

## *PFI Pegasus Fuel Injection EZ Installation Instructions*

### Hardware Installation Instructions for PFI V5.0 Pegasus Fuel Injection

Welcome to the PFI hardware installation guide. The purpose of this document is to provide a quick reference during hardware installation. For more advanced information, including a discussion of software and mapping, please refer to the "installation and tuning manual."

The PFI system consists of three hardware sub-assemblies (1) Throttle assembly (2) Coil assembly (3) Ignition pickup assembly. The throttle assembly resembles a carburetor except it has the brain mounted on top of it, plus injectors on the bottom and a throttle position sensor (TPS) on the side. The coil assembly contains the coil, fuel pump, both mounted on the top motor mount. There is also a unique multi-tooth ignition pickup wheel, which replaces the stock one in the ignition cone, but we use the stock ignition pickup sensor. This pickup wheel, with its many teeth, is the key to sequential fuel injection and single fire ignition.

If you are performing a "complete install" follow the directions below word-for-word. If you are performing a "custom install," meaning you plan on relocating some of the components, you may omit certain sections.

Before you begin:

- Disconnect ground from battery
- Drain fuel from tank(s)
- Remove tank(s)
- Remove old carburetor
- Remove top motor mount, coil bracket and coil
- Remove old ignition system including pickup wheel
- Procure S&S "G" manifold

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1. The PFI throttle body comes with the air filter attached. Begin by removing the three outer bolts.



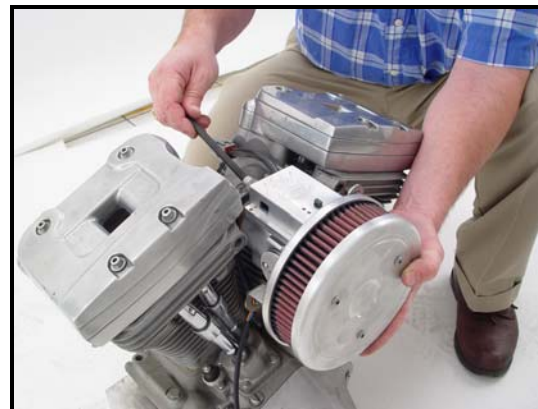
2. Remove the 4 bolts on the backing plate.



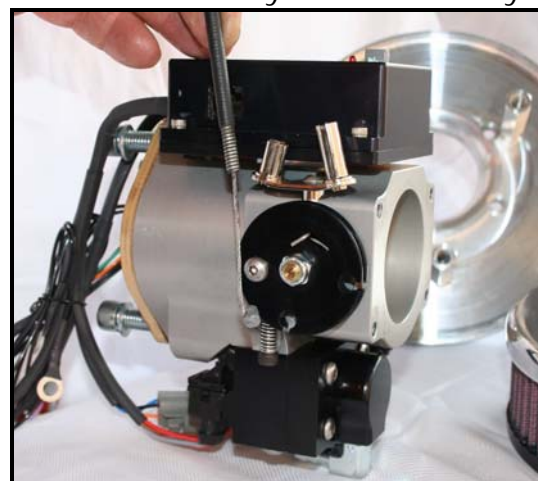
3. Throttle should look like this.



4. Install G manifold and insulator block.



5. Attach throttle assembly to manifold using supplied 3/8 bolts and washers. Make sure wiring harness is neatly out of the way.

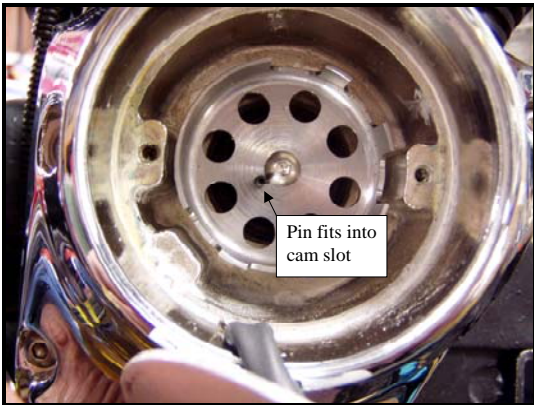


6. Connect throttle cables. You must use two cables for safety. Opening cable shown.

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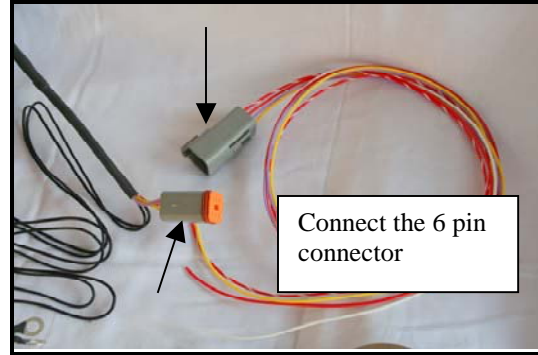
7. Remove stock ignition pickup wheel, and rotate engine until crank mark is at top dead center, cyl1. Cam slot MUST be at 7-8 o'clock, and not 2-3 o'clock (Sportster is different).



