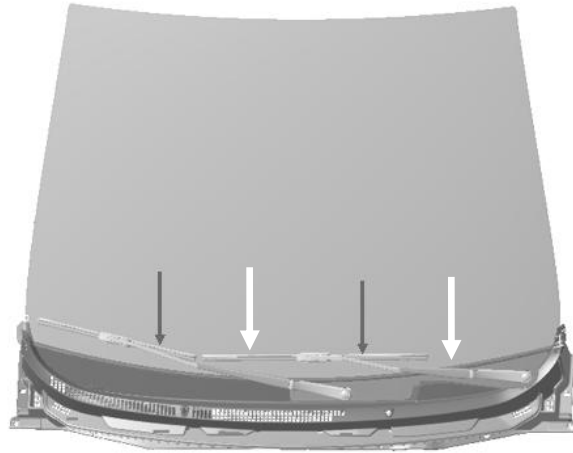


J4 Workshop Manual windscreen wiper/Wiper washing

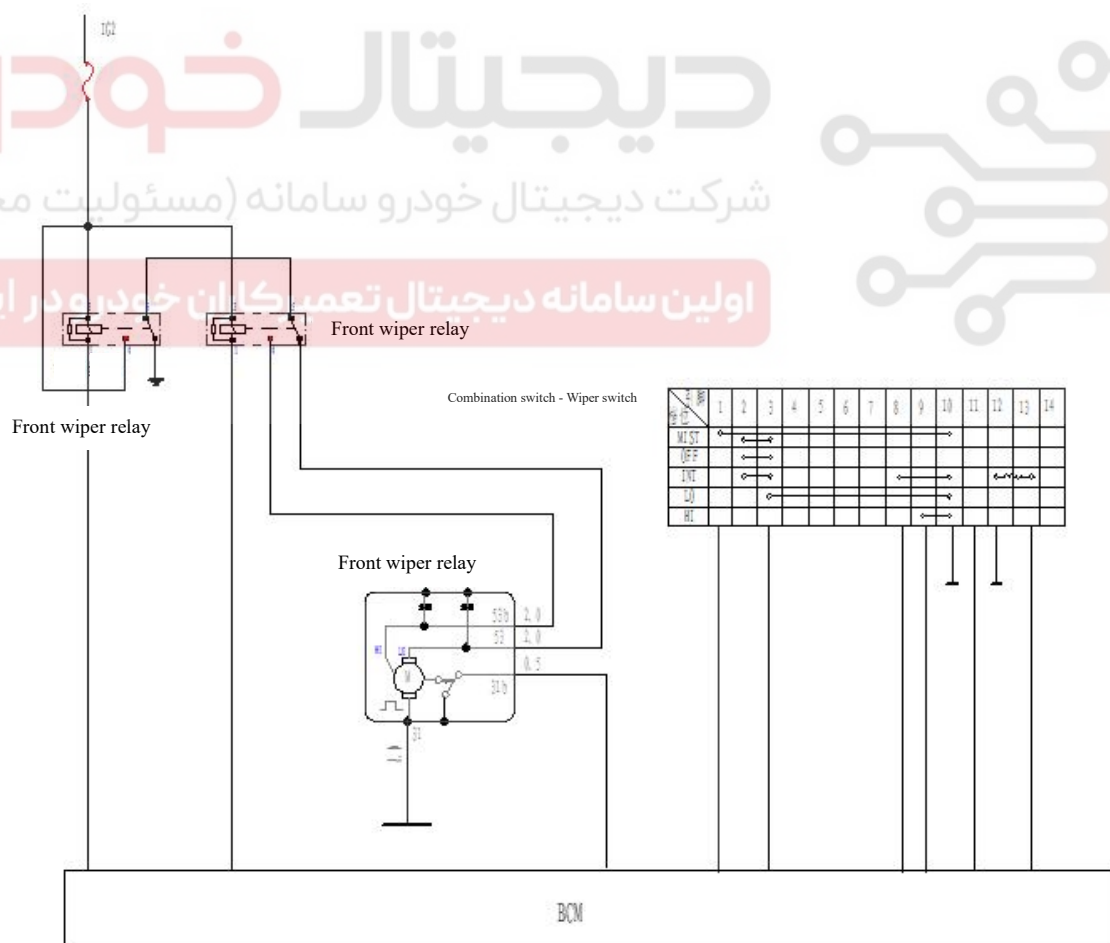
Wiper washing system

Wiper system

1. Component location

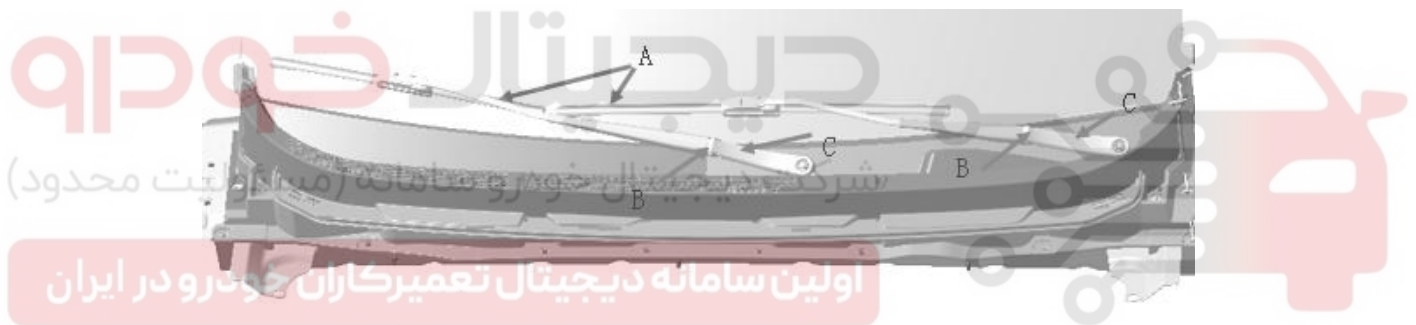


2. Schematic diagram

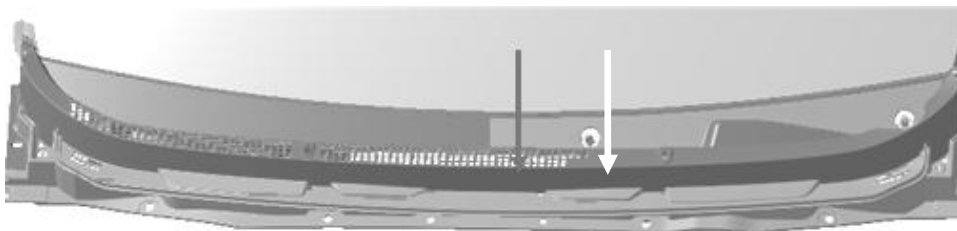


J4 Workshop Manual windscreen wiper/Wiper washing**3. Disassembly**

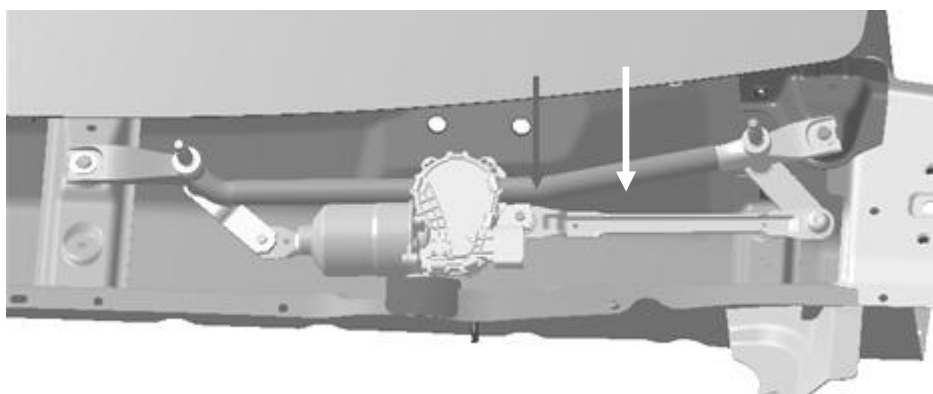
- 1) Confirm the ignition switch is in off position. Then, use flathead screwdriver to pry apart two blanking caps(A) located near front wiper . After that, use wrench to loosen two nuts and disassemble front wiper mountings and blades.
- 2) After unscrewing nuts, disassemble front wiper mountings and black assembly, the specific method is described as follows, press B position of the below figure with appropriate force until wiper arm become loose. Then, use the other hand uplift C position and adjust strength according real situation until the wiper arm and blade assembly be disassembled.



- 3) Disassemble ventilation panel, the specific method is detailed in service section of ventilation panel.



- 4) Up plug connector between wiper wiring harness and wiper motor.
- 5) Unscrew two set bolts of wiper motor and linkage assembly, disassemble the assembly from middle C-slot to finish the disassembly of motor and rod assembly; So far, the whole front wiper disassembly has been finished.



