Speed Sentinel™

Programmable Road Speed Limiter

SS531-A, SS531-AX, SS531-AND

Ford E Series 2005-2012

Ford F Series 2008-2010

Ford Crown Victoria 2005-2008

Contact InterMotive for specific engine applications.

USER GUIDE

- ◆ Vehicle speed can be set from 10-80 mph.
- ◆ Maximum engine output up to set speed.
- ◆ Flexible – speed setting can be changed.
- ◆ "Plug & Play" installation – installs in a few minutes.
- ◆ Dynamic Load Response – adjusts for varying road terrains.
- ◆ Optional Engine Idle Function – forces engine to stay in idle mode as a theft deterrent.
- ◆ Available electronic override for Emergency Vehicles.

Table of Contents

1. System Overview

Speed Sentinel is a programmable road speed limiter for Ford vehicles. Speed Sentinel is a micro-processor controlled unit that limits maximum vehicle speed but does not limit maximum engine output.

Speed Sentinel interfaces with the vehicle through the use of "Plug & Play" connectors that plug directly into the vehicle's factory OEM connectors. This method of installation reduces the installation time and improves the connection reliability.

Speed Sentinel has been designed with internal safeguards to insure the safe operation of the vehicle. If it senses any unsafe or unknown condition it automatically reverts back to full driver control.

2. Installation Instructions

WARNING
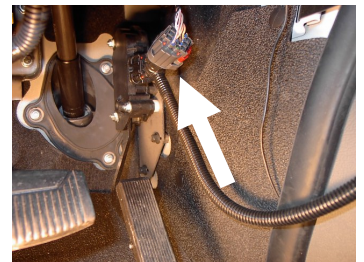Disconnect the battery to prevent setting a check engine light.

Remove the lower dash panel below the steering column area and find a suitable location to mount the Speed Sentinel module. Do not mount the module until all wire harnesses are routed and secure. (Last step of installation is to mount the module.)

2.1. Accelerator Pedal T– Harness

- To prevent setting a check engine light, the battery must be disconnected.
- Locate the accelerator pedal. (APP)
- Remove the OEM connector by sliding back the red safety lock, push in the connector locking tab and separate the connector from the pedal assembly.
- Install the Speed Sentinel II T-harness between the Accelerator Pedal Position sensor (APP) and the OEM APP connector.
- Ensure that the red sliding lock is fully seated in the locked position on both connectors.
- Secure the harness to prevent contact with the driver's foot.
- Attach the 8-Pin connector from the Pedal harness to the Control Module in the cavity labeled "Pedal".

2.2. LED Display Panel

- Locate a suitable position on the dashboard, within view of the driver, for the mounting of the LED Display Panel. It must be within 36 inches of the module and allow room for the LED harness installation.

- Drill a ¾" hole in the dashboard where the center of the display will be. Attach one end of the LED harness to the Control Module in the cavity labeled "Display".

- Run the other end of the harness under the dash and out through the ¾" hole. Attach the end of the display harness to the Display Panel. Ensure panel is level and secure using the supplied screws.

Note: The SS531-AX Does not include the LED Display Panel.

2.3. Data Link Harness (SS531-A and SS531-AX systems only)

- Locate the vehicle OBD II Data Link Connector. It will be mounted below the lower dash panel.

- Remove the mounting screws for the OEM Data Link Connector.

- Plug the red connector from the Speed Sentinel Data Link T- Harness into the vehicle Data Link Connector.

- Ensure the connection is fully seated and secure with the supplied wire tie.

- Mount the black connector from the Speed Sentinel Data Link Harness in the former location of the OEM connector.

- Attach the black ground wire with eyelet to a chassis ground.

- Secure the Data Link Harness so that it does not hang below the lower dash panel.

- Plug the 6-pin connector from the Data Link Harness into the "Data Link" connector on the control module.

Note: The SS531-AND Does not include the Data Link Harness.

The Dual Data GTWY/SSII Harness must be used with the SS531-AND.

Contact Intermotive for specific applications.

2.4. Dual Data GTWY/SSII Harness (SS531-AND system only)

- Unplug the 6-Pin Gateway Data Link connector from the Gateway Module.

- Plug the 6-Pin Gateway Data Link connector into the 6-Pin Female connector on the Dual Data GTWY/SSII Harness.

