

91-94 Mercury Capri Window Regulator Repair

**This document is written assuming the point of failure on the Window Regulator was where the upper or lower cable attaches to the lifter. If your Window Regulator is broken in some other fashion, these instructions may still be helpful.*

** These instructions may not make a whole lot of sense until you have you window regulator out of the car, and are following each section step-by-step. Also, this may not be the best way to repair a window regulator, but it worked for me.*

An alternate set of instructions can be found in Yahoo's Capri group, in the "Files" section of, under "Window Regulator Repair.txt", which was taken from an email posted by Jay Turberville.

URL: <http://autos.groups.yahoo.com/group/capri/files/Repair%20Information/>

Other options: If you read this instruction sheet and decide you would rather not deal with the hassle of repairing your own window regulator, you may want to try to get in touch with Ray Berendowski. He has been known to repair them at a fraction of the cost of a replacement. Contact him by email to check and see if he is still in the repair business at: baron658@cs.com

Tools Needed:

#2 tip Phillips screwdriver
Needle Nose Pliers
(2) Pair of Vise-Grips
Socket wrench
Socket wrench extension
#10 Metric Socket
Drill
1/8 drill bit
15/64 drill bit
Lithium Grease
Soldering Flux
Long Zip Ties
1/16" Cable Stops
(3) 3/16 dia. Bolts (1/3" -1/2" in length)
(3) Matching Nuts & Lock Washers

Other Specialty tools:

<u>Minimum</u>	<u>Recommended</u>	<u>Task</u>
A good soldering iron	Propane Torch	Soldering the Cable
Wire Cutters	Dremmel (w/ cut-off disc)	Cutting the cable (neatly)
Vise Grip	Professional Crimpers	Crimping cable stops
120 grit sandpaper	Rat-tail file	Cleaning up Spindle
Fine tipped needle nose pliers	Snap Ring Pliers	Removing Snap Ring
A quality glue	Liquid Nails	Holding Snap Ring in place

***TIP:** The Dremmel was incredibly useful during my repair, (especially when cutting cables), I highly recommend having one on hand.

***Note 1:** Even if the original cables are bent up, you should be able to use them. If your cables are too damaged, then purchase 1/16 diameter cable in two sections: 43" long for the top, and 37" long for the bottom. (Those lengths should give you an extra inch or so, for each cable.) I have found these cables at my local H&S Hardware and at Lowe's Hardware, along with the Cable Stops.

***Note 2:** I used solder on the tip of the cable as a way of preventing the Cable Stop from being pulled off. An alternative to this method would be to use "Loctite Red". Apply Loctite Red to the cable before crimping the Cable Stop on. I haven't tried it, but it seems like that would work as well.

Removing the Window Regulator:

*Note: These are abbreviated instructions on the removal. For more details, Please refer to the Service Manual located at: www.TechCapri.com

Remove the Door Panel – (twelve #2 Phillips screws).

Pull the clear plastic rain guard up ¾ of the way, (or completely off if you prefer).

Remove the two #10 Metric bolts holding the glass window to the lifter.

