2000 Town Car

Subarticles

- Inspection and Verification
- Symptom Chart
- Pinpoint Tests

SECTION 501-16: Wipers and Washers	2000 Town Car Workshop Manual
DIAGNOSIS AND TESTING	Procedure revision date: 05/27/1999

Wipers and Washers

Refer to Wiring Diagrams Cell 81, Interval Wiper/Washer for schematic and connector information.

Special Tool(s)

 ST1137-A	73 Digital Multimeter or equivalent 105-R0051

Inspection and Verification

1. Verify the customer concern by operating the windshield wiper and washer system to duplicate the condition.
2. Visually inspect for the obvious signs of mechanical or electrical damage; refer to the following chart.

Visual Inspection Chart

Mechanical	Electrical
• Wiper blade • Binding wiper pivot arm • Binding wiper mounting arm and pivot shaft • Empty washer reservoir • Washer hoses	• Fuse • Wiper motor • Washer pump • Open connectors • Corroded connectors • Multi-function switch • Circuit

3. If the concern is not visually evident, determine the symptom and proceed to Symptom Chart.

Symptom Chart

Symptom Chart

Condition	Possible Sources	Action
• The Washer Pump Is Inoperative	• Circuitry. • Multi-function switch. • Wiper control module. • Washer pump.	• GO to Pinpoint Test A.
• The Wipers are Inoperative	• Fuse. • Wiper motor. • Multi-function switch. • Circuitry. • Wiper control module.	• GO to Pinpoint Test B.
• The Low Wiper Speed Does Not Operate Properly	• Multi-function switch. • Wiper motor. • Circuitry. • Wiper control module.	• GO to Pinpoint Test C.
• The High Wiper Speed Does Not Operate Properly	• Multi-function switch. • Wiper motor. • Circuitry. • Wiper control module.	• GO to Pinpoint Test D.
• The Intermittent Wiper Speed Does Not Operate Properly	• Multi-function switch. • Circuitry. • Wiper control module. • Wiper motor.	• GO to Pinpoint Test E.
• The Wipers Will Not Park at the Proper Position	• Wiper motor. • Wiper control module. • Circuitry.	• GO to Pinpoint Test F.

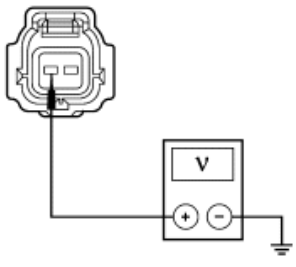
• The Wipers Stay On Continuously	• Multi-function switch. • Wiper motor. • Wiper control module. • Circuitry.	• GO to Pinpoint Test G.

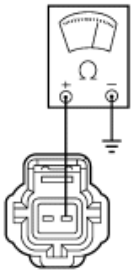
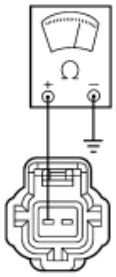
Pinpoint Tests

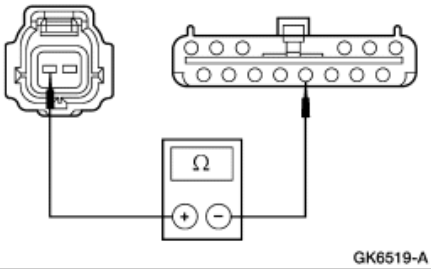
CAUTION: Electronic modules are sensitive to electrical charges. If exposed to these charges, damage may result.

PINPOINT TEST A: THE WASHER PUMP IS INOPERATIVE

CONDITIONS	DETAILS/RESULTS/ACTIONS
A1 CHECK THE WASHER PUMP MOTOR OPERATION	
1 	
	2 Press the washer button.
	• **Does the washer pump motor operate properly?** → **Yes** GO to A2. → **No** GO to A3.
A2 CHECK FOR BLOCKAGE OR OBSTRUCTION	
1 	
	2 Inspect the washer nozzles, washer hoses, and washer pump for blockages or obstructions.

