



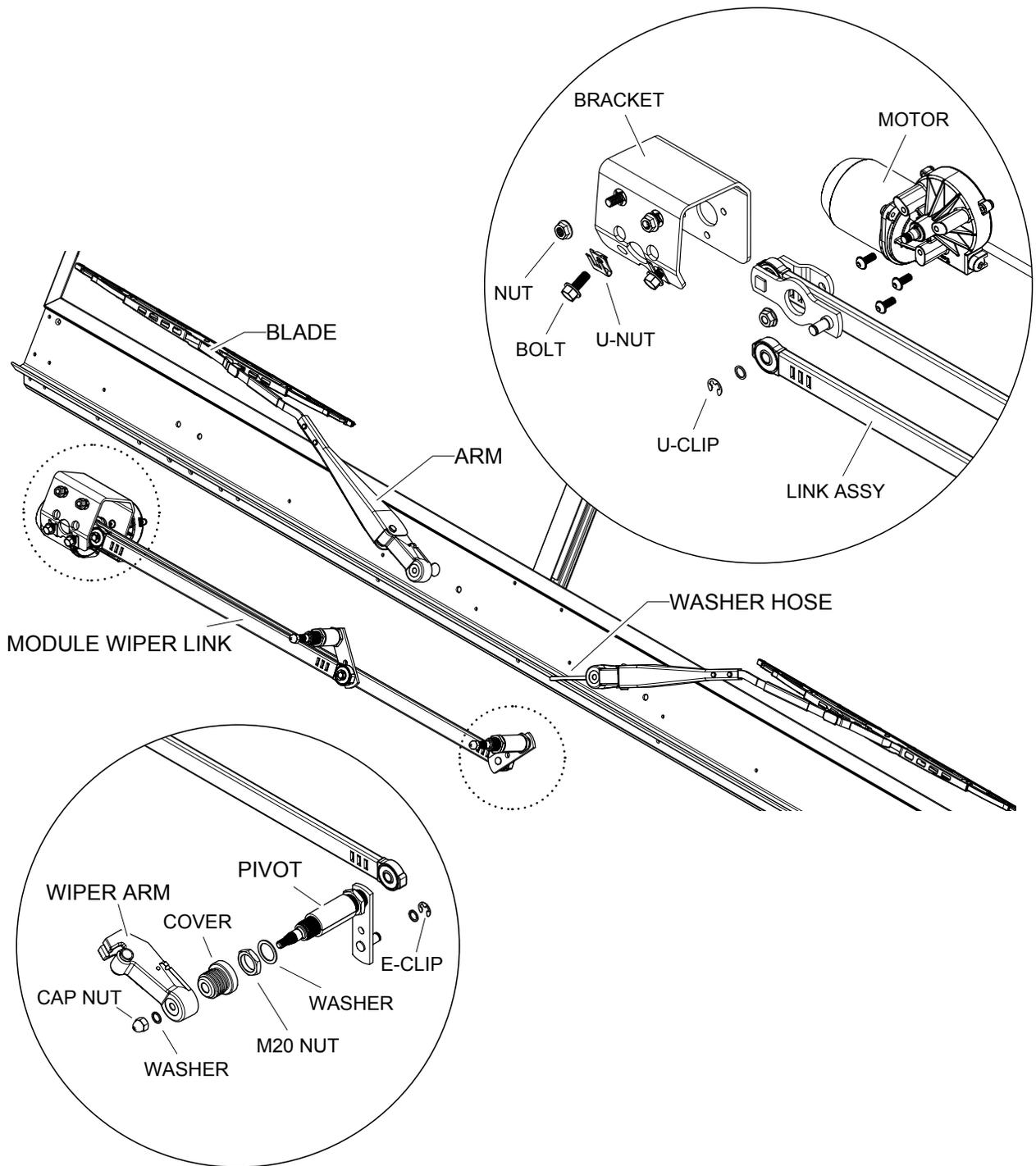
Service Guide

Aeromaster Wiper System W-Series

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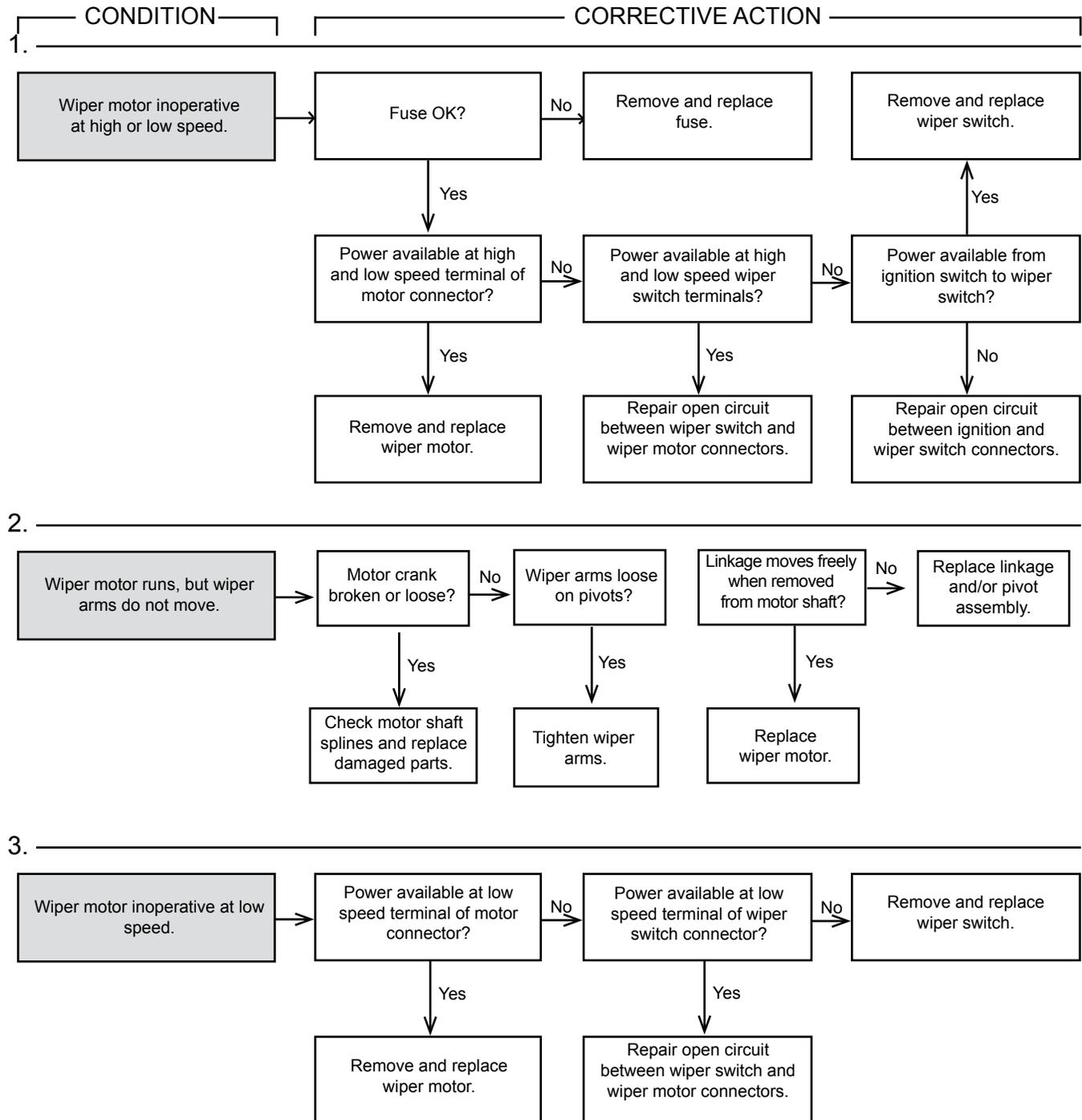
Overview

