:

1. Remove high tension lead from heater coil and cut the wire approximately  $1\frac{1}{2}$ " from the coil tower insulating boot.
2. Screw the spark intensifier onto the longer portion of the cut coil lead, then screw the shorter cut lead into the other end of the intensifier.
3. Replace high tension lead in coil.

NOTE: Make sure both cut ends bottom in the intensifier.

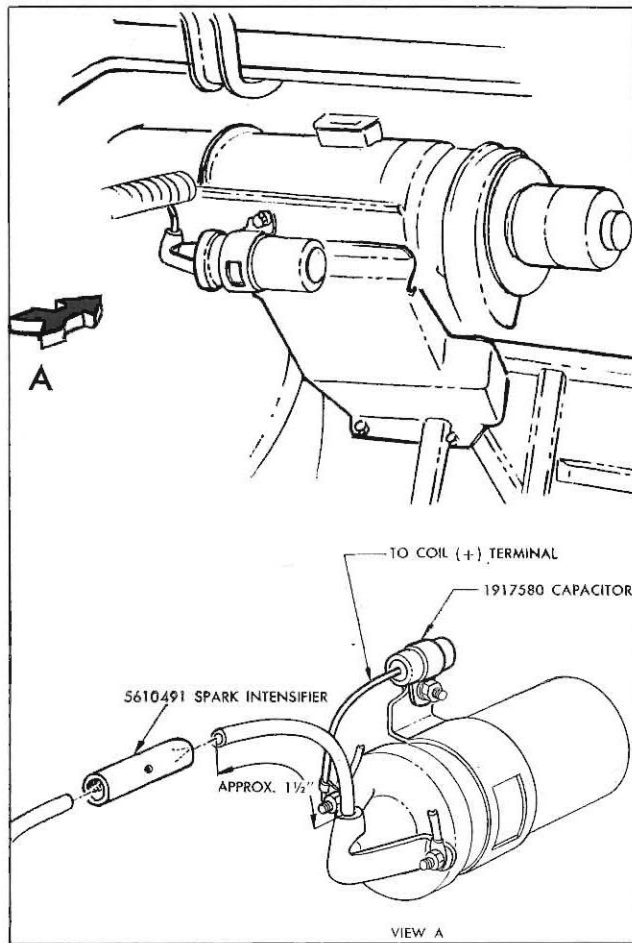


Fig. 4—Spark Intensifier Installation

- To function as a noise suppressor, Capacitor 1917580, or equivalent, should be installed on the heater coil when a spark intensifier or radio is used.

### IGNITION POINTS, CAM AND CONDENSER

When the heater is being diagnosed for “no heat” or “erratic operation”—particular attention should be paid to the ignition point set. There are four areas where trouble has been experienced.

#### Movable Point Post

Ignition point bases produced in mold cavity “4” (See Fig. 5) may have an oversize movable point post. This may eventually cause the movable point to seize or break. If this is the case, replacement of the ignition base unit would be necessary to correct the condition.

#### Cam Wear

Some early production breaker cams may be subject to rapid wear. As these cams wear they not only upset point gap and dwell—but may also cover the point contact surfaces with fine black

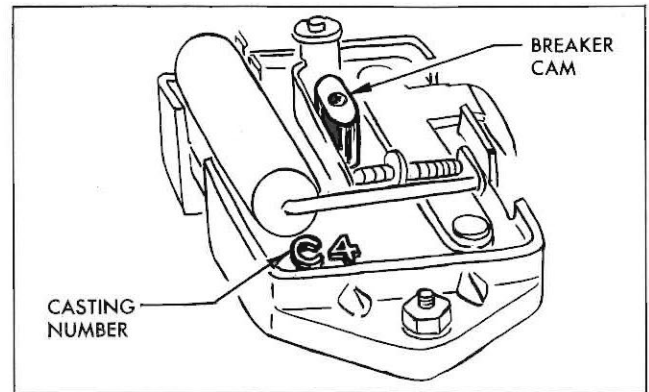


Fig. 5—Heater Ignition Base Assembly

particles. Cam wear may be evidenced by an accumulation of particles on the inside of the ignition base cover.

