with Installation Instructions

Owner's Manual

Banks Derringer® Tuner

2014-2018 3.0L EcoDiesel Ram 1500
2014-2018 3.0L EcoDiesel Jeep Grand Cherokee

THIS MANUAL IS FOR USE WITH SYSTEM 66671, 66672, 66681 & 66794

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Installation Support: (888) 839-2700

bankspower.com

07/15/2020 **PN 97282** v.5

General Installation Practices

Dear Customer,

If you have any questions concerning the installation of your Banks Techni-Cooler, please call our Technical Service Hotline at (888) 839-2700 between 7:00 am and 4:00 pm (PT). If you have any questions relating to shipping or billing, please contact our Customer Service Department at (888) 839-5600.

Thank you.

1. Before starting work, familiarize yourself with the installation procedure by reading all of the instructions.

2. The exploded views (**Pages 6-9**) provides only general guidance. Refer to each step and section diagram in this manual for proper instruction.

3. Throughout this manual, the left side of the vehicle refers to the driver's side, and the right side to the passenger's side.

4. Disconnect the negative (ground) cable from the battery (or batteries, if there are more than one) before beginning work. The OEM battery clamp can be removed using a 10mm socket or wrench.

5. Route and tie wires and hoses a minimum of 6" away from exhaust heat, moving parts and sharp edges. Clearance of 8" or more is recommended where possible.

6. During installation, keep the work area clean. Do not allow anything to be dropped into intake, exhaust, or lubrication system components while performing the installation, as foreign objects will cause immediate engine damage upon start-up.

CAUTION! Do not use floor jacks to support the vehicle while working under it. Do not raise the vehicle onto concrete blocks, masonry or any other item not intended specifically for this use.

7. During installation, keep the work area clean. Do not allow anything to be dropped into intake, exhaust, or lubrication system components while performing the installation, as foreign objects will cause immediate engine damage upon start-up.

TOOLS REQUIRED:

- Metric sockets and wrenches
- Hooked Pick
- Diagonal (side cutter) Pliers
- Exacto knife or other small bladed knife
- Drill motor*
- #31 (.1200 dia.) Drill bit*
- #1 or 7/32 (.228 dia.) Drill bit*

*Required only if mounting switch in dash

Highly recommended tools and supplies:

- Standard and Phillips screwdrivers
- Silicon sealer (black or clear recommended)
- Metal coat hanger

Table of Contents

Disclaimers

THIS IS A HIGH PERFORMANCE PRODUCT. USE AT YOUR OWN RISK. Do not use this product until you have carefully read the following agreement.

This sets forth the terms and conditions for the use of this product. The installation of this product indicates that the BUYER has read and understands this agreement and accepts its terms and conditions.

Disclaimer of Liability

Gale Banks Engineering Inc., and its distributors, employees, and dealers (hereafter "***SELLER***") shall in no way be responsible for the product's proper use and service. The ***BUYER*** hereby waives all liability claims.

The ***BUYER*** acknowledges that he/ she is not relying on the ***SELLER***'s skill or judgment to select or furnish goods suitable for any particular purpose and that there are no liabilities which extended beyond the description on the face hereof and the ***BUYER*** hereby waives all remedies or liabilities, expressed or implied, arising by law or otherwise, (including without any obligations of the ***SELLER*** with respect to fitness, merchantability, and consequential damages) whether or not occasioned by the ***SELLER***'s negligence.

The ***BUYER*** is responsible to fully understand the capability and limitationsof his/her vehicle according to manufacturer specifications and agrees to hold the ***SELLER*** harmless from any damage resulting from the failure to adhere to such specifications.

The ***SELLER*** disclaims any warranty and expressly disclaims any liability for personal injury or damages. The ***BUYER*** acknowledges and agrees that the disclaimer of any liability for personal injury is a material term for this agreement and the ***BUYER*** agrees to indemnify the ***SELLER*** and to hold the ***SELLER*** harmless from any claim related to the item of the equipment purchased.

Under no circumstances will the ***SELLER*** be liable for any damages or expenses by reason of the use or sale of any such equipment.

The ***BUYER*** is responsible to obey all applicable federal, state, and local laws, statutes, and ordinances when operating his/her vehicle, and the ***BUYER*** agrees to hold ***SELLER*** harmless from any violation thereof.

The ***SELLER*** assumes no liability regarding the improper installation or misapplication of its products. It is the installer's responsibility to check for proper installation and if in doubt, contact the manufacturer.

The ***BUYER*** is solely responsible for all warranty issues from the automotive manufacturer.

Limitation of Warranty

Gale Banks Engineering Inc. (hereafter "***SELLER***"), gives Limited Warranty as to description, quality, merchantability, fitness for any particular purpose, productiveness, or any other matter of ***SELLER***'s product sold herewith. The ***SELLER*** shall be in no way responsible for the product's open use and service and the ***BUYER*** hereby waives all rights except those expressly written herein. This Warranty shall not be extended or varied except by written instrument signed by ***SELLER*** and ***BUYER***. Please see enclosed warranty information card, or go to www.bankspower.com/warranty, for warranty information regarding your product. All products that are in question of Warranty must be returned shipping prepaid to the ***SELLER*** and must be accompanied by a dated proof of purchase receipt. All Warranty claims are subject to approval by Gale Banks Engineering Inc.

Under no circumstance shall the ***SELLER*** be liable for any labor charged or travel time incurred in diagnosis for defects, removal, or reinstallation of this product, or any other contingent expense.

Under no circumstances will the ***SELLER*** be liable for any damage or expenses incurred by reason of the use or sale of any such equipment.

IN THE EVENT THAT THE BUYER DOES NOT AGREE WITH THIS AGREEMENT:

The ***BUYER*** may promptly return this product, in a new and unused condition, with a dated proof-of-purchase, to the placeof-purchase within thirty (30) days from date-of-purchase for a full refund, less shipping and/or restocking fee.

The installation of this product indicates that the ***BUYER*** has read and understands this agreement and accepts its terms and conditions.

Derringer Hardware Differences

The Derringer is produced in two difference form factors.

GENERATION 1 (PN 61312) is an overmolded design with a pigtail 8-pin connector.

GENERATION 2 (PN 61313) is housed in a hard plastic case with an integrated 12-pin connector. The function and operation and capability of the GENERATION 1 Derringer and GENERATION 2 Derringer are identical; just the looks and feel of the module have been revised.

NOTE: The images shown in this manual are for installation of a GENERATION 1 Derringer. The process for installing the GENERATION 2 is identical.