6) Disassemble wiper blade separately as follows: After making sure the engine cover is closed, uplift the wiper arm to lock position, then use thumb and index finger to press on locking blocks at the junction position of wiper blade and arm. In the meantime, uplift locking blocks to open it. After that, use one hand to hold the middle position of wiper blade and use the other hand to hold U-shape hook position of wiper arm, use strength to opposite directions to remove the wiper blade from wiper arm.

Caution:

■ Please make sure connecting rod stopped at automatic stop position before disassembling wiper blade and connecting rod assembly.

■ In the process of disassembly, do not operate violently, to avoid damage wiper blade and influence the effect of wiping.

4. Installment

Installment is converse process of disassembly, this instruction won't explain it in detail, important points and process are as follows:

Caution:

■ Connect the connector between wiper motor and wiring harness before assembling wiper motor and rod assembly. There is a "click" sound when connection is finished.

■ The tightening torque of fixed bolts of wiper motor and connecting rod assembly is $11\text{N.m} \pm 1\text{N.m.c}$

J4 Workshop Manual windscreen wiper/Wiper washing

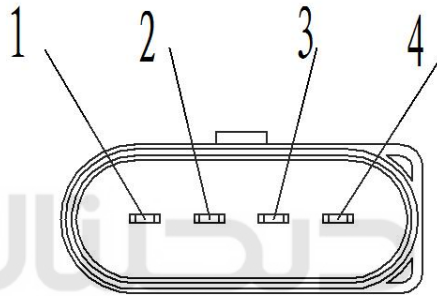
■ Supply power to wiper motor before assembling wiper arm and blade assembly. After wiper motor working about 10s, operate combination switch to turn off the wiper and make wiper motor stop at “OFF” position.

- Wiper blade edge should be coincided with anchor point of windshield.
- The tightening torque of mounting nut of wiper arm is $15\text{N.m} \pm 2\text{N.m}$.

5. Checking

Speed operation checking

1) Separate connector of wiper motor.



NO.	1	2	3	4
Definition	Ground connection	Off position	Low speed	High speed

NO.1、3、4 terminal connect positive pole of accumulator,
NO.1 terminal connect negative pole of accumulator.

2) Follow the table as below, check whether the motor is normal.

Position	1	2	3	4
OFF	○ — ○	○		
LO	○ — ○		○	
HI	○ — ○			○

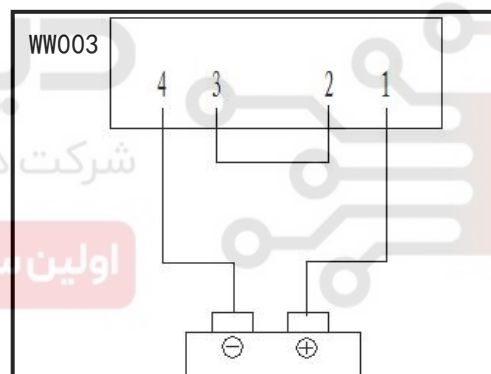
J4 Workshop Manual windscreen wiper/Wiper washing

Caution:

■ Generally, the pollutants are from insect, sap and hot wax process using commercial vehicle scrub solution.

6. Operation of checking wiper automatic stop.

- 1) Use joystick to operate motor at low speed.
- 2) Separate NO. 3 terminal of motor wire connector, make the motor stopped at any position except OFF position.
- 3) Connect NO.2 and NO.3 terminal.
- 4) Connect positive pole to NO.1 terminal and connect negative pole to NO.4 terminal.
- 5) Check if the motor stopped at OFF position.



Washing system

1. Examination

- 1) Connect wash motor to water tank, add water to water tank.

Caution;

■ Before adding water to liquid reservoir, make sure there is no impurities on filter and the filter has not been polluted. Clean the filter as needed.

- 2) Connect positive pole wire and negative pole wire of accumulator to positive pole and negative pole terminals.

- 3) If the washing motor works normally, check if washing pipeline is damaged

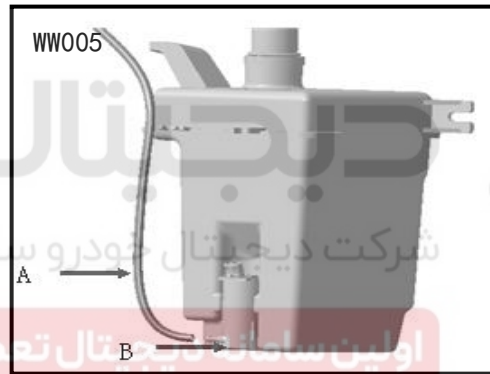
J4 Workshop Manual windscreen wiper/Wiper washing

or detached by stages. This checking should gradually from washing motor to nozzle.