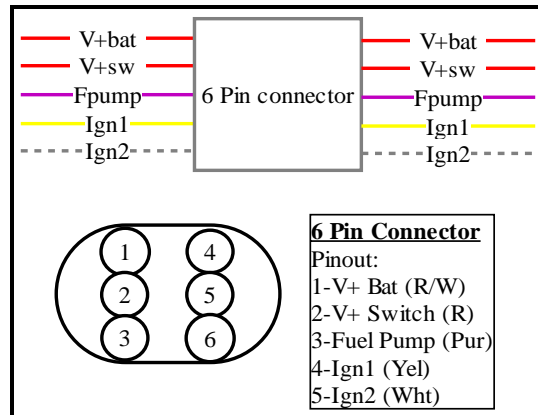
8. Install PFI pickup wheel. Pin fits into cam slot. A large washer is provided to cover pin. Use blue Loctite.



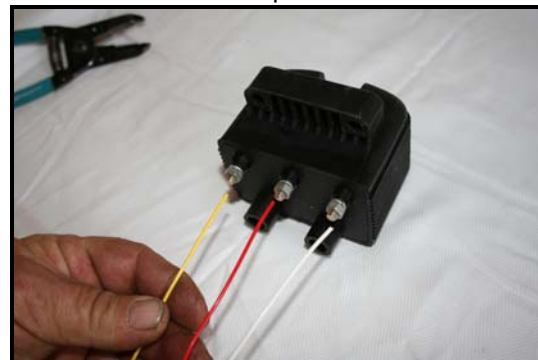
9. Prepare to make electrical connections. All connectors and wire shown.



10. Connect the 6 pin male/female connector together. Note: there are only 5 wires in this connector.



6 Pin connector pin-out.



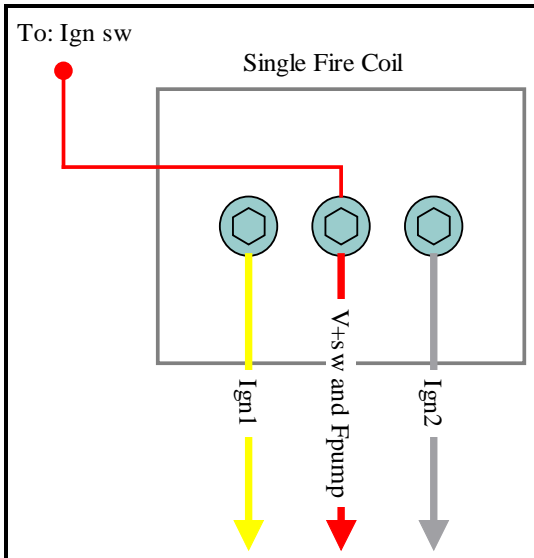
Coil wiring is as follows: Front cylinder is yellow, rear is white. Center post is connected to ignition switch, but also to fuel pump power (red) and pin 2 (red wire) of 6 pin connector to power ECU.



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11. Install coil/bracket, and wire coil to 6 pin connector. Use tie-wraps to secure the wires. Heat shrink can be used to conceal wires, and to protect. Tighten top motor mount bracket at this time.



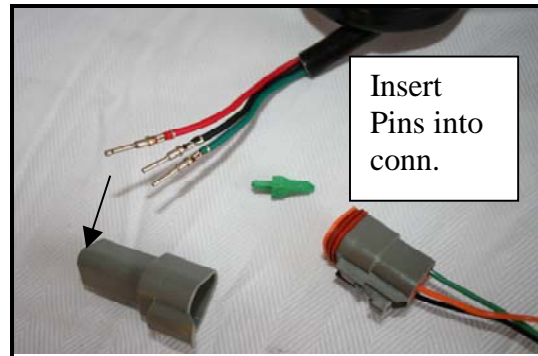
Coil Pin-out.



12. Install cam ignition pickup sensor plate. Each large mark is 10 degrees on crankshaft rotation (These marks are used to statically time the system later on).



