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Title: Wiper Troubleshooting on 2007 HPV and ProStar

Applies To: 2007 and later HPV

DESCRIPTION

The windshield wiper switch has a total of eight positions: off, five intermittent wipe settings, low speed, and high speed. The wiper switch is actually three separate switches. Each of the three switches is connected to an accessory biased ESC digital input. Closing a switch provides a path to ZVR, which pulls the digital input to near 0V. All three switches are normally closed, so when the wipers are at rest, the voltage on the wires from the multifunction switch to the body controller should be near 0V. Each of the eight possible wiper switch settings causes a different combination of open and closed switches. The combination of open or closed switches is used by the ESC to determine which switch position the driver has selected. Note that if the wiper switch is disconnected, the inputs will all pull up to accessory voltage level. This will cause the ESC to operate the wiper motor at high speed. Other wiper inputs include ESC ignition and ESC accessory inputs.

The most common cause of the wipers staying on all the time is that the washer input to the ESC is staying on.

For more information on how this feature works, [click here S08293](#) this manual is for the old ESC, but they both work the same way.

SYMPTOMS

- Wipers on High all the time
- Wipers won't come on
- Wipers on low all the time

SIGNALS TO WATCH

Signal	Pins	Signal Type	Value	Unit	Watch	
Washer_Pump_Signal	1600-A15	Digital Input	<input type="checkbox"/>	On/Off	<input type="checkbox"/>	The value box should get a checkmark when pressing the washer button. This will be checked key off.
Wiper_0_Signal	1600-A9	Digital Input	<input type="checkbox"/>	On/Off	<input type="checkbox"/>	The windshield wiper has three switches that produce 8 modes: off, 5 intermittent settings, low speed and high speed. If you cycle between all 3 modes, you should get a checkmarks in the values columns. These are the digital inputs from the multifunction switch.
Wiper_1_Signal	1600-A10	Digital Input	<input type="checkbox"/>	On/Off	<input type="checkbox"/>	
Wiper_2_Signal	1600-A11	Digital Input	<input type="checkbox"/>	On/Off	<input type="checkbox"/>	
Wiper_Low_Speed_Cad	1601-E7	Relay Driver Output	<input type="checkbox"/>	On/Off	<input type="checkbox"/>	This signal must be present, indicating the B/C is grounding the wiper power relay, for any wiper mode.
Wiper_High_Speed_Cad	1601-E6	Relay Driver Output	<input type="checkbox"/>	On/Off	<input type="checkbox"/>	This signal must be present, indicating the B/C is grounding the wiper High/Low relay, for wiper high speed.
Wipers_Output_from_fuse_circuit	1604-A	Digital Output	<input type="checkbox"/>	On/Off	<input type="checkbox"/>	This signal should be on any time the ignition is in the run position.

[Wiper Signal DLB Session](#)

TROUBLESHOOTING

1. The first step is to check and record the DTC's using DLB, not the cluster. For info on doing this properly, see [IK2600036](#).

Signal	B/C Pin	SPN	FMI	Description	Action
Wiper_Cmd	1604-A	4057	5	Wiper Motor Circuit Under Current	Open circuit from the body controller 1604-A to pin 86 of the wiper ON/OFF and High/Low relays.
Wiper_Cmd	1604-A	4057	6	Wiper Motor Circuit Over Current	Shorted circuit from the body controller 1604-A to pin 86 of the wiper ON/OFF and High/Low relays.

Wiper_Low_Speed_Cmd	1601-E6	2637	5	Wiper High/Low Relay Under Current	Open circuit from the body controller 1601-E6 to pin 85 of the wiper high/low relay.
Wiper_Low_Speed_Cmd	1601-E6	2637	6	Wiper High/Low Relay Over Current	Shorted circuit from the body controller 1601-E6 to pin 85 of the wiper high/low relay.
Wiper_High_Speed_Cmd	1601-E7	2636	5	Wiper On/Off Relay Under Current	Open circuit from the body controller 1601-E7 to pin 85 of the wiper power relay.
Wiper_High_Speed_Cmd	1601-E7	2636	6	Wiper On/Off Relay Over Current	Shorted circuit from the body controller 1601-E7 to pin 85 of the wiper power relay.

- Make sure that you have ignition and accessory voltage to the Body Controller. If you don't have accessory voltage, the wipers won't work. For info on checking this, see [IK0800092](#).
- Hook up with DLB and monitor the [Washer_Pump_Signal](#), [Wiper_0_Signal](#), [Wiper_1_Signal](#), and [Wiper_2_Signal](#). These are the inputs to the ESC from the switch.
 - If there is a check mark next to the [Washer_Pump_Signal](#), the ESC thinks that the washer switch is being pushed all the time.

Wiper Switch Position	1600-A9	1600-A10	1600-A11
Off	No Checkmark	No Checkmark	No Checkmark
Intermittent 1	Checkmark	No Checkmark	No Checkmark
Intermittent 2	No Checkmark	Checkmark	No Checkmark
Intermittent 3	Checkmark	Checkmark	No Checkmark
Intermittent 4	No Checkmark	No Checkmark	Checkmark
Intermittent 5	Checkmark	No Checkmark	Checkmark
Low	No Checkmark	Checkmark	Checkmark
High	Checkmark	Checkmark	Checkmark

- Hook up your break out box to the 1600 connector and measure voltage on pin A15.
 - You should have about 10 volts when the washer switch is not being pushed.
 - You might have 0v or close to it. This means that you have a short to ground or a bad switch.
- Measure voltage on pins A9, A10, and A11 of the 1600 connector through the breakout box.
 - These pins are the inputs for the [Wiper_0_Signal](#), [Wiper_1_Signal](#), and [Wiper_2_Signal](#).
 - You should have about 0 volts on each of these with the wiper switch turned off. Each of the three switches in the multifunction switch are normally closed. When the switch is moved to another position, the switch will open and the corresponding wire will show the voltage output from the body controller.
 - If you have voltage on any of these with the switch turned off, you have an open in that circuit.

CIRCUIT DIAGRAMS

- [Wiper Output Circuit Diagram](#)
- [Wiper Input Circuit Diagram](#)
- For advanced interactive [Circuit Diagrams](#), [click here](#). This diagram is a good place to see how the system works.

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