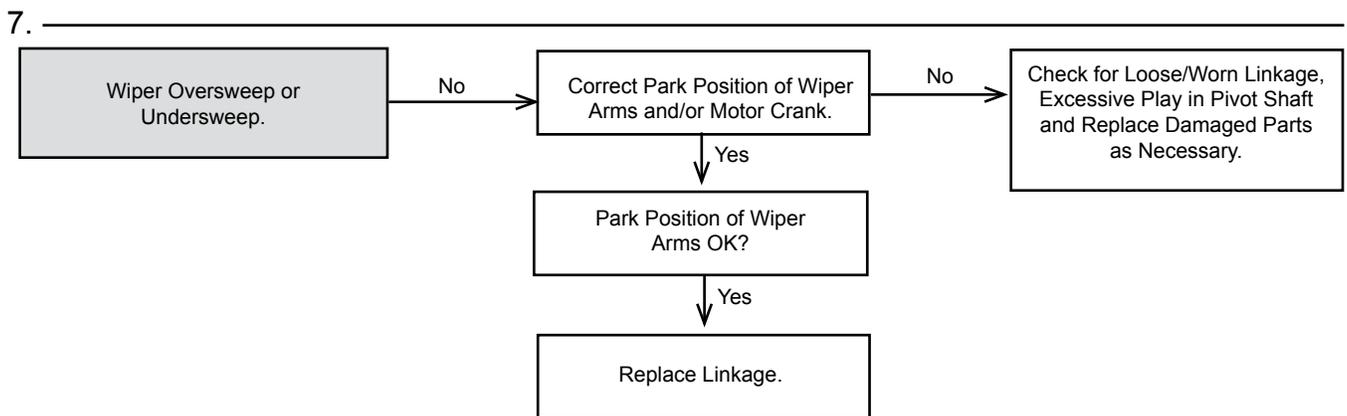
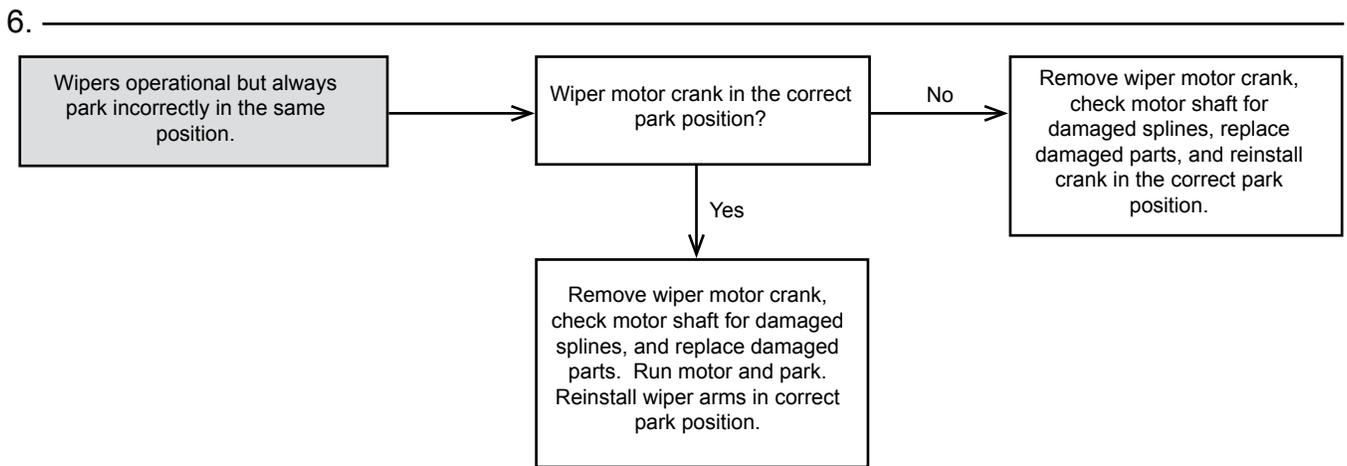
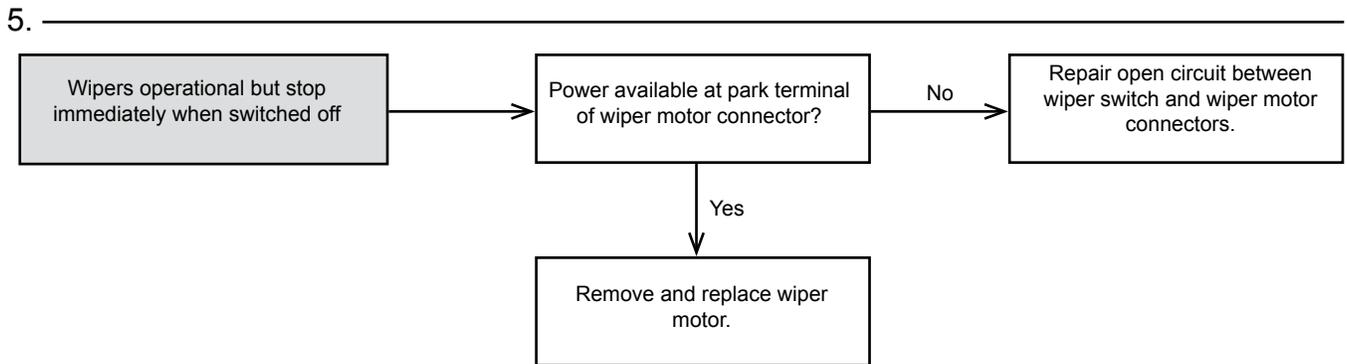
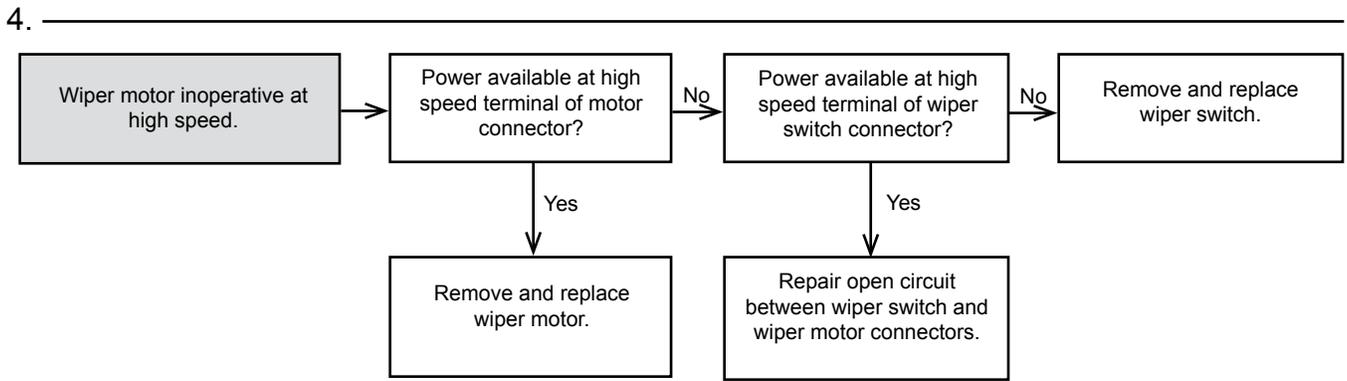


Wiper system overview

Troubleshooting Procedure

The following troubleshooting and repair procedure should be followed when encountering problems with wiper systems.