13. When plate is in-place, route wires out nose-cone hole. Don't lock down at this time.



14. Insert pickup wires into 3 pin connector. Red wire in female connector lines up with orange, black with black, and green with green.



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15. Insert green lock into center of connector (after inserting the 3 wires) before connecting both sides of the 3 pin connector together.



16. Attach fuel pump. Kit comes with a rubber mounted bracket that attaches to the upper motor mount bracket. The three holes are designed to fit a "soft-tail" top motor mount, but this bracket can be altered to fit other mounts. Other brackets are available. Note: the left side of the pump is the high pressure side, and connects to the throttle body via the braided AN fuel lines and regulator. The right side of the pump connects to the petcock with rubber fuel injection hose (provided).



This is how the pump looks when attached to the bracket.

Kit comes with necessary fittings. You must use a backup wrench when installing fittings onto pump or pump will be damaged. Use liquid Teflon tape on all pipe threads. Note: fuel pump must always be rubber mounted.



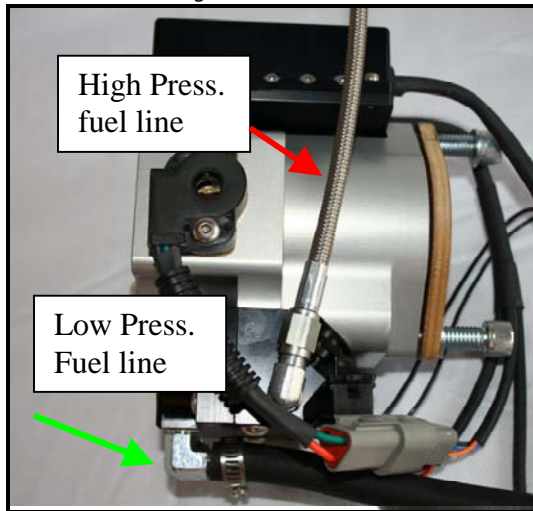
Another way to mount the fuel pump. Here, the pump has been mounted behind the oil tank on a custom motorcycle. Rubber isolators are used. Note: this type of installation will require custom fuel lines.



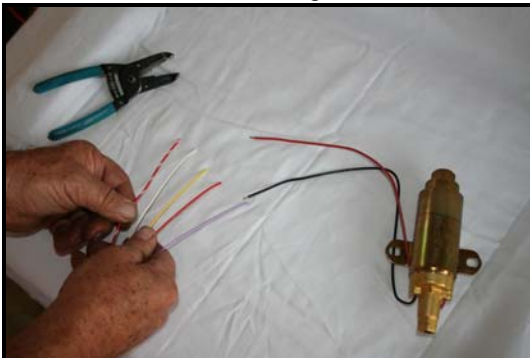
17. Major components of the fuel system: (1) pump (2) bracket (3) high pressure fuel lines (4) fuel filter (5) petcock (6) low pressure fuel lines. With fittings in place, connect the high pressure AN lines (a) to the high pressure side of the pump

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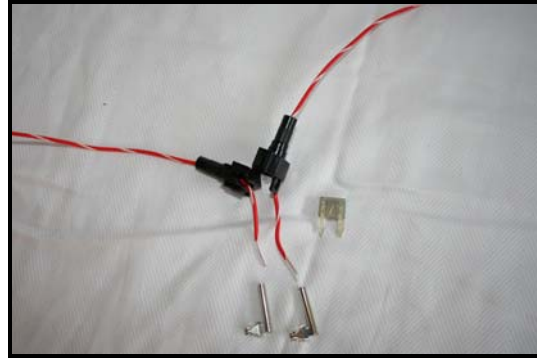
(b) to the inlet fitting on the throttle body.



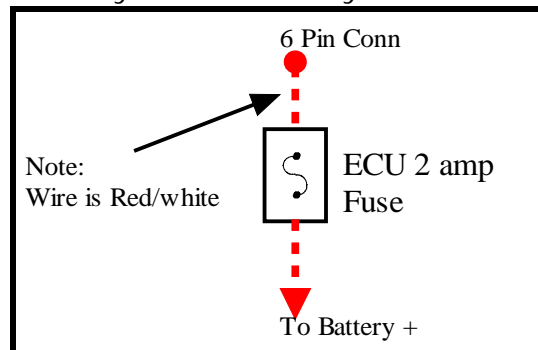
Picture of throttle body showing both the high and low pressure fuel lines. Fittings come in throttle from factory.



18. Wiring the pump. Connect the black pump wire to the purple wire on the 6 pin connector. Connect the red pump wire to the center post of the ignition coil (to ign switch). Make sure these connections are secure and heat-shrunked.