- Plug the 6-Pin Male connector (Short Lead) on the Dual Data GTWY/SSII harness into the "Data Link" connector on the Gateway Module.

- Plug the 6-pin Male connector (Long Lead) from the Data Link Harness into the "Data Link" connector on the Speed Sentinel control module.

2.5. Without Cruise Control Inhibit (Vehicle not equipped with cruise control)

- If the vehicle does not have cruise control, continue to step 2.7.

## 2.6. Cruise Control Inhibit (Vehicle equipped with cruise control)

Ford E Series 2005-2009

- Locate the brown 6-pin Ford connector (C218B) on the lower right side of the steering column.

- Find the light blue/black wire in pin #6 (2006-09) or pin #4 (2005) (Ford Circuit #151).

- Parallel tap, using solder and heat shrink tubing, the brown wire from the 8-pin "Auxiliary" connector to this circuit. Route and secure the brown wire.

- Insert the 8-pin Auxiliary connector into the module in the cavity labeled "Auxiliary".
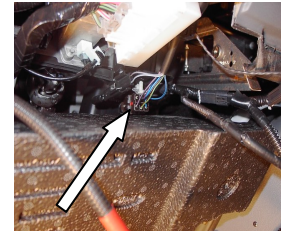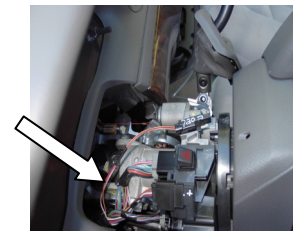

Ford E-Series (2010-2012)

- Locate the gray 10-pin Ford connector (C218B) on the lower right side of the steering column.

- Find the white wire in pin #3.

- Attach the brown wire from the 8-pin "Auxiliary" connector to this circuit as a parallel tap using solder and heat shrink tubing.

- Route and secure the brown wire.

- Insert the 8-pin Auxiliary connector into the Speed Sentinel module in the cavity labeled "Auxiliary".
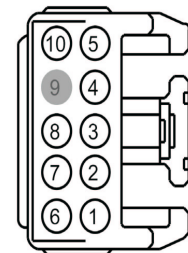
Connector C218B

Crown Victoria 2005-2008

- Remove both upper and lower steering column finish covers.
- Locate Ford connector (C218A).
- Find the light blue/black wire in pin #13 (Ford Circuit #151).
- Parallel tap, using solder and heat shrink tubing, the brown wire from the 8-pin "Auxiliary" connector to this circuit. Route and secure the brown wire.
- Insert the 8-pin Auxiliary connector into the module in the cavity labeled "Auxiliary".

Ford F Series 2008-2009

- Remove both upper and lower steering column finish covers.
- Locate the black 16-pin Ford connector (C218A) on the upper left side of the steering column. Find the White wire in pin #15.
- Parallel tap, using solder and heat shrink tubing, the brown wire from the 8-pin "Auxiliary" connector to this circuit. Route and secure the brown wire.
- Insert the 8-pin Auxiliary connector into the module in the cavity labeled "Auxiliary".

Connector: C218A Description: CLOCKSPRING
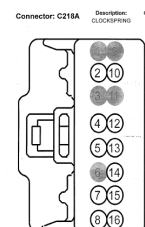
2.7. Optional Input System Operation

The activation of a chosen equipment (i.e. PTO) installed on the vehicle will activate the Speed Sentinel. With deactivation of the chosen equipment, the Speed Sentinel system will not function.

Optional Input Installation Instructions

- Connect the Auxiliary harness connector Pin #7 Blue wire lead to the chosen equipment output that will apply 12V to the "Auxiliary" connector Pin #7 when the chosen equipment is activated.
- Insert the 8-pin Auxiliary connector into the module in the cavity labeled "Auxiliary".

With deactivation of chosen equipment the Speed Sentinel system will not activate!

2.8 Optional Switch Controlled Settings (Preprogrammed by InterMotive)

- Optional Forced Engine Idle Function – Flip an operator installed switch and Speed Sentinel forces the engine to stay in idle mode as a theft deterrent.
- System controlled electronic override of Speed Sentinel is available for Emergency Vehicles when in code 3 mode.

Contact InterMotive for the installation and activation of:
- Forced Idle Function (Forces engine to stay at idle during vehicle theft).
- Electronic Override (For emergency vehicles when operating in Code 3 mode).

