ConcoursMustang.com

65-66 Heater Blower Feed Cable Replacement Part I

Approx Time Needed For Completion:

- 1 hr to disassemble
- 1 hr to attach new leads
- 30 mins to clean and paint housing (plus drying time)
- 1 hr to reassemble motor & test
- 15 mins to stamp prt number & date code (plus drying time)
- 1 hr to assemble motor, seal, plate & wheel

I don't remember if I got the info about the replacement cable from this forum or the HIPO forum but here's what it takes to replace the cable on 65-68 Mustang heater blowers. The wires were showing thru the insulation on mine, so replacement was a good idea.

Setup

If the heater is still in the vehicle or the motor is still attached to the heater box/housing it will need to be removed first and disassembled.

Check the shop manual for the proper order of disassembly. A wrong choice here means more work later.

Supplies/Equipment Needed:

- Feed Replacement Cable
- Soldering Iron & Solder
- Shrink Tubing
- Dremel Tool or other to cut crimp to the finished length
- Heater rebuild kit
  - Seal between motor & mounting plate (if original is not usable)
  - Seal between mounting plate & wheel
- Two spade tip or ring lug for 16 awg wire
- Hemostats as a soldering aid
- Screw drivers, wire strippers, pliers, 5/16, 3/8, & 7/16 nut drivers & long 1/8 allen wrench

Setup cont.

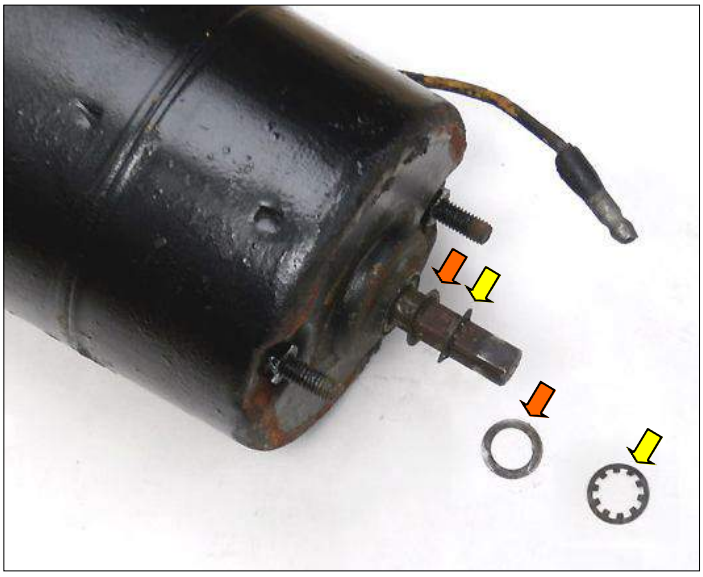
There is a retainer on the shaft of the motor that needs to be removed before the two sections of the motor case can be separated. The retainer looks like an internal tooth lock washer. Its dimensions for the heater blower motor are: 0.305 ID, 0.472 OD, 0.018 THK, 10 teeth. It needs to be smaller in diameter than the shaft (0.312 OD) to be an effective retainer. The shaft should have a flat surface along its edge to mount the fan. I've found this retainer on 64 thru 67 motors but this information may apply to additional years and may apply to air conditioning blower motors too.

Between the retainer and upper shaft bushing is a thrust washer. Its dimensions are 0.312 ID, 0.462 ID, 0.005 THK. Some motors may not have this retainer and washer. They may have been removed and lost, or broken and lost.

The retainer's function is to keep the shaft from moving too far in at the brush end, the washer acts as a bearing.

