

2008 Ford Mustang

2008 ACCESSORIES & BODY, CAB Speed Control - Mustang

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Speed Control - Mustang

DESCRIPTION AND OPERATION

SPEED CONTROL

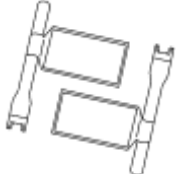
The speed control system consists of the following components:

- Speed control switches
- Speed control deactivator switch
- Clutch pedal speed control deactivator switch (manual transmission)
- Speed control indicator
- PCM

DIAGNOSTIC TESTS

SPEED CONTROL

Special Tools

Illustration	Tool Name	Tool Number
 ST1137-A	73III Automotive Meter	105-R0057 or equivalent
 ST2834-A	Vehicle Communication Module (VCM) and Integrated Diagnostic System (IDS) software with appropriate hardware, or equivalent scan tool	
 ST2621-A	Diagnostic Tool, Restraint System (2 required)	418-F395
 ST2574-A	Flex Probe Kit	105-R025C or equivalent

2008 Ford Mustang

2008 ACCESSORIES & BODY, CAB Speed Control - Mustang

Principles of Operation

The speed control system is controlled by the PCM. The speed control system is designed to maintain a selected vehicle speed between 48 and 200 km/h (30 and 124 mph). The speed control system is controlled by the steering wheel mounted switches (ON, OFF, SET+, SET-, and RESUME), the stoplamp switch, the clutch pedal speed control deactivator switch (manual transmission), and the speed control deactivator switch. The steering wheel mounted switches are hardwired to the PCM through the clockspring.

The speed control functions include:

- Turning the speed control system on
- Setting and maintaining the desired vehicle speed
- Accelerating the vehicle speed
- Decelerating the vehicle speed
- Turning the vehicle speed control system off
- Cancelling the speed control

Pressing and releasing the ON switch turns the speed control system on. Pressing and releasing the SET+ or SET- switch while the vehicle is traveling at the desired speed activates the speed control system.

Tapping the SET+ or the SET- switch while in the set mode increases or decreases the maintained vehicle speed by 1.6 km/h (1 mph) per tap, respectively. If either button is pressed and held, the vehicle speed continues to accelerate (SET+) or decelerate (SET-) until the button is released.

Pressing and releasing the OFF switch, or switching the ignition switch to the OFF position, turns the speed control system off. Applying the brake pedal puts the speed control system into the standby mode. Pressing the RESUME button when the speed control system is in the standby mode causes the vehicle to accelerate to the last set speed. RESUME does not function if the OFF button is pressed or if the current vehicle speed is below the minimum operational speed.

The clutch pedal speed control deactivator switch is used on vehicles equipped with a manual transmission. When the clutch pedal is applied with the vehicle speed control system engaged, the normally closed switch opens and signals the PCM to deactivate the speed control.

The speed control deactivator switch is provided as an additional safety feature. When the brake pedal is applied, an electrical signal from the stoplamp switch is sent to the smart junction box (SJB), which then sends a message to the PCM to deactivate the speed control system. Under increased brake pedal effort, the speed control deactivator switch opens and removes the voltage signal from the PCM input circuit, deactivating the speed control system.

Whenever the speed control system is engaged and active, a speed control icon on the instrument cluster (IC) is illuminated.

The inputs to the PCM are:

- Output shaft speed (OSS) sensor

2008 Ford Mustang

2008 ACCESSORIES & BODY, CAB Speed Control - Mustang

- Transmission range (TR) sensor
- Speed control switch
- Clutch pedal speed control deactivator switch (manual transmission)
- Speed control deactivator switch
- Accelerator pedal position sensor
- SJB
- Parking brake

The outputs of the PCM for the speed control system are:

- Speed control indicator lamp
- Throttle command

The speed control system throttle position is completely controlled by the PCM through the electronically controlled throttle body. Speed control electronics are contained entirely within the PCM.

When the speed control system is active, the PCM corrects for deviations in the actual vehicle speed by proportionally moving the throttle plate. The PCM modulates the throttle to minimize error between actual, and desired vehicle speed.

The PCM strategy uses the throttle control for smooth accelerations.

The PCM sends a message over the controller area network (CAN) to the IC whenever the speed control telltale should be turned on or off.

In the event of an OFF command or a deactivation request from any source, the speed control system carries out a deactivation and immediately returns the throttle to the idle position.

The speed control system provides self-diagnostics. The speed control is disabled anytime an error is detected in the system. No cluster telltale or message center messages are displayed when faults occur. Fault codes are logged by the PCM.

An electronically controlled throttle system fault also causes the speed control system to be disabled and a warning telltale (wrench light) or a message center message is displayed.

Additionally, the following conditions cause the speed control system to deactivate:

- Transmission gear selector in a position other than D or OD (automatic transmission)
- Vehicle clutch pedal is applied (manual transmission)
- Speed control set speed is over-ridden with the accelerator pedal for a period longer than 5 minutes
- Vehicle speed loss from set speed of greater than 16 km/h (10 mph) occurs
- Vehicle speed falls below the minimum allowable limit of 48 km/h (30 mph)
- Parking brake is applied

2008 Ford Mustang

2008 ACCESSORIES & BODY, CAB Speed Control - Mustang

- Speed control switch is pressed or stuck for longer than 2 minutes

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

VISUAL INSPECTION CHART

Mechanical	Electrical
• Throttle body	• Smart junction box (SJB) fuse 18 (10A) • Wiring, terminals or connectors • Speed control switch • Clutch pedal speed control deactivator switch (manual transmission) • Speed control deactivator switch • Stoplamp switch • PCM

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. Verify the speedometer operates correctly without speed control by test driving the vehicle. If the speedometer does not operate correctly, refer to **INSTRUMENT CLUSTER (IC), MESSAGE CENTER, AND WARNING CHIMES** article.
5. Verify the stoplamp operate correctly with the ignition switch in the ON position. If the stoplamp do not operate correctly, refer to **EXTERIOR LIGHTING** article.
6. Verify the parking brake warning indicator is operating correctly. If the parking brake warning indicator does not operate correctly, refer to **INSTRUMENT CLUSTER (IC), MESSAGE CENTER, AND WARNING CHIMES** article.

