

2008 Mazda CX-9 Grand Touring

2008 ACCESSORIES & BODY, CAB Wiper/Washer System - Mazda CX-9

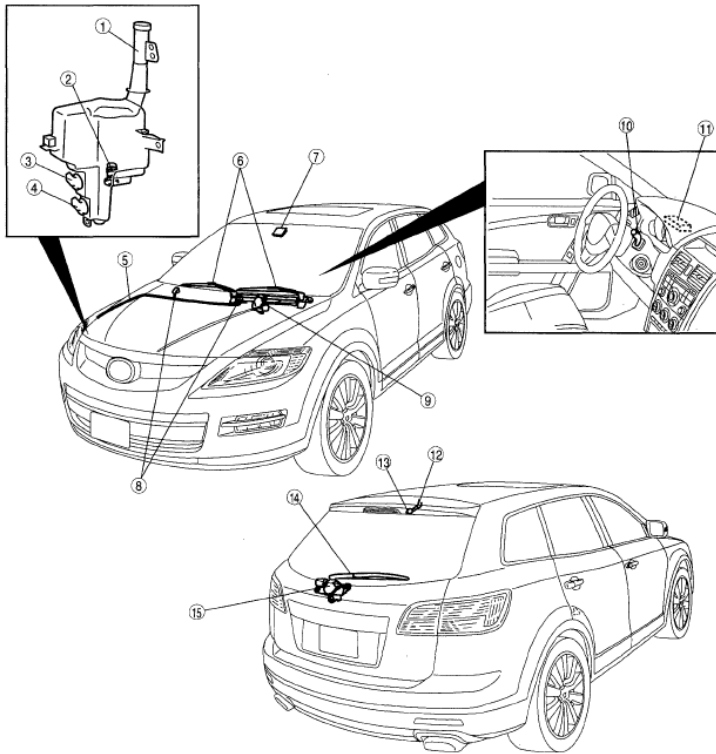
2008 ACCESSORIES & BODY, CAB

Wiper/Washer System - Mazda CX-9

WIPER/WASHER SYSTEM LOCATION INDEX

2008 Mazda CX-9 Grand Touring

2008 ACCESSORIES & BODY, CAB Wiper/Washer System - Mazda CX-9



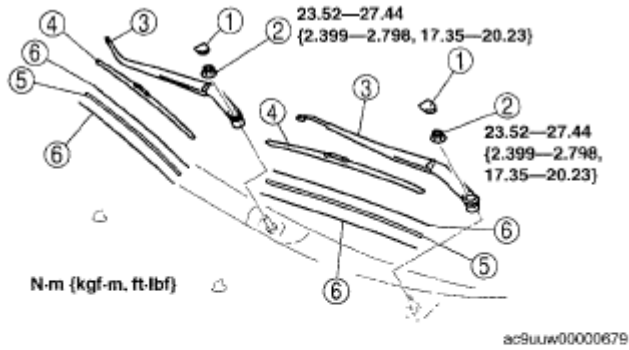
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1	Washer tank (See 09-19-6 WASHER TANK REMOVAL/INSTALLATION.)	7	Rain sensor (See 09-19-16 RAIN SENSOR REMOVAL/INSTALLATION.) (See 09-19-17 RAIN SENSOR REINITIALIZATION SETTING.)
2	Washer fluid-level sensor (See 09-19-8 WASHER FLUID-LEVEL SENSOR REMOVAL/INSTALLATION.) (See 09-19-8 WASHER FLUID-LEVEL SENSOR INSPECTION.)	8	Windshield washer nozzle (See 09-19-7 WINDSHIELD WASHER NOZZLE REMOVAL/INSTALLATION.)
3	Rear washer motor (See 09-19-12 REAR WASHER MOTOR REMOVAL/INSTALLATION.) (See 09-19-13 REAR WASHER MOTOR INSPECTION.)	9	Windshield wiper motor (See 09-19-4 WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION.) (See 09-19-5 WINDSHIELD WIPER MOTOR DISASSEMBLY/ASSEMBLY.) (See 09-19-6 WINDSHIELD WIPER MOTOR INSPECTION.)
4	Windshield washer motor (See 09-19-6 WINDSHIELD WASHER MOTOR REMOVAL/INSTALLATION.) (See 09-19-7 WINDSHIELD WASHER MOTOR INSPECTION.)	10	Wiper and washer switch (See 09-19-9 WIPER AND WASHER SWITCH REMOVAL/INSTALLATION.) (See 09-19-9 WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.) (See 09-19-10 REAR WIPER AND WASHER SWITCH INSPECTION.)
5	Windshield washer hose (See 09-19-7 WINDSHIELD WASHER HOSE REMOVAL/INSTALLATION.)	11	Auto light/wiper control module (See 09-19-15 AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.) (See 09-19-16 AUTO LIGHT/WIPER CONTROL MODULE INSPECTION.)
6	Windshield wiper arm and blade (See 09-19-3 WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.) (See 09-19-4 WINDSHIELD WIPER ARM AND BLADE ADJUSTMENT.)	12	Rear washer hose (See 09-19-14 REAR WASHER HOSE REMOVAL/INSTALLATION.)
		13	Rear washer nozzle (See 09-19-13 REAR WASHER NOZZLE REMOVAL/INSTALLATION.) (See 09-19-13 REAR WASHER NOZZLE ADJUSTMENT.)
		14	Rear wiper arm and blade (See 09-19-11 REAR WIPER ARM AND BLADE REMOVAL/INSTALLATION.) (See 09-19-11 REAR WIPER ARM AND BLADE ADJUSTMENT.)
		15	Rear wiper motor (See 09-19-12 REAR WIPER MOTOR REMOVAL/INSTALLATION.) (See 09-19-12 REAR WIPER MOTOR INSPECTION.)

Fig. 1: Identifying Wiper/Washer System Components Location
 Courtesy of MAZDA MOTORS CORP.

WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION

1. Remove in the order indicated in the table.



1	Cap
2	Nut
3	Windshield wiper arm (See 09-19-3 Windshield Wiper Arm Installation Note.)
4	Windshield wiper blade
5	Rubber brush
6	Backing plate

Fig. 2: Identifying Windshield Wiper Arm, Blade Components & Torque Specifications
Courtesy of MAZDA MOTORS CORP.

2. Install in the reverse order of removal.
3. Adjust the windshield wiper arm and blade. (See WINDSHIELD WIPER ARM AND BLADE ADJUSTMENT.)

WINDSHIELD WIPER ARM INSTALLATION NOTE

1. Clean the windshield wiper arm connector shafts using a wire brush before installing the windshield wiper arms.

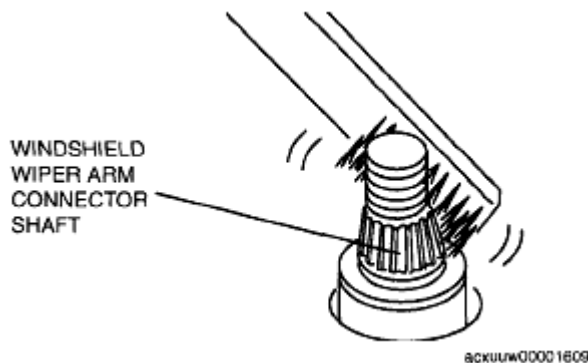


Fig. 3: Cleaning Windshield Wiper Arm Connector Shafts Using Wire Brush
Courtesy of MAZDA MOTORS CORP.

