

WIPER AND WASHER SYSTEM

HOW TO PROCEED WITH TROUBLESHOOTING

052AJ-02

1	VEHICLE BROUGHT TO WORK SHOP
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2	CUSTOMER PROBLEM ANALYSIS (See page 05-811)
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3	PROBLEM SYMPTOMS TABLE (See page 05-815)
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4	TERMINAL OF ECU (See page 05-814)
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5	IDENTIFICATION OF PROBLEM
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6	REPAIR OR REPLACE
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7	CONFIRMATION TEST
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END

PRE-CHECK

1. RAIN DROP SENSING WIPER OPERATION CHECK

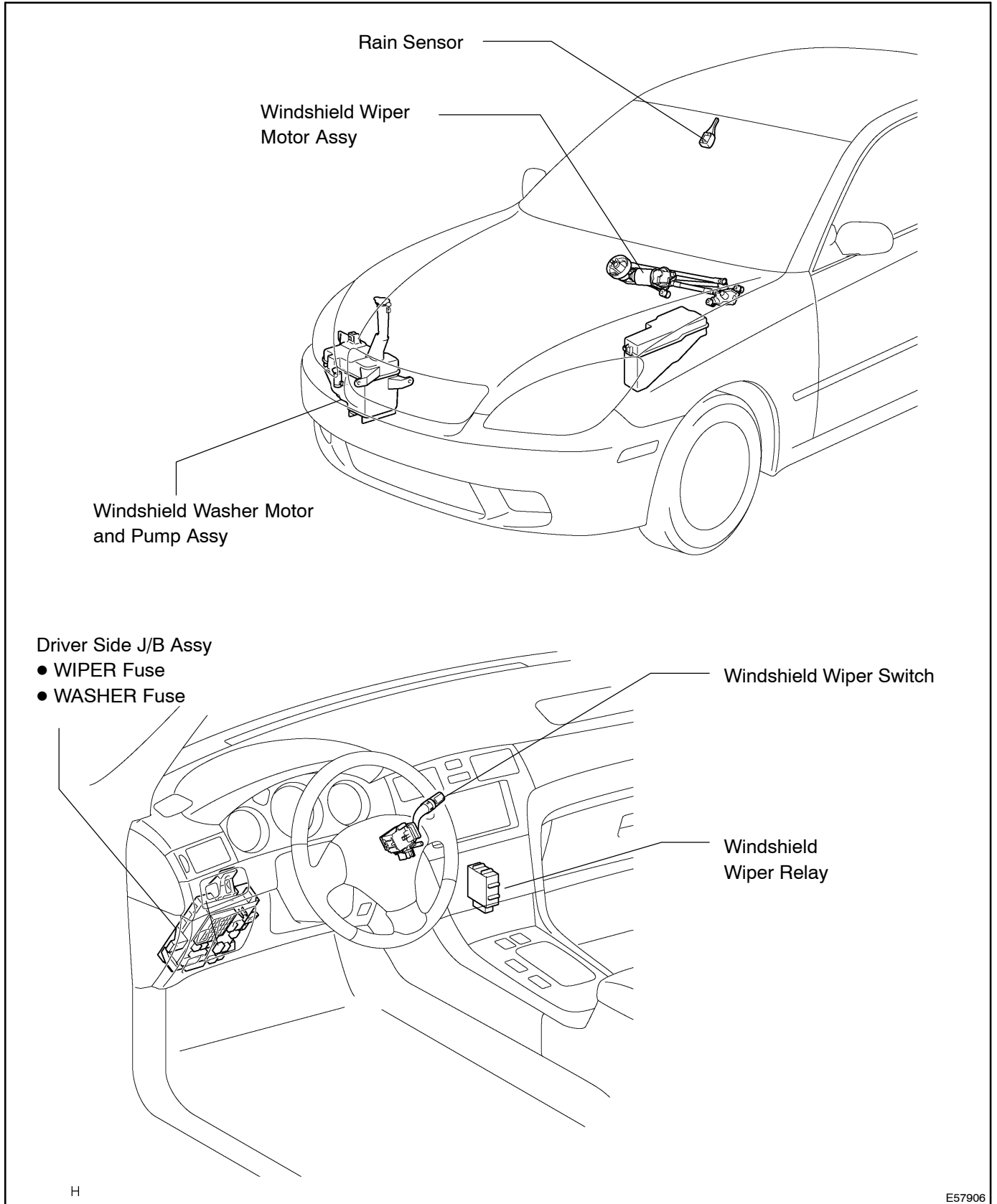
- (a) Check that wiper operates properly in INT, LO, HI mode depending on the amount of rain drop on windshield glass when wiper switch AUTO.

