Troubleshooting and repairing the wiper/washer system

Models: Challenger, Miramar, Outlaw, Ace, Hurricane, Windsport

Follow this 3-step process

1. Find the customer complaint in the table below in the left-hand column
2. Follow the corresponding troubleshooting diagram listed in the right-hand column to identify the cause/repair procedure
3. Follow the repair procedure to correct the problem and then verify the problem is gone

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<td>No washer fluid getting to windshield</td>
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*Driver side arm parked too high
*Driver side arm parked too low
**Linkage toggle causing passenger side arm to over-travel and jam**
Wipers inoperative, all switch positions

- **Wipers inop all switch positions**
  - **Fuse blown?**
    - yes: Unplug wiper motor & replace fuse
    - no: Ign. Key on, run wiper switch through all positions
  - Fuse blown again?
    - yes: Check wiper linkage for jamming or damage
    - no: Plug in wiper motor & run wipers all speeds
  - Fuse blown again?
    - yes: Linkage damaged?
      - yes: Remove & replace wiper module with Thor part no. 0364865
      - no: Motor shaft stripped or broken
    - no: Repair vehicle wiring, replace wiper switch, relays or control module & retest

- **Ign. on, wiper sw. off, check white wire (ground) for continuity with vehicle ground**
  - Continuity with ground?
    - yes: Ign on, wiper switch off. Check for power at green wire (park)
    - no: Power at park lead?
      - yes: Ign on, wiper switch on low. Check for power at blue lead (low speed)
      - no: Power at low speed lead?
        - yes: Ign on, wiper switch on high. Check for power at white/black lead (high speed)
        - no: Power at high speed lead?
          - yes: Plug in wiper motor and cycles wiper switch through all settings
          - no: Is the wiper motor running?
            - yes: Remove & replace wiper motor with Thor part no. 0172388
            - no: Check wiper linkage for jamming or damage
Wipers inoperative on one switch position

1. **Wipers inop on low or high or intermittent**
   - Disconnect wiper motor and check at vehicle wiper motor connector as follows

2. **High speed**
   - Wiper inop on which speed?
     - Low speed
       - Ign on, wiper switch on low. Check for power at blue lead (low speed)
         - Power at low speed lead? no
           - Repair vehicle wiring, replace wiper switch, relay or control module & retest
         - yes
           - Replace wiper intermittent controller
   - yes
     - Replace wiper motor with Thor part no. 0172388

3. **Intermittent**
   - Run wipers on low speed and switch off
     - Wipers run and park? no
       - Replace wiper intermittent controller
     - yes
       - Repair vehicle wiring, replace wiper switch, relay or control module & retest

4. **Ign on, wiper switch off. Check for power at green wire (park)**
   - Power at park lead? yes
     - Park switch in wiper motor not working. Remove & replace motor with Thor part no. 0172388
   - no
     - Ign on, wiper switch on high. Check for power at white/black lead (high speed)
       - Power at high speed lead? no
         - Replace wiper intermittent controller
       - yes
         - Repair vehicle wiring, replace wiper switch, relay or control module & retest

5. **Ign on, wiper switch on high. Check for power at white/black lead (high speed)**
   - Power at high speed lead? no
     - Replace wiper intermittent controller
   - yes
     - Repair vehicle wiring, replace wiper switch, relay or control module & retest
Wipers run but no auto park

Unplug wiper motor and check at vehicle wiper connector as follows

Ign on, wiper switch off. Check for power at green wire (park)

Power at park lead?

- **Yes**: Repair vehicle wiring, replace wiper switch, relay or control module
- **No**: Ign on, wiper switch on low. Check for power at blue lead (low speed)

Power at low speed lead?