2.9. Set Vehicle Speed Limit

- Remove the lid of the Speed Sentinel module. With power disconnected from the module, locate the rotary switch and adjust the speed limit according to the chart shown below.

⚠ WARNING ⚠

The Speed Sentinel II control module must be disconnected from the vehicle battery power during rotary switch adjustment.
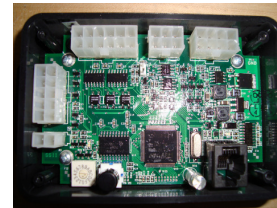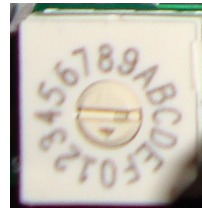
0* = 55mph (factory default setting)	8 = 45mph
1 = 10mph	9 = 50mph
2 = 15mph	A = 55mph
3 = 20mph	B = 60mph
4 = 25mph	C = 65mph
5 = 30mph	D = 70mph
6 = 35mph	E = 75mph
7 = 40mph	F = 80mph

* Speed Limit can be adjusted in 1 mph increments. Please contact InterMotive for programming information.

Reconnect the Battery!!

4. Final Steps

- Connect a scan tool and check for diagnostic trouble codes (DTC's). If codes are present, document the codes and clear all DTC's prior to delivery of vehicle.

- Mount and secure the Speed Sentinel module, reinstall all removed panels, and perform post installation test.

5. Post Installation Instructions

The following checks must be performed prior to releasing the vehicle to the driver.

- Test drive the vehicle to verify proper Speed Sentinel operation. The Speed Sentinel must limit vehicle speed at the preset speed limit and pass the following steps:

- When the Speed Sentinel engages (green LED will illuminate) and the vehicle speed is limited, press the accelerator pedal to wide-open throttle and verify that vehicle speed has been limited.

- Ensure that the preset speed is set to the desired limit (See Section 2.9 of the installation instructions for the adjustment procedure).

- Check passing mode operation by going from wide-open throttle to closed throttle three times in a three-second span. The Speed Sentinel passing mode will allow a temporary override of speed limiting. The override lasts for 10 seconds then resumes limiting vehicle speed. If enabled, the green LED will flash once after prove out. Passing mode is optional and may be removed by contacting InterMotive Technical Support.

- If the vehicle has cruise control, check the cruise control operation and inhibit. Verify that cruise control is operational when vehicle speed is below the limited speed and not operational during speed limiting.

- Verify that the check engine light has not been set. (Turning the ignition switch to the "on" position with the accelerator pedal unplugged during installation will set a check engine light).

Submit product registration at www.intermotive.net.

If the Speed Sentinel fails any step in the post installation test,
review the installation instructions and check all connections. If necessary, call

InterMotive technical support @ (530) 823-1048.

6. Speed Sentinel Operating Instructions

The Speed Sentinel is a road speed limiter, which limits maximum vehicle speed to a preset limit. Once the driver attains the limited speed, any additional input on the throttle pedal will not increase the speed of the vehicle. If the throttle is pushed beyond the maximum speed, the Speed Sentinel will maintain the preset speed.

The Speed Sentinel will maintain vehicle speed on varying terrain, much like a cruise control. However, while coasting down hills, the vehicle can exceed the limit since Speed Sentinel II does not apply the vehicle brakes. When the Speed Sentinel reaches the limited speed, the green LED (limit) on the LED Display will illuminate to show that maximum speed has been achieved. If the red LED is illuminated, a fault code is present and should be reported to the fleet manager.

The Speed Sentinel has an optional passing mode, which allows for a short-time override of the limited speed (use in passing at critical moments). Verify that the Speed Sentinel is or is not programmed with passing mode. To verify passing mode is programmed, an extra "blink" on the green LED during prove out indicates passing mode is programmed. Passing mode is entered by going from wide-open throttle to idle three times in a three second span. The override lasts for 10 seconds then resumes limited vehicle speed.

The Speed Sentinel also has a mode that will return the engine to base idle if the service brake is applied at the same time as the accelerator pedal. This mode will only activate while the Speed Sentinel is limiting vehicle speed. To remove Speed Sentinel from this mode: Release and reapply the accelerator pedal to reactivate control of the accelerator pedal.

