

<b>Last Modified:</b> 5-25-2010	6.4 L	<b>From:</b> 200907
<b>Model Year:</b> 2010	<b>Model:</b> HS250H	<b>Doc ID:</b> RM000000PJ302OX
<b>Title:</b> WIPER / WASHER: WIPER AND WASHER SYSTEM: PRECAUTION (2010 HS250H)		

## PRECAUTION

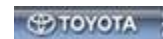
### 1. PRECAUTION OF WASHER NOZZLE ADJUSTMENT

(a) Do not clean or adjust the washer nozzle with a safety pin, etc. because:

(1) The washer nozzle tip is made of resin and could be damaged.

(2) Adjustment is not necessary for this spray type washer nozzle. If it is necessary to change the nozzle angle, replace the washer nozzle with one that has a different nozzle angle.

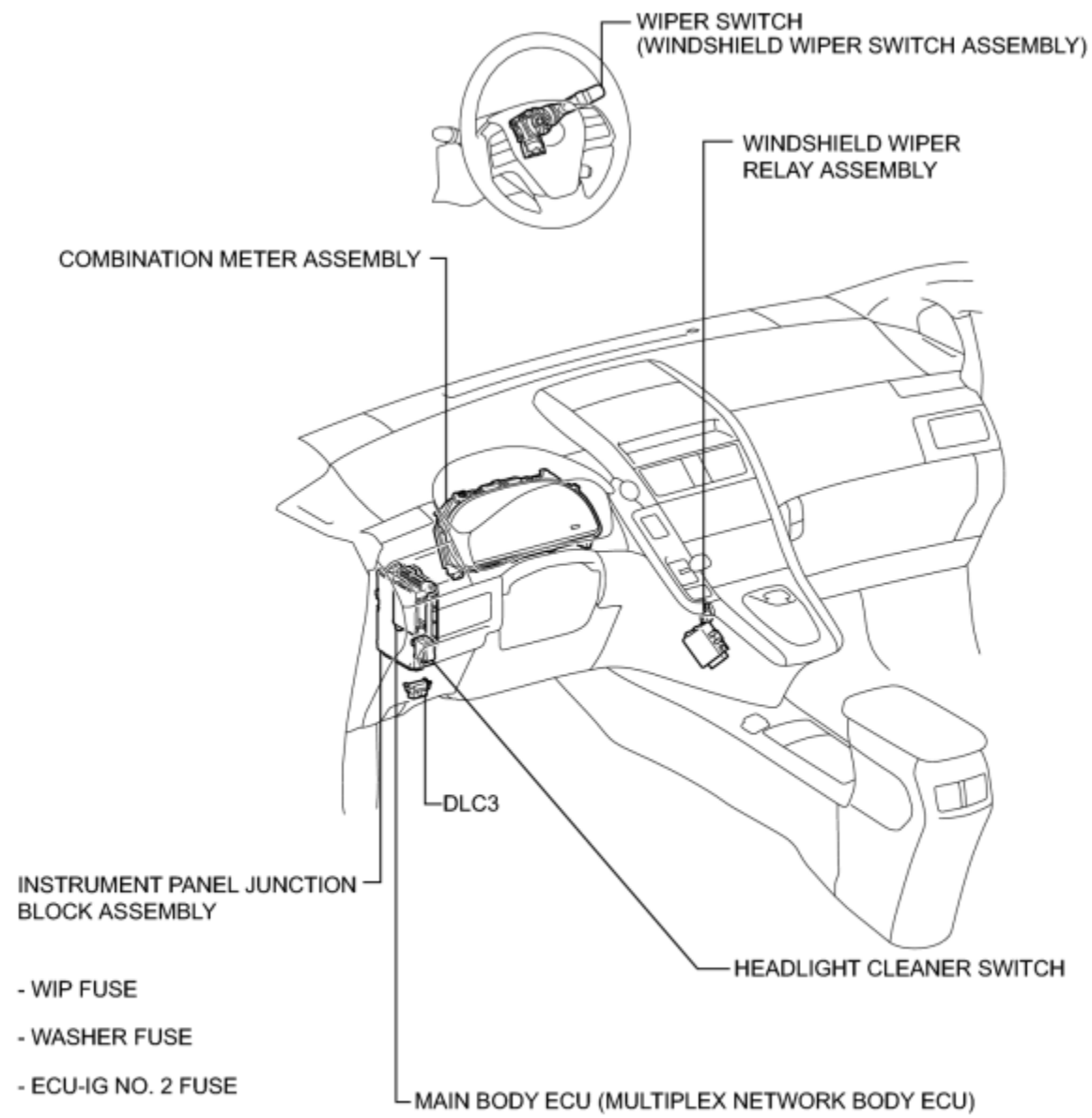
(b) If the washer nozzle is clogged with wax, etc., remove it and clean the nozzle hole with a soft resin brush or other cleaning tool.



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<b>Title:</b> WIPER / WASHER: WIPER AND WASHER SYSTEM: PARTS LOCATION (2010 HS250H)		

