

INSTALLATION INSTRUCTIONS AND OWNERS MANUAL

SOUTH WIND
HEATER FOR VOLKSWAGEN
MODEL 10600B

SYMBOL OF

South Wind

SW

STEWART-WARNER CORPORATION

SOUTH WIND PRODUCTS

Thank you for your recent inquiry regarding the products of Stewart-Warner's South Wind Division.

We are happy to enclose the information which you requested and trust you will find it useful. We are also enclosing information on some other fine Stewart-Warner products which make up the "Heat-Fleet" and hope you will find these interesting, also.

In this day of rising fuel costs, we are understandably proud of the fact that the "Heat Fleet" products are proving to be real energy cost cutters. These fine products are available through the Warehouse Distributors listed on the back of this letter, and also through National Accounts such as International Harvester, Mack, White, Peterbilt, Kenworth, and Freightliner dealers.

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Revised 3/82



GUARANTEE

We guarantee this Heater to be free from defects in material and workmanship for 12 months from date of sale. Should a defect occur within this period and is due to faulty material or workmanship only, Heater may be returned to place of purchase for repair or replacement at our option. Guarantee is void if Heater has been altered or misused.

Read and understand the Installation Instructions before starting the installation.

INSTALLATION CAUTIONS

1. The fuel tank filler hose has to be cut in order to make the heater fuel pick up connection. Make sure gasoline level in tank is less than 3/4 full to eliminate fuel spillage while installing heater.
2. Make sure no wires or tubes are within one inch of the exhaust tube.

HEATER OPERATION CAUTIONS

1. Push the heater switch control knob in and wait 30 seconds before turning heater switch knob to off position.

PART I-INSTALLATION

INTRODUCTION

The South Wind Heater Model 10600A is designed for use in 1968 thru 1972 standard Volkswagen Sedan Model only.

The heater is installed in the luggage compartment on the left side. (As seen from the driver's seat; see Figure 1.) The ventilating air louver plate assembly which directs the heated air into the passenger compartment is located in the center on underside of the luggage compartment floor. See Figure 2.

INSTALLATION PROCEDURE

The installation procedure set forth in the following pages is the factory recommended procedure. In some cases, it may be found that due to modification or damage to the vehicle it is impossible to install the heater exactly as directed. In such cases the installation personnel should resort to a field expedient to overcome the interference with the particular vehicle and alter the installation procedure accordingly.

The following procedure is arranged in logical sequence, but the order of installation may be changed to suit the available equipment and circumstances.

PRE-INSTALLATION STEPS

1. Disconnect battery.
2. Remove left front wheel.
3. Remove from the luggage compartment the floor covering, instrument panel covering and the insulation pad.
4. Remove spare tire and wheel from luggage compartment.

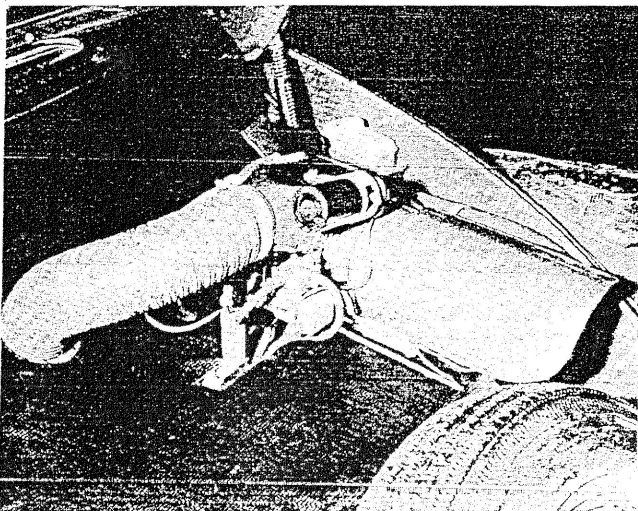


Figure 1 - Heater Unit Installed

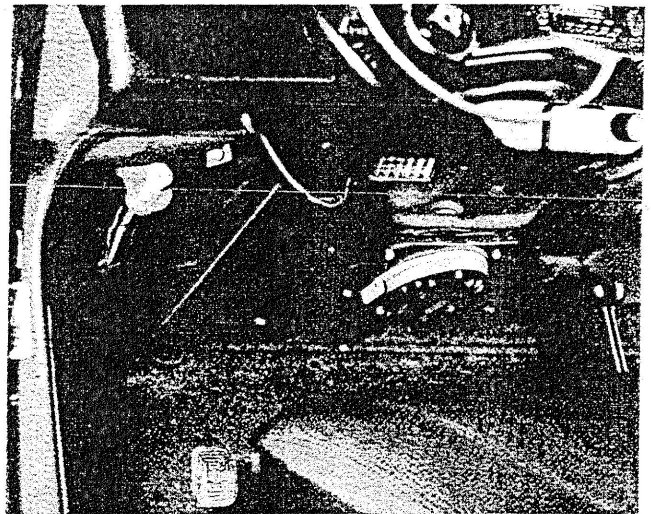


Figure 2 - Heater Switch and Hot Air Outlet

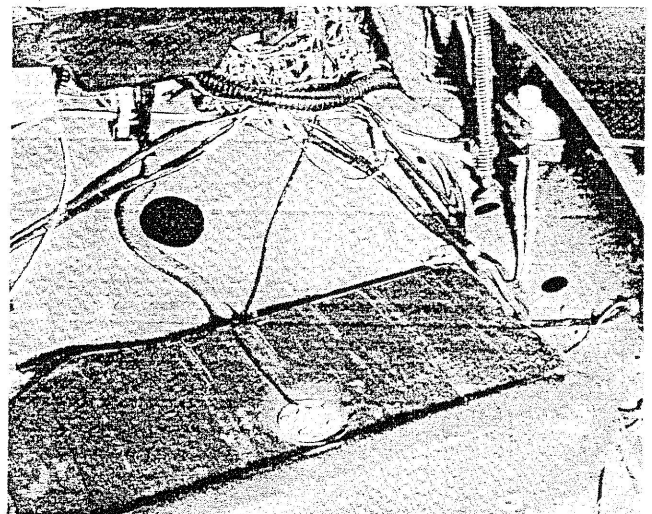


Figure 3 - Holes Required in Luggage Compartment

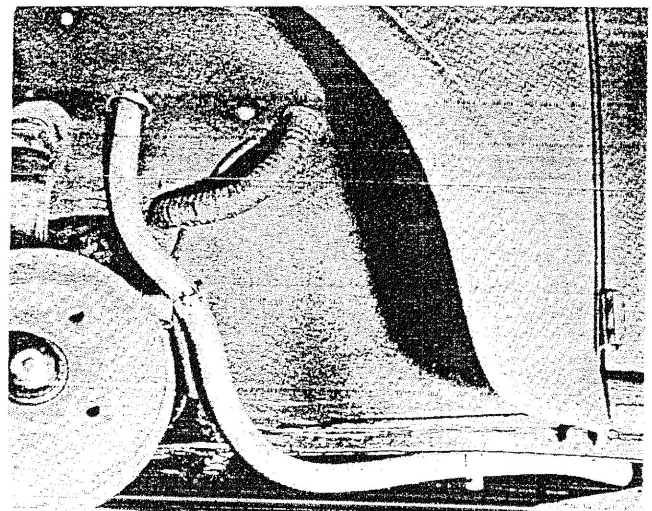


Figure 4 - Hose Installations in Fender Well

SECTION I

CUTTING OUT NECESSARY INSTALLATION HOLES

When installing the heater, it is more convenient to drill as many of the required installation holes as possible at one operation as a means of reducing installation time. Also, the appropriate tools should be available. Among these tools are an electric drill, hole saws of 3-1/2 inch, 2 inch, 1-1/2 inch and 3/4 inch diameters; an assortment of drills should also be available.

Templates are provided in the heater kit and are marked as to their use. Hole sizes are also stamped on templates. Figure 3 shows all holes cut or drilled using the following templates. Trim templates as stated on templates.

1. Place the Template PM 35483 on luggage compartment floor. Slide left end under the wiring and align with the bottom edge of vehicle cowl drain and gasoline tank hold down bolt on left rear corner. Tape in place, center punch and drill holes to sizes stated on template.

2. Template PM 35485 has to be trimmed. Follow instructions on template and cut along dotted lines. Also cut a 1/4 inch hole in template for location over the left fender bolt.

Place template on left fender using the existing fender bolt as one locating point. Slide the two ends under the wiring and tubes so template will follow contour of fender. Align the other 1/4 inch hole on this template with hole "A" that was located and drilled when using Template PM 35483. Tape template in place, center punch, drill and cut holes to size as stated.

3. Place the Template PM 35484 in center of luggage compartment floor and follow location instruction, tape in place, center punch holes, cut and drill holes to the sizes stated.