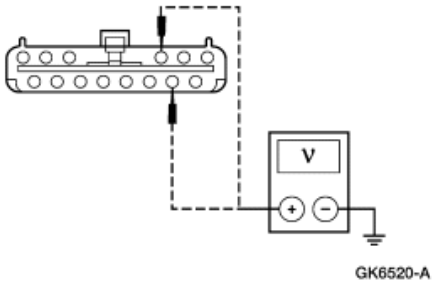
	• **Are any blockages or obstructions present?** → **Yes** REPAIR or REPLACE as required. TEST the system for normal operation. → **No** REPLACE the washer pump motor; REFER to Washer Pump and Reservoir. TEST the system for normal operation.
A3 CHECK THE WASHER PUMP MOTOR FOR VOLTAGE — CIRCUIT 941 (BK/W)	
1 	
2  Washer Pump Motor C1022	
3 	
4 	4 Measure the voltage between washer pump motor C1022, circuit 941 (BK/W), and ground while pressing the washer button.
	• **Is the voltage greater than 10 volts?** → **Yes** GO to A4. → **No** GO to A5.
A4 CHECK THE WASHER PUMP MOTOR GROUND — CIRCUIT 57 (BK)	
1	

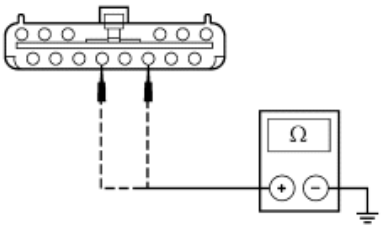
	
2  AK0690-A	2 Measure the resistance between washer pump motor C1022, circuit 57 (BK), and ground.
	• **Is the resistance less than 5 ohms?** → **Yes** REPLACE the washer pump motor; REFER to Washer Pump and Reservoir. TEST the system for normal operation. → **No** REPAIR circuit 57 (BK). TEST the system for normal operation.
A5 CHECK CIRCUIT 941 (BK/W) FOR SHORT TO GROUND	
1 	
2  AK0691-A	2 Measure the resistance between washer pump motor C1022, circuit 941 (BK/W), and ground.
	• **Is the resistance greater than 10,000 ohms?** → **Yes** GO to A6. → **No**

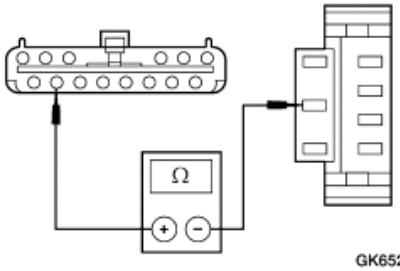
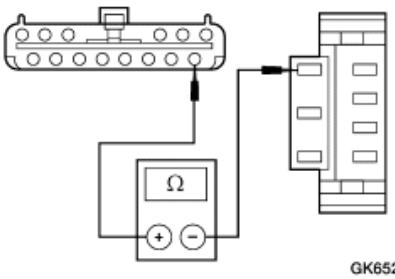
	REPLACE the multi-function switch; REFER to Section 211-05. TEST the system for normal operation.
A6 CHECK CIRCUIT 941 (BK/W) FOR OPEN	
1  Wiper Control Module C294	
2 	2 Measure the resistance between washer pump motor C1022, circuit 941 (BK/W), and wiper control module C294-4, circuit 941 (BK/W).
	• **Is the resistance less than 5 ohms?** → **Yes** REPLACE the wiper control module; REFER to Module—Windshield Wiper. TEST the system for normal operation. → **No** REPAIR circuit 941 (BK/W). TEST the system for normal operation.

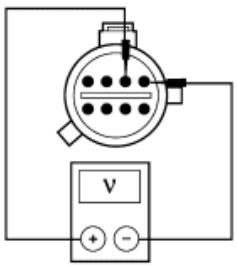
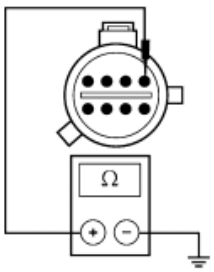
PINPOINT TEST B: THE WIPERS ARE INOPERATIVE

CONDITIONS	DETAILS/RESULTS/ACTIONS
B1 CHECK FUSE JUNCTION PANEL FUSE 16 (30A)	
1 	
2  Fuse 16 (30A)	