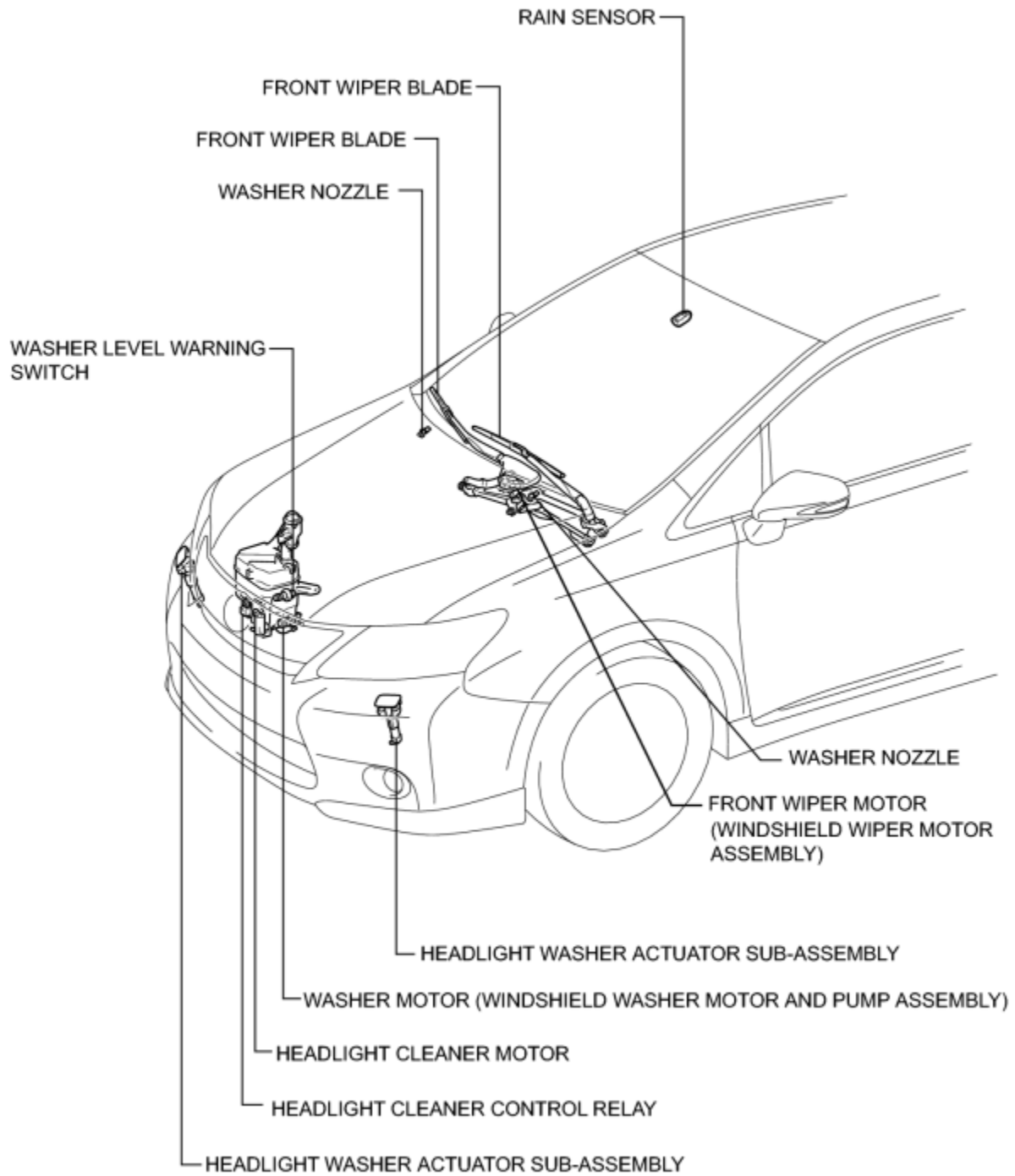
## PARTS LOCATION

## ILLUSTRATION

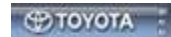


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## ILLUSTRATION



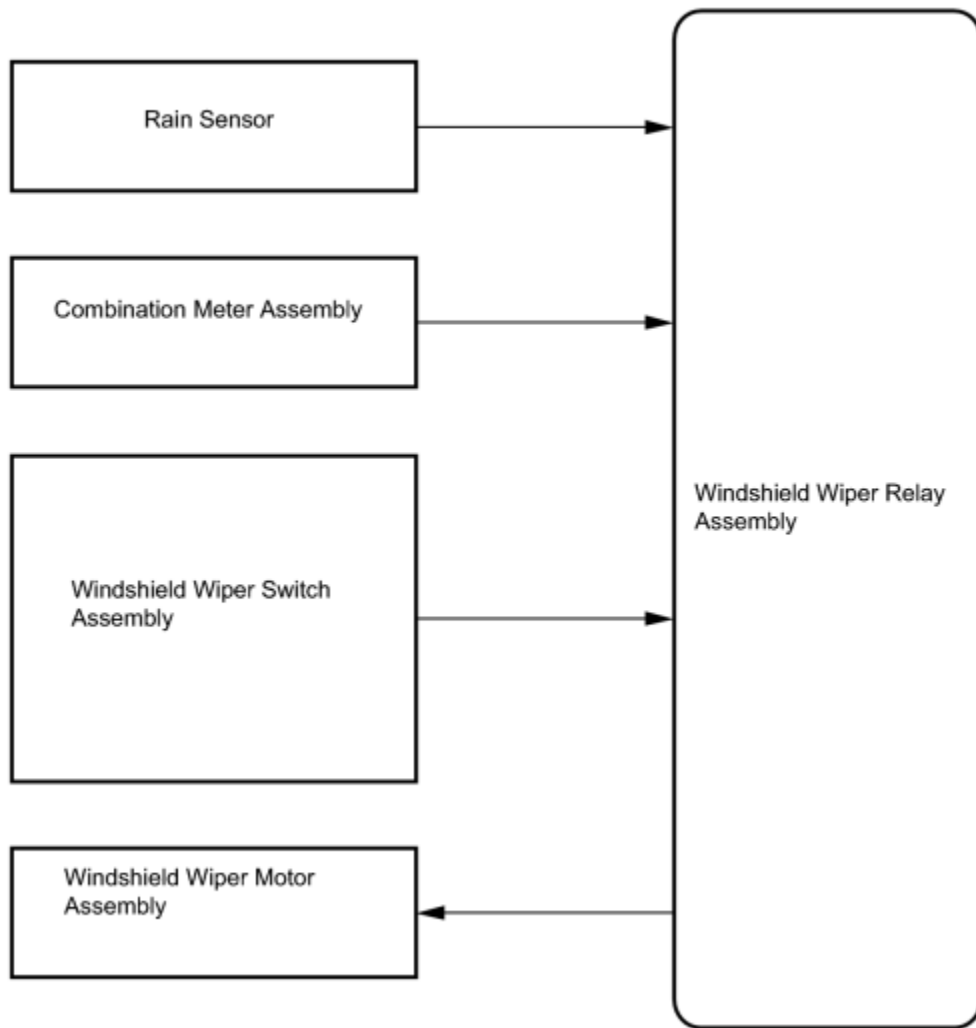
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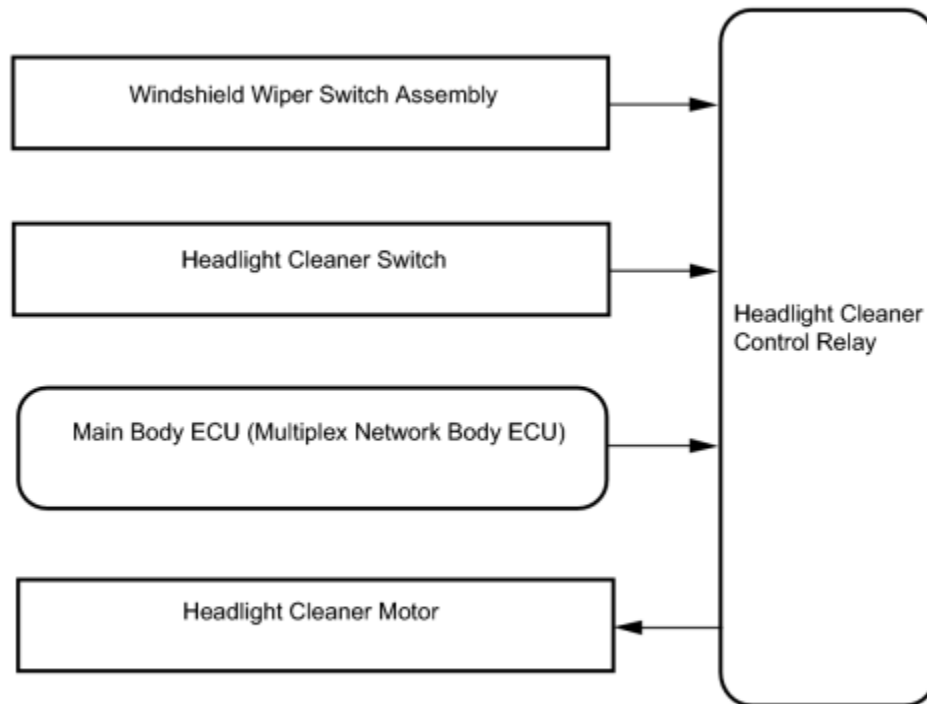
<b>Last Modified:</b> 5-25-2010	6.4 U	<b>From:</b> 200907
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<b>Title:</b> WIPER / WASHER: WIPER AND WASHER SYSTEM: SYSTEM DIAGRAM (2010)		