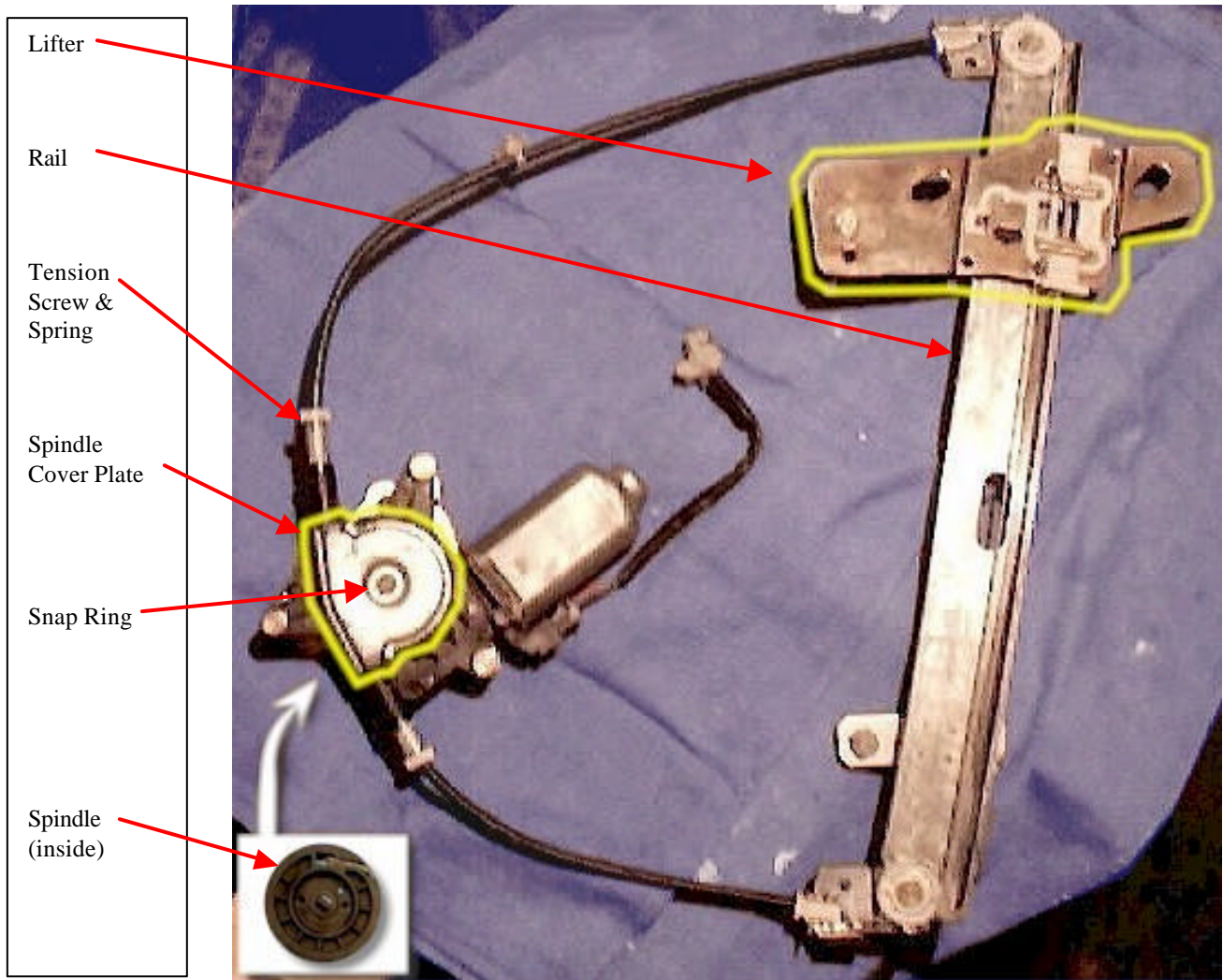
Run Zip Ties through the bolt holes in the window; strap the window to the top of the door to get the window up and out of the way. (This is a temporary way to hold the window up, & keep water out)

Remove the three #10 Metric nuts and washers holding the guide rail to the doorframe.

Drill out the three rivets holding the motor using the 15/64 drill bit.

Slide the entire window regulator assembly out of the hole in the door closest to the rear of the car.

Unofficial “*technical*” terminology used in this set of instructions.



(Fig. 1)

Preparing the cables:

Remove the Snap Ring, Pull the Spindle Cover Plate off, and remove the Spindle.

Unwind the cables, and unhook them from the Spindle.

Your cables were probably tangled, and bent up. Use the pliers and Vise Grips to straighten the cables, unless the cables are severely damaged or frayed, in which case; refer to the following section: “*If your cables are too far gone*”

Using the Dremmel, cut off the two Cable Stops that hook into to the Spindle. Cut the cable close to the Cable Stop as possible, you’ll need all the usable cable you can get. Try to make a clean cut through the cable, it’ll be important later.