19. Connect the 6 pin connector red/white wire (V+ bat) to the battery via the fuse block. You must disassemble the fuse block as shown, then connect and reassemble. The other side of this red/white wire goes directly to the battery.

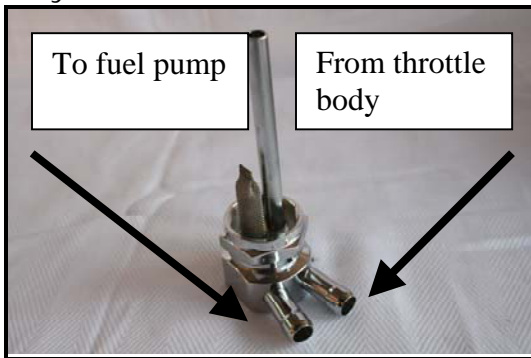


Schematic of fuse. This fuse is connected between the 6 pin connector and the battery positive. It is a low power fuse used to protect the ECU and cannot be used for any other purpose.

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20. Connect ECU grounds(s) to battery negative terminal. The ECU has two separate ground wires that must connect directly to the negative terminal and NOWHERE ELSE. Do not cut or alter these ground wires in any way.



21. Mounting the fuel tank, installing the petcock and connecting the low pressure fuel lines. The petcock threads into the same location as the old one. There are two hose nipples. The one on the left (with screen) is the outlet to the fuel pump. The one on the right (tall) is connected to the low pressure fitting on the throttle body. Both are connected with fuel injection hose (provided).



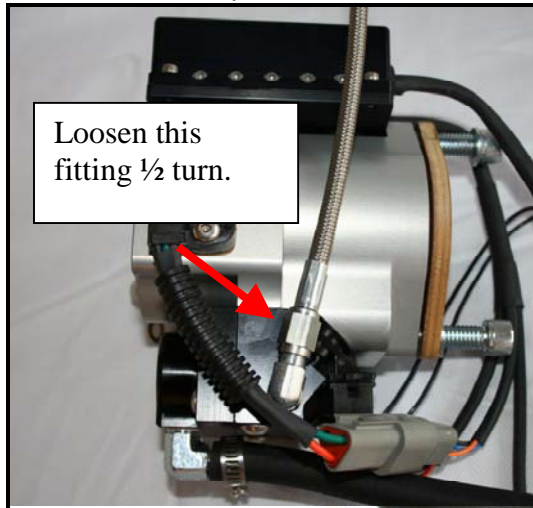
This installation uses 3/8 braided fuel line to reach the pump mounted behind the oil tank.



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*Special Note: At this point:*

- All mechanical complete
- All electrical complete
- All fuel lines plumbing complete.
- Ignition plate/static timing not complete.

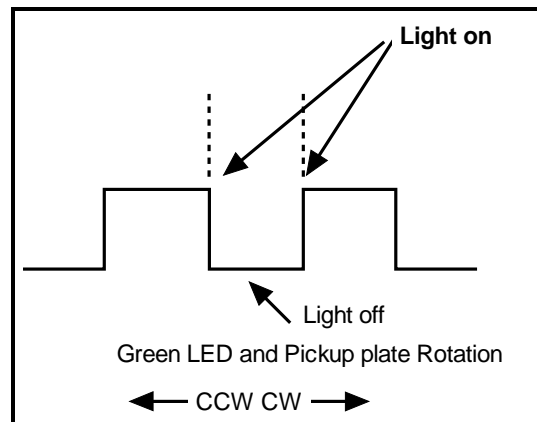


22. Filling the tank with fuel, turning on electrical power, and priming the system. With the tank partially filled, turn on the ignition switch for the first time. The fuel pump should spin for 4 seconds. Turn off the ignition switch. The fuel pump must be primed by loosening the -AN fitting on the throttle body 1/2 turn. Re-activate the ignition switch and verify fuel is leaking out of the fitting. If so, the system is primed. Re-tighten fitting and check for leaks.



23. Setting the ignition timing statically. Begin by re-checking the crankshaft mark to ensure the engine is at TDC cyl 1. With the ignition switch on, you should see the "red" light on the ECU activated (if not, there is an electrical problem). If so, then move the ignition plate slowly all the way counter-clockwise.

Note: Usually the green light is on at this point, but on some applications, it may still be off. This is not a problem, but the next step will be different if this is the case.

