



Factory Five Racing, Inc.

818 Kit

Assembly manual revision 1J update

Turbo coolant overflow tank.....	1
Shifter handle	4
Install	4
Door skin	7
Door Liner	10
Side mirrors.....	14
Door handles and pulls	17
Center Console	25
Appendix G: Wiper Instructions.....	29
Disassembly of the Subaru parts.....	30
Assembly to new bracket	34
Frame prep	38
Motor assembly installation.....	42
Cowl panel.....	46
Hood preparation.....	48
Cowl trim panel.....	53
Wiper arms.....	57

Turbo coolant overflow tank

- ☞ Coolant overflow tank, lines/coolant tubes, body finish components, 1/4" x 0.75" flanged button head screws.
- ✂ Drill, 25/64" drill bit, rivnut tool, 5/32" hex key, marker, razor knife.



Hold the coolant overflow up to the 1.50 inch tube to the left side of the engine and mark the center of the mounting holes. Make sure you have enough room to fit a drill in to drill the holes.



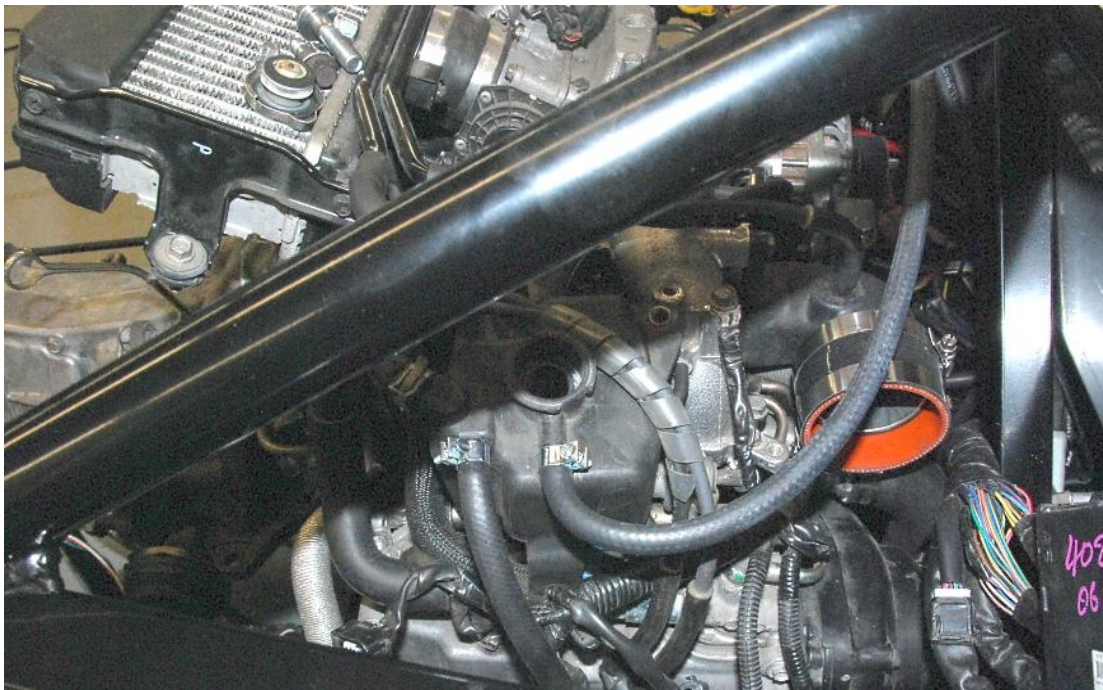
Install rivnuts at the mounting points marked.



Attach the overflow to the frame.



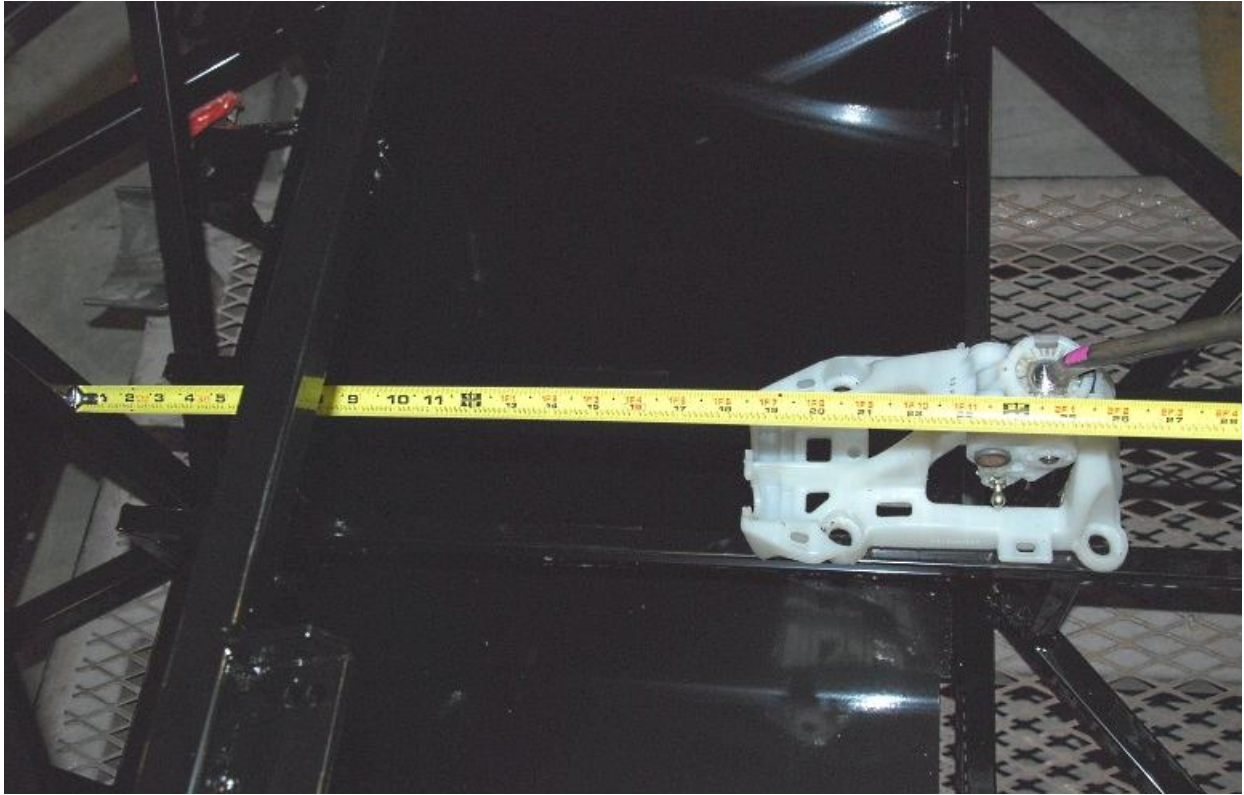
Insert the overflow tubing into the tank and run it over to the engine attachment location.

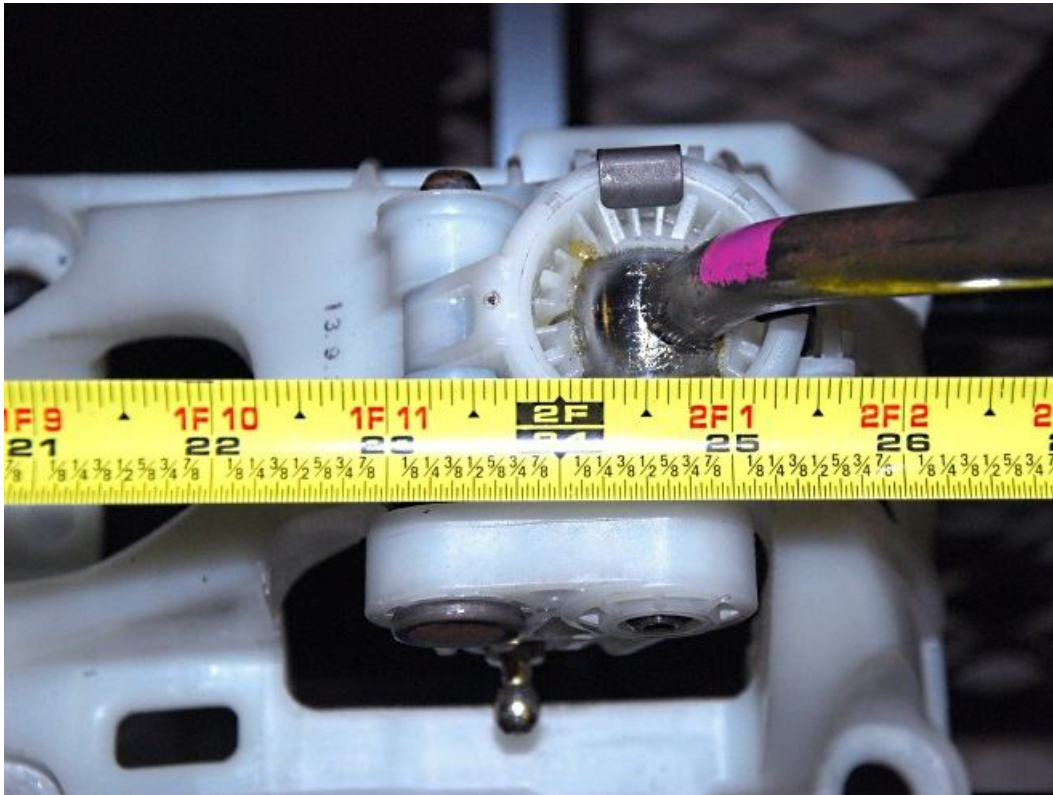


Cut the hose to length and attach to the engine.

Shifter handle

Install





Put the shifter handle on the center tunnel and measure from the front cockpit wall center 1" tube to the center of the shifter pivot ball 24.50 inches.



Mark through the four mounting holes in the shifter onto the tunnel.



Remove the shifter and drill the four marked holes for rivnuts. Drill slightly larger holes through the alum so the tunnel can be removed.



Install rivnuts in the top of the tunnel tubes for mounting the shifter.



Tighten the shifter down to the transmission tunnel using $\frac{1}{4}$ " x 1.50" hex head bolts.

Door skin



Using this measurement, trace the inside edge of the door latch trim piece onto the inside of the door skin.



Using the end of the trim piece, mark the end of the cutout as pictured above.

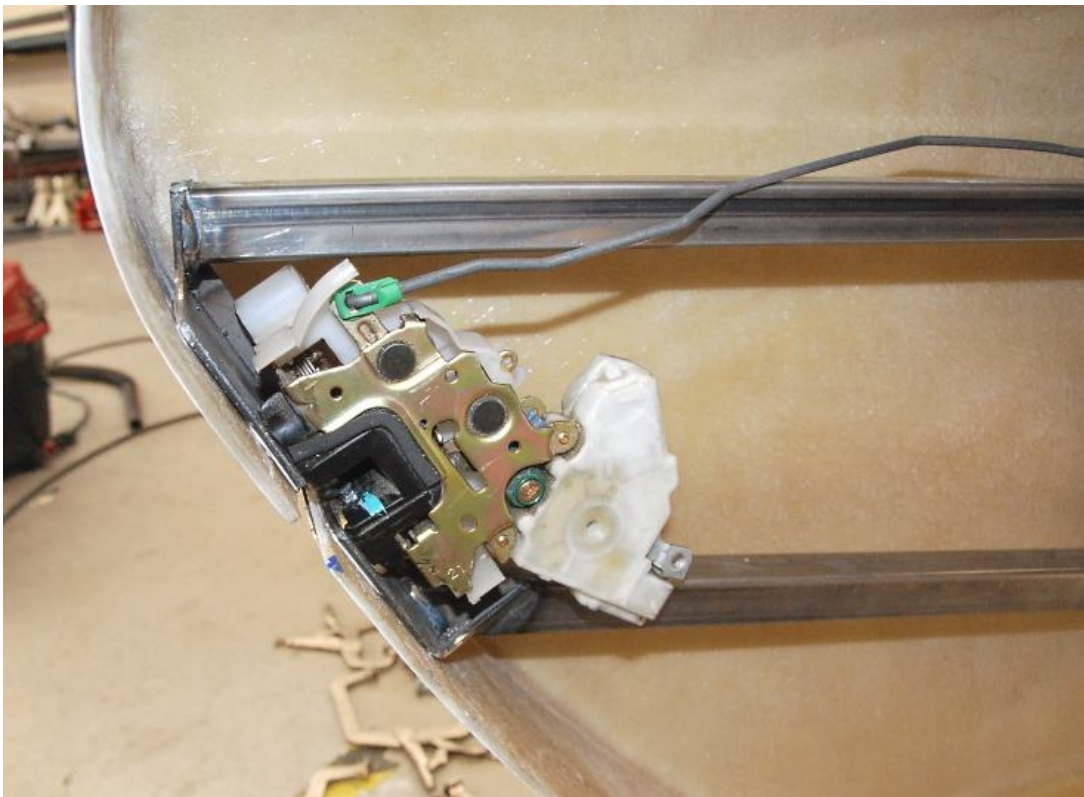


Test fit the door, latch and striker together. Make sure the cutout is deep enough for the door to fit correctly.