NOTE: Make sure to use the latest scan tool software release.

7. If the cause is not visually evident, connect the scan tool to the data link connector (DLC).

NOTE: The vehicle communication module (VCM) LED prove-out confirms power and ground from the DLC are provided to the VCM.

8. If the scan tool does not communicate with the VCM:
 - Check the VCM connection to the vehicle.

2008 Ford Mustang

2008 ACCESSORIES & BODY, CAB Speed Control - Mustang

- Check the scan tool connection to the VCM.
 - Refer to **MODULE COMMUNICATIONS NETWORK** article, No Power To The Scan Tool, to diagnose no communication with the scan tool.
9. If the scan tool does not communicate with the vehicle:
- Verify the ignition key is in the ON position.
 - Verify the scan tool operation with a known good vehicle.
 - Refer to **MODULE COMMUNICATIONS NETWORK** article to diagnose no response from the PCM.
10. Carry out the network test.
- If the scan tool responds with no communication for one or more modules, refer to **MODULE COMMUNICATIONS NETWORK** article.
 - If the network test passes, retrieve and record the continuous memory DTCs.
11. Clear the continuous DTCs and carry out the self-test diagnostics for the PCM.
12. If the DTCs retrieved are related to the concern, go to DTC Charts. For all other DTCs, refer to **MULTIFUNCTION ELECTRONIC MODULES** article.
13. If no DTCs related to the concern are retrieved, go to **Symptom Chart**.

DTC Charts

PCM DTC CHART

DTCs	Description	Action
P0579	Cruise Control Multifunction Input A Circuit Range/Performance	Go to <u>Pinpoint Test C</u> .
P0581	Cruise Control Multifunction Circuit High	Go to <u>Pinpoint Test C</u> .
P1703	Brake Switch Out of Self-Test Range	Go to <u>Pinpoint Test B</u> .
All other DTCs	-	REFER to the <u>Introduction - Gasoline Engines</u> article.

Symptom Chart

Symptom Chart

Condition	Possible Sources	Action
• The speed control is inoperative	• PCM not configured for speed control • Speed control switch • Digital transmission range (TR) sensor alignment (automatic transmission) • Clutch pedal speed control deactivator switch (manual	• Go to <u>Pinpoint Test A</u>.

	transmission) PCM	
The speed control does not disengage when the clutch is applied	- Wiring, terminals or connectors - Clutch pedal speed control deactivator switch - PCM	Go to <u>Pinpoint Test A</u>.
The speed control indicator lamp is inoperative/always on	- Wiring, terminals or connectors - Instrument cluster (IC) - PCM	REFER to <u>INSTRUMENT CLUSTER (IC), MESSAGE CENTER, AND WARNING CHIMES</u> article.

Pinpoint Tests

Pinpoint Test A: The Speed Control Is Inoperative

Normal Operation

The PCM sends a signal through circuit 248 (TN/OG) to the speed control switches, which passes through the clockspring. The return signal is sent to the PCM through circuit 133 (BK) and the clockspring. When the brake pedal is applied, the smart junction box (SJB) sends a message to the PCM to deactivate the speed control, if engaged.

The speed control deactivator switch interrupts circuit 535 (LB/RD), removing the voltage signal to the PCM, when the brake pedal is applied firmly and passes the stoplamp switch trip point. This is a redundant signal to the PCM.

Vehicles equipped with a manual transmission have an additional clutch pedal speed control deactivator switch. The clutch pedal speed control deactivator switch, normally closed, supplies a ground signal to the PCM through circuit 1899 (WH). When the clutch pedal is pressed, the clutch pedal speed control deactivator switch moves to the open position, removing the ground signal from the PCM, which deactivates the speed control. Circuit 1205 (BK) supplies ground to the clutch pedal speed control deactivator switch.

This pinpoint test is intended to diagnose the following:

- PCM not configured for speed control
- Speed control switch
- Digital transmission range (TR) sensor alignment (automatic transmission)
- Clutch pedal speed control deactivator switch (manual transmission)
- PCM

PINPOINT TEST A: THE SPEED CONTROL IS INOPERATIVE

2008 Ford Mustang

2008 ACCESSORIES & BODY, CAB Speed Control - Mustang

CAUTION: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

A1 VERIFY PCM CONFIGURATION

- Enter the following diagnostic mode on the diagnostic tool: Programmable Parameters
- Verify that the speed control is enabled in the PCM.
- **Is the speed control enabled?**

YES : Go to A2.

NO : Enable the speed control in the PCM using the scan tool programmable parameters menu. If no parameter exists, REFER to **MODULE CONFIGURATION** article to carry out PCM programmable module installation (PMI). TEST the system for normal operation.

A2 CHECK FOR DTCs

- Review the recorded DTCs from the PCM self-test.
- **Are any non-speed control DTCs recorded?**

YES : REFER to the **Introduction - Gasoline Engines** article. REPAIR all PCM DTCs and RETEST the speed control.

NO : Go to A3.

A3 CHECK THE SPEED CONTROL COMMAND SWITCH (SCCS) PID

- Start the engine.
- Enter the following diagnostic mode on the diagnostic tool: PCM DataLogger
- With the engine running, monitor the PCM SCCS PID while pressing the speed control switches as follows:

Speed Control Switch	PID Minimum Value	PID Maximum Value
OFF	0.00 volts	1.089 volts
SET -	2.192 volts	3.057 volts
SET +	3.057 volts	3.721 volts
RESUME	3.721 volts	4.209 volts
ON	4.209 volts	4.556 volts
No switch pressed	4.556 volts	4.839 volts

- **Are the PCM SCCS PID values OK?**

YES : TURN the engine off. Go to A5.

2008 Ford Mustang

2008 ACCESSORIES & BODY, CAB Speed Control - Mustang

NO : TURN the engine off. Go to A4.