Once the Cable Stops are removed, and the cable is bent straight again, remove the cables from the assembly by pulling the cables out of their respective sheaths.

Clean off the old grease from the cable.

Apply fresh Lithium grease to the cables, and straighten the recently cut tips of the cables, - all in preparation to run the cables back into their sheaths.

Run the each cable into its appropriate sheath – only this time - BACKWARDS. As in, make sure the existing Cable Stops, (the ones that previously connected to the lifter), are now on the Spindle side of the assembly. (This leaves the straight end of the cable to wind around the Spindle, and the bent up end to be pulled in a straight line down to the pulleys.)

Also very important: As you run the cables back through the sheaths, make sure the cables are also routed through/around the pulleys.

*** If your cables are too far gone:**

Prepare to crimp down the Cable Stops on ONE END of EACH of the new 1/16 dia. cables.

Flare out a ¼ inch on the end of the cable. Using the propane torch or soldering iron; create a glob of solder on the flared end of the cable, (so the flared end cannot close). Slide the Cable Stop on from the other end and crimp it down as close to the flared end as it can go. If it is flared out too much to fit in the Spindle, trim it down with the Dremmel.



(Fig. 2)



(Fig. 3)

Apply Lithium grease to both cables.

Starting at the motor side; run the cables through the sheaths, which will leave the Cable Stops on the motor side of the assembly, to be attached to the Spindle.

Very important: As you run the cables back through the sheaths, make sure the cables are routed through/around the pulleys.

Preparing the Spindle:

If your Spindle is like mine, it will be pretty chewed up.

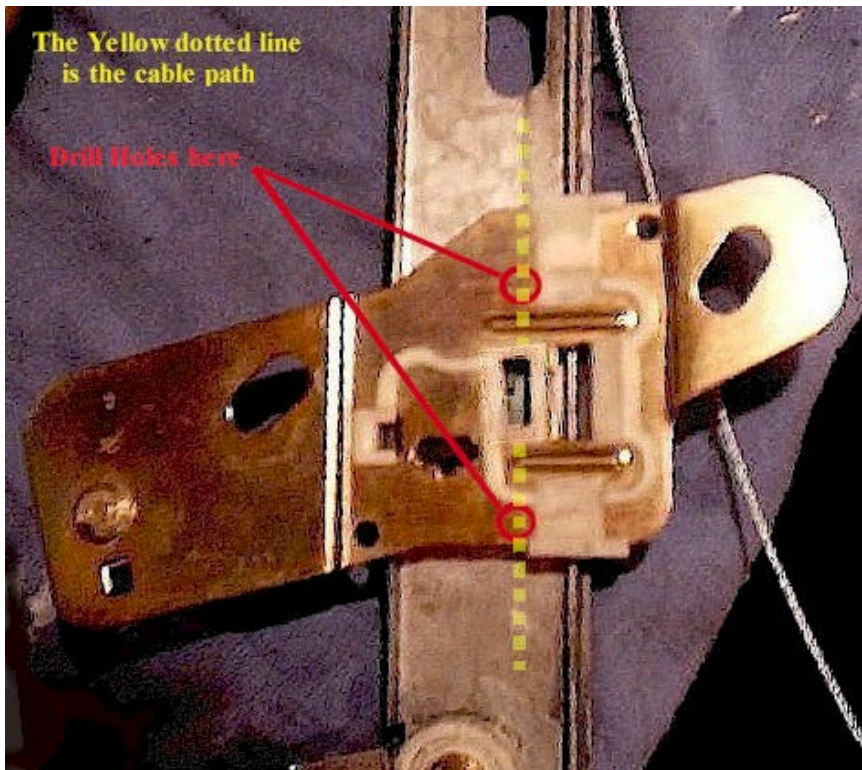
Using the “rat-tail” file, re-define the grooves that the cable falls into, on the Spindle.

Remove any frayed chunks of plastic, on or around the Spindle.