Place the latch trim piece around the cutout, and then drill the three mounting holes out of the door skin.

Attach the door skin to the latch with the supplied hex head screws.





Close the door, lining up all body lines. Space the door $\frac{3}{16}$ inch (paint stick thickness) from the body.

Door Liner

- ✂ Drill, $\frac{1}{8}$ " , $\frac{3}{16}$ " , $\frac{1}{4}$ " , $\frac{25}{64}$ " drill bits, Philips head screwdriver, marker, ruler/square, saw, M2.5 hex key, rivnut tool
- 🚗 Door hinge and latch hardware, door liners, Black #8 x $\frac{3}{4}$ " oval head screws, black countersunk washers.



Place door liner on door with bottom flange inside outer shell.



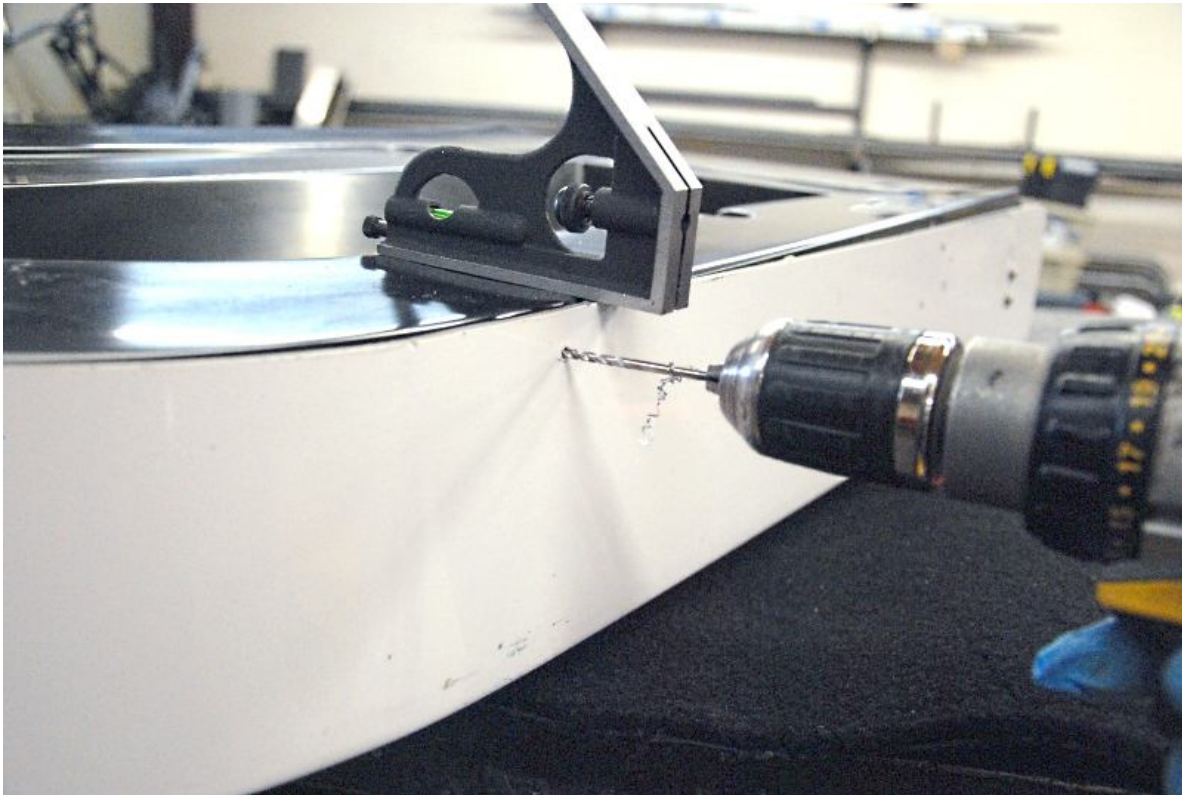
If the top flange does not sit down on the top of the door, use a heat gun or hot air dryer to bend the liner over more.



Either the liner or the door skin will need to get sliced so that the door liner can make the transition from the outside of the panel to the inside.



Trim front of door liner to the front aluminum.



Set the door liner height so that it is flush with outer shell then drill $\frac{1}{8}$ inch holes through the outer shell and the liner for #8 black oval head screws and countersunk washers around the bottom and back of the door. Pull the liner out then drill oversized $\frac{3}{16}$ inch holes in outer shell so the screws pass through outer shell easily.



Install screws and countersunk washers.



Mark and cut a notch for the door striker.

Mark the top of the door where the door liner ends.

Remove the door liner.

Reattach the door to the chassis.

Side mirrors

🚗 OEM side mirrors, side mirror components, M5 x 12mm Black Philips pan head screws.

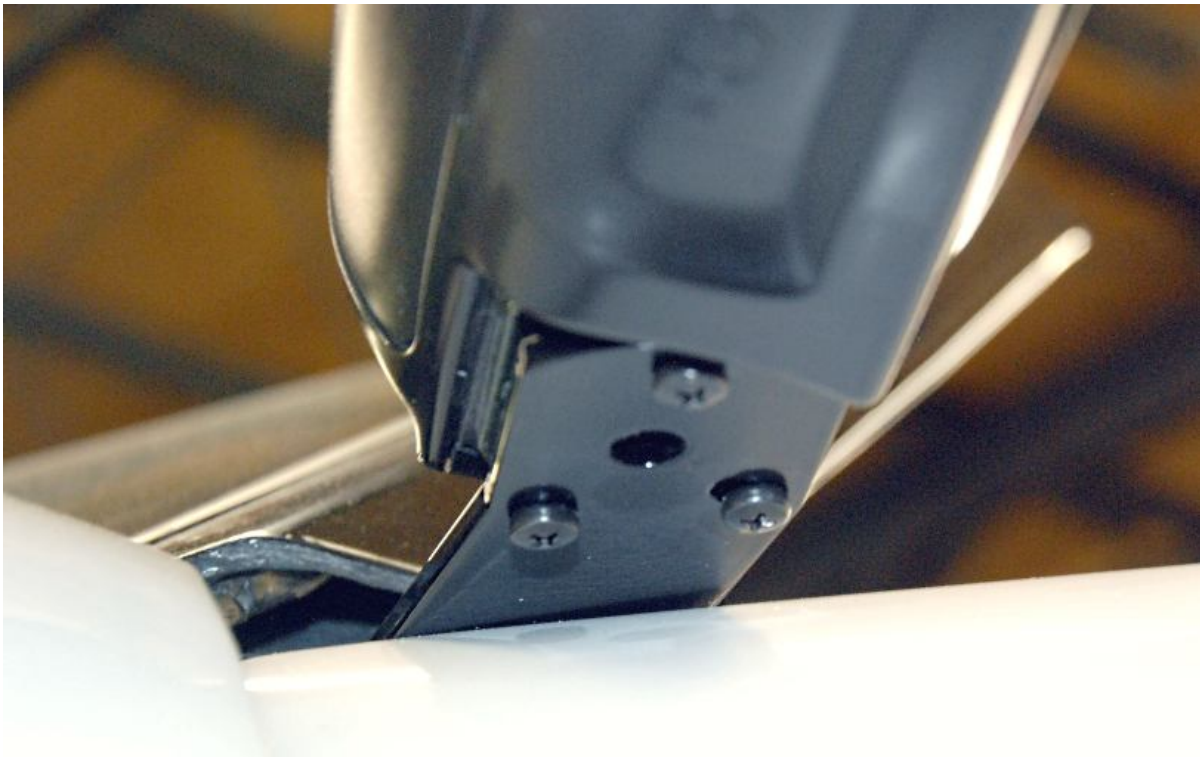
🔧 Philips head screwdriver, $\frac{7}{16}$ " wrench



Unpack the side view mirror mounts. We usually spray these with semi-gloss black paint.



Attach the rear view mirrors to the mounting brackets using the provided screws.



Fit the mirrors to the doors making sure to check the clearance on the windshield surround.



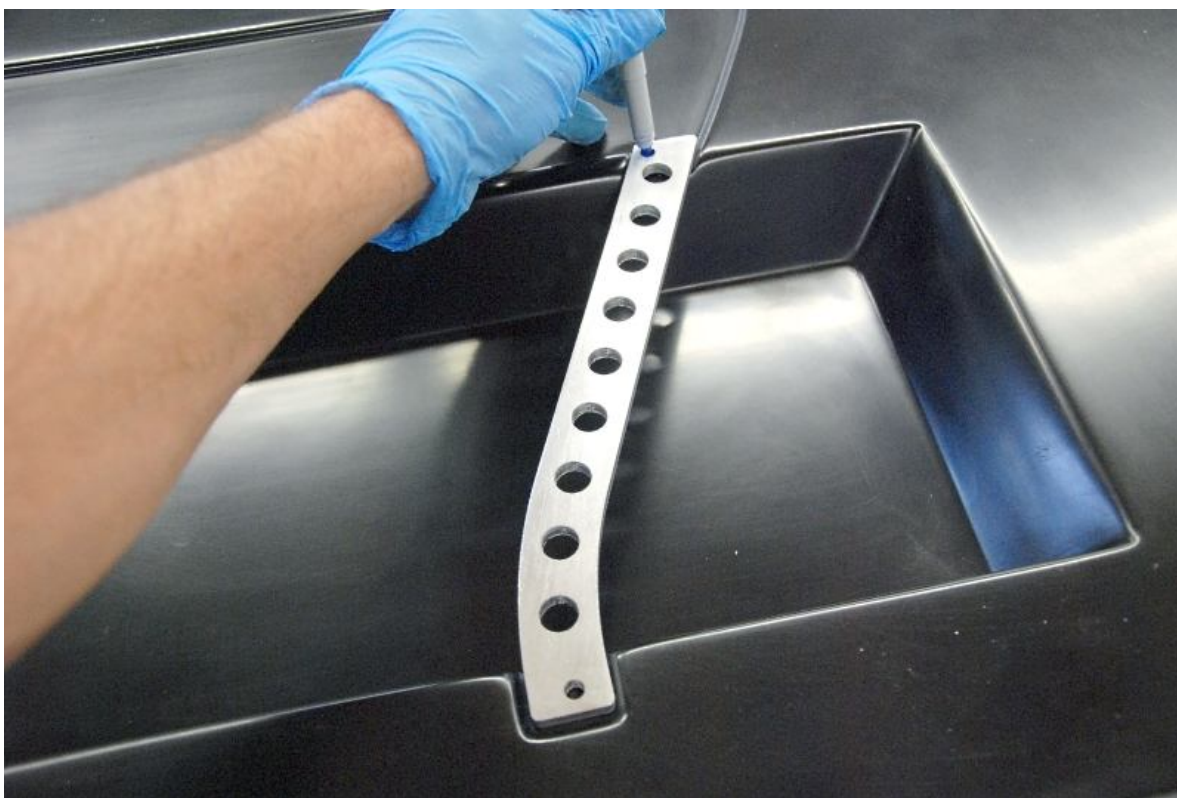
Mount the side view mirror bracket to the door using the two top existing black $\frac{1}{4}$ " x 1" mounting screws that hold the door frame to the door.



If necessary, trim the top door liner flange to the sideview mirror bracket.

Door handles and pulls

🚗 M6 x 20mm button head screws, M6 locknuts, ¼"x 2" round head Philips head screws.