2. FAIL SAFE FUNCTION

- (a) Wiper operates intermittently depending on the sensitivity control position in wiper switch "AUTO" on the following condition.
 - (1) Rain sensor temperature is less than -10 degrees.
 - (2) Rain sensor temperature is more than 80 degrees.
 - (3) Rain sensor malfunction.

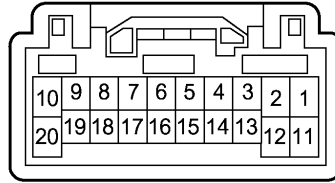
LOCATION

052AM-02



TERMINALS OF ECU

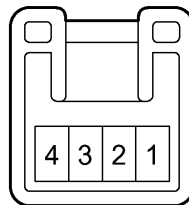
1. WINDSHIELD WIPER RELAY ASSY



E57895

Symbols (Terminals No.)	Wiring Color	Condition	Specified condition
IG ↔ E (1 - 13)	L ↔ WB	IG SW ON	9 - 16 V
+SM ↔ E (2 - 13)	G -B ↔ WB	Wiper stop position → Except stop position	Below 1 V → 10 - 14 V
+1 ↔ E (11 - 13)	B-R ↔ WB	Wiper SW except LO → LO	Below 1 V → 10 - 14 V
+2 ↔ E (12 - 13)	L-O ↔ WB	Wiper SW except HI → HI	Below 1 V → 10 - 14 V
SIG ↔ E (6 - 13)	P-B ↔ WB	IG SW ON	8 V
SPD ↔ E (16 - 13)	LG ↔ WB	Wiper stops LO → HI	6.8 V → 4.1 V → 1.3 V
PAI ↔ E (17 - 13)	V ↔ WB	Wiper SW except AUTO → AUTO, except wiper stop position → AUTO, wiper stop position	5 V → 2.2 V → 0.2 V
VR1 ↔ E (8 - 13)	GR-R ↔ WB	Sensitivity volume HI → LO	0 kΩ → 2.7 kΩ
VR2 ↔ E (18 - 13)	LG-R ↔ WB	Sensitivity volume HI → LO	0 kΩ → 2.7 kΩ
CI ↔ E (9 - 13)	O ↔ WB	Wiper SW AUTO	Continuity
CO ↔ E (19 - 13)	W ↔ WB	Wiper SW AUTO	Continuity
+SSW ↔ E (10 - 13)	L-Y ↔ WB	Wiper SW OFF or AUTO	Continuity
+2S ↔ E (20 - 13)	L-B ↔ WB	Wiper SW OFF or AUTO	Continuity
W ↔ E (5 - 13)	P ↔ WB	Washer SW OFF → ON	Continuity → No continuity
E ↔ Body ground (13 - Body ground)	W-B ↔ WB	Continuity	Continuity

2. RAIN SENSOR



E57896

Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
SIG ↔ ES (1 - 4)	P-B ↔ W-B	IG SW ON	8 V
AUTO ↔ ES (2 - 4)	V ↔ W-B	Wiper SW except AUTO → AUTO, except wiper stop position → AUTO, wiper stop position	5 V → 2.2 V → 0.2 V
WIP ↔ ES (3 - 4)	LG ↔ W-B	Wiper stops → LO → HI	6.8 V → 4.1 V → 1.3 V
ES ↔ Body ground (4 - Body ground)	W-B ↔ -	Continuity	Continuity