A4 CHECK THE SPEED CONTROL SWITCH

- Key in OFF position.
- Disconnect: PCM C175b
- Measure the resistance between the PCM C175b-19, circuit 248 (TN/OG), harness side and the PCM C175b-30, circuit 133 (BK), harness side, while pressing the speed control switches as follows:

Speed Control Switch	Resistance Value
OFF	Less than 5 ohms
SET -	285 - 315 ohms
SET +	570 - 630 ohms
RESUME	1,054 - 1,165 ohms
ON	2,004 - 2,215 ohms
No switch pressed	4,094 - 4,525 ohms

- **Are the speed control switch resistance values OK?**

YES : Go to A11.

NO : INSTALL a new speed control switch. REFER to **Speed Control Switch**. TEST the system for normal operation.

A5 CHECK THE STOPLAMP SWITCH (BOO) PID

- Key in ON position.
- Enter the following diagnostic mode on the diagnostic tool: PCM DataLogger
- Monitor the PCM BOO PID.
- Apply and release the brake pedal.
- **Does the PID value agree with the brake pedal position?**

YES : Go to A6.

NO : Go to **Pinpoint Test B**.

A6 CHECK THE VEHICLE SPEED

2008 Ford Mustang

2008 ACCESSORIES & BODY, CAB Speed Control - Mustang

NOTE: This step may require an assistant.

- Enter the following diagnostic mode on the diagnostic tool: ABS Module DataLogger
- Monitor and record the ABS module LF_WSPD (left front wheel speed) PID while driving the vehicle at 48 km/h (30 mph) as indicated on the speedometer.
- Enter the following diagnostic mode on the diagnostic tool: PCM DataLogger
- Monitor and record the PCM VSS (vehicle speed) PID while driving the vehicle at 48 km/h (30 mph).
- **Does the speed indicated by the ABS module LF_WSPD PID match the PCM VSS PID?**
YES : If equipped with an automatic transmission, go to A7.

If equipped with a manual transmission, go to A8.

NO : REFER to the **Introduction - Gasoline Engines** article to diagnose the output shaft speed (OSS) sensor signal.

A7 CHECK THE DIGITAL TRANSMISSION RANGE (TR) SENSOR PID

- Apply the parking brake.
- Key in ON position.
- Enter the following diagnostic mode on the diagnostic tool: PCM DataLogger
- Monitor the PCM TR PID.
- Select DRIVE.
- **Does the PID value agree with the transmission range selector lever position?**

YES : Go to A11.

NO : REFER to **AUTOMATIC TRANSAXLE/TRANSMISSION - 5R55S** article.

A8 CHECK THE CLUTCH PEDAL SPEED CONTROL DEACTIVATOR SWITCH (CPP_TOP) PID

- Enter the following diagnostic mode on the diagnostic tool: PCM DataLogger
- Monitor the PCM CPP_TOP PID while pressing and releasing the clutch pedal.
- **Does the clutch pedal speed control deactivator switch PID agree with the clutch pedal position?**

YES : Go to A11.

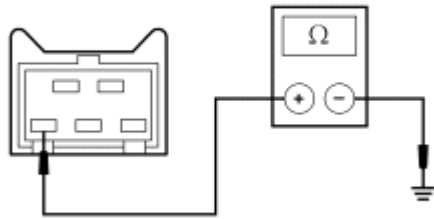
NO : Go to A9.

A9 CHECK CIRCUIT 1205 (BK) FOR AN OPEN

- Key in OFF position.
- Disconnect: Clutch Pedal Speed Control Deactivator Switch C277

2008 Ford Mustang

2008 ACCESSORIES & BODY, CAB Speed Control - Mustang



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Fig. 1: Checking Circuit 1205 (BK) For An Open
Courtesy of FORD MOTOR CO.

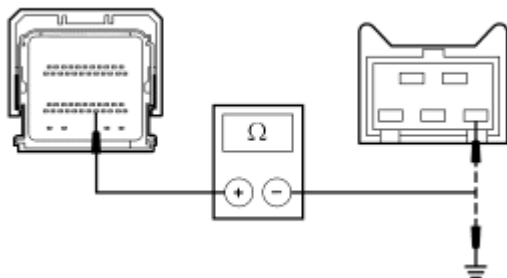
- Measure the resistance between the clutch pedal speed control deactivator switch C277-3, circuit 1205 (BK), harness side and ground.
- **Is the resistance less than 5 ohms?**

YES : Go to A10.

NO : REPAIR the circuit. TEST the system for normal operation.

A10 CHECK CIRCUIT 1899 (WH) FOR AN OPEN OR A SHORT TO GROUND

- Disconnect: PCM C175b



N0058835

Fig. 2: Measuring Resistance Between PCM C175B-39, Circuit 1899 (WH), Harness Side
Courtesy of FORD MOTOR CO.

- Measure the resistance between the PCM C175b-39, circuit 1899 (WH), harness side and the clutch pedal speed control deactivator switch C277-1, circuit 1899 (WH), harness side; and between the PCM C175b-39, circuit 1899 (WH), harness side and ground.

- **Is the resistance less than 5 ohms between the PCM and the clutch pedal speed control deactivator switch, and greater than 10,000 ohms between the PCM and ground?**

YES : INSTALL a new clutch pedal speed control deactivator switch. REFER to **Speed Control Deactivator Switch**. TEST the system for normal operation.

NO : REPAIR the circuit. TEST the system for normal operation.

A11 CHECK FOR CORRECT PCM OPERATION

- Disconnect all the PCM connectors.
- Check for:

2008 Ford Mustang

2008 ACCESSORIES & BODY, CAB Speed Control - Mustang

- corrosion
- damaged pins
- pushed-out pins
- Connect all the PCM connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.
- **Is the concern still present?**

YES : INSTALL a new PCM. REFER to **ELECTRONIC ENGINE CONTROLS** article. TEST the system for normal operation.

NO : The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. TEST the system for normal operation.

Pinpoint Test B: DTC P1703 - Brake On/Off Circuit Failure

Refer to appropriate SYSTEM WIRING DIAGRAM ARTICLE, Speed Control for schematic and connector information.