Mark and drill one ¼ inch hole at each end of the door pull to mount them.



Install one M6 x 20mm button head nut and bolt.

Use the door pull as drill template to drill the remaining holes.

Install the remaining M6 nuts and bolts.

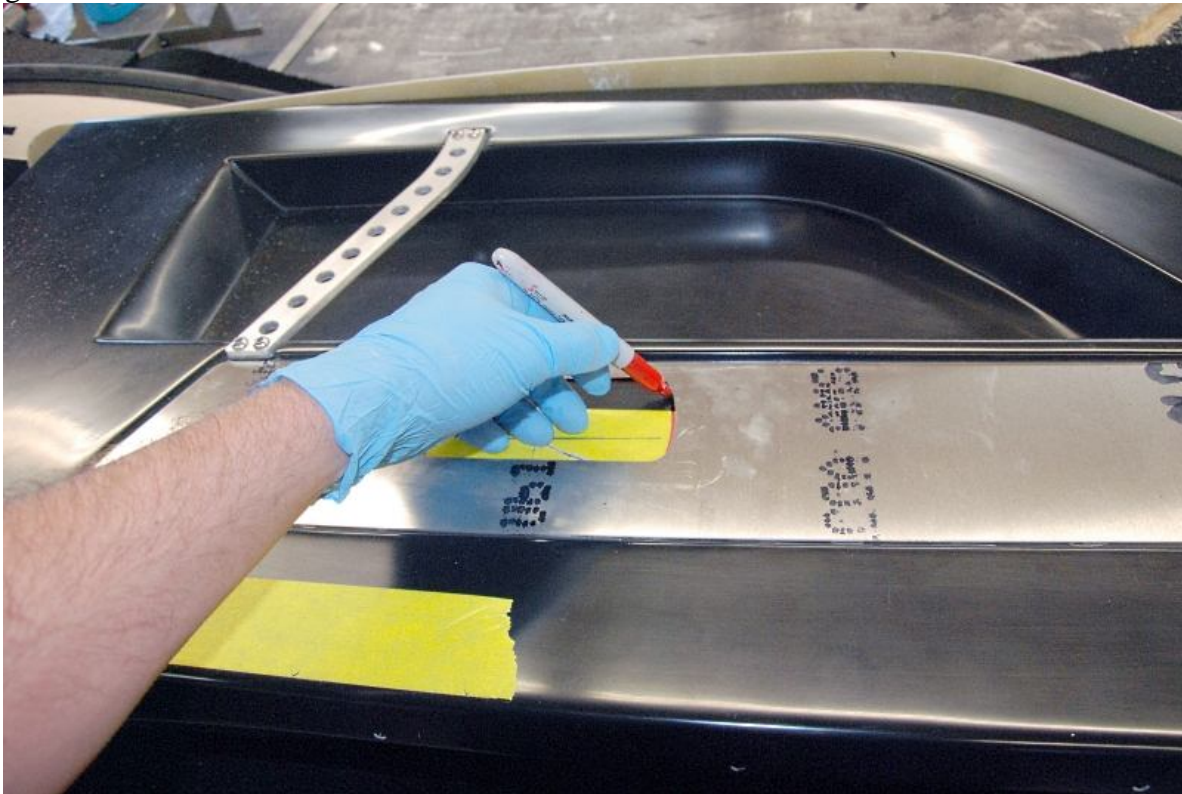


Drill $\frac{1}{8}$ " mounting screw holes along the top flange.



If desired install oval head screws and countersunk washers all along the top flange. If not, Put one at each end of the top flange.

- ✎ There are two ways the door handle can get mounted, with the included aluminum inlay or without depending on the look you are going for with the car.
- ✎ If you are not going to use the aluminum inlay the handle can be located anywhere as long as the latch linkage reaches..



Place the aluminum inlay on the door liner and trace the door handle cut out.



Use a saw to cut to the outside of the marker on the door liner.



Make sure the door handle fits with room for bezel.

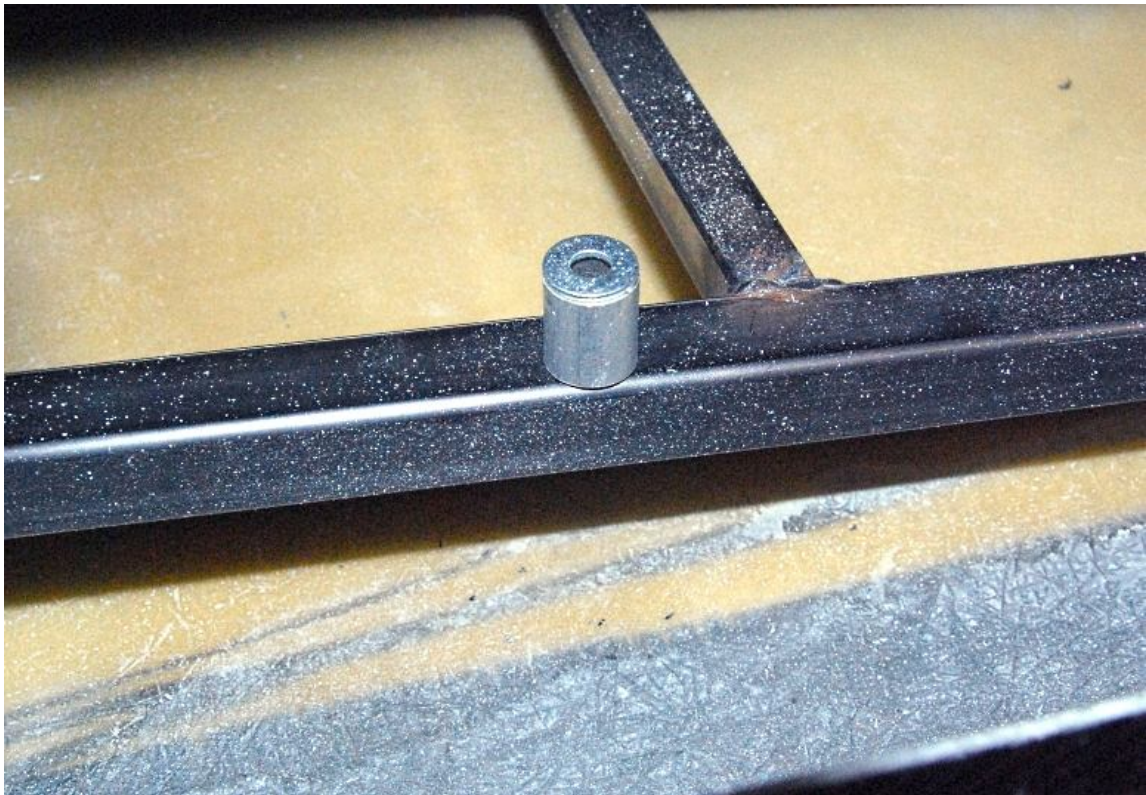


Place the door handle bezel in the aluminum and snap the opener to it, sandwiching the aluminum. Place the assembly on liner and mark mounting hole on door frame.

Unscrew and remove the door liner.



Drill a $\frac{25}{64}$ inch hole and install a rivnut at the point marked.



Use spacers to set the door handle to the desired height, flush with door liner.



Hook the latch linkage to door handle.



Install the door handle and bend/cut the linkage to the correct length so the latch will actuate.



Re-install the door liner with the door handle bezel to check for fitment attaching them with the ¼ inch x 2.00 inch round Philips head screws.

Remove liner, inlay and bezel.

Remount the door assembly to car and set the gaps.

Remount liner assembly to door.





Back off the screws along the bottom of the liner and install “T” weather stripping along the bottom and back edge of door skin to door liner seam. We suggest applying silicone to the seam beforehand.

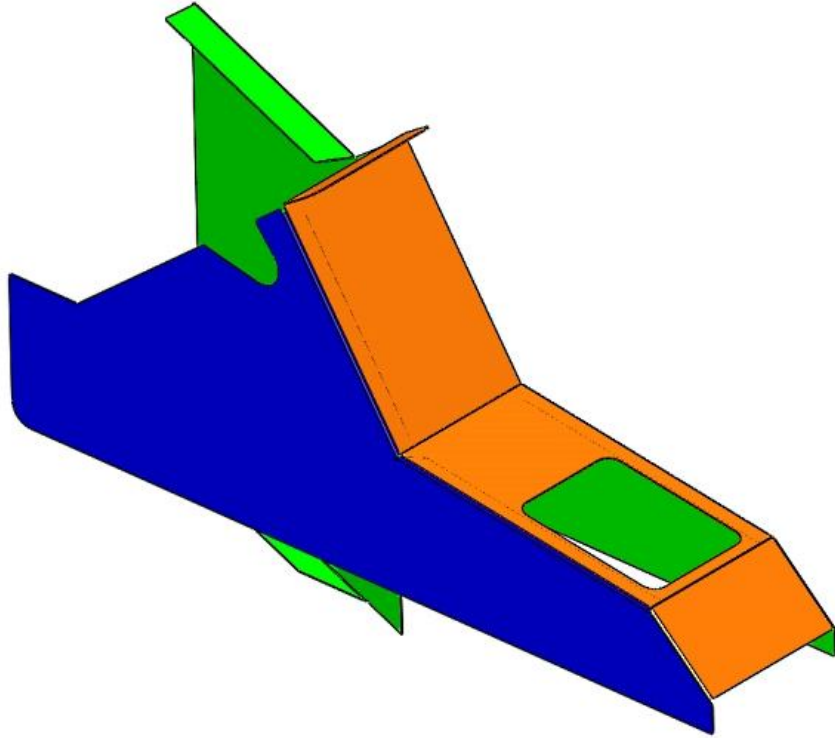


Completed door without aluminum inlay.

Center Console

 packaged aluminum, body finish components (box 4)

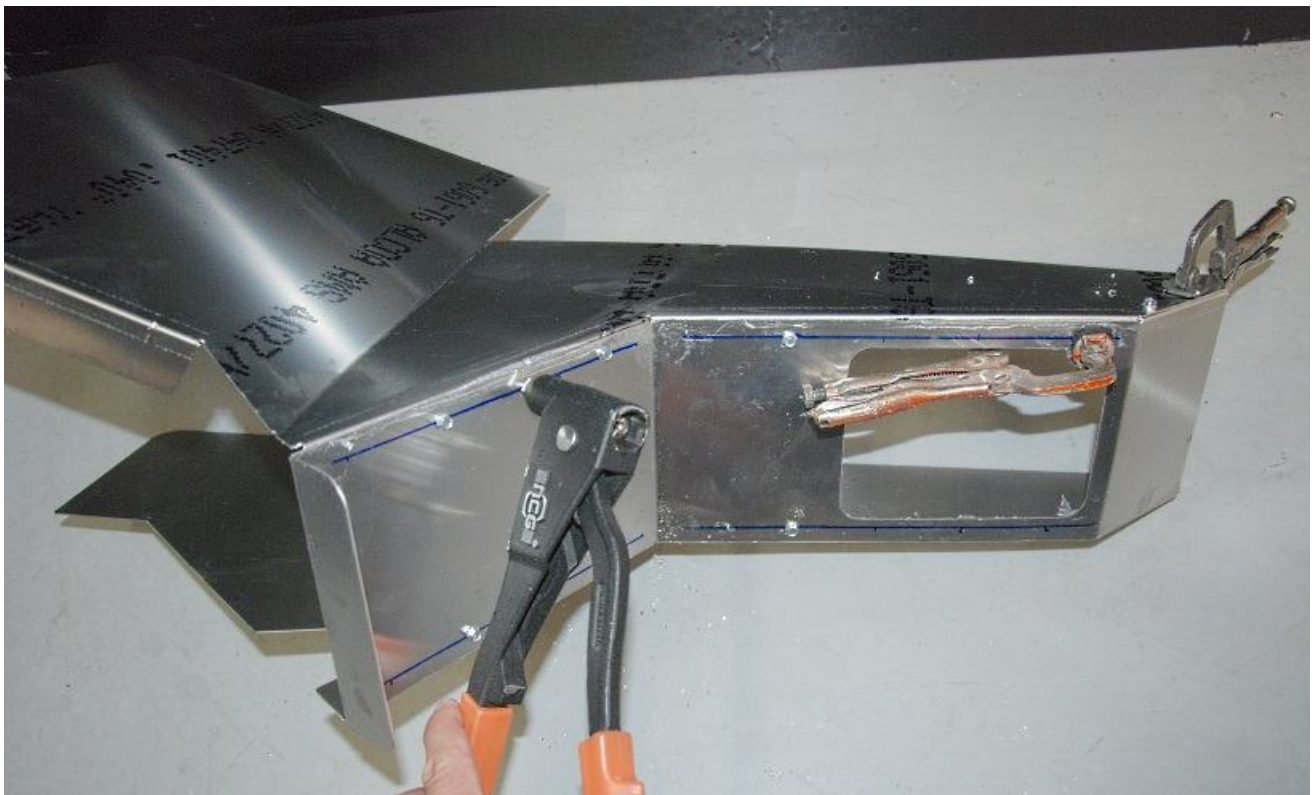
 , drill, $\frac{1}{8}$ " , $\frac{3}{16}$ " drill bits, marker, rivet tool, clamps



Mark the top of the center console along the edges for rivets.