Wiper Blades



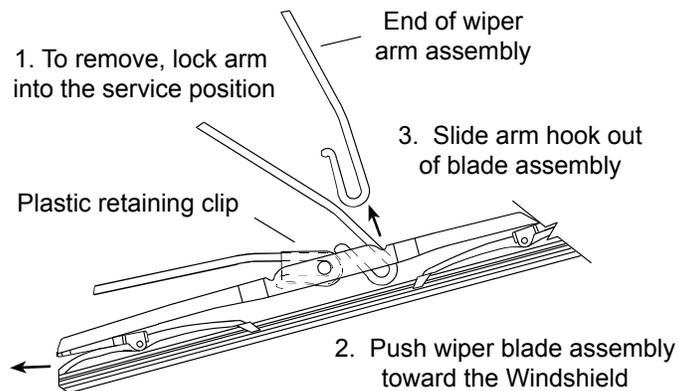
CAUTION: Always install wiper arms and blades according to the manufacturer's instructions to avoid interference with the windshield molding.

Removal

1. Pull the wiper arm away from the windshield and lock the arm into the Service position.
2. Rotate the blade about 90° and push the blade toward the windshield about 1". The rubber insert will bow outward from the arm pushing against it.
3. Unhook the blade assembly from the arm.

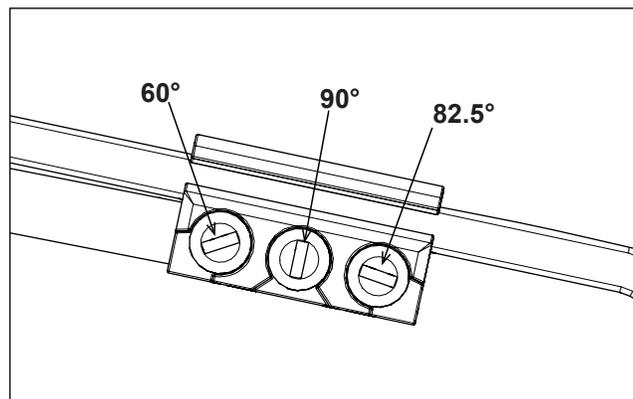
Installation

1. Hook in a replacement blade and push it away from the vehicle until the blade locks in place.
2. Rotate the blade to its normal position and lower the arm.



Washer Nozzle Spray Adjustment

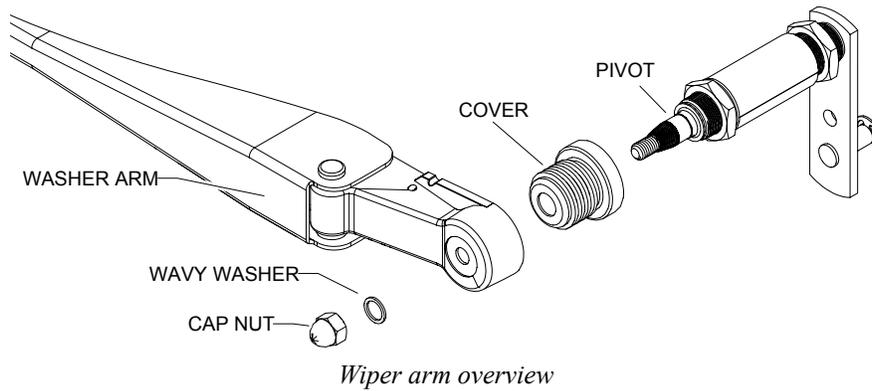
1. Use a screwdriver to adjust middle nozzle 90 degrees (perpendicular) to the windshield.
2. Adjust inboard nozzle to point approximately 60 degrees outward of middle nozzle and the outboard nozzle to point approximately 82.5 degrees outward of middle nozzle.



Wiper spray nozzle adjustment screws (RF shown)

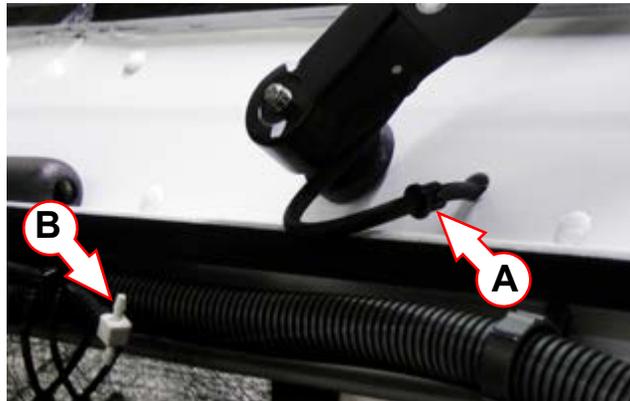
Wiper Arms

Removal



NOTE: Keep all fasteners unless noted otherwise.

1. Disconnect the washer hose from the T-fitting pump assembly under the hood. Remove the grommet and the hose through the cowl.

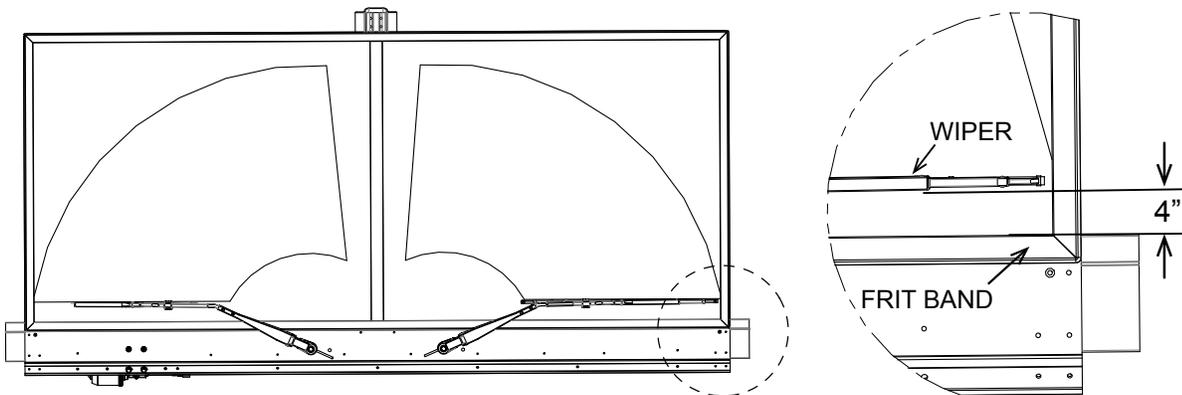


Wiper arm hose grommet (A) and T-fitting (B)

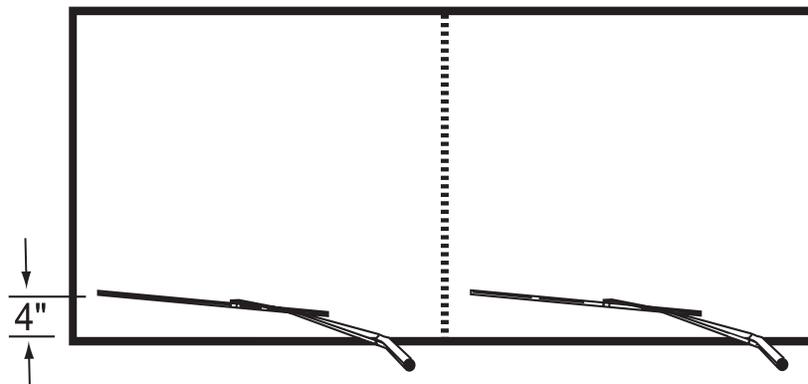
2. Remove the arm-retaining cap nut and washer with a 13 mm wrench and remove the wiper arm.
3. Use a battery post puller to release the arm from the shaft, if necessary.