PROBLEM SYMPTOMS TABLE

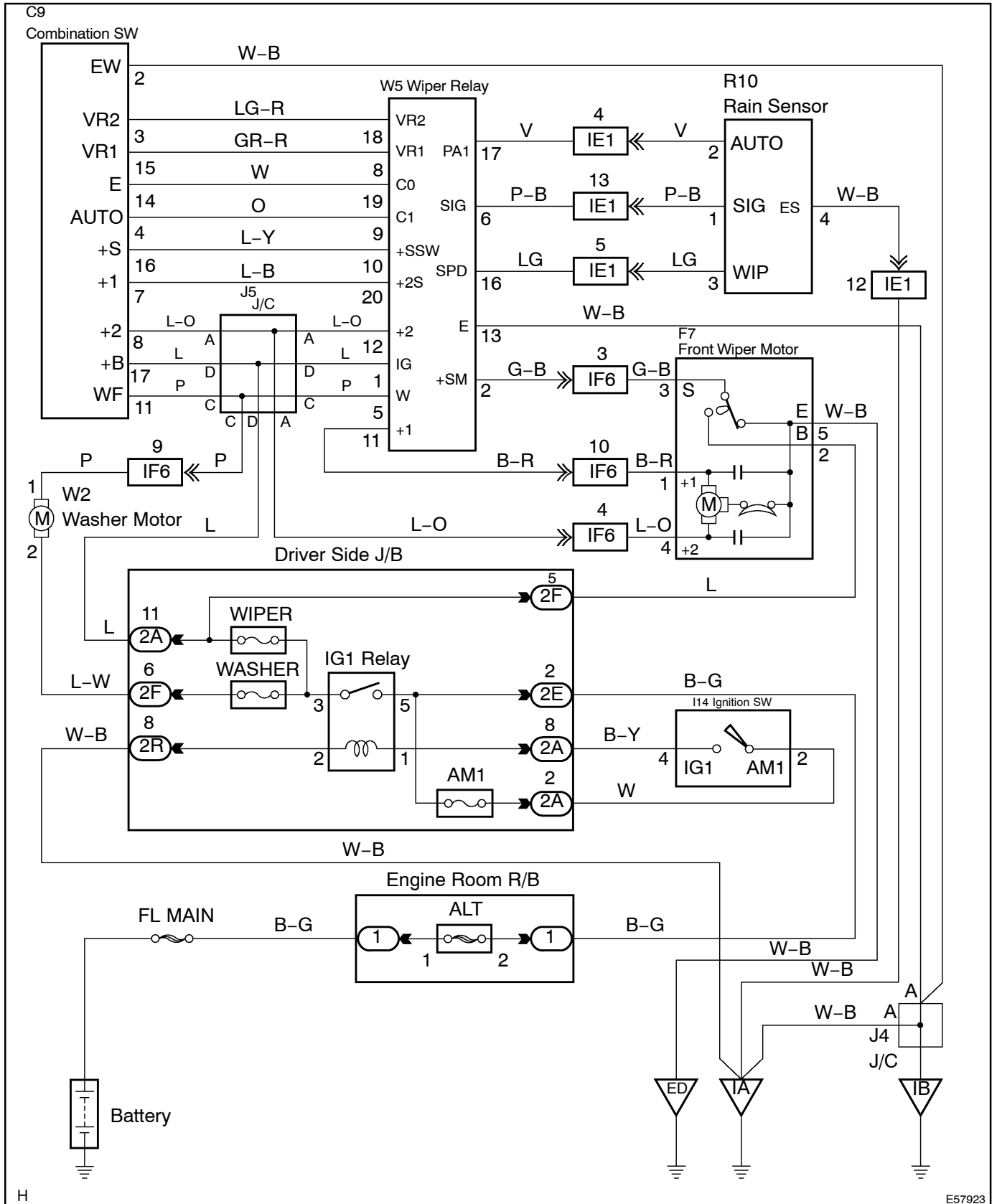
1. WIPER AND WASHER SYSTEM

Symptom	Suspect Area	See page
Front wipers do not operate.	1. IG1 Relay 2. WIPER Fuse (I/P J/B) 3. Front Wiper Switch 4. Wire Harness	- - 66-3 -
Front wipers do not operate in LO or HI.	1. Front Wiper Switch 2. Front Wiper Motor 3. Wire Harness	66-3 66-3 -
Front wipers do not operate in INT.	1. Front Wiper Switch 2. Front Wiper Motor 3. Wire Harness	66-3 66-3 -
Front Washer motor does not operate.	1. WIPER Fuse (I/P J/B) 2. Front Washer Switch 3. Front Washer Motor 4. Wire Harness	- 66-3 65-5 -
Front Wipers do not operate when washer switch in ON.	1. Front Wiper Switch 2. Front Wiper Motor 3. Wire Harness	65-5 65-5 -
Washer fluid does not operate.	1. Washer Hose and Nozzle	-
● When the wiper switch is OFF, the wiper blade does not retract or the retract position wrong.	1. *1Wiper Switch	-
Rain drop sensing function does not operate.	-	05-815

*1: Inspect wiper arm and blade set position

RAIN DROP SENSING FUNCTION DOES NOT OPERATE

WIRING DIAGRAM



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1 CHECK WINDSHIELD WIPER SWITCH ASSY

- (a) Check the continuity between terminals as shown in the chart below.