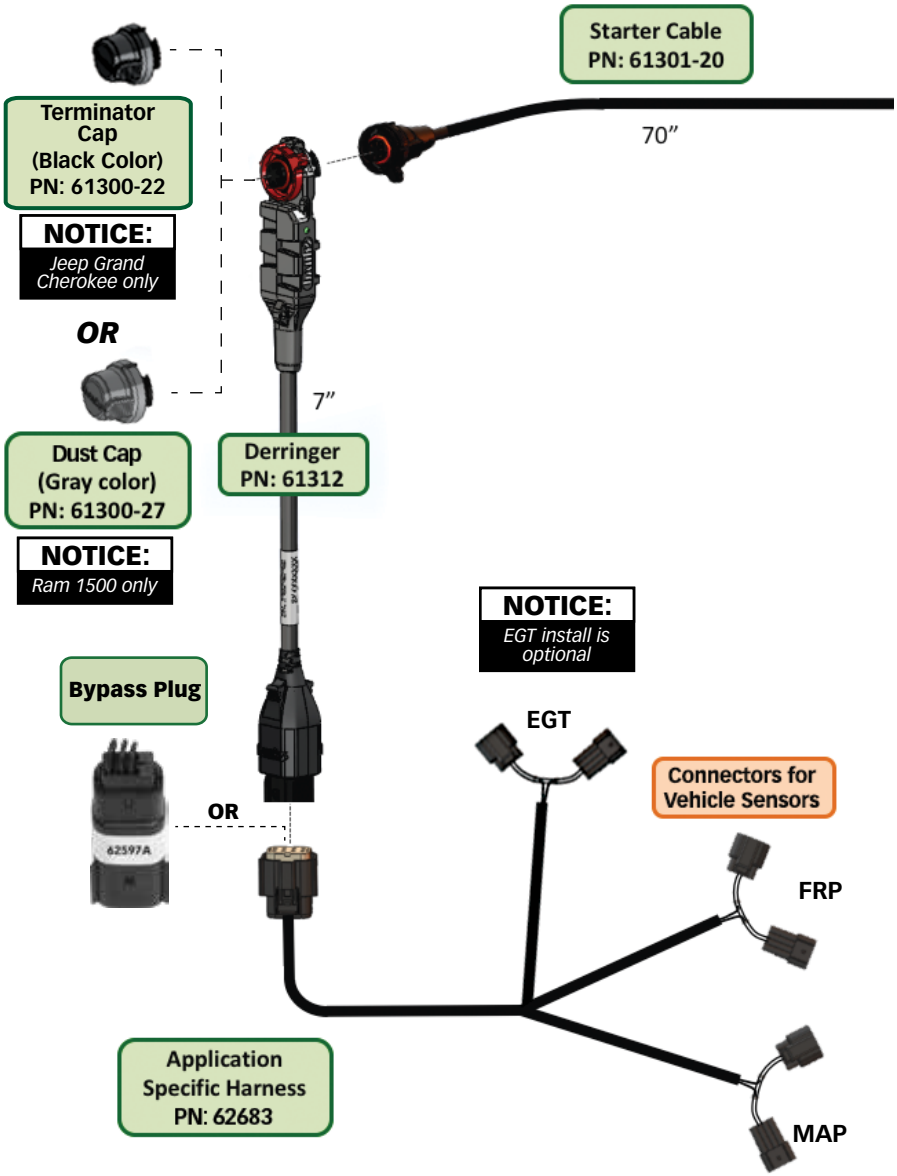
GENERATION 1 (PN 61312)

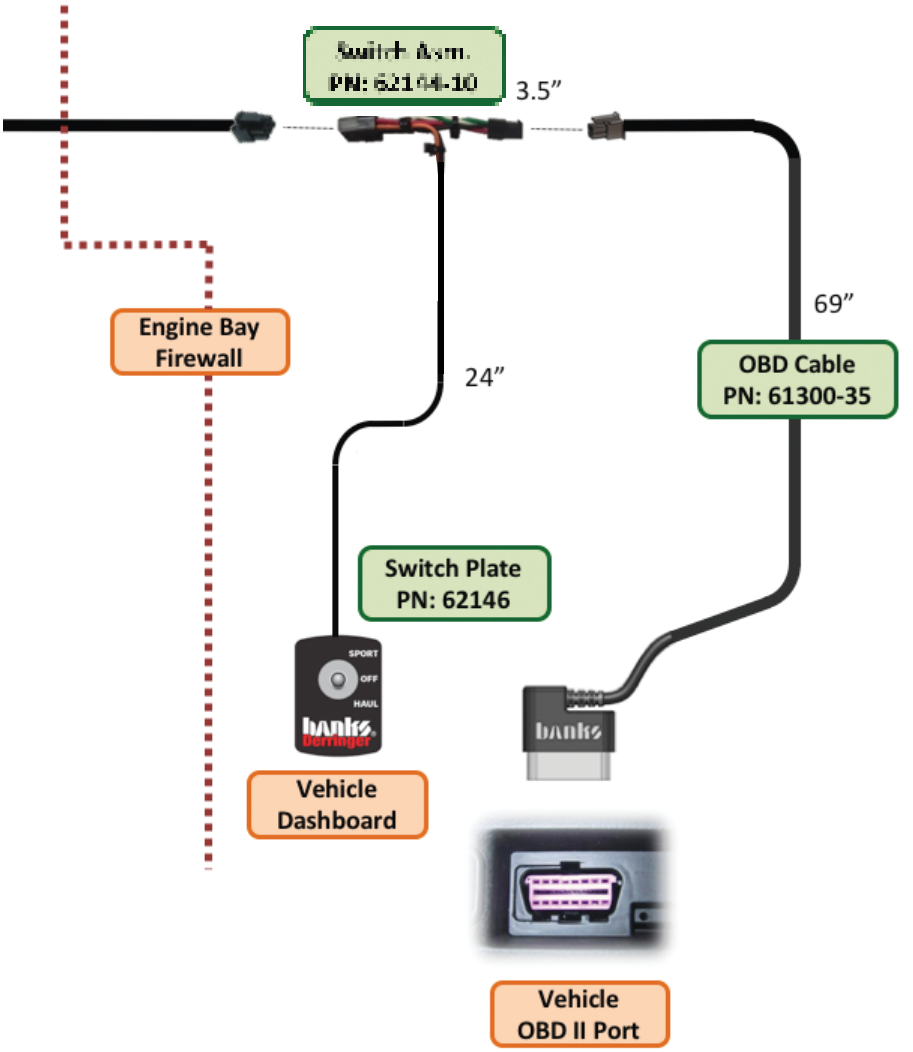
GENERATION 2 (PN 61313)