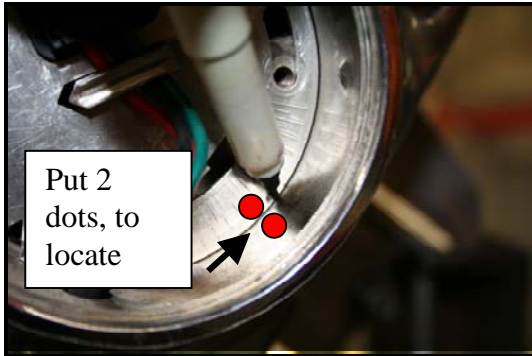


Then, if the light is on, begin to move it clockwise until the "green" light is off. Continue to move the plate clockwise until the "green" light is on again.

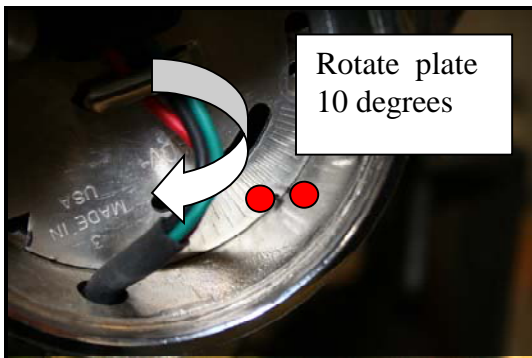


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This is the on-off-on sequence. Note: if the green light never came on when rotating the plate counterclockwise, then just rotate clockwise until it comes on. You will only see the off-on sequence.



Using a "sharpie" pen, put marks on both the nose cone and the ignition plate, to locate it.

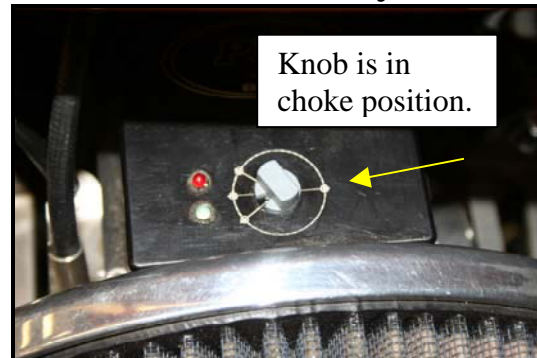


Rotate the plate 10 degrees, or one large line, clockwise. The "green" and "red" lights are on, and the system is statically timed. Tighten down two studs.

24. Backing plate and support brackets. Take the backing plate, turn over, and loosen the two bolts holding the support brackets. These brackets support the throttle and attach to the head breather bolts. Re-

install the 4 bolts (previously removed) that attach the backing plate to the throttle body. Use blue Loctite. Install the support brackets. Do not install the air filter at this time.

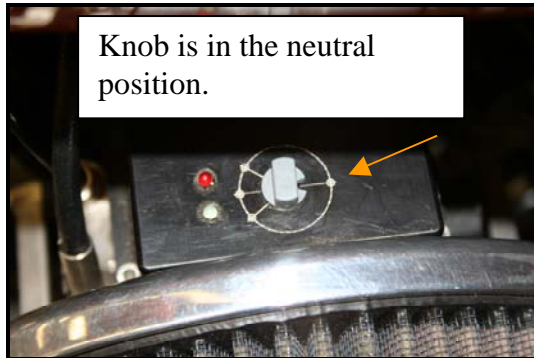
25. Communicate with ECU and set engine displacement parameter. You should now connect the ECU to your personal computer (PC) and use PFIComm to communicate and set the engine displacement parameter before starting the engine. Please see "EZ Software" document for more information on this subject.



26. Crank it up. A quick check can be performed to verify all systems are functioning at this time. Begin by turning the ECU enrichment knob clockwise into choke position as shown. With the ignition switch on, rotate the throttle and open the butterfly until the fuel pump begins to turn and the injectors "prime" the intake. Allow 2 seconds of priming, then close the throttle. Barely crack the throttle and engage the starter. The engine should start. Work the throttle if necessary to keep the engine

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running. Verify the butterfly and throttle are working correctly, then stop the engine and install the air cleaner and cover.



When the engine has warmed up, return the knob to the "neutral" position.