- **No**: Unplug wiper motor and check at vehicle wiper connector as follows
- **Yes**: Remove & replace wiper motor with Thor part no. 0172388
Wipers park consistently too high or too low

- Run wipers and park. Check position of motor crank arm.
  - Crank arm horizontal?
    - yes: Wipe angles too large. See "wiper over-sweep" diagram
    - no: Room to move arms?
      - yes: Remove and reinstall wiper arms so they park horizontal
      - no: Reset wiper module park position

- Run wipers on high speed wet glass.
- Remove and reinstall wiper arms
Erratic operation

Changing sweep angle and park position every wipe cycle

- Run wipers and park. Check if motor crank arm nut is tight
- Unplug wiper motor, remove crank arm and inspect motor shaft for damaged splines
- Splines damaged?
  - yes: Replace motor and reset park position
  - no: Reset wiper module park position

- Crank nut loose?
  - no: Check if wiper arm nuts are tight
  - yes: Arm nut loose?
    - no: Remove arms and inspect splines on knurled driver and inside arm for damage.
    - yes: Splines damaged?
      - no: Check wiper linkage for bent or loose components
      - yes: Remove & replace wiper arms & knurled drivers

- Linkage damaged?
  - yes: Remove & replace wiper module with Thor part no. 0364865
  - no: Splash!
Wipers stop unexpectedly but run fine later.

Motor thermoswitch temporarily stopped motor. There is no problem.

If multiple occurrences, replace wiper motor with Thor part no. 0172388.

Stopped while on dry glass?

- Yes
- No

Temporary shutdown
Wiper arm/blade overshot reversal point and is jammed off the glass

Check linkage for bent or disconnected parts

Bent/damaged parts?

no

Is wiper arm loose on pivot?

yes

See "loose arm" diagram

no

Linkage has toggled. Remove & replace wiper module with Thor part no. 0364865
One or both wipers oversweep off the glass on high speed setting.

Engine on, run wipers on high with washer going

Wipers oversweep off glass?
  yes
  Both wipers park horizontal?
    yes
    Remove and replace wiper module with Thor part no. 0364865
    no
    Check park position of motor crank arm.
      yes
      Crank arm horizontal?
        yes
        Remove and reinstall wiper arms at park
        no
      no
      Reset wiper module park position
    no
  no
  stop
Loose wiper arm

Wiper arm loose on pivot shaft

Remove arm, check for damaged knurled driver, pivot shaft or stripped splines in arm

Arm/knurled driver damaged?
  yes
  Replace knurled driver or wiper arm & reinstall
  Knurled drive 0196719
  Ace model wiper arm 0241505
  All others 0170619

no

Pivot shaft damaged?
  yes
  Install pivot service kit

no

Reinstall wiper arm
Loose wiper blade

Wiper blade loose on arm

Try reinstalling blade to arm.

Blade locks to arm?

yes
  stop

no

Try known good blade

Blade locks to arm?

yes
  Replace original wiper blade

no

Remove & replace wiper arm
Ace model 0241505
All others arm 0170619
Washer system problems

No washer fluid getting to windshield

Check washer bottle for fluid and fill if necessary

Check for leaks in the bottle and main supply hose

Bottle or hose leak?

yes

Replace bottle or hose Thor bottle assembly 0172549

no

Repair faulty vehicle wiring

Activate washer switch and check for fluid on windshield

Fluid on windshield?

yes stop

no

Check washer pump fuse

Fuse blown?

yes Repairs short in vehicle switch or wiring

no

Activate washer switch and check washer pump fuse again

Fuse blown?

yes

Reconnect pump and activate washer pump. Check fuse.

no

Unplug pump & replace fuse

Check for power at washer pump

Power at washer pump?

yes

Pump run?

yes

Disconnect washer hose both ends and check for blockage or crimps

Hose clear?

yes

Replace bottle assembly with Thor part no. 0172549

no

Clear or replace hose

no

Repair faulty vehicle wiring

Replace bottle assembly with Thor part no. 0172549

no

Check washer bottle for fluid and fill if necessary

Check for leaks in the bottle and main supply hose

Bottle or hose leak?

yes

Replace bottle or hose Thor bottle assembly 0172549

no

Repair faulty vehicle wiring

Activate washer switch and check for fluid on windshield

Fluid on windshield?

yes stop

no

Check washer pump fuse

Fuse blown?

yes Repairs short in vehicle switch or wiring

no

Activate washer switch and check washer pump fuse again

Fuse blown?

yes

Reconnect pump and activate washer pump. Check fuse.

no

Unplug pump & replace fuse

Check for power at washer pump

Power at washer pump?

yes

Pump run?

yes

Disconnect washer hose both ends and check for blockage or crimps

Hose clear?