After you’ve cleaned up the Spindle, work some lithium grease into the grooves. Maybe this will cut down on future wear and tear. Also remove any debris in the recessed area in the Motor where the Spindle will go.

Attaching cables to the lifter:

Make sure to line up the holes you are going to drill into the Lifter with the cable's original mounted position. Hopefully you cut the cables close to the Cable Stops, because this is the point where you will need the length.



(Fig. 4)

Before you drill, you'll need to figure out the exact location for the holes. To do that, look at where the cables originally mounted: in the square hole in the middle of the Lifter. The cables previously ran in between the Lifter, and the Rail; and clipped in to notches cut out inside the square hole, where the cable stops prevented it from sliding out. (In most cases, it's the plastic covered metal notches that Mercury made for the cable, that gave-out)

The bottom cable, (the short end), has only one good spot to drill the hole in the lifter, so there is no measuring needed.

The top cable is a little more complicated, and there are two methods of figuring out hole placement.

Method 1: you'll need to line up the cable to where it use to mount, and measure how much cable you cut away to figure out where to drill your hole in the lifter.

Method 2: (which I think the smarter way), Hook the cables up to the Spindle and wind them up tight, so you can see exactly how much cable you'll have. This way is more accurate, but also much more time consuming.

(If you are using new cables, you will have to use the latter option on calculating where to drill the holes.)

The hard part is winding the cables up tight. For instructions on that, see the section "**Attaching the Cable to the Spindle**" on page 6 of this document.

Once you figure out where to dill the holes, use the 1/8 drill bit to create the holes.

*TIP: I actually drilled these holes at an angle so that the edge of the hole wouldn't cut into the cable, and so that the upper cable stop wouldn't be sticking straight up against the glass when the window is bolted on.

Next you'll need some slack, so make sure the cable is detached from the Spindle, and run the cables through the newly drilled holes. Also make sure the cables are routed through/around the pulleys, because you can't run them through later.

Clean the tips of the cables in preparation of crimping on the cable stops.

Slide the cable stop on the end of the cables, leaving very little cable sticking out the end, - (only enough to flare out and solder) – but not too much – you don't have a lot of cable to work with if your still using your original cables.

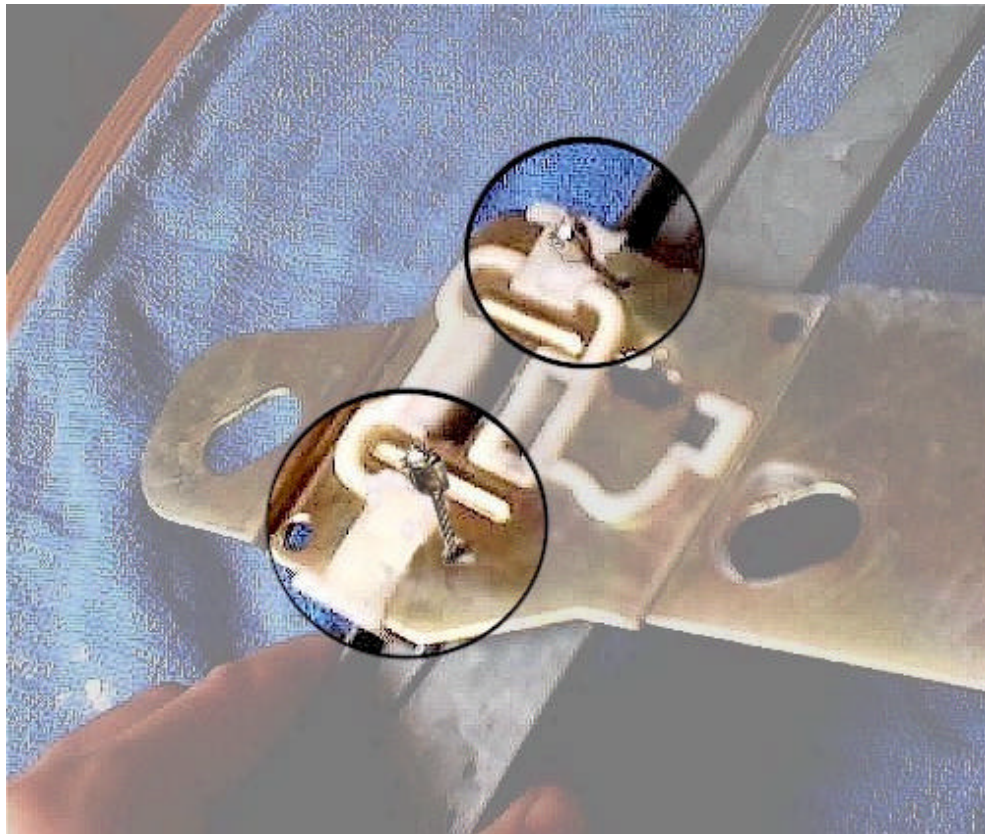
Crimp down the Cable Stops. Flare out what ever is sticking the end of the cable.