SECTION 1.0

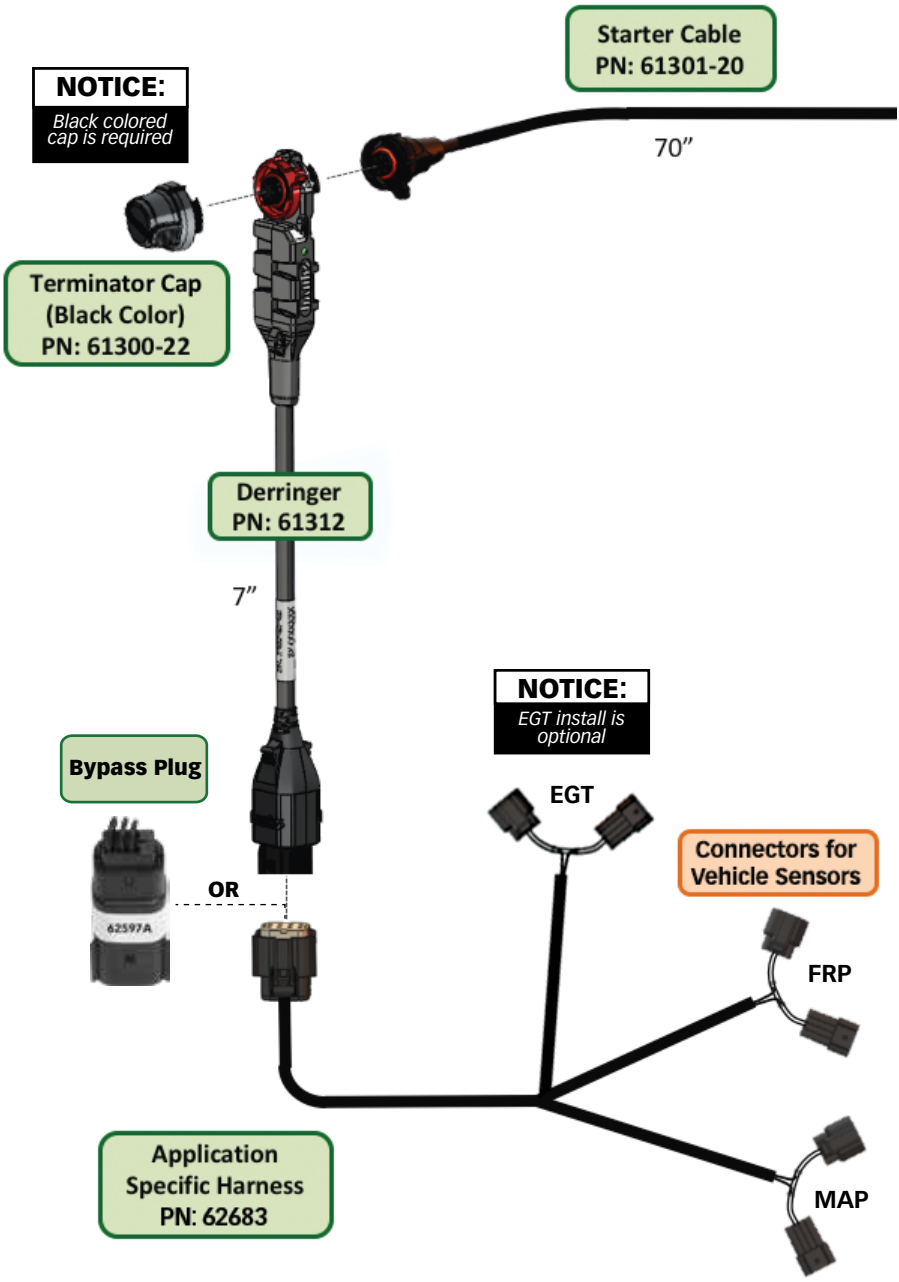
Installation of Wire Harness and Derringer Tuner

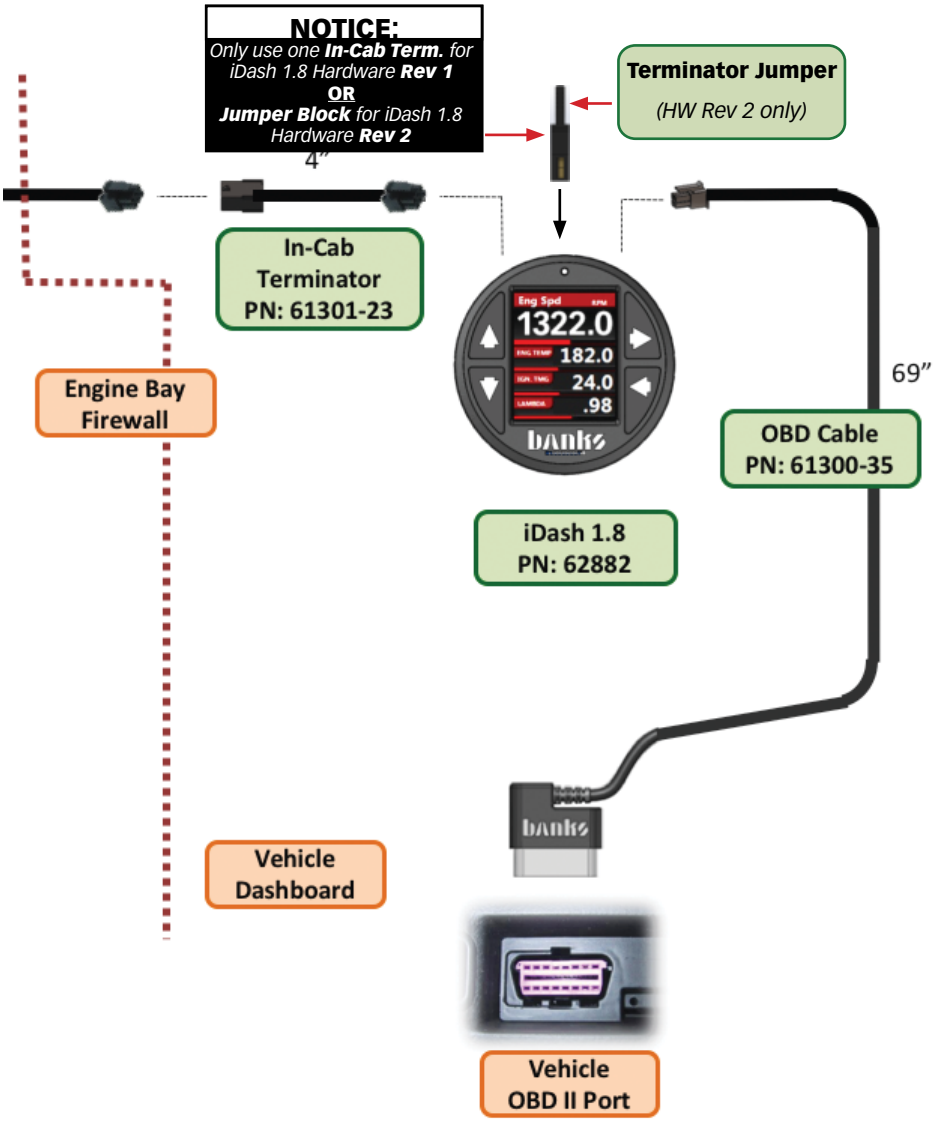
Wiring Diagram:
Stand Alone/Switch Tuner Configuration




Switch Asm.
PN: 62144-10
3.5”
Engine Bay
Firewall
24”
69”
OBD Cable
PN: 61300-35
Switch Plate
PN: 62146
SPORT
OFF
HAUL
Vehicle
Dashboard
Vehicle
OBD II Port

Wiring Diagram:
iDash 1.8" Configuration




NOTICE:
Only use one In-Cab Term. for iDash 1.8 Hardware Rev 1
OR
Jumper Block for iDash 1.8 Hardware Rev 2
Terminator Jumper
(HW Rev 2 only)
4"
In-Cab Terminator PN: 61301-23
Engine Bay Firewall
Eng Spd
1322.0
182.0
24.0
.98
banks
69"
OBD Cable PN: 61300-35
iDash 1.8 PN: 62882
banks
Vehicle Dashboard
Vehicle OBD II Port

Section 1

INSTALLATION OF WIRING HARNESS, CONNECTIONS & DERRINGER TUNER

1. Disconnect the battery ground cables from each battery (if so equipped). Secure the cables so that they do not come in contact with the battery posts during the installation.

2. Remove the engine cover for:

a. The Ram 1500, by first removing the oil filler cap. Then, lift up at the front to release the rubber socket mounts and pull forward to release from rear mounts. Reinstall oil filler cap. See ***Figure 1***.

b. The Jeep Grand Cherokee, by lifting up at each corner to release the rubber socket mounts. See ***Figure 2***.