7. Checking Speed Sentinel for Diagnostic Trouble Codes

- If the Speed Sentinel has a stored fault code, the "fault" LED will blink twice a second and codes can be retrieved by entering diagnostic mode.

- If the Speed Sentinel requires calibration with the vehicle, the "fault" LED will blink on for two seconds and off for a half second. See Section 3 for accelerator pedal calibration.

- If the Speed Sentinel has an internal programming fault, the "fault" LED will blink on/off rapidly. Call InterMotive for assistance.

Note: The SS531-AX Does not include the LED Display Panel. Fault Codes can be read at the module by pressing and releasing the calibration button and reading the Fault LED.

Yellow "Diag"   Fault LED
Button

Calibration   Fault LED
Button
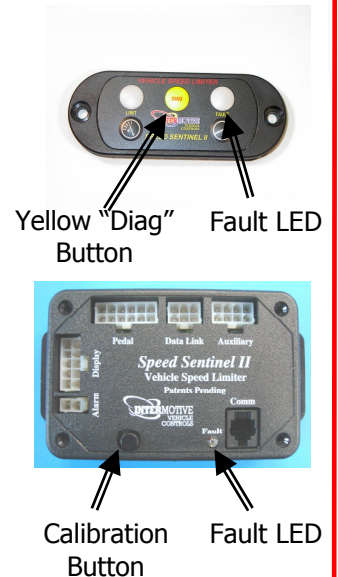
Operating Instructions (Continued)

8. Entering Diagnostic Mode

- Diagnostic mode is entered by pressing and releasing the yellow "diag" button on the LED display. Once in diagnostic mode, all codes will be displayed by the blinking "fault" LED.

- The codes will be displayed as blink codes. For example, if there is 1 blink, a short pause, and then 2 blinks, the code is 1 2. These two sets of blinks are combined to form the code.

- A zero will have no blink, so when the vehicle is safe (ready to be active) it will blink once every three seconds. Diagnostic codes will change depending on the safe status of the vehicle.
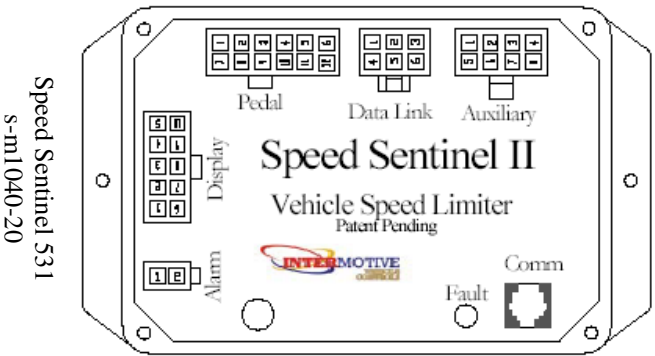
Clearing codes:

- Place the vehicle in Park.
- Press the yellow "Diag" button and at the same time pump the service brake three times.

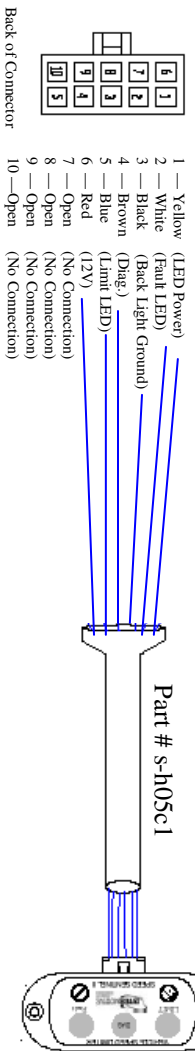| LED Code	Terminal Code	VSS state	Drive Train state	Service Brake state
1 - 0	10	> 0	In Drive	Not applied
1 - 1	11	> 0	In Drive	Applied
1 - 2	12	> 0	Not In Drive	Not applied
1 - 3	13	> 0	Not In Drive	Applied
1 - 4	14	= 0	In Drive	Not applied
1 - 5	15	= 0	In Drive	Applied
1 - 6	16	= 0	Not In Drive	Not applied
1 - 7	17	= 0	Not In Drive	Applied
1 - 8	18	> 0	In Drive	Not applied
1 - 9	19	> 0	In Drive	Applied
1 - 10	1A	> 0	Not In Drive	Not applied
1 - 11	1B	> 0	Not In Drive	Applied
1 - 12	1C	= 0	In Drive	Not applied
1 - 13	1D	= 0	In Drive	Applied
1 - 14	1E	= 0	Not In Drive	Not applied
1 - 15	1F	= 0	Not In Drive	Applied