Apply soldering flux to the tip of the cable.

Using the propane torch or soldering iron, and create a glob of solder on the flared end of the cable - (so the flared end cannot close). If you are using a propane torch make sure you don't melt the Cable Stop, or over heat the metal so that the solder won't stick.



(Fig. 5)



(Fig. 6: Highlighted are the crimped on Cable Stops with the end of the cable flared out, and soldered)

Re-Greasing:

Before you get into the next section, this is a good time to clean the moving parts, and grease them up.

The pulleys: If you rock the pulley back and forth, while liberally rubbing Lithium grease on the center of the pulley, the motion should pack grease into its center shaft.

Unwind the Plastic Tension Screw, and slide the spring off; - clean and re-grease the screw.

Also, this would a good time to re-grease the rail and lifter.

Attaching the Cables to the Spindle:

First: Slide the lifter down to the bottom, (the short cable side), of the Rail.

At the Motor: Pull on both cables to draw out some slack.

Check the both sheaths to make sure they are fully pushed into the Motor on one side, and the Rail on the other – this will allow you to pull out more slack.

Tighten down both Tension Screws all the way until the spring is bottomed-out, and use something to hold them that way.

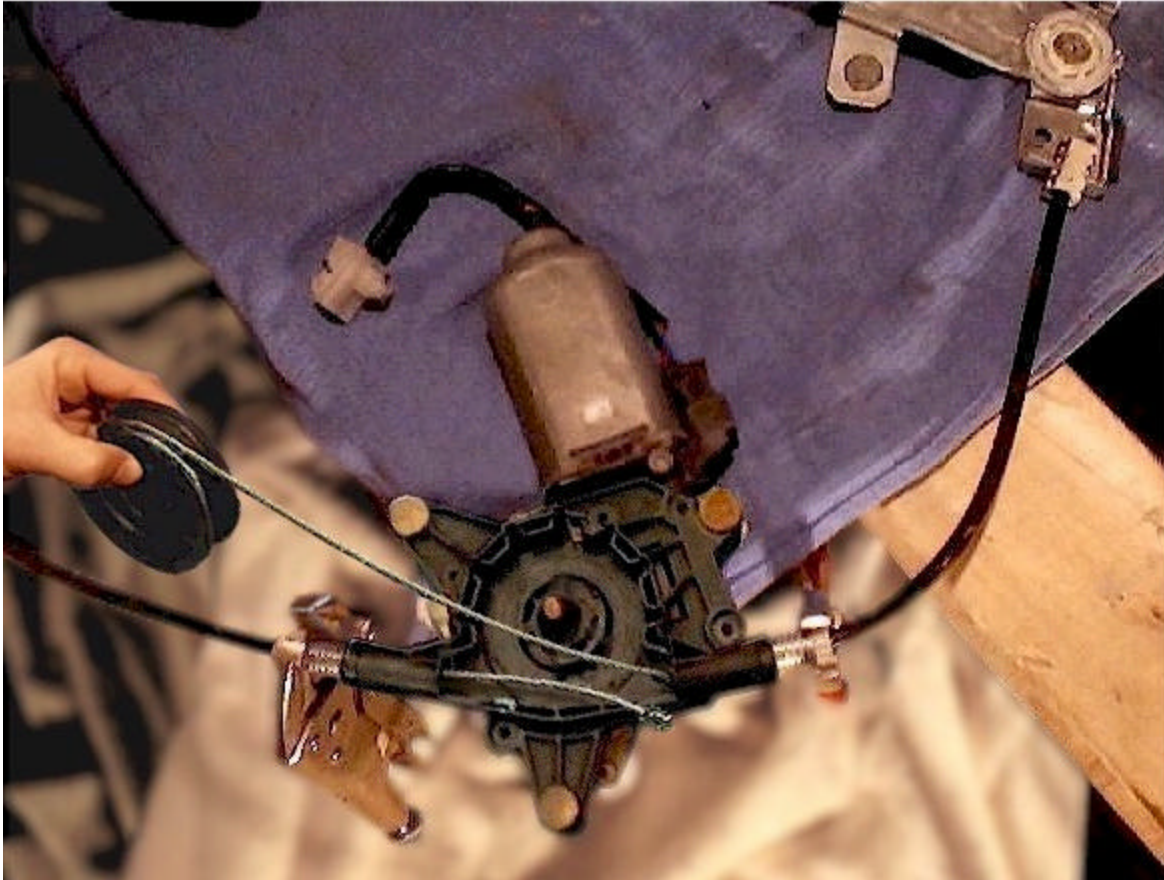
* I hung a Vise-Grip off of each tension screw, - adjusted so to not crush the plastic screw. (see Fig. 7) The weight of each Vise-Grip hanging off the corner of my bench was enough to hold the spring in the tightened position.