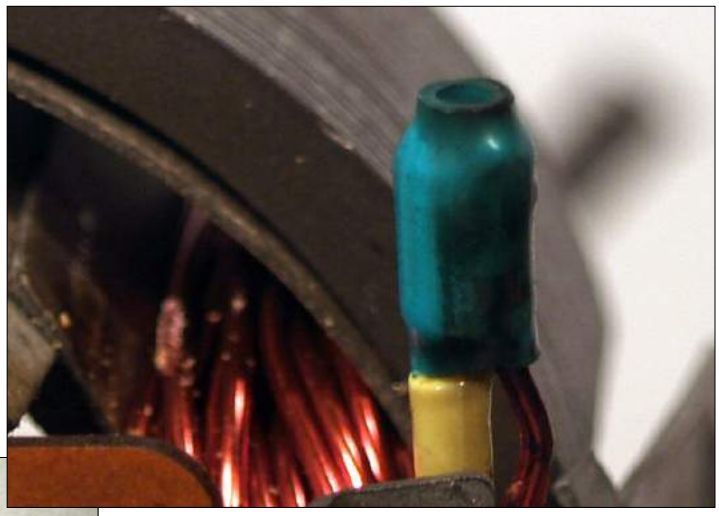
The retainer can be removed with a sharp, thin blade, as found in an Xacto Knife. Slip the blade under the retainer and pry just a little, rotate the shaft 1/4 turn and pry again. Repeat until a small screw driver can be used to raise the retainer to where a pair of pliers or a 5/16 inch wrench slipped under the retainer can remove the retainer with equal force on the retainer. Be careful as the washer may be damaged or lost. The washer can be stuck to the retainer or stuck to the shaft bushing. Don't lose either, I have not found replacement sources.

To reinstall the retainer and washer after the motor is completely assembled: put a drop of 20W oil on a tooth pick and apply a dab to the shaft bushing; slip the washer over the shaft down to the bushing; with the same toothpick, apply a second dab of oil on the top of the washer; slip the retainer on the shaft and gently force it downward. A 5/16 wrench should be used on the shaft and on top of the retainer to prevent the retainer from getting twisted by too much downward force.



The picture above shows a motor with the retainer and washer slid down the shaft and another retainer and washer for size reference.

Setup cont.



You will need to trim the inside leads to the same length as the old leads' length. Don't forget to include the soldered ends length..

Below is what a replacement cable from Virginia Classic Mustang looks like.

Step #1

The original connection from the input cable to the armature winding wire was made with a crimp. I used my Dremel tool to cut the crimp off as I wanted the extra length (3/8 inch) of the coil winding wire.". It's a bit tight in there.

Step #2

(This is a secret method. Don't tell anyone.) I removed the insulation from a blue spade tip lug, inserted the two wires and then soldered the two wires together. The spade end is convenient to hang on to. The hemostat is a part of my tool box.

Step #3

Cut the spade off and trim the end. A ring lug will work just as well.

Step #4

Shrink tubing on the brown wire. (Hey, two stage paint and powder coating are accepted now, so shrink tubing has to be OK.) Use a match to shrink the tubing. It will show some burn marks.

Step #5

Next step is to clean and restore the motor housing before reassembly. Instead of bead blasting and risking glass dust getting in the bushings, I used a wire wheel to remove the paint.

What I found under the paint was a type of plating that used tin and lead, aka solder. It was an inexpensive surface finish used back in the 60's, soft but effective. I specified that type of finish on metal cans that were soldered shut after the electronics was inserted. I rejected the use of a chemical paint remover as cleaning up its residue might also damage the bushings.

Motor Reassembly

SOME DEFINATIONS

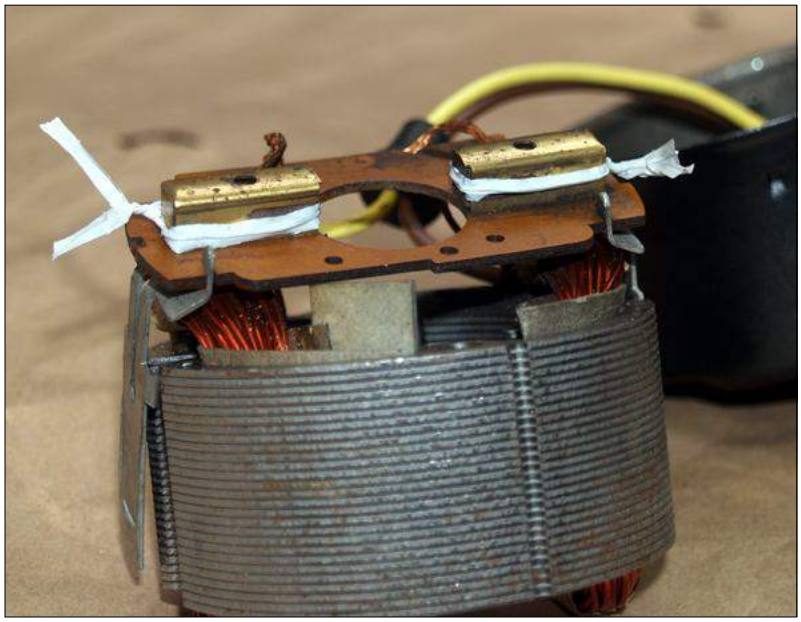
Brush – a hard carbon contact usually rectangle in shape with one end having a braided copper wire for electrical current to follow and the other end arced to mate with the rotor.

