

Windshield Wipers

1966-74 FORD MOTOR CO. ELECTRIC

Ford Motor Co.
 All Models (1970-74)
 All Models Exc. "P" & "U" (1966-69)

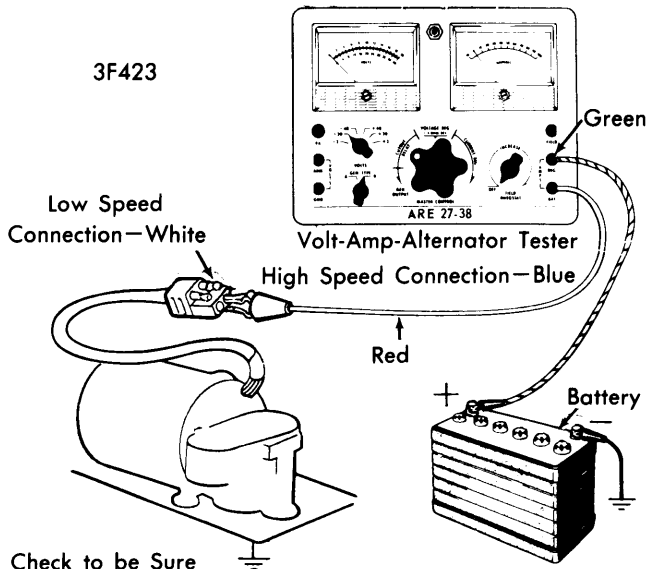
DESCRIPTION

One and two speed permanent magnet windshield wiper motors are used. One speed motor uses a two brush plate and switch assembly while two speed motor uses a three brush plate and switch assembly. On two speed motors, when control selector is in low position, grounded brush and white wire brush are used to operate motor at low speed. When control selector is in high position, grounded brush and blue wire brush are used to operate motor at high speed. When control selector is moved to park position, motor will continue at low speed until park switch lower contacts open, stopping motor in park position. Optional intermittent wipers are available on 1973-74 "F" models. For normal operation on this system, turn wiper control knob to right for low or high speed. For intermittent operation, rotate wiper control knob to left. The more knob is rotated to left, the greater the time interval between wiper blade sweeps.

TESTING

WIPER MOTOR

Disconnect linkage from motor, and disconnect electrical plug to test motor on vehicle. Connect suitable volt-amp meter as shown in illustration. Check both high and low speed connections. Current draw should not exceed 3.0 amperes except on 1971 models which should not exceed 2.5 amperes.

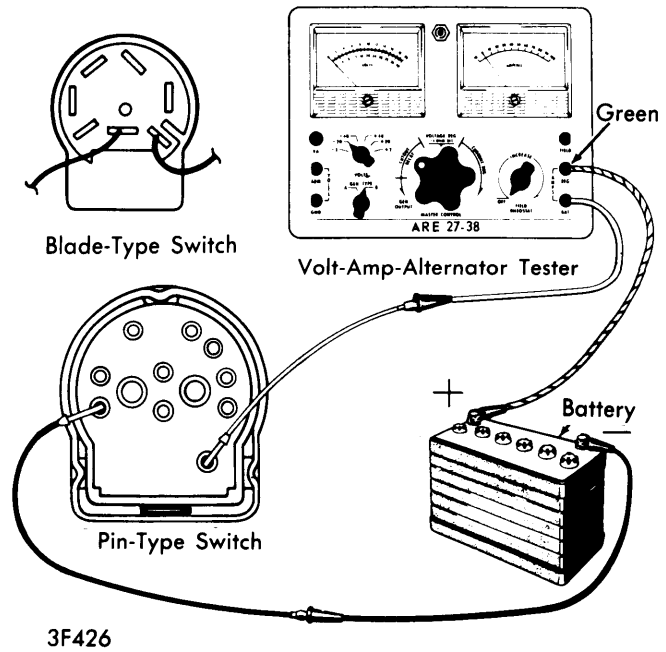


MOTOR CURRENT DRAW TEST

CIRCUIT BREAKER

Circuit breaker is located in wiper control switch. All pin terminal switches have a circuit breaker rating of 8 1/4 amps and all blade terminal switches have a rating of 7 amps. Test circuit breaker as follows:

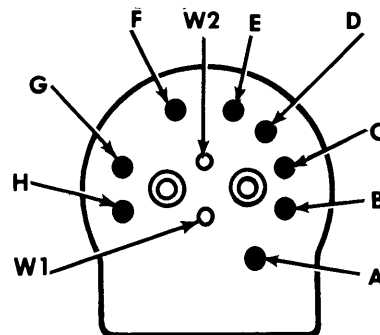
- 1) Before connecting tester leads as shown in illustration, short tester leads together and adjust current draw until it equals circuit breaker rating. Connect switch to tester and leave switch connected for ten minutes. Current reading should remain at rated current. If circuit breaker opens during the ten minutes, replace wiper switch assembly.
- 2) Short tester leads together and adjust current draw until it is twice rated current. Connect switch to tester and current reading on ammeter should drop to zero within 30 seconds. If it takes longer than 30 seconds for breaker to open, replace wiper switch assembly.



CIRCUIT BREAKER TEST

WIPER SWITCH CONTINUITY TEST

Check continuity between switch terminals as shown in illustration. Either a self powered test light or an ohmmeter can be used to test a standard switch. An ohmmeter must be used to test a switch with the intermittent system. To detect marginal operation of switch, rotate control knob while each reading is being taken. If switch does not exhibit continuity as shown or poor continuity exists, replace switch.

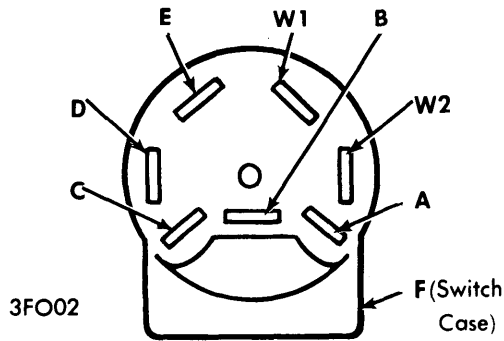


3F001

PIN-TYPE SWITCH (2-SPEED)

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Switch Position	Terminals
Off (Park)	B-C, A-H, F-G
Low	C-D, A-G-H
High	D-E, A-G-H
Wash	W1-W2



BLADE-TYPE SWITCH (2-SPEED)

Switch Position	Terminals
Off (Park)	C-D, A-B
Low	A-B-C
High	A-B-E
Wash	W1-W2

Intermittent Switch Position	Intermittent Terminals
Off (Park)	A-B, D-E
Low	A-B, D-E-F
High	D-E-F, A-B-C
Intermittent	① D-E-F, A-B, D-E
Wash	W1-W2

① - Variable resistance between terminals D-E should be minimum 100-900 ohms and maximum 5600-8400 ohms.

INTERMITTENT GOVERNOR

If intermittent operation is unsatisfactory, check motor current draw, then check control switch and all connecting wires for continuity. If motor, switch and connecting wires are satisfactory, replace governor assembly.

REMOVAL & INSTALLATION

WIPER MOTOR

U-100 - Motor and bracket assembly is mounted on windshield header. Disconnect linkage arm and pivot shaft assembly from motor drive arm by removing retaining clip. **NOTE** - On 1973-74 models, it is necessary to remove cover for access to retaining clip. Disconnect wires at multiple connector and remove bolts attaching mounting bracket to windshield header. Remove bracket and motor assembly. To install, reverse removal procedure.

All Other Models - Disconnect battery ground cable. Remove radio (if necessary) and disconnect wiper motor wires. Disconnect linkage arm and pivot shaft assembly from motor drive arm by removing retaining clip. Remove bracket attaching bolts and remove motor and bracket assembly from vehicle. To install, reverse removal procedure.

WIPER CONTROL SWITCH

"E" Models - Disconnect battery cable at battery, loosen set screw on wiper control knob and remove knob. Remove wiper control to instrument panel retaining nut using suitable tool (T56L-700A). Remove wiper control from instrument panel and disconnect wires. To install, reverse removal procedure.