If the points appear to be in good condition simply blow out the foreign particles with compressed air and replace the breaker cam (3144865). Use a thin film of Lubriplate on the cam at installation.

#### Point Gap and Dwell

Point gap recommended in early service information was insufficient—actually the gap should be .015” to .028”, as shown in the 2nd edition of the Corvair Shop Manual. Point dwell can also be checked and doing so would aid in detecting a worn cam as well as incorrect point gap. Dwell should be 40° to 50° on the four lobe cam scale of the dwell meter (actual 80°-100°).

#### Condenser Lead Soldering

Early service ignition base units were furnished without the condenser lead soldered. Soldering was to be performed when the replacement unit was installed. Unfortunately, some mechanics did not solder the lead at installation; therefore this item should be checked and corrected as necessary. Later ignition base units furnished for service will have the condenser lead soldered in place.

#### ADDITION OF FUEL SOLENOID RELAY

A fuel solenoid relay (Fig. 8) was incorporated in the heater combustion blower circuit on all cars built later than October 29, 1959. The relay opens the fuel solenoid circuit to shut off fuel flow to the burner in the event of an open circuit in the power lead to the combustion blower.

Authorization and instructions for adding the solenoid relay to early production heaters was furnished in Technical Service Bulletin No. 627, which received dealer distribution. Heater Relay Kit No. 3149073 available through regular Chevrolet Parts channels contains all necessary parts and detailed instructions for the installation.

### INCREASED VENTILATOR BLOWER SPEED

Ventilator blower RPM at the "FAN" control lever low speed setting was increased during the 1960 model year. This can be done on early jobs by moving the red wire, located in the triple connector on top of the air distributor, to the formerly unused terminal of that connector. Figure 8 shows the red wire installed to provide increased blower speed.

**NOTE:** *The terminal locking tang in the connector must be released before the red wire can be removed from the connector.*

### HIGHER CAPACITY FUSE

The fuse for the complete heater system and back-up lamp, located in the accessory junction block (Fig. 8), was changed early in production from 15 amps to 20 amps. All heater installations should be equipped with the 20 amp fuse.

### SNOUT ADDED TO AIR DISTRIBUTOR

On early production heaters, the area around the driver's legs can be warmed faster by addition of a snout type air duct over the rectangular opening on the left side of the air distributor (Fig. 8). This duct, Part No. 3150227, is similar to that used in later production and can be easily attached to the distributor using two sheet metal screws.

### GASOLINE SUPPLY HOSES AND CLAMPS

Original equipment type gasoline resistant hose must be used for replacement.

A special clamp, that required crimping at installation, was used to attach the rubber hoses to the gasoline supply and by-pass pipes in both early Production and Service. This clamp will not provide an adequate seal on re-use, after it has been once installed. If an early service clamp of the above type is used as replacement; install the clamp with the bulge accessible, then obtain retention by squeezing the bulge with end cutter pliers.

Use of the later production and service Special Hose Clamp, Part No. 3783008, is preferred for replacement. This is a re-usable clamp that is tensioned by an adjusting screw.

All hose installations should be checked with the engine and heater running, before the tunnel cover is replaced.

**CAUTION:** *When removing the rubber hose from steel tubing some gasoline may drain out of the lines. Use precautionary measures to insure against possible ignition of fuel.*

### FUEL PRESSURE REGULATOR CAUTION

The Fuel Pressure Regulator Assembly (Fig. 7) should provide fuel supply to the heater at a constant pressure of between 4 and 5 PSI.

If a fuel pressure check shows the regulator to be sticking or not regulating within limits specified, do not attempt to adjust or otherwise repair the regulator. The regulator assembly should be replaced.

