

banks

with Installation Instructions
Owner's Manual

Banks Six-Gun® & Banks SpeedBrake®

**For use with Banks iQ
& Compatible with PowerPDA**

**2008-2010 Ford Power Stroke
6.4L Turbo-Diesel**

THIS MANUAL IS FOR USE WITH SYSTEMS 55464-55466, 63919

Gale Banks Engineering
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(626) 969-9600 • Fax (626) 334-1743

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Also Available from Banks Power

08-10 Ford 6.4L



Banks iQ System (P/N 61155)

- 5" touchscreen interface that can control the Banks Diesel Tuner and/or SpeedBrake on the fly.
- Interchangable gauge display, read and clear codes, monitor engine diagnostics, log data, time your vehicles runs and much more.

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- Allows for controlled hill decent at a user defined vehicle speed.

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- Adds power safely to your vehicle
- Engine and transmission safeguards
- Change power levels on-the-fly

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**OttoMind Programmer
(P/N 66063)**

- Contains Banks tunes that boost your vehicles HP, Torque and MPG.
- Displays a host of critical engine functions
- Provides "service technician" diagnostic capabilities
- Has upgradeable functionality, so it will never be out of date

**Six-Gun Bundle
(P/N 46652-46655)**

Contains:

- Monster Exhaust (single and dual)
- Ram-Air Intake
- Six-Gun Tuner w/ Banks iQ

**Big Hoss Bundle
(P/N 46656-46659)**

Contains:

- Monster Exhaust (single and dual)
- Ram-Air Intake
- Six-Gun Tuner w/ Banks iQ
- Techni-Cooler

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 limitations of 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**.

The Warranty is Limited to two (2) years from the date of sale and is limited solely to the Gale Banks Engineering parts contained within the products kit. 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.

Warning: Below 32°F (0°C) or above 140°F (60°C), the Banks iQ may be susceptible to damage as a result of extended direct exposure to sunlight, heat or extreme cold. It is highly recommended that Banks iQ be removed from its mounting location if the vehicle will be subjected to high concentrations of sunlight, heat or cold for an extended period of time. Gale Banks Engineering is not responsible for damage to Banks iQ resulting from exposure conditions.

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.

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 place-of-purchase within thirty (30) days from date-of-purchase for a full refund.
The installation of this product indicates that the buyer has read and understands this agreement and accepts its terms and conditions.

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.

Table of Contents

General Installation Practices	7
Section 1	8
Installation of Banks Six-Gun Wiring Harness	
Section 2	14
Installation of Optional Banks SpeedBrake Wiring Harness	
Section 3	20
Mounting and Connecting the Banks iQ	
Section 4	24
Automatic Transmission Learning	
Section 5	25
Checking Engine Performance	
Section 6	26
Troubleshooting	
Section 7	32
Clearing Learned Information	
Section 8	32
Removal of the Six-Gun Diesel Tuner	
Section 9	32
Updating Banks iQ/PowerPDA and Banks Six-Gun/Brake Software	
Section 10	34
Placement of the Banks Power Decals	

For detailed operation of the Banks Speedbrake, see the Banks iQ Owner's Manual

Dear Customer,

If you have any questions concerning the installation of your Banks Six-Gun Diesel Tuner, please call our Technical Service Hotline at (888) 839-2700 between 7:00am and 5:00pm (PST). If you have any questions relating to shipping or billing, please contact our Customer Service Department at (888) 839-5600.

Thank you.

The Banks Six-Gun Diesel Tuner has six power levels that you can adjust with the Banks iQ Dashboard PC.

Banks iQ is a versatile device that gives you total control of your Banks Six-Gun Tuner. With a touch of your finger on the bright, full-color LCD display, you can adjust power levels on-the-fly, customize the gauges you view, tune numerous performance parameters, set system warnings and alerts, see vital engine functions at a glance, and more. Evaluate your changes by running 0-60, ¼ and 1/8 mile performance tests. You can even scan, read and clear OBDII diagnostic trouble codes.

Banks iQ doesn't stop there. It's a true in-car PC packed full of extra functions. Listen to your favorite tunes, watch videos, play games, review Windows® Office documents, and more. Expandable and upgradeable, it comes fitted with a rechargeable battery and includes accessory cords. You'll quickly discover Banks iQ is the device you'll use every day, both inside and outside your car.

To prevent damage to the factory transmission, Banks recommends that both automatic and manual transmission vehicles do not exceed Level 4 while the vehicle is experiencing load (towing, climbing a steep grade, carrying a load, etc.).

To use the higher levels of the Six-Gun Diesel Tuner while towing or climbing, airflow improvements must be made to lower the exhaust gas temperature (EGT) entering the turbo. The EGT should not exceed 1400° F for more than a few seconds. Elevated EGT can damage the turbocharger and the engine.

Attention! Before proceeding with these instructions, please carefully read the DISCLAIMER OF LIABILITY and LIMITATION OF WARRANTY statement located on pages 2-3 of this manual.

TOOLS REQUIRED:

- Inch and metric sockets
- Inch and metric combination and open-end wrenches
- Pliers
- Wire cutters
- Scissors
- Drill motor
- 1/8" drill bit
- 13/32" drill bit

General Installation Practices

1. Banks recommends either a Banks iQ or a Pyrometer (EGT) gauge and Boost gauge be installed with the Six-Gun Diesel Tuner to help monitor performance and exhaust gas temperature of the vehicle (see part numbers below). To further increase engine life by lower EGT's, Banks also recommends installing a Monster Exhaust® system.

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

3. The exploded views provide only general guidance. Refer to each step and section diagram in this manual for proper instruction.

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

5. Disconnect the negative (ground) cable from the battery (or batteries, if there are two) before beginning work.

6. 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.

7. When raising the vehicle, support it on properly weight-rated safety stands, ramps or a commercial hoist.

Follow the manufacturer's safety precautions. Take care to balance the vehicle to prevent it from slipping or falling. When using ramps, be sure the front wheels are centered squarely on the topsides. When raising the front of the vehicle, put the transmission in park (automatic) or reverse (manual), set the parking brake, and block the rear wheels. When raising the back of the vehicle, be sure the vehicle is on level ground and the front wheels are blocked securely.

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.

8. 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.

9. Save this Owner's Manual as a reference for system maintenance and service.

Additional Equipment:

Gauge Assembly,

Boost and Pyro64507

Section 1

INSTALLATION OF BANKS SIX-GUN WIRING HARNESS

Figure 1: Six-Gun and supplied wiring harnesses



If you have previously installed a Six-Gun and are adding the Banks Brake, Skip to Section 2.

If you are installing the Banks Six-Gun for the first time, continue to Step 1

Six-Gun Installation

1. Locate the Six-Gun Powertrain Control Module (PCM) Harness. See **Figure 1**. Place harness over the driver side fuse box. Route the PCM connectors from the driver side fuse box along the rail on the rear of the engine compartment to the passenger side of the vehicle. See **Figure 2**.

2. Locate the Factory Powertrain Control Module (PCM) on the passenger side firewall in the engine compartment. See **Figure 2**.

3. Disconnect the left connector from the PCM by opening the locking tab as shown in **Figure 3**.

4. Insert the male connector on the Six Gun Tuner PCM harness into the female connector on the factory harness. Insert the female connector on the Six Gun Tuner PCM harness onto the male connector on the factory PCM. Lock the connection by closing the locking tabs. Secure the connectors behind the oil reservoir and away from any heat source.