WINDSHIELD WIPER ARM AND BLADE ADJUSTMENT

1. Operate the windshield wipers, and then turn off the windshield wiper motor to set the wipers in the park position.
2. Slide the serrated connecting part and adjust the windshield wiper arm and blade so that its end is aligned with the hollowed mark in the ceramic coating.

NOTE:

- If the hollowed mark in the ceramic coating cannot be located, measure the distance from the cowl grille end line, and adjust the windshield wiper arm and blade.

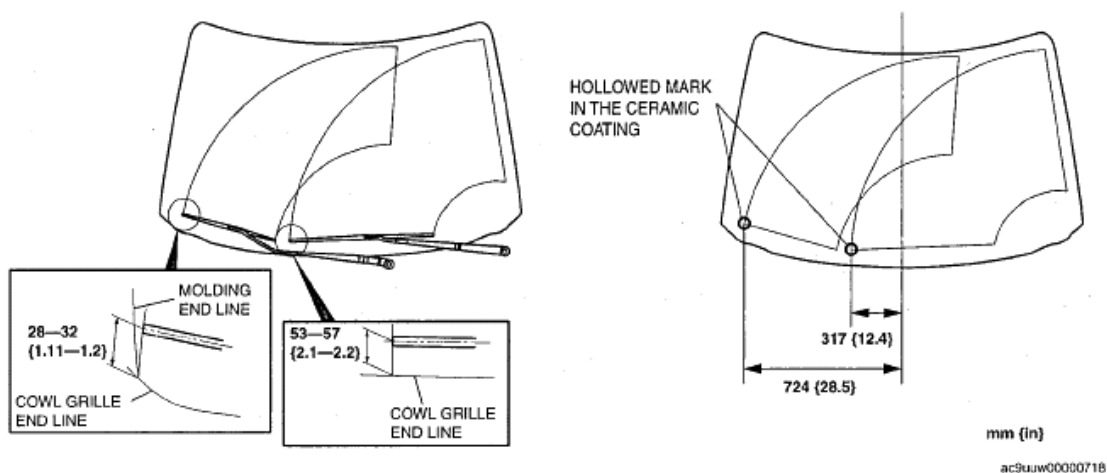


Fig. 4: Identifying Windshield Wiper Arm And Blade Adjusting Dimensions
 Courtesy of MAZDA MOTORS CORP.

WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the windshield wiper arm and blade. (See WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
3. Remove the cowl grille. (See COWL GRILLE REMOVAL/INSTALLATION.)
4. Remove in the order indicated in the table.

2008 Mazda CX-9 Grand Touring

2008 ACCESSORIES & BODY, CAB Wiper/Washer System - Mazda CX-9

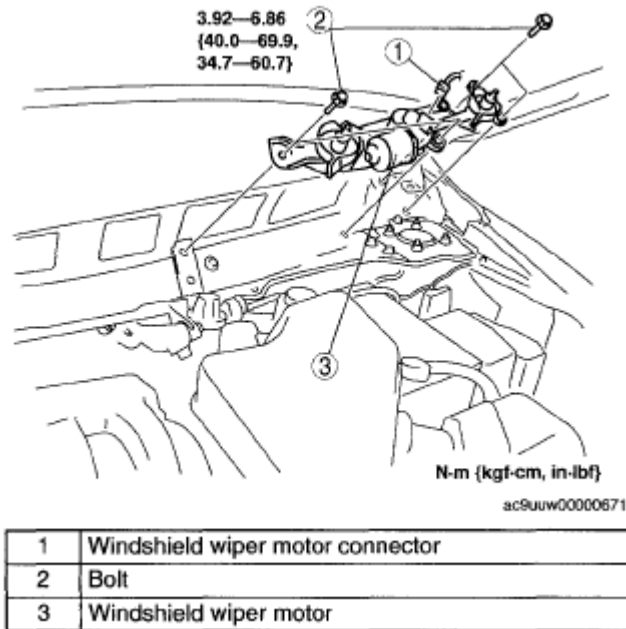


Fig. 5: Identifying Windshield Wiper Motor Components & Torque Specifications
Courtesy of MAZDA MOTORS CORP.

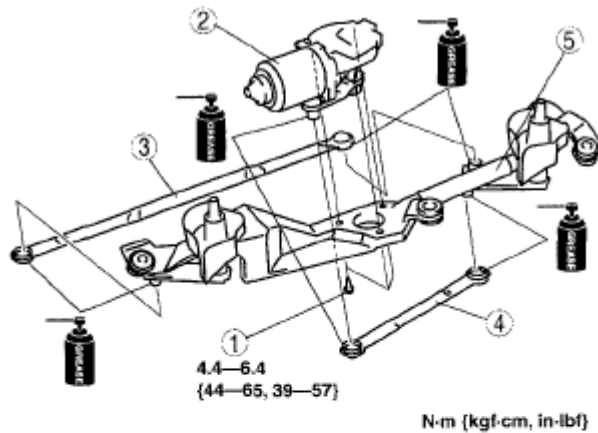
5. Install in the reverse order of removal.

WINDSHIELD WIPER MOTOR DISASSEMBLY/ASSEMBLY

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.

2008 Mazda CX-9 Grand Touring

2008 ACCESSORIES & BODY, CAB Wiper/Washer System - Mazda CX-9



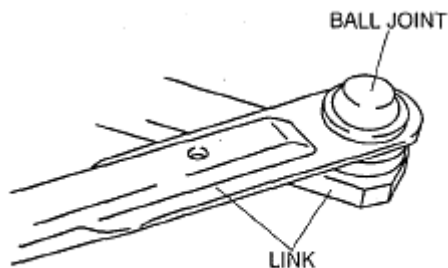
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1	Screw
2	Windshield wiper motor (See 09-19-5 Windshield Wiper Motor Assembly Note.)
3	Wiper link No. 1 (See 09-19-5 Ball Joint Assembly Note.)
4	Wiper link No. 2 (See 09-19-5 Ball Joint Assembly Note.)
5	Main link (See 09-19-5 Ball Joint Assembly Note.)

Fig. 6: View Of Windshield Wiper Motor & Torque Specifications
Courtesy of MAZDA MOTORS CORP.