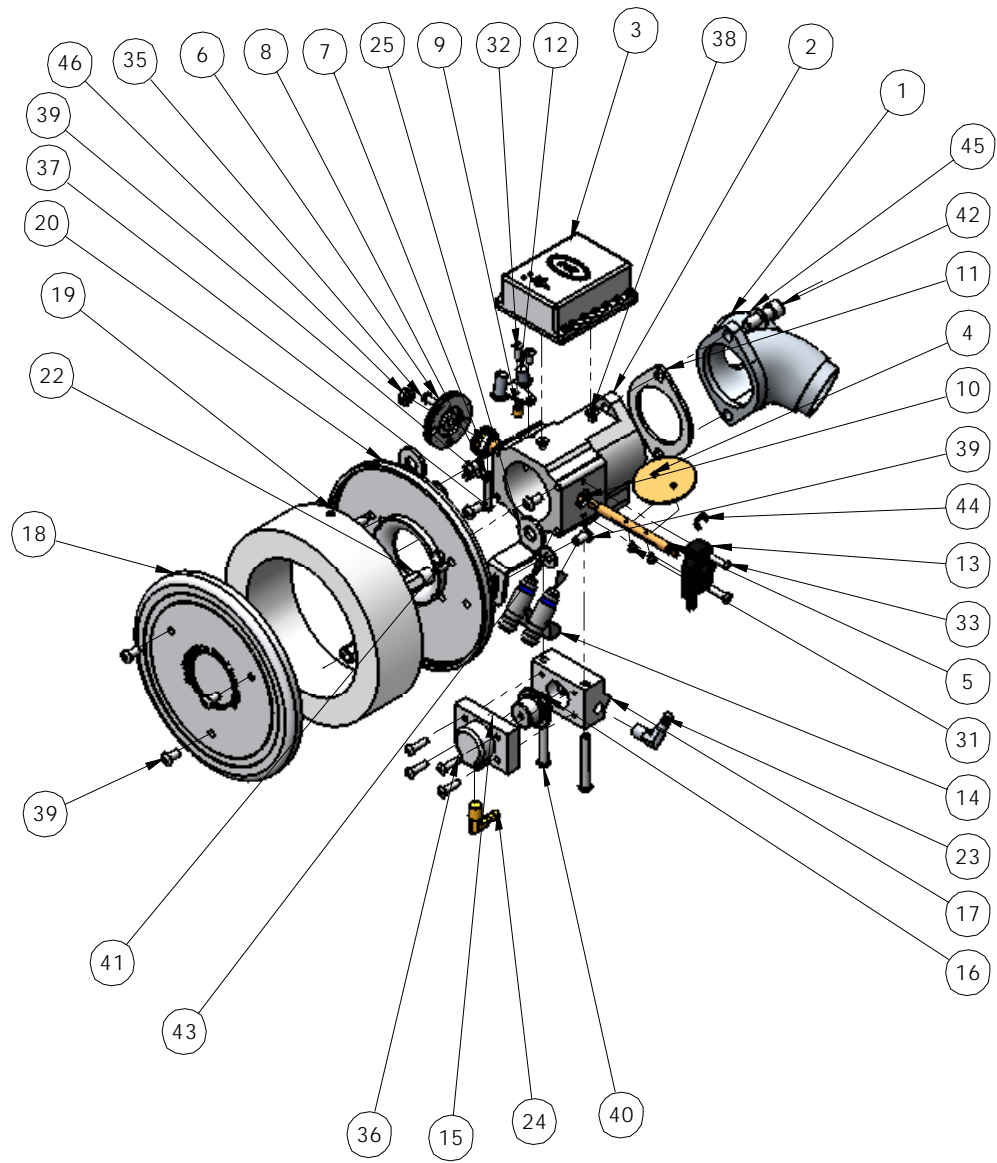


Great picture of a 117 Big Dog with PFI system.



PFI installed on an 80 inch rubber mounted engine.