## SYSTEM DIAGRAM

### 1. AUTO WIPER SYSTEM



### 2. HEADLIGHT CLEANER SYSTEM



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<b>Title:</b> WIPER / WASHER: WIPER AND WASHER SYSTEM: SYSTEM DESCRIPTION (2010 HS250H)		

## SYSTEM DESCRIPTION

### 1. AUTO WIPER SYSTEM



#### General

- The auto wiper system controls the wiper timing in accordance with the amount of raindrops that strike the windshield when the wiper switch is in AUTO.
- The windshield wiper relay assembly controls the timing based on the signal from the rain sensor.

## 2. HEADLIGHT CLEANER SYSTEM

### General

- The headlight cleaner system operates when the headlight cleaner switch is pushed ON.
- The headlight cleaner system also operates when the front washer switch is first operated with the headlights on.

		
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<b>Title:</b> WIPER / WASHER: WIPER AND WASHER SYSTEM: PROBLEM SYMPTOMS TABLE (2010 HS250H)		

## PROBLEM SYMPTOMS TABLE

### HINT:

Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, the potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.

### *Front Wiper and Washer (w/o Auto Wiper System)*

Symptom	Suspected Area	See page
Front wipers do not operate at all	WIP fuse	-
	Windshield wiper motor assembly	<a href="#">INFO</a>
	Windshield wiper switch assembly	<a href="#">INFO</a>
	Harness or connector	-
Front wipers do not operate in INT	Windshield wiper motor assembly	<a href="#">INFO</a>
	Windshield wiper switch assembly	<a href="#">INFO</a>
	Harness or connector	-
Front wipers do not operate in LO	Windshield wiper switch assembly	<a href="#">INFO</a>

	Windshield wiper motor assembly	<a href="#">INFO</a>
	Harness or connector	-
Front wipers do not operate in HI	Windshield wiper switch assembly	<a href="#">INFO</a>
	Windshield wiper motor assembly	<a href="#">INFO</a>
	Harness or connector	-
Front washer motor does not operate	Washer fuse	-
	Windshield washer motor and pump assembly	<a href="#">INFO</a>
	Windshield wiper switch assembly	<a href="#">INFO</a>
	Harness or connector	-
Washer fluid does not flow	Washer hose and nozzle	-
Front wipers do not operate when the front washer switch is on	Windshield wiper switch assembly	<a href="#">INFO</a>
	Windshield wiper motor assembly	<a href="#">INFO</a>
	Harness or connector	-
When the front wiper switch is off, the wiper blades do not park or park in the wrong position	Front wiper arm installation position	<a href="#">INFO</a>
	Windshield wiper motor assembly	<a href="#">INFO</a>

**Front Wiper and Washer (w/ Auto Wiper System)**

Symptom	Suspected Area	See page
Front wipers do not operate at all	Wiper ECU power source circuit	<a href="#">INFO</a>
	Front wiper motor circuit	<a href="#">INFO</a>
	Windshield wiper relay assembly	<a href="#">INFO</a>
Front wipers do not operate in AUTO	Rain sensor tape	-
	Rain sensor circuit	<a href="#">INFO</a>
	Speed signal circuit	<a href="#">INFO</a>
	Front wiper motor circuit	<a href="#">INFO</a>
	Wiper and washer switch	<a href="#">INFO</a>

	circuit	
	Windshield wiper relay assembly	<a href="#">INFO</a>
Front wipers do not operate in LO	Front wiper motor circuit	<a href="#">INFO</a>
	Wiper and washer switch circuit	<a href="#">INFO</a>
	Windshield wiper relay assembly	<a href="#">INFO</a>
Front wipers do not operate in HI	Front wiper motor circuit	<a href="#">INFO</a>
	Wiper and washer switch circuit	<a href="#">INFO</a>
	Windshield wiper relay assembly	<a href="#">INFO</a>
Washer fluid does not flow	Washer hose and nozzle	-
Front wipers do not operate when the front washer switch is on	Front wiper motor circuit	<a href="#">INFO</a>
	Windshield wiper switch assembly	<a href="#">INFO</a>
When the front wiper switch is off, the wiper blades do not park or park in the wrong position	Front wiper arm installation position	<a href="#">INFO</a>
	Windshield wiper motor assembly	<a href="#">INFO</a>

### Headlight Cleaner System

Symptom	Suspected Area	See page
Headlight cleaner system does not operate when the headlight cleaner switch is operated	H-LP CLN fuse	-
	ECU-IG No. 2 fuse	-
	Headlight cleaner switch assembly	<a href="#">INFO</a>
	Headlight cleaner motor and pump assembly	<a href="#">INFO</a>
	Harness or connector	-
	Headlight cleaner control relay	<a href="#">INFO</a>
	Main body ECU (multiplex network body ECU)	<a href="#">INFO</a>
Headlight cleaner system does not operate when the front washer switch is operated	H-LP CLN fuse	-
	ECU-IG No. 2 fuse	-
	Headlight cleaner motor and	<a href="#">INFO</a>

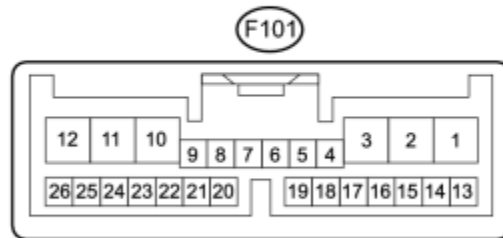


	pump assembly	
	Harness or connector	-
	Headlight cleaner control relay	<a href="#">INFO</a>
	Main body ECU (multiplex network body ECU)	<a href="#">INFO</a>

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<b>Title:</b> WIPER / WASHER: WIPER AND WASHER SYSTEM: TERMINALS OF ECU (2010 HS250H)		

## TERMINALS OF ECU

### 1. CHECK WINDSHIELD WIPER RELAY ASSEMBLY



- (a) Disconnect the F101 windshield wiper relay assembly connector.
- (b) Measure the voltage and resistance according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
F101-4 (W) - Body ground	SB - Body ground	Front washer switch circuit	Front washer switch on	Below 1 $\Omega$
			Front washer switch off	10 k $\Omega$ or higher

F101-6 (VR2) - F101-7 (VR1)	W - G	Adjusting volume circuit	Windshield wiper switch adjusting ring changed from (+) side to (-) side	0 to 2.7 k $\Omega$
F101-12 (IG) - Body ground	L - Body ground	Power source circuit	Power switch on (IG)	11 to 14 V
			Power switch off	Below 1 V
F101-23 (WIG) - Body ground	P - Body ground	Power source circuit	Power switch on (IG)	11 to 14 V
			Power switch off	Below 1 V
F101-26 (E) - Body ground	W-B - Body ground	Body ground	Always	Below 1 $\Omega$

If the result is not as specified, there may be a malfunction in the wire harness.

