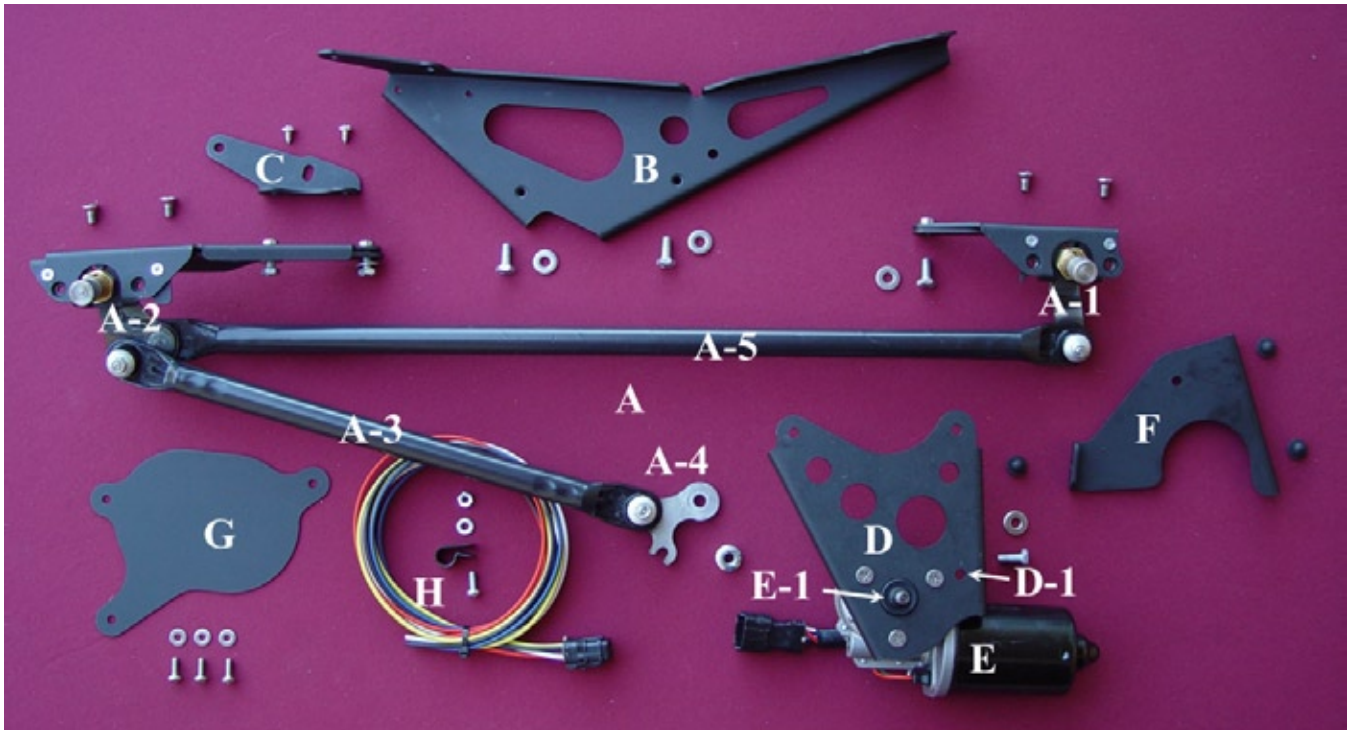
Installation instructions
for 1967-69 Camaro/Firebird and 1968-74 Nova* Windshield Wiper Systems



The Pacific Western Design 1967-69 Camaro/Firebird and 1964-74 Nova wiper system is designed for ease of installation as well as reliability.

Please review these instructions before beginning the installation of this windshield wiper system. This machine is designed with precision in mind. We do "tweak" our designs from time to time so there may be parts that have slight variations from when these pictures were taken. If you think you need to alter it to accommodate your installation, you are doing something wrong. Please call us. Pacific Western Design Inc. 1 800 686 1955 weekdays 9am to 4pm Pacific time. (Other times by chance.)

I. Getting Started

1. Please disconnect your battery. Do not reconnect the battery until you are finished and ready to test the system.

2. Remove the old wiper system.
   A. Begin by removing the wiper arms and blades. Your wiper arms and blades can be reused but none of the rest of the original parts are compatible with the Pacific Western Design Inc. wiper system.
   B. Remove the fresh air grill and cowling covering the air box in front of the windshield. See photo 1.
   C. Remove the OEM wiper motor from the firewall.
   D. Remove the OEM wiper assembly from inside the air box.
   E. Remove the stock wiper switch. The Pacific Western Design wiper system does not use any of the original windshield wiper wires.