Clamp and screw the aluminum panels together using the self-taping screws.



Drill and rivet the console together.



Push and hold the shifter boot up in the shifter hole noting where the corners of the boot and hole are for attaching the boot.

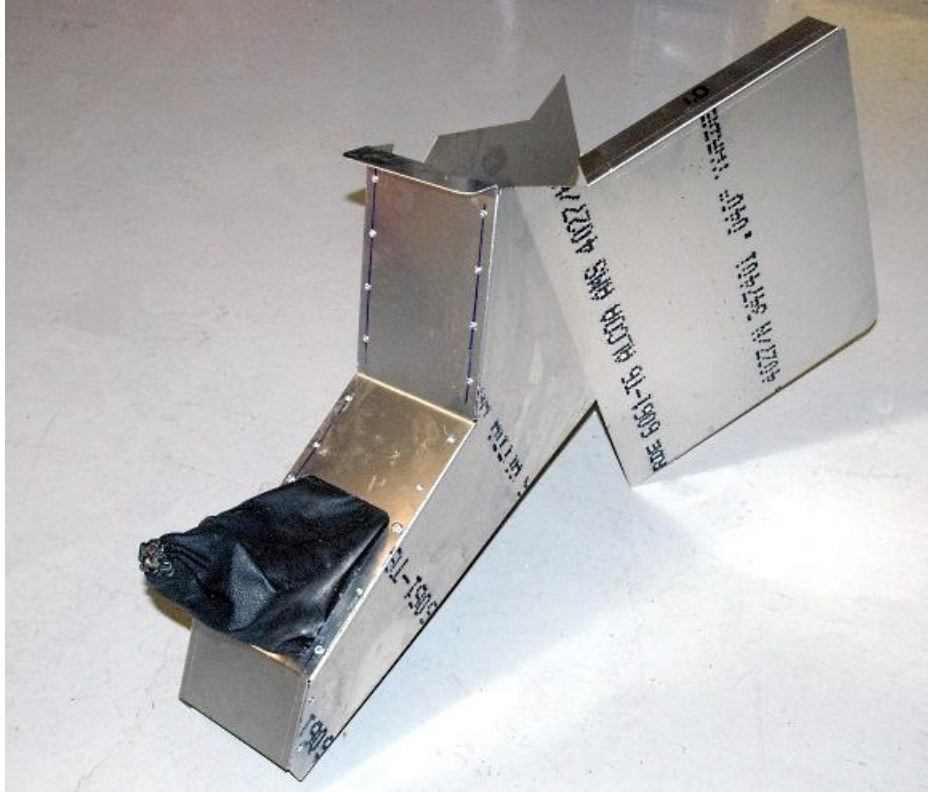
👉 Do the next two steps one corner at a time to make sure that the boot does not move out of place.



From the underside, use a $\frac{3}{16}$ " drill bit to drill through one of the corners of the boot and the aluminum.



From the top side, use a $\frac{3}{16}$ " rivet in the aluminum hole drilled with a #10 washer under the boot. Push the washer against the boot while tightening the rivet so that the boot is squeezed against the aluminum.



Finished console.

Cover the center console.

Install the center console so that the top center tab is tucked up behind the dash.

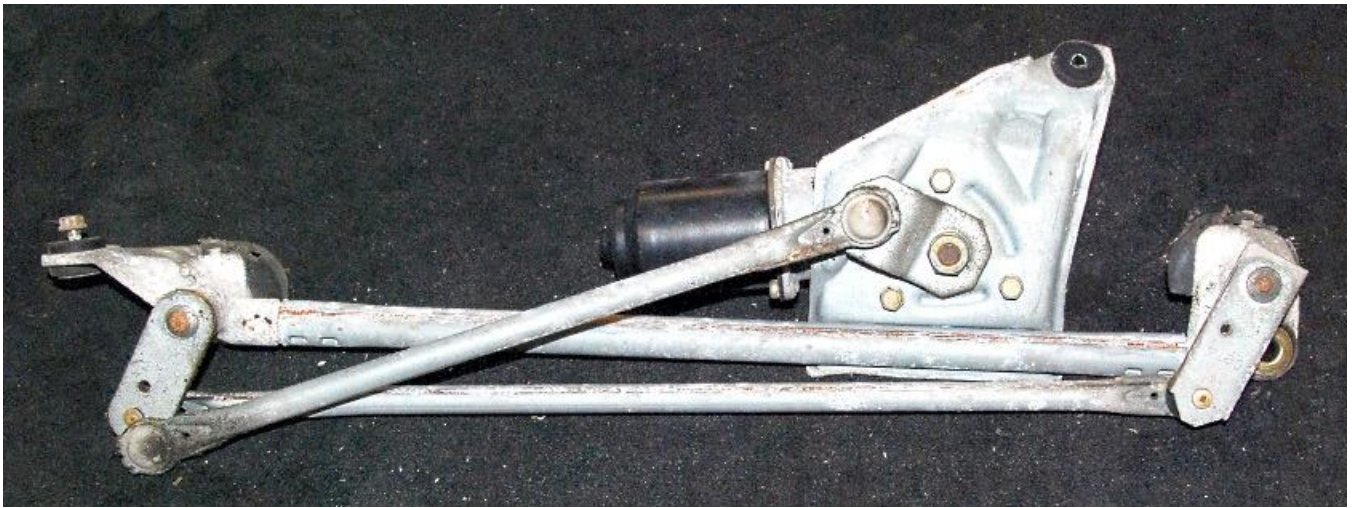
Attach the dash to the center console.

Attach the left side of the center console to the center cockpit tubes.

Appendix G: Wiper Instructions

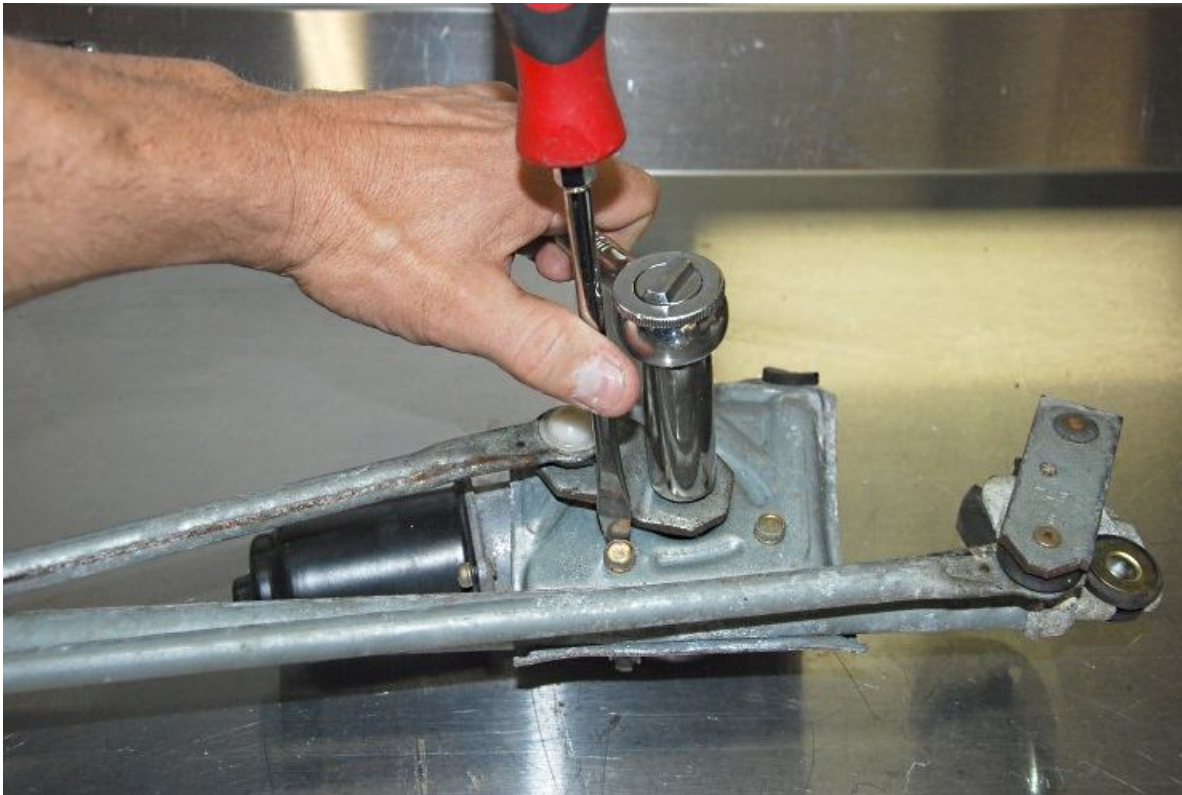


- ✎ Subaru wiper arms and blades are not used.
- ✂ Ratchet, drill, $\frac{3}{16}$ " , $\frac{1}{4}$ " , $\frac{3}{8}$ " , $\frac{25}{64}$ " drill bits, Rivnut tool, wrenches, $\frac{1}{8}$ " , $\frac{5}{32}$ " Hex key, small & large flat head screwdrivers, Philips head screwdriver, 10mm, 17mm sockets, vise, marker, masking tape, tape measure, clamp, air saw or jig saw.



 Wiper motor, shaft and wheelbox assembly.

Disassembly of the Subaru parts



Remove the wiper motor arm using a 17mm socket and large flat head screwdriver between the arm and the head of a motor mount screw to stop it from turning.



Remove the three bolts holding the wiper motor onto the mount bracket using a 10mm socket.



Remove the wiper arm shafts from the mount bracket. With the nut still on the splined shaft end, hit the nut with a hammer to remove the washer then remove the nut.



If necessary, use a punch or similar to get the wiper arm shaft completely out.



It is ok if the linkage arm pops off.



Remove the retaining ring from the groove on the wiper arm pivot shaft using a small flat head screwdriver.



Remove the white bushing from the wiper arm shaft.



Wiper parts used.

