

# HEATER FAN MOTOR

## CIRCUIT DESCRIPTION

The heater fan circuit consists of a variable speed, reversible, DC motor, a three position switch, and a voltage dropping resistor. The speed of the motor is controlled by the voltage applied, and the direction of rotation is controlled by the polarity of the applied voltage.

In the low speed position, the output voltage of the fan switch is applied to a voltage dropping resistor inside the fan housing. In the high speed position, the output voltage of the fan switch bypasses the dropping resistor and is applied directly to the fan motor. The three speeds - off-low-high - are depicted in **figure 1**, right. The heavy lines depict the flow of current for the high two operating speeds.

## TROUBLESHOOTING

**NOTE:** If you have a TR250 or a '69 - '72 TR6, make sure your cowl vent is open before assuming the fan motor circuit is bad. The only source of air for the fan is through this vent. No matter how well the fan works, if the vent is closed, precious little air will flow, only that which leaks around the vent seal. On the later models, the cowl vent is covered by plastic louvers and can't be closed.

Trouble shooting is very straight forward for this simple circuit. The fan receives power from the "green" fuse, so is *ANY* if the other loads fed from this fuse (gauges, WS wipers, back up lights, etc) are working, then you know you have power to the circuit. If not, refer to chapter 22, Power Distribution, to resolve the power issue. If so, follow the procedures below, specific to the heater fan.

### A) Fan doesn't work at all:

Step 1) With the ignition key on and the fan switch in the high speed position, check for power at the green and at the green/yellow wire on the back of the switch. If you are using a voltmeter, you should read very near full battery voltage on both leads, or, if you are using a test lamp, you should see equal and full brilliance on both leads. Place the switch in the low speed position and repeat the tests, checking for power on the green/brown wire.

### You don't have power:

If you have no power on the green lead, then there is a break in the green wire to the switch, or you have a bad connection at the switch.

If you have power at the green wire, but not at either the green/ brown or the green/yellow, your switch is bad or there is a bad connection at the green/brown or the green/yellow wire.

### You do have power:

If you have power on the green/brown and the green/yellow wires, but the fan still doesn't work, examine the heater housing to see if the ground wire exits the housing. Usually, it doesn't, which means the heater housing must be removed for further testing. If your particular unit has the ground wire available, try connecting it to a good ground (or ensure that the existing ground connection is a good one).

If you can't get to the ground lead, or the ground lead isn't the problem, the entire heater assembly will need to be removed for bench testing.

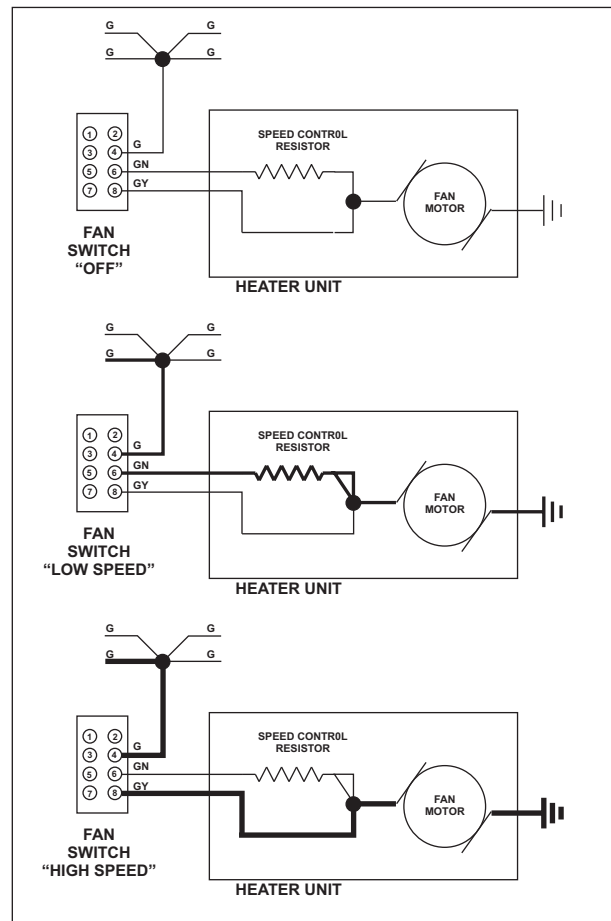


FIGURE 1

B) Fan works on one speed only:

If the fan works in only one speed, reverse the leads to the switch (swap the green/brown lead with the green/yellow lead), and try the fan again. If the fan still works in only the same switch position as before (at a different speed), then the switch is bad. If the fan works at the same speed, but only when the switch is in a different position than before, the problem is in the wiring inside the housing, and the unit will have to be removed for bench testing.

BENCH TESTING

With the motor and wiring laying on the bench, connect one end of a fused test lead to the positive post of the power supply or battery, and connect the other end to the junction of the motor wire, the green/yellow wire, and the resistor. Connect the minus post to the ground wire from the motor. If the motor is good, it will operate at full speed when connected this way. If the motor doesn't operate, it will need to be replaced.

If the motor proves to be operable, remove the test lead from the junction described above and connect it directly to first the green/yellow wire, and then to the green/brown

wire. If the motor operates under these conditions, then you original problem was a bad ground connection. if it doesn't, there is a problem with the wiring or the resistor, depending on which speed it operated at, if any.

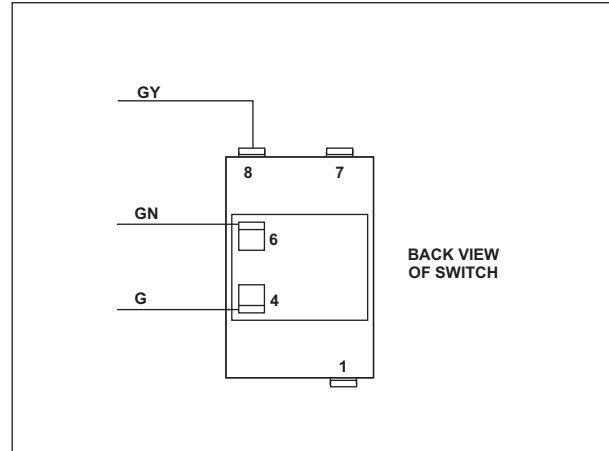
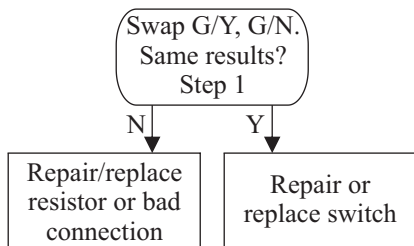


FIGURE 2

Figure 2, above, is a diagram of the rear view of the switch, and the associated wiring.

TROUBLESHOOTING FLOW DIAGRAMS

HEATER FAN OPERATES ON ONE SPEED ONLY



HEATER FAN DOESN'T WORK AT ALL