yes

Replace bottle assembly with Thor part no. 0172549

no

Clear or replace hose

no

Repair faulty vehicle wiring

Replace bottle assembly with Thor part no. 0172549
Washer system problems

1. No washer fluid getting to windshield
   - Yes: Check washer bottle for fluid and fill if necessary
   - No: Repair faulty vehicle wiring

2. Check washer system problems
   - Check washer pump fuse
     - Yes: Unplug pump & replace fuse
     - No: Repair short in vehicle switch or wiring

3. Check for power at washer pump
   - Yes: Activate washer switch and check for fluid on windshield
   - No: Stop

4. Fluid on windshield?
   - Yes: Stop
   - No: Check for leaks in the bottle and main supply hose

5. Bottle or hose leak?
   - Yes: Replace bottle or hose
   - No: Reconnect pump and activate washer pump. Check fuse.

6. Fuse blown?
   - Yes: Repair short in vehicle switch or wiring
   - No: Unplug pump & replace fuse

7. Power at washer pump?
   - Yes: Replace pump
   - No: Repair faulty vehicle wiring

8. Pump run?
   - Yes: Hose clear?
     - Yes: Replace pump
     - No: Disconnect washer hose both ends and check for blockage or crimps
   - No: Replace pump

9. Hose clear?
   - Yes: Replace pump
   - No: Clear or replace hose
Wiper service module removal/installation procedure

Tools required:

1. 3/8” drive ratchet
2. Sockets as follows
   a. 9/16”
   b. Deep wall 1”
   c. 5/16”
3. 3/8” drive torque wrench, >25 ft-lbs

Module removal procedure    Note: the service wiper module will have all new mounting hardware

1. Remove both wiper arm acorn nuts & washers using a 9/16” socket (fig. 1).
2. Pull the wiper arm washer hoses off of the hose fittings (fig. 1).
3. Pull both wiper arms off of the pivot shafts – there is a knurled drive that may stick inside the wiper arm or stick to the pivot shaft. Save the arms & blades (fig. 1).
4. Pull off the rubber caps on the pivot shafts.
5. On the back side of the vehicle cap, locate and disconnect the washer hoses from the brass fittings that go through the cap from the outside (fig. 2).
6. Unplug the wiper motor from the vehicle harness.

Fig. 1 Pivot shown with arm removed and washer hose disconnected
7. Some older wiper modules may have one or more brackets that attach the wiper module to either the back side of the cap or the underside of the dash. Unscrew these from the vehicle.

8. Follow the long wiper module stringer bracket outboard to one of the pivots. Remove the 2 screws that attach the stringer to the cap using a 5/16” socket. Do this for both sides (fig. 2).

9. Locate the washer hose coming from the washer bottle and disconnect it at the plastic hose T on the wiper module. Don’t allow the hose to drop lower than the washer bottle or the bottle may drain.

10. On the outside, remove the large pivot nuts using a 1” socket. Next, remove the large flat washers with brass hose fittings and gaskets.

11. The wiper module may now be removed from the vehicle. **DO NOT** strike the pivot shafts with a hammer or mallet to force the wiper module rearward as this may loosen the shaft retaining clips. If the module is stuck, wedge a large standard screw driver under the stringer bracket near the pivot and pry to move the wiper module rearward (see fig. 2 for pry location).
Wiper module installation procedure

1. To install a new service wiper module, do the following;
   a. Position the replacement wipe module next to the old removed module on a bench top
   b. Bend the new wiper module stringer bracket at each end to match the old one as closely as possible
2. Check the orientation of the motor crank arm on the wiper module. It should be horizontal (within a few degrees) and pointing towards the driver side of the vehicle. If it is not, refer to the separate “setting wiper module park position” procedure and correct as necessary before continuing (fig. 3).