BALL JOINT ASSEMBLY NOTE

1. Use a clean rag to protect the link, and squeeze using pliers.



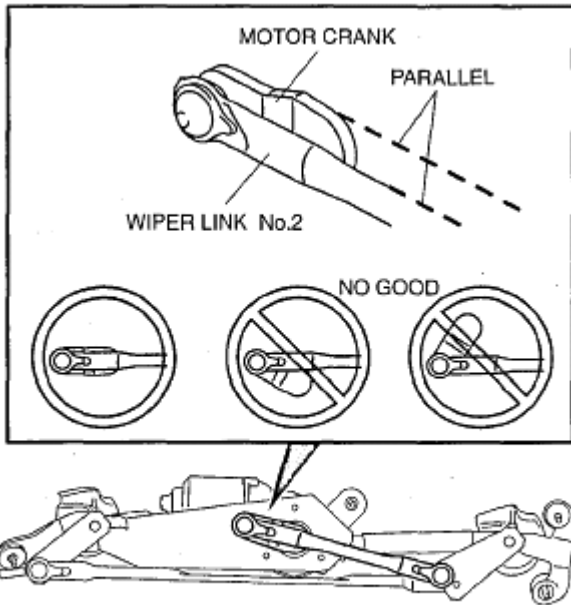
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Fig. 7: Identifying Ball Joint Assembly
Courtesy of MAZDA MOTORS CORP.

WINDSHIELD WIPER MOTOR ASSEMBLY NOTE

1. Connect the windshield wiper motor to the vehicle wiring harness connector, operate the windshield wipers, and then stop them at the auto-stop position.

2. Adjust the motor crank and wiper link No.1 so that they are parallel as shown in the figure.
3. Assemble the windshield wiper motor.



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Fig. 8: Identifying Proper Position Of Motor Crank And Wiper Link
 Courtesy of MAZDA MOTORS CORP.

WINDSHIELD WIPER MOTOR INSPECTION

1. Disconnect the windshield wiper motor connector.
2. Connect battery positive voltage to windshield wiper motor terminal A or B, and ground to terminal D, then verify that the windshield wipers operate as shown in the table.
 - If the windshield wipers do not operate as indicated in the table, replace the windshield wiper motor.

TERMINALS AND OPERATION CONDITION REFERENCE

Terminal connected to battery positive voltage	Operation condition
A	LO
B	HI

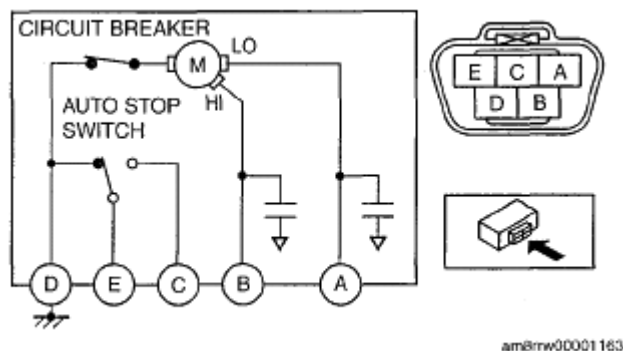
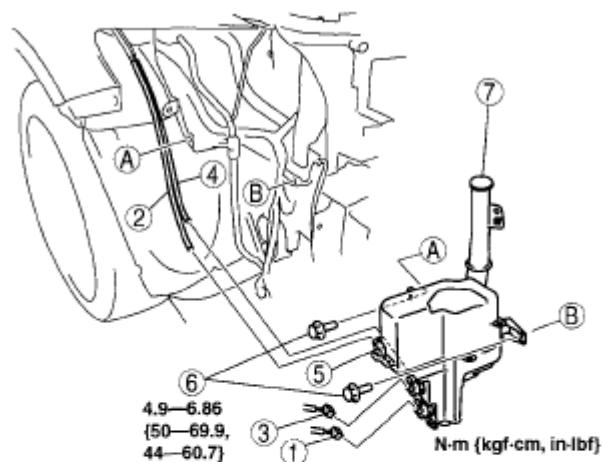


Fig. 9: Identifying Windshield Wiper Motor Terminals
 Courtesy of MAZDA MOTORS CORP.

3. Disconnect battery positive voltage from the motor terminal A while the wipers are operating.
4. Verify that the wipers do not stop in the park position.
5. Short between the motor terminals A and C, and connect battery positive voltage to the motor terminal E.
6. Verify that the wipers operate at low speed again, then stop in the park position.
 - If there is any malfunction, replace the windshield wiper motor.

WASHER TANK REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the front bumper. (See **FRONT BUMPER REMOVAL/INSTALLATION** .)
3. Remove in the order indicated in the table.



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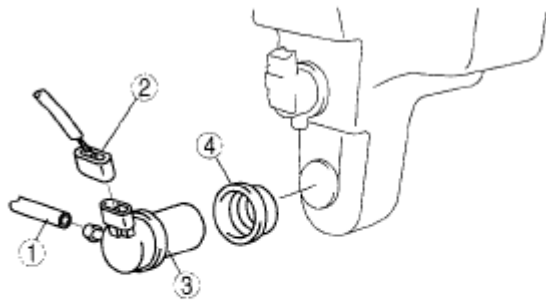
1	Windshield washer motor connector
2	Windshield washer hose
3	Rear washer motor connector
4	Rear washer hose
5	Washer fluid-level sensor connector (Vehicles with washer fluid-level sensor)
6	Bolt
7	Washer tank

Fig. 10: Identifying Washer Tank Components & Torque Specifications
 Courtesy of MAZDA MOTORS CORP.

4. Install in the reverse order of removal.

WINDSHIELD WASHER MOTOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Partially peel back the splash shield (RH).
3. Remove in the order indicated in the table.



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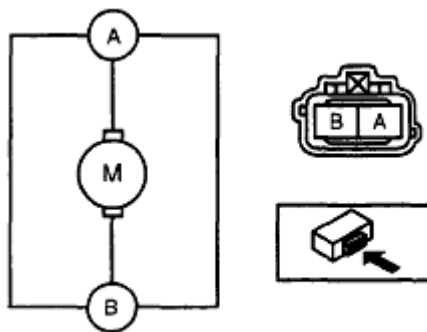
1	Windshield washer hose
2	Windshield washer motor connector
3	Windshield washer motor
4	Grommet

Fig. 11: Identifying Windshield Washer Motor Remove/Install Components
 Courtesy of MAZDA MOTORS CORP.

4. Install in the reverse order of removal.

WINDSHIELD WASHER MOTOR INSPECTION

1. Connect battery positive voltage to windshield washer motor terminal A and terminal B to ground.
2. Verify that the windshield washer motor operates normally.
 - If there is any malfunction, replace the windshield washer motor.



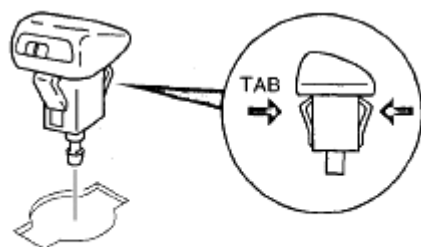
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Fig. 12: Identifying Windshield Washer Motor Terminals
 Courtesy of MAZDA MOTORS CORP.