4. Refer to Figure 4 and cut a 2 inch hole in the area as shown inside fender wheelwell panel beneath the fuel tank. **CAUTION: WIRING BEHIND PANEL MUST BE HELD ASIDE WHEN CUTTING HOLE.**

5. Using the aluminum strap, bundle the wiring and tubes running along left end of fuel tank so the band will hold them together and retain them in channel between tank and fender.

6. Lay the insulation pad and covering on luggage compartment floor and cut a hole through both coinciding with 3-1/2 inch hole cut in step 3, to permit clearance for the collar on the air outlet adapter and the air duct. See Figure 1.

7. Cut the pad and covering to permit clearance for the heater mounting bracket and bolt.

8. Cut or trim the floor covering on left side to allow clearance for the front heater mounting bracket, exhaust tube, combustion air intake duct and drain tube. See Figure 1.

9. Remove cover and pad after cutting.

SECTION II

INSTALLATION OF HEATER ASSEMBLY ASSEMBLY

1. Insert the heater exhaust tube through the 1-1/2 inch hole and align mounting brackets with mounting holes.

2. From inside passenger compartment insert a 5/16 x 1/2 inch bolt through the 3/8 hole and rear mounting bracket. Secure with flat washer and nut.

3. From inside luggage compartment insert the other 5/16 x 1/2 inch bolt through rear mounting bracket and 3/8 hole in fender panel. Attach heater ground lead under bolt head. Secure with washer and nut.

4. From inside luggage compartment insert the two 1/4 x 1/2 inch bolts through front heater mounting bracket and the 5/16 inch holes in fender panel. Secure with washer and nut.

5. Insert the drain tube on heater through remaining hole drilled in fender panel.

6. Install the rubber combustion blower intake adapter to the side of combustion blower housing. Slip the 1-1/2 inch I.D. duct over the adapter inlet. Install one of the 2 inch grommets on duct and route over to and through the 2 inch hole in fender panel and place the grommet in hole. Install the other 2 inch grommet over the duct and insert duct and grommet through and into the 2 inch hole drilled in panel beneath the fuel tank. See Figure 4.

SECTION III

EXHAUST TUBE INSTALLATION

1. Slip the asbestos gasket and the gasket retainer over the heat exchanger exhaust tube and push the gasket and retainer up against the fender wheelwell.

2. Install the metal flexible exhaust tube over the heat exchanger exhaust tube and route tube down and to the rear of wheelwell.

3. Using a 11/64 drill bit, drill a hole in fender wheelwell and secure one of the exhaust tube clamps with the No. 14 x 5/8 screw. See Figure 4.

4. Remove the bolt and plate from the "U" shaped channel under vehicle and to rear of fender. Discard the plate removed and using the plate provided in heater kit and the bolt removed, install the other exhaust tube bracket. Route the flexible exhaust along bottom of vehicle and secure with the clamp. See Figure 4.

5. Replace wheel. Be sure exhaust tube does not touch tire in full left turn position. Shape tube as required to prevent interference.

SECTION IV

INSTALLATION OF VENTILATING AIR LOUVER SHUTTER AND ADAPTER

1. With the shutter in closed position and shutter handle pointed towards left front seat, insert the collar through the 3-1/2 inch hole on underside of luggage floor and align

holes in plate with holes drilled in luggage floor. Secure with the four small sheet metal screws. See Figure 2.

SECTION V

INSTALLATION OF HEATER SWITCH, WIRING AND FUEL LINES

1. Furnished in heater kit is a heater switch assembled to a mounting bracket to be installed on the underside of the instrument panel in the driver's compartment. Refer to Figure 2 for location of the switch mounting bracket.

2. Using the bracket as a template drill the two 3/32 inch holes and secure with the two sheet metal screws. See Figure 2.

3. A 3/4 inch hole must be cut in luggage compartment floor to pass the switch control cable and wiring through. Locate and drill the 3/4 inch hole six (6) inches directly behind the heater switch, being careful not to drill into any wires or tubes lying on luggage compartment floor. See Figures 2 and 3.

4. Push the control cable through the 3/4 inch hole and extend cable into luggage compartment. Route the control cable under and around the combustion air blower with no kinks or sharp bends in the cable and up to the thermostat that is attached to the ventilating air blower.

With the heater switch knob pushed all the way in, move the thermostat linkage clockwise as far as it will go and insert the cable wire through the linkage swivel on the thermostat. Place the end of the cable housing in the groove on the thermostat plate and secure with cable clip. Secure the control wire to the swivel with the setscrew.

5. After securing control wire and cable housing to the thermostat, check out the thermostat linkage travel. It should have full clockwise and counter-clockwise travel by

6. Insert the wiring harness lead wire (red) coming off heater assembly at ventilating air motor through the 3/4 inch hole along with the switch control cable and connect the wire to one of the terminals on heater switch.

7. Insert one end of the wire with fuse through the 3/4 inch hole and connect wire to the other terminal on heater switch.

Disconnect one of the wires on number two terminal from left side of vehicle terminal board and fuse block. Install the electrical tee connection provided in heater kit to terminal on the tee. Connect the other end of fused wire to the other terminal on tee.

8. Insert the 3/4 inch split grommet in hole and around the control cable and wiring.

Installation of Fuel Inlet and Bypass Adapter Assembly

NOTE: Fuel adapter connection on 1968 Models only.

Cut the filler hose approximately 2-1/2 inches from connection at fuel tank. Cut a 1/2 inch piece from the longer hose to provide space for the fuel pick up adapter.

Insert the long fuel pick up tube into short hose and fuel tank.

Insert the fuel pick up adapter into the two hoses and rotate so the fuel lines will be flat on luggage compartment floor.

Secure the fuel pick up adapter with the two clamps.

Installation of Ventilating Air Duct

NOTE: On 1969 Models and up.

1. With a sharp knife cut in half the rubber hose that is connected to the fuel tank, loosen the clamp at top of metal elbow and push elbow up into the hose that is connected to the fuel filler neck. Insert the long fuel pick up tube through the short hose and into the fuel tank. Insert the large metal tube into the hose on tank and slide the metal elbow and hose down on the large metal pick up tube. Rotate the assembly so the fuel lines are lying on luggage compartment floor.

Install the two clamps on hose and retighten the one that was loosened.

1. Slip one end of the 3-1/2 inch duct over the louver plate collar and secure with band type clamp.

2. Insert the other end of duct through hole in insulation pad and cover and re-install pad and cover. Attach duct to ventilating air adapter on blower and secure with clamp.

3. Remove and discard inspection plate (behind spare tire on "right side"). This will insure a source of fresh ventilating air into the luggage compartment.

4. Re-install spare tire and reconnect battery.

SECTION VI

HEATER CHECK OUT

In checking out the heater for proper operation, go through the following steps:

1. Turn vehicle ignition switch to "on" and open the heater shutter.

2. Rotate heater switch knob to right or clockwise. You will hear the heater start to burn and warm air should be felt almost immediately at the louver plate outlet in driver's compartment. The heater will cycle off when the temperature of the air at the thermostat equals the thermostat setting. As the air cools, the heater will cycle on again in response to the thermostat.

3. Pull the heater control knob out to its extreme position. This should raise the temperature in the compartment.

4. Check around all fuel fittings, fuel pump, and connection made at fuel tank filler hose for any evidence of fuel leakage.

5. If everything is functioning satisfactorily, push heater switch control knob all the way in and wait about 30 seconds, then shut heater off by rotating the heater control knob to the left or counter-clockwise.

6. Shut ignition switch off.

NOTE: A slight "smoking" may be noticed when the heater is run for the first few times. This is due to an oil film on the flexible exhaust tube burning off and is not a defect.

PART II – OWNERS MANUAL

SECTION I GENERAL DESCRIPTION

A fuel pump delivers fuel (gasoline only) to a burner assembly in which it is mixed with air supplied by a combustion air blower. This mixture is ignited by a spark plug which obtains its high voltage through a system employing a coil and set of points in much the same manner as that in a car's ignition system. The ignited mixture creates hot gases which circulate through the passages of a heat exchanger and heat the exchanger walls before passing out the heater exhaust. The heat from the exchanger is then absorbed by fresh air which is forced across the exchanger by a separate ventilating air blower. This hot fresh air is then ducted into the car.

A thermostat is provided to interrupt fuel and ignition, thereby stopping combustion within the heater at a given temperature determined by the thermostat setting which is controlled by the user in response to his heating requirements.

A safety device known as an overheat switch is provided for the purpose of interrupting heater operation in the event the heater exchanger temperature becomes higher than a predetermined safe maximum.