(c) Reconnect the F101 windshield wiper relay assembly connector.

(d) Measure the voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
F101-1 (+2S) - Body ground	BR - Body ground	Front wiper low speed signal circuit	Power switch on (IG), front wiper switch in low position	11 to 14 V
			Power switch on (IG), front wiper switch not in low position	Below 1 V
F101-2 (+1) - Body ground	BR - Body ground	Front wiper motor low speed signal circuit	Front wiper motor in low operation	11 to 14 V
			Front wiper motor off	Below 1 V
F101-3 (+2) - Body ground	R - Body ground	Front wiper motor high speed signal circuit	Front wiper motor in high operation	11 to 14 V
			Front wiper motor off	Below 1 V
F101-4 (W) - Body ground	SB - Body ground	Front washer motor circuit	Front washer switch on	Below 1 V
			Front washer switch off	11 to 14 V
F101-8 (SIG) - Body ground	L - Body ground	Power source circuit	Power switch on (IG)	7.5 to 8.5 V
			Power switch off	Below 1 V
F101-10 (+SM) - Body ground	B - Body ground	Front wiper motor operation signal	Front wiper motor in low or high operation	11 to 14 V
			Front wiper motor off	Below 1 V
F101-11 (+SSW) - Body	B - Body ground	Front wiper motor operation signal	Power switch on (IG), front wiper switch off or in AUTO.	11 to 14 V

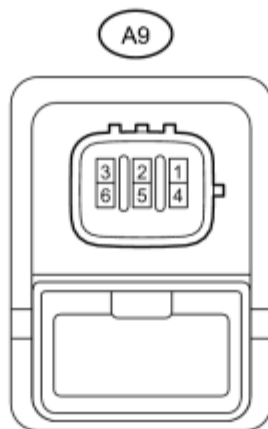
ground			front wiper motor operates	
			Front wiper motor off	Below 1 V
F101-14 (PA1) - Body ground	G - Body ground	Rain sensor signal	Power switch on (IG)	Pulse generation
F101-17 (C1) - F101-16 (CO)	V - Y	IG signal circuit	Power switch on (IG)	11 to 14 V
			Power switch off	Below 1 V
F101-19 (SPD) - Body ground	G - Body ground	Speed signal	Power switch on (IG), front wheel turns slowly	Pulse generation

If the result is not as specified, the windshield wiper relay assembly may have a malfunction.

## 2. CHECK HEADLIGHT CLEANER CONTROL RELAY

(a) Disconnect the A9 headlight cleaner control relay connector.

(b) Measure the voltage and resistance according to the value(s) in the table below.



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Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
A9-1 (HDLO) - A9-4 (E)	L - W-B	Low beam headlight signal	Light control switch in head position	Below 1 V
			Light control switch off	11 to 14 V
A9-2 (H) - A9-4 (E)	W - W-B	Headlight cleaner switch operation	Power switch on (IG) and headlight cleaner switch off	11 to 14 V

		signal	Power switch on (IG), light control switch in head position and headlight cleaner switch on	Below 1 V
A9-3 (IG) - A9-4 (E)	LG - W-B	Power switch on (IG) signal (Power source circuit)	Power switch off	Below 1 V
			Power switch on (IG)	11 to 14 V
A9-4 (E) - Body ground	W-B - Body ground	Body ground	Always	Below 1 Ω
A9-5 (FRWA) - A9-4 (E)	B - W-B	Front washer switch signal	Power switch on (IG) and front washer switch off	11 to 14 V
			Power switch on (IG) and front washer switch on	Below 1 V

If the result is not as specified, there may be a malfunction in the wire harness.



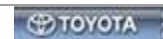
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<b>Title:</b> WIPER / WASHER: WIPER AND WASHER SYSTEM: FAIL-SAFE CHART (2010 HS250H)		

## FAIL-SAFE CHART

### 1. AUTO WIPER SYSTEM

The rain sensor operates in fail-safe mode if an abnormal condition such as those listed below has been detected.

Item	Outline
Detection of abnormal high temperature	The operation of the rain sensing function stops.
Detection of abnormal input voltage (low input voltage)	
Detection of abnormal low temperature	Switches to the intermittent operation.
Detection of abnormal output signal	
Detection of abnormal communication	



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<b>Title:</b> WIPER / WASHER: WIPER AND WASHER SYSTEM: DATA LIST / ACTIVE TEST (2010 HS250H)		

## DATA LIST / ACTIVE TEST

### 1. ACTIVE TEST (w/ Headlight Cleaner System)

#### HINT:

Using the Techstream to perform Active Tests allows relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Tests.

- (a) Connect the Techstream to the DLC3.
- (b) Turn the power switch on (IG).
- (c) Turn the Techstream on.
- (d) Enter the following menus: Body / Main Body / Active Test.
- (e) Perform the Active Test according to the display on the Techstream.

#### Main Body

Tester Display	Test Part	Control Range	Diagnostic Note
Head Light Cleaner	Low beam headlight state signal	ON/OFF	-

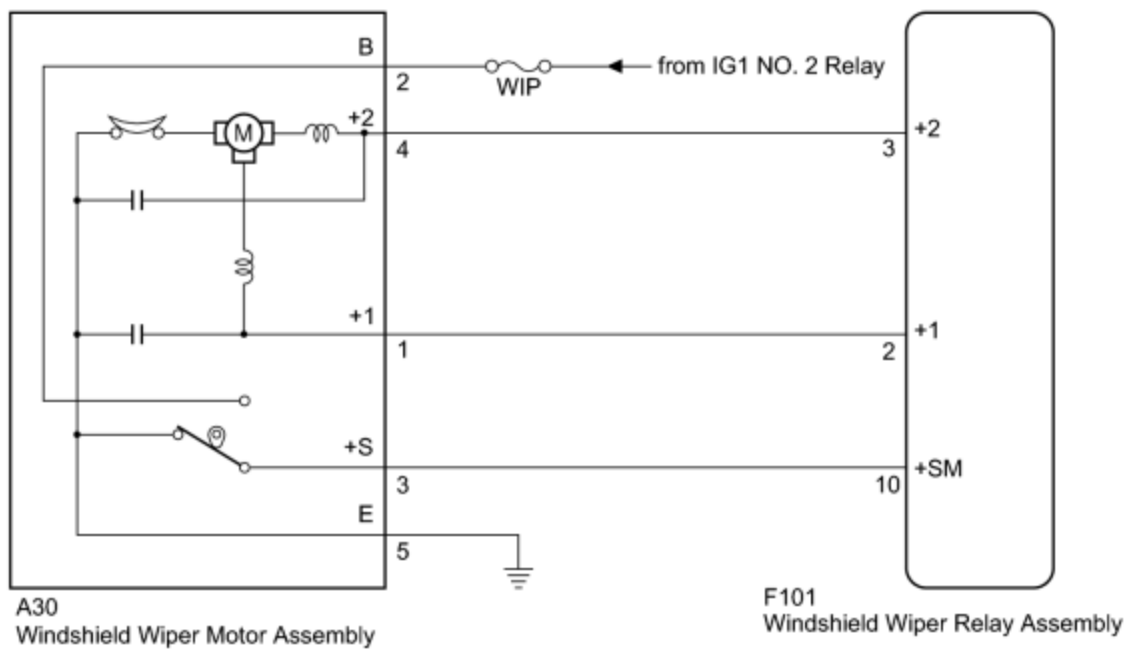


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<b>Title:</b> WIPER / WASHER: WIPER AND WASHER SYSTEM: Front Wiper Motor Circuit (2010 HS250H)		
Front Wiper Motor Circuit		