Normal Operation

When the brake pedal is applied, the smart junction box (SJB) sends a message to the PCM to deactivate the speed control if engaged.

The speed control deactivator switch receives voltage through circuit 391 (RD/YE). The switch removes voltage from circuit 535 (LB/RD) to the PCM when the brake pedal is applied firmly and passes the stoplamp switch trip point. This is a redundant signal to the PCM.

- DTC P1703 (Brake On/Off Circuit Failure) - sets when there is an open or short in the deactivator switch circuits or when there is an open or short in the stoplamp circuits.

This pinpoint test is intended to diagnose the following:

- Fuse
- Wiring, terminals or connectors
- Speed control deactivator switch
- ABS module
- Bussed electrical center (BEC)
- SJB
- PCM

PINPOINT TEST B: DTC P1703 - BRAKE ON/OFF CIRCUIT FAILURE

CAUTION: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

B1 CHECK THE OPERATION OF THE STOPLAMP

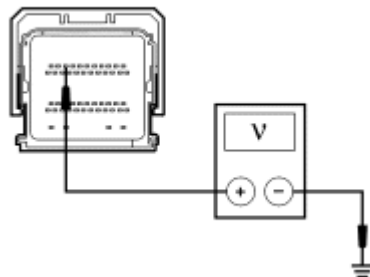
- Key in ON position.
- Operate the stoplamp.
- **Do the stoplamp operate correctly?**

YES : Go to B2.

NO : REFER to EXTERIOR LIGHTING article.

B2 CHECK CIRCUIT 535 (LB/RD) FOR VOLTAGE

- Key in OFF position.
- Disconnect: PCM C175b
- Key in ON position.



N0058834

Fig. 3: Measuring Voltage Between PCM C175B-9, Circuit 535 (LB/RD), Harness Side & Ground

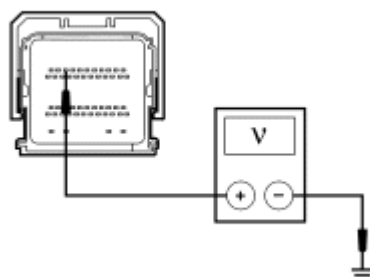
Courtesy of FORD MOTOR CO.

- Measure the voltage between the PCM C175b-9, circuit 535 (LB/RD), harness side and ground.
- **Is the voltage greater than 10 volts?**

YES : Go to B3.

NO : Go to B6.

B3 CHECK THE SPEED CONTROL DEACTIVATOR SWITCH FOR CORRECT OPERATION



N0058834

Fig. 4: Measuring Voltage Between PCM C175B-9, Circuit 535 (LB/RD), Harness Side & Ground

Courtesy of FORD MOTOR CO.

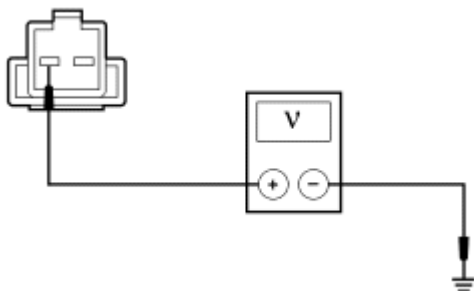
2008 Ford Mustang

2008 ACCESSORIES & BODY, CAB Speed Control - Mustang

- While firmly applying and releasing the brake pedal, measure the voltage between the PCM C175b-9, circuit 535 (LB/RD), harness side and ground.
- **Is the voltage greater than 10 volts with the brake pedal released and 0 volts with the brake pedal firmly applied?**
YES : Go to B10.
NO : Go to B4.

B4 CHECK CIRCUIT 535 (LB/RD) FOR A SHORT TO VOLTAGE

- Key in OFF position.
- Disconnect: Speed Control Deactivator Switch C278
- Key in ON position.



N0002250

Fig. 5: Checking Circuit 535 (LB/RD) For A Short To Voltage
Courtesy of FORD MOTOR CO.

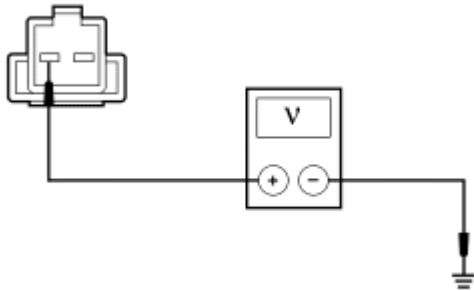
- Measure the voltage between the speed control deactivator switch C278-1, circuit 535 (LB/RD), harness side and ground.
- **Is any voltage present?**
YES : Go to B5.
NO : INSTALL a new speed control deactivator switch. REFER to **Speed Control Deactivator Switch**. CLEAR the DTCs. REPEAT the self-test.

B5 CHECK THE ABS MODULE FOR A SHORT TO VOLTAGE

- Key in OFF position.
- Disconnect: ABS Module C135
- Key in ON position.

2008 Ford Mustang

2008 ACCESSORIES & BODY, CAB Speed Control - Mustang



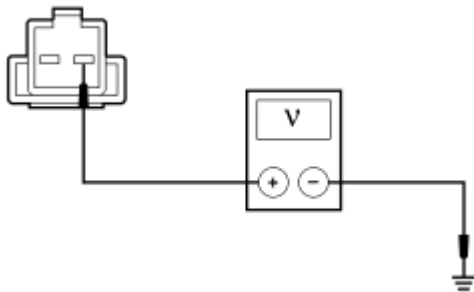
N0002250

Fig. 6: Checking ABS Module For A Short To Voltage
Courtesy of FORD MOTOR CO.

- Measure the voltage between the speed control deactivator switch C278-1, circuit 535 (LB/RD), harness side and ground.
- **Is any voltage present?**
YES : REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.
NO : Go to B9.

B6 CHECK CIRCUIT 391 (RD/YE) FOR AN OPEN

- Key in OFF position.
- Disconnect: Speed Control Deactivator Switch C278
- Key in ON position.