5. Secure the Six-Gun Tuner PCM harness along the rail on the firewall with the supplied cable ties.

*NOTE: Do not connect the Six-Gun PCM harness to the tuner. It will be connected in **step 17**.*

Figure 2: Six-Gun Harness routing

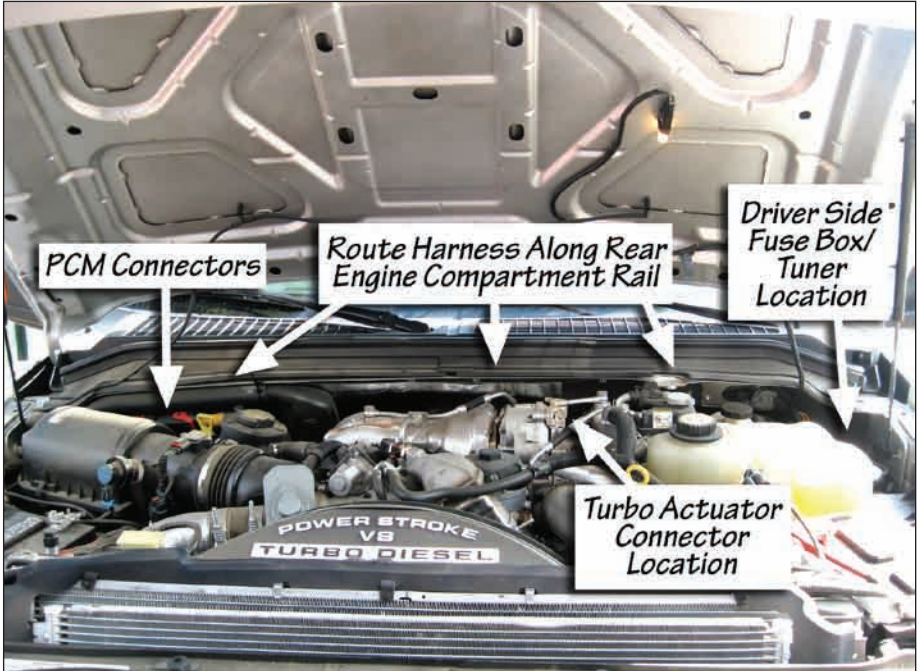


Figure 3: PCM Location on Passenger side.



6. Locate the Six-Gun Turbo/In-cab harness. Place the harness over the driver side fuse box. Route the turbo actuator connector on the Turbo/ in-cab harness along the rail on the rear of the engine compartment to the turbo.

7. Unplug the turbo actuator connector shown in **Figure 4**. The turbo actuator cable connector can be unplugged by sliding the red safety slide down, pressing the locking button, and then pulling on the connector.

8. Plug the female Six-Gun turbo actuator connector into the male factory turbo actuator connector. Plug the female factory turbo actuator connector into the male Six-Gun turbo actuator connector.

9. Secure the Six-Gun turbo actuator connector wires to the firewall rail using the supplied zip ties. Secure the wires away from any heat source.

WARNING: The use of Banks Brake is for use with installed Six-Gun Tuner Package.

10. Remove the bottom steering column panel by pulling out to release the retaining clip. See **Figure 5**.

Installing harness through firewall.

11. Locate the rubber grommet on the driver's side of the vehicle firewall. The grommet is about 3" in diameter. Make a 1" x 1" cross-shaped (X) incision in the grommet. Be careful so you do not cut the factory harness.

12. From inside the cab locate the grommet on the firewall and make another 1" x 1" cross-shaped (X) incision on the grommet, opposite the spot that was cut from the outside.

Now, feed the Six-Gun In-Cab cable on the Turbo/In-cab harness through the incision made in the firewall grommet and into the cab See **Figure 6**.

NOTE: Some thick putty may be used to provide additional sealing around the In-Cab cable and the grommet. If also installing Banks Brake wait until after Section 2, step 5 to use putty.

Figure 4: Turbo Actuator Connector

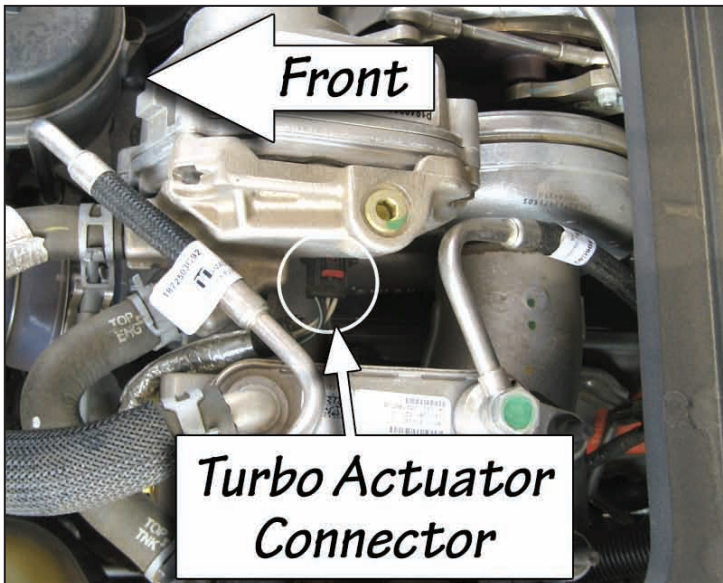


Figure 5 Ford (08-09)



Figure 6: Rubber Grommet on driver side Fire wall



Mounting The Six-Gun Diesel Tuner

13. If equipped, remove the vacuum pump from its mounting location by turning the thumb screw and lifting the pump aside. See **Figure 7**.

14. Clean the area on top of the fuse box cover.

NOTE: Make sure the entire mounting surface is clean and free of dirt and oil before mounting the Six-Gun Diesel Tuner. Clean and dry as required using a cloth dampened in rubbing alcohol or similar cleaning solution.

15. Locate the two (2) dual-lock fasteners in your kit. Peel the protective backing off from one side of the hook and loop interlocking fasteners and attach to the recess area on the back of the tuner module.

16. Peel the protective backing off the other side of the hook and loop interlocking fasteners on the back of the tuner module and affix the tuner to

the top of the fuse box cover as shown in **Figure 8**. Apply light pressure to the Six-Gun Diesel Tuner module by hand for 60 seconds to create a strong bond between the fuse box and hook & loop interlocking fasteners.

17. Connect the PCM and Turbo/ In-Cab harness connectors to the correct Six-Gun module connection. The connections are keyed differently so make sure to connect the correct one into the appropriate connection. See **Figure 8**.