All Other Models - Disconnect battery cable and remove wiper switch knob, bezel nut and bezel. Pull switch from under instrument panel and disconnect plug connector from switch. To install, reverse removal procedure.

INTERMITTENT GOVERNOR

"F" Models - Governor is mounted on lower flange of instrument panel below wiper-washer switch. Disconnect wire connectors from governor, remove attaching screws and remove governor. To install, reverse removal procedure.

ADJUSTMENT

WIPER PARK SWITCH ADJUSTMENT

If motor will not park, remove motor through bolts and armature. Rotate the output shaft until park switch lower contacts are firmly closed. Rotate adjusting screw clockwise until lower contacts just open. Rotate adjusting screw counterclockwise one full turn. Check that the bridge legs are contacting brush plate when lower contacts are closed.

OVERHAUL

WIPER MOTOR

Disassembly (1966-70) - Remove gear cover, gear and pinion retainer, idler gear and pinion, then remove thrust washer. Remove motor through bolts, motor housing, switch terminal insulator sleeve and armature. **CAUTION** - Do not pound case magnet assembly as damage may occur to ceramic magnets. Mark position of output arm with respect to output shaft for reassembly. Remove output retaining nut, output arm, spring washer, flat washer, output gear shaft assembly, thrust washer, parking switch lever and washer. Remove brushes and springs, brush plate and switch assembly, then remove switch contact to parking lever pin from gear housing.

Reassembly (1966-70) - 1) Install parking switch lever washer. Install parking switch lever on gear and pinion shaft with cam rider pointing toward gear housing output shaft hole, ensuring that lever bottoms against casting. Apply suitable grease to output gear teeth and shaft bearing surface, then insert shaft in bearing. **NOTE** - Parking switch lever must be clear of cam and gear assembly.

2) Install spacer washer, spring washer and output arm on shaft. Install and tighten retaining nut. **NOTE** - Install arm in position as marked at disassembly. Position brush springs and brushes in holders and wrap wire around them to secure brushes in fully retracted position. Push insulated brush connector onto switch terminal. Place switch contact to parking lever

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pin in gear housing and position brush plate assembly to housing, then install retaining screws.

3) Adjust park switch contact points if necessary. See *Wiper Park Switch Adjustment*. Apply suitable grease to ball bearing in end of armature shaft and position armature shaft in gear housing. Remove brush retracting wires. Hold armature in position and install terminal insulating sleeve, motor housing and magnet assembly and through bolts. Use suitable sealer in area where terminal insulator sleeve seats against motor and gear housings.

4) Apply suitable grease to worm gear and idler gear, then install gears, thrust washer and retainer. Apply suitable grease to armature shaft and install gear housing cover and ground terminal.