## DESCRIPTION

The windshield wiper relay assembly controls the windshield wiper motor assembly.

## WIRING DIAGRAM



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## INSPECTION PROCEDURE

### PROCEDURE

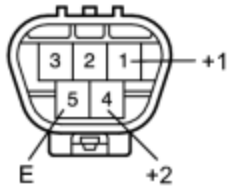
1. INSPECT WINDSHIELD WIPER MOTOR ASSEMBLY

(a) Remove the windshield wiper motor assembly INFO.

\*1

(b) Check low speed operation.

Connect a battery positive (+) lead to terminal 1 (+1) and a negative (-) lead to terminal 5 (E), and check that the motor operates at low speed.



OK:

Motor operates at low speed.

P

(c) Check high speed operation.

Connect a battery positive (+) lead to terminal 4 (+2) and a negative (-) lead to terminal 5 (E), and check that the motor operates at high speed.

OK:

Motor operates at high speed.

***Text in Illustration***

*1	Component without harness connected (Windshield Wiper Motor Assembly)
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NG ▶ [REPLACE WINDSHIELD WIPER MOTOR ASSEMBLY](#)

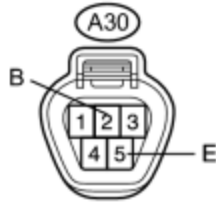
OK



2.	CHECK HARNESS AND CONNECTOR (WINDSHIELD WIPER MOTOR ASSEMBLY - BATTERY AND BODY GROUND)
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(a) Disconnect the A30 windshield wiper motor connector.

\*1



N

(b) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Condition	Specified Condition
A30-2 (B) - Body ground	Power switch on (IG)	11 to 14 V

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
A30-5 (E) - Body ground	Always	Below 1 $\Omega$

**Text in Illustration**

*1	Front view of wire harness connector (to Windshield Wiper Motor Assembly)
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NG REPAIR OR REPLACE HARNESS OR CONNECTOR

OK



3.	CHECK HARNESS AND CONNECTOR (WINDSHIELD WIPER MOTOR - WINDSHIELD WIPER RELAY)
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(a) Disconnect the F101 windshield wiper relay assembly connector.



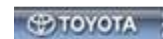
(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
A30-1 (+1) - F101-2 (+1)	Always	Below 1 $\Omega$
A30-1 (+1) - Body ground	Always	10 k $\Omega$ or higher
A30-4 (+2) - F101-3 (+2)	Always	Below 1 $\Omega$
A30-4 (+2) - Body ground	Always	10 k $\Omega$ or higher
A30-3 (+S) - F101-10 (+SM)	Always	Below 1 $\Omega$
A30-3 (+S) - Body ground	Always	10 k $\Omega$ or higher

NG  REPAIR OR REPLACE HARNESS OR CONNECTOR

OK  [PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE](#)

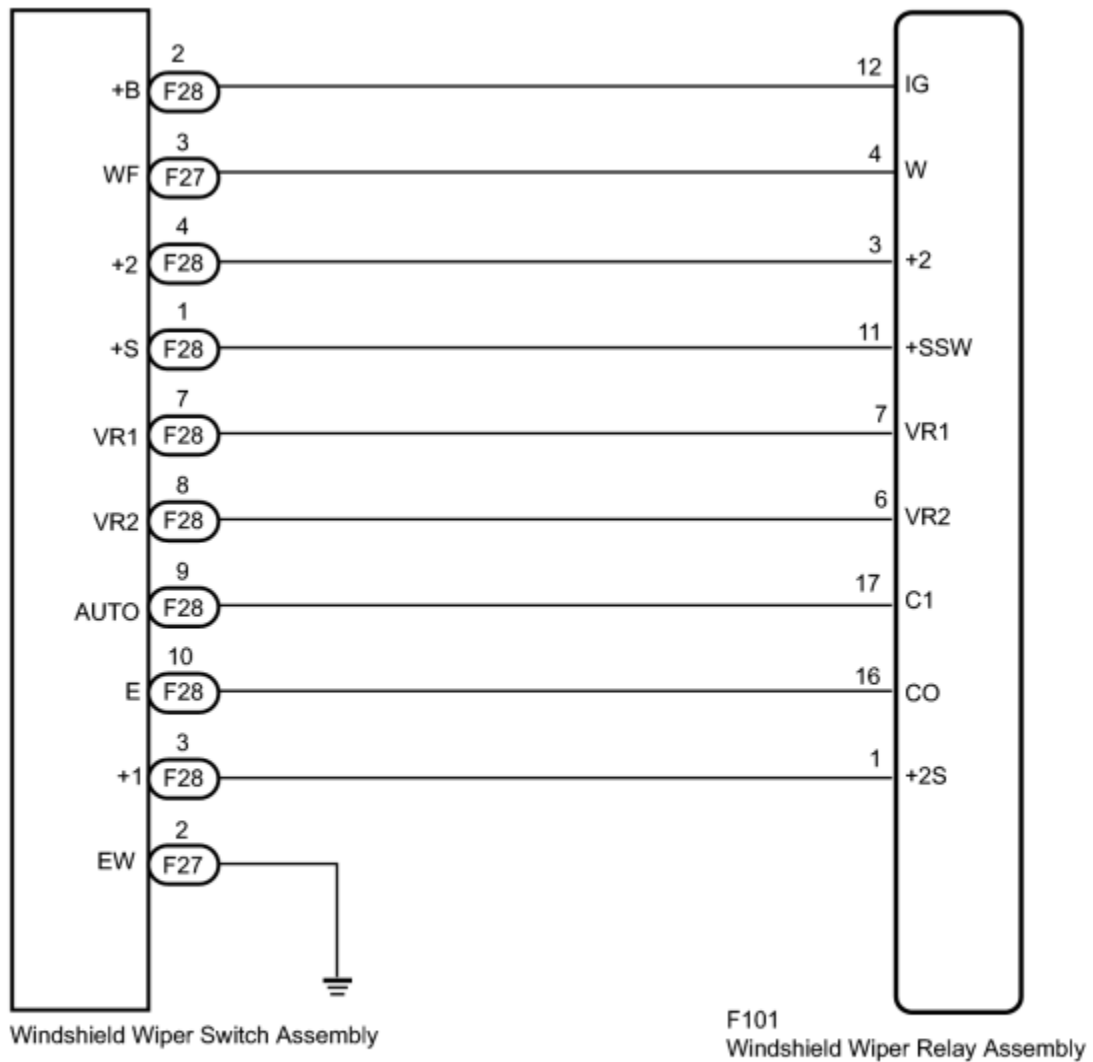


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<b>Title:</b> WIPER / WASHER: WIPER AND WASHER SYSTEM: Wiper and Washer Switch Circuit (2010 HS250H)		
Wiper and Washer Switch Circuit		

## DESCRIPTION

This circuit detects the state of the windshield wiper switch assembly (front wiper switch and front washer switch) and sends it to the windshield wiper relay assembly.