WINDSHIELD WASHER NOZZLE REMOVAL/INSTALLATION

1. Remove the windshield wiper arm and blade. (See WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
2. Remove the cowl grille. (See COWL GRILLE REMOVAL/INSTALLATION .)
3. Remove the windshield washer hose from the windshield washer nozzle.

4. Squeeze the tabs of the windshield washer nozzle.
5. Pull the windshield washer nozzle out to remove it.
6. Install in the reverse order of removal.

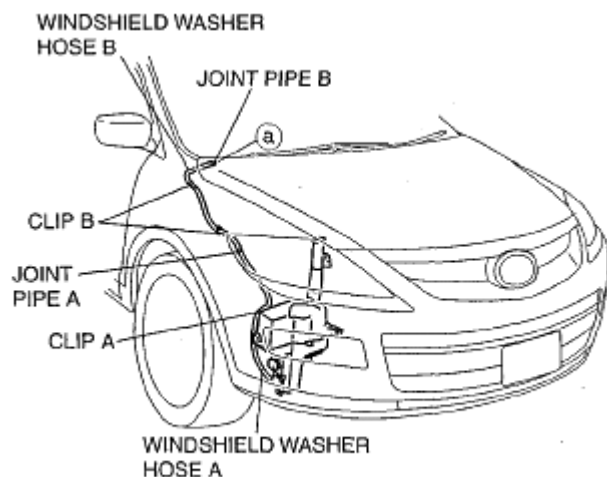


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Fig. 13: Removing Windshield Washer Nozzle
 Courtesy of MAZDA MOTORS CORP.

WINDSHIELD WASHER HOSE REMOVAL/INSTALLATION

1. Remove the splash shield (RH). (See SPLASH SHIELD REMOVAL/INSTALLATION .)
2. Disconnect windshield washer hose A from the windshield washer motor.
3. Remove windshield washer hose A from clip A.
4. Disconnect joint pipe A and remove windshield washer hose A.
5. Detach clips B.
6. Disconnect joint pipe A and B and remove windshield washer hose B.
7. Remove the windshield wiper arm and blade. (See WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)
8. Remove the cowl grille. (See COWL GRILLE REMOVAL/INSTALLATION .)



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Fig. 14: Identifying Windshield Washer Hoses, Joint Pipe And Clips
 Courtesy of MAZDA MOTORS CORP.

9. Remove windshield washer hose C from hook A.
10. Disconnect joint pipe B and C, than remove windshield washer hose C.
11. Disconnect joint pipe C and remove windshield washer hose D.
12. Disconnect windshield washer hose E from the windshield washer nozzle.
13. Disconnect joint pipe D and remove windshield washer hose E.
14. Remove the windshield washer hose F from the hooks B.
15. Disconnect windshield washer hose F from the windshield washer nozzle.
16. Disconnect joint pipe D and remove windshield washer hose F.
17. Install in the reverse order of removal.

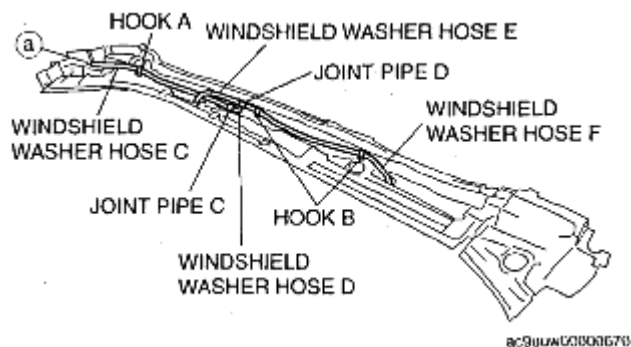
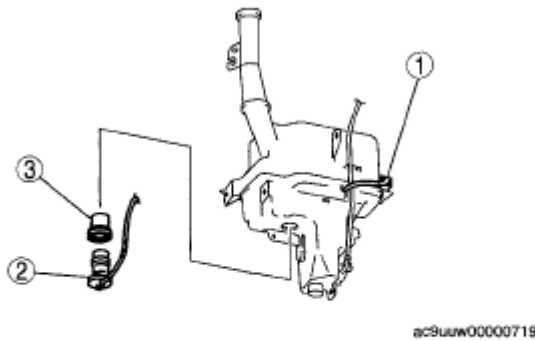


Fig. 15: Identifying Windshield Washer Hoses, Hooks And Joint Pipes
 Courtesy of MAZDA MOTORS CORP.

WASHER FLUID-LEVEL SENSOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the front bumper. (See **FRONT BUMPER REMOVAL/INSTALLATION** .)
3. Remove the washer tank. (See **WASHER TANK REMOVAL/INSTALLATION**.)
4. Remove in the order indicated in the table.



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1	Connector
2	Washer fluid-level sensor
3	Grommet

Fig. 16: Identifying Washer Fluid-Level Sensor Remove/Install Components
 Courtesy of MAZDA MOTORS CORP.

5. Install in the reverse order of removal.

WASHER FLUID-LEVEL SENSOR INSPECTION

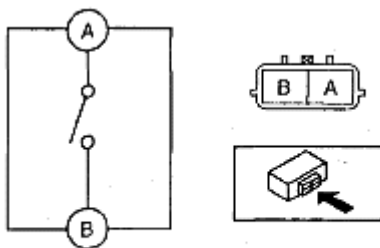
1. Disconnect the negative battery cable.
2. Verify that continuity between the washer fluid-level sensor terminals is as indicated in the table.
 - If not as specified, replace the washer fluid-level sensor.

○—○ : Continuity

Fluid level	Terminal	
	A	B
Above low		
Below low	○—○	○—○

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Fig. 17: Washer Fluid-Level Sensor Terminals Continuity Chart
 Courtesy of MAZDA MOTORS CORP.



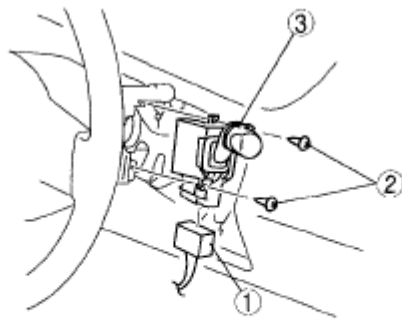
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Fig. 18: Identifying Washer Fluid-Level Sensor Terminals

Courtesy of MAZDA MOTORS CORP.

WIPER AND WASHER SWITCH REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the lower column cover. (See COLUMN COVER REMOVAL/INSTALLATION .)
3. Put aside the upper column cover.
4. Remove in the order indicated in the table.



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1	Connector
2	Screw
3	Wiper and washer switch

Fig. 19: Identifying Wiper And Washer Switch Remove/Install Components
 Courtesy of MAZDA MOTORS CORP.

5. Install in the reverse order of removal.

WINDSHIELD WIPER AND WASHER SWITCH INSPECTION

VEHICLES WITHOUT AUTO WIPER SYSTEM

1. Verify that the continuity between the windshield wiper and washer switch is as indicated in the table.
 - Verify that the continuity between the windshield wiper and washer switch is as indicated in the table.

