

Installation Instructions

Thanks for your purchase!

The staff at SP Diesel Performance thanks you for your recent purchase of the SP Power Stage II Module, the most tunable performance product on the market! We are sure you will find all SP products to be an exceptional value for your dollar. We have designed all SP products to be easy to install, while offering you the same results of similar, higher dollar products.

Before you begin

Before you begin installation you should make sure you have at least a basic understanding of wiring. You don't need to be an expert with our instructions but if you aren't comfortable, try and find a knowledgeable friend there to lend support, or if all else fails we are available by email and phone. On a scale of technical difficulty, installation of the SP Power Stage II is a 3 on a scale of 10. Also as with any electronic modification to your truck, **remove the key from the ignition**. Pictures are supplied at the end so you can print them out and keep them next to the text directions for easy reference. All picture references will be noted in the instructions.

Parts List

See the below chart for a complete list of parts. Optional parts are noted as such in the list.

- (1) SP Diesel Stage II module
 - ICP & MAT/MAP Harnesses
 - Parts Kit including zip-ties and terminals
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Tools

See the below chart of tools recommended for installation.

Tool	Purpose
Long-Nose Pliers	They come in handy!
Screwdriver	Used to open dash cover.
Electrical Tape	Various purposes
Zip Ties	To clean up wiring runs and organize under the dash or under hood.
Drill /drill bits	For drilling hole in plastic access ports to engine bay from passenger cabin and for mounting module
Straight bent coat hanger or fish tape	For fishing the wire through the firewall of the engine bay.
Wire Stripping/Crimping Tool	Used to make necessary connections for your Stage II module.

Remove the Dash Cover

Remove the Panel Cover directly below the steering column by loosening the four catch screws at the corners. A penny, flat-head screwdriver, or good fingernail works well for this. Place it out of the way for now.

Continued on next page

Installation Instructions (continued)

Before you mount your unit

If you have any doubts about permanently mounting your Stage II module, you should consider temporarily mounting it under the dash or in a convenient location. The only reason we mention this, is because you have to drill more than one hole in your dash. We can assume no responsibility if you drill holes and decide this unit isn't for you. We are sure you won't be returning it because your truck is going to run like a demon now, but since we offer a 30-day test drive, we wish to remind you that it's much easier to drill a hole in your dash than 'undrill' it.

Remove your Dash Trim Cover

Use the below procedures for removing the dash trim panel in your vehicle. Follow these steps if you plan to use the ESOF-panel mounting method. Reference the install photos at the end of this document.

Step	Action
1.	Remove the headlight switchgear box. Depending on the model year there are two different ways to do this. If you have a 2001 and up, you will stick a small flat-blade in the detent under the box and gently pull. If you have an early 99-2000, you remove the headlight switch by turning the headlights on. Then using a small screwdriver, release the headlight switch knob using the hole in the rear of the switch. Then put the knob back on the switch backwards and turn the headlights off then on. The headlight switch assembly should now easily pull out of the dash. Reverse the procedure to reinstall the switch assembly
2.	Gently begin to pry at the panel starting from left to right. Firm but even force will pull the dash panel free. Remember to distribute your pulling force so as not to crack the panel. Don't use hard tools on this panel to remove it.

Use the mounting template when you are ready to mount your unit

Use the mounting template to make your drill points for the stage II module. Match up the board to the template to be sure. Poke holes in the template if you wish to mark the area to be drilled with a pencil. Mark as close to dead center of each hole as possible, as this will ensure a proper fit. Using a small bit drill pilot holes for the mounting points, and gradually step up to the final drill size. The mounting template has the bit sizes conveniently placed near the holes.

Break Tabs behind ESOF (only some models)

Some model years have some 'tabs' behind the ESOF panel. They will be in the way of your Stage II mounting. Using a set of side-cutters or 'dykes', gently break them away.

Plug in your harnesses

You have two harnesses in your stage II kit. One is the ICP harness and the other is for the MAT/MAP connections. Plug in (carefully) each harness at their respective locations. The ICP is just to the right of the fuel filter bowl (looking in from front), and the MAT is at the center of the cold air manifold. The Connector is keyed to exactly match the factory connections. Do not force the connectors, as they don't need much force to lock. Tap the green/black wire on the MAP sensor with the provided T-tap, and connect the terminal to it. If you have a SP Overboost Eliminator or other similar electronic device (i.e. zener diode) remove it at this point, as it may interfere with proper Stage II operation. Zip-tie your harnesses out of the way and along the firewall.