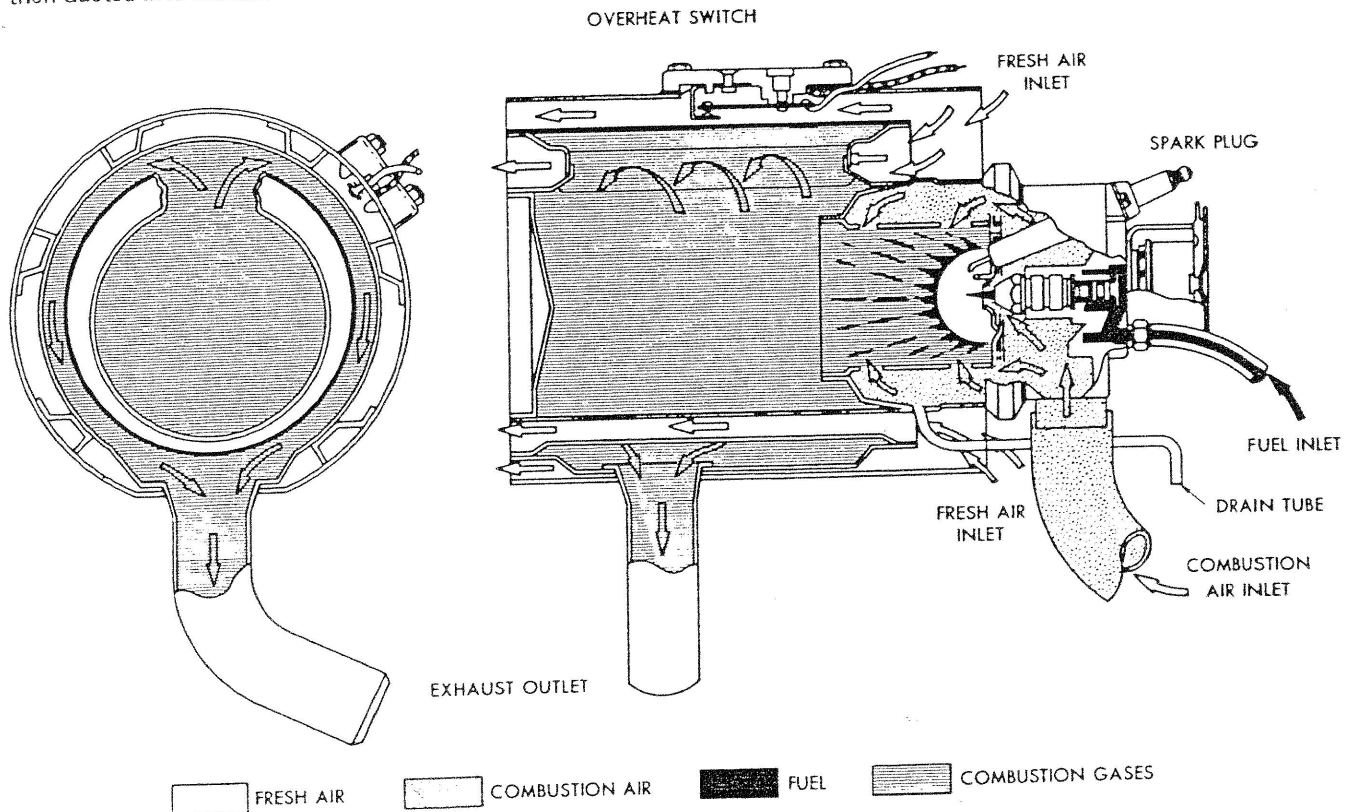


Figure 5 - Flow Diagram

SECTION II HEATER COMPONENTS

1. Heat Exchanger and Burner Assembly

The heat exchanger is of all-welded stainless steel construction and is designed for maximum heat transfer.

The burner assembly which is secured to the exchanger by a clamp, consists of a casting into which is assembled a solenoid-operated on-off fuel valve, fuel nozzle, solenoid coil, mixer assembly, spark plug, and other components necessary for efficient burner operation.

The spring-loaded fuel valve is controlled by the solenoid coil which, in turn, is controlled by the heater switch, thermostat, and overheat switch depending upon the circumstances. (See wiring diagram). When the heater switch is on and the thermostat is calling for heat, the fuel solenoid coil is energized through the thermostat and overheat switch, and the resultant magnetic field lifts the spring-loaded valve from the valve seat. This allows fuel to flow to the nozzle which introduces fuel into the mixer assembly in a fixed conical spray.

Air to mix with the fuel is delivered by the combustion air blower which will be discussed later. In order to enter the mixer, the combustion air must pass through the louver plate of the mixer and then through the small holes in the side of the mixer. The louvers and holes are of a predetermined size to admit the correct quantity of air and should not be altered without specific instructions.

The fuel-air mixture is ignited by a spark plug having a gap of .085. The plug has only one electrode and the ground electrode is welded to the mixer assembly.

2. Combustion Air Blower Assembly

The combustion air blower provides the correct amount of air to mix with the fuel to maintain a balanced fuel-air ratio. A 1-1/4 inch diameter duct is used to deliver combustion air to the burner assembly.

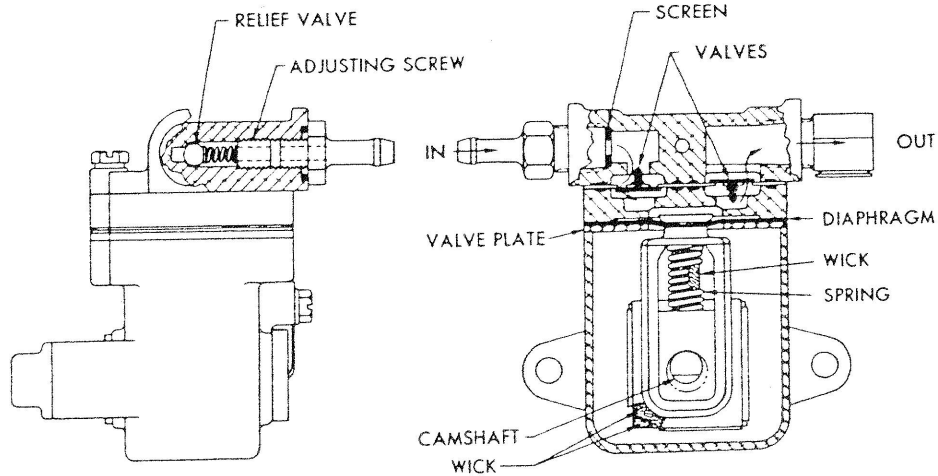


Figure 6 - Fuel Pump - Cross Section

3. Ventilating Air Blower Assembly

The ventilating air blower is required for the purpose of supplying air across the heat exchanger to remove heat resulting from combustion within the exchanger. This heated air is then delivered to the space to be heated.

4. Heater Fuel Pump

Each heater is equipped with a fuel pump which is driven by the combustion air motor. This is accomplished by a coupling network consisting of a metal connector on the extended shafts of the motor and pump with a rubber coupling between the connectors. The fuel pump, which is designed to deliver fuel at a pressure of 10 to 13 PSI, is a spring-loaded diaphragm type with fixed internal pressure regulation. The fuel pump has a built-in bypass that passes excessive fuel back to the vehicle fuel tank. The main spring of the fuel pump acts as a positive arm that has a pressure potential of 20-25 psig. A spring-loaded ball located in the bypass is adjusted so that the fuel pump outlet pressure has a setting of 10 to 13 psig. All excess fuel (fuel not needed for combustion) and all vapors created by the systems or put into the fuel system are also passed through the bypass. This assures that the burner receives

raw fuel for efficient combustion. Adjustment in the field is not recommended.

5. Ignition Coil, Breaker Points and Cam

These components, in combination with the spark plug described in Para. 1, result in an ignition system very similar to that used in an automobile. The coil resembles a standard automotive coil and supplies the high voltage required for the spark plug. The breaker points assembly consists of a set of points and a condenser installed on a base assembly. The assembly is installed on the fuel pump housing. A two-lobed cam which is threaded (left-hand threads) on the extended shaft of the fuel pump rotates with the shaft and actuates the points thereby producing the necessary interruption of current flow in the primary winding of the ignition coil. The breaker points gap is .018.

6. Thermostat

The thermostat contains a bimetal coil which is affected by temperature changes and which controls a microswitch through a cam and adjustable linkage. The thermostat, acting in response to the temperature of the air passing across the bimetal coil cycles the fuel and ignition circuits "on" and "off" as required. The cycling temperature (70°F to 190°F) is dependent upon the positioning of the thermostat control linkage which is controlled by a Bowden cable manipulated by the user. The thermostat does not cycle the two blowers; they operate as long as the heater switch is on (See wiring diagram).