### REDUCING BODY AIR LEAKS

To obtain maximum heat with minimum heater operation, the following should be checked and corrected as necessary to prevent cold air entry.

1. **Adjust cowl vents to obtain good air seal when vents are closed.**
2. **Eliminate Air Entry at Shroud Panel Pinch-weld.**

Cold air from the front compartment area (heater supply air) may enter passenger compartment along length of pinchweld (securing shroud panel to toe pan to front compartment rear pan). This area is shown in Circle "A", Figure 6. The air leak will be present in most

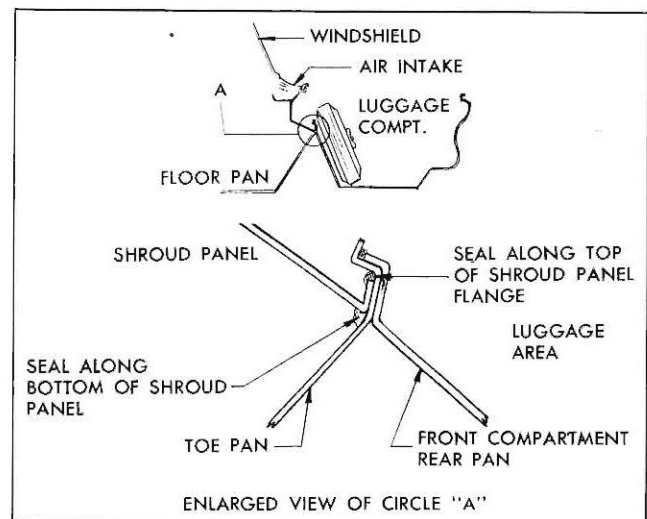


Fig. 6—Sealing Body Air Leak

early production bodies and may be corrected by sealing the shroud panel to the toe pan using body caulking compound. See enlarged view of circle "A".

- a. From luggage compartment side (front) of shroud panel, place  $\frac{1}{4}$ " diameter bead of caulking compound along top of shroud panel flange. Seal should extend from extreme left end of pinchweld to heater blower area.
- b. From passenger compartment side of shroud panel, fold back the upper end of front floor covering and place  $\frac{1}{4}$ " diameter bead of caulking compound along lower surface of shroud panel to toe panel joint. Seal should extend from extreme right end of pinchweld to control tunnel on toe pan.