○—○ : Continuity

Switch position	Mist	Terminal					
		A	C	E	K	M	O
Windshield wiper switch	OFF		○—○				
				○—○			
	INT		○—○				
	1			○—○			
	2			○—○	○—○		
Windshield washer switch	ON	○—○					

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Fig. 20: Identifying Wiper And Washer Switch Terminals Continuity Chart
Courtesy of MAZDA MOTORS CORP.

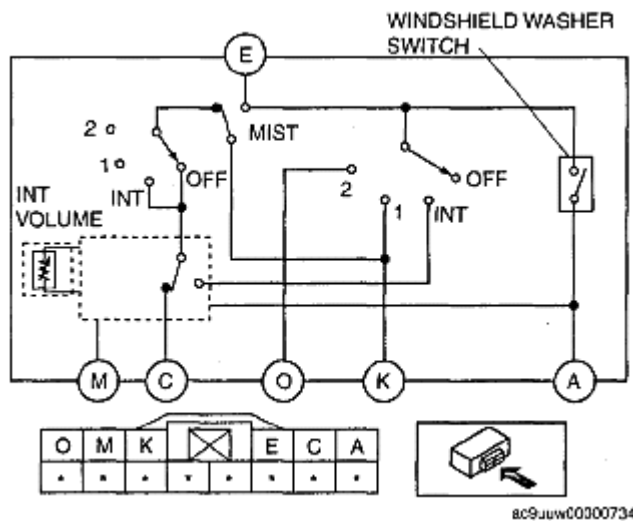


Fig. 21: Wiper And Washer Switch Circuit Diagram
Courtesy of MAZDA MOTORS CORP.

VEHICLES WITH AUTO WIPER SYSTEM

1. Verify that the continuity between the windshield wiper and washer switch is as indicated in the table.
 - Verify that the continuity between the windshield wiper and washer switch is as indicated in the table.

2008 Mazda CX-9 Grand Touring

2008 ACCESSORIES & BODY, CAB Wiper/Washer System - Mazda CX-9

○—○ : Continuity

Switch position	Mist	Terminal							
		A	C	D	E	K	O	P	
Windshield wiper switch	OFF	OFF	○	—			○		
		ON				○	○		
	AUTO					○	—	○	
				○	—		○		
						○	○		
					○	—	○		
Windshield washer switch	ON	○	—						

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Fig. 22: Wiper And Washer Switch Terminals Continuity Chart (Vehicles With Auto Wiper System)

Courtesy of MAZDA MOTORS CORP.

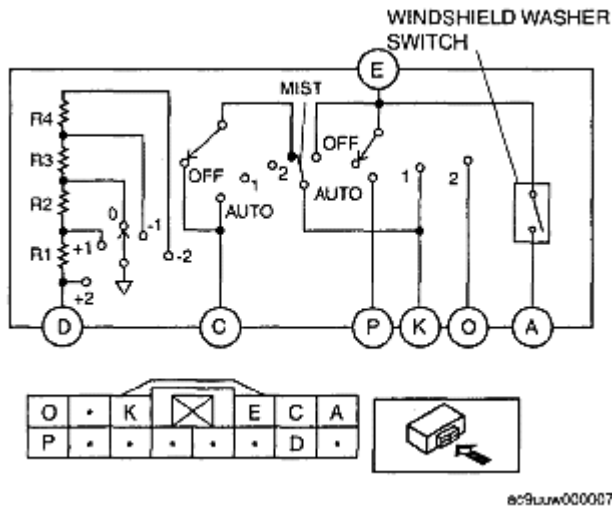


Fig. 23: Wiper And Washer Switch Circuit Diagram (Vehicles With Auto Wiper System)

Courtesy of MAZDA MOTORS CORP.

2008 Mazda CX-9 Grand Touring

2008 ACCESSORIES & BODY, CAB Wiper/Washer System - Mazda CX-9

○—○ : Continuity ○—W—○ : Resistance

Switch position		Terminal	
		D	Body ground
+	2	○—○	○—○
	1	○—○	○—W—○ R ₁
0		○—W—○	○—W—○ R ₁ R ₂
-	1	○—W—○	○—W—○ R ₁ R ₂ R ₃
	2	○—W—○	○—W—○ R ₁ R ₂ R ₃ R ₄

R₁ R₂ R₃ R₄ : 228—252 Ω
ac9uuw0000738

Fig. 24: Wiper And Washer Switch Terminals Continuity Chart (Vehicles With Auto Wiper System)

Courtesy of MAZDA MOTORS CORP.

REAR WIPER AND WASHER SWITCH INSPECTION

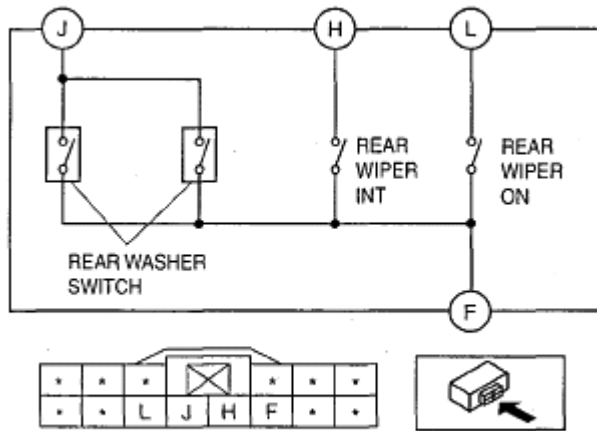
1. Verify that the continuity between the rear wiper and washer switch terminals is as indicated in the table.
 - If not as indicated in the table, replace the wiper and washer switch.

○—○ : Continuity

Switch position		Terminal			
		F	H	J	L
Rear wiper switch	OFF				
	ON	○—○			○
	INT	○—○			
Rear wiper and washer switch	ON	○—○			
Rear washer switch	ON	○—○			

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Fig. 25: Rear Wiper And Washer Switch Terminals Continuity Chart
Courtesy of MAZDA MOTORS CORP.

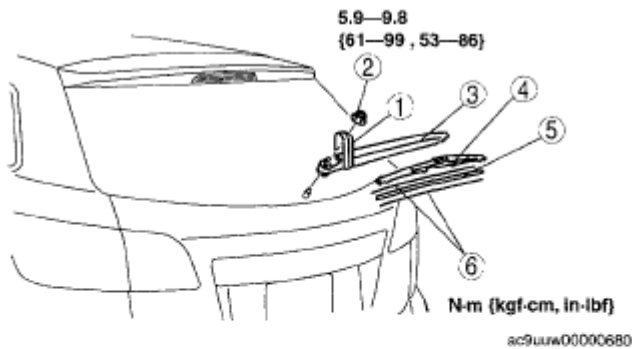


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Fig. 26: Rear Wiper And Washer Switch Circuit Diagram
 Courtesy of MAZDA MOTORS CORP.