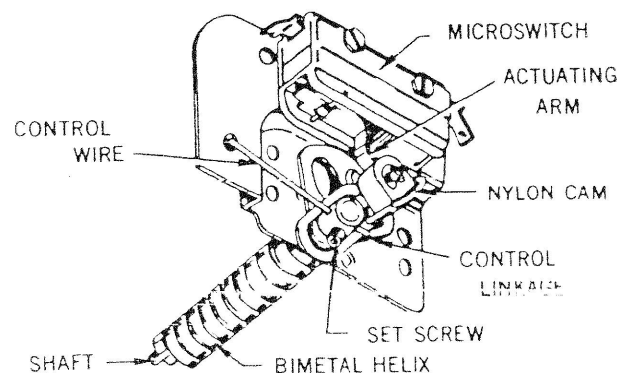


Figure 7 - Heater Thermostat

7. Overheat Switch

The overheat switch is connected electrically in series with the fuel solenoid coil (see wiring diagram) and will cycle the fuel if the air temperature at the location of the overheat switch is higher than a predetermined safe maxi-

mum. The switch contains a bimetal blade which will have enough deflection at a given temperature to open a set of contacts thereby breaking the circuit to the fuel solenoid coil. As the air cools due to loss of combustion, the switch will automatically reset and the heater will cycle on the overheat switch until the cause of malfunction is corrected.

SECTION III SERVICE AND REPAIR

This section consists of a Trouble Shooting Chart and other information to assist the service man in locating the cause of malfunction in a defective heating system. Basically, three things are required for correct heater operation. These are: FUEL, AIR and IGNITION. The most obvious causes of malfunction should be investigated before disas-

sembling major assemblies. Before conceding that the heater is defective, make certain the customer understands how to operate the heater. Then operate the heater to determine if the complaint is justified before proceeding with inspection.

TROUBLE-SHOOTING CHART								
POSSIBLE CAUSE	COMPLAINT Heater Inoperative; Combustion Air Blower Inoperative	Heater Inoperative; Combustion Air Blower Operates	Heater Operates; No Warm Air Delivered	Popping or Backfiring When Heater Cycles	Excessive Exhaust Smoke	Gasoline and/or Exhaust Odors in Car	Intermittent Opera- tion; Heat too Low	
Burned out fuse	X							
Loose or defective wiring	X	X		X	X	X	X	
Incorrect wiring	X	X	X	X	X	X	X	
Low voltage		X		X			X	
Kinked or restricted fuel lines		X		X	X		X	
Defective fuel pump		X		X			X	
Broken pump coupling		X		X			X	
Defective pump check valves		X		X			X	
Air lock in fuel line		X					X	
Open fuel solenoid coil		X						
Fuel valve sticking on seat		X					X	
Clogged nozzle		X					X	
Defective overheat switch		X					X	
Defective thermostat		X					X	
Leaking fuel valve				X	X			
Incorrect spray from nozzle		X		X				
High fuel pressure			X				X	
Ventilating air motor defective						X	X	
Leaking fuel lines						X		
Leak at coil cup				X				
Leak between nozzle and casting						X		
Leaking heat exchanger					X	X		
Loose burner clamp				X	X	X		
Slow combustion air motor				X	X	X		
Combustion air motor not grounded	X			X	X	X		
Damaged or disconnected combustion air duct		X		X	X	X		
Restricted exhaust		X		X				
Pitted breaker points		X		X				
Poor condenser solder joint		X		X				
Worn points cam		X		X				
Incorrect points gap		X		X				
Damaged spark plug		X		X				
Incorrect spark gap		X		X				
Defective ignition coil		X		X				
Damaged or restricted air duct			X				X	
Incorrect control cable installation							X	
Incorrect installation		X	X			X	X	
Defective control switch	X			X				
Incorrect customer operation						X	X	
Leak at vehicle tank or engine						X		

1. Heat Exchanger and Burner Assembly

The heat exchanger should last for several years. However, if a complaint of exhaust fumes arises and inspection of the exchanger reveals leakage, it should be replaced. Leaks will be indicated by a deposit of red, yellow, and orange deposits surrounding the leak or a hole caused by a "burn-through."

The burner assembly is not a service part and should be repaired by replacing the defective parts only. If the burner assembly is removed for service, a thorough inspection prior to disassembly can sometimes reveal the cause of malfunction. The nozzle and inside of the mixer will normally be coated with a medium layer of black carbon, and the nozzle should have a small gray opening at the orifice. The outer end of the mixer will usually be burned to a gray or reddish color and some scaling or loose particles may be present. These should not be considered as defects. Indications of improper operation are uneven build-up of black, sooty carbon or an excessively burned or eroded spot on the mixer. All air holes in the mixer must be open to allow entry of combustion air to mix with the fuel. Also check for evidence of fuel leakage around the fuel inlet fitting and between the solenoid coil cup and burner casting. In a complaint of popping or backfiring, check the fuel valve for leakage by applying fuel (under pressure) to the burner with the solenoid coil de-energized. If the valve does not seat properly on the valve seat because of dirt or other foreign matter or a missing valve spring, fuel will enter the burner at all times regardless of thermostat setting. This condition is usually indicated by excessive black smoke from the exhaust when the heater is first turned on with gradual clearing of the smoke as the heater continues to operate. However, when the heater cycles off and then on again, a pop or backfire can and usually does occur. In this instance, Part No. 736009, Burner Service Kit, which contains gaskets, valve, valve seat, and other parts assembled in the burner casting, should be used after disassembly of the burner.

A leak between the nozzle and burner casting can also result in improper combustion and occasional popping. First determine if a leak is present at this point by holding your thumb over the nozzle orifice with the solenoid coil energized and fuel applied to the burner under pressure. If a leak is present, check to see if the nozzle is tight. If it is tight, remove it and check the nozzle seating surface of the burner casting for scoring or unevenness. If the surface is damaged, the burner casting should be replaced.

The fuel solenoid coil seldom fails. The coil can be checked by holding a screwdriver blade near the coil cover screw while energizing and de-energizing the coil. A good coil will attract the blade when the coil is energized. A magnetized screwdriver should not be used for this test. Another quick method of checking is by listening for a click as the coil is energized. The click is the valve being attracted to the bottom of the coil cup.

Many fuel nozzles are replaced in a routine manner when the real difficulty lies elsewhere. The nozzle should emit an even conical-shaped spray and should not be directed to one side. The nozzle may be checked by supplying fuel under pressure to the burner with the solenoid coil

duct disconnected. It may be necessary to supply a separate length of fuel line in order to prevent fuel from being sprayed on the car or the test can be conducted at a bench. A slight dribbling of fuel may be noted when the solenoid coil is de-energized. This is permissible; however, continuous flow indicates a leaking valve which should be corrected. Never attempt to remove the screen in the nozzle nor clean the nozzle orifice with a sharp instrument. The best method of cleaning the face of the nozzle is by rubbing your thumb over the face while fuel is being emitted under pressure.

The spark plug is another item which is replaced quite often without cause. The plug housing protruding into the mixer will normally be coated with a medium layer of carbon. As previously explained, the ground electrode is welded to the mixer. Therefore, adjustment of the .085 gap is made by moving only the ground with the spark plug electrode located in the center of the plug housing. It is very important that the ground electrode be positioned correctly with respect to the nozzle orifice and Service Tool No. ST-890330 should be used. The ground electrode should lie flat against the shoulder of the gauge (Fig. 8). Incorrect gap or location of the ground electrode can be the cause of delayed ignition, non-ignition, or can result in formation of carbon across the gap. Therefore, proper adjustment is extremely important. Replacement of the plug should be required only when it is broken or the electrode is burned excessively. Before reinstalling the burner assembly, check for an arc at the gap. During the test, the fuel solenoid leads should be disconnected. The burner assembly grounded, the heater switch on, and the thermostat on high. Spark Plug Kit, Part No. 736008, contains the plug and gasket and is used for service.

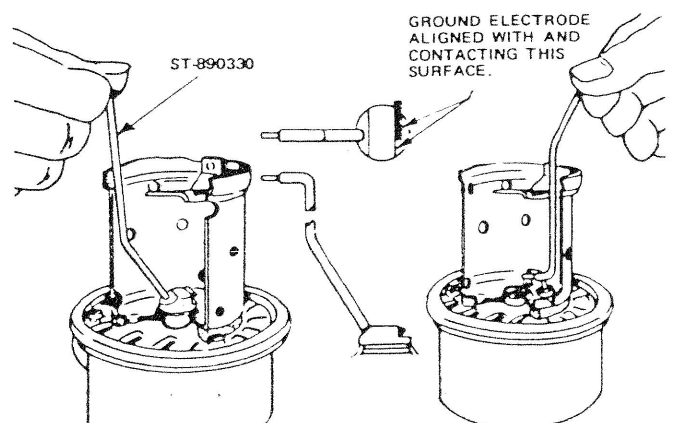


Figure 8 - Check Plug Alignment and Gap

2. Combustion Air Blower Assembly

Combustion air is taken from outside the vehicle. Therefore, in an instance of excessive exhaust smoke with insufficient combustion air suspected, inspect all combustion air ducts for restrictions caused by kinking, obstructions, or damage. Motor speed should be approximately 4000 RPM. Check to see that the motor is grounded and sufficient voltage is available at the motor. Minimum voltage at the motor should be approximately 11.0 volts. If voltage is lower than this and heater is unsatisfactory, check all wiring connections, vehicle battery, vehicle charging circuit.