## WIRING DIAGRAM



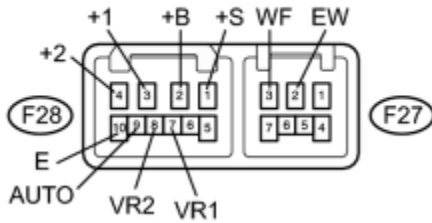
## INSPECTION PROCEDURE

### PROCEDURE

1. INSPECT WINDSHIELD WIPER SWITCH ASSEMBLY

(a) Remove the windshield wiper switch assembly INFO.

\*1



(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Front Washer Switch

Adjusting Ring\*1

**Front Wiper Switch**

Tester Connection	Switch Condition	Specified Condition
F28-3 (+1) - F28-1 (+S)	OFF	Below 1 Ω
F28-3 (+1) - F28-2 (+B)	MIST	
	LO	
F28-2 (+B) - F28-4 (+2)	HI	
F28-9 (AUTO) - F28-1 (+S)	AUTO	
Tester Connection	Switch Condition	Specified Condition
F27-2 (EW) - F27-3 (WF)	ON	Below 1 Ω
	OFF	10 kΩ or higher
Tester Connection	Condition	Specified Condition
F28-7 (VR1) - F28-8 (VR2)	Adjusting ring changed from (+) side to (-) side	0 to 2.7 kΩ

**Text in Illustration**

*1	Component without harness connected (Windshield Wiper Switch Assembly)
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HINT:

\*1: The rain sensor sensitivity can be adjusted by the windshield wiper switch adjusting ring.

NG  REPLACE WINDSHIELD WIPER SWITCH ASSEMBLY

OK



2.	CHECK HARNESS AND CONNECTOR (WIPER SWITCH - WIPER RELAY AND BODY GROUND)
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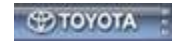
- (a) Disconnect the F27 and F28 windshield wiper switch assembly connectors.
- (b) Disconnect the F101 windshield wiper relay assembly connector.
- (c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
F28-2 (+B) - F101-12 (IG)	Always	Below 1 Ω
F28-2 (+B) - Body ground	Always	10 kΩ or higher
F28-3 (+1) - F101-1 (+2S)	Always	Below 1 Ω
F28-3 (+1) - Body ground	Always	10 kΩ or higher
F28-4 (+2) - F101-3 (+2)	Always	Below 1 Ω
F28-4 (+2) - Body ground	Always	10 kΩ or higher
F28-1 (+S) - F101-11 (+SSW)	Always	Below 1 Ω
F28-1 (+S) - Body ground	Always	10 kΩ or higher
F28-9 (AUTO) - F101-17 (C1)	Always	Below 1 Ω
F28-9 (AUTO) - Body ground	Always	10 kΩ or higher
F28-10 (E) - F101-16 (CO)	Always	Below 1 Ω
F28-10 (E) - Body ground	Always	10 kΩ or higher
F28-7 (VR1) - F101-7 (VR1)	Always	Below 1 Ω
F28-7 (VR1) - Body ground	Always	10 kΩ or higher
F28-8 (VR2) - F101-6 (VR2)	Always	Below 1 Ω
F28-8 (VR2) - Body ground	Always	10 kΩ or higher
F27-3 (WF) - F101-4 (W)	Always	Below 1 Ω
F27-3 (WF) - Body ground	Always	10 kΩ or higher
F27-2 (EW) - Body ground	Always	Below 1 Ω

NG  REPAIR OR REPLACE HARNESS OR CONNECTOR

OK [PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE](#)



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<b>Title:</b> WIPER / WASHER: WIPER AND WASHER SYSTEM: Rain Sensor Circuit (2010 HS250H)		
Rain Sensor Circuit		

## DESCRIPTION

The windshield wiper relay assembly receives a signal from the rain sensor to control the auto wiper system.

## WIRING DIAGRAM



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## INSPECTION PROCEDURE

# PROCEDURE

1.	CHECK HARNESS AND CONNECTOR (WINDSHIELD WIPER RELAY ASSEMBLY - RAIN SENSOR)
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- (a) Disconnect the F101 windshield wiper relay assembly connector.
- (b) Disconnect the P7 rain sensor connector.
- (c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
F101-8 (SIG) - P7-4 (SIG)	Always	Below 1 $\Omega$
P7-4 (SIG) - Body ground	Always	10 k $\Omega$ or higher
F101-14 (PA1) - P7-3 (AUTO)	Always	Below 1 $\Omega$
P7-3 (AUTO) - Body ground	Always	10 k $\Omega$ or higher
F101-25 (E) - P7-1 (ES)	Always	Below 1 $\Omega$
P7-1 (ES) - Body ground	Always	10 k $\Omega$ or higher

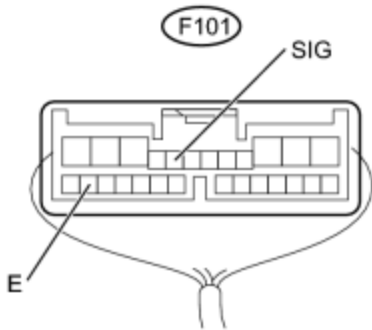
NG REPAIR OR REPLACE HARNESS OR CONNECTOR

OK



2.	INSPECT WINDSHIELD WIPER RELAY ASSEMBLY
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\*1



- (a) Reconnect the F101 windshield wiper relay assembly connector.

(b) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Condition	Specified Condition
F101-8 (SIG) - F101-25 (E)	Power switch on (IG)	7.5 to 8.5 V

*Text in Illustration*

*1	Component with harness connected (Windshield Wiper Relay Assembly)
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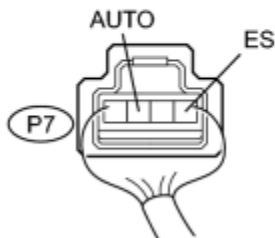
NG  [REPLACE WINDSHIELD WIPER RELAY ASSEMBLY](#)

OK



3.	INSPECT RAIN SENSOR
----	---------------------

\*1



(a) Reconnect the P7 rain sensor connector.

N

(b) Connect an oscilloscope to the automatic light control sensor connector.