18. If previously removed, reinstall the Vacuum Pump in place and secure with the factory thumb screw.

19. Go over all connections. Check all connections under the hood and keep wires away from heat sources when possible.

END, SECTION 1-

Figure 7

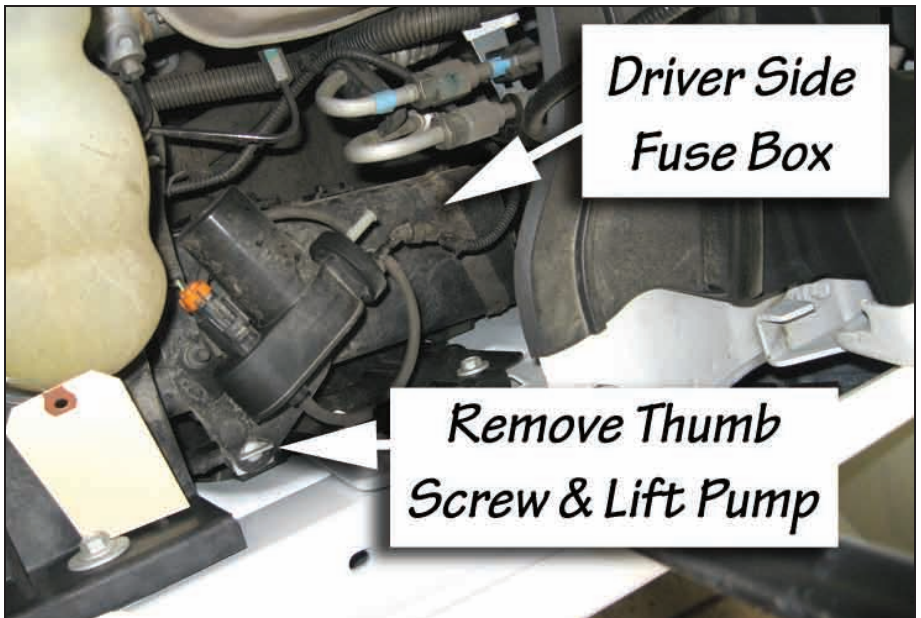
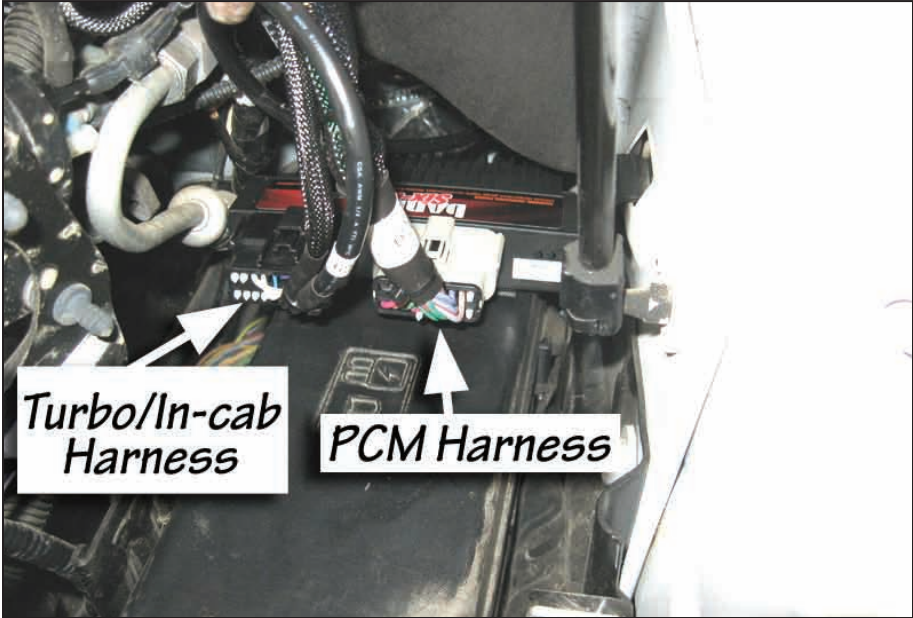


Figure 8 Mounting location of Six-Gun tuner to Fuse box, driver



Section 2

INSTALLATION OF OPTIONAL BANKS SPEEDBRAKE WIRING HARNESS

If you are not installing Optional SpeedBrake Skip to Section 3.

If an existing Six-Gun Tuner has been previously installed, verify that the Tuner has the latest version firmware. Check and compare to the current version available on the Banks website. Banks Brake may not function properly if Six-Gun Tuner firmware is not up to the current version. If the Tuner is not to the latest version refer to section 9.

Installing Banks Brake Wire Harness

1. From inside the engine compartment, locate the factory brake pressure sensor connector on the brake master cylinder. The brake pressure sensor will be the connector farthest away from the firewall. See **Figure 9**. Disconnect the factory brake pressure sensor connector.

2. Locate the Brake Pressure Sensor harness in your kit. See **Figure 10**. Connect the female connector on the Brake Pressure Sensor harness to the

factory male connector. Connect the male connector on the Brake Pressure Sensor harness to the factory female connector.

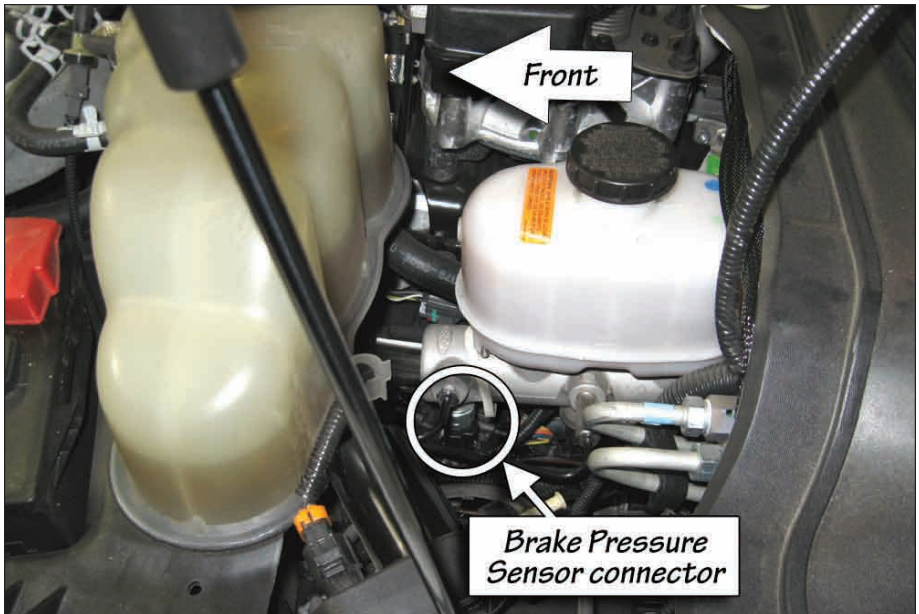
3. Route the 2-pin connector on the Brake Pressure Sensor harness following the six-gun in-cab cable through the fire wall. Secure the wiring harness with the supplied cable ties away from any heat source or moving parts.

4. From inside the vehicle, continue to pull the cable through the firewall until it is approximately 22" inside the cab. Secure the cable to the lower access panel area. Take precaution to leave the three connectors accessible for usage further in the installation process.

5. From under the dash, pull the 2-pin connector on the Brake Pressure Sensor harness through the fire wall.

NOTE: Some thick putty may be used to provide additional sealing around the In-Cab cable and the grommet.

Figure 9 Brake Pressure Sensor



6. Locate the Banks Brake Wire Harness and connect the 2-pin male connector on the Brake Pressure Sensor harness to the 2-pin connector on the Banks Brake wire harness.

If you have previously installed a PowerPDA or Banks iQ, continue to Step 7.

If you have not previously installed a PowerPDA or Banks iQ, skip to Step 10.

Removing a Previously installed Banks OBD II Interface Cable

7. Disconnect Banks OBD II interface cable from the vehicle OBD II connector.

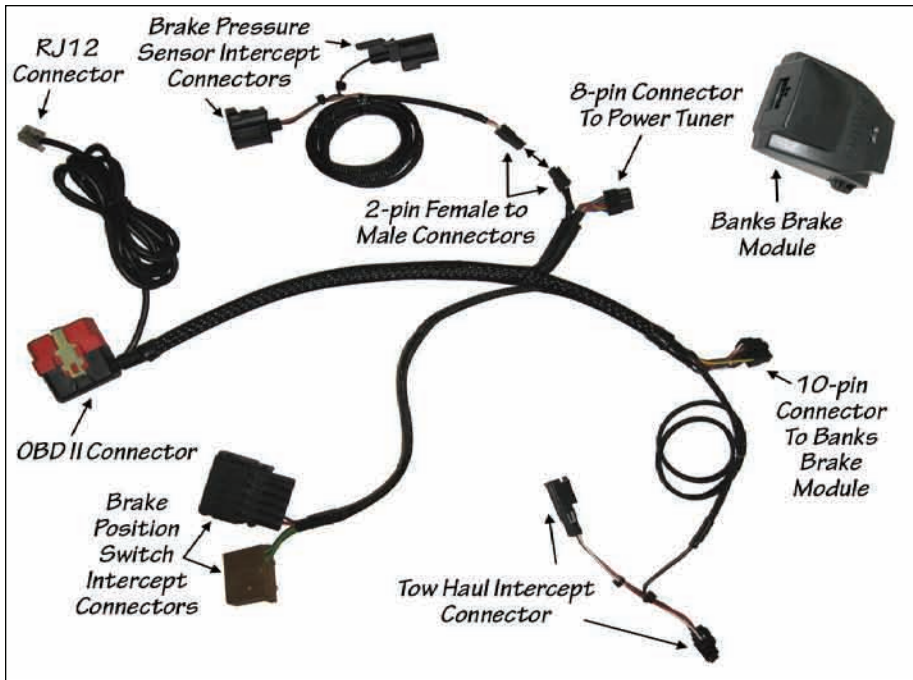
A. For PowerPDA: Disconnect the RJ12 connector from the docking station.