3. Ventilating Air Blower Assembly

A complaint of insufficient or no heat with the heater operating can be due to a defective ventilating air motor, wiring, or restricted or loose duct.

4. Fuel Pump

Fuel pump pressure should be 10 to 13 PSI with the heater operating. A slight rise in pressure will be noted when the heater cycles off. Since the fuel pump is driven by the combustion air motor, make sure the motor is operating during a pressure check. If the coupling or one of the metal connectors which serve as the coupling network between the shafts of the pump and motor is broken, Part No. 735405, Pump Coupling, should be used for service. The package contains two connectors, a coupling and two flat washers. It is very important that the washers be installed behind the connectors to prevent the connectors from overriding the threads on the shafts. If there is no pressure or pressure is intermittent, it is very possible that the pump check valves are defective. The valves are installed in a brass plate beneath the pump top casting and are serviced by Part No. 735736, Fuel Pump Valve Kit, containing the valves installed in the plate and four gaskets. If the pump is defective for other reasons, it should be replaced. When installing new check valves, refer to Fig. 6 so that the valves will be installed correctly with respect to fuel flow as indicated on the pump casting marked "IN" and "OUT." The flap of the check valve should be down on the inlet side and up on the outlet side.

Whenever the top casting of the pump is removed for pump service, always make certain that the pump shaft is on the down portion of the stroke before reinstalling the top casting. This is an added precaution against high fuel pump pressure. A fuel pump with excessive pressure or binding shaft can sometimes be corrected by removing the top casting of the pump to expose the diaphragm, pressing down vigorously with the thumb (with the pump shaft on down portion of the stroke), and reassembling without rotating pump shaft.

The pump shaft must rotate freely as a binding pump will overload the combustion air motor and cause excessive exhaust smoke due to lack of combustion air. A pump that binds, particularly in only one part of the rotation, usually indicates an improperly seated diaphragm.

5. Ignition Coil, Breaker Points, and Cam

The ignition coil resembles a standard automotive coil; however, if replacement is required, only the recommended service part should be used.

The breaker points are serviced by replacing the entire base assembly which includes the points and condenser. The adjustment of .018 is obtained by an adjusting screw which has the stationary contact on the end. When the proper gap is reached, solder the adjusting screw in place making certain that it is secure and that the condenser lead is also soldered. Do not use acid core solder since the acid will cause corrosion. Use rosin core solder only. If the adjusting screw is not soldered or a cold solder joint exists at the condenser and screw, backfiring will usually occur because of intermittent spark.

The two lobed cam has left hand threads and should be replaced if wear is noted. When adjusting points, rotate the cam so that a lobe of the cam raises the movable contact arm and adjust for .018 gap. Then rotate the cam to the other lobe and check for a gap of .012 to .021. With .018 on one lobe, .012 to .021 is permissible on the other lobe.

The coil, points, and cam can be functionally checked as follows. Remove the spark plug cable from the heater spark plug and insert a standard automotive plug gapped to approximately .085. Disconnect the fuel solenoid lead to prevent fuel from entering the burner, ground the automotive plug, turn the heater switch on, and place the thermostat on high heat. If all ignition parts are good, a steady spark will be noted. No spark indicates trouble in the coil, points, cam, wiring, or thermostat.

6. Thermostat

The thermostat will very seldom require service, and it is serviced by replacing the entire thermostat rather than just the defective part because of possible inaccuracy of field adjustment.

Most complaints traced to the thermostat are the result of improper control cable installation at the thermostat linkage. With the heater control knob pushed all the way in, the thermostat linkage should travel to its full counter-clockwise position. With the heater control out as far as it will go, the linkage should have full clockwise travel. This results in use of the full 70-190 degree temperature range. A set screw secures the control cable to the linkage.

To determine if the thermostat is defective proceed as follows. With heater switch on and heater control pulled out to its extreme position, connect a test light between the cold terminal of thermostat and ground. If the test light glows, the thermostat switch is closed which indicates that the thermostat is completing the circuit as it should. If the light does not glow and wiring connections are good, the thermostat should be replaced. If a shorted thermostat is suspected, depress the metal actuating arm of the thermostat with the test light as above and heater switch on. If the light continues to glow, the thermostat is shorted and should be replaced.

7. Overheat Switch

The overheat switch should have continuity through it during normal heater operation. If a defective overheat switch is suspected, it can be checked out with an ohmmeter, buzzer, or test light after referring to the wiring diagram. A defective overheat switch should be replaced and no field adjustment is recommended.

Three service tools are available at nominal cost to aid in servicing South Wind Heaters.

Part No. ST-890330, Spark Plug Gage (Fig. 8) is necessary for heater service and is used not only for obtaining the correct gap of .025 but also for locating the ground electrode in the proper relationship to the fuel nozzle orifice.

Part No. ST-890322, Fuel Pressure Gage (0-30PSI), and Part No. ST-890325, Test Light, are also available.

8. Wiring Diagram

The following wiring diagram in this manual is reproduced in a manner to simplify tracing of wires and connections.