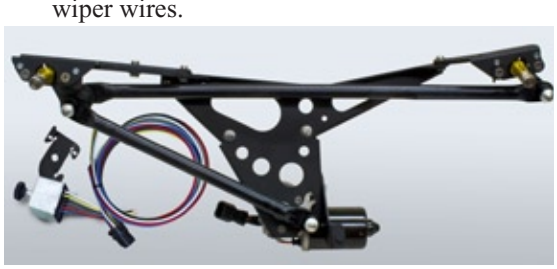


Photo 00 shows the 1969 and later system as it will look assembled in the air box. Plus it shows the optional variable delay switch.

Photo 1. This is the fresh air grille and coweling in fromt of the windshield opening. Note: in this photo the OEM wiper assembly has already been removed.

Photo 0.
A. Drive Unit Assembly
A-1. Driver Side Pivot Shaft Assembly
A-2. Passenger Side Pivot Shaft Assembly
A-3. Drive Arm Link
A-4. Drive Arm, Note "C" shaped Park Position Slot.
A-5. Pivot Shaft Link
B. Bridge
C. Bridge Gusset
D. Motor Plate
D-1. Motor Plate 1/4" dia. Park Position Locator
E. Motor
E-1. Motor Spindle
F. Motor Brace with 3 Rubber Bumpers
G. Cover Plate
H. Wiper Motor Wiring Harness
I. Grommet (not shown)

(Other items not shown based on options or application: Rotary Switch Adapter Plate, Switch, Switch Nut, Switch Knob and Switch Electrical Pack.)

** These systems may also work on other X bodies.*

II. Pre Installation:

3. Drill a 5/8" dia hole in the aft wall of the Air Box to route the wires from the switch to the motor. We used a step drill with a shaft extension to get the hole under the lip of the cowl. The Camaro/Firebirds and Novas are slightly different so find a place 4" to 6" (not more than 6") inboard of the middle of the driver side pivot shaft opening, just under the cowl lip, locating the hole as high as you can. Check for clearance under the dash. See photo 2

4. Install the enclosed rubber grommet in the hole to keep the wires from chaffing.

Photo 2. Drill the wireing pass through hole 4" to 6" (not more than 6") inboard of the middle of the driver side pivot shaft opening,

III. Installation

Installing the Drive Unit Assembly
Familiarize yourself with the orientation of the parts that make up the Drive Unit Assembly before inserting it into the air box. See Photo 3.

Photo 3. At the opening in the cowl forward of the driver position, insert the passenger side Pivot Shaft Assembly into the air box.

5. Insert the Drive Unit Assembly into the air box by sliding the passenger side Pivot Shaft Assembly through the opening in the cowl forward of the driver position, Once the entire Drive Unit Assembly is inside the air box it should end up with the knurls of the Pivot Shafts pointing in a mostly upward and aft position. See photo 4.

Some helpful tips:

a. You can put a heavy plastic bag over the passenger side Pivot Shaft Assembly before inserting it into the air box to help prevent scratching the surfaces.

b. If the driver side, plastic air intake duct (See photo 5) is causing interference with the driver side Pivot Shaft Assembly, you can remove it by going inside the car and taking out the three screws that hold it in place. See photo 6. Reinstall it later.

Photo 4. The entire Drive Unit Assembly should end up with the tips of the Pivot Shafts pointing in an upward and aft position. In this photo the Drive Unit Assembly is resting on the bottom of the air box with the Pivot Shafts to the left of their respective pivot shaft openings in the cowel.

6. Raise the Pivot Shafts into the pivot shaft openings in the cowl. Position the mounting holes in the Pivot Shaft Assemblies under their respective countersunk holes at both sides of the pivot shaft openings. Secure each side with two 1/4" countersunk screws but do not tighten yet. Leave them about one turn shy of tight. See photo 7.