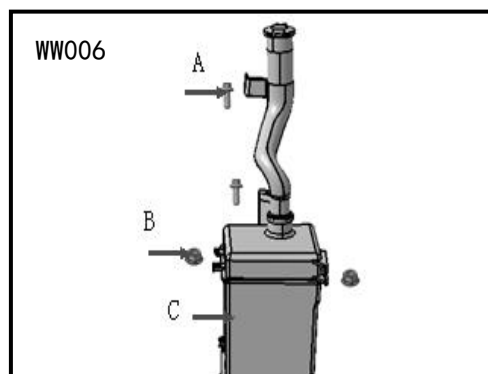
2. Disassembly

Caution:

- Be careful not to damage seal of washer pump when it been repairing.
 - Do not operate washer pump before adding liquid to washer pump reservoir.
- 1) Disassemble negative pole of accumulator.
 - 2) Disassemble front bumper assembly, see service manual of front bumper.
 - 3) Disassemble front washing pipe (A), disconnect the connector of wash motor (B).

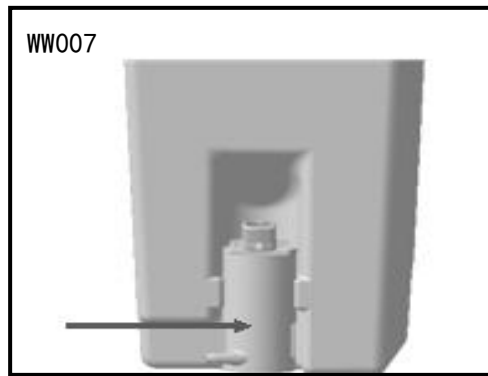


- 4) Disassemble wash motor.
- 5) Unscrew 2 bolts(A) and one nut(B), disassemble washing liquid pot(C).



- 6) Follow direction of pipeline, disassemble washing pipe assembly(A)

J4 Workshop Manual windscreen wiper/Wiper washing



3. Installment

1) Assemble washing liquid pot.

Caution:

Before installing wash motor, make sure there is no impurities and contamination, clean the filter and wash motor if needed.

2) Connect wash motor and flexible hose for washing.

3) Install wash motor.

4) Install nozzle of front washing system.

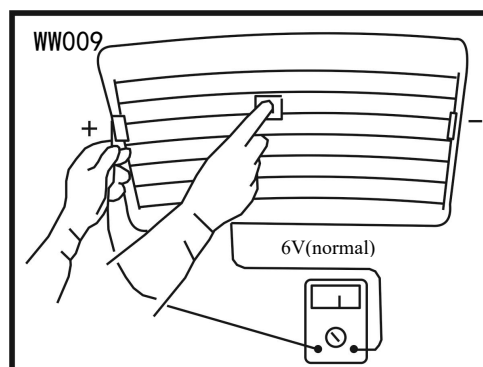
5) Install front bumper assembly.



Rear window defroster

1. Check

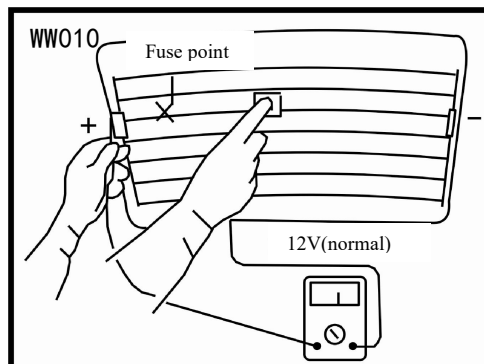
Caution:



Twine tinfoil around lead of multimeter to prevent it being damaged, use your finger to press on tinfoil and slide it follow grid lines.

J4 Workshop Manual windscreen wiper/Wiper washing

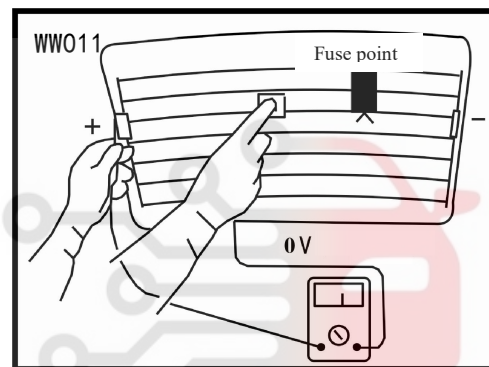
- 1) Turn on the switch of defroster and use multimeter to measure voltage of every heater strip at middle of rear window.