B. For Banks iQ: Disconnect the RJ12 connector from the Banks iQ Bridge Module.

8. Disconnect the 8-pin connector from the OBD II interface cable from the 8-pin connector on the Six-Gun in-cab cable.

9. Remove the OBD II interface cable from the vehicle.

Figure 10: SpeedBrake and supplied wiring harnesses



Installing Banks Brake Wire Harness

10. Connect the Banks Brake Wire Harness OBD II connector to the vehicle's OBD II connector. Use a cable tie, as shown in **Figure 11** to secure the Banks Brake Wire Harness to the vehicle's OBD II connector.

11. Connect the 8-pin connector from the Banks Brake Wire Harness to the 8-pin connector on the Six-Gun In-Cab Cable.

12. Locate the Foot Brake position switch connector under the dash. See **Figure 12**. Disconnect the foot brake position switch connector.

13. Locate the Brake Position Switch intercept connectors on the Banks Brake Wire Harness. Connect the female connector on the Brake Position Switch intercept connectors to the factory black brake position

switch connector. Connect the male connector on the Brake Position Switch intercept Connectors to the factory female brake position connector that was disconnected.

14. From under the steering column, loosen the screws that hold the steering column panel covers in place.

15. Move the steering column down to the lowest possible position to aid in removal of the top steering column panel. Remove the top steering column panel. See **Figure 13**.

CAUTION: Be careful when removing the top steering column panel or damage may result.

16. Locate the tow haul connector towards the top rear of the steering column. See **Figure 14**.

17. Disconnect the tow haul connector.

Figure 11 OBDII Connector



Figure 12 Brake Position Sensor location under dash

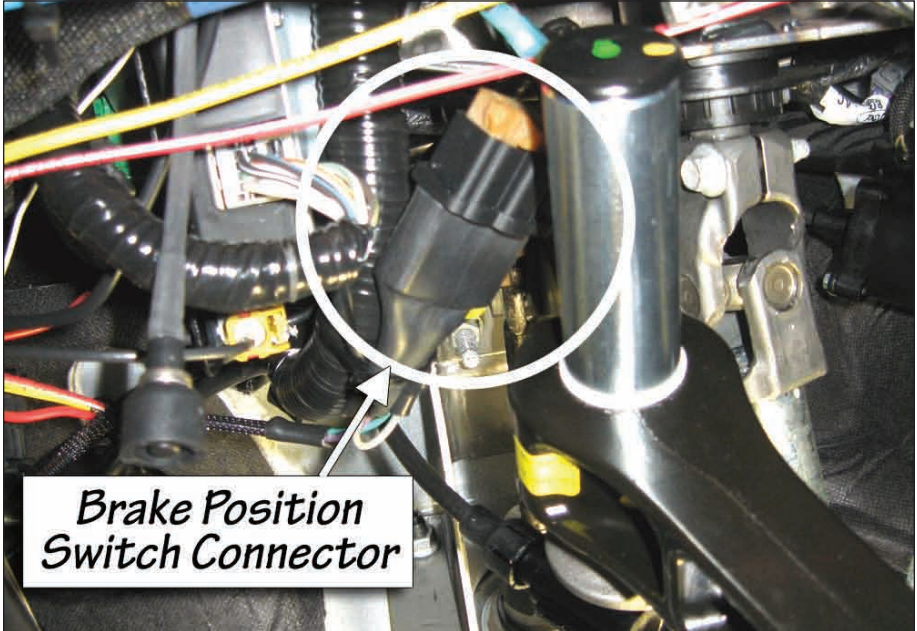
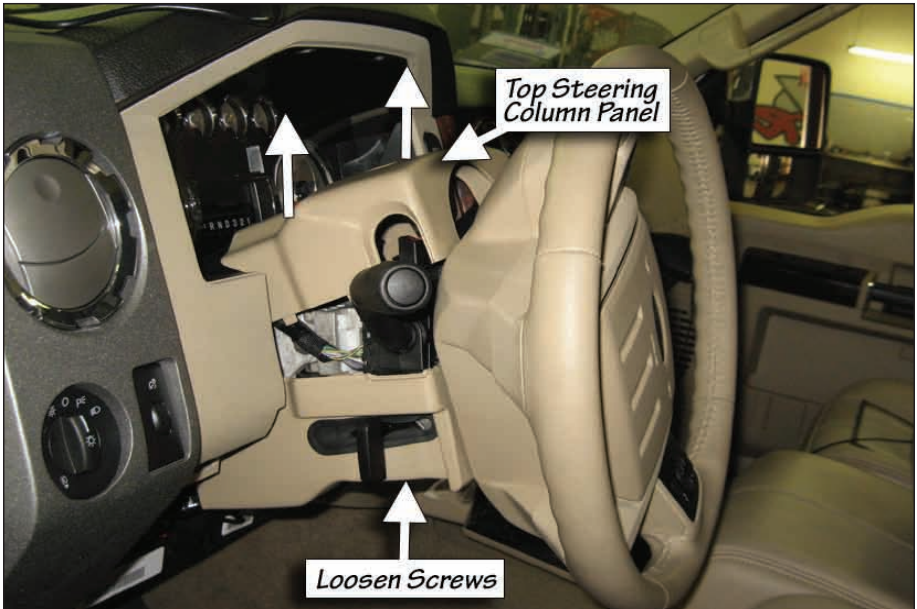


Figure 13 Remove top column panel cover



18. Locate the tow haul intercept connector on the Banks Brake Wire harness. Route the Tow Haul intercept connectors under the dash towards the front of the vehicle and up to the top of the steering column following the factory harness to the factory tow haul connector. Make sure the connectors and wires are free of rotation from the steering column. Connect the female connector on the Tow Haul intercept connectors to the factory male tow haul connector. Connect the male connector on the Tow Haul intercept connectors to the factory female tow haul connector. Secure the connectors and wires with supplied cable ties.

19. Connect the Brake module 10-pin connector on the Banks Brake wire harness to the Brake module. The connector will be the only one with a label.

NOTE: Make sure the correct connection is made to the Tuner and the Banks Brake before proceeding.

20. Secure Brake Module under the dash to any dash frame support or main wiring harness using the supplied cable ties. Use the cable tie support loops on the side of the Brake Module to securely fasten it under the dash. See **Figure 15**.

NOTE: Make sure to mount the Brake Module under the dash away from moving parts or where it can obstruct feet movement.

Figure 14 Tow Haul Connector on steering column, under main harness



21. Install the top steering column panel back in place.

22. Reinstall the factory screws to fasten the steering column plans back together.

23. Go over all connections. Secure the wire harness with the supplied ties under the dash.

WARNING: Take care to keep any cables away from the pedals or where they could become tangled.

-END, SECTION 2-

Figure 15 Banks Brake Module mounting location



Section 3

MOUNTING AND CONNECTING THE BANKS IQ

If installing a Banks SpeedBrake with a PowerPDA. Proceed to step 7.

WARNING: Below 32°F (0°C) or above 140°F (60°C), the Banks IQ may be susceptible to damage as a result of extended direct exposure to sunlight, heat or extreme cold. It is highly recommended that the Banks IQ be removed from its mounting location if the vehicle will be subjected to high concentrations of sunlight, heat or cold for an extended period of time. Gale Banks Engineering is not responsible for damage to Banks IQ resulting from exposure conditions.