Installation

1. Turn the ignition On, and run the wiper system. Return the wiper control to the Off position to allow the wiper motor to park itself.
2. Push the arm heads over the tapered knurl shaft. The blades should be approximately 4" from the top edge of the windshield glass frit band and the bottom edge of the wiper.
3. Replace arm-retaining cap nuts and wavy washers and with a 13 mm wrench.
4. Inspect by turning the ignition On, and run the wiper system. Return the wiper control to the Off position to allow the wiper motor to park itself.
5. Torque to 13–17 ft•lbs.
6. Push the washer hose through the holes in the cowl and connect to the T-fitting washer pump.
7. Re-torque after 30 minutes.



86.5 and 93.5 Park position



78.5 Park Position

Wiper Assembly

Removal

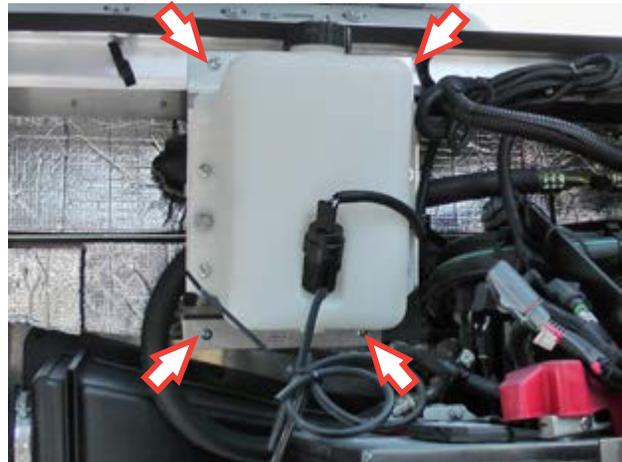
NOTE: Removal of the washer bottle assembly is only necessary on the Ford E-Series chassis. Do not disconnect washer bottle or hose

NOTE: Keep all fasteners unless noted otherwise.

1. On the Ford E-Series chassis, remove (4) Torx screws from washer bottle bracket and set assembly aside.



Harness on the RH side of washer bottle



Washer bottle bracket fasteners



CAUTION: *The wiper motor is equipped with an internal thermal overload protection switch that stops the wiper motor in case of overload. Thus, if the motor is not unplugged, the motor may activate itself without warning. Always unplug the motor when working on or disconnecting wiper linkages.*

2. Turn the ignition On, and run the wiper system. Return the wiper control to the Off position to allow the wiper motor to park itself.

3. Mark the Park position on motor bracket using a marker or grease pencil. The lower crank arm should be horizontal and point toward the passenger side of the vehicle.
4. Park position marked on wiper motor bracket.



Park position marked on wiper motor bracket

5. Disconnect the wiper arm washer hoses from the T-fitting under the hood. Remove the grommet and the hose through the cowl.
6. Cut wiper motor harness Metri-Pack retainer clip and discard.



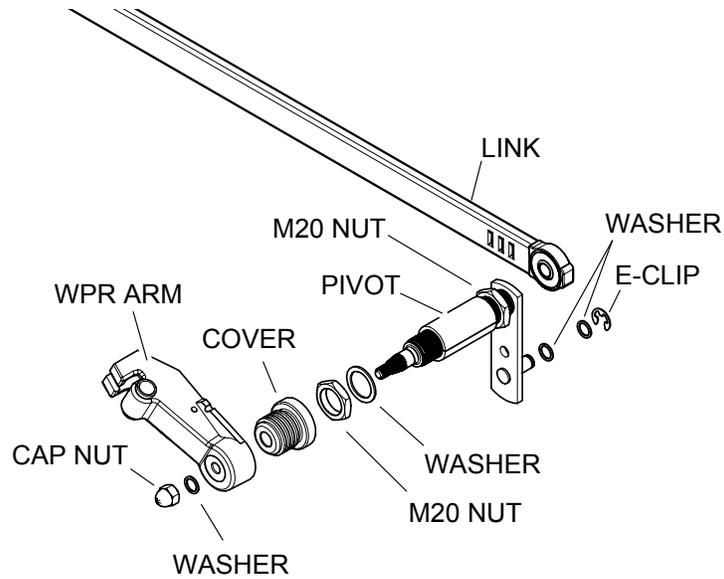
Harness retaining clip



Wiper hose

7. Disconnect the wiper motor harness from the jumper harness.

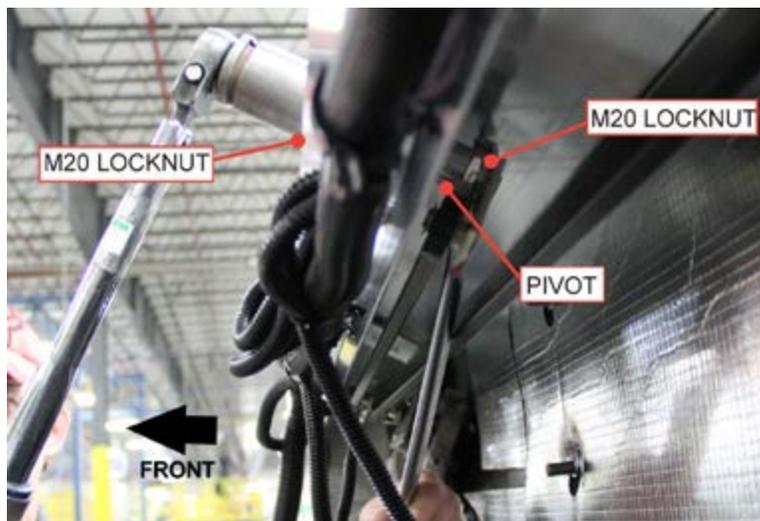
8. Remove the wiper arm.



Overview of arm and pivot

NOTE: If outside locknut is seized on the housing, use a rotary style cutter to remove nut.