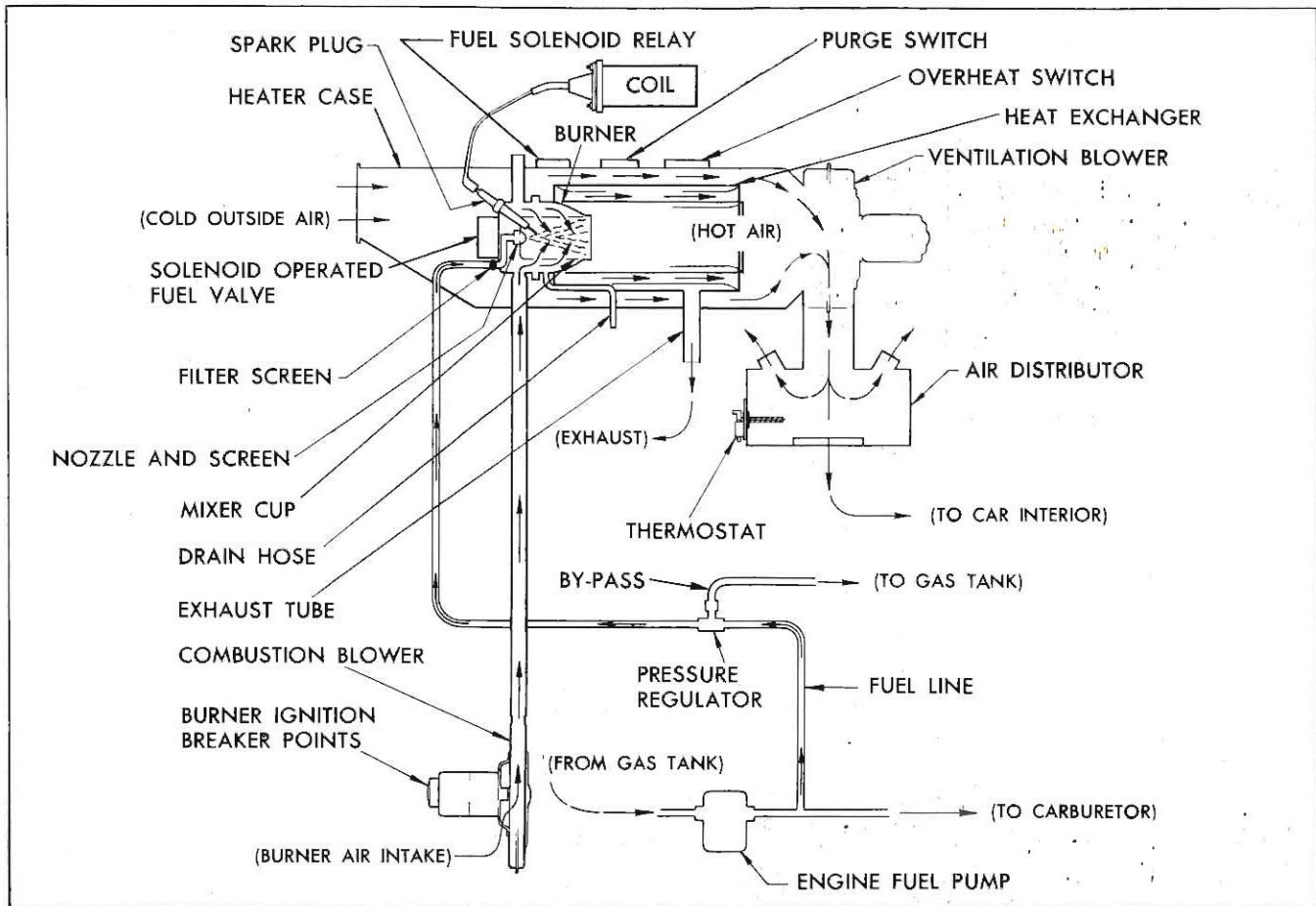


Fig. 7—Revised Heating System Schematic

### DESCRIPTION OF COMPONENTS

**Burner**—Assembly where fuel-air mixture is ignited. Includes a nozzle to spray the fuel, a mixer cup to mix the fuel with combustion air and a spark plug to ignite the fuel.

**Fuel Valve**—Operated by a solenoid to start or stop fuel flow into the burner.

**Heat Exchanger**—Cylindrical stainless steel container that radiates the heat created when fuel-air mixture burns, also provides a baffled outlet for exhaust gases.

**Overheat Switch**—Opens the fuel valve electrical circuit to shut off burner fuel if the temperature within the heat exchanger becomes excessive. This switch will automatically reset.

**Purge Switch**—Automatically energized by heat when the heater has operated a few seconds, but does not function until the heater is turned off either at the controls or by stopping the car engine. It then permits the combustion blower to operate from 30 seconds to 2 minutes to force all remain-

ing hot air and combustion products out of the heater. The switch maintains contact directly with the battery for this short period.

**Fuel Solenoid Relay**—Breaks the fuel solenoid circuit, which stops fuel flow to burner, in the event of any interruption in the electrical circuit to the combustion blower.

**Combustion Blower**—Provides the proper amount of air required to mix with the fuel in the burner. This is a single-speed (at least 2500 rpm) electrically powered centrifugal blower.

**Fan Control Lever**—Connected by cable to the air inlet door in the air distributor. Movement of this door actuates the heater control switch (right side of air distributor) which starts the heater and provides two ventilation blower speeds.

**Heat Control Lever**—Connected by cable to the thermostat installed in the right side of the air distributor. Selection of the heat control lever setting will control cycling of the burner.