(c) Check for pulses.

OK:

Tester Connection	Condition	Specified Condition
P7-3 (AUTO) - P7-1 (ES)	Power switch on (IG)	Pulse generation

*Text in Illustration*

*1	Component with harness connected (Rain Sensor)
----	---

NG [▶ REPLACE RAIN SENSOR](#)

OK [▶ PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE](#)

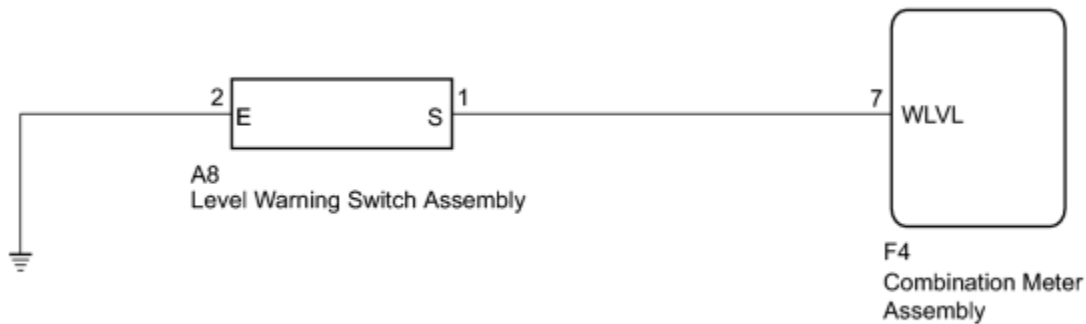


<b>Last Modified:</b> 5-25-2010	6.4 J	<b>From:</b> 200907
<b>Model Year:</b> 2010	<b>Model:</b> HS250H	<b>Doc ID:</b> RM000000PJC011X
<b>Title:</b> WIPER / WASHER: WIPER AND WASHER SYSTEM: Washer Fluid Level Warning Switch Circuit (2010 HS250H)		
Washer Fluid Level Warning Switch Circuit		

## DESCRIPTION

The combination meter receives washer fluid level warning switch condition (on or off) information to control the washer fluid level warning system.

## WIRING DIAGRAM



## INSPECTION PROCEDURE



# PROCEDURE

1. INSPECT LEVEL WARNING SWITCH ASSEMBLY

HINT:

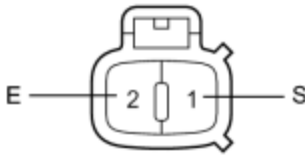
The following check should be performed with the windshield washer motor and pump installed to the washer jar.

(a) Fill the washer jar with washer fluid.

(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

\*1



Tester Connection	Condition	Specified Condition
1 (S) - 2 (E)	Fluid volume is more than 800 ml	10 kΩ or higher
1 (S) - 2 (E)	Fluid volume is less than 600 ml	Below 1 Ω
<b>Text in Illustration</b>		Component without harness connected  (Level Warning Switch Assembly)
*1		

NG [▶ REPLACE LEVEL WARNING SWITCH ASSEMBLY](#)

OK  
▼

2. CHECK HARNESS AND CONNECTOR (LEVEL WARNING SWITCH - COMBINATION METER AND BODY GROUND)

(a) Disconnect the F4 combination meter connector.

(b) Measure the resistance according to the value(s) in the table below.

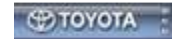
Standard Resistance:

Tester Connection	Condition	Specified Condition
F4-7 (WLVL) - A8-1 (S)	Always	Below 1 Ω

A8-2 (E) - Body ground	Always	Below 1 $\Omega$
F4-7 (WLVL) - Body ground	Always	10 k $\Omega$ or higher

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ► [PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE](#)



<b>Last Modified:</b> 5-25-2010	6.4 J	<b>From:</b> 200907
<b>Model Year:</b> 2010	<b>Model:</b> HS250H	<b>Doc ID:</b> RM000002NNE05EX
<b>Title:</b> WIPER / WASHER: WIPER AND WASHER SYSTEM: Speed Signal Circuit (2010 HS250H)		
Speed Signal Circuit		

## DESCRIPTION

The windshield wiper relay assembly receives a vehicle speed signal from the combination meter to control the automatic windshield wiper system.

A voltage of 12 V or 5 V is output from the combination meter assembly and then input to the skid control ECU.

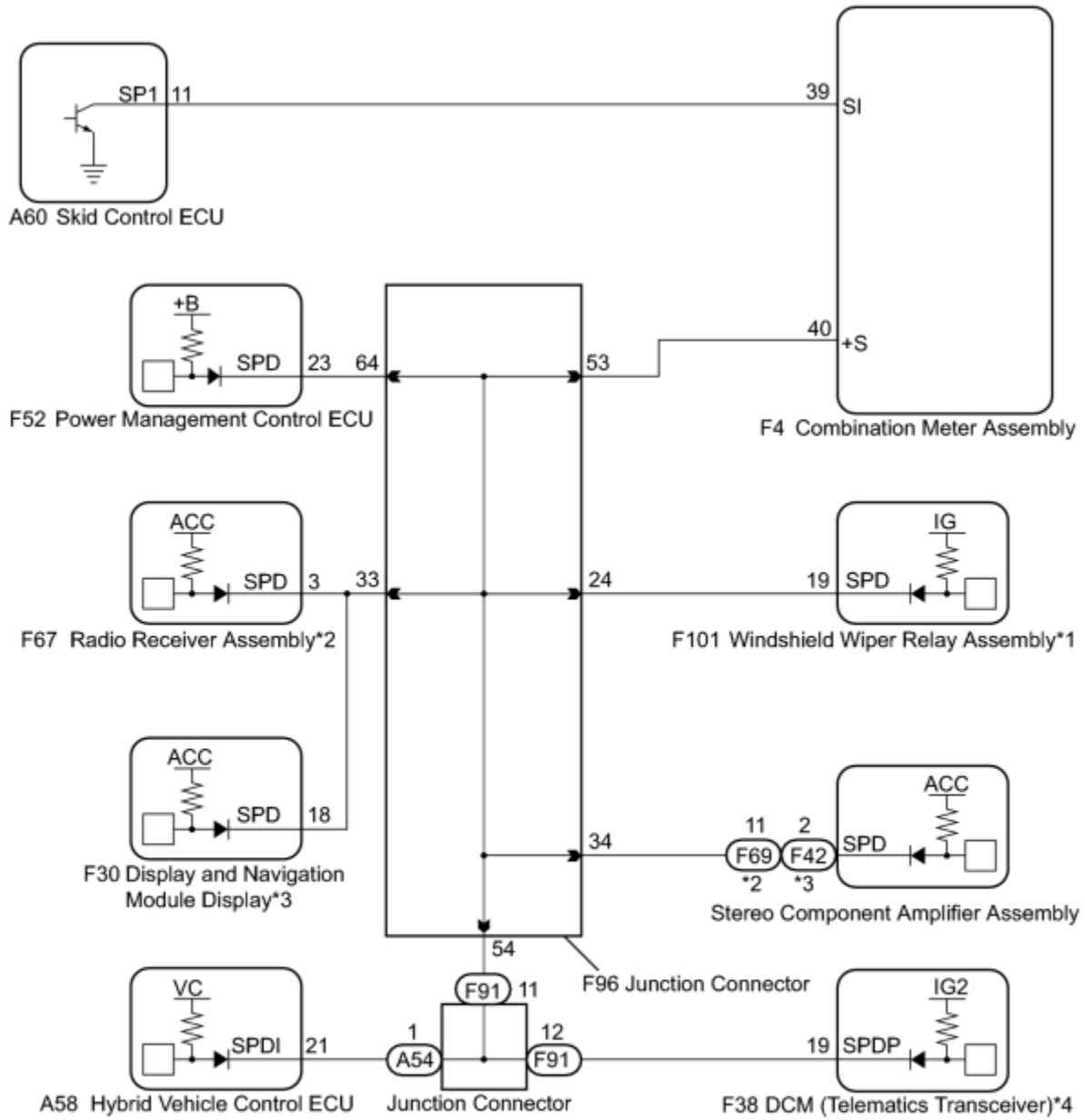
A voltage of 12 V or 5 V is output from each ECU or relay and then input to the combination meter assembly.