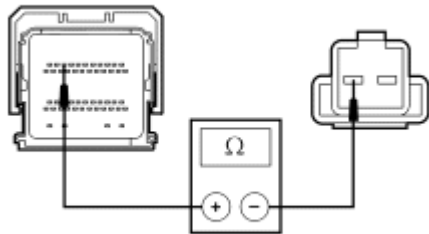
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Fig. 7: Checking Circuit 391 (RD/YE) For An Open
Courtesy of FORD MOTOR CO.

- Measure the voltage between the speed control deactivator switch C278-2, circuit 391 (RD/YE), harness side and ground.
- **Is the voltage greater than 10 volts?**
YES : Go to B7.
NO : VERIFY the SJB fuse 18 (10A) is OK. If OK, REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.

B7 CHECK CIRCUIT 535 (LB/RD) FOR AN OPEN

- Key in OFF position.



N0058836

Fig. 8: Measuring Resistance Between PCM C175B-9, Circuit 535 (LB/RD), Harness Side
Courtesy of FORD MOTOR CO.

- Measure the resistance between the PCM C175b-9, circuit 535 (LB/RD), harness side and the speed control deactivator switch C278-1, circuit 535 (LB/RD), harness side.

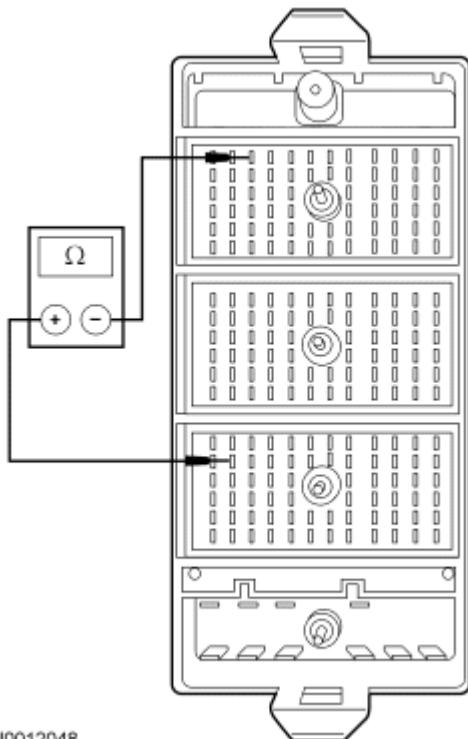
- **Is the resistance less than 5 ohms?**

YES : INSTALL a new speed control deactivator switch. REFER to **Speed Control Deactivator Switch**. CLEAR the DTCs. REPEAT the self-test.

NO : Go to B8.

B8 CHECK THE BEC FOR AN OPEN

- Key in OFF position.
- Disconnect: BEC C1035a
- Disconnect: BEC C1035b



N0012048

Fig. 9: Measuring Resistance Between BEC C1035A Pin E2 And BEC C1035B Pin F3
Courtesy of FORD MOTOR CO.

- Measure the resistance between the BEC C1035a pin E2, component side and the BEC C1035b pin F3, component side.
- **Is the resistance less than 5 ohms?**
YES : REPAIR circuit 535 (LB/RD). CLEAR the DTCs. REPEAT the self-test.
NO : INSTALL a new BEC. CLEAR the DTCs. REPEAT the self-test.

B9 CHECK FOR CORRECT ABS MODULE OPERATION

- Disconnect the ABS module connector.
- Check for:
 - corrosion
 - damaged pins
 - pushed-out pins
- Connect the ABS module connector and make sure it is seated correctly.
- Operate the system and verify the concern is still present.
- **Is the concern still present?**
YES : INSTALL a new ABS module. REFER to **VEHICLE DYNAMIC SYSTEMS** article. CLEAR the PCM DTCs. REPEAT the self test.
NO : The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the PCM DTCs. REPEAT the self-test.

B10 CHECK FOR CORRECT PCM OPERATION

- Disconnect all the PCM connectors.
- Check for:
 - corrosion
 - damaged pins
 - pushed-out pins
- Connect all the PCM connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.
- **Is the concern still present?**
YES : INSTALL a new PCM. REFER to **ELECTRONIC ENGINE CONTROLS** article. TEST the system for normal operation.
NO : The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.

Pinpoint Test C: DTC P0579 or P0581 - Speed Control Switch Circuit Failure

Refer to appropriate SYSTEM WIRING DIAGRAM ARTICLE, Speed Control for schematic and connector information.

Normal Operation

2008 Ford Mustang

2008 ACCESSORIES & BODY, CAB Speed Control - Mustang

The PCM sends a signal through circuit 248 (TN/OG) to the speed control switches. The return signal is sent through circuit 133 (BK). Both circuits pass through the clockspring.

- DTC P0579 (Speed Control Switch Circuit Failure) - sets when the speed control switch circuits are open, shorted to voltage or shorted to ground.
- DTC P0581 (Speed Control Switch Circuit Failure) - sets when the speed control switch circuits are shorted to voltage or open.

This pinpoint test is intended to diagnose the following:

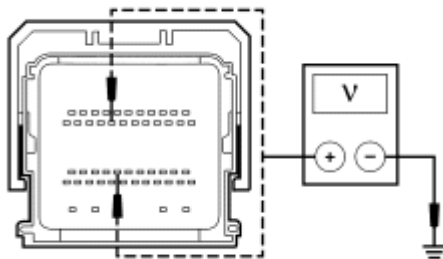
- Wiring, terminals or connectors
- Clockspring
- Speed control switch
- PCM

PINPOINT TEST C: DTC P0579 OR DTC P0581 - SPEED CONTROL SWITCH CIRCUIT FAILURE

CAUTION: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

C1 CHECK THE SPEED CONTROL SWITCH CIRCUITRY FOR A SHORT TO VOLTAGE

- Key in OFF position.
- Disconnect: PCM C175b
- Key in ON position.
- Turn the parking lamps on.



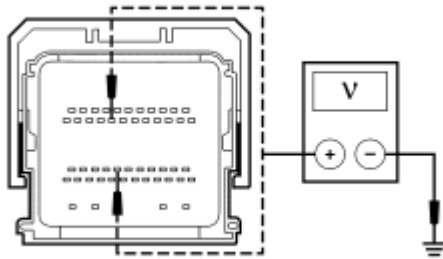
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Fig. 10: Measuring Voltage Between PCM Connector And Ground
Courtesy of FORD MOTOR CO.