9. Use a deep socket and a wrench under the cowl to remove M20 locknuts and flat washers from pivots.



Cowl locknuts on pivots

10. Remove (2) 5/16" nuts on the cowl.

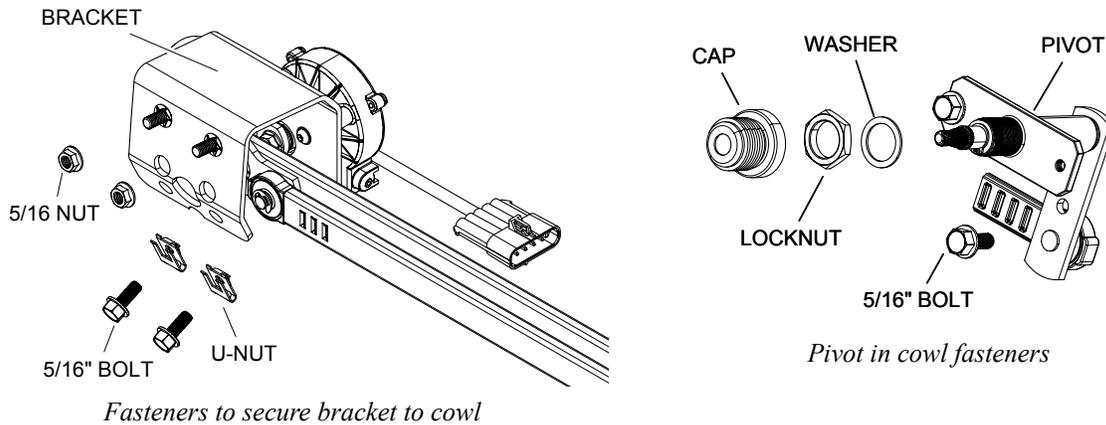


Wiper bracket screws and nuts

11. Remove (2) 5/16" flange screw from the lower cowl channel.

12. Remove the entire wiper assembly from under cowl.

Installation



CAUTION: Do NOT cross-thread the bolts into the pivot flange. If a screw does not thread easily by hand, align pivot flange with holes in the cowl. Enlarge hole if needed.

NOTE: Wiper assembly may be wire-tied to prevent motor crank rotation during vehicle installation. Remove after vehicle installation of system.

NOTE: Secure with flange screws only on 2015 wiper systems or later or if removing assembly to replace pivots. See pivot installation.

1. Place wiper assembly under cowl and loosely fasten (2) 5/16- x 1.25 flange screws in pivot flange holes starting from the passenger side.
2. Loosely tighten the M20 hex nut and flat washer to each pivot.



Pivot fasteners

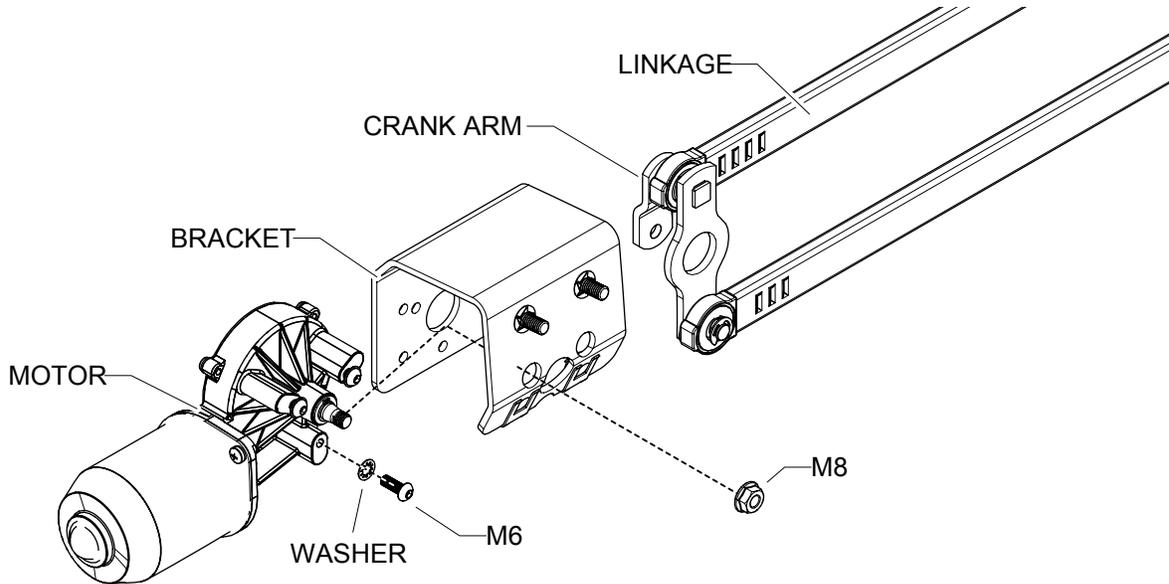
3. Push the motor bracket inside of the cowl channel and insert (2) 5/16" studs through the upper cowl. Secure with (2) 5/16" nuts.
4. Use (2) flange screws to secure the motor bracket to the lower cowl channel.
5. Torque (4) motor bracket fasteners to 11–17 ft•lbs.

6. Install pivot caps.
7. Connect harness and replace Metri-Pack connector clip.
8. Secure harness with wire ties.
9. Turn the ignition On, and run the wiper system. Return the wiper control to the Off position to allow the wiper motor to park itself.
10. Install wiper arms.
11. On Ford E-Series chassis, secure washer bottle bracket using (4) Torx screws.

Motor



CAUTION: The wiper motor is equipped with an internal thermal overload protection switch that stops the wiper motor in case of overload. Thus, if the motor is not unplugged, the motor may activate itself without warning. Always unplug the motor when working on or disconnecting wiper linkages.



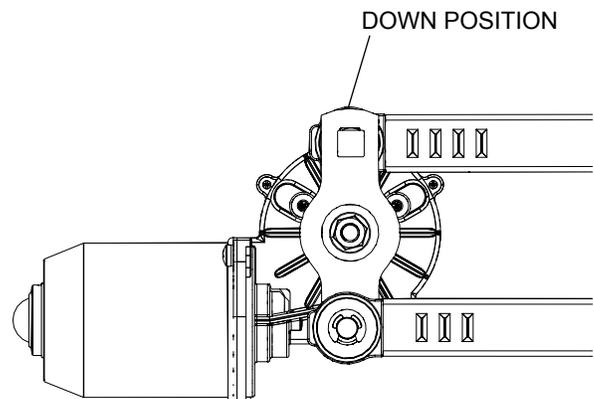
Overview of motor removal

Removal

1. Disconnect the wiper motor harness from the jumper harness.

NOTE: The Ford E-Series chassis requires moving the washer bottle bracket to service the wiper motor.

2. Place the wiper arms up into the service Up position away from the windshield.
3. Rotate the motor crank to the Down position to gain access to the crank retaining nut on the motor shaft.
4. Use a 1" open end wrench to hold the crank arm in place.
5. Remove the M8 nut on the motor shaft and set aside for reuse.
6. Position the 1" wrench between the motor and the crank arm. Pry the motor crank off the shaft and move the linkage down until clear of the bracket.
7. Remove (4) fasteners securing the motor bracket to cowl and remove motor assembly.
8. Remove the (3) M6 screws and washers from motor and set aside bracket and fasteners.