NOTICE: *If installing in a Jeep Grand Cherokee, skip steps 3 and 4 and proceed to step 5.*

Figure 1

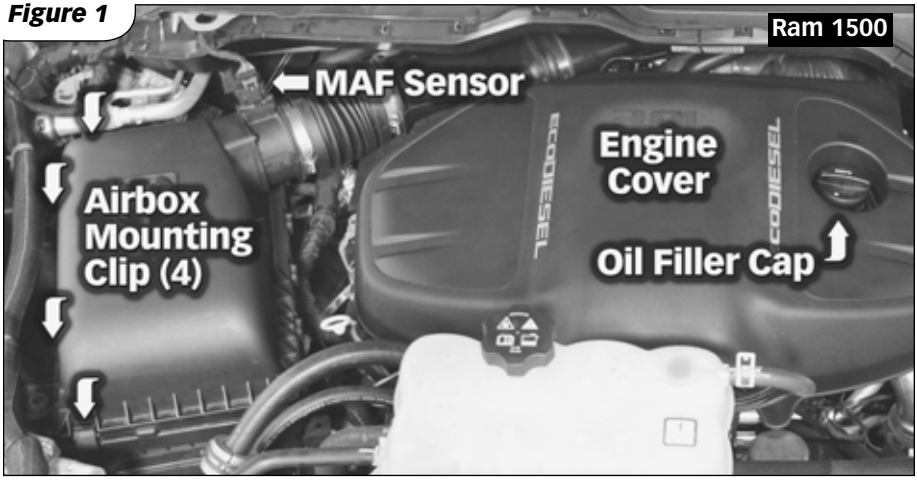


Figure 2

3. Disconnect the Mass Air Flow (MAF) sensor connector by first lifting up on the red lock slider until it releases, then depress the connector latch and lift the connector away from the sensor.

4. Remove the airbox and intake duct by first loosening the compressor inlet duct hose clamp at the compressor (see ***Figure 3***) - 5/16 socket, extensions, ratchet. Unhook each of the latches securing the airbox lid to the airbox, lift up on the outer edge of the airbox cover to release the finger catches, then lift up on the intermediate plastic tube / silencer to disengage it from the rubber mount and remove the assembly from the vehicle. See ***Figure 4***.

NOTICE: *Cover the compressor inlet & air filter with clean rags to prevent foreign objects from accidentally entering the induction system while installing the Derringer tuner.*

Figure 3

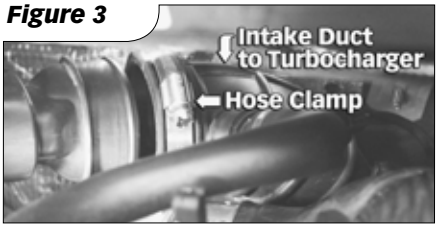
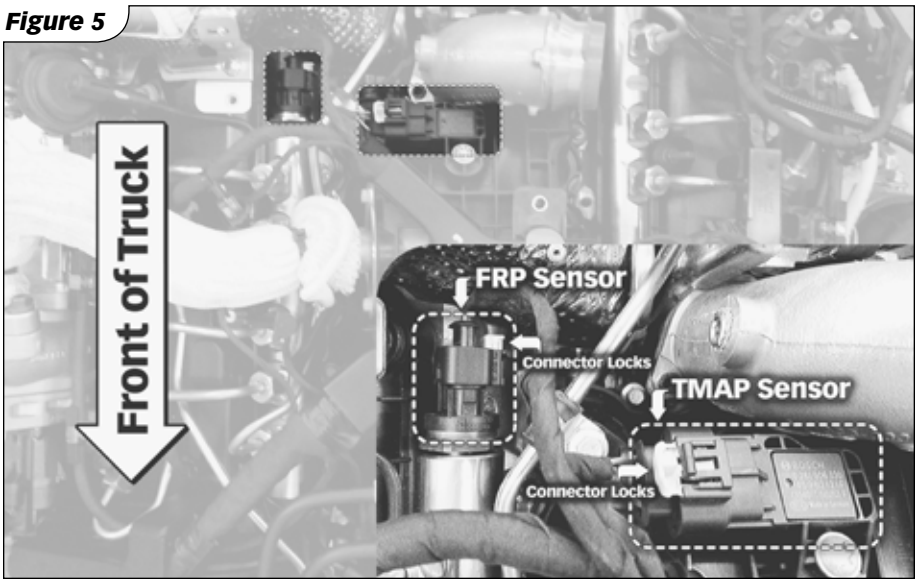


Figure 4

5. Remove the black acoustic foam covering the passenger side camshaftcover and EGR cooler outlet pipe. See ***Figure 4***.

6. Locate the Fuel Rail Pressure (FRP) sensor and Temperature / Manifold Absolute Pressure (TMAP) Sensor. See ***Figure 5***.

Figure 5



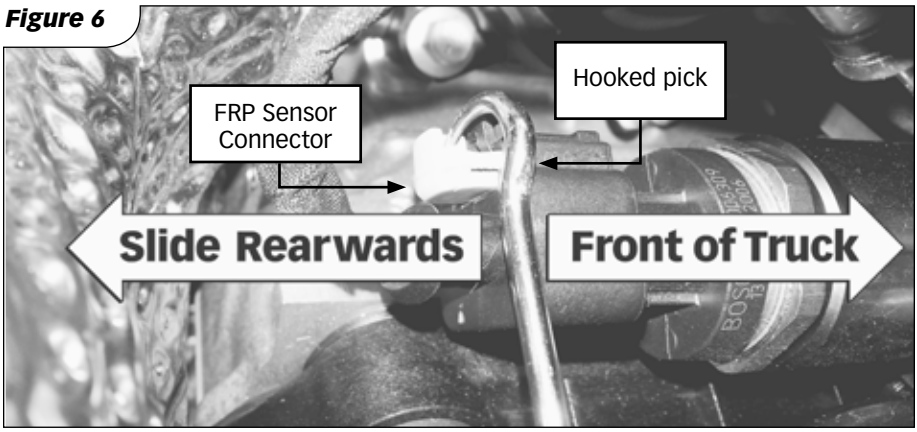
7. For each connector, slide the yellow connector lock away from the sensor body, then depress the connector latch and slide the connector off the sensor.

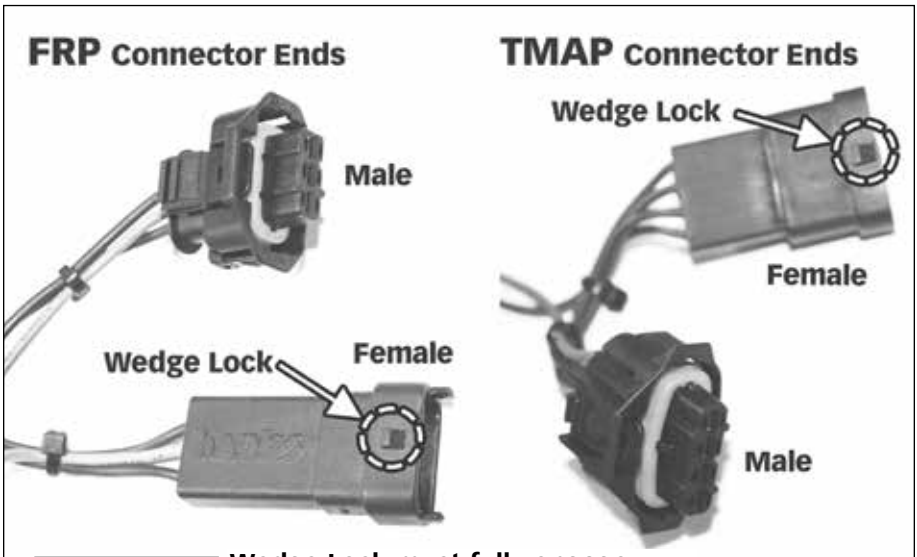
NOTE: *the FRP sensor connector latch may not be visible from above - due to variations in installation of the FRP sensor, it may be necessary to slide the connector latch toward the rear of the vehicle using a hooked pick to reach underneath the connector.* See ***Figure 6***.