- Measure the voltage between the PCM C175b-19, circuit 248 (TN/OG), harness side and ground; and between the PCM C175b-30, circuit 133 (BK), harness side and ground.
- **Is any voltage present?**
YES : TURN the parking lamps off. Go to C2 .
NO : TURN the parking lamps off. Go to C4 .

C2 CHECK CIRCUITS 248 (TN/OG) AND 133 (BK) FOR A SHORT TO VOLTAGE

- Key in OFF position.
- Disconnect: Clockspring C2274
- Key in ON position.
- Turn the parking lamps on.



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Fig. 11: Checking Circuits 248 (TN/OG) & 133 (BK) For A Short To Voltage
Courtesy of FORD MOTOR CO.

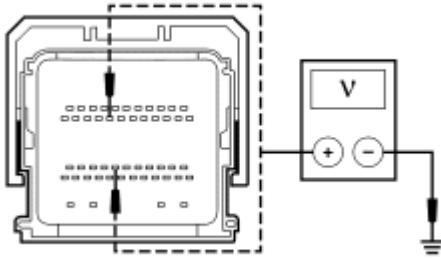
- Measure the voltage between the PCM C175b-19, circuit 248 (TN/OG), harness side and ground; and between the PCM C175b-30, circuit 133 (BK), harness side and ground.
- **Is any voltage present?**
YES : REPAIR the circuit in question. CLEAR the DTCs. REPEAT the self-test.
NO : TURN the parking lamps off. Go to C3 .

C3 CHECK THE CLOCKSPEED FOR A SHORT TO VOLTAGE

- Key in OFF position.
- Connect: Clockspring C2274
- Remove the driver air bag module. Refer to **SUPPLEMENTAL RESTRAINT SYSTEM** article.
- Connect the restraint system diagnostic tools (418-F395) to the upper clockspring air bag connector.
- Disconnect: Upper Clockspring

WARNING: Make sure no one is in the vehicle and there is nothing blocking or placed in front of any air bag module when the battery is connected. Failure to follow these instructions may result in serious personal injury in the event of an accidental deployment.

- Connect the battery.
- Key in ON position.
- Turn the parking lamps on.



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Fig. 12: Measuring Voltage Between PCM C175B-19, Circuit 248 (TN/OG), Harness Side & Ground

Courtesy of FORD MOTOR CO.

- Measure the voltage between the PCM C175b-19, circuit 248 (TN/OG), harness side and ground; and between the PCM C175b-30, circuit 133 (BK), harness side and ground.

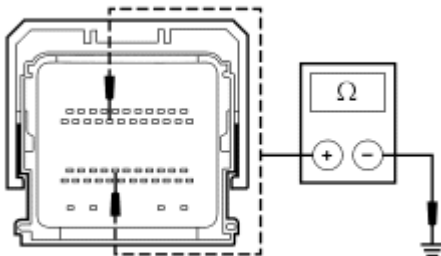
- **Is any voltage present?**

YES : INSTALL a new clockspring. REFER to **SUPPLEMENTAL RESTRAINT SYSTEM** article. DISCONNECT the battery. INSTALL the driver air bag module. REFER to **SUPPLEMENTAL RESTRAINT SYSTEM** article. CLEAR the DTCs. REPEAT the self-test.

NO : INSTALL a new speed control switch. REFER to **Speed Control Switch**. DISCONNECT the battery. INSTALL the driver air bag module. REFER to **SUPPLEMENTAL RESTRAINT SYSTEM** article. CLEAR the DTCs. REPEAT the self-test.

C4 CHECK THE SPEED CONTROL SWITCH CIRCUITRY FOR A SHORT TO GROUND

- Key in OFF position.



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Fig. 13: Measuring Resistance Between PCM C175B-19, Circuit 248 (TN/OG), Harness Side & Ground

Courtesy of FORD MOTOR CO.

- Measure the resistance between the PCM C175b-19, circuit 248 (TN/OG), harness side and ground; and between the PCM C175b-30, circuit 133 (BK), harness side and ground.

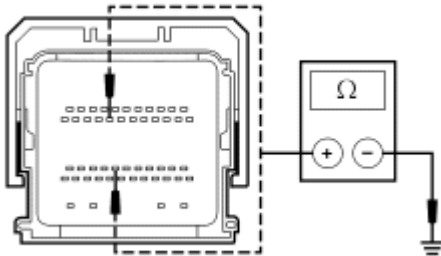
- **Are the resistances greater than 10,000 ohms?**

YES : Go to C7.

NO : Go to C5.

C5 CHECK THE CLOCKSPEED FOR A SHORT TO GROUND

- Remove the driver air bag module. Refer to SUPPLEMENTAL RESTRAINT SYSTEM article.
- Disconnect: Upper Clockspring



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Fig. 14: Measuring Resistance Between PCM C175B-19, Circuit 248 (TN/OG), Harness Side & Ground

Courtesy of FORD MOTOR CO.

- Measure the resistance between the PCM C175b-19, circuit 248 (TN/OG), harness side and ground; and between the PCM C175b-30, circuit 133 (BK), harness side and ground.

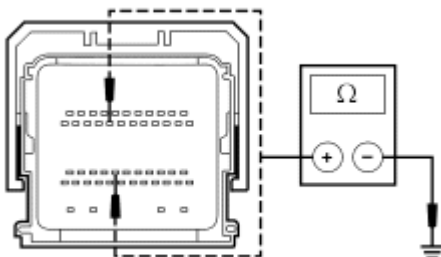
- **Are the resistances greater than 10,000 ohms?**

YES : INSTALL a new speed control switch. REFER to Speed Control Switch. DISCONNECT the battery. INSTALL the driver air bag module. REFER to SUPPLEMENTAL RESTRAINT SYSTEM article. CLEAR the DTCs. REPEAT the self-test.

NO : Go to C6.