	• **Is the fuse OK?** → **Yes** GO to B2. → **No** REPLACE the fuse. TEST the system for normal operation. If the fuse fails again, CHECK for a short to ground. REPAIR as necessary.
B2 CHECK FOR VOLTAGE TO THE WIPER CONTROL MODULE — CIRCUIT 65 (DG)	
1 	
2  Wiper Control Module C294	
3 	
4 	4 Measure the voltage between wiper control module C294-2, circuit 65 (DG), and ground; and between wiper control module C294-11, circuit 65 (DG), and ground.
	• **Is the voltage greater than 10 volts?** → **Yes** GO to B3. → **No** REPAIR circuit 65 (DG). TEST the system for normal operation.
B3 CHECK CIRCUIT 57 (BK) FOR OPEN	
1	

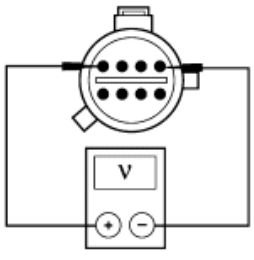
	
2  	2 Measure the resistance between wiper control module C294-3, circuit 57 (BK), and ground; and between wiper control module C294-5, circuit 57 (BK), and ground.
	• **Are the resistances less than 5 ohms?** → **Yes** GO to B4. → **No** REPAIR circuit 57 (BK). TEST the system for normal operation.
B4 CHECK THE MULTI-FUNCTION SWITCH	
1  Multi-Function Switch	
	2 Check the multi-function switch; refer to Section 211-05.
	• **Is the multi-function switch OK?** → **Yes** GO to B5. → **No** REPLACE the multi-function switch; REFER to Section 211-05. TEST the system for normal operation.
B5 CHECK CIRCUIT 993 (BR/W) FOR OPEN	
1	1 Measure the resistance between multi-function switch C269-4, circuit 993 (BR/W), and wiper control module C294-7, circuit 993 (BR/W).

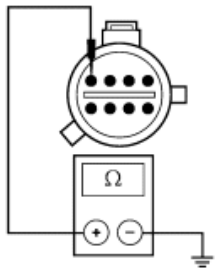
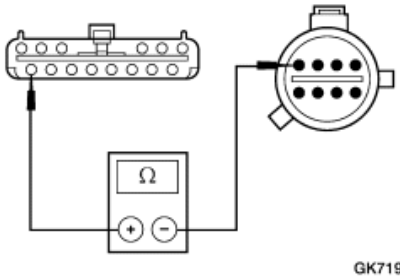
 GK6522-A	
	• **Is the resistance less than 5 ohms?** → **Yes** GO to B6. → **No** REPAIR circuit 993 (BR/W). TEST the system for normal operation.
B6 CHECK CIRCUIT 589 (O) FOR OPEN	
1  GK6523-A	1 Measure the resistance between multi-function switch C269-1, circuit 589 (O), and wiper control module C294-1, circuit 589 (O).
	• **Is the resistance less than 5 ohms?** → **Yes** GO to B7. → **No** REPAIR circuit 589 (O). TEST the system for normal operation.
B7 CHECK THE WIPER CONTROL MODULE OUTPUT FOR VOLTAGE	
1  Wiper Control Module C294	
2	

 Wiper Motor C152	
	3 Turn the multi-function switch to the HI position.
4 	
5  GK7192-A	5 Measure the voltage between wiper motor C152-4, circuit 57 (BK), and wiper motor C152-3, circuit 56 (DB/O). • **Is the voltage greater than 10 volts?** → **Yes** REPLACE the wiper motor; REFER to Motor—Windshield Wiper. TEST the system for normal operation. → **No** GO to B8.
B8 CHECK CIRCUIT 57 (BK) FOR OPEN	
1 	
2  GK7201-A	2 Measure the resistance between wiper motor C152-4, circuit 57 (BK), and ground.

	• **Is the resistance less than 5 ohms?** → **Yes** REPLACE the wiper control module; REFER to Module—Windshield Wiper. TEST the system for normal operation. → **No** REPAIR circuit 57 (BK). TEST the system for normal operation.