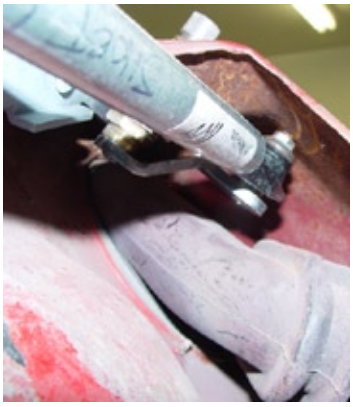


Photo 5. If the driver side, plastic air intake duct is causing interference with the driver side Pivot Shaft Assembly, remove it while installing the Wiper System

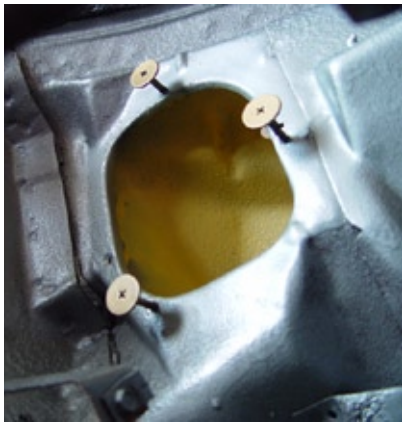


Photo 6. The three screws that hold the plastic air intake duct.

Photo 7. Secure each side with two 1/4" countersunk screws but do not tighten yet. Leave them about one turn shy of tight.

7. Before putting the Bridge into the air box, attach the Bridge Gusset to the passenger side of the Bridge. Two #10 phillips head sheetmetal screws go into the bridge vertically. Do Not tighten the screws yet. Leave them about a half turn from tight. See photo 8.

8. Insert the Bridge into the air box, under the Pivot Post Link. Attach the Bridge to the Pivot Shaft Assemblies. Start at the passenger side. Use two 1/4-28 bolts and flat washers to join the Bridge to the passenger side Pivot Shaft Assembly. Then go to the driver side and join the left Pivot Shaft Assembly to the Bridge with a single 1/4-28 bolt. Finger tight to start .... Please DO NOT tighten bolts until all three are in place.

9. Tighten the Bridge Gusset screws.

10. Tighten the right and left Pivot Shaft Assembly bolts. See photos, 9 and 10.

11. Tighten the 4, Countersunk, 1/4" phillips head bolts in the cowl.

12. Clip the black plastic connector on the Wire Harness into the connector on the motor.

13. Place a heavy plastic bag over the Motor/Motor Plate to help prevent scratching. Insert the Motor Plate into the air box. Orient the two 1/4" holes with the threaded bosses near the center of the Bridge. Use two 1/4" bolts and flat washers to secure it. Tighten these bolts. See photos 11 and 12.

Tip: Pushing the (long) Pivot Post Link to the passenger side will give you room to get the motor in.

14. Route the harness wires under the Bridge. This can be tedious. It may be easier to route one wire at a time. Secure them near the middle of the Bridge with a nylon wire loop, 10-32 x ½" screw and nut and continue routing the wires through the Grommet and into the vehicle interior. See photo 13.

Photo 8. Before putting the Bridge into the air box, attach the Bridge Gusset to the passenger side of the Bridge.

Photo 9. After attaching the Bridge to the Pivot Shaft Assemblies and tightening the Bridge Gusset screws, tighten the right Pivot Shaft Assembly bolts.

Photo 10. Tighten the left Pivot Shaft Assembly bolts. Then tighten the 4, Countersunk, 1/4" phillips head bolts in the cowl.

Photo 11. Insert the Motor Plate into the air box. Orient the two 1/4" holes with the threaded bosses near the center of the Bridge.

Photo 12. Use two 1/4" bolts and flat washers to secure it. Tighten these bolts.

Photo 13. Route the harness wires under the Bridge.

Installing the Drive Arm onto the Motor Spindle:

15. Remove the nut on the Motor Spindle. Push the Pivot Shaft Links to the left and orient the Drive Arm as shown in Photo 14. Position the open hole in the drive arm over the Motor Spindle. Lower the Drive Arm onto the Motor Spindle and replace the Spindle Nut leaving it loose. DO NOT TIGHTEN UNTIL YOU HAVE FOLLOWED THE NEXT STEP.

16. Look through the small, 1" x 2" rectangular hole on top of the cowl. Locate the "C" shaped detail on the Drive Arm. Rotate the Drive Arm counter clockwise (CCW) until the "C" shaped detail on the Drive Arm comes to rest over an empty, 1/4" hole in the Motor Plate. (NOTE: The 1/4" hole on the Motor Plate is called the "Park Position Locator".) Proper orientation of the "C" detail on the Drive Arm and the 1/4" hole in the Motor Plate are **ESSENTIAL** to locating the "Park Position" of the Wiper System.