C6 CHECK CIRCUITS 248 (TN/OG) AND 133 (BK) FOR A SHORT TO GROUND

- Disconnect: Clockspring C2274



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Fig. 15: Measuring Resistance Between PCM C175B-19, Circuit 248 (TN/OG), Harness Side & Ground

Courtesy of FORD MOTOR CO.

- Measure the resistance between the PCM C175b-19, circuit 248 (TN/OG), harness side and ground; and between the PCM C175b-30, circuit 133 (BK), harness side and ground.

- **Are the resistances greater than 10,000 ohms?**

YES : INSTALL a new clockspring. REFER to **SUPPLEMENTAL RESTRAINT SYSTEM** article. DISCONNECT the battery. INSTALL the driver air bag module. REFER to **SUPPLEMENTAL RESTRAINT SYSTEM** article. CLEAR the DTCs. REPEAT the self-test.

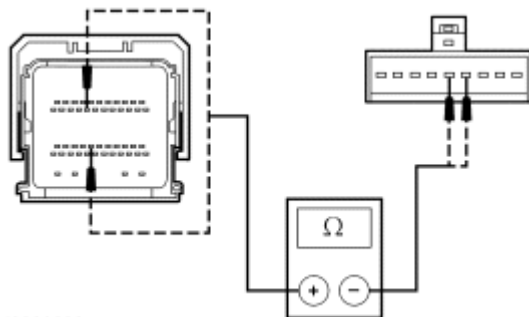
NO : REPAIR the circuit in question. INSTALL the driver air bag module. REFER to **SUPPLEMENTAL RESTRAINT SYSTEM** article. CLEAR the DTCs. REPEAT the self-test.

C7 CHECK THE SPEED CONTROL SWITCH CIRCUITRY FOR AN OPEN

- Measure the resistance between the PCM C175b-19, circuit 248 (TN/OG), harness side and the PCM C175b-30, circuit 133 (BK), harness side.
- **Is the resistance between 4,100 and 4,500 ohms?**
YES : Go to C10.
NO : Go to C8.

C8 CHECK CIRCUITS 248 (TN/OG) AND 133 (BK) FOR AN OPEN

- Disconnect: Clockspring C2274



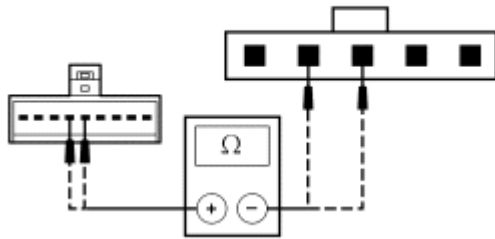
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Fig. 16: Measuring Resistance Between PCM C175B-19, Circuit 248 (TN/OG), Harness Side
Courtesy of FORD MOTOR CO.

- Measure the resistance between the PCM C175b-19, circuit 248 (TN/OG), harness side and the clockspring C2274-4, circuit 248 (TN/OG), harness side; and between the PCM C175b-30, circuit 133 (BK), harness side and the clockspring C2274-5, circuit 133 (BK), harness side.
- **Are the resistances less than 5 ohms?**
YES : Go to C9.
NO : REPAIR the circuit in question. CLEAR the DTCs. REPEAT the self-test.

C9 CHECK THE CLOCKSPRING

- Remove the driver air bag module. Refer to **SUPPLEMENTAL RESTRAINT SYSTEM** article.
- Disconnect: Upper Clockspring



N0012049

Fig. 17: Measuring Resistance Between Clockspring C2274 Pin 4, 5 & Upper Clockspring Connector Pin 2, 3

Courtesy of FORD MOTOR CO.

- Measure the resistance between the clockspring C2274 pin 4, component side and the upper clockspring connector pin 2, component side; and between the clockspring C2274 pin 5, component side and the upper clockspring connector pin 3, component side.

• Are the resistances less than 5 ohms?

YES : INSTALL a new speed control switch. REFER to Speed Control Switch. DISCONNECT the battery. INSTALL the driver air bag module. REFER to SUPPLEMENTAL RESTRAINT SYSTEM article. CLEAR the DTCs. REPEAT the self-test.

NO : INSTALL a new clockspring. REFER to SUPPLEMENTAL RESTRAINT SYSTEM article. DISCONNECT the battery. INSTALL the driver air bag module. REFER to SUPPLEMENTAL RESTRAINT SYSTEM article. CLEAR the DTCs. REPEAT the self-test.

C10 CHECK FOR CORRECT PCM OPERATION

- Disconnect all the PCM connectors.
- Check for:
 - corrosion
 - damaged pins
 - pushed-out pins
- Connect all the PCM connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.
- **Is the concern still present?**

YES : INSTALL a new PCM. REFER to ELECTRONIC ENGINE CONTROLS article. INSTALL the driver air bag module. REFER to SUPPLEMENTAL RESTRAINT SYSTEM article. TEST the system for normal operation.

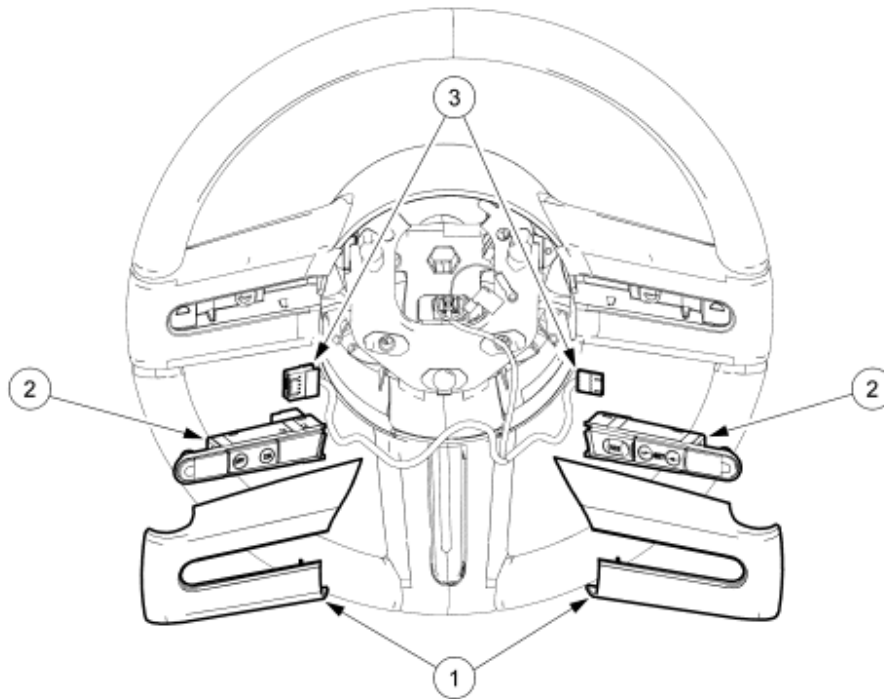
NO : The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. INSTALL the driver air bag module. REFER to SUPPLEMENTAL RESTRAINT SYSTEM article. CLEAR the DTCs. REPEAT the self-test.