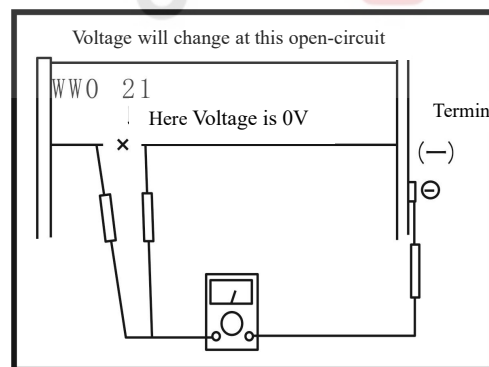
- 1) If open

Circuit happened between central point and positive pole, volt value will be 12V.

- 2) If open circuit happened between central point and negative pole, volt value will be 0 V.



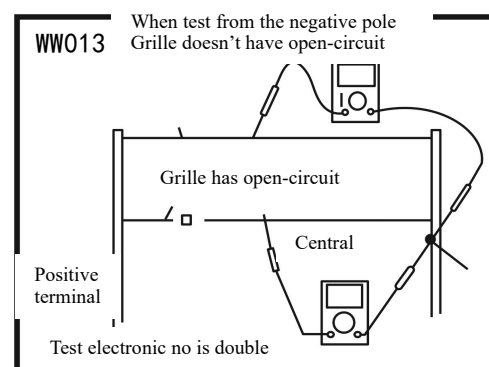
- 4) When you find the direction of circuit break, move test probe towards that direction, until there is abrupt voltage or voltage becomes 0V, which is circuit break.



- 5) Examine resistance between measuring terminal and midpoint of heating wire or this terminal and adjacent wire by using an ohmmeter.

Resistance of wires with broken point should be double times of that of other wires.

Move probe slowly through that portions resistance affected



J4 Workshop Manual windscreen wiper/Wiper washing

to find the point at which resistance changes suddenly.

Trouble inspection and repair

1. List of common faults of wiper and washer system

Common faults	Cause and solution	
Stopped	1. moving part jammed 2. 2 No power supply, broken wire of connector 3. 3 Damaged motor	1. eliminate failure of stuck 2. connect power 3. Replace motor
Abnormal noise; malfunction	1.1 Internal noise of motor 2 Interference between moving parts 3 Abnormal noise arises between blade and windscreen	1. 1 Replace motor 2. 2 eliminate failure of interference 3. Clean windscreen
Trembling during wiping	Add detergent into kettle to reduce friction during wiping.	
The blade can not get to horizontal position when returned	Reinstall wiper arm to make blade horizontal after motor returned	
The windscreen cannot get fully clean	1. Dirty windscreen 2. Seriously damaged blade	1. Clean windscreen 2. Replace blade (It is recommended to replace blade every three months)

2. Systematic inspection of washer

Steps	Measures	Normal	Abnormal
1	Turn ignition switch to ON position. Maintain switch of washer at ON position.	Run wiper with lower speed. Water should be injected onto windscreen with switch at ON position. Wiper stops after 2-4 more circles when washer switched off.	Washer does not work
2	Put switch at relay position (pulsed mode).	The wiper should wait for 1-2 seconds after one circle of wiping and then starts to wipe again.	Wiper does not work at pulsed mode. Wiper does not work in defrosting mode, relay mode or lower speed mode.
3	Put switch at relay position (pulsed mode). Allow wiper to operate for about 1-2s with	The washer continues to inject water on windscreen with switch at turned on position. The wiper will operate 2-4 circles	Washer does not work Wiper does not work at pulsed mode.

J4 Workshop Manual windscreen wiper/Wiper washing

	switch turned on.	after switch of washer is released. And then returns to pulsed operation.	Wiper does not work in defrosting mode, relay mode or lower speed mode.
4	Turn wiper switch to lower speed position.	Wiper works continuously in lower speed mode.	Wiper does not work in defrosting mode, relay mode or lower speed mode.
5	Turn wiper switch to higher speed position (HI).	Wiper works continuously in higher speed mode.	Wiper does not work in higher speed mode due to failure while work normally in lower speed mode.
6	Turn wiper switch to OFF position.	Wiper returns with lower speed.	Wiper scraper works continuously on windscreen. Wiper works continuously.