3. Install the wiper service module by starting the pivot shafts through the holes in the cap.
4. Push the stringer bracket flat against the cap backer and install (2) new #12 screws through the stringer into the existing holes in the backer at each end. Tighten with a 5/16” socket until snug. Do not over-tighten or strip the screws. If the stringer was bent properly in step 1b, then the stringer should be flat against the backer on both ends (see fig.2).
5. Wiper service modules do not need or use any additional brackets (as supplied on some old modules).
6. From the outside, reinstall the pivot gaskets, large flat washers with hose barbs and the large pivot nuts. Use a 1” socket and tighten the pivot nuts to 15 ft-lbs. Do not over-tighten or the fiberglass may crack. Push the rubber caps back onto the pivots (fig. 1).
7. From under the hood, reattach the 2 wiper module washer hoses (at the pivot ends) to the hose barbs (fig. 2). Also reconnect the supply hose from the washer bottle to the T connector at the module.

8. With the ignition switch off, reconnect the wiper motor to the vehicle harness. Make sure to observe the polarity on the connectors and match up the locking feature on each connector.

9. Switch the ignition key on and cycle the wipers and repark. Check to see that the motor crank arm is still horizontal. If not, refer to the “setting wiper module park position” procedure and correct before continuing. Switch the ignition key off.

10. Reattach the wiper arms
   a. If the knurled drivers are stuck in the wiper arms, tap the knurled drivers out of the wiper arms and discard. Install new drivers onto the pivot shafts.
   b. Slip the wiper arms onto the knurled drivers so that the wiper blades are positioned horizontal (fig. 4).
   c. Install the 2 dished washers and acorn nuts on the pivots. Torque using the 9/16” socket to 10-ft-lbs. Do not over-tighten or the knurled driver may crush or crack and the wiper arm will loosen during use.

11. Switch the ignition key on, start the vehicle engine and run the wipers on both low and high applying washer fluid. Make sure that the wipers operate on both speeds and that the washer system primes and sprays the windshield. Switch the wipers off and make sure that they park horizontally at the bottom of the windshield.

Fig. 4 Correct typical wiper arm park position
Setting wiper module park position procedure

Tools required:

4. 3/8” drive ratchet
5. 13 mm socket
6. 13 mm box wrench
7. 1” open end wrench or adjustable wrench
8. 3/8” drive torque wrench with capacity of 25 ft-lbs

Procedure

Warning: Rotating the wiper motor crank arm manually while the ignition key is on will activate the wiper motor auto-park feature. Serious injury can result from moving wiper linkage parts.

1. With the wiper arms removed (see separate procedure “wiper arm removal & installation”) do the following;
   a. Ignition key off, unplug the wiper motor from the vehicle harness
   b. Using the 1” open end or adjustable wrench, rotate the motor crank arm so that it is pointing down at 6 o’clock to gain access to the crank retaining nut.
   c. Restrain the motor crank arm from turning with the 1” open end or adjustable wrench and at the same time use a 13 mm socket to remove the crank arm retaining nut. Save the nut.

Fig. 1 Crank rotated to 6 o’clock and restrained for nut removal
d. Pry the motor crank arm off of the motor shaft (see fig. 2)

2. Plug the wiper motor back into the vehicle harness. Run the wiper motor several cycles and then switch off and allow it to park. Unplug the wiper motor from the vehicle harness again.

3. Make sure that the pivot levers are both pointing down, not up (figure 3).
4. Reinstall the crank arm onto the motor shaft making sure it is pointing horizontal towards the driver’s side. Spin the nut down by hand as tight as possible (fig. 4).

Fig. 4 Correct park position shown
5. Restrain the crank arm from turning with the 1” open end or adjustable wrench. Use the 13 mm box wrench to tighten the crank nut as much as possible by hand (fig. 5).

6. Rotate the crank arm down to 6 o’clock again with the 1” open end wrench to gain access to the crank nut with a torque wrench (see fig. 1).

7. Restrain the motor crank arm with the 1” open end or adjustable wrench and torque the motor crank arm nut to 20 ft-lbs using the 13 mm socket (see fig. 1).

8. Reconnect the wiper motor to the vehicle harness. Switch on the ignition switch and wiper switch. Allow the wipers to cycle a few times and then switch off and allow to park. Check that the motor crank arm is horizontal pointing towards the driver side.