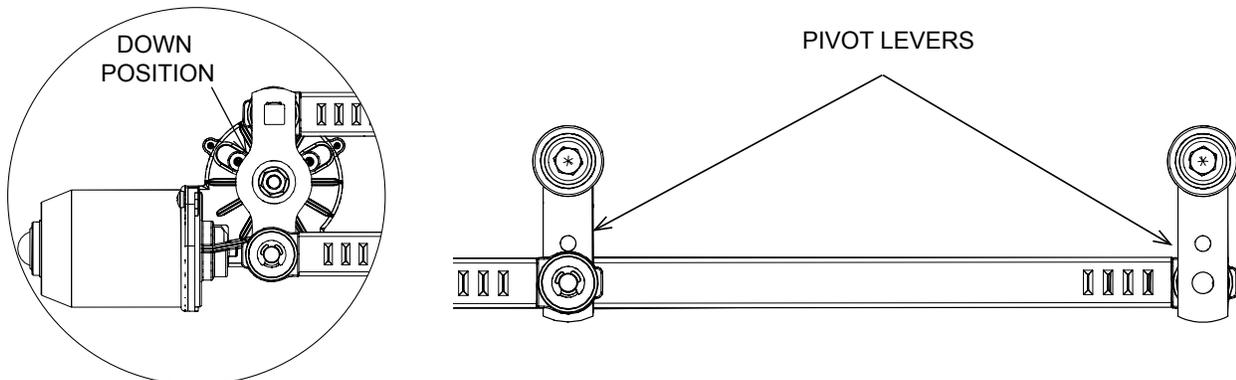
Crank in Down position (bracket omitted for clarity)

Installation



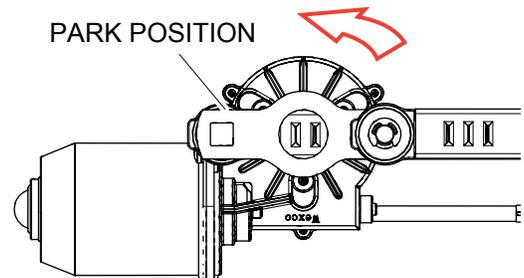
CAUTION: Do not let the motor crank rotate while tightening. If the crank rotates, remove fasteners and run the wiper system to return the motor to Park position.

1. Attach the motor to the bracket using the (3) M6 hex screws and washers.
2. Torque to 6–7 ft•lbs.
3. Use (2) 5/16" nuts to fasten the wiper motor bracket inside of the cowl channel.
4. Use (2) flange bolts with U-nuts to secure to the lower cowl channel.
5. Torque all bracket fasteners to 7–11 ft•lbs.
6. Connect the wiper motor to the jumper harness.
7. Turn the ignition On, and run the wiper system. Return the wiper control to the Off position to allow the wiper motor to park itself.
8. Disconnect the wiper motor jumper harness.
9. Lift the wiper arms to the Service position.
10. Place crank arm on the motor shaft in the Down position with both pivot levers pointing down.



Pivots levers in Down position for motor installation

11. Rotate the motor crank arm counterclockwise to the Park position.
12. Hold the motor crank arm in place with a 1" wrench and tighten the crank arm nut with a 13 mm wrench.
13. Rotate the crank arm counterclockwise to the Down position to access the crank nut.
14. Use the 1" wrench to hold the crank arm and torque crank retaining nut to 11–13 ft•lbs.
15. Return wiper arms to the windshield.
16. Connect the wiper motor harness to the jumper harness.



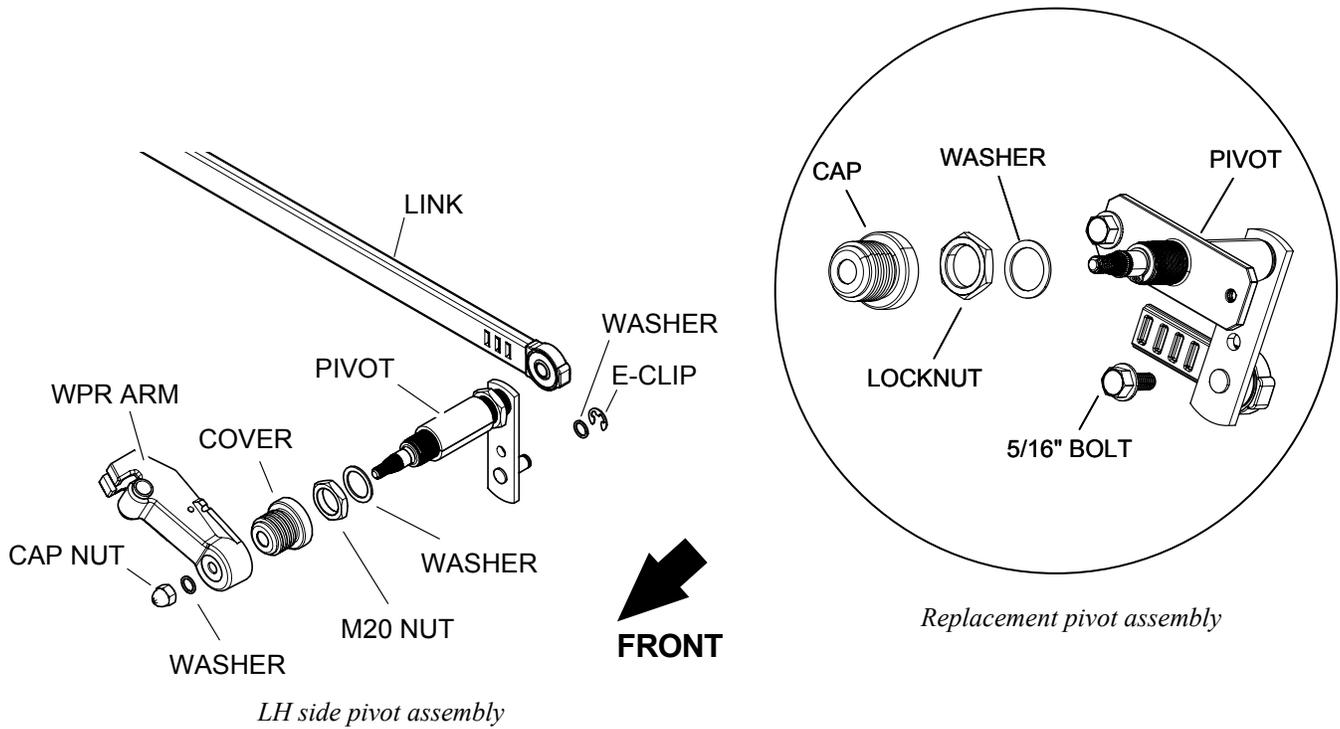
Park position (bracket omitted for clarity)

Pivot Assembly

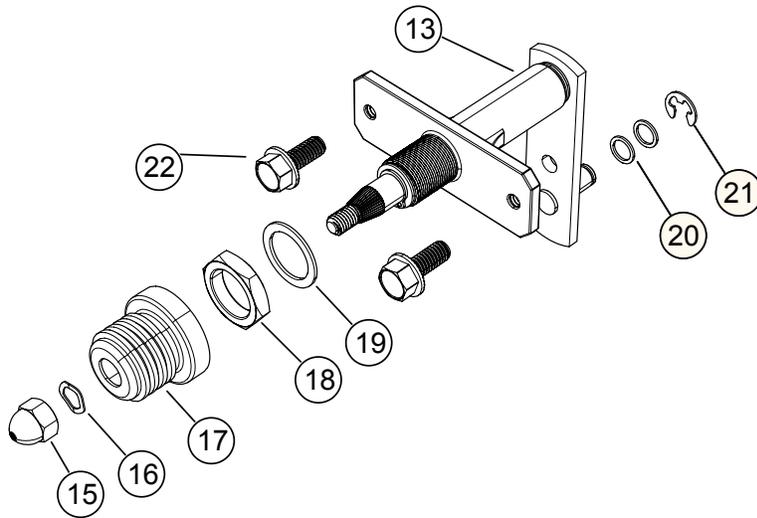
Removal

NOTE: Keep all fasteners for reinstallation.