Assembly to new bracket

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Wiper Shaft	WIPER ARM PIVOT	1
2	818.2.4.5M - Hex jam nut, M10 x 1.5, with 16mm WAF -D+N		3
3	230-BB88	WIPER MOTOR	1
4	Wiper Shaft	WIPER ARM PIVOT	1
5	80785	MOUNT PLATE ASSEMBLY	1
6	80783		4
7	90967A165	External Retaining Ring	2
8	92161A032	Triple-Wave Washer	2
9	SBHCSCREW 0.25-20x0.75-HX-N		4
10	818.2.3.1M - Hex cap screw, M6 x 1.0 x 12 -12N	WIPER MOTOR SCREWS	3
11	LINKAGE	LINKAGE ARM	1
12	LINKAGE	LINKAGE ARM	1
13	MOTOR ARM		1

UNLESS OTHERWISE SPECIFIED:	DRAWN	NAME	DATE
818	J1	9/12/13	

DIMENSIONS ARE IN INCHES
 TOLERANCES:
 TWO PLACE DECIMAL ±0.01
 THREE PLACE DECIMAL ±0.005
 FOUR PLACE DECIMAL ±0.001

MATERIAL:
 FINISH:
 USED ON:
 APPLICATION:

818 WIPER SET
 SIZE DWG. NO. **A 80776** REV **A**
 SCALE: 1:4 WEIGHT: SHEET 1 OF 1

Factory Five Racing, Inc.
 TITLE:

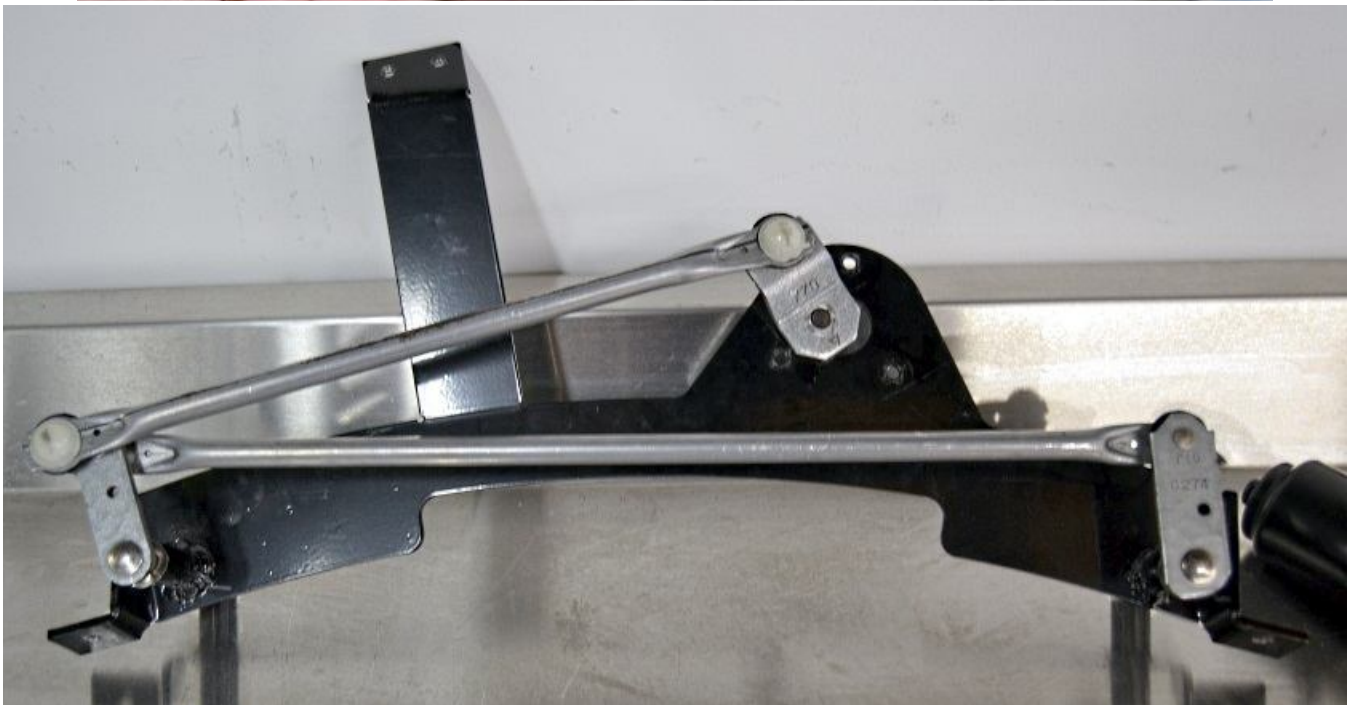
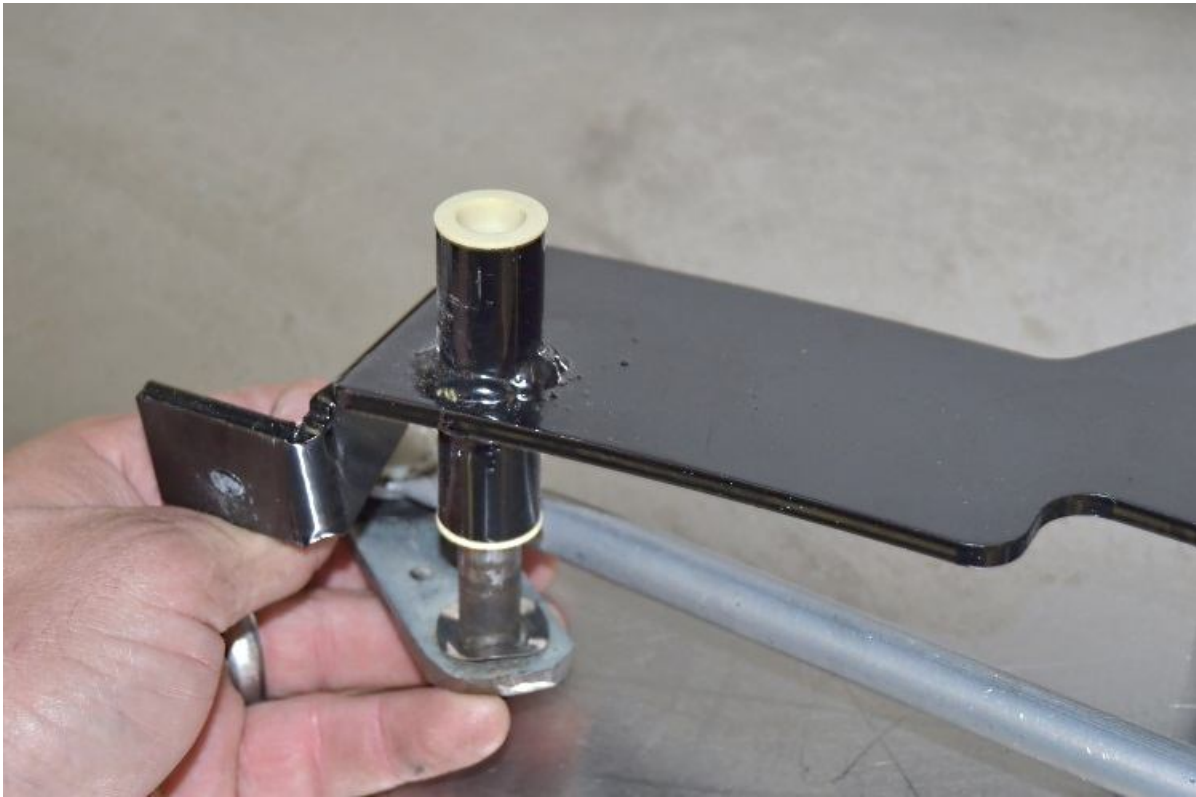
PROPRIETARY AND CONFIDENTIAL
 THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FACTORY FIVE RACING, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FACTORY FIVE RACING, INC. IS PROHIBITED.



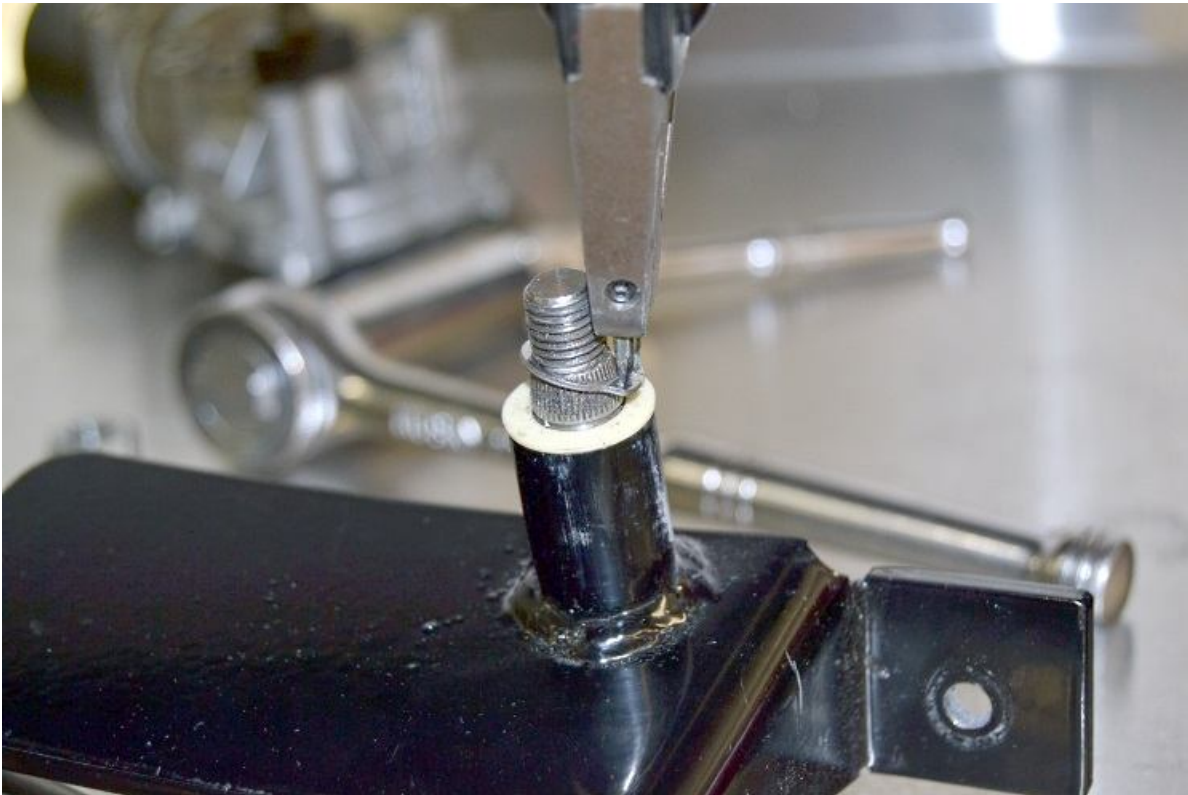
Push the nylon bushings into the shaft sleeves.



Put a wave washer onto each of the wiper shafts.



Insert the wiper shafts through the bushings in the bracket so that the linkage arms are as shown.



Attach the snap ring to the wiper shaft groove while pushing down on the bracket compressing the wave washer.



Attach the wiper motor to the top of the bracket using a 10mm socket and the stock bolts.



Leave the motor arm off the motor for now.

Frame prep

If installing on a finished car, remove the hood.

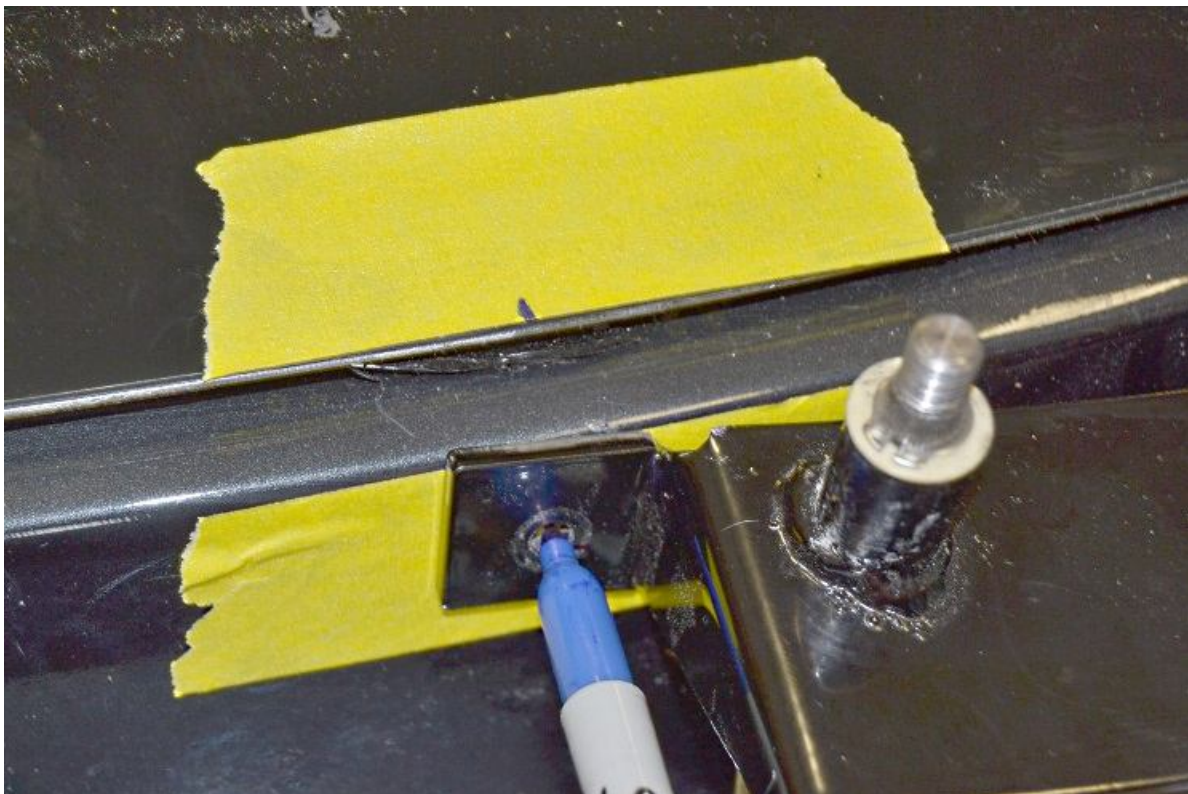
Put masking tape at the rough bottom center of the windshield.