9. Finish installing the wiper arms according to the “wiper arm removal and installation” procedure.

10. Recheck wiper operation.
Wiper arm removal & installation procedure

Tools required:

9. 3/8” drive ratchet
10. 9/16” socket
11. 3/8” drive torque wrench, >25 ft-lbs
12. Pin punch

Removal procedure

12. Remove both wiper arm acorn nuts using a 9/16” socket. Save nuts & dished washers.

Fig. 1 Typical installed wiper arm

13. Pull the wiper arm washer hoses off of the hose fittings.
14. Pull both wiper arms off of the pivot shafts – there is a knurled drive that may stick inside the wiper arm. Save the arms, blades & knurled drivers (fig. 2).
15. If the knurled driver is stuck inside the arm, use a pin punch to gently tap it out of the arm.
Installation procedure

1. Check the orientation of the wiper module motor crank arm. It should be horizontal (within a few degrees) and pointing towards the driver side of the vehicle. If it is not, refer to the separate procedure “setting wiper module park position” and correct if necessary before proceeding (fig. 3).
2. Reattach the wiper arms
   a. Make sure that the wiper blades are installed and latched to the wiper arms
   b. Position the knurled drivers onto the pivot shafts
   c. Slip the wiper arms onto the knurled drivers so that the wiper blades are positioned horizontal (fig. 4).
   d. Install the 2 dished washers and acorn nuts on the pivots. Torque using the 9/16” socket to 10-ft-lbs. Do not over-tighten or the knurled driver may crush and the nut will loosen during use.
   e. Reconnect the washer hoses to the hose barbs. The hoses should be looped under the arms and around the pivots in a CCW orientation (fig. 4).

3. Switch the ignition key on, start the vehicle engine and run the wipers on both low and high applying washer fluid. Switch the wipers off and make sure that they park horizontally at the bottom of the windshield.
Wiper motor removal and replacement procedure

Tools required:

13. 3/8" drive ratchet
14. 13 mm socket
15. 3/8" drive torque wrench, >25 ft-lbs
16. 4 mm Allen drive
17. 1" open end wrench or adjustable wrench
18. 13 mm box wrench
19. Large standard screw driver

Procedure

Warning: Rotating the wiper motor crank arm manually while the ignition key is on can activate the motor auto-park feature. Serious injury can result from moving wiper linkage parts.

11. Unplug the wiper motor from the vehicle harness
12. Lift both wiper arms up off the glass until they latch open
13. Using a 1" open end wrench, rotate the motor crank arm so that it is pointing down at 6 o’clock (fig. 1).
14. Restrain the motor crank arm from turning with the 1" open end wrench and at the same time use a 13 mm socket to remove the crank arm retaining nut. Save the nut.
15. Pry the motor crank arm off the motor shaft using a large standard screw driver (fig. 2).

16. Remove the (3) button head screws holding the motor to the bracket with a 4mm Allen drive. Save the screws.

17. The motor can now be removed.

18. Take the new wiper motor and plug it into the vehicle harness. Run the wiper motor several cycles and then switch off and allow it to park. **Unplug the motor from the vehicle harness.**

19. Position the new motor onto the wiper module motor bracket and install the (3) button head screws using the 4 mm Allen drive. Torque to 7 ft-lbs (fig. 2).

20. Reinstall the crank arm onto the motor shaft making sure it is pointing horizontal towards the driver’s side. Spin the nut down by hand as tight as possible.

21. Restrained the crank arm from turning with the 1” open end or adjustable wrench. Use the 13 mm box wrench to tighten the crank nut as much as possible by hand (fig. 3). It will be torqued properly next.
22. Use the 1” open end wrench and rotate the motor crank so that it is pointing at 6 o’clock. This will give access to the crank nut with the torque wrench & socket (fig. 1).
23. Restrain the motor crank arm with the 1” open end or adjustable wrench and torque the motor crank arm nut to 20 ft-lbs using the 13 mm socket (fig. 1).
24. Lower the wiper arms back down so the blades are on the windshield. The blades will be positioned in the middle of the sweep pattern because the motor crank is rotated out of park.
25. Make sure the ignition switch is off before reconnecting the wiper motor to the vehicle harness. Switch on the ignition switch and wiper switch. Allow the wipers to cycle a few times on high and low and then switch off and allow to park. Check that the motor crank arm is horizontal pointing towards the driver side and that both of the blades are parked horizontal. Readjust the arms if required.