Standard:

Switch operation	Tester connection	Specified condition
OFF	4 (AUTO) - 14 (E)	No continuity
AUTO	4 (AUTO) - 14 (E)	Continuity

NG**REPLACE WINDSHIELD WIPER SWITCH ASSY****OK****2 CHECK HARNESS AND CONNECTOR**

- (a) Check the continuity between terminals of windshield wiper switch and windshield wiper relay assy as shown in the chart below.

Standard:

Item	Tester connection	Specified condition
Windshield wiper switch assy - Windshield wiper relay	15 (VR1) - 8 (VR1)	Continuity
Windshield wiper switch assy - Windshield wiper relay	3 (VR2) - 18 (VR2)	Continuity
Windshield wiper switch assy - Windshield wiper relay	14 (E) - 19 (CO)	Continuity
Windshield wiper switch assy - Windshield wiper relay	4 (AUTO) - 9 (C1)	Continuity

NG**REPAIR OR REPLACE HARNESS AND CONNECTOR****OK****3 CHECK HARNESS AND CONNECTOR**

- (a) Check the continuity between terminals of windshield wiper relay assy and rain sensor as shown in the chart below.

Standard:

Item	Tester connection	Specified condition
Windshield wiper relay - Rain sensor	16 (SPD) - 3 (WIP)	Continuity
Windshield wiper relay - Rain sensor	6 (SIG) - 1 (SIG)	Continuity
Windshield wiper relay - Rain sensor	17 (PA1) - 2 (AUTO)	Continuity

NG**REPAIR OR REPLACE HARNESS AND CONNECTOR****OK**

4 CHECK RAIN SENSOR

- (a) Disconnect the connector of the rain sensor.
 (b) Measure voltage between terminal 1 (SIG) and body ground.

Standard: 8 V

NG

REPLACE WINDSHIELD WIPER RELAY ASSY

OK

5 CHECK RAIN SENSOR

- (a) Check the continuity between terminal 4 (ES) of rain sensor and body ground.

Standard: There is continuity.

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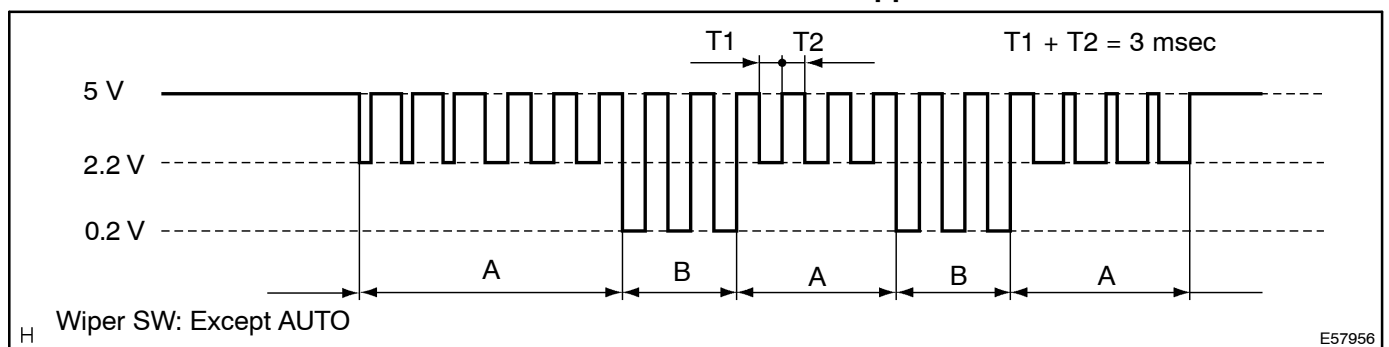
REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

6 CHECK RAIN SENSOR

- (a) Using an oscilloscope, check that signal waveform appears between terminal 2 (AUTO) and body ground as shown in the illustration.

Standard: Bar appears.



- A → Wiper SW: AUTO,
 Wiper position: Positions except stop position
 B → Wiper SW: AUTO,
 Wiper position: Stop position

NG

REPLACE WINDSHIELD WIPER RELAY ASSY

OK

7 | CHECK RAIN SENSOR(BETWEEN RAIN SENSOR AND BODY GROUND)

(a) Check that voltage between 3 (WIP) and body ground follows the standard value as shown in the chart below.

Standard:

Rain drop amount	Volt
Nothing	6.8 V
A little (Wiper switch in LO)	4.1 V
A lot (Wiper switch in HI)	1.3 V

NG → **REPLACE RAIN SENSOR**

OK

REPLACE WINDSHIELD WIPER RELAY ASSY