1. Remove the wiper arms.
2. Remove wiper assembly.
3. On workbench, disconnect the linkage from the pivot by removing the E-clip and washers.
4. Remove the pivots.



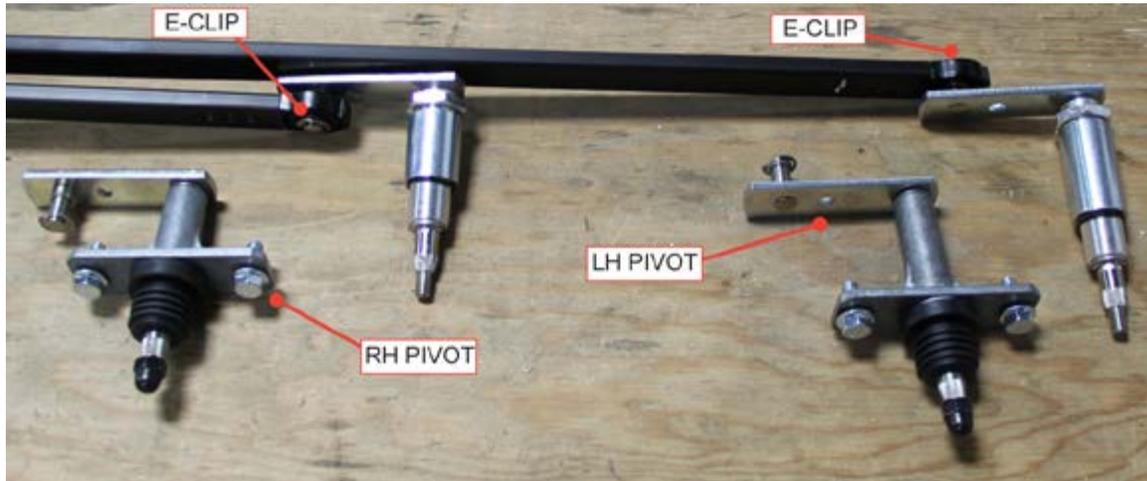
Installation



BOM ID	Descriptio
13	PIVOT ASSEMBLY
15	M8 ACORN NUT
16	M8 WAVY WASHER
17	M20 PIVOT CAP
18	M20 HEX NUT
19	M20 FLAT WASHER
20	0.375 ID FLAT WASHER
21	0.375 E-CLIP
22	5/16-18 x 1.25 FLANGE SCREW

Overview of replacement pivot assembly (LH shown)

NOTE: Replacement pivots require drilling additional holes in cowl.



Passenger (RH) and driver's side (LH) and pivots

1. Install replacement pivot in linkage using (2) flat washers on each side of the linkage. Repeat on opposite pivot. Both pivots should point forward with the longer pivot installed on the driver's side (LH).
2. Secure with E-clips.

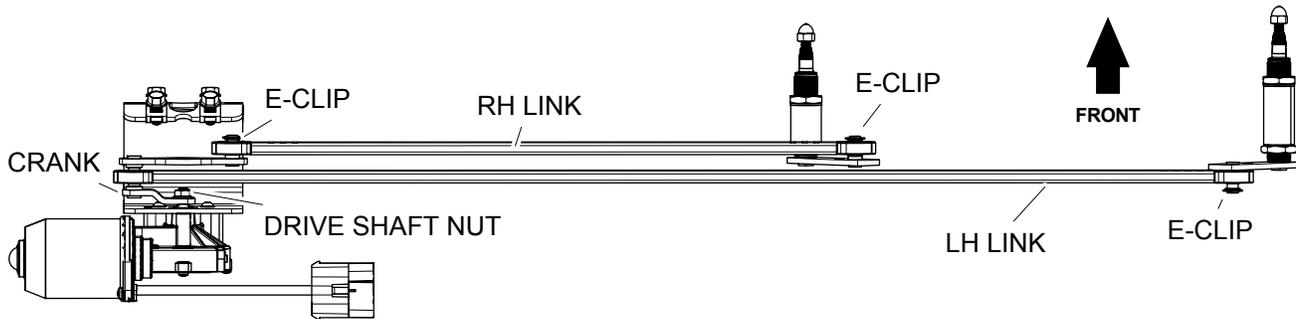
3. Clean the cowl around the pivot holes.
4. Use a center punch and the holes in the replacement pivots as a guide to mark (2) holes.
5. Drill (4) 3/16" pilot holes in cowl.
6. Use a 3/8" drill bit to enlarge holes.



Replacement pivot flange fastener holes

7. Deburr holes.
8. Place wiper assembly under cowl and loosely fasten (2) 5/16 x 1.25 flange screws in pivot flange holes starting from the passenger side.
9. Install wiper assembly.
10. Torque pivot 5/16 x 1.25 flange screws to 13–17 ft•lbs.
11. Torque M20 nuts to 13–17 ft•lbs.
12. Install wiper arms.

Link Assembly Removal



Link assembly overview (viewed from below)

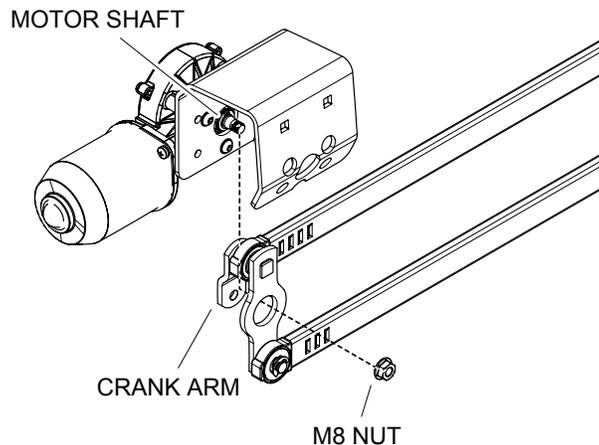
1. Disconnect the electrical harness at the wiper motor.
2. Remove wiper assembly from cowl.
3. Remove the wiper motor drive shaft nut with a 13 mm wrench.
4. Remove the motor crank arm from the wiper motor drive shaft.
5. Remove link assembly from pivots.

Installation



CAUTION: Do not let the motor crank rotate while tightening fasteners. If the crank rotates, remove fasteners and run the wiper system to return the motor to Park position.