REAR WIPER ARM AND BLADE REMOVAL/INSTALLATION

1. Remove in the order indicated in the table.



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1	Cap
2	Nut
3	Rear wiper arm (See 09-19-11 Rear Wiper Arm Installation Note.)
4	Rear wiper blade
5	Rubber brush
6	Backing plate

Fig. 27: Identifying Rear Wiper Arm, Blade Components & Torque Specifications
 Courtesy of MAZDA MOTORS CORP.

2. Install in the reverse order of removal.
3. Adjust the rear wiper arm and blade. (See REAR WIPER ARM AND BLADE ADJUSTMENT.)

REAR WIPER ARM INSTALLATION NOTE

1. Clean the rear wiper arm connector shaft using a wire brush before installing the rear wiper arm.

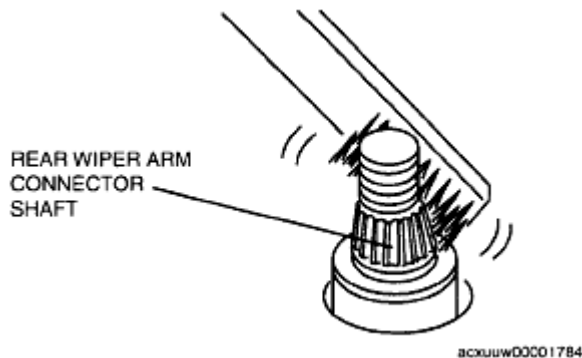


Fig. 28: Cleaning Rear Wiper Arm Connector Shaft Using Wire Brush
Courtesy of MAZDA MOTORS CORP.

REAR WIPER ARM AND BLADE ADJUSTMENT

1. Turn off the rear wiper switch while operating the rear wiper motor, and then stop the rear wiper at the auto-stop position.
2. Set the rear wiper arm onto the ceramic end line.

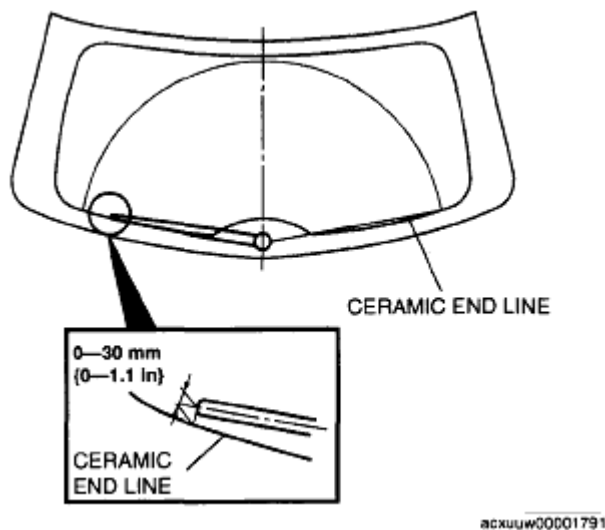


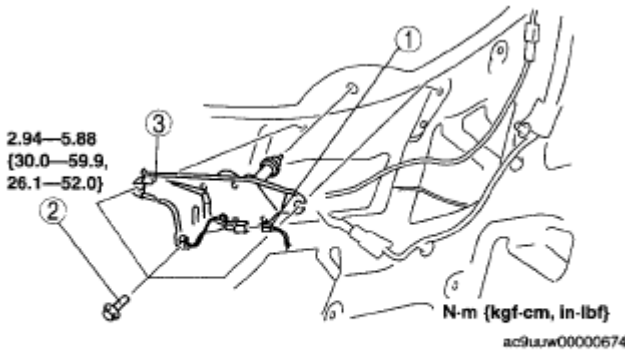
Fig. 29: Identifying Rear Wiper Arm And Blade Adjusting Dimension
Courtesy of MAZDA MOTORS CORP.

REAR WIPER MOTOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 1. Rear wiper arm and blade (See **REAR WIPER ARM AND BLADE**

REMOVAL/INSTALLATION.)

2. Liftgate upper trim (See **LIFTGATE UPPER TRIM REMOVAL/INSTALLATION .)**
 3. Liftgate side trim (See **LIFTGATE SIDE TRIM REMOVAL/INSTALLATION .)**
 4. Liftgate lower trim (See **LIFTGATE LOWER TRIM REMOVAL/INSTALLATION .)**
3. Remove in the order indicated in the table.



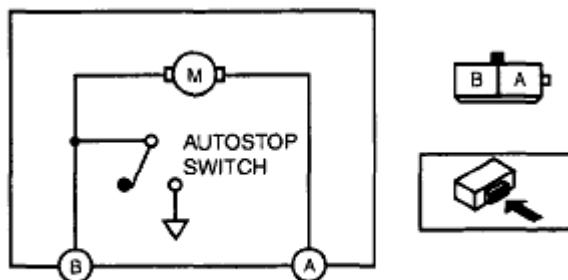
1	Rear wiper motor connector
2	Bolt
3	Rear wiper motor

Fig. 30: Identifying Rear Wiper Motor Components & Torque Specifications
Courtesy of MAZDA MOTORS CORP.

4. Install in the reverse order of removal.

REAR WIPER MOTOR INSPECTION

1. Connect battery positive voltage to the rear wiper motor terminal A, and ground the rear wiper motor terminal B.
2. Verify that the rear wiper motor operates.
 - If there is any malfunction, replace the rear wiper motor.

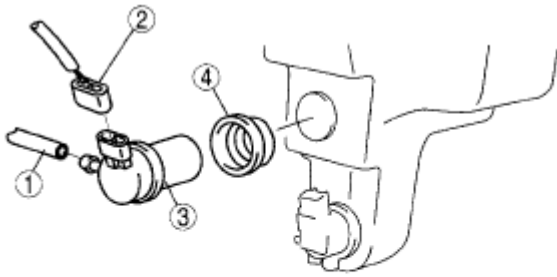


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Fig. 31: Rear Wiper Motor Circuit Diagram
Courtesy of MAZDA MOTORS CORP.

REAR WASHER MOTOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Partially peel back the splash shield (RH).
3. Remove in the order indicated in the table.



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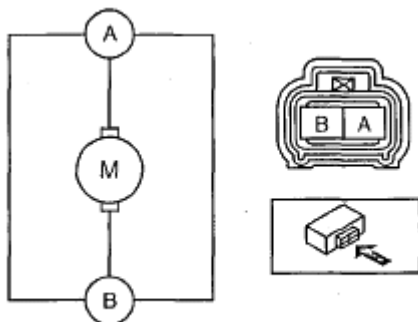
1	Rear washer hose
2	Rear washer motor connector
3	Rear washer motor
4	Grommet

Fig. 32: Identifying Rear Washer Motor Remove/Install Components
 Courtesy of MAZDA MOTORS CORP.

4. Install in the reverse order of removal.

REAR WASHER MOTOR INSPECTION

1. Connect battery positive voltage to rear washer motor terminal A and terminal B to ground.
2. Verify that the rear washer motor operates normally.
 - If there is any malfunction, replace the rear washer motor.