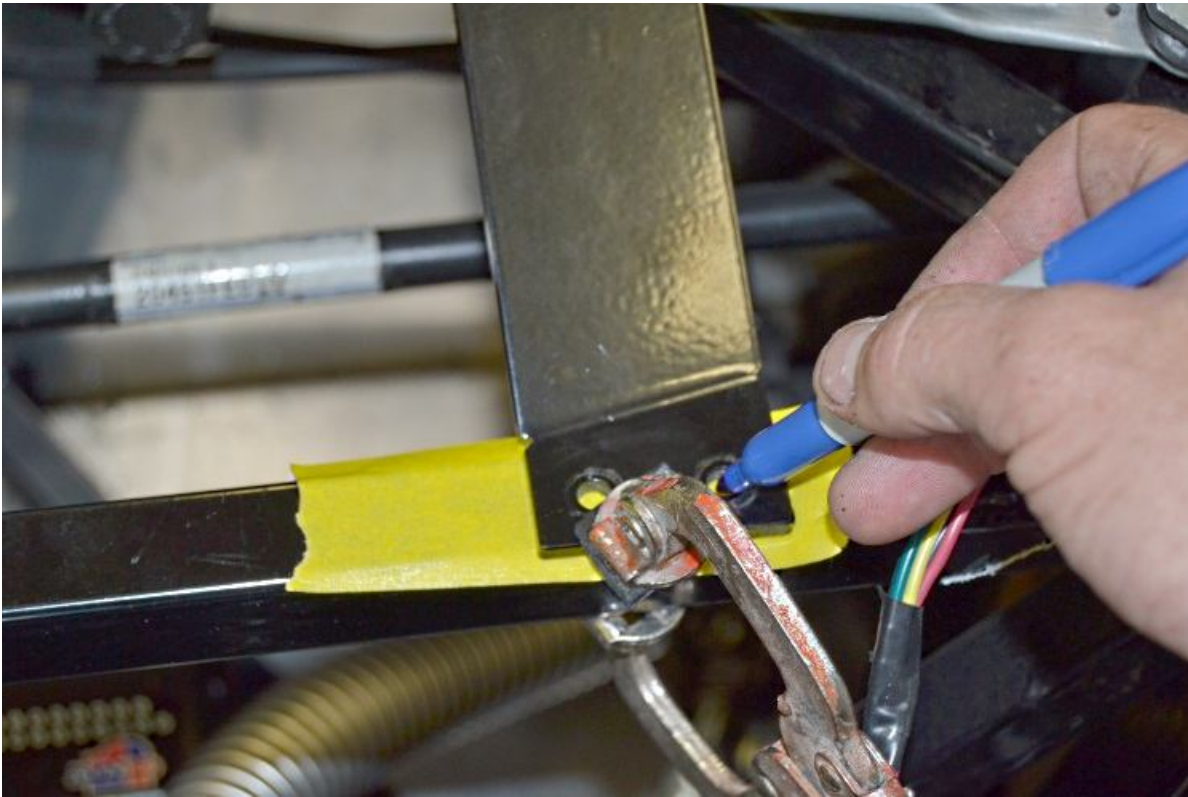
Use a tape measure and marker to find the bottom center of the windshield ($\sim 31\frac{5}{16}$ ") and mark the masking tape.



Clamp the motor bracket assembly to the 1" tube that goes across the car. The front of the bracket should be even with the front side of the tube and the rear mounting hole near the center of the car should be aligned with the center mark made. The top of the rear mounting hole tabs should be aligned with the angled edge of the windshield.



Mark the mounting hole location of the holes on the windshield surround.



Mark the front bolt hole locations.



Remove the motor assembly and drill all of the marked locations with a $\frac{3}{16}$ " drill bit.



Open the hole up for a rivnut using a $\frac{25}{64}$ " drill bit.



Install rivnuts in the windshield surround and the 1" tube.

Motor assembly installation

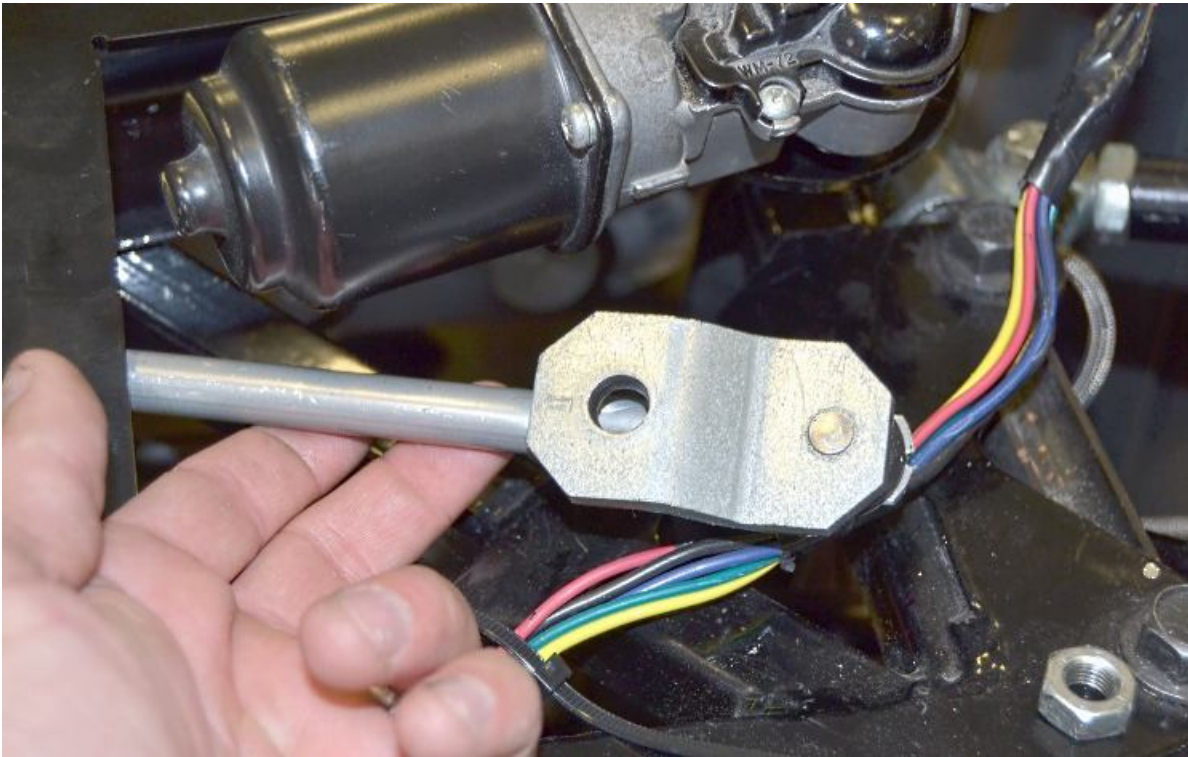


Attach the motor assembly using the $\frac{1}{4}$ "x $\frac{3}{4}$ " button head screws using a $\frac{5}{32}$ " Hex key.

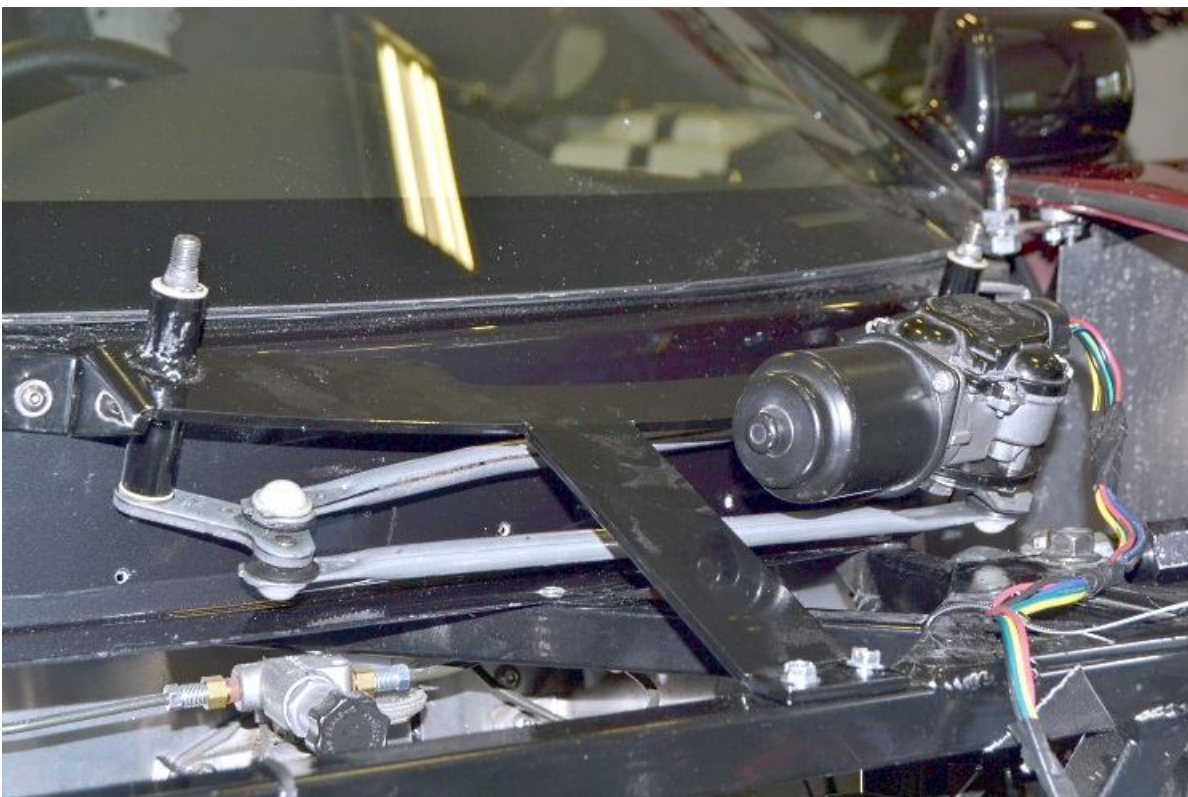


Attach the wiper motor connector to the wiper motor. If necessary extend the wires using the included wire and red butt connectors or solder the wires.