NOTICE: *On some factory connectors depressing the latch may not fully disengage the connector from the sensor body. Gently inserting a pick or small flat blade screwdriver underneath the leading edge of the latch while depressing will aid release.*

8. Locate the Derringer Sensor harness (PN 62683) and identify the connectors. See ***Figure 7***.

Figure 6





NOTICE: **Wedge Lock must fully engage locking latch on factory harness.**

Figure 7

Passenger side underneath

9. Connect the male ends of both the FRP and TMAP Derringer harness to the sensors on-engine. Pay specific attention to the connector latch orientation and engagement, making sure that the connector fully engages the sensor and latches in place. Check each connection by pulling firmly on the connector body after latching.

NOTE: *that the male Derringer harness connectors do not use a sliding connector lock, only a latch.*

⚠CAUTION: Pay specific attention to the orientation of Female TMAP connector in the following step. Damage can result with improper connection. Wedge lock on female TMAP connector (Derringer Harness) must be oriented on same side as connector locking latch and yellow lock (OEM Engine Harness).

10. Connect the female ends of both the FRP and TMAP Derringer harness to the factory harness, again making sure that the connector bodies are oriented properly and latch securely when connected. Slide the factory harness connector locks into place, and confirm that the connections are secure by tugging firmly on either side of the junction. Secure the harness connectors to the engine with supplied zipties.

11. Secure the Derringer harness to the factory drip tray at the top of the firewall. Run the harness towards the driver's side fender and secure using the supplied zip ties. See ***Figure 7***.

Figure 8

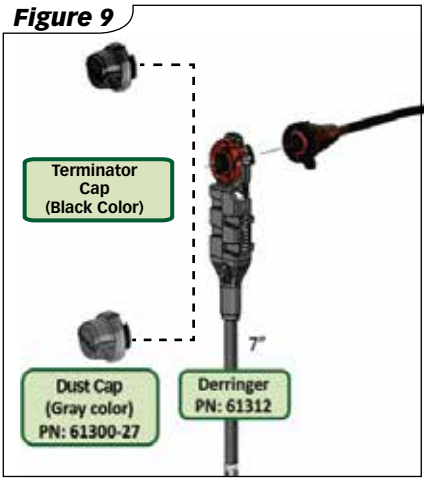
12. Connect the Derringer module to the sensor harness.

13. Connect the round connector end of the Banks Starter cable into the Derringer module. Secure connection by rotating the locking ring clockwise towards its locking position until you hear a click. See ***See Figure 8 & 9.*** Secure Derringer module in place along the drivers' side fender with provided zip tie.

NOTICE: Jeep Grand Cherokee requires the use of black Terminator Cap at all times.

14. If installing on Ram 1500 and using the 3-position switch configuration install **gray Dust Cap** otherwise if using iDash configuration install **black Terminator Cap.**

Figure 9



If installing on Jeep Grand Cherokee, both configurations require the use of the **black Terminator Cap**. See ***Figure 13.*** Once the correct cap is in place, secure connection by rotating the locking ring clockwise until you hear a click. See ***Figure 14 & 15.***

NOTICE: If installing Derringer Tuner in a Ram 1500 perform steps **17-19.** If installing in a Jeep Grand Cherokee, skip to step **20.**

NOTICE: The starter cable and cap contain alignment marks at the 12 o'clock position and a locking ring with a tab. First rotate the locking ring towards the 12o-clock position then connect the mating ends together ensuring proper alignment using the 12 o'clock marks ***Figure 14***. Then rotate the locking ring towards the lock icon until you feel a click to secure the cable or cap. ***Figure 15***.

Figure 14

Figure 15

17. To route the Derringer starter cable through the firewall, we recommend taking advantage of the removable factory clutch master cylinder block-off plate. From inside the cab of the vehicle, locate the two studs / nuts protruding into the cab, above and to the right of the steering shaft firewall pass-through. See ***Figure 16***. Remove the nuts, then push the blockoff plate free of the firewall (pressing on the backside of the plate \ through the center opening in the firewall) to release the factory adhesive backing.

18. From the engine bay side of the firewall, locate and remove the block-off plate. Secure it in a vice, and drill a 3/16" pilot hole in the center of the plate. See ***Figure 17.*** Enlarge the hole to 9/16", to allow the smaller connector of the Derringer Starter Cable to pass through the block-off plate from the engine compartment side, so it comes out in the same direction the mounting bolts face. See ***Figure 18***. Then reinstall the blockoff plate, taking care to not pinch or trap any wires.

Figure 16

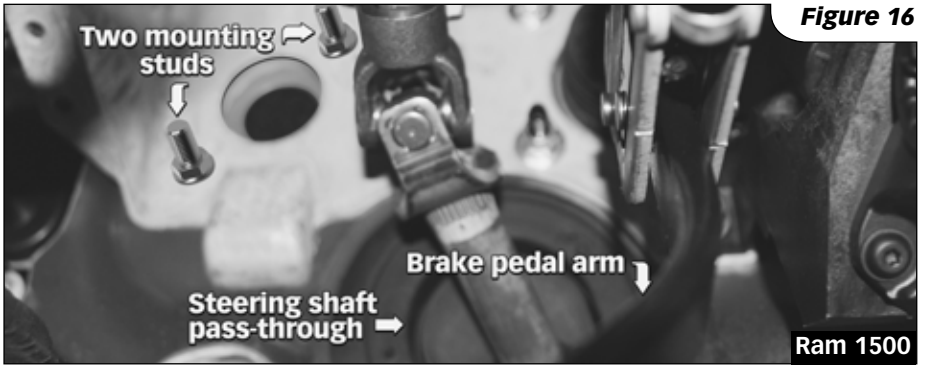


Figure 17

Figure 18

19. Re-install the block off plate mounting nuts onto the studs from the inside of the cab. Then carefully pull the remaining free length of the Derringer Starter Cable through the firewall. Be sure to leave a little slack on the engine bay side of the firewall.

NOTICE: If installing Derringer Tuner in a Jeep Grand Cherokee perform step **20.** If installing in a Ram 1500 skip to step **21.**

20. For the jeep Grand Cherokee, route the smaller connector fo the Derringer Starter Cable through the EOM grommet (behind the brake pedal) from the engine-side of the firewall. See ***Figure 19.*** Feed a straightened metal coat hanger through the firewall from the inside of the vehicle and then attach the wire to it. Then gently pull them back through the firewall. The EOM grommet may need to be cut to create extra room for the additional wires. Take care to not pinch or trap any wires.