CAUTION: Do not use force when working on plastic parts. Permanent damage to the part might result.

1. Locate the Window Mount Assembly in your kit.
2. Assemble the Banks IQ docking station to the Universal mount by inserting and sliding the Universal

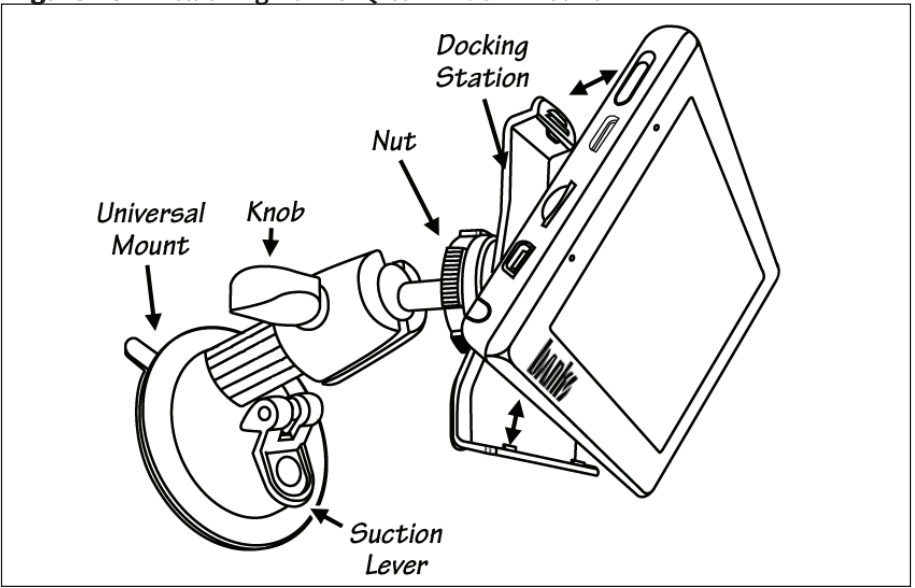
mount tab into the docking station groove. Hand tighten the nut behind the docking station to hold the docking station in place.

3. Attach the window mount to your Banks IQ. See **Figure 16**. Align and place the two (2) lower tabs on the window mount to the corresponding slots on the bottom of Banks IQ first then snap the top of Banks IQ into place.

NOTE: There may be a snug fit when installing the Banks IQ into the window mount. Take care not to force this process.

4. Find a suitable place on the windshield for ease of access and viewing of Banks IQ. Use location shown in **Figure 17** as a reference for mounting Banks IQ in your vehicle. Loosen the knob and move the swivel suction plate to achieve desired viewing angle of the Banks IQ screen. Do a test fit and note the angle necessary to achieve the correct viewing angle.

Figure 16 Attaching Banks IQ to window mount



5. Make sure the suction cup and the mounting area on the windshield are clean and dry. With the suction lever in the up position, ensure the suction cup is flat against the windshield, and then push the suction lever down to secure in place.

6. Next, remove and set the side dash access panel aside.

If installing a Banks SpeedBrake use step 7 and skip steps 8-10.

If not installing SpeedBrake, use steps 8-10 and skip step 7.

7. RJ Connector with SpeedBrake

Banks iQ: Locate Banks iQ Bridge Module and connect the RJ12 connector from the Banks SpeedBrake wire Harness into the Bridge Module. See **Figure 20**.

PowerPDA: Connect the RJ12 connector from the Banks SpeedBrake wire Harness into the leftmost receptacle on the bottom of the Docking Station.

For Banks SpeedBrake with a PowerPDA. Skip steps 8-12.

8. RJ Connector without SpeedBrake

Locate the Banks OBD II Interface Cable in your kit. This cable has three connection points. Connect the RED OBD II connector on the Banks interface cable to the vehicle OBD II connector. Use a cable tie as shown in **Figure 18** to secure the Banks interface cable to the vehicle OBD II connector. Next, connect the 6-pin connector on the Banks OBD II interface cable to the 6-pin connector on the Six-Gun Tuner harness.

9. Locate the RJ12 Cable (similar to telephone connector) on your Banks OBDII interface cable. See **Figure 19**.

10. Locate Banks iQ Bridge Module and connect the RJ12 connector into the Bridge Module. See **Figure 20**.

11. Route the Banks iQ USB interface cable from the Banks iQ Bridge Module under the dash and out through the fuse access panel opening. The cable can be slid under the door frame's seal

Figure 17 Suggested Mounting location for Banks iQ



Figure 18 OBD II connection



Figure 19 Banks iQ System

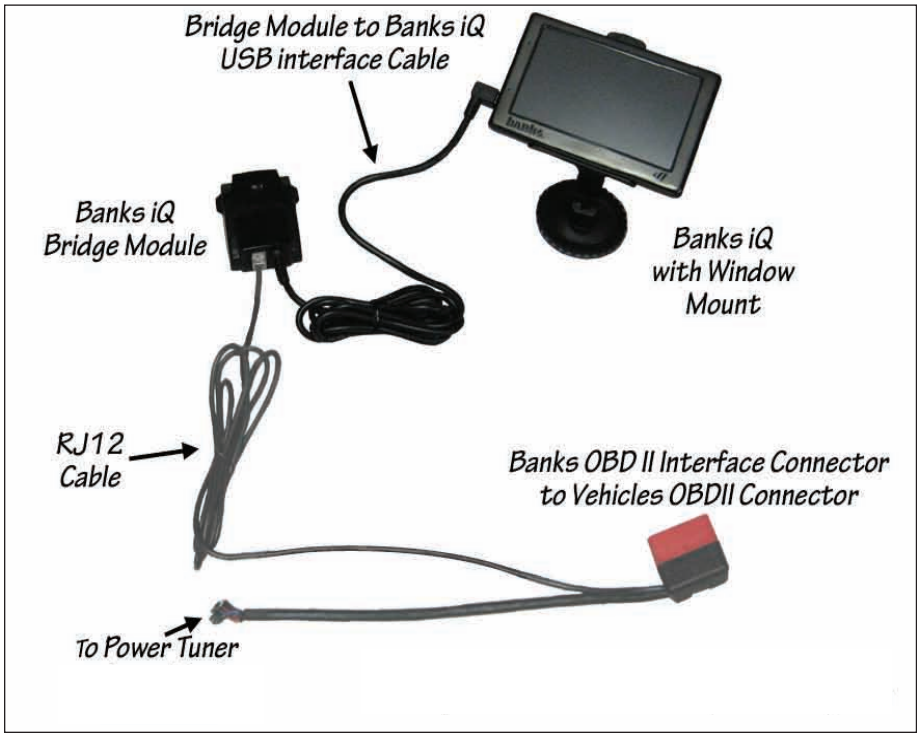
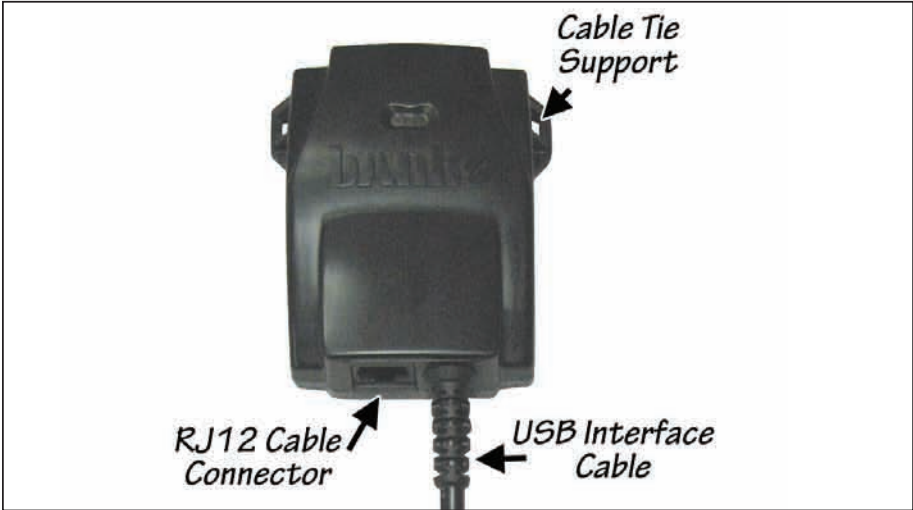


Figure 20 Banks Bridge Module



and run up to the top of the dash. Pull enough cable to reach the Banks iQ and connect it to the USB receptacle on the left side of Banks iQ. See **Figure 16**. Snap the fuse access panel back in place making sure not to pinch the wire.