PINPOINT TEST C: THE LOW WIPER SPEED DOES NOT OPERATE PROPERLY

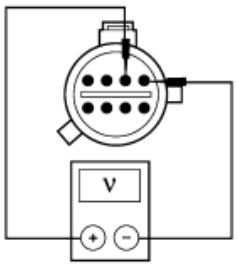
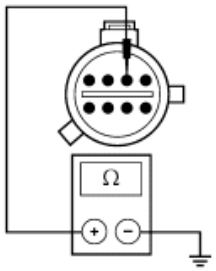
CONDITIONS	DETAILS/RESULTS/ACTIONS
C1 CHECK THE VOLTAGE TO THE WIPER MOTOR — CIRCUIT 58 (W)	
1 	
2  Wiper Motor C152	
3 	
	4 Turn the multi-function switch to the LO position.
5  GK7193-A	5 Measure the voltage between wiper motor C152-4, circuit 57 (BK), and wiper motor C152-1, circuit 58 (W).
	• **Is the voltage greater than 10 volts?** → **Yes** REPLACE the wiper motor. REFER to Motor—Windshield Wiper. TEST the system for normal operation.

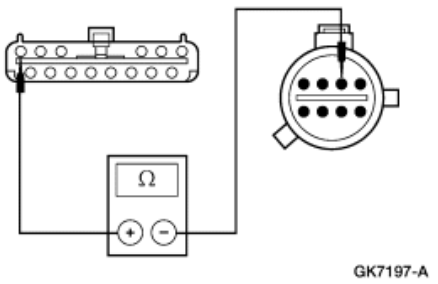
	→ **No** GO to C2.
C2 CHECK CIRCUIT 58 (W) FOR SHORT TO GROUND	
1 	
2  Wiper Control Module C294	
3 	3 Measure the resistance between wiper motor C152-1, circuit 58 (W), and ground.
	• **Is the resistance greater than 10,000 ohms?** → **Yes** GO to C3. → **No** REPAIR circuit 58 (W). TEST the system for normal operation.
C3 CHECK CIRCUIT 58 (W) FOR OPEN	
1 	1 Measure the resistance between wiper control module C294-8, circuit 58 (W), and wiper motor C152-1, circuit 58 (W).
	• **Is the resistance less than 5 ohms?**

	→ **Yes** GO to C4. → **No** REPAIR circuit 58 (W). TEST the system for normal operation.
C4 CHECK THE MULTI-FUNCTION SWITCH	
1  Multi-Function Switch	
	2 Check the multi-function switch; refer to Section 211-05.
	• **Is the multi-function switch OK?** → **Yes** REPLACE the wiper control module; REFER to Module—Windshield Wiper. TEST the system for normal operation. → **No** REPLACE the multi-function switch; REFER to Section 211-05. TEST the system for normal operation.

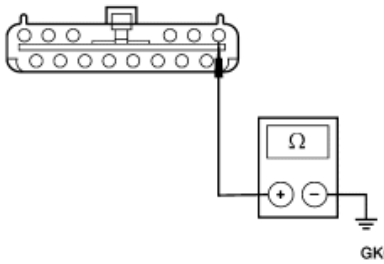
PINPOINT TEST D: THE HIGH WIPER SPEED DOES NOT OPERATE PROPERLY

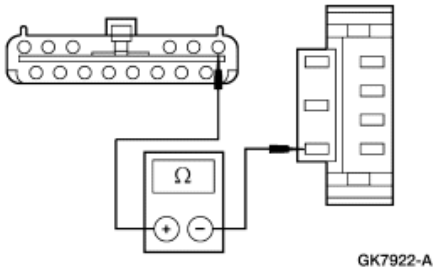
CONDITIONS	DETAILS/RESULTS/ACTIONS
D1 CHECK THE VOLTAGE TO THE WINDSHIELD WIPER MOTOR — CIRCUIT 56 (DB/O)	
1 	
2  Wiper Motor C152	
	3 Turn the multi-function switch to the HI position.
4	4

 GK7192-A	Measure the voltage between wiper motor C152-4, circuit 57 (BK), and wiper motor C152-3, circuit 56 (DB/O).
	• **Is the voltage greater than 10 volts?** → **Yes** REPLACE the wiper motor; REFER to Motor—Windshield Wiper. TEST the system for normal operation. → **No** GO to D2.
D2 CHECK CIRCUIT 56 (DB/O) FOR SHORT TO GROUND	
1 	
2  Wiper Control Module C294	
3  GK7196-A	3 Measure the resistance between wiper motor C152-3, circuit 56 (DB/O), and ground.
	• **Is the resistance greater than 10,000 ohms?** → **Yes** GO to D3. →