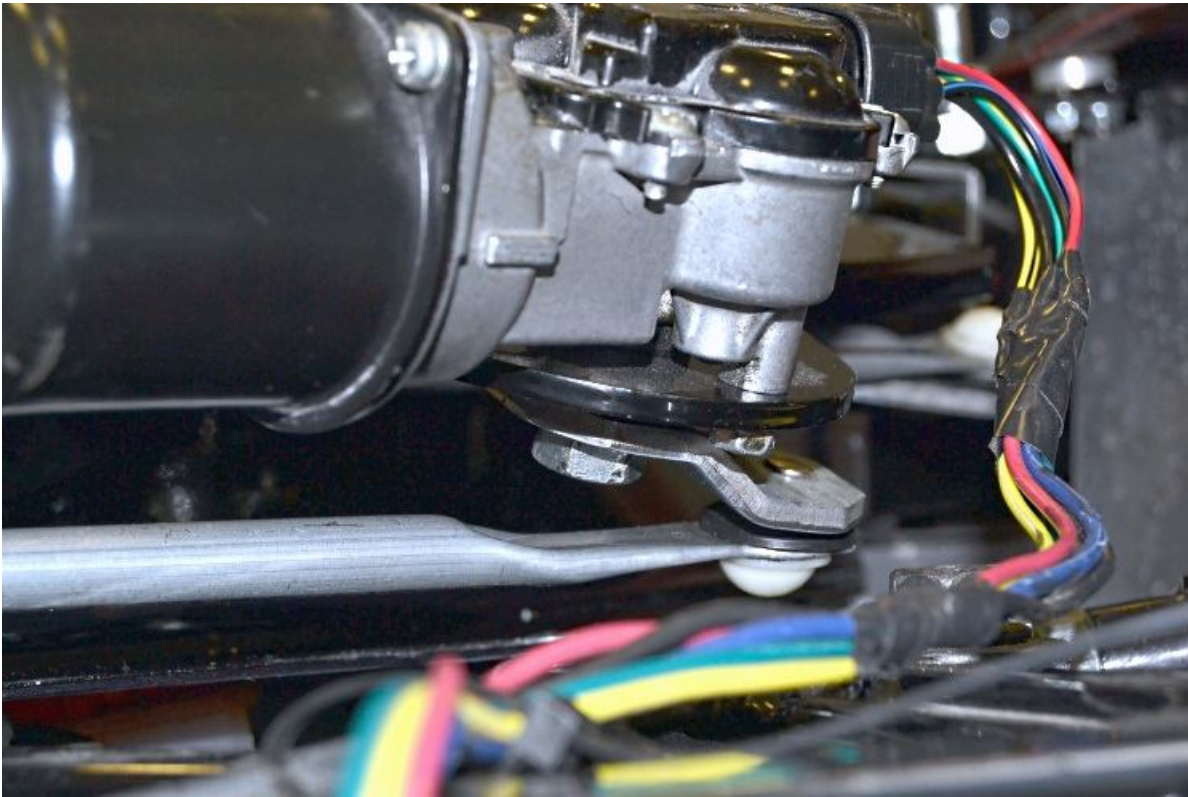
Turn the car on and turn the wipers on low for a few seconds then turn them off to make sure that the motor works and so that the motor returns to the park position so wiper arm install is easy.



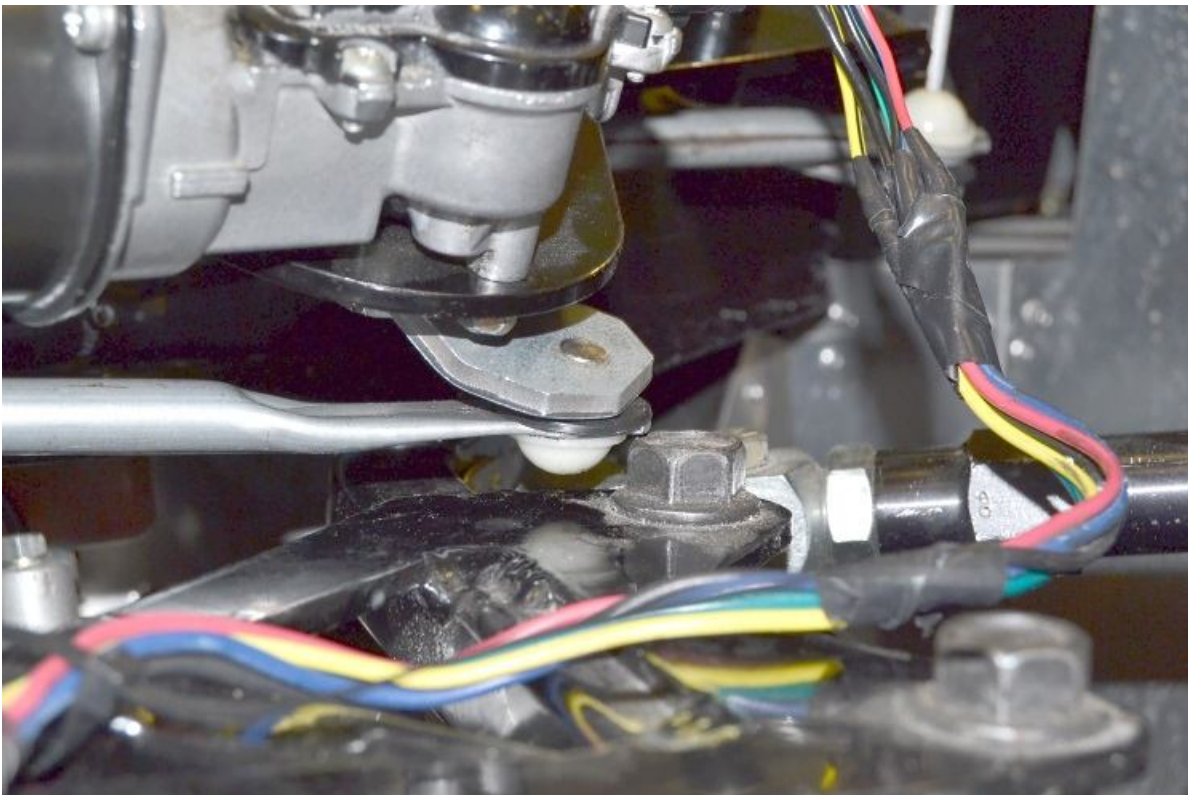
Rotate the wiper motor arm so that it is going back on the linkage as shown above.



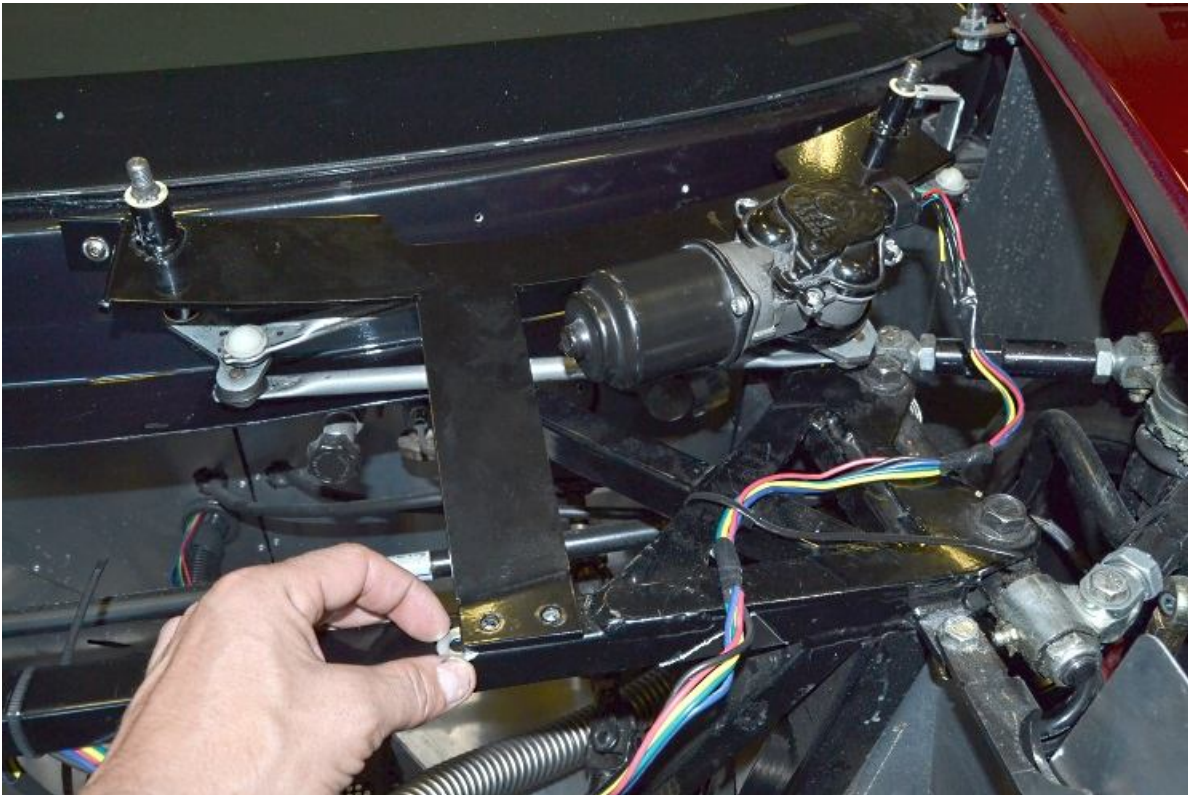
Move the wiper shafts and linkage arms so they are located as shown and the motor arm can reach the motor.



Attach the motor arm to the motor using the stock nut and 17mm wrench.



Check the clearance between the motor arm/linkage and the front upper control arm bolt.



If necessary for clearance space the front mount up using the 1/4" washers under the front bracket mount.



Reattach the front mount to the frame then double check clearance of the motor arm to control arm bolt and check all three linkage arms and wiper shaft arms for clearance by rotating the motor arm a full revolution by hand or with a wrench.

Cowl panel



Put the cowl panel on over the wiper shafts.



Locate the cowl panel so it sits down on the windshield then hold the side cowl mount brackets up to the windshield surround and the underside of the cowl panel and mark the holes on the cowl and the windshield surround.

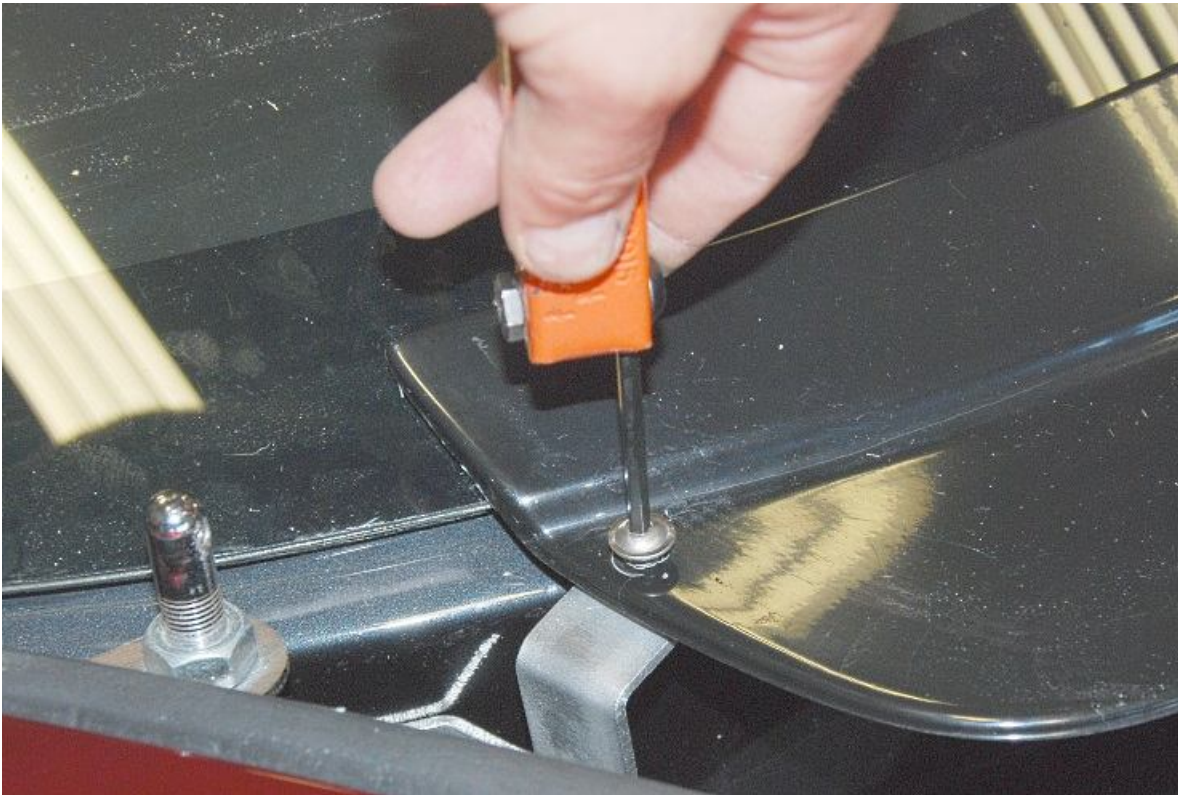


Drill the cowl at the marked locations using a $\frac{1}{4}$ " drill bit.