WARNING: THE CHARGING CABLE CONNECTED TO THE BANKS iQ IS DESIGNED TO SUPPLY A CONSTANT LOW-VOLTAGE POWER SOURCE (+5VDC) TO THE BANKS iQ AND IS "LIVE" AS LONG AS THE SYSTEM'S OBD II INTERFACE CABLE OR BANKS WIRING HARNESS IS COMPLETELY INSTALLED AND THE USB CABLE CONNECTOR IS PLUGGED INTO BANKS iQ. ALTHOUGH THIS CHARGING CABLE IS SHORT AND ITS CIRCUITRY IS FUSE-PROTECTED, THE USER IS EXPECTED TO TAKE APPROPRIATE MEASURES TO PREVENT SMALL CHILDREN AND/

OR PETS FROM CONTACT WITH ANY PART OF THIS SYSTEM.

12. Secure Banks iQ Bridge Module under the dash to any dash frame support using the supplied cable ties. Use the cable tie support loops on the side of the Bridge Module to securely fasten it under the dash.

13. Route all wiring away from any pedals or other moving components. Using the cable ties supplied, secure the wiring under the dash.

14. Reinstall the lower knee panel back in place with the factory hardware. Tuck any excess cable behind it for a clean appearance.

-END, SECTION 3-

Section 4

AUTOMATIC TRANSMISSION LEARNING (FOR SIX-GUN ONLY)

The 6.4L Ford Trucks equipped with the TorqShift™ 5-speed automatic overdrive transmission use an adaptive shift control logic. This will require the transmission to learn how to cope with the additional power created by the Banks Power products before it will shift properly. Additionally, the Banks Six-Gun Diesel Tuner will require a short learning curve to characterize the transmission in order to optimize fueling during gear change events. The following sequence must be followed to allow for collaborative learning between the Banks Six-Gun and the transmission's control system. Failure to follow the sequence can result in damage to the transmission.

Perform the following sequence at a location where it is safe to accelerate to 60 mph without exceeding the posted speed limit.

- 1.** Start the truck and allow the engine to reach normal operating temperature.
- 2.** Set the Banks IQ to power level 2.
- 3.** Accelerate with the pedal to the floor, from a standing start to 60 mph. Repeat three (3) times.
- 4.** Cruise at 30 mph, then press the accelerator to the floor to cause the transmission to downshift. Continue accelerating to 60 mph.
- 5.** Repeat **steps (2) and (3)** for the next power setting.
- 6.** Continue to increase the power setting and drive cycle until the desired power setting is achieved.

*The TorqShift™ 5-speed automatic transmission will continually adapt to the power output of the engine to optimize shift quality. This will result in the transmission un-learning how to cope with the higher power settings of the Six-Gun Diesel Tuner, if the Six-Gun Diesel Tuner is returned to a lower power setting. The rate that the transmission un-learns how to cope with the higher power levels, when switching to a lower power level, depends on the driving cycle. The transmission will quickly adapt to the power setting if the driving cycle includes regular gear changes at high loads. **The transmission learning procedure will need to be repeated when switching back to the higher power settings once the transmission adapts to the lower power settings.** It will be apparent when the transmission adapts to the lower settings by monitoring the feel of the gearshift. Gear changes will be noticeably harder when initially switching from a higher to lower power setting. This will soften as the transmission adapts to the new setting.*

For example: If the transmission has adapted to level 3 and it is desired to go to level 6, the transmission learning procedure can start at level 3.

IF TRANSMISSION SLIP IS DETECTED DURING THE TRANSMISSION LEARN PROCESS, REDUCE THE POWER LEVEL BY ONE, AND START OVER AT STEP 3.

-END, SECTION 4-

Section 5

CHECKING ENGINE PERFORMANCE

The Six-Gun Diesel Tuner requires the engine coolant temperature (ECT) to be above 110° before it will add fuel. If the optional Banks iQ or DynaFact® gauges are installed, observe the operation of the boost and pyrometer (EGT) gauge values while driving under varying conditions. Turbocharger boost pressure will increase as a function of load and engine RPM, thus the engine will produce little boost while cruising at light throttle, with maximum boost while climbing hills heavily loaded during acceleration. Note the boost level seen during hard acceleration with a given load. If performance seems to have deteriorated sometime in the future, the maximum boost figures may be compared to see if boost has dropped off. Lower boost may be caused by turbo ducting leaks, a malfunctioning wastegate or fuel injection pump, or dirty air filter. Typical maximum boost pressure settings will vary considerably with stick or automatic transmission options, year model of vehicle and altitude.

NOTE: Before key-off, check tuner for error codes.

Use your Banks iQ or EGT gauge to monitor exhaust gas temperature (EGT) in the engine. At idle, exhaust gas temperature will be very low, perhaps only 300°F. As the engine is accelerated for higher speeds with greater loads, the EGT will rise. The highest EGT will be seen under maximum load at full throttle, such as climbing a steep grade with a heavily laden vehicle.

To avoid heat damage to various engine components it is recommended that the exhaust gases cool below 400° before the engine is shut down. Your Six-Gun Diesel Tuner is calibrated to maintain a maximum EGT of 1350°F. You may experience brief excursions slightly above 1350°F under acceleration. This is normal and EGT should return to 1350°F or below within a few seconds. If you find that EGT remains high for any length of time, check for boost leaks or a dirty air filter.

-END, SECTION 5-

Section 6

TROUBLESHOOTING

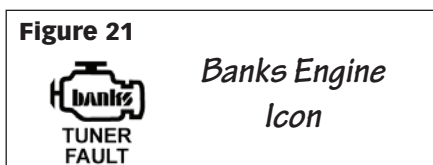
If a Tuner has been previously installed, verify that the Tuner has the latest version firmware. Check your version to the current version available on the Banks website.

SpeedBrake may not function properly if Tuner/Brake firmware is not up to the current version.

For PowerPDA, use PowerPDA manual for Troubleshooting instructions.

Six-Gun & Brake Troubleshooting Using The Banks iQ

Check the Banks iQ's Status indicator for the "OK" icon on the upper left corner of the iQ screen. Any Tuner fault will be indicated by the "Banks Engine" icon (see **Figure 21**) and its cause can be investigated by running a 'Tuner Diagnostic' from the Diagnostic menu.



1. In the Environment select menu press on the 'Diagnostics' button. See **Figure 22**.

2. In the Diagnostics menu press on the 'Tuner Diagnostics' button to run a tuner diagnostics. See **Figure 23**.

3. The 'Self Diagnostic' screen displays a log of diagnostic events related to the Power Tuner. The 'Logged Events' list takes a moment to update each time this screen is opened. Once the list is updated, the most current event will appear at the bottom of the list. Each event has an associated timestamp and description, which will be displayed below the list when that event is highlighted. Each key cycle of the vehicle produces a minimum of two logged events. See **Figure 24**. **Table 1** lists the common diagnostic codes and the suggested course of action for each.

4. Use the arrow buttons to scroll through the recorded events

5. Touch the Banks iQ icon on the lower left of the screen to return to the environment screen or the return icon to return to the Diagnostics menu.