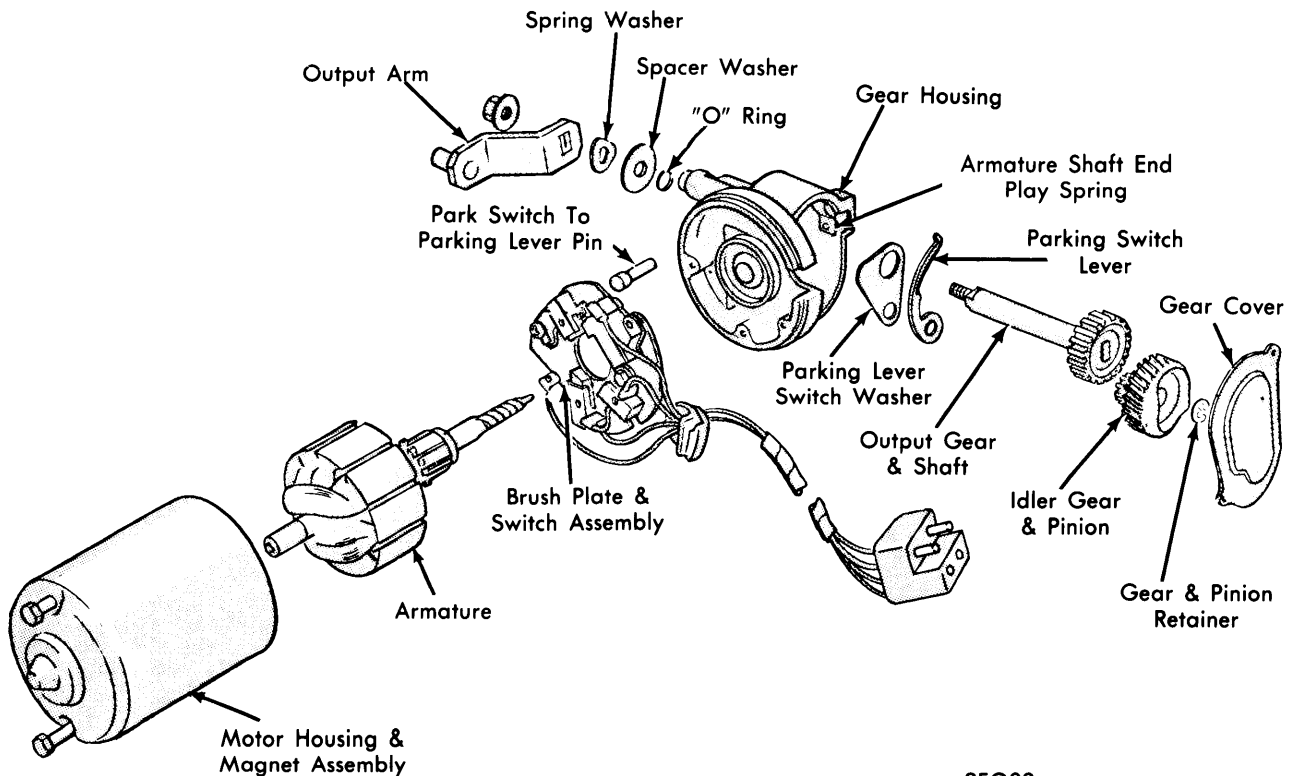
Disassembly (1971-74) – Remove ground terminal and gear cover. Remove idler gear by pressing shaft (with retainer) out of motor housing. Remove motor through bolts, case, switch terminal insulator sleeve and armature. **CAUTION** – Do not pound case magnet assembly as damage may occur to ceramic magnets. Mark position of output arm with respect to output shaft for reassembly. Remove output arm retaining nut, output arm, wave washer, flat washer, "O" ring, leaf spring, output gear shaft assembly, parking switch lever and plate. Remove brushes, brush springs and wire harness. Remove brush plate and switch assembly, then remove switch contact to parking lever pin from gear housing.

Reassembly (1971-74) – 1) Position housing on flat surface with inside of housing facing up. Position parking switch lever and lever plate with cam rider pointing toward gear housing output shaft hole. Apply suitable grease to output gear teeth and shaft bearing surface. Insert shaft in bearing ensuring parking switch lever is clear of cam and gear assembly.

2) Install idler gear on shaft and insert shaft through park lever and plate. Using a drift and hammer, lightly tap gear and pinion shaft to proper depth. **CAUTION** – Do not allow push nut to put a preload on gear. A .001-.007" clearance is necessary.

3) Position brush springs and brushes in holder, then wrap wire around them to hold brushes in retracted position. Push insulated brush connector into switch terminal. Place switch contact to parking lever pin in gear housing, then position brush plate assembly to housing and install retaining screws.

4) Apply suitable grease to ball bearing in end of armature shaft, position armature shaft in gear housing and remove brush retracting wires. While holding armature in position, install motor case and magnet assembly and through bolts. **NOTE** – Align indicator marks on case and gear box before installing through bolts. Apply suitable grease to worm gear and pinion and idle gear. Install end play spring in housing. Apply generous amount of suitable grease to area around end of armature shaft and install gear housing cover.



2FO03

WIPER MOTOR (TYPICAL)