	No REPAIR circuit 56 (DB/O). TEST the system for normal operation.
D3 CHECK CIRCUIT 56 (DB/O) FOR OPEN	
1  	1 Measure the resistance between wiper control module C294-14, circuit 56 (DB/O), and wiper motor C152-3, circuit 56 (DB/O). • **Is the resistance less than 5 ohms?** → **Yes** GO to D4. → **No** REPAIR circuit 56 (DB/O). TEST the system for normal operation.
D4 CHECK THE MULTI-FUNCTION SWITCH	
1  Multi-Function Switch	
	2 Check the multi-function switch; refer to Section 211-05.
	• **Is the multi-function switch OK?** → **Yes** REPLACE the wiper control module; REFER to Module—Windshield Wiper. TEST the system for normal operation. → **No** REPLACE the multi-function switch; REFER to Section 211-05. TEST the system for normal operation.

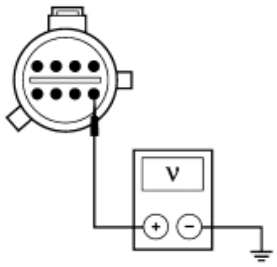
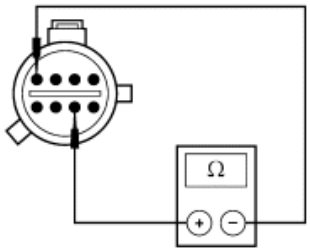
PINPOINT TEST E: THE INTERMITTENT WIPER SPEED DOES NOT OPERATE PROPERLY

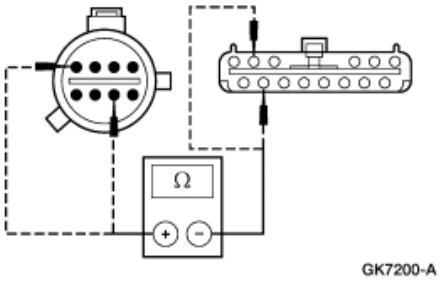
CONDITIONS	DETAILS/RESULTS/ACTIONS
E1 CHECK THE MULTI-FUNCTION SWITCH	
1 	
2  Multi-Function Switch	
	3 Check the multi-function switch; refer to Section 211-05.
	• **Is the multi-function switch OK?** → **Yes** GO to E2. → **No** REPLACE the multi-function switch; REFER to Section 211-05. TEST the system for normal operation.
E2 CHECK CIRCUIT 590 (DB/W) FOR SHORT TO GROUND	
1  Wiper Control Module C294	
2  	2 Measure the resistance between wiper control module C294-9, circuit 590 (DB/W), and ground.
	• **Is the resistance greater than 10,000 ohms?** → **Yes**

	GO to E3. → **No** REPAIR circuit 590 (DB/W). TEST the system for normal operation.
E3 CHECK CIRCUIT 590 (DB/W) FOR OPEN	
1  	1 Measure the resistance between wiper control module C294-9, circuit 590 (DB/W), and multi-function switch C269-6, circuit 590 (DB/W).
	• **Is the resistance less than 5 ohms?** → **Yes** REPLACE the wiper control module; REFER to Module—Windshield Wiper. TEST the system for normal operation. → **No** REPAIR circuit 590 (DB/W). TEST the system for normal operation.

PINPOINT TEST F: THE WIPERS WILL NOT PARK AT THE PROPER POSITION

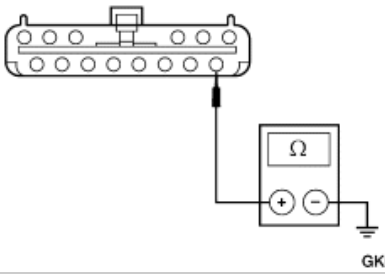
CONDITIONS	DETAILS/RESULTS/ACTIONS
F1 CHECK THE WIPER MOTOR FOR VOLTAGE — CIRCUIT 65 (DG)	
1 	
2  Wiper Motor C152	
3 	
4	4