17. To lock the Drive Arm onto the Motor Spindle, pass a long 1/4" bolt (or the shaft of a Phillips screwdriver) through the "C" shaped detail on the Drive Arm and into the 1/4" hole on the Motor Plate. See photos 15 and 16. **(NOTE: *ALWAYS* use this procedure to loosen or tighten the Drive Arm.** This will prevent the Drive Arm from rotating the motor out of it's proper "Park Position".) With the Drive Arm locked in this position, insert the open end of a 13mm wrench into the original motor hole in the firewall and tighten the Spindle Nut. See photo 17. (Note: If the motor hole has been welded closed, to clean the firewall, you can also gain access for tightening the Spindle Nut through the top of the cowl air box.)

Photo 14. Position the open hole in the drive arm over the Motor Spindle. Lower the Drive arm onto the Motor Spindle.

Photo 15. Put the Drive Arm onto the Motor Spindle. Looking through the small rectangular hole on top of the cowl air box. Rotate the Drive Arm counter clockwise (CCW) on the Moter Spindle until the "C" shaped detail on the Drive Arm comes to rest over an empty, 1/4" hole in the Motor Plate. . Pass a long 1/4" bolt or the shaft of a phillips screwdriver through the "C" detail of the Drive Arm and into the 1/4" hole on the Motor Plate and tighten Spindle Nut.

Photo 16. is taken inside the cowl air box looking from the driver side towards the passenger side. The original motor hole is to the left

Photo 17. With the Drive arm locked in position (with the bolt or screw driver) insert the open end of a 13mm wrench into the original motor hole in the firewall and tighten the Spindle

Installing the Motor Brace:

18. Install the three rubber bumpers into the Motor Brace flange holes. Insert the Motor Brace into the air box. The crescent shape in the brace fits onto the body of the motor itself. Two rubber bumpers rest on the floor of the air box and one is on the top. Raise the Motor Plate with one hand and with the other hand orient the 1/4" hole on the middle of the Motor Brace with the 1/4" threaded boss on the Motor Plate. Secure with a 1/4-28 bolt and flat washer. See photos 18, 18a and 19.

Photo 18. Put three rubber bumpers into the Motor Brace flange holes.

Photo 18a. Insert the Motor Brace into the air box. The crescent shape in the brace fits onto the body of the motor itself. Raise the Motor Plate with one hand and with the other orient the 1/4" hole on the middle of the Motor Brace with the 1/4" threaded boss on the Motor Plate. Secure with a 1/4-28 bolt and flat washer.

Photo 19. When the crescent shape in the brace is positioned around the motor, two of the rubber bumpers rest on the floor of the air box and one is on the top.

19. Plug the motor hole in the firewall with the Cover Plate. Use three 10-24 Screws and flat washers. The Cover Plate is chemically plated Black Zinc. See Photo 20.

20. Prepping the Switch for installation: Often new switches have a very tight spring to hold them in their detent positions. We recommend that, before you install the switch, you "work" the switch several times to make sure the switch will move from position to position easily. Grip the switch shaft with pliers (not the knob) to get enough leverage to turn the switch from position to position. This is most important for installations using the plastic switch knob.

21 For the 1967-68 Camaro/Firebird and 1968 Chevy II Nova using a standard switch, simply replace the wiper switch with the one provided in the kit. The delay switches for 67-68 Camaros/Firebird and 1968 Chevy II Nova are supplied with a (brass) 3 piece extension to clear the rear of the dash. Orient the switch on the Rotary switch adapter plate as desired (or in the dash) and then file a "flat" on the bottom of the shaft extension for the set screw in the switch knob. The inner switch nut should be run out on the shaft so that when the outer (chrome) switch nut is tightened down no threads should project beyond the inner surface of the nut, see photo 21. The 1969 Camaro/Firebird and 1969 to 74 Nova have the molded plastic dash insert. For these applications we supply a Rotary Switch Adapter Plate that screws onto the backside of the dash in the same location as the slide switch that came with the car. This allows you to replace the factory switch with the one supplied with the kit. See photos 22 to 26.

Photo 20. A Cover Plate is provided to plug the motor hole in the firewall if you do not choose to weld it closed.