* I believe using masking tape to hold the spring in the tightened position will work also.

Pull hard on the cable to draw out the rest of the slack.

Attach the bottom cable's Cable Stop, (the short cable), to the **bottom** side of the Spindle, - (Fig. 1 has an insert that displays the **top** side of the Spindle – use that as reference.)

Wind the cable around the spindle, all the while keeping tension on the cable, (see fig. 7), then place the spindle in the motor assembly.



(Fig 7)

As you insert the Spindle, rotate it so that it locks into the motor's gear teeth. Of course you'll need to keep the cable taut. To do this, pull the upper cable, (the longer side), as you rotate the Spindle.

Once the Spindle is fitted into the motor, it will not turn. Therefore, as you wrap the upper cable around the Spindle, you can put a lot pressure on the assembly while you try to lock in the upper cable's Cable Stop into the Spindle.

You may notice your cable is an inch or so short of locking into the Spindle notch, - that's O.K. There are still a few ways to get more slack out of the cable.

Attempt to put the upper cable into the Spindle using the Needle Nose Pliers, remember the cables were, (probably), bent up. So by applying a lot of pressure you may be able to stretch them back out. Also, you may need to use one hand to adjust the Tension Springs, cable sheaths, or the cable itself, (where it attaches to the lifter), to gain more slack, while you try to insert the upper cable into the Spindle.

Once you lock the upper cable into the Spindle, notice how far the cable drops into its notch. Then release the tension springs, and unwind them manually. You'll be surprised how far the springs actually come out.