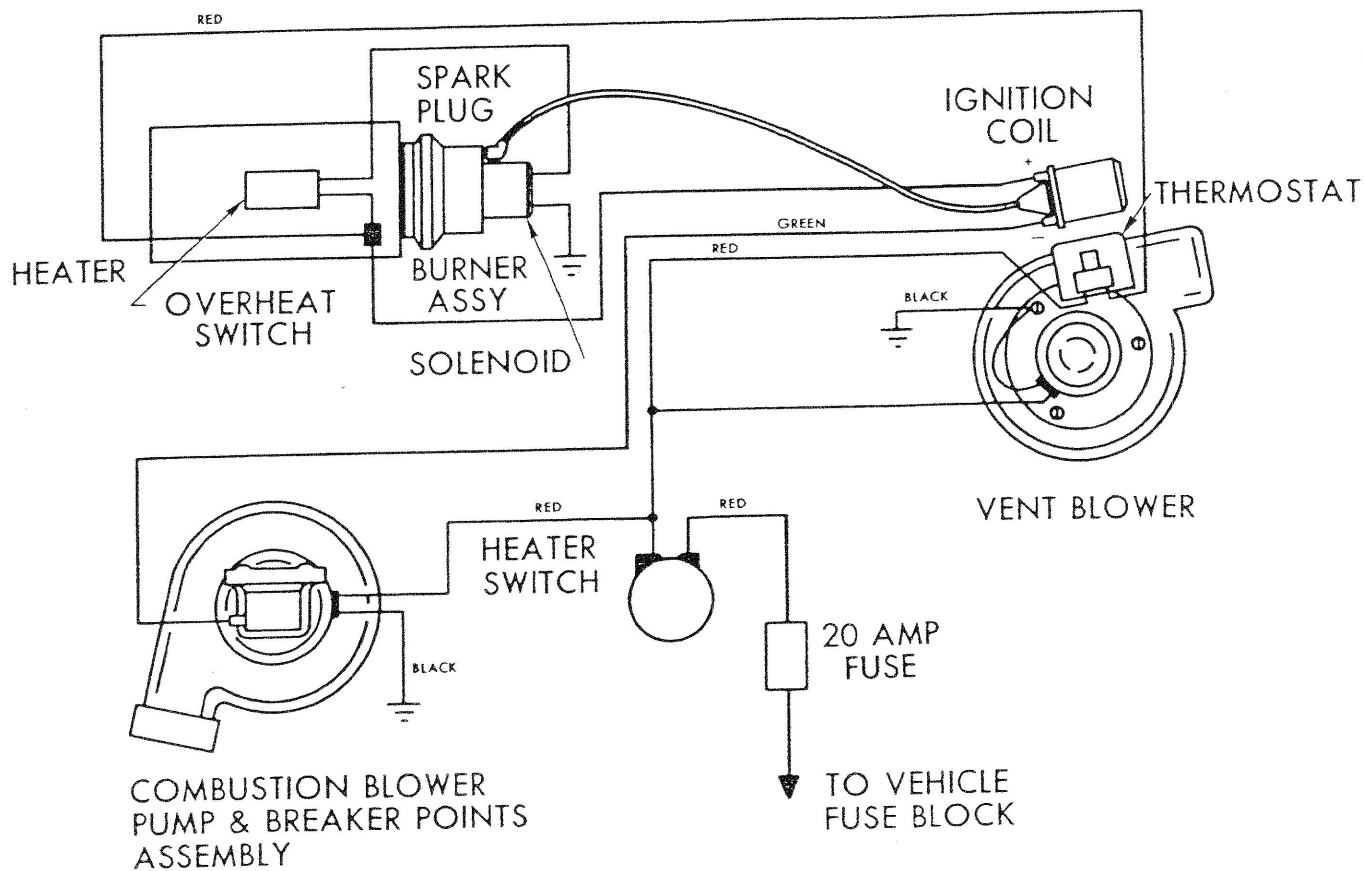


Figure 9 – Wiring Diagram

SECTION IV

PARTS LIST

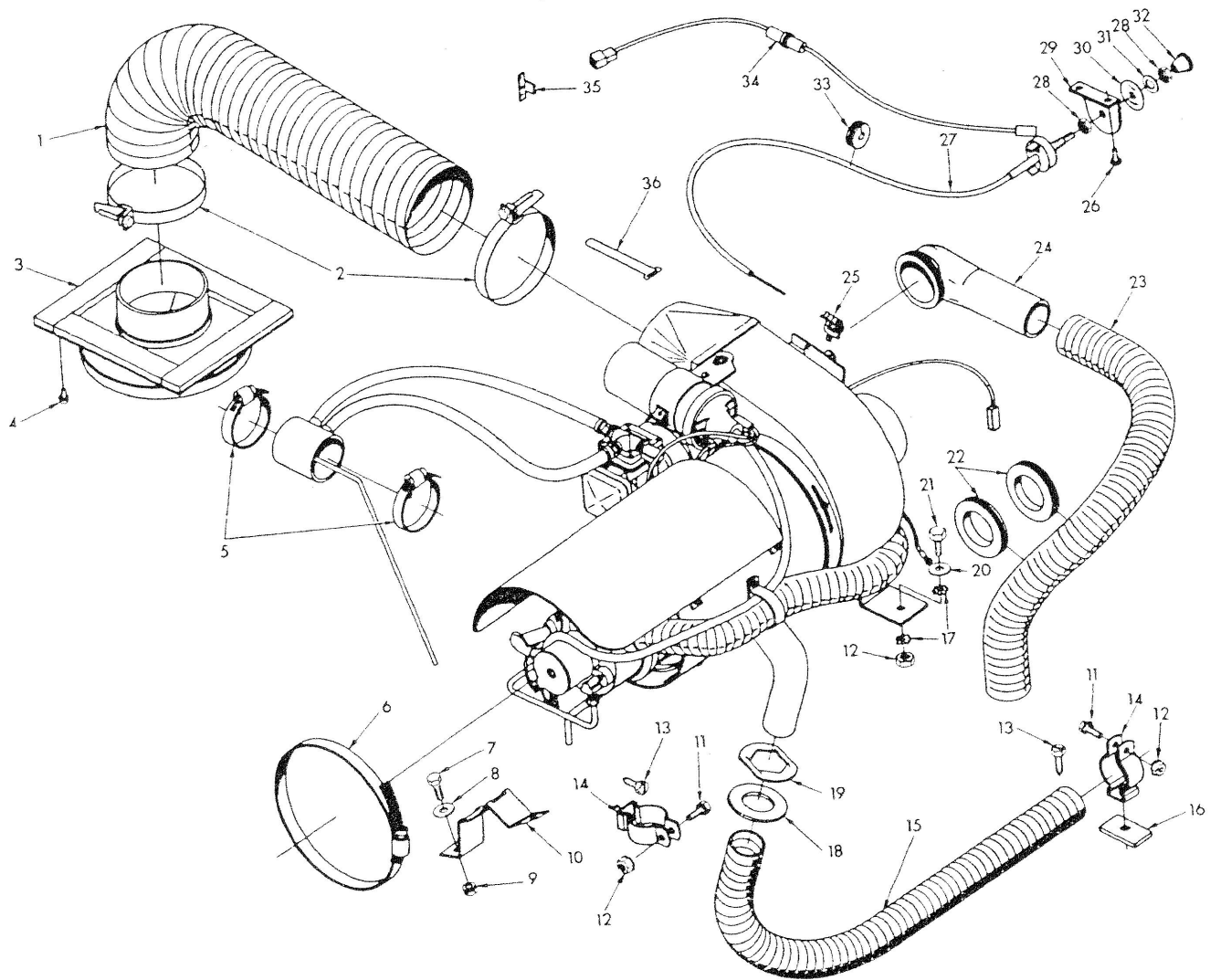


Figure 10 - Heater Kit

Reference Number	Part Number	Description	Reference Number	Part Number	Description
1	736399-3	Duct - Flexible, 3-1/2 I.D.	19	735872	Clip - Pushon Exhaust
2	735548	Clamp	20	701372	Washer
3	738086	Air Damper Assembly	21	487280	Bolt 1/4-20 x 1/2
4	736071-3	Screw No. 10 x 5/8	22	736971	Grommet
5	736740-8	Clamp	23	736859-6	Hose - Comb. Air Intake
6	736740-13	Clamp	24	736995	Adapter - Comb. Air Inlet
7	77855	Bolt - 5/16-18 x 1/2	25	735091	Clamp - Control Cable
8	14536	Washer	26	736070-2	Screw No. 8-3/8
9	42076	Nut - 5/16-18	27	736409-12	Switch and Control Cable
10	738107	Bracket - Heater, Rear	28	736225	Nut - 7/16 28 Hex
11	736340	Bolt - 1/4-20 x 1-1/2	29	735901	Bracket
12	171081	Nut 1/4-20	30	736973	Plate - Instruction
13	18803	Screw No. 14 x 5/8	31	736972	Washer - Flat
14	738113	Clamp	32	736799	Knob
15	735905-9	Tube - Exhaust	33	488589	Grommet
16	738114	Spacer	34	737705	Fuse and Cable Assembly
17	901129003	Lockwasher	35	735600	Tee - Electrical
18	735876	Gasket - Exhaust	36	735590	Strap