Installation Instructions (continued)

Find a location to tap through the firewall

Now that you have connected your harnesses and drilled the points to mount your stage II, use a flashlight to locate a suitable location to pass a wire through the firewall. If you have an automatic transmission the clutch port is an ideal location, as the port cover can be easily removed, drilled and replaced and the wires can be easily passed through it. If you have a manual transmission, you might find a port nearby. You can also use the customer access wiring port in the upper right hand corner of the back of the dash.

Run your Wires through the firewall

Now route all wires (6 of them) through the firewall into the engine compartment. This is where your fish tape or clothes hanger might come in handy. Just tape the end of the wire to the coat hanger or fish tape and pass it through. You are almost there!

Make your connections using the spades

Ahh! This is going fast isn't it? So is your truck in about 30 minutes. Using the supplied spade terminals, crimp them on each of the loose 6 wires. Loosen each terminal individually, and insert the spade at a slight angle to ensure a good fit. Gently tighten each screw as you are done. Use the chart below to ensure proper connection.

Number on Back of Board	Corresponding Wire Color
1	Red
2	Green
3	Purple
4	Orange
5	Yellow
6	White

Tap your Accelerator Pedal

Use the provided tap splice to connect into the gray/white trace wire on the accelerator pedal. This is the variable 'out' from your pedal that is used to drive the module. Make sure this wire is up and out of the way of any moving parts. If necessary, use a multi-meter to verify this wire remains between 0 and 5volts during the pedal sweep with the truck in the key on position. Connect the supplied gray wire to this using a T-tap, and pink 3M-brand connector.

Recheck All Connections

Now go back over your entire install procedure up to this point, and verify that every connection is solid and properly made. Verify that all wires connected to the Stage II module are in the correct order. Failure to do this may cause the Stage II to fail, and engine damage may result.

Place cover back on dash

Again, we are perfectionists, but take a look around your install area, make sure there are no loose electronics or tools and then button the dash panel back up.

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Installation Instructions w/testing procedures

Testing Procedures

IMPORTANT – Testing procedures must be performed to ensure your module is connected correctly. Engine damage may result from starting your truck with the module connected incorrectly.

Position your module so that it can be seen

Position the module such that you can see both of the LED lights on the module, located next to the terminal strip. Most modules will have a red LED on the left and a green LED on the right when the board is positioned with the switches towards you.

Turn your key to the on position DO NOT START

Turn your key to the on position (your radio should come on and warning lights will light on the dash) Do NOT start your truck at this point. You will notice the green LED on the right of the board will light up. If the LED does not come on, STOP and REVIEW your install procedure, as something is not correct.

Check the Accelerator Pedal is properly tapped DO NOT START

Now with the key in the on position depress the accelerator pedal to the floor. You should notice the green LED to the right of the board will go out approximately $\frac{3}{4}$ through the stroke of the pedal. If the LED does not go out, STOP and REVIEW your install procedure, as something is not correct.

Check the position of the power and timing knobs

Can you feel it? You're getting real close now. Verify that the power and timing knob on the module are cranked full counter clockwise and that the fuel curve boost switch is up (off). Now you may start your engine. Please note: Even though it will be tempting DO NOT DRIVE your truck until you read and fully understand the operating instructions included with these directions. After the engine starts you should notice that now both LED red and green are lit verifying the module is installed correctly. . If the LEDs do not both turn on, STOP and REVIEW your install procedure as something is not correct.

Testing and Operating Procedures

Operating Procedures

IMPORTANT – Operating procedures must be completely understood and applied correctly. Engine damage may result from an incorrectly operated module.

Power Level Knob Operation

The power level knob on the left of the module is used to increase the fuel delivery to the engine. This knob may be adjusted on the fly to increase or decrease the total level of performance from your module. The full counter clockwise position is the least amount of power and full clockwise is full power

Fuel Curve Boost Switch

The fuel curve boost switch is used to increase the off idle and low end performance of your module. This may be switched on the fly to increase or decrease low-end performance. The fuel curve boost is 'on' when the switch is in the down position with the module oriented horizontally.