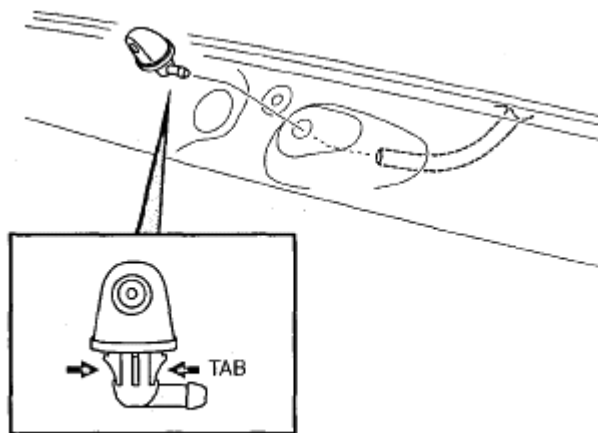


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Fig. 33: Rear Washer Motor Circuit Diagram
 Courtesy of MAZDA MOTORS CORP.

REAR WASHER NOZZLE REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the liftgate upper trim. (See LIFTGATE UPPER TRIM REMOVAL/INSTALLATION .)
3. Remove the rear spoiler. (See REAR SPOILER REMOVAL/INSTALLATION .)
4. Press the tabs and remove the rear washer nozzle.
5. Install in the reverse order of removal.
6. Adjust the rear washer nozzle. (See REAR WASHER NOZZLE ADJUSTMENT.)



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Fig. 34: Removing Rear Washer Nozzle
Courtesy of MAZDA MOTORS CORP.

REAR WASHER NOZZLE ADJUSTMENT

1. Insert a needle or an equivalent tool into the spray hole of the rear washer nozzle and adjust the nozzle direction as shown.

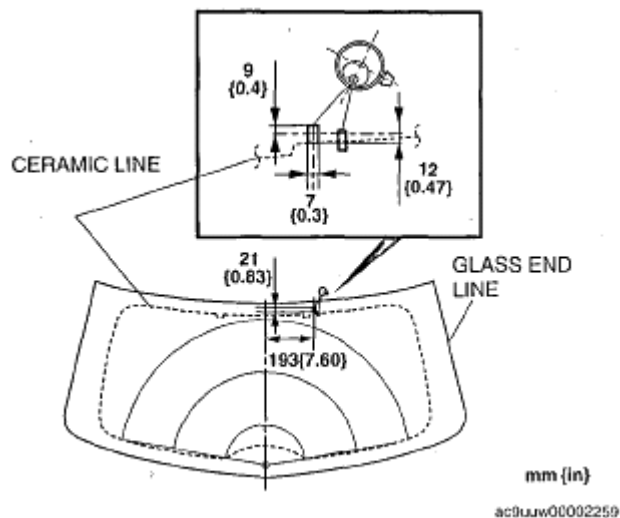


Fig. 35: Identifying Rear Washer Nozzle Adjusting Dimensions
 Courtesy of MAZDA MOTORS CORP.

REAR WASHER HOSE REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the splash shield (RH). (See **SPLASH SHIELD REMOVAL/INSTALLATION** .)
3. Disconnect rear washer hose A from the washer tank.
4. Remove rear washer hose A from clip A, B.
5. Disconnect joint pipe A and remove rear washer hose A.
6. Disconnect joint pipe B and remove rear washer hose B.
7. Remove the grommet.
8. Remove the following parts:
 1. Decoration panel (See **DECORATION PANEL REMOVAL/INSTALLATION** .)
 2. Front console box mat (See **FRONT CONSOLE BOX MAT REMOVAL/INSTALLATION** .)
 3. Indicator panel (See **INDICATOR PANEL REMOVAL/INSTALLATION** .)
 4. Front console box (See **FRONT CONSOLE BOX REMOVAL/INSTALLATION** .)
 5. Dashboard under cover (See **DASHBOARD UNDER COVER REMOVAL/INSTALLATION** .)

2008 Mazda CX-9 Grand Touring

2008 ACCESSORIES & BODY, CAB Wiper/Washer System - Mazda CX-9

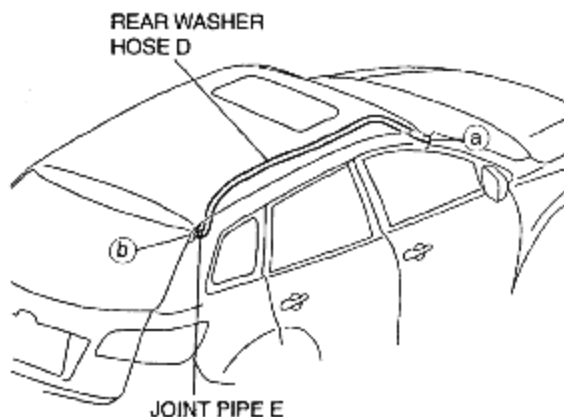
9. Disconnect joint pipe C and remove rear washer hose B.
10. Remove rear washer hose C from clips C.
11. Disconnect joint pipe D and remove rear washer hose C.
12. Remove the following parts:
 1. Rear scuff plate inner (See **REAR SCUFF PLATE REMOVAL/INSTALLATION** .)
 2. Front seat belt lower anchor installation bolt (Driver side) (See **FRONT SEAT BELT REMOVAL/INSTALLATION** .)
 3. B-pillar lower trim (See **B-PILLAR LOWER TRIM REMOVAL/INSTALLATION** .)
 4. Front seat belt upper anchor installation bolt (See **FRONT SEAT BELT REMOVAL/INSTALLATION** .)
 5. B-pillar upper trim (See **B-PILLAR UPPER TRIM REMOVAL/INSTALLATION** .)
 6. Trunk box (See **TRUNK BOX REMOVAL/INSTALLATION** .)
 7. Seat side box (See **SEAT SIDE BOX REMOVAL/INSTALLATION** .)
 8. Trunk end trim (See **TRUNK END TRIM REMOVAL/INSTALLATION** .)
 9. Third-row seat (See **THIRD-ROW SEAT REMOVAL/INSTALLATION** .)
 10. Third-row seat belt lower anchor installation bolt (See **THIRD-ROW SEAT BELT REMOVAL/INSTALLATION** .)
 11. Trunk side trim (See **TRUNK SIDE TRIM REMOVAL/INSTALLATION** .)
 12. Roof side trim (See **ROOF SIDE TRIM REMOVAL/INSTALLATION** .)
 13. Second-row seat belt upper anchor installation bolt (See **SECOND-ROW SEAT BELT REMOVAL/INSTALLATION** .)
 14. C-pillar trim (See **C-PILLAR TRIM REMOVAL/INSTALLATION** .)
 15. Third-row seat belt upper anchor installation bolt (See **THIRD-ROW SEAT BELT REMOVAL/INSTALLATION** .)
 16. D-pillar trim (See **D-PILLAR TRIM REMOVAL/INSTALLATION** .)
 17. Front map light (See **FRONT MAP LIGHT REMOVAL/INSTALLATION** .)
 18. Sunvisor (See **SUNVISOR REMOVAL/INSTALLATION** .)
 19. Assist handle (See **ASSIST HANDLE REMOVAL/INSTALLATION** .)
13. Disconnect joint pipe E and remove rear washer hose D.
14. Remove the headliner. (See **HEADLINER REMOVAL/INSTALLATION** .)