6. A pop-up "Log-File" screen will appear asking you if you want to erase the contents of the log. Press 'No' to keep the contents on Log-file or 'Yes', to erase the Log-files.

Figure 22



Figure 23

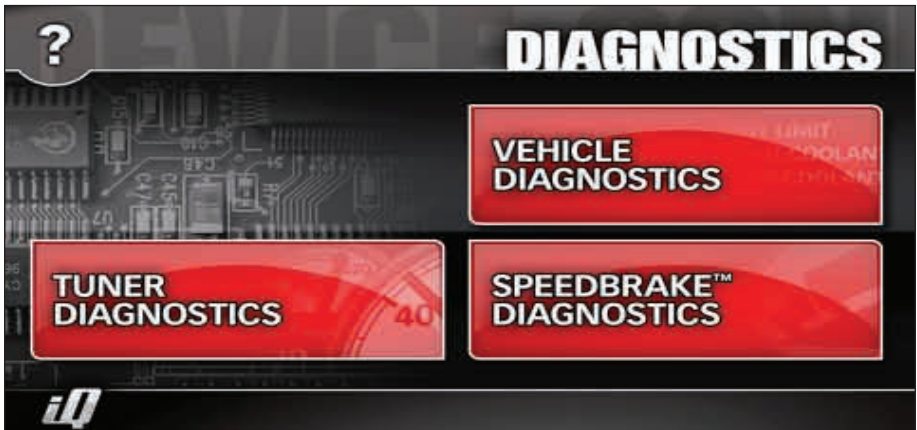


Figure 24



Six-Gun & Brake Troubleshooting (Using Tuner LEDs).

If you feel that your Brake and/or Six-Gun Diesel Tuner are not functioning properly, some diagnostics can be performed. Your Brake and Six-Gun Diesel Tuner are equipped with diagnostic features that will detect and display certain errors. Remove the Brake and Six-Gun Diesel Tuner from their mounting locations while keeping all connectors plugged in. Turn the vehicle key to the ON position. Observe the two LEDs mounted on the Tuner.

- *A steady GREEN LED will illuminate* if all wire connections are correct, the engine is running and the engine coolant temperature is within its normal operating range.
- *The GREEN LED will flash* if all wire connections are correct, the engine is running, but the engine coolant temperature is not within its normal operating range. The GREEN LED will stop flashing once the engine coolant temperature is within normal operating range. Power will not be added if the coolant temperature is not within its normal range (not to be confused with Speed-Loader flash on power up).
- *None of the LEDs will illuminate* if the fuse on the Six-Gun wiring harness is blown or the power supply hook-up is not properly connected. If the power connection and fuses are okay, contact Banks Technical Service.

• *The RED LED will flash* if a connection is incorrect or if there is a problem with the system, when the engine is running. The RED LED will flash in sequence to identify a particular fault code. A Six-Gun Diesel Tuner's fault code is comprised of 2 digits. Each code is expressed in a sequence of 2 sets of the flashing RED LED separated by a brief flashing of the GREEN LED. Each set of a number of RED LED flashes represents a digit. A longer flashing of the GREEN LED separates the sequences. The LEDs will continue to flash to display all the errors, and then repeat.

Table 1 lists the Six-Gun Tuner fault codes.

Table 2 lists the Banks Brake fault codes.

For example, if a faulty thermocouple is detected (code 2,3) by the Six-Gun Diesel Tuner, the following RED and GREEN LED flashing sequence is observed when the key is ON:

- (1) Two times flashing RED LED
- (2) One time quick flashing GREEN LED
- (3) Three times flashing RED LED
- (4) One time longer flashing GREEN LED

The above flashing sequence will repeat continuously. When the problem is corrected, the fault code will be eliminated and replaced with a steady GREEN LED. Note: If multiple codes are set, they will be displayed in a series separated by the longer flashing GREEN LED. When reading codes, make sure to watch the entire series until you see the first code repeat.

-END, SECTION 6-

Table 1: Banks Six-Gun Fault Codes

Code	Event	Course of Action
1,1	Fuel Rail Pressure (FRP) Input Voltage Out of Range.	Turn ignition OFF and check the 96-pin male and female PCM connectors. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
1,2	Manifold Absolute Pressure (MAP) Input Voltage Out of Range.	Turn ignition OFF and check the 96-pin male and female PCM connectors. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
1,3	Six-Gun Switch Input Value Out of Range.	Turn ignition OFF and make sure either Banks IQ or Six-Gun switch is connected to Six-Gun tuner. If Six-Gun switch is connected (no Banks IQ), check 2-pin connection on tuner's in-cab cable. Turn ignition back ON and re-check for presence of code.
1,4	Exhaust Back Pressure (EBP) Input Voltage Out of Range.	Turn ignition OFF and check the 96-pin male and female PCM connectors. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
2,1	Fuel Rail Pressure (FRP) Output Voltage Out of Range.	Turn ignition OFF and check the 96-pin male and female PCM connectors. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
2,2	Manifold Absolute Pressure (MAP) Output Voltage Out of Range.	Turn ignition OFF and check the 96-pin male and female PCM connectors. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
2,3	Mass Air Flow (MAF) Signal Fault.	Turn ignition OFF and check the 96-pin male and female PCM connectors. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
2,4	Exhaust Back Pressure (EBP) Output Voltage Out of Range.	Turn ignition OFF and check the 96-pin male and female PCM connectors. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
If code/problem persists, note conditions when code appears and call Gale Banks Engineering Tech Support.		

Table 1: Banks Six-Gun Fault Codes (Continued)

Code	Event	Course of Action
3,1	Engine Position Sensor Fault.	Turn ignition OFF and check the 96-pin male and female PCM connectors. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
3,2	Internal Module Malfunction or Intermittent Power.	Turn ignition OFF and check the 96-pin male and female PCM connectors. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
3,3	EGR Valve Position (EGRP) Input Voltage Out of Range.	Turn ignition OFF and check the 96-pin male and female PCM connectors. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
3,4	OBDII CAN communication error	Turn ignition OFF and check the 4-pin male and female turbo actuator connectors. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
4,1	EGR Valve Position (EGRP) Output Voltage Out of Range.	Turn ignition OFF and check the 96-pin male and female PCM connectors. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
4,2	Transmission Slippage Detected.	Transmission is slipping excessively. Code will automatically clear once transmission stops slipping (repaired).
4,3	Internal Module Malfunction or Intermittent Power.	Turn ignition OFF and check the 96-pin male and female PCM connectors. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
4,4	Internal Memory Malfunction.	Turn ignition OFF. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
If code/problem persists, note conditions when code appears and call Gale Banks Engineering Tech Support.		

Table 2: Banks Brake Fault Codes

Code	Event	Course of Action
1, 1	Insufficient power supply to brake module	Turn Ignition OFF and check connection at fuse tap, 10-pin connection to module and 8-pin connection to Tuner. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
1, 2	Brake signal malfunction while brake is on	Turn Ignition OFF and check connections at 5-pin male and female brake pedal connector. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
1, 3	Insufficient voltage to tow-haul switch	Turn Ignition OFF and check connections at 3-pin male and female tow-haul switch. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
1, 4	Brake Signal malfunction while brake is off.	Turn Ignition OFF and check connections at 5-pin male and female brake pedal connector. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
2, 1	No response to generated OBD ISO messages	Turn Ignition OFF and check connections at OBD II connection. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
2, 2	Brake pressure switch signal malfunction	Turn Ignition OFF and check connections at 2-pin male and female brake pressure sensor intercept connector and 2-pin in-cab cable connector. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
3, 1	Rear wheel slip during braking	Module has detected rear wheel slipping. Code will automatically clear 30 seconds after traction regained.
3, 2	Power Up Error or Internal Module Malfunction	Turn Ignition OFF and check connection at fuse tap, 10-pin connection to module and 8-pin connection to Tuner. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
3, 3	Internal Module Malfunction	Turn Ignition OFF and check connection at fuse tap, 10-pin connection to module and 8-pin connection to Tuner. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
4, 3	Exhaust Back Pressure (EBP) Input Voltage Out of Range	Turn Ignition OFF and check the 96-pin male and female PCM connectors. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
4, 4	Communication failure to brake module.	Turn Ignition OFF and check connections at 10-pin brake module, 8-pin Tuner, and OBD II connector. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.
5, 1	Internal Module Malfunction	Turn Ignition OFF and check connections at 10-pin brake module, 8-pin Tuner, and OBD II connector. Turn ignition back ON and re-check for presence of code. If code does not re-appear at key ON, start engine and check for presence of code both at engine idle and under varying driving conditions.