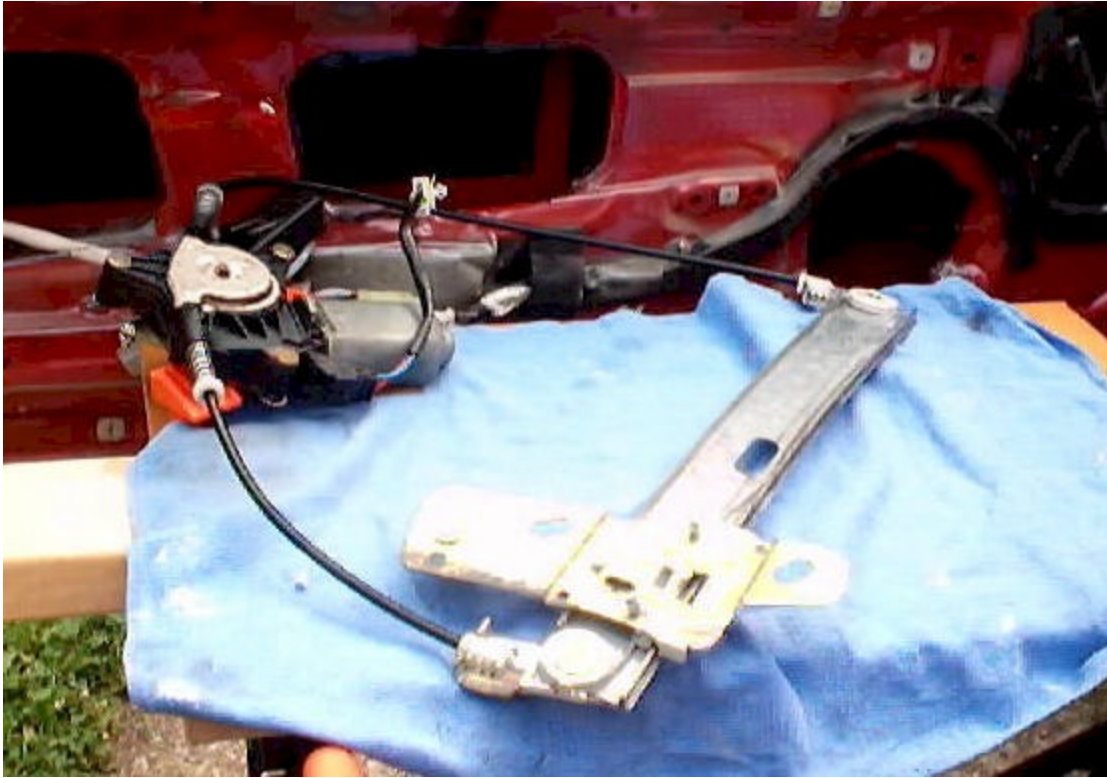
Reinstall the Spindle Cover Plate.

Using the Snap Ring Pliers, (or "fine tipped" Needle Nose pliers), install the Snap Ring.

Optional: Apply a little "Liquid Nails" glue around the Snap Ring and center shaft. (The Snap Ring has been known to pop-off, also the center shaft does not spin, so the glue does not affect the performance of the motor)

Testing:

Take the assembly out to your Capri and plug the motor into the socket in the car door, and **test it**. Now that you have the lifter moving up and down, have the lithium grease ready, because you may find some areas to re-grease



(Fig. 8)

Re-mounting the Motor in the Door:

Before re-installing the window regulator assembly, you will want to position the Lifter 2-3 inches from the top pulley on the rail. This will make for an easy installation of the glass to the lifter.

You may have noticed the rail has 3 studs mounted on it, for the nut and washers that will hold it in place, but the motor is lacking hardware since it was riveted on. There are a few different ways of mounting the motor, choose whatever works best for you