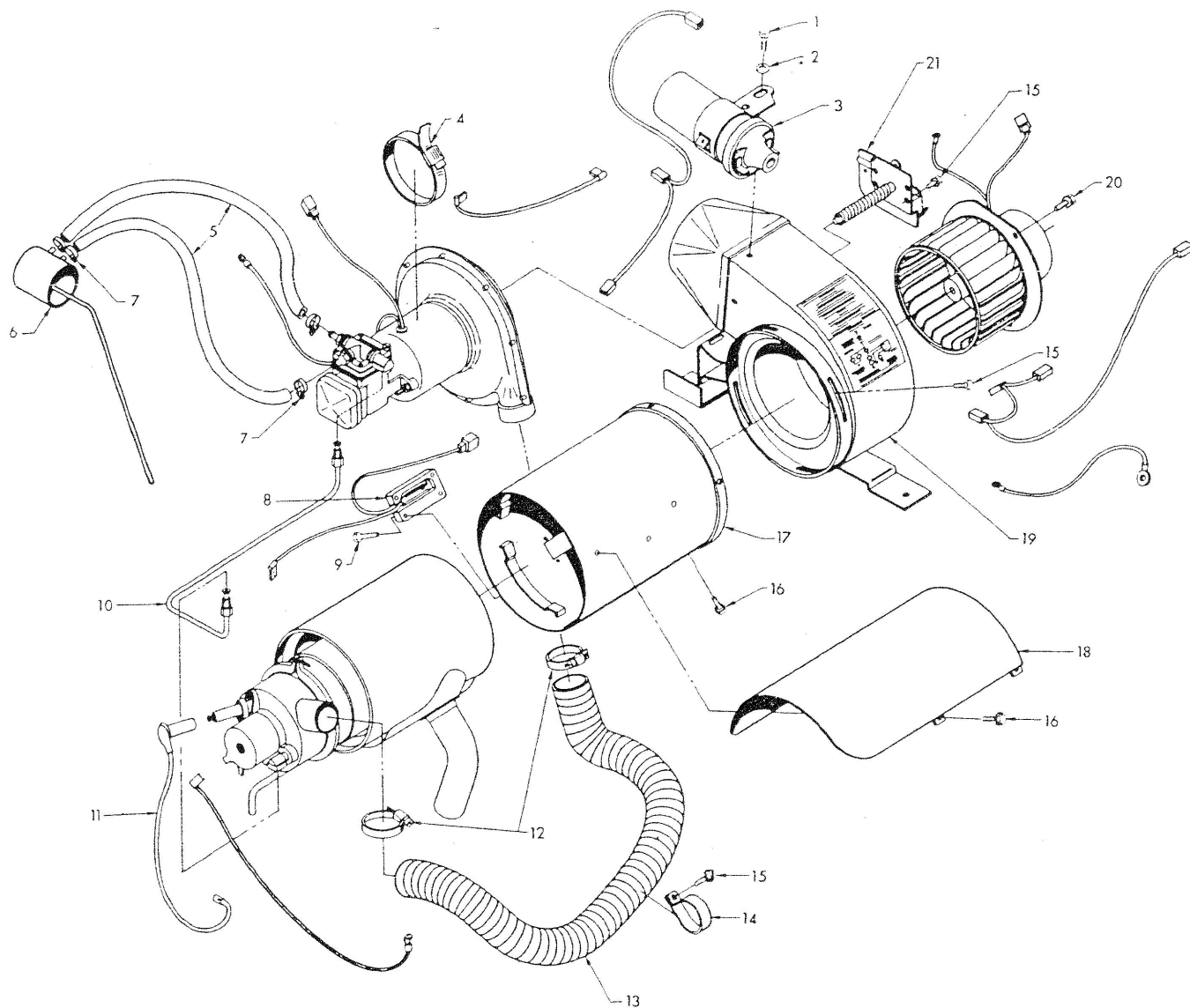


Figure 11 – Heater Assembly

Heater Assembly Parts List

Reference Number	Part Number	Description	Reference Number	Part Number	Description
1	18803	Screw No. 14 x 5/8	12	735550	Clamp
2	14534	Washer	13	735558-1	Hose – Comb. Air
3	735758	Coil – Ignition 12V	14	735552	Clamp
4	736120	Clamp – Comb. Motor	15	736070-2	Screw No. 8 x 3/8
5	738084-1	Fuel Line (28 inches)	16	736070-1	Screw No. 8 x 1/4
6	738093	Adapter – Fuel Inlet and Bypass	17	738112	Housing – Heater
7	735591-1	Clamp – Fuel Line	18	738100	Shroud – Heater
8	736796-1	Switch – Overheat	19	738090	Housing – Vent Air Blower
9	735509	Screw No. 6 x 3/4	20	736071-1	Screw No. 10 x 3/8
10	738110	Fuel Line Assembly	21	735841	Thermostat
11	735931-8	Cable – Spark Plug			

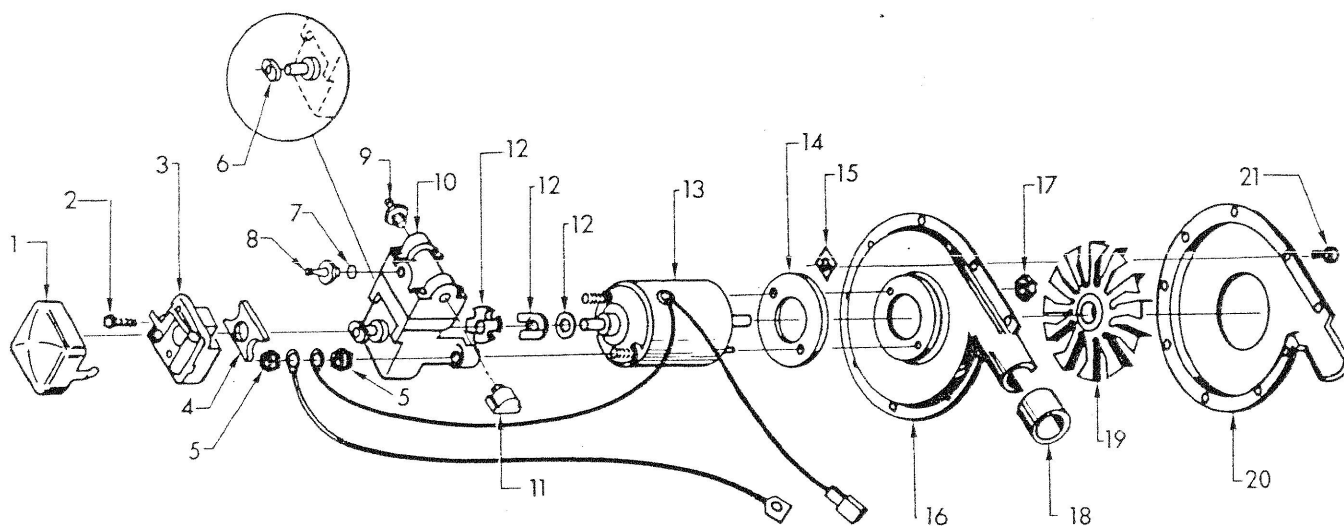


Figure 12 - Combustion Air Blower

Reference Number	Part Number	Description	Reference Number	Part Number	Description
1	735450	Cover	12	735405	Kit - Pump Coupling
2	735921	Screw - No. 8-32 x 3/8	13	736267-2	Motor - 12V
3	735923	Points - Breaker	14	735913	Spacer
4	736005	Gasket	15	488155	Nut No. 6
5	736698-6	Nut No. 10-32	16	736996	Blower Housing (Half)
6	735451	Cam	17	736698-6	Nut No. 10-32
7	737711	"O" Ring	18	735914	Collar
8	737847	Fitting - Bypass	19	475130	Wheel
9	700832	Fitting	20	735912-5	Blower Housing (Half)
10	737829	Pump - Fuel	21	85040	Screw No. 6 x 1/4
11	735592	Fitting			

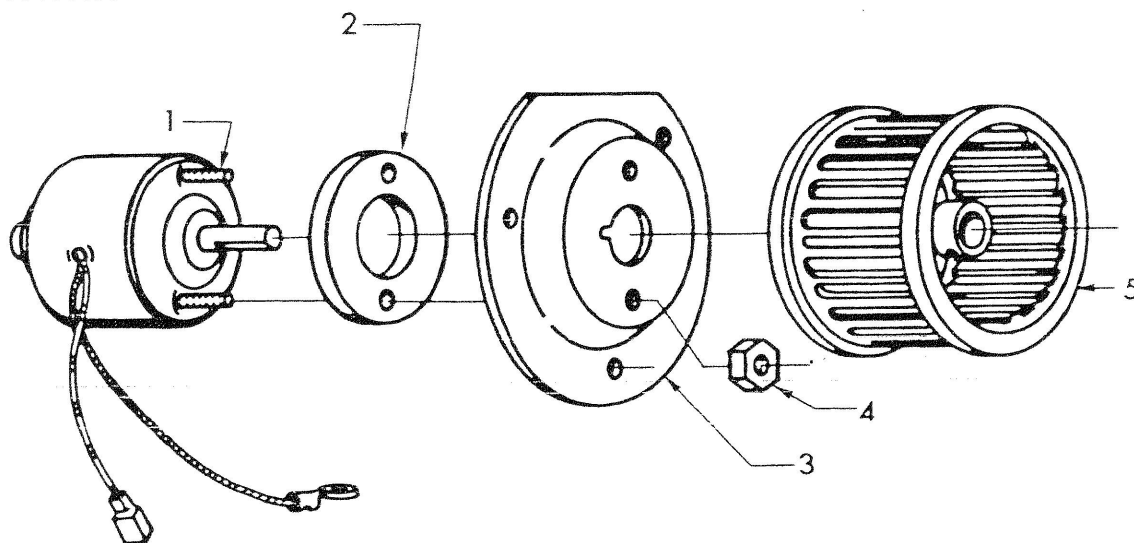


Figure 13 - Ventilating Air Blower

Vent Air Blower Parts List

Reference Number	Part Number	Description
1	737588	Motor
2	735913	Spacer
3	736915	Plate - Mtg.
4	736698-6	Nut - No. 10-32
5	737588	Wheel