REMOVAL AND INSTALLATION

SPEED CONTROL SWITCH

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N0012207

Fig. 18: Exploded View Of Speed Control Switch
Courtesy of FORD MOTOR CO.

Item	Part Number	Description
1	3F830	Steering wheel spoke finish panels (if equipped)
2	9E740	Speed control switches
3	-	Speed control switch electrical connectors

REMOVAL AND INSTALLATION

1. Remove the driver air bag module. For additional information, refer to **SUPPLEMENTAL RESTRAINT SYSTEM** article.

NOTE: Carefully grasp and pull the edges to remove the steering wheel spoke finish panels.

2. If equipped, remove the steering wheel spoke finish panels.

NOTE: Using a small, flat-bladed screwdriver, gently pry up the speed control switches from the steering wheel, beginning at the outer edge. Use care not to damage the steering wheel.

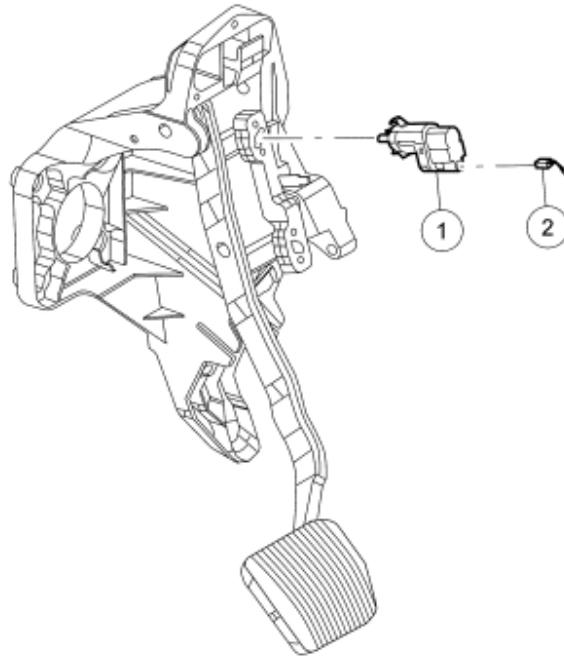
3. Remove the speed control switches.

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- Disconnect the electrical connectors.
4. To install, reverse the removal procedure.

SPEED CONTROL DEACTIVATOR SWITCH



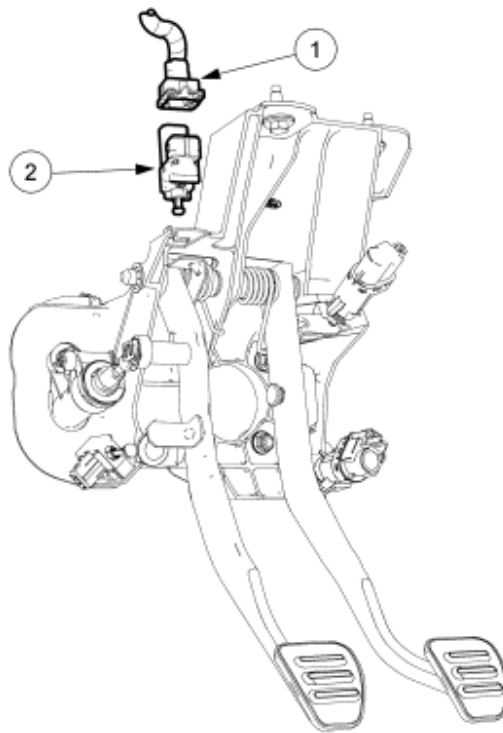
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Fig. 19: Exploded View Of Speed Control Deactivator Switch - Brake Pedal
Courtesy of FORD MOTOR CO.

Item	Part Number	Description
1	9C872	Speed control deactivator switch
2	-	Speed control deactivator switch electrical connector

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N0012208

Fig. 20: Exploded View Of Speed Control Deactivator Switch - Clutch Pedal
Courtesy of FORD MOTOR CO.

Item	Part Number	Description
1	-	Speed control deactivator switch electrical connector
2	7C534	Speed control deactivator switch

REMOVAL AND INSTALLATION

CAUTION: Do not press, pull or otherwise move the brake pedal while removing or installing the speed control deactivator switch. The switch must be installed with the booster push rod attached to the brake pedal and with the brake pedal in the at-rest position. Installing the switch with the brake pedal in any other position results in incorrect adjustment and damage to the switch.

NOTE: This procedure is for both speed control deactivator switches.

CAUTION: The switch plunger must be compressed for the switch to rotate in the bracket. Attempting to remove the switch with the plunger extended (during brake pedal apply) results in damage to the switch.

1. Remove the speed control deactivator switch.
 - Disconnect the electrical connector.

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- Rotate the speed control deactivator switch counterclockwise 45 degrees and remove the deactivator switch.

NOTE: When installing the speed control deactivator switch, it is automatically self-adjusting to the proper position. Do not pull up or push down on the pedal during installation. Initial installation of the speed control deactivator switch allows for one adjustment. If additional adjustments are necessary, install a new switch.

2. To install, reverse the removal procedure.