Drill the windshield surround using a $\frac{3}{16}$ " drill bit.



Install rivnuts on the side cowl mounts and rivet the side cowl mounts to the windshield surround using the $\frac{3}{16}$ " rivets.



Attach the cowl panel to the side brackets using the $\frac{1}{4}$ "x $\frac{3}{4}$ " button head screws and a $\frac{5}{32}$ " Hex key.

Hood preparation



Put the hood on the car.



Mark the hood where the cowl panel ends.



Note that the cowl panel is flush with the rear edge of the hood.



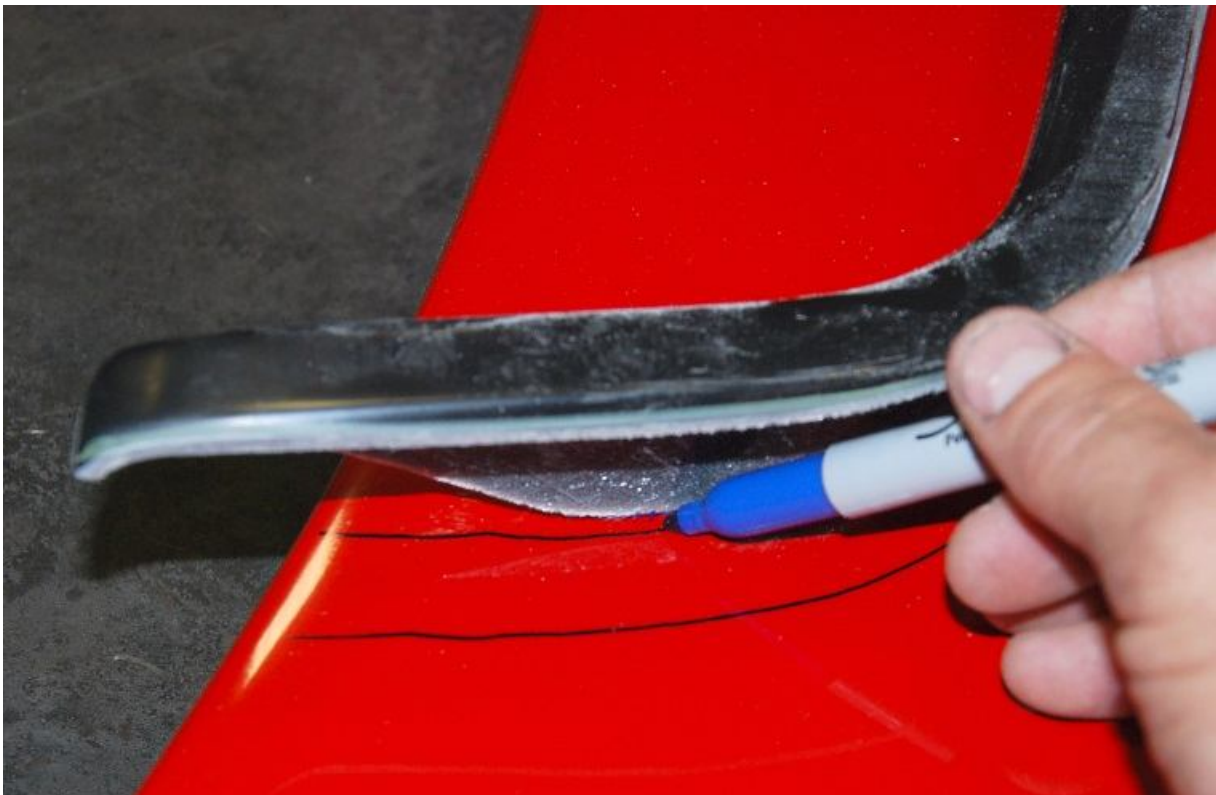
Remove the hood and place the cowl panel on top of the hood lining it up with the marks made and so that the back edge of the cowl is flush with the back edge of the hood.



Mark around the cowl panel.



Remove the cowl panel and place the cowl trim piece on the hood.



Center the trim panel between the cowl lines made and move the trim panel forward and so the top curved area is above the curve on the hood so they will sit on top of each other once the hood is cut.



Using a conservative line, cut the hood so that the cowl trim panel will sit correctly on the hood.

Check the fitment of the cowl trim panel in the hood. Remove more material if necessary.



Check the fitment of the cowl trim panel with the hood on the car as well checking to see that the panel will touch the cowl panel.

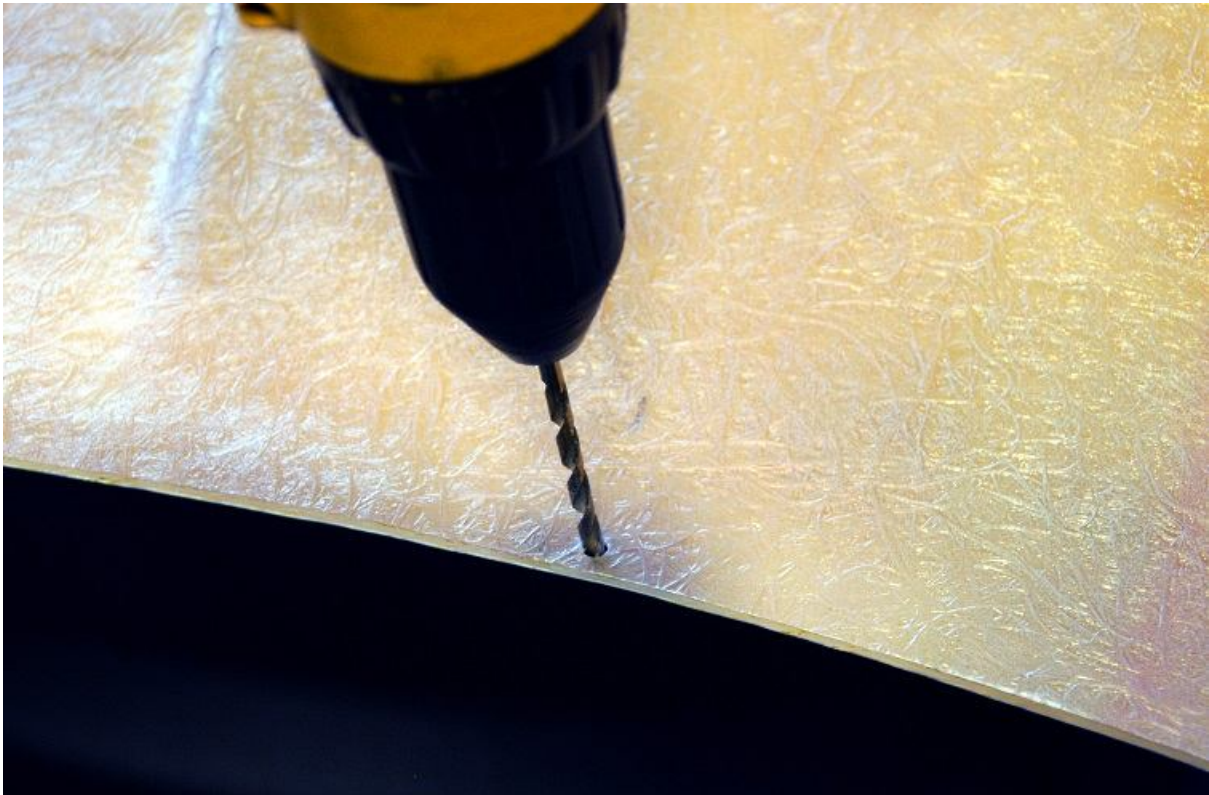


Put a wiper on the left side to make sure that the end of the arm

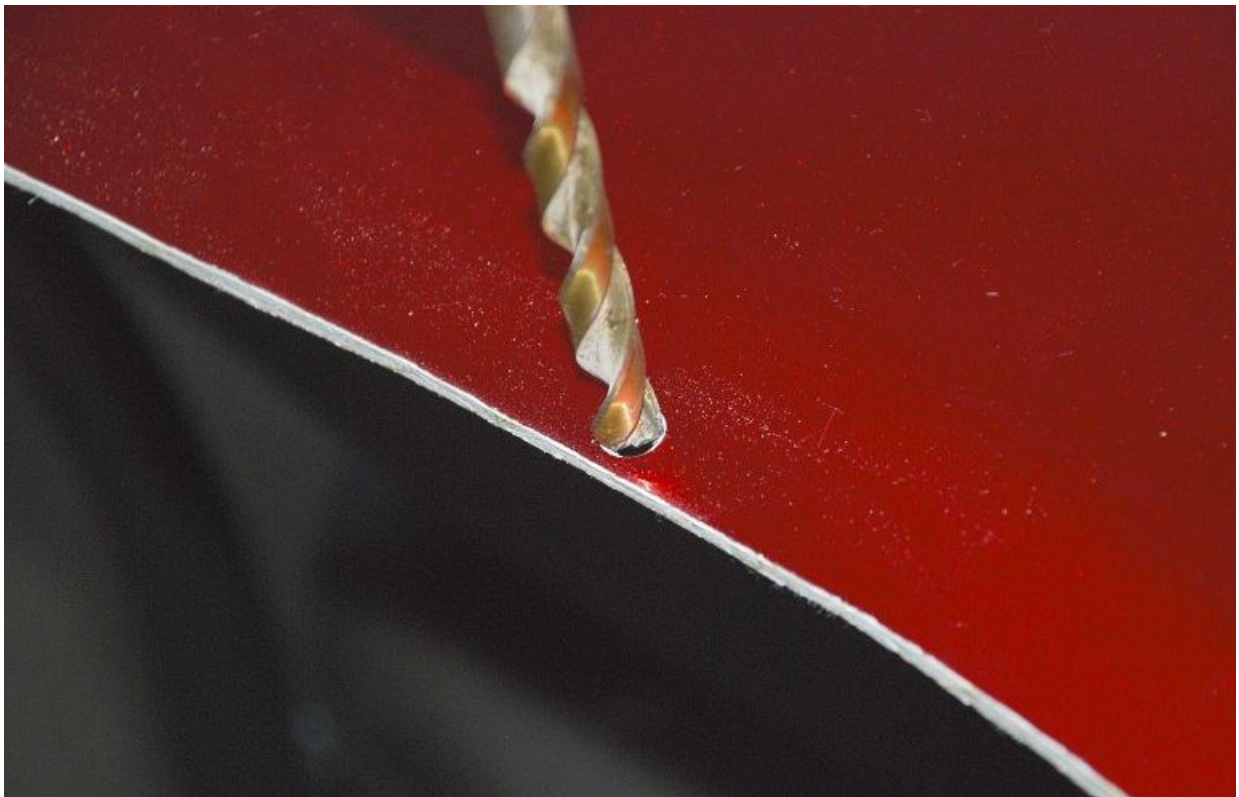
Cowl trim panel



Evenly space the cowl trim mounting brackets around the hood as shown above so that the tab is flush with the back edge of the hood and mark the hole location.



Use a $\frac{3}{16}$ " drill bit to drill the locations marked.



On the top side of the hood, use a $\frac{3}{8}$ " drill bit or a counter sink bit to countersink the hole for the flat head screws.



Check the fitment of the flat head screws.



Attach the cowl trim mount brackets using a Philips head screwdriver and a $\frac{3}{8}$ " wrench.



Attach the remaining brackets.



Hold the cowl trim panel up to the hood and mark the location of the mounting holes on the back side of the cowl trim bracket.

Drill the marked locations using a $\frac{3}{16}$ " drill bit.



Attach the cowl trim panel to the hood using the #10 black button head screws.

Wiper arms



Attach the wiper arms to the wiper blades. The left side gets the short arm and long blade and the right side gets the long arm and short blade.



Put the wiper arms on the wiper shafts.



Locate the wiper arms so they are in the park position and they are not hitting the cowl panel or each other.



Use a 17mm wrench or socket to snug the wiper arms up so they will just move with the motor. Do not fully tighten the nuts.



By hand, move the wiper arms through their sweep stopping at the high point.



Check clearance between the left arm and the corner of the windshield. If necessary, rotate the arm down slightly.



Tighten the wiper arms.

Run the wiper motor to see the movement of the assembly.



If the wiper arm nut covers came off earlier, reattach them at this time.