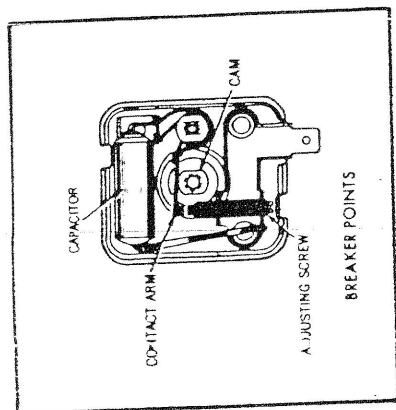


Figure 15 - Breaker Points

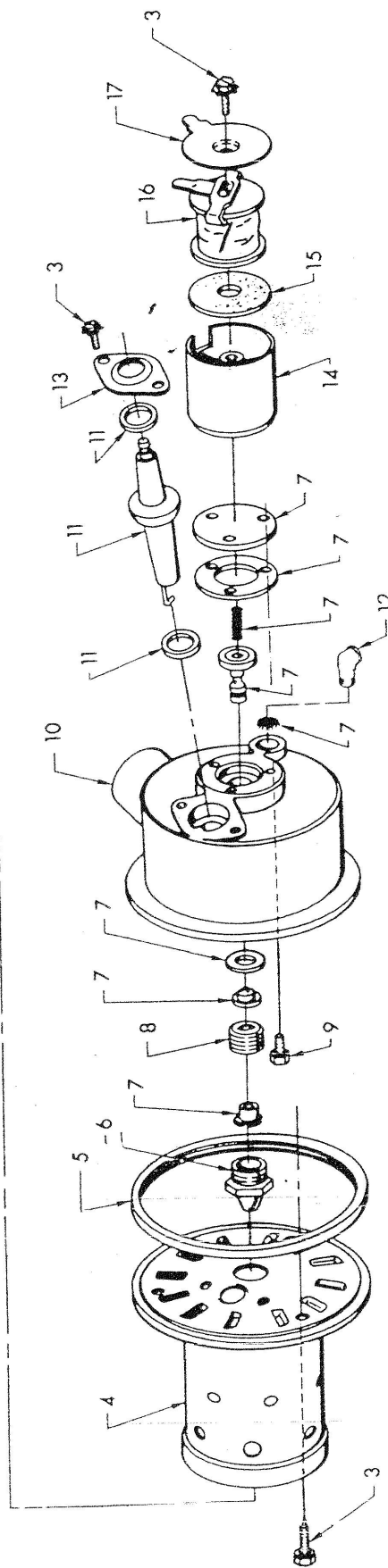
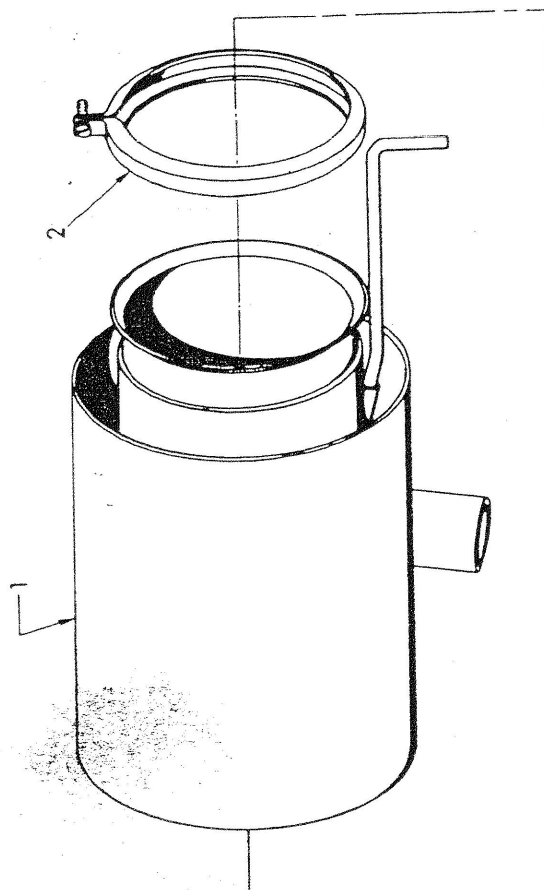


Figure 14 - Heat Exchanger and Burner Assembly

Reference Number	Part Number	Description	Reference Number	Part Number	Description
1	736484-2	Exchanger - Heat	10	735769-5	Base - Burner
2	735045	Clamp - Burner	11	736008	Kit - Spark Plug
3	735221	Screw No. 8-32 x 3/8	12	700832	Fitting - Fuel
4	736292	Mixer	13	735125	Cap - Spark Plug Retainer
5	735061	Gasket (also in Ref. No. 7)	14	735494	Cup - Coil
6	735060	Nozzle	15	476229	Washer
7	736009	Kit - Burner Overhaul	16	735481	Coil - Solenoid
8	735127	Retainer - Valve Seat	17	735496	Cover
9	736865-4	Screw No. 6-32 x 5/8			

ALIGN EDGE OF TEMPLATE
WITH BOTTOM EDGE OF
COWL DRAIN EMBOSS

TRIM TEMPLATE TO
DOTTED LINES

LEFT SIDE OF VEHICLE

ALIGN ARROW V
OF HEAD OF LEFT
TANK HOLD DOWN

DRILL $\frac{3}{8}$ DIAMETER HOLE

DRILL $\frac{3}{8}$ DIAMETER
HOLE

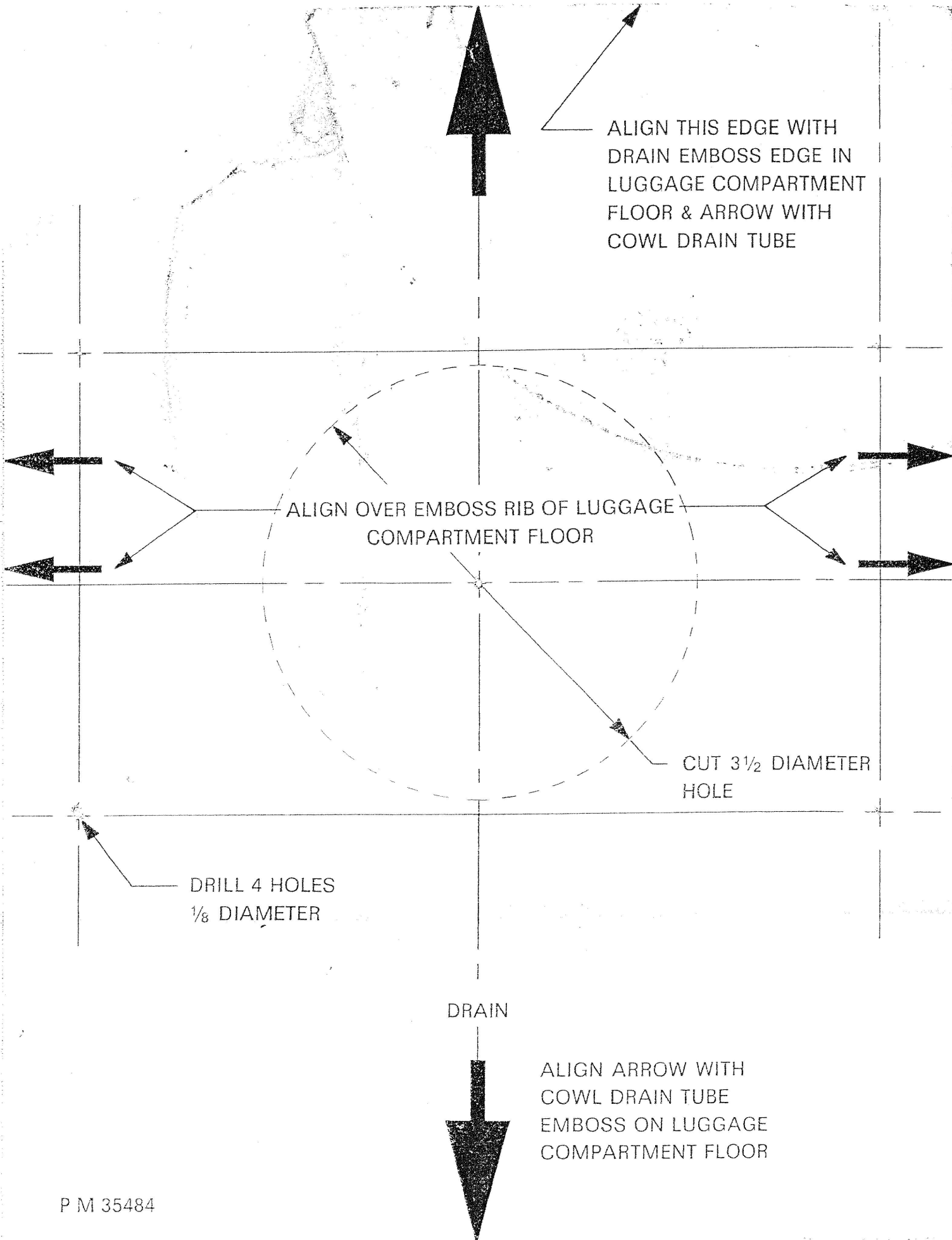
ALIGN ARROW WITH CENTER
OF HEAD OF LEFT REAR FUEL
TANK HOLD DOWN BOLT

P M 35483

TEMPLATE 35483 (3 PCS, 1 PAGE)

- CUT OUT 3 PIECES

- TAPE (A) TO (A), (B) TO (B)



CUT 1/4 DIAMETER
HOLE IN TEMPLA
LOCATION OVER



TEMPLATE

35485

(2 PLS ON 2 PAGES)

MATCH



TO



TO



35485/ PAGE 1

CUT 1/4 DIAMETER
HOLE IN TEMPLATE AND
ALIGN WITH HOLE A IN
TEMPLATE P M 35483

CUT 2" DIAMETER
HOLE

CUT 1/4 DIAMETER
HOLE IN TEMPLATE FOR
LOCATION OVER FENDER BOLT

(C)

DRILL 5/16
DIA. HOLE



FRONT OF VEHICLE

CUT 1 1/2 DIAMETER HOLE

(D)

DRILL 5/16 DIAMETER HOLE

DRILL 5/16 DIAMETER HOLE