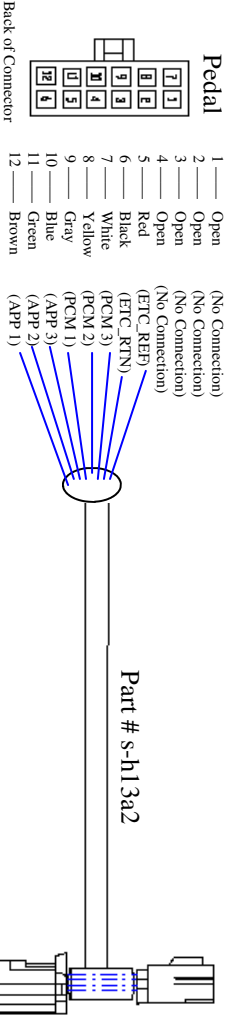***Contact InterMotive for assistance with codes and diagnostics of the Speed Sentinel.***
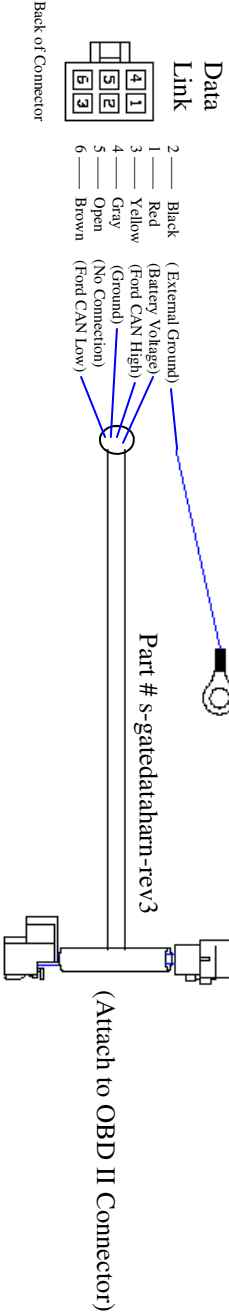
9. Schematic

Speed Sentinel 531
s-m1040-20

Speed Sentinel II
Vehicle Speed Limiter
Patent Pending
INTERMOTIVE
Pedal | Data Link | Auxiliary
Display
Alarm | Fault | Comm

(SS531-A and SS531-AND Models only)

Display
Back of Connector

1 — Yellow (LED Power)
2 — White (Fault LED)
3 — Black (Back Light Ground)
4 — Brown (Diag.)
5 — Blue (Limit LED)
6 — Red (12V)
7 — Open (No Connection)
8 — Open (No Connection)
9 — Open (No Connection)
10 — Open (No Connection)

Part # s-h05c1
(Attach to Accelerator Pedal Assembly)

Pedal
Back of Connector

1 — Open (No Connection)
2 — Open (No Connection)
3 — Open (No Connection)
4 — Open (No Connection)
5 — Red (ETC_REF)
6 — Black (ETC_RTN)
7 — White (PCM 3)
8 — Yellow (PCM 2)
9 — Gray (PCM 1)
10 — Blue (APP 3)
11 — Green (APP 2)
12 — Brown (APP 1)

Part # s-h13a2
(Attach to OBD II Connector)

Data Link
Back of Connector

2 — Black (External Ground)
1 — Red (Battery Voltage)
3 — Yellow (Ford CAN High)
4 — Gray (Ground)
5 — Open (No Connection)
6 — Brown (Ford CAN Low)

Part # s-gatedataharn-rev3
(Attach to Good Chassis Ground)

Auxiliary
Back of Connector

1 — Open (No Connection)
2 — Open (No Connection)
3 — Open (No Connection)
4 — Open (No Connection)
5 — Brown (No Connection)
6 — Open (No Connection)
7 — Blue (No Connection)
8 — Open (No Connection)

Part # s-h16c1
(Attach to Cruise Control Switch Circuit)
(Chosen equipment output that will apply 12v when equipment activated.)

SS531-A-061517-CAD