NOTE:

- Rear washer hose C is integrated with the headliner. If rear washer hose C is to be replaced, replace it with the headliner as a single unit.

2008 Mazda CX-9 Grand Touring

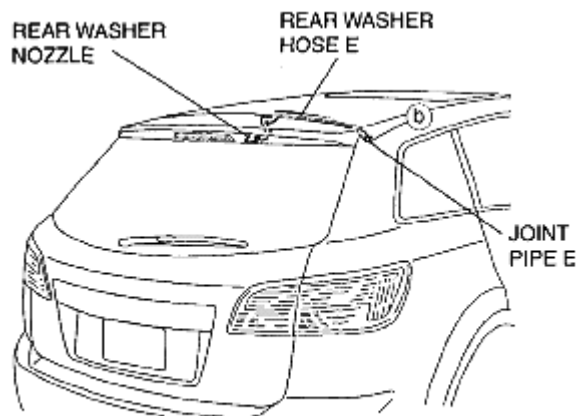
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Fig. 37: Identifying Rear Washer Hose And Joint Pipe
Courtesy of MAZDA MOTORS CORP.

15. Remove rear washer hose E from the rear washer nozzle.
16. Install in the reverse order of removal.



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Fig. 38: Identifying Rear Washer Hose, Joint Pipe And Rear Washer Nozzle
Courtesy of MAZDA MOTORS CORP.

AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION

NOTE:

- Auto wiper system are integrated with the auto light/wiper control module.

1. Disconnect the negative battery cable.
2. Remove the dashboard under cover (Driver side). (See **DASHBOARD UNDER COVER REMOVAL/INSTALLATION** .)

3. Remove the auto light/wiper control module. (See **AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION** .)
4. Install in the reverse order of removal.

AUTO LIGHT/WIPER CONTROL MODULE INSPECTION

NOTE: • Auto wiper system are integrated with the auto light/wiper control module.

1. Auto light/wiper control module inspection. (See **AUTO LIGHT/WIPER CONTROL MODULE INSPECTION** .)

RAIN SENSOR REMOVAL/INSTALLATION

CAUTION: • When the ignition switch is turned to the ON position after replacing the rain sensor with a new one, the windshield condition is verified and the initial setting is stored. Before installing a rain sensor, always remove water and dirt from the windshield.

NOTE: • Perform the initial setting again in the following cases: (See **RAIN SENSOR REINITIALIZATION SETTING**.)

- The windshield is replaced and the rain sensor is reused.
- The auto wiper system operates incorrectly.

• The rain sensor is integrated with the auto light sensor as a single unit.

1. Disconnect the negative battery cable.
2. Remove the rearview mirror cover, (See **REARVIEW MIRROR REMOVAL [VEHICLES WITH AUTO LIGHT/WIPER SYSTEM]** .)
3. Disconnect the rain sensor connector.
4. Slide both tabs located on each side of the rain sensor in the direction of the arrow and remove the rain sensor.
5. Install in the reverse order of removal.

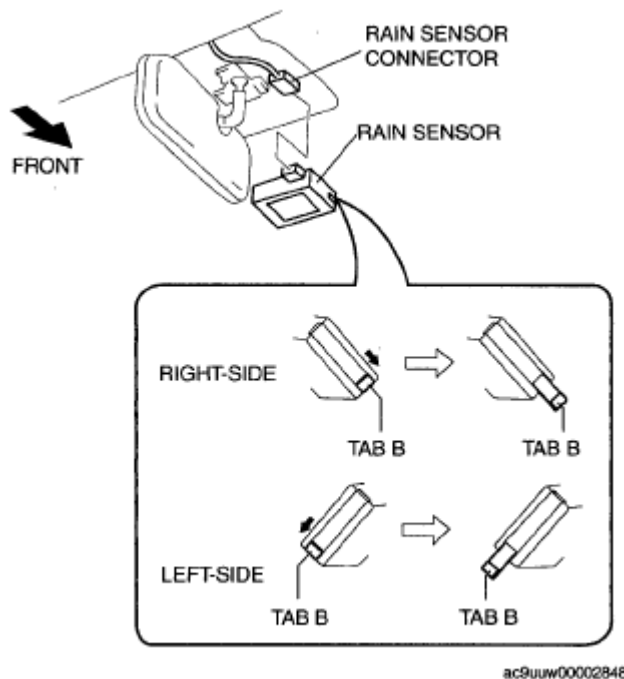


Fig. 39: Removing Rain Sensor
 Courtesy of MAZDA MOTORS CORP.

RAIN SENSOR REINITIALIZATION SETTING

- CAUTION:**
- If the initialization is performed again with water or dirt on the windshield, the rain sensor may not operate normally. Before performing the rain sensor initialization again, remove water and dirt from the windshield

- NOTE:**
- When the ignition switch is turned to the ON position after replacing the rain sensor with a new one, the windshield condition is verified and the initial setting is stored.
 - Perform the initial setting again in the following cases:
 - The windshield is replaced and the rain sensor is reused.
 - The auto wiper system operates incorrectly.

WITHOUT USING M-MDS

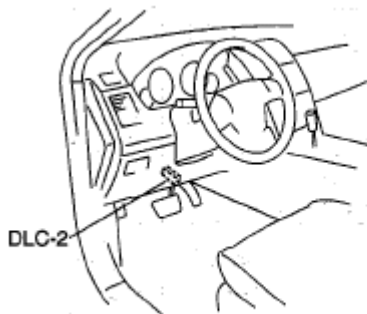
1. Remove water and dirt from the windshield surface.
2. Turn the ignition switch off.
3. Turn the windshield wiper switch to the AUTO position.
4. Within 10 s after turning the ignition switch to the ON position, turn the windshield wiper switch from the AUTO to the OFF position for five times and return it to the AUTO position.

- CAUTION:**
- If the operation is too fast, the windshield wiper switch position cannot be detected and the initial setting may not be performed. Operate the windshield wiper switch for one cycle (AUTO-->OFF-->AUTO) per 1 s.

- NOTE:**
- When the initial setting is performed correctly, the windshield wiper operates once at low speed.

USING M-MDS

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select "Electrical".
 - When using the PDS (Pocket PC)
 1. Select "All Tests and Calibrations".
3. Then, select items from the screen menu in the following order.
 1. Select "Rain Sensor Reset".
4. Perform the procedure as indicated on the screen.



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Fig. 40: Identifying Data Link Connector
Courtesy of MAZDA MOTORS CORP.