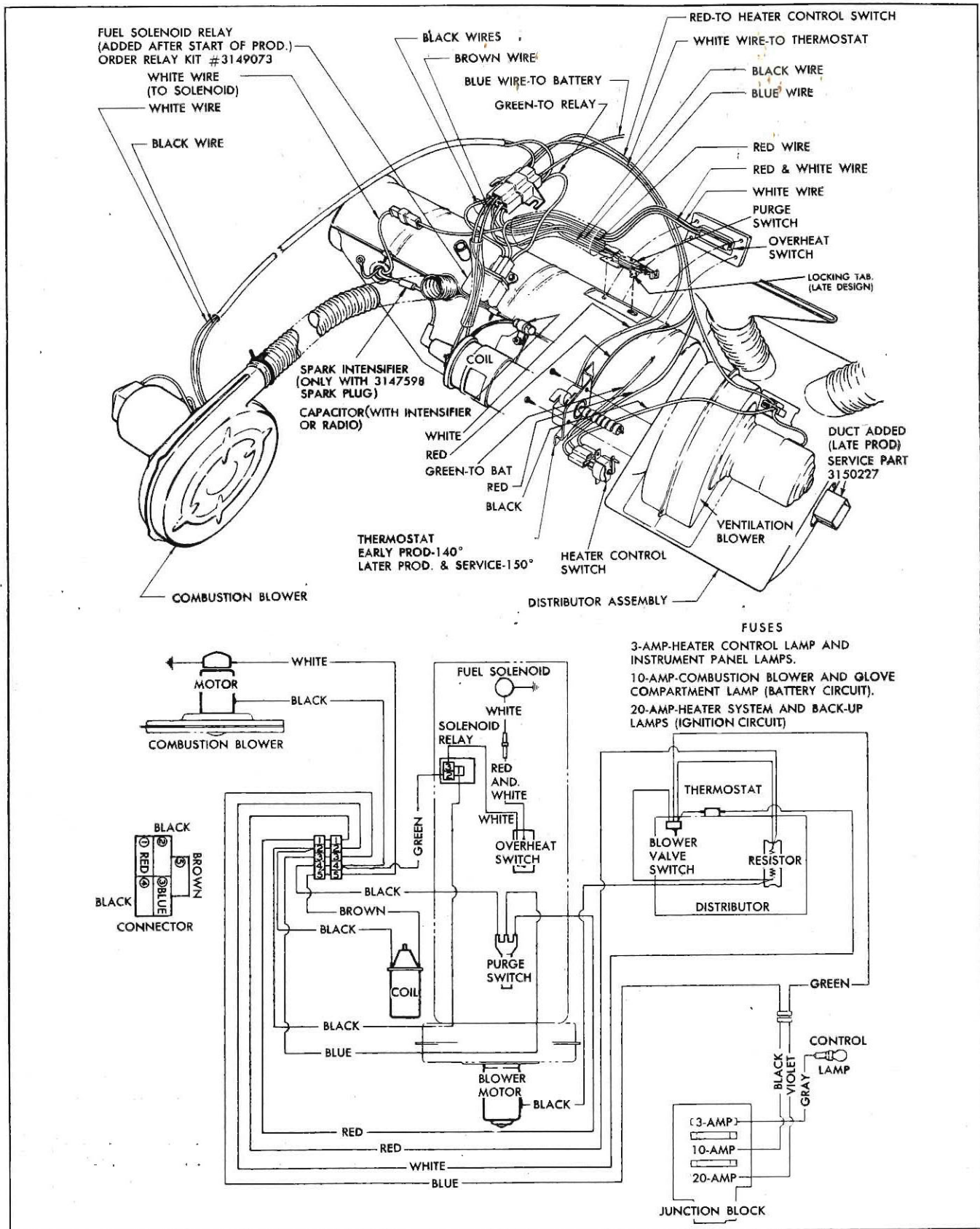


Fig. 8—Revised Heater Circuit Diagrams