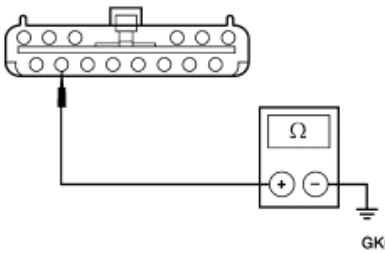
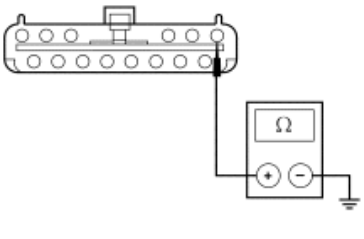
	Measure the voltage between wiper motor C152-8, circuit 65 (DG), and ground.
	• **Is the voltage greater than 10 volts?** → **Yes** GO to F2. → **No** REPAIR circuit 65 (DG). TEST the system for normal operation.
F2 CHECK THE WIPER CONTROL MODULE RETURN CIRCUIT FOR OPEN — CIRCUIT 28 (BK/PK)	
1 	
2 	2 Measure the resistance between wiper motor C152-7, circuit 28 (BK/PK), and wiper motor C152-1, circuit 58 (W).
	• **Is the resistance less than 5 ohms?** → **Yes** GO to F4. → **No** GO to F3.
F3 CHECK THE WIPER CONTROL MODULE/WIPER MOTOR CIRCUITS FOR OPEN	
1 	

Wiper Control Module C294	
2  	2 Measure the resistance between wiper motor C152 and wiper control module C294; refer to the following chart: **Wiper Motor Connector** / **Circuit** / **Wiper Control Module Connector** C152-7 / 28 (BK/PK) / C294-13 C152-1 / 58 (W) / C294-8
	• **Are the resistances less than 5 ohms?** → **Yes** REPLACE the wiper control module; REFER to Module—Windshield Wiper. TEST the system for normal operation. → **No** REPAIR the circuit in question. TEST the system for normal operation.
F4 CHECK THE WIPER LINKAGE	
	1 Verify the wiper linkage is not bent, cracked, or mispositioned from the wiper motor shaft.
	• **Is the wiper linkage OK?** → **Yes** REPLACE the wiper motor; REFER to Motor—Windshield Wiper. TEST the system for normal operation. → **No** REPAIR or REPLACE the wiper mounting arm and pivot shaft; REFER to Mounting Arm and Pivot Shaft. TEST the system for normal operation.

PINPOINT TEST G: THE WIPERS STAY ON CONTINUOUSLY

CONDITIONS	DETAILS/RESULTS/ACTIONS
G1 CHECK THE MULTI-FUNCTION SWITCH	
1	

	
2  Multi-Function Switch	
	3 Check the multi-function switch; refer to Section 211-05.
	• **Is the multi-function switch OK?** → **Yes** GO to G2. → **No** REPLACE the multi-function switch; REFER to Section 211-05.
G2 CHECK CIRCUIT 589 (O) FOR SHORT TO GROUND	
1  Wiper Control Module C294	
2  GK6536-A	2 Measure the resistance between wiper control module C294-1, circuit 589 (O), and ground.
	• **Is the resistance greater than 10,000 ohms?** → **Yes** GO to G3. → **No** REPAIR circuit 589 (O). TEST the system for normal operation.

G3 CHECK CIRCUIT 993 (BR/W) FOR SHORT TO GROUND	
1  	1 Measure the resistance between wiper control module C294-7, circuit 993 (BR/W), and ground.
	• **Is the resistance greater than 10,000 ohms?** → **Yes** GO to G4. → **No** REPAIR circuit 993 (BR/W). TEST the system for normal operation.
G4 CHECK CIRCUIT 590 (DB/W) FOR SHORT TO GROUND	
1  	1 Measure the resistance between wiper control module C294-9, circuit 590 (DB/W), and ground.
	• **Is the resistance greater than 10,000 ohms?** → **Yes** REPLACE the wiper control module; REFER to Module—Windshield Wiper. TEST the system for normal operation. → **No** REPAIR circuit 590 (DB/W). TEST the system for normal operation.