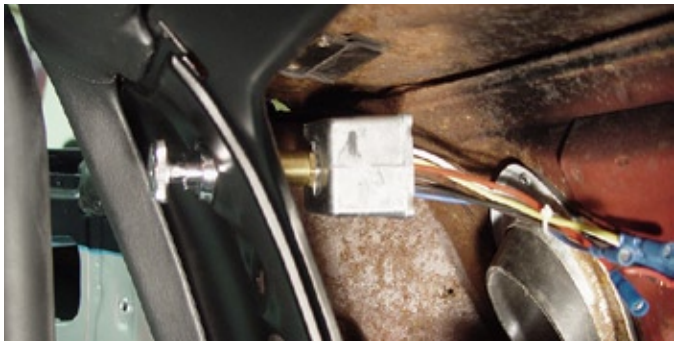


Photo 21. This photo shows the 1967-68 Delay Switch installed in the dash. The delay switch for this application is supplied with a (brass) 3 piece extension to clear the rear of the dash.

Photo 22. We supply a Rotary Switch Adapter Plate that screws onto the backside of the dash in the same location as the slide switch that came with the car.

Photo 23. You can attach the Switch to the Switch Adapter Plate before installing it in the dash.

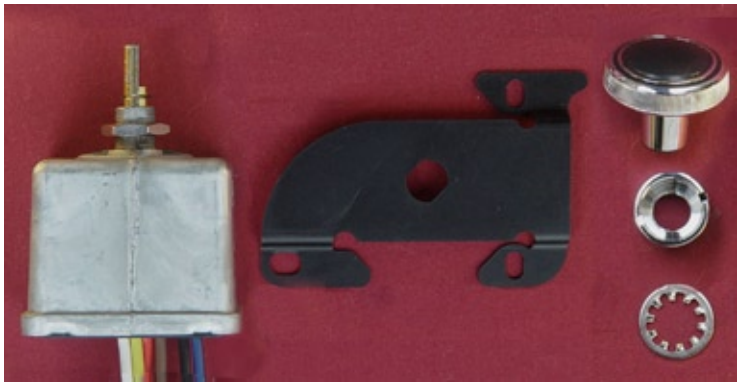


Photo 24. This photo shows the later 1969 -74 Delay Switch and installation hardware. Your switch may look different, depanding on the year of your car and type of switch.

Photo 25. This photo is an inside the dash shot of installing a 1969 and later Delay Switch.

Photo 26. This shows a 1969 and later Switch installed using the Rotary Switch Adapter Plate. The Switch Nut is in place but the Knob has not yet been installed.

V. Wiring: Please wire the system according to the wiring diagram supplied with the switch you are using. See the last (yellow) page of instructions.

Wiper systems are open machines with very powerful moving parts. Keep electrical wire bundles well away from the Drive Unit and links across this wiper system. Tie or tape heater ducting and wiring away from the system.

VI. Testing: Before installing the Wiper Arms, you **MUST** test to make sure the system functions properly.

22. Make sure you have a fully charged 12 volt battery to test the system. A battery charger will not work on the delay wiper systems. A battery with a charge below 11.5 volts will not work.

23. Test the wiper park position by wrapping tape around the knurled head of both Pivot Shafts, leaving roughly 6" flaps to act as simulated wiper arms.

24. Turn the Wiper Switch on, then off to make sure the arms will park in the proper position. The flaps of tape should stop at the end of their sweep, just as the direction reverses. If this is not happening - if a flap is stopping somewhere in the middle of the sweep, turn the system off with the Wiper Switch (not with the ignition switch or by disconnecting the battery.) When you have correctly turned it off with the Wiper Switch, inspect the Drive Unit "park position" alignment. Return to steps 16 and 17. If this looks to be correct, something is wrong with the installation. **Call Us**, before installing the Wiper Arms and Blades.

VII. Arm and blade installation: With the wiper turned off using the switch, so that the system in the park position, install the arms and blades where they should be when parked. The original GM knurls were diecast with a taper at the top. Ours are made straight. As a result some arms can be difficult to start and seat. Make absolutely certain that the arm is not cocked against the knurl or you will never get it started. Some arms may tighten on the knurls about 3/4 of the way down. We suggest lubing the knurls before installation of the arms. We use a plastic faced hammer to gently tap the arms securely onto the knurls as necessary.