The signal is changed to a pulse signal at the transistor in the combination meter assembly.

Each ECU controls the respective system based on the pulse signal.

If a short occurs in any of the ECUs or in the wire harness connected to an ECU, all systems in the diagram below will not operate normally.

## WIRING DIAGRAM



\*1: w/ Auto Wiper System

\*2: w/o Navigation System

\*3: w/ Navigation System

\*4: w/ Manual (SOS) Switch

## INSPECTION PROCEDURE

# PROCEDURE

1.	CHECK COMBINATION METER SYSTEM
----	--------------------------------

(a) The circuit that sends vehicle speed signals to the combination meter system is inspected in the meter section INFO.

NEXT



2.	CHECK HARNESS AND CONNECTOR (WINDSHIELD WIPER RELAY ASSEMBLY - COMBINATION METER)
----	---

(a) Disconnect the F101 windshield wiper relay assembly connector and F4 combination meter assembly connector.

(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
F101-19 (SPD) - F4-7 (+S)	Always	Below 1 Ω

NG REPAIR OR REPLACE HARNESS OR CONNECTOR

OK



3.	INSPECT COMBINATION METER ASSEMBLY (SPEED SENSOR SIGNAL)
----	--

(a) Check the output waveform.

(1) Remove the combination meter assembly with the connector still connected.

(2) Connect an oscilloscope to terminal F4-7 (+S) and body ground.

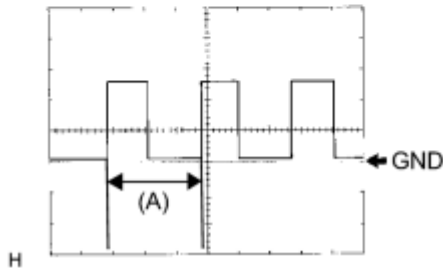
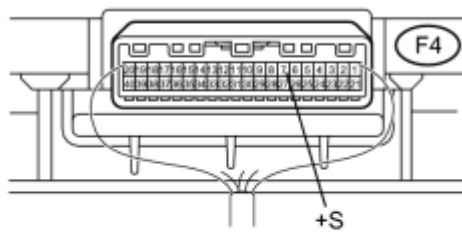
(3) Turn the power switch on (IG).

(4) Turn a wheel slowly.

(5) Check the signal waveform according to the condition(s) in the table below.

Item	Condition
------	-----------

\*1



Tool setting	5 V/DIV., 20 ms./DIV.
Vehicle condition	Wheel being rotated

OK:

The waveform is similar to that shown in the illustration.

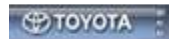
HINT:

When the system is functioning normally, one wheel revolution generates 4 pulses. As the vehicle speed increases, the width indicated by (A) in the illustration narrows.

<b>Text in Illustration</b>  *1	Component with harness connected
	(Combination Meter Assembly)

NG [▶ REPLACE COMBINATION METER ASSEMBLY](#)

OK [▶ PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE](#)

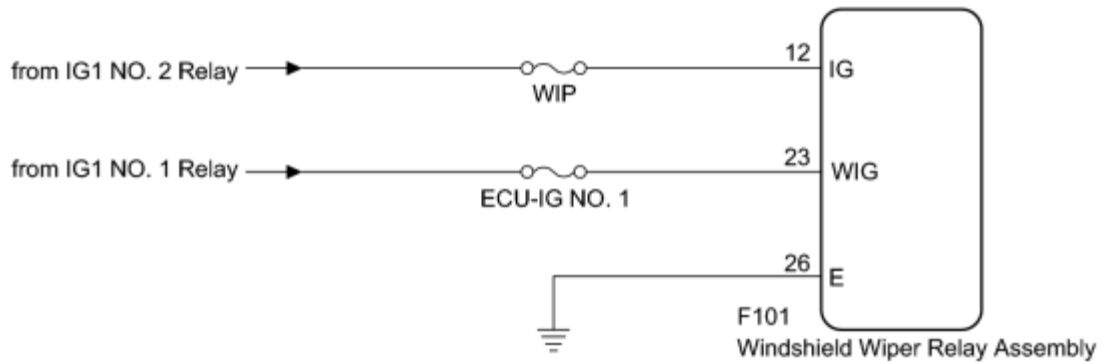


Last Modified: 5-25-2010	6.4 J	From: 200907
Model Year: 2010	Model: HS250H	Doc ID: RM000001YBO01QX
Title: WIPER / WASHER: WIPER AND WASHER SYSTEM: Wiper ECU Power Source Circuit (2010 HS250H)		
Wiper ECU Power Source Circuit		

## DESCRIPTION

This circuit provides power to the windshield wiper relay assembly.

## WIRING DIAGRAM

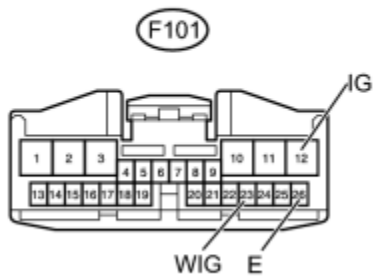


## INSPECTION PROCEDURE

### PROCEDURE

- |    |   |
|----|---|
| 1. | CHECK HARNESS AND CONNECTOR (WINDSHIELD WIPER RELAY ASSEMBLY - BATTERY AND BODY GROUND) |
|----|---|

\*1



(a) Disconnect the F101 windshield wiper relay assembly connector.

N

(b) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Condition	Specified Condition
F101-12 (IG) - Body ground	Power switch on (IG)	11 to 14 V
F101-23 (WIG) - Body ground	Power switch on (IG)	11 to 14 V

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
F101-26 (E) - Body ground	Always	Below 1 $\Omega$

*Text in Illustration*

*1	Front view of wire harness connector (to Windshield Wiper Relay Assembly)
----	--

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ► [PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE](#)