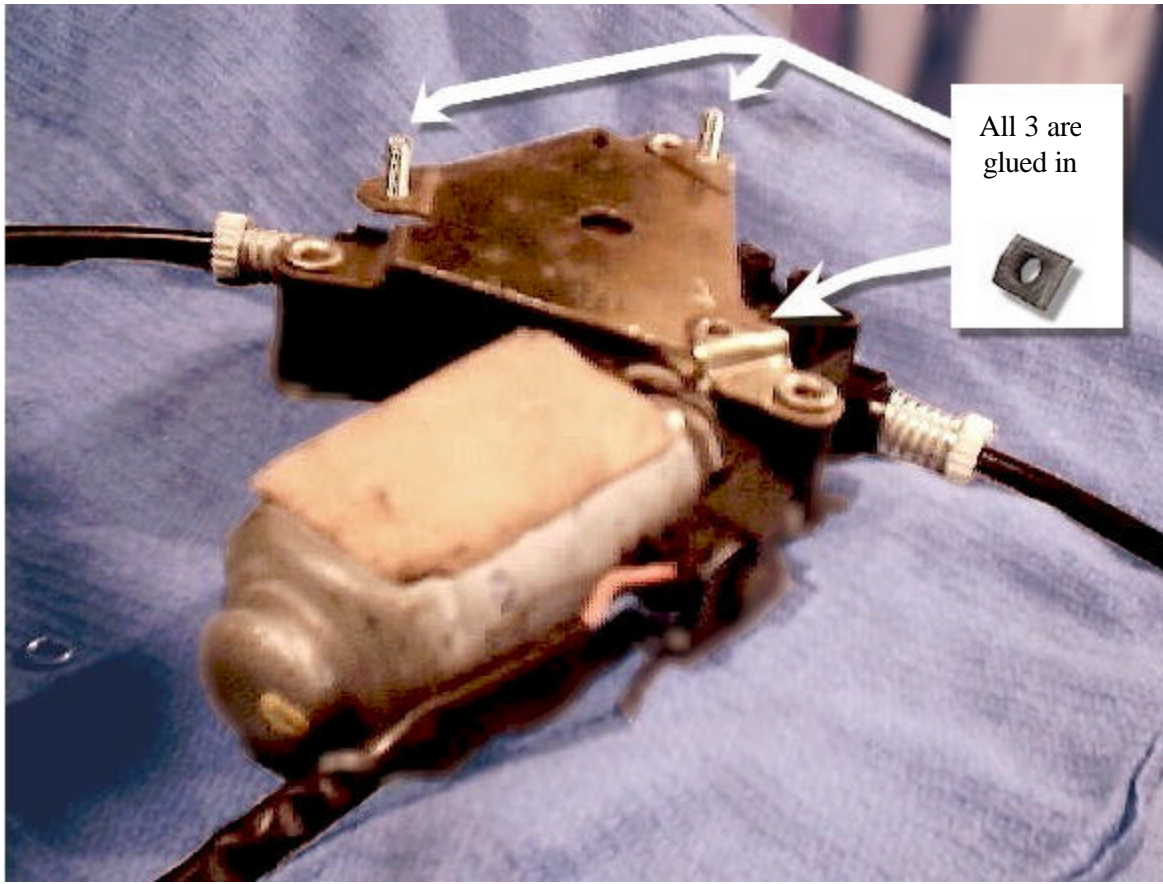
Plastic Zip-Ties. Quick and easy, but not recommended – they would probably break eventually.

Short Bolts and Nuts (with the nut on the inside if the door): Reliable, but difficult to tighten a nut on the inside of the door. Wing nuts may be a good option for this task.

Create your own Studs: Use Liquid Nails to glue the heads of the bolts in the mounting holes on the motor. This is not a rock solid way of holding the bolt in place, but the glue can hold the bolt on long enough to get the assembly inside the door. It also helped a little in preventing the bolt from spinning while you tighten it to the door.

Combination: (of the latter two) – Since one of the mounting holes in the motor are shallow, it is hard to get a bolt in there. Glue a nut to the inside of the motor bracket, and glue bolts to the remaining two holes. (see Fig 9)

*Tip: Screw the nuts and bolts together, which will hold them in place while the glue dries.



(Fig 9)

Re-installation:

Reverse the procedure found on page two if these instructions, in section: "*Removing the Window Regulator*". Hopefully, the bolts you chose for the motor were not that long, so that it will not interfere with the door panel installation. Make sure you put on the Lock Washers, to prevent the nuts from working their way off.

*TIP: Before tightening the Door Panel down, check the interior "Door Release Lever". The Door Release shaft can get pinned down by the Door Panel, and make it difficult to open and close the door.

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Instructions, pictures, composition, blood, sweat, and tears by:

Eddie Clemerson

91 Silver N/A

91 Red N/A

notso_fast_eddie@yahoo.com