Section 7

CLEARING LEARNED INFORMATION

If the Six-Gun Diesel Tuner has been moved to a different vehicle, or you are instructed to do so by Banks Technical Staff, it is possible to reset all of the parameters that the Six-Gun has 'learned' - presence of an EGT thermocouple or Speed-Loader, etc.

CAUTION: The following procedures can only be carried out with the engine OFF!

1. Turn the vehicle key to ON but **DO NOT** start the engine.

2. Fully depress the throttle pedal and then release it completely. Repeat 5 times. The GREEN LED will flash when this is completed successfully.

3. Turn the key OFF. Wait 30 seconds, or until the GREEN LED goes off and stays off. Turn the key back to the ON position but **DO NOT** start the engine.

4. Fully depress the throttle pedal and then release it completely. Repeat 5 times.

-END, SECTION 7-

Section 8

REMOVAL OF THE SIX-GUN DIESEL TUNER

If the Six-Gun Diesel Tuner should ever need to be removed from the vehicle, perform the following:

NOTE: The ignition must remain in the OFF position throughout the removal process.

1. Disconnect the Six-Gun's PCM connector from the left connection on the PCM.

2. Re-connect the vehicle's PCM connector back into the left connection on the PCM.

3. Disconnect the Six-Gun's turbo actuator connector from the vehicles turbo actuator connection and harness. Re-connect the vehicle's turbo actuator connector.

4. Disconnect the 3 small connectors on the 'In-Cab Cable' and gently pull the cable back through the firewall.

5. Remove the Six-Gun Diesel Tuner, PCM harness and Turbo/In-cab harness from the vehicle.

Failure to follow the above instructions when removing the module will result in a "Check Engine" light on the dash and a Diagnostic Trouble Code being stored in the factory computer, in addition to the engine not running.

NOTE: Banks Brake will not function without the Six-Gun Tuner installed.

-END, SECTION 8-

Section 9

UPDATING BANKS IQ/POWERPDA & BANKS SIX-GUN/BRAKE SOFTWARE

If a Tuner has been previously installed, verify that the Tuner has the latest version firmware. Check your version to the current version available on the Banks website.

SpeedBrake may not function properly if Tuner/Brake firmware is not up to the current version.

To update your PowerPDA go to www.bankspower.com/downloads and follow the updating instructions.

System Info

To view your System Information, press the 'System Info' button in the 'Adjustments' menu (Refer to your Banks iQ Owner's Manual to open the 'Adjustment' menu). See **Figure 25**. Use this info to verify that you are downloading the correct update/upgrade version for your Banks iQ. Press the 'Return' icon to go back to the 'Adjustment' menu.

To update Banks Six-Gun/Brake

1. Go to www.bankspower.com/downloads and check for the Banks Power Tuner or Brake updates.
2. Download them onto your Micro-SD card (sold separately) and insert it into the port on your Banks iQ.
3. Press the 'Update Six-Gun/SpeedBrake' button in the 'Adjustment' menu.
4. Press the 'Check For Updates' button and available Brake updates will appear in the window. See **Figure 26**. Highlight the appropriate file name from the available list.

5. Press 'Update Six-Gun/Brake' to download updates into Banks iQ.

NOTE: A warning message will appear if the chosen file is the same or older than the file currently in use.

To update Banks iQ Software

1. Plug Banks iQ into your PC using the supplied USB cable.
2. Go to www.bankspower.com/downloads and click on 'Check for Updates'.
3. Follow the on-screen directions on your PC to update your Bank iQ with the latest software updates.

-END, SECTION 9-

Figure 25

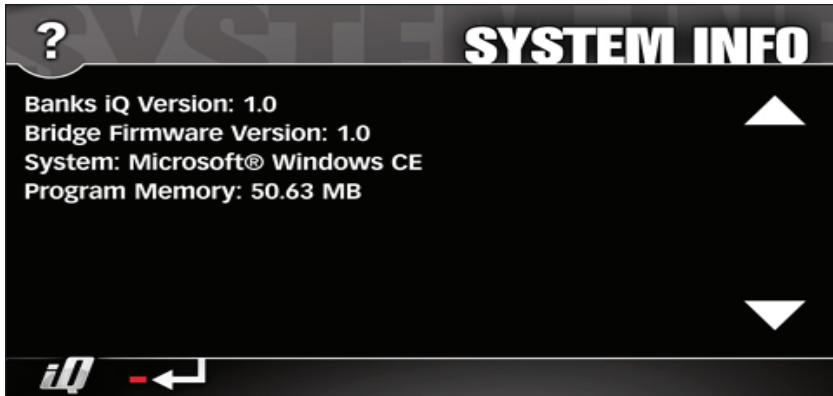


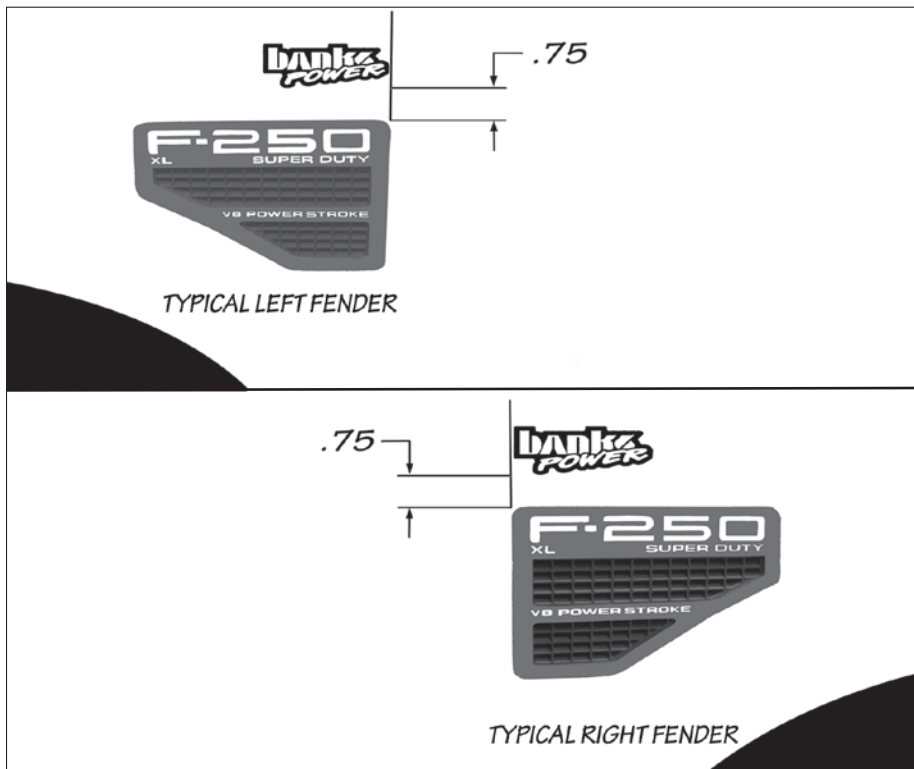
Figure 26



Section 10

PLACEMENT OF THE BANKS POWER DECALS

Figure 27: Placement of the Banks decals



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