21. Plug the OBDII cable into the OBDII port under the dash ***Figure 20***.

Figure 19

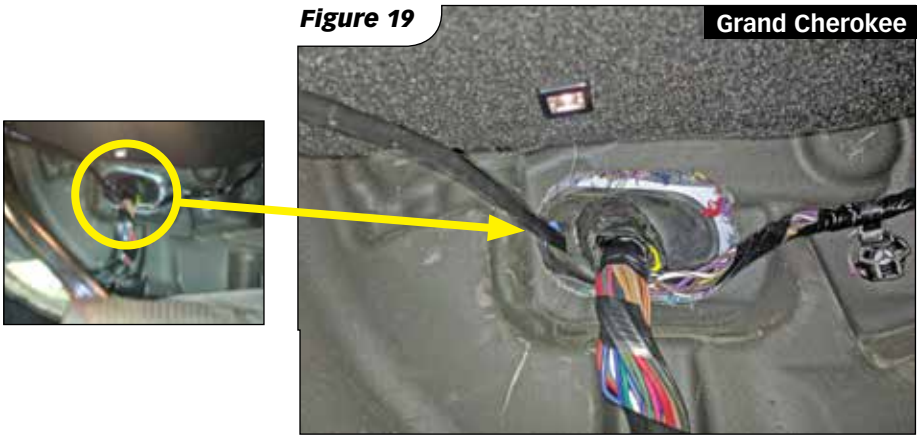


Figure 20

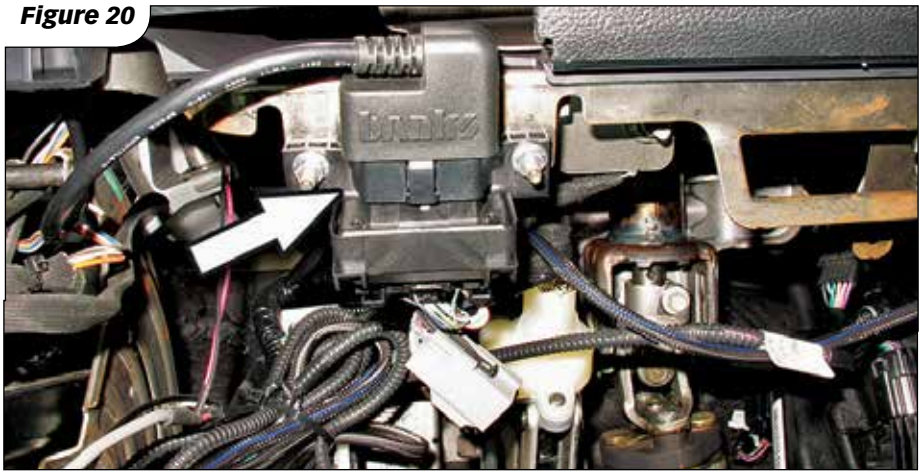
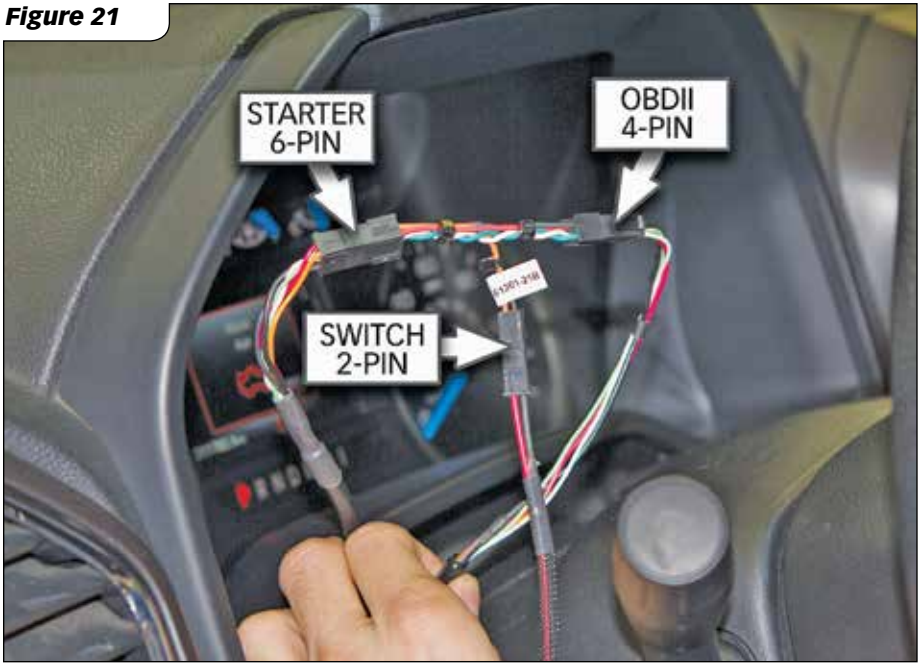


Figure 21



For Switch Configuration:

NOTE: If using the Switch configuration, perform steps 22-24. If using iDash 1.8" Gauge configuration, skip to step 25.

22. Plug the 4-pin connector from the OBDII cable, the 6-pin connector from the starter cable, and the 2-pin connector from the switch cable into the Y-harness ***Figure 21***.

23. Install the power level plate to the switch. Make sure to align the slot of the switch with the red line on the plate towards Sport ***Figure 22***.

24. OPTIONAL: Mount switch in dashboard by drilling two holes using the supplied template (see **page 28**). Be careful to not damage factory wiring behind the dashboard. To keep the switch from rotating, it is necessary to install the locking tab washer behind the dash, with the locking tab facing the backside of the dash face. Alternatively, Zip tie the switch in any easy to access location for power level adjustment.

Figure 22

For iDash Configuration:

NOTE: Only perform steps 25-28 if using iDash gauge configuration. If using the switch configuration skip to step 29.

25. Check which iDash 1.8 Hardware Revision you have. Look behind the iDash 1.8 as shown in **Figure 23** to check for pins. Alternatively you can check the "**Hardware Rev:**" in the "**System Information**" menu, as shown in **Figure 24.**

Figure 23

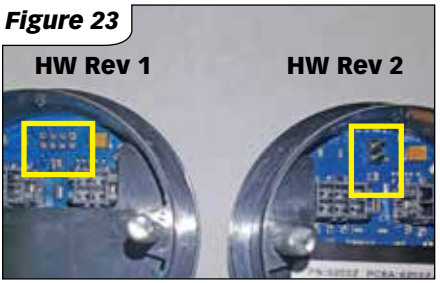
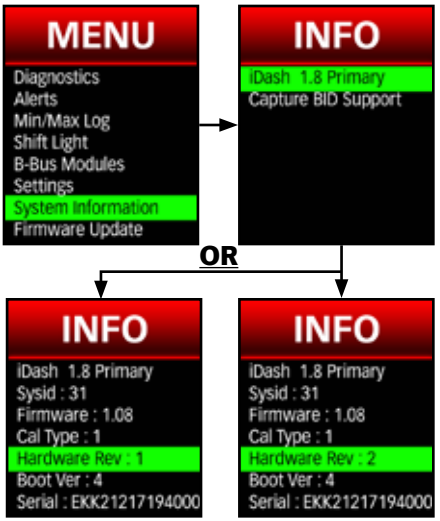


Figure 24



26. If using a single iDash Gauge:
(If using multiple, skip to step 27)

If you have a HW Rev 1 iDash 1.8:

A. Connect the Starter Cable to the In-Cab Terminator. See **Figure 25, Step 2A.**

B. Connect the In-Cab Terminator to the iDash 6-Pin Port. See **Figure 25, Step 2B.**

If you have a HW Rev 2 iDash 1.8:

A. Connect the Starter Cable to the iDash 6-Pin Port (**Without** the In-Cab-Terminator). See **Figure 25.**

B. Check for the pre-installed Jumper Block to the iDash 2-Pin termination. See **Figure 26.**

Figure 25

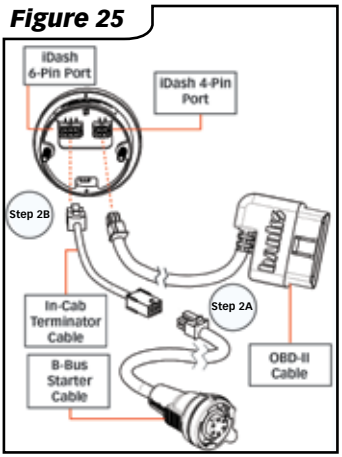


Figure 26

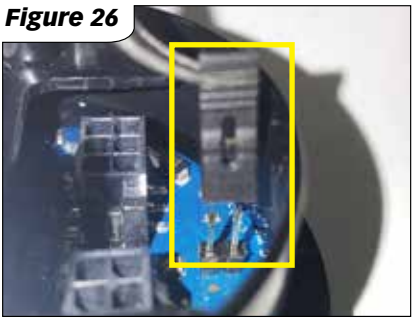
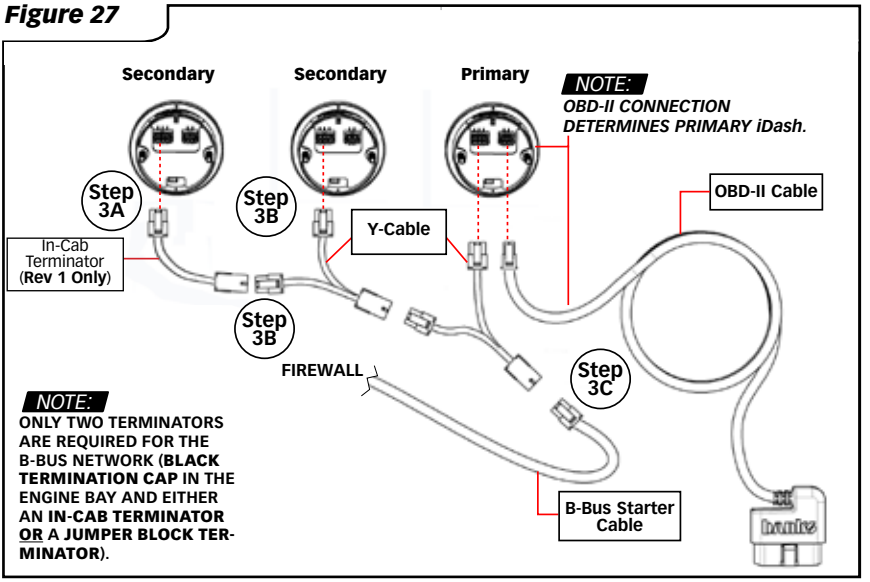


Figure 27



27. If using multiple iDash Gauges:

If you ONLY have HW Rev 1 iDash 1.8's:

A. Connect the In-Cab Terminator to the iDash 6-pin port. See **Figure 27, Step 3A.**

NOTE: Only one In-Cab Terminator is required.

B. Connect the Y-Cable to the In-Cab Terminator and the second iDash. See **Figure 27, Step 3B.**

NOTE: For each additional iDash 1.8, a Y-Cable is used. See **Figure 27.**

C. Connect the Starter Cable to the Y-Cable. See **Figure 27, Step 3C**.

If you ONLY have HW Rev 2 iDash 1.8's:

B. Connect the Y-Cable to the 6-pin port of the first and second iDash 1.8 (**without** the **In-Cab Terminator**). See **Figure 27**

C. Connect the Starter Cable to the Y-Cable. See **Figure 27, Step 3C**.

B. Remove extra Jumper Blocks from the secondary iDash 2-Pin terminations. See **Figure 26.**

NOTE: Only one Jumper Block Terminator is required.

If you have HW Rev 1 AND Rev 2 iDash 1.8's:

Follow either of the instructions for Rev 1 or Rev 2, but only use a single terminator.

28. Install the iDash 1.8 in an A-pillar mount or a suction cup windshield-mount gauge-pod.

29. Secure the harness connectors under the dash, avoiding any moving parts, with supplied Zip ties.

30. Double-check all wire harness routing under the hood and the dash for proper clearance around moving parts and sharp objects as well as heat sources, then use the supplied nylon tie straps to secure the wire harnesses safely away from any control linkages and the operator's feet underneath the dashboard. Be sure to step on the brake and E-brake pedals and move the tilt column and adjustable peddles, if equipped, when checking for proper harness clearance. Also turn the steering wheel lock to lock to ensure that the harness does not hit, pull or otherwise interfere with any moving or hot parts of the truck.

31. Re-attach any previously removed interior trim panels, reinstall the acoustic foam engine intake cover and oil fill cap and lower the vehicle. Re-connect the negative battery cable.

32. Your system contains a CARB EO label for emissions purposes. This label should be placed on the grill/radiator cross member inside the engine compartment, so that it is easily seen by an emissions technician.

33. Start the vehicle, checking for normal engine operation.

34. Check for proper device operation as follows:

While engine is running, check the LED indicator on the derringer. Under proper operation the LED will be blinking green. If LED is always off or blinking Red refer to troubleshooting section.

If connected to the iDash Gauge:

Load the "Derringer" layout and use the "up" and "down" arrows buttons to adjust the Power Level settings. If Power Level cannot be adjusted, refer to troubleshooting section.

NOTICE: Go over the entire installation as a precautionary check to ensure that all clamps are tight, wiring and hoses are properly routed, and connections are correct and tight. Make sure that the Derringer wire harness is not lying in the way of the brake and gas pedals, or any moving parts.

If vehicle is equipped with adjustable pedals and/or column, ensure that the harness is clear through the full range of adjustments.

Section 2
OPERATION OF THE DERRINGER MODULE

Setting Desired Power Level:

The Derringer is equipped with multiple power levels. You can set the desired power level while the engine is running but it is recommended that you do not switch the power level under high load applications.

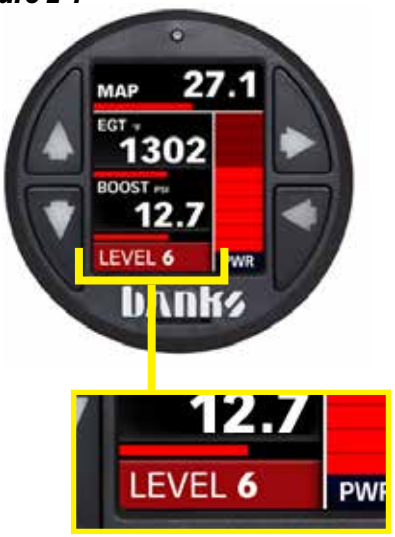
Switch configuration:

There are 3 power levels (Sport, Plus and Stock) when configured with a switch.

iDash 1.8 configuration:

When the Derringer is connected to an iDash 1.8, there are a total of 6 power levels (level 6, 5, 4, 3, 2 and stock). The power level can be changed by pressing the **UP** and **DOWN** buttons at any time. If you have the derringer layout loaded, you will see the power level change at the bottom left corner (See **Figure 2-1**). If you have any other layout loaded, a message box will pop up to notify you of the power level change.

Figure 2-1



SPORT MODE/LEVEL 6 (switch up/towards slot)
This mode is to be used when peak engine performance is required. This mode has been optimized for maximum power output along with improved turbo response by tuning fuel delivery and boost.

SPORT MODE (switch up)
Full power will be available for 10-15 seconds at a time depending on the application. **PLUS MODE/LEVEL 3 (switch down/away from slot)**
The plus calibration is designed for use in everyday driving. This power level adds a noticeable punch under high load acceleration by improving turbo response and power. Power in this mode can be sustained for a prolonged duration.
STOCK MODE (switch middle)
Stock mode turns OFF your Derringer tuner. Throttle response and power return to stock levels.
Banks ActiveSafety®

Anytime aftermarket electronics are introduced to your vehicle, it is important to know that they are not going to cause damage. Banks builds in a suite of ActiveSafety features to safeguard your vehicle:

» Software that monitors and diagnoses itself to ensure proper function.