Timing Adjustment Knob

The timing adjustment knob of the right of the module is used to increase the timing advance of your engine. The full counter clockwise position is the least amount of timing and full clockwise is full timing advance. Adjust this knob in small increments as you drive to ensure you do not take the timing to far. The timing adjustment as a few second delay in adjustment so the response will not be immediate. Customers who plan on "stacking" this module on top of a performance chip, programmer, nitrous, and or propane system must read and fully understand the following section or engine damage may result from excessive timing.

Band Of Control Adjustment

The small trimmer located on your stage II module does not normally need to be adjusted, but is provided for your convenience. This small knob, adjusted with a mini screwdriver, will adjust the overall power level of your module. The module is shipped with full power potential (trim pot rotated full clockwise), but may be detuned, or softened by rotating the trim pot counter clockwise.

Cold Weather and Cold Start

During cold weather and during a cold start situation adjust both the timing and power level knob to their minimum position until the engine has reached operating temps.

Important Messages

Operating Procedures

IMPORTANT – Operating procedures must be completely understood and applied correctly. Engine damage may result from an incorrectly operated module.

**Performance
Product
Stacking
Warnings**

We at SP Diesel pride ourselves in the hours and months of testing that have taken place before offering this product to the market. We have designed this module to work to its full potential on a stock truck, and work in conjunction (i.e. stacked) with other performance products on the market. With that said we have not and will not test the module with every possible combination of performance products on the market. Now to the warnings.

CAUTION: Customers Stacking this Module on Propane or High Performance Chips, Nitrous etc. READ THIS: The stage II module has been designed to increase timing on a stock truck to safe levels. When used in conjunction with the previously mentioned products it is possible to increase the timing to far, where detonation and engine damage may result. We strongly recommend leaving the timing adjustment knob cranked full counter-clockwise when used with these performance devices. If you decide to, this device will still allow you to increase and adjust your engines timing advance beyond its previous state on the fly, but since we cannot control the other performance products on your vehicle the timing adjustment is done solely at your own risk. We will be happy to discuss your particular performance application and give you suggestions on the proper usage of the Stage II module.

SES Light

On some applications the service engine soon light may illuminate under heavy throttle. This light is the computer throwing an ICP out of range code and does not effect the power or operation of your vehicle. This light should turn off when the engine is restarted and should not be of concern.

Disclaimers

Like any other products SP Diesel cannot be held liable for incorrect installation. Installation of performing enhancing products is solely at your own risk. Check your local diesel emissions laws prior to installation. SP Diesel is held harmless except in cases of gross negligence.

**Gauges are
HIGHLY
Recommended**

Due to the variances in Fords stock engine and transmission programming, the SP Power stage II can have varying results on Exhaust Gas Temperatures (EGTs). For that reason we recommend the use of a pyrometer on your truck. Avoid spending more than 2-3 seconds at redline to avoid spiking EGTs. Stage II Modules can drive EGTs to near redline temps on some trucks.

**Remove before
servicing**

SP Diesel recommends you remove the SP Power module and/or any other SP Diesel product prior to visiting the dealer. This avoids confusion from the dealer who may not be familiar with these products. These products can also interfere with the normal troubleshooting procedures that are used in fixing some common engine problems where injector timing and pressure are related.

Important Messages

**Contact
Information**

You may contact SP Diesel in case of technical assistance, orders, or questions through the following:

spdiesel@comcast.net

SP Diesel Hotline: 410-375-9570

SP Diesel Performance Stage II Module

Installation Pictures

ICP

Left to right. ICP Disconnected. ICP Interconnect with SII Harness



MAT Connection

Left to right. MAT disconnected, MAT interconnected using SII Harness



SP Diesel Performance Stage II Module

Installation Pictures

MAP Connection

Tap is the right side onto the green/blk trace MAP wire.



ICP Location

Harnesses Zip Tied to firewall.



SP Diesel Performance Stage II Module

Installation Pictures

Dash Mounting Top to bottom: Fuel, Fuel Curve Boost, Timing.



Dash Removal Dash removal complete, it is pulled back just enough to get behind the panel.



Installation Pictures

Terminal Strip Connections

Left to right, White, Yellow, Orange, Purple, Green, Red. Note that the spade ends are bent upward for proper clearance behind the dash. The spade ends are bent up about 35-45 degrees.