Brush plate – an insulating material to align and hold the brushes.

Rotor – the moving part of a motor. It is wired to react to a magnetic field created by the stator by rotation.

Stator – the fixed part that generates a magnetic field when a DC current is applied to it.

Field – an invisible force created by magnetism. It also refers to the wiring in the rotor and stator.



Step #1

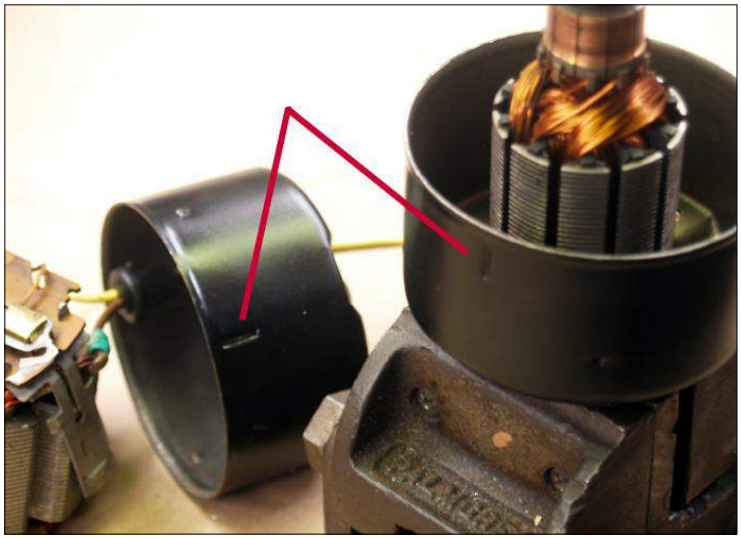
Insert the brushes into their holders on the brush plate on the stator and secure each so they will fit over the rotor. I used a pair of twist ties. If the brushes are damaged (cracked, scored, etc), do not use.

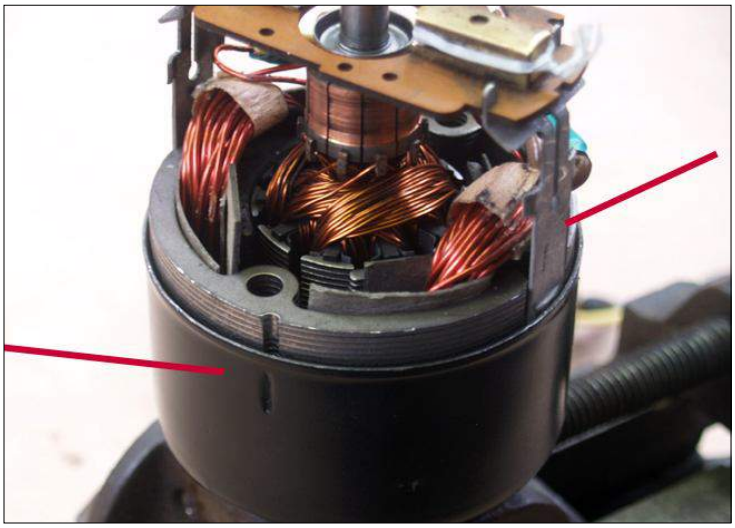
Step #2

If the contact for the brushes on the rotor are scored too badly, do not use. Clean the rotor shafts with a cloth. If there is too much corrosion on the long end, use some 400 grit sand paper to remove. This is the end that the fan goes on so try the fan for easy fit. Put a drop of SAE 20 oil on each end of the shaft. Use oil designed for electric motors. Make sure the thrust washer, red line, is installed on the long end of the shaft.