» Self-monitoring hardware that provides automatic bypass should something malfunction.

The Derringer Tuner module monitors multiple parameters and adjusts its output controls to protect the driveline. The Derringer Tuner monitors engine coolant temperature (ECT) and will limit the additional power that it provides anytime the ECT is outside of optimal operating range to protect the engine.

Power Added (%):

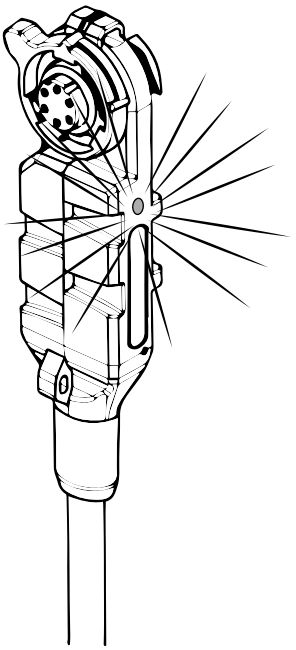
If connected to an iDash 1.8 while displaying the "**Derringer**" layout, the vertical bar graph on the right hand side represents, in real-time, how much power the Derringer is adding (See **Figure 2-2**). In **Stock Mode** there will be no change to the bar graph and in **Sport Mode/Level 6** the bar graph will reach 100% under proper operating conditions. Percent power added is effected by safety features such as Engine Coolant Temperature, so it might not always fully reach 100%. The "**Power Added**" data can also be displayed on ANY layout as a numeric value by selecting it from the "**Derringer**" category of parameters.

Figure 2-2

Section 3
TROUBLESHOOTING

Normal Operation

Your Derringer Tuner has a built-in, self-diagnostic system. The status of the Derringer system is communicated via the LED on the module. When the Derringer Tuner is functioning properly the LED will flash green.



Derringer Not Powered

When the LED is not illuminated, the Derringer Tuner is not powered on. If the ignition is on and the LED is not illuminated, check the TMAP connections on the vehicle and ensure they are fully engaged.

No Communication with iDash 1.8

Check that your wiring matches the figure in **Section 1.1 Wiring Diagram: iDash 1.8" Configuration** (See **page 10**) or for multiple iDash 1.8 Gauges see **Figure 15** on **page 17.**

Common sources of communication errors are wrong caps attached to the Derringer and/or the In-Cab Termination Cable is not installed. A Black Termination Cap must be connected to the Derringer and only one In-Cab Termination Cable should be attached to one of the iDash 1.8's.

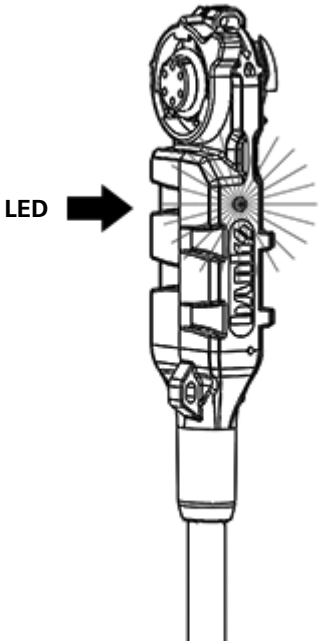
LED Error Code

When faults are detected, the Derringer Tuner will flash a diagnostic code. These diagnostic codes are comprised of 2 digits. Each digit is expressed by the flashing red LED.

A code can be determined by counting the number of red flashes displayed before the LED flashes green for the first digit and the number of red flashes after the LED flashes green for the second digit. After the diagnostic code is displayed, additional codes will be displayed in sequence, separated by 4 seconds with the LED off. Once all codes are displayed the Derringer will begin sending the codes again. Once you have written down all diagnostic codes being displayed, consult the following tables for a description of the code along with the action to be taken.

Bypass Plug

If the Derringer should ever need to be removed from the vehicle, the system includes a bypass plug that must be connected to the sensor harness in place of the module. Failure to utilize the bypass plug when the Derringer has been unplugged from the harness will generate a Check Engine light when attempting to start the vehicle.



61312-30 Derringer Tuner (Chrysler EcoDiesel applications)

Code	Event	Course of Action
1,1	Fuel Rail Pressure (FRP) Input Voltage Out of Range.	Turn ignition OFF & check the male and female FRP sensor connectors. Turn ignition back ON & re-check for presence of code. If code does not re-appear at key ON, start engine & check for presence of code both at engine idle & under varying driving conditions.
1,2	Manifold Absolute Pressure (MAP) Input Voltage Out of Range.	Turn ignition OFF & check the male & female MAP sensor connectors. Turn ignition back ON & re-check for presence of code. If code does not re-appear at key ON, start engine & check for presence of code both at engine idle & under varying driving conditions.
1,4	Exhaust Gas Temperature (EGT) Input Voltage Out of Range.	Turn ignition OFF & check the male & female RTD sensor connectors. Turn ignition back ON & re-check for presence of code. If code does not re-appear at key ON, start engine & check for presence of code both at engine idle and & varying driving conditions.

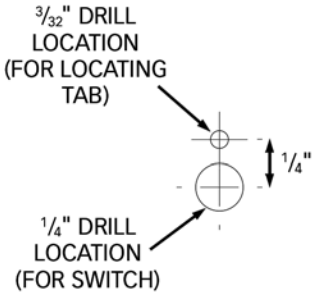
61312-30 Derringer Tuner (Chrysler EcoDiesel applications) cont'd

Code	Event	Course of Action
2,1	Fuel Rail Pressure (FRP) Output Voltage Out of Range.	Turn ignition OFF & check the male & female FRP sensor connectors. Turn ignition back ON & re-check for presence of code. If code does not re-appear at key ON, start engine & check for presence of code both at engine idle & under varying driving conditions.
2,2	Manifold Absolute Pressure (MAP) Output Voltage Out of Range.	Turn ignition OFF & check the male & female MAP sensor connectors. Turn ignition back ON & re-check for presence of code. If code does not re-appear at key ON, start engine & check for presence of code both at engine idle & under varying driving conditions.
2,4	Exhaust Gas Temperature (EGT) Output Voltage Out of Range.	Turn ignition OFF & check the male & female RTD sensor connectors. Turn ignition back ON & re-check for presence of code. If code does not re-appear at key ON, start engine & check for presence of code both at engine idle & under varying driving conditions.
3,2	Internal Module Malfunction or Intermittent Power.	Turn ignition OFF & check the male & female MAP sensor connectors. Turn ignition back ON & re-check for presence of code. If code does not re-appear at key ON, start engine & check for presence of code both at engine idle & under varying driving conditions.
3,4	OBDII / BanksBus CAN Communication error	Turn ignition OFF & check the following connections (as applicable): 1) 61300-35 OBD-II Interface Cable - at 16-pin vehicle OBD-II & 4-pin inter-cable connectors. 2) 61301-21 Y-Adapter Cable - at 4-pin inter-cable & 6-pin inter-cable connectors. 3) 61301-20 B-Bus Starter Cable - at 6-pin inter-cable & 6-pin B-Bus Circular connectors. 4) 61300-22 B-Bus Terminator Plug - at 6-pin B-Bus Circular connector. Turn ignition back ON & re-check for presence of code. If code does not re-appear at key ON, start engine & check for presence of code both at engine idle & under varying driving conditions.

Section 4

PLACEMENT OF THE BANKS POWER DECALS

Mount switch template
(step 22 on page 19)



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