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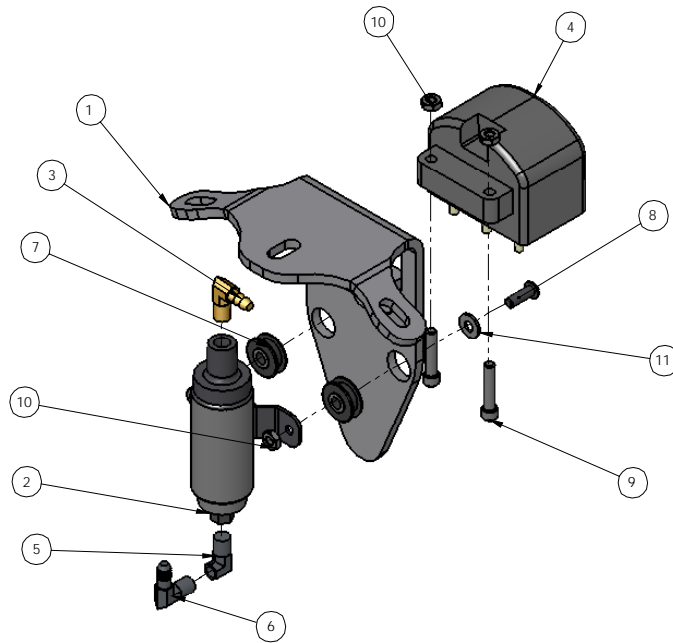
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	10-0021	Intake Manifold*
2	1	10-0006	Throttle Body
3	1	20-0000	Brain Assembly
4	1	10-0007	Butterfly
5	1	10-0008	Throttle Shaft
6	1	10-0012	Throttle Wheel
7	1	10-0013	Throttle Spring
8	1	10-0032	Idle adjustment spring
9	1	10-0026	Spacer
10	2	10-0015	bushing
11	1	10-0020	Insulator
12	1	10-0014	Throttle Cable Bracket
13	1	10-0009	Throttle Position Sensor
14	2	50-0004	INJECTOR
15	1	50-0005	regulator cover
16	1	50-0006	regulator
17	1	50-0001	Fuel Rail
18	1	15-0001	Breather Cover
19	1	10-0002	Air Filter
20	1	15-0002	Back Plate
21	1	20-0005	WIRING HARNESS**
22	3	15-0003	Breather Standoff
23	1	50-0099	90 Deg #3AN Fitting
24	1	50-0010	90 Deg Brass Fitting
25	2	15-0009	support plate
26	2	50-0006	Fuel Line**
27	4	50-0007	Hose Clamp**
28	1	35-0003	fuel filter**
29	1	35-0002	fuel line #3 an long**
30	1	35-0001	fuel line #3 an short**
31	2	60-0083	SBHCS #6-32x0.25
32	1	60-0007	SBHCS #8-32 x ½
33	1	60-0008	SBHCS #8-32x3/4
34	1	60-0002	SBHCS #10-24x3/8
35	1	60-0010	SBHCS #10-24x1/2
36	5	60-0004	SBHCS #10-24x3/4



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37	1	60-0023	SBHCS #10-24x1.25
38	2	60-0006	SCSNK 10-24 x 3/8
39	9	60-0082	SBHCS 1/4-20 X .5
40	2	60-0011	SBHCS 1/4-20 x 2
41	3	60-0019	SET SCREW 1/4-20
42	2	60-0067	SHCS 3/8-16 x 1.25
43	2	60-0073	Flat Washer 1/4
44	2	60-0081	SNAP RING
45	2	60-0074	FLAT WASHER 3/8
46	1	60-0089	1/4-20 NYLOCK NUT THIN

- \*Not included in Assembly
- \*\* Not shown on BOM

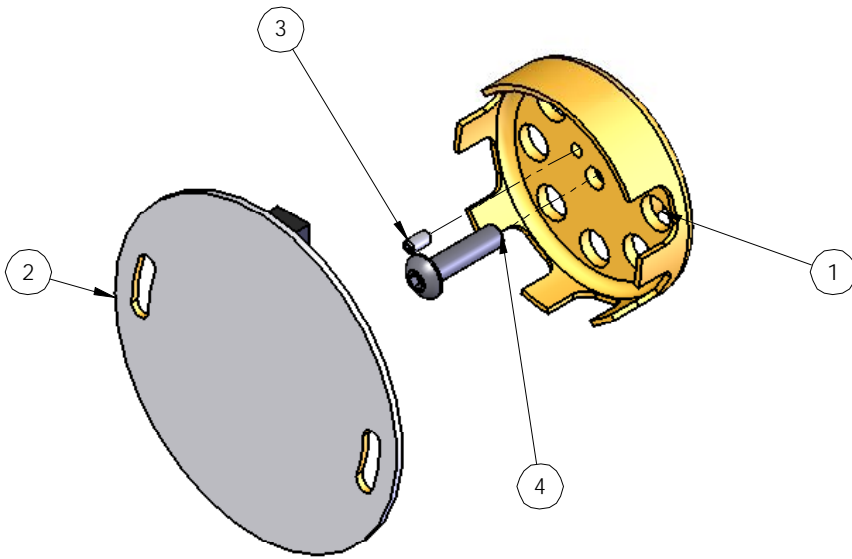


ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	30-0001	Coil Bracket

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2	1	30-0004	Fuel Pump
3	1	50-0010	#3 AM 90 Deg Fitting male/male
4	1	70-0001	Coil Single Fire
5	1	50-0075	90 degree fitting female/female
6	1	50-0099	#3AN 90 degree fitting male/male
7	2	90-0002	Grommet
8	2	60-0039	SBHCS 1/4-20x.75
9	2	60-0045	SHCS 1/4-20x1.25
10	4	60-0057	HJNUT 1/4-20
11	2	60-0073	Flat Washer 1/4
12	2	80-0001	Spark Plug Wire**