Step #3

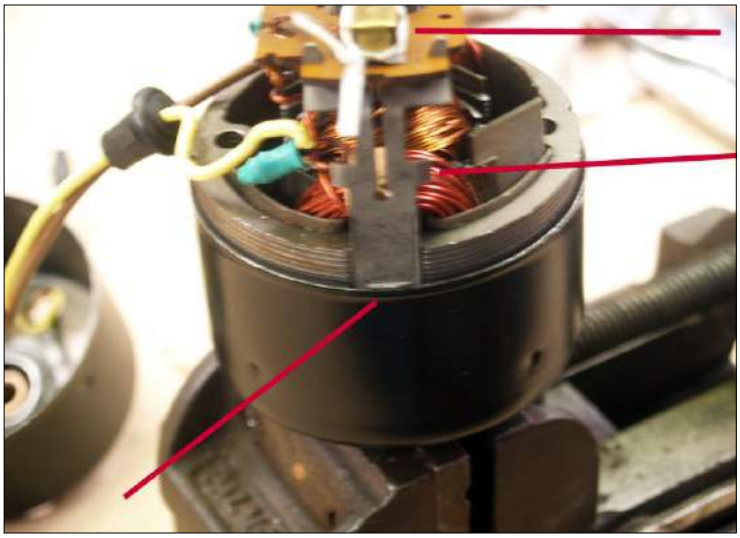
Insert the rotor into the bushing at the fan shaft end of the housing and place it in bench vice so that it is vertical. Don't lose the thrust washer. Note the two indents alignment marks, in the housing.





Step #4

Install the stator into the fan shaft end aligning the stator with the alignment marks and an indent. Do not force it in – yet. Yes, you can get it in 180 degrees out so use the wire lead end of the housing to make sure the marks are correct. The wire lead end with the leads placed in the access hole will only fit one way.

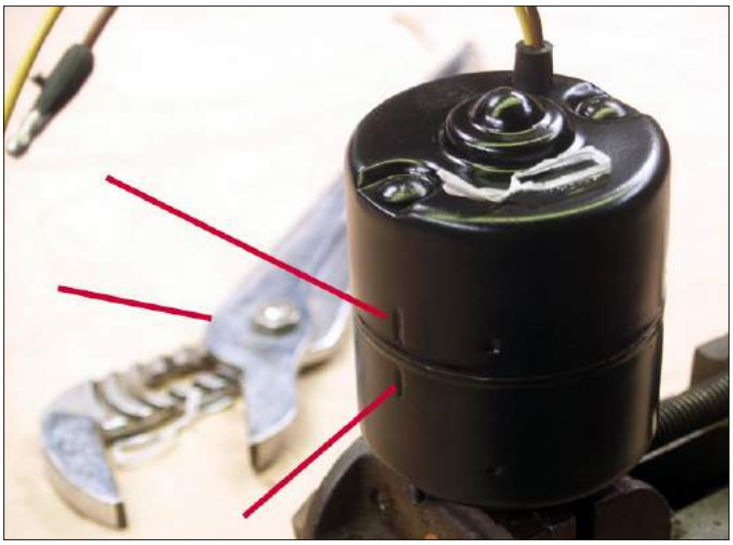


Step #5

Insert the brush plate retainers into the slots on each side, lower red line. Press the stator down as far as it will go. The brush plate retainers, middle red line, have a pair of "ears" to mark the depth. After the brush mounting plate retainers are pressed in (I used a large pair of channel lock pliers, next picture) you can remove the twist ties. Make sure that no wires can touch the housing or are shorted together. Use an ohm meter to determine there are no shorts with either lead end to the housing. Also use the ohm meter to insure electrical continuity between leads.

Step #6

Press the wire lead end over the stator. You may need to "jiggle" the assembly to get the shaft to seat in the bushing. Gently pull the new wire leads so the grommet seats in the housing. Drop in the two shoulder screws and attach the nuts. Again, use an ohm meter to determine there are no shorts with either lead end to the housing. And use the ohm meter to insure electrical continuity between leads.



Step #7

Test the motor on a battery- brown wire to the positive terminal, yellow wire to the negative (ground). If it spins you did good. If it don't, take the motor apart and find out why.

You should temporally put the wheel on the shaft for this test. If it spins clockwise when looking at the shaft you did good