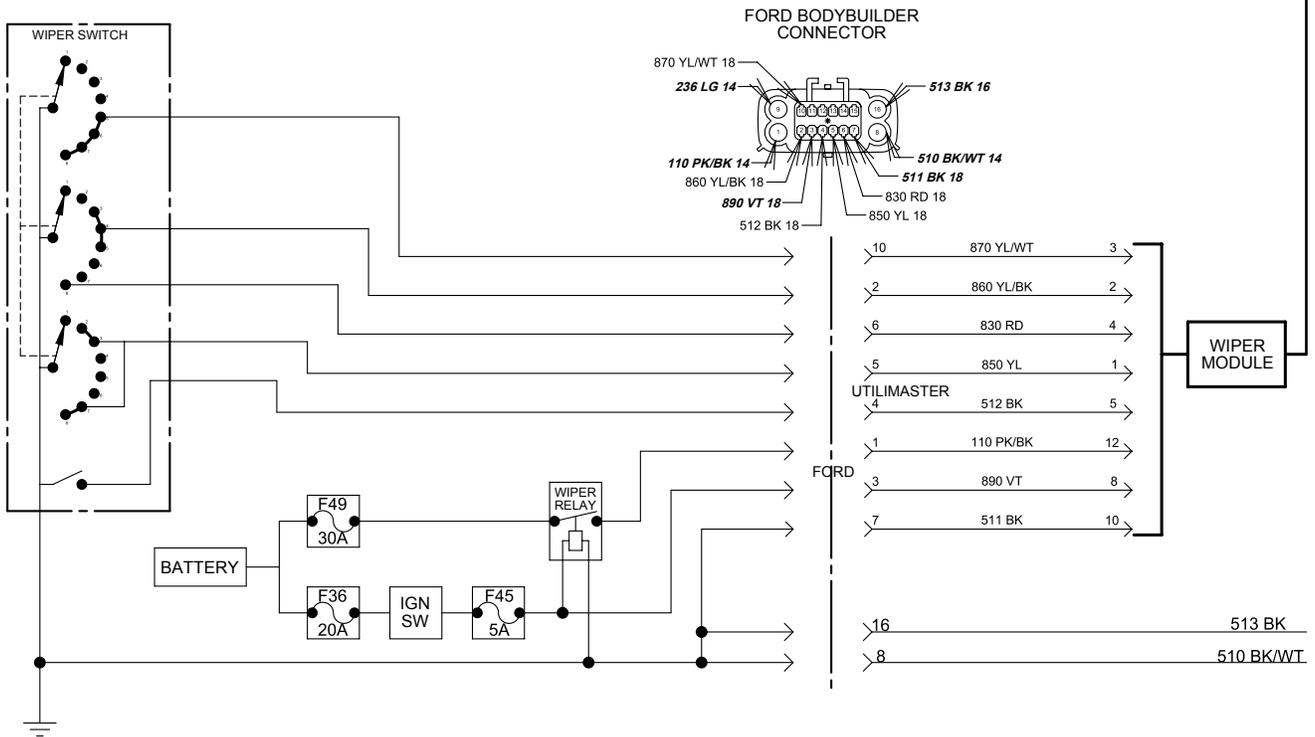
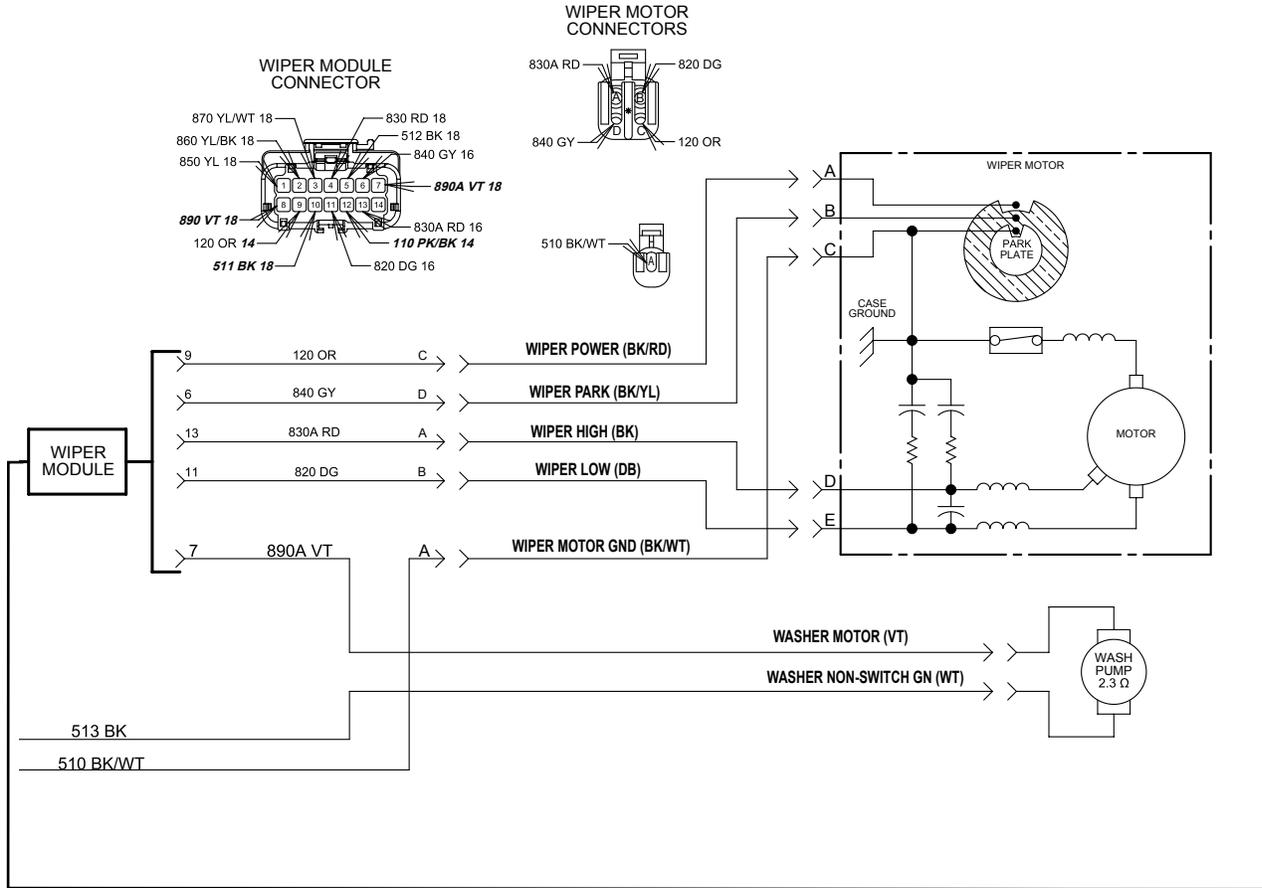
1. Install pivots on replacement link assembly.
2. Install link assembly motor crank to motor.
3. Hold the motor crank arm in place with a 1" wrench and tighten the crank arm nut.
4. Rotate the crank arm counterclockwise to the Down position to access the nut.
5. Use the 1" wrench to hold the crank arm and torque crank retaining nut to 11–13 ft•lbs.
6. Install the wiper assembly



Linkage crank arm installation

7. Install pivot covers.
8. Connect the wiper motor harness to the jumper harness.
9. Turn the ignition On, and run the wiper system. Return the wiper control to the Off position to allow the wiper motor to Park itself.
10. Install wiper arms.
11. Adjust wiper arm position if necessary.

Ford Wiper Wiring Diagram



Ford E-Series Wiper Control Module



WARNING: Always remove the (BLACK) Negative cable first and connect it last.



Wiper control module harness and screws

Removal

1. Disconnect the vehicle Negative (BLACK) battery cable(s).
2. Secure the battery cable(s) away from the terminal to prevent accidental contact.
3. Disconnect the harness connector from the module.
4. Remove (4) screws securing the module to the cowl.

Installation

1. Secure replacement module to the cowl.
2. Secure wiper control harness to the module.
3. Connect the battery.

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03103436-A10004 Wiper System, W-Series

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