3. Diagnostic procedure of wiper/washer system

Malfunction mode: The wiper or washer does not work in any mode.

steps	Measures	Yes	No
1	Check if fuse of fuse box in engine compartment/ fuse of internal fuse box are fused	To step 2	To step 3
2	After the elimination of the factor of other circuits, replace the fuse to see if the fault has been eliminated.		To step 3
3	With ignition switch turned on, check for normal function of power circuit and grounding of motor. Voltage between terminal 3 and ground of wiper motor should be 12V and terminal 1 is grounded, in low speed. Voltage between terminal 4 and ground of washer motor should be 12V, in high speed.		To step 4
4	Replace wiper motor or washer motor. Does failure disappear?		To step 5
5	Replace wiper switch.		

4. Malfunction mode: only higher speed range does not work

steps	Measures	Yes	No
1	Check for electrical connectivity between terminal 4 and terminal 1 of wiper motor.	To step 3	To step 2
2	Replace wiper motor		To step 3
3	Check for normal function of circuit between Terminal 4 of wiper motor and the combined switches.	To step 5	To step 4

J4 Workshop Manual windscreen wiper/Wiper washing

4	Repair or replace circuit between terminal 4 of motor and combined switches. Does failure disappear?		To step 5
5	With combined switches turn to higher speed position, check for connectivity of combined switches between terminal 9 and terminal 10. Is it OK?	To step 7	To step 6
6	Change combined switches. Does failure disappear?		To step 7
7	Repair or replace circuit between terminal 10 of combined switches and ground.		

5. Malfunction mode: front wiper does not work only low speed range

steps	Measures	Yes	No
1	Check for electrical connectivity between terminal 3 and terminal 1 of wiper motor.	To step 3	To step 2
2	Replace wiper motor		To step 3
3	Check for normal function of circuit between terminal 3 of wiper motor and the combined switches.	To step 5	To step 4
4	Repair or replace circuit between terminal 3 of motor and combined switches. Does failure disappear?		To step 5
5	With switch turned to lower speed position, check for electrical connectivity between terminal 3 and terminal 10 of switch. Is it OK?	To step 7	To step 6
6	Change combined switches. Does failure disappear?		To step 7
7	Repair or replace circuit between terminal 10 of combined switches and ground.		

6. Malfunction mode: front wiper does not work only intermittently

steps	Measures	Yes	No
1	With switch turned to intermittent mode, check electrical connectivity between terminal 2 and terminal 3, terminal 10 and terminal 8 of switch. Is it OK?	To step 3	To step 2
2	Change combined switches. Does failure disappear?		To step 3
3	Check electrical connectivity between terminal 8 of combined switches and BCM. Is it OK?	To step 5	To step 4
4	Repair or replace circuit between terminal 8 of combined switches and BCM. Does failure disappear?		To step 5
5	Check for electrical connectivity between terminal of wiper relay and BCM. Is it OK?	To step 7	To step 6
6	Repair or replace circuit between wiper Relay and BCM. Does failure disappear?		To step 7
7	With ignition at position ON, turn wiper switch to intermittent mode to check for electrical connectivity between terminal of wiper relay and ground. Is it OK?	To step 9	To step 8

J4 Workshop Manual windscreen wiper/Wiper washing

8	Replace BCM. to see if the fault has been eliminated.		To step9
9	Change wiper relay.		

7. Malfunction mode: wiper cannot stop

steps	Measures	Yes	No
1	Check for electrical connectivity of combined switches in each operation position.	To step3	To step2
2	Change wiper combined switches. to see if the fault has been eliminated.		To step3
3	Check for normal connection between combined switches and wiper motor.	To step5	To step4
4	Repair or replace circuit between combined switches and wiper motor. Does failure disappear?		To step5
5	Replace wiper motor		

8. Malfunction mode: washer does not work

steps	Measures	Yes	No
1	Check power supply of washer motor; turn on ignition, battery voltage should be detected between positive pole (+) of motor and ground.	To step3	To step2
2	Repair or replace power circuit of washer motor, does failure disappear?		To step3
3	With combined switches turned to washing position, check for its electrical connectivity. Terminal 10 and 11 should be electrical connected.	To step5	To step4
4	Change combined switches. Does failure disappear?		To step5
5	Check circuit of combined switches and washer motor for normal connection	To step7	To step6
6	Repair or change electrical circuit of combined switches or washer motor. to see if the fault has been eliminated.		To step7
7	Change washer motor		