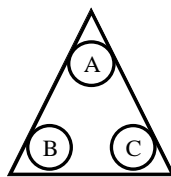
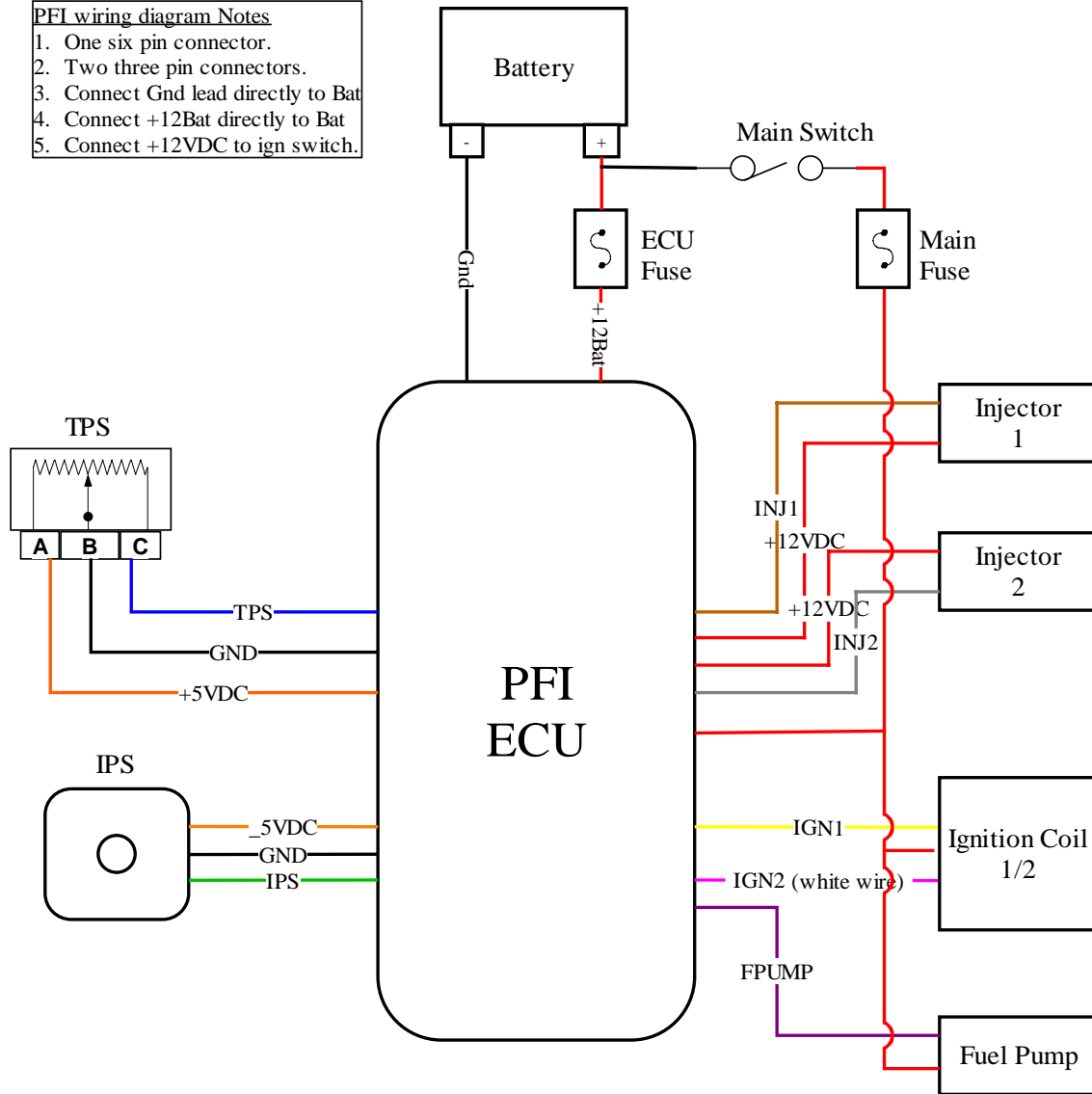
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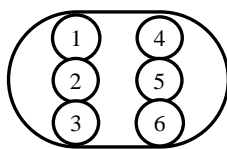
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	40-0002	Pickup 8 Tooth Wheel
2	1	40-0001	Speed Sensor
3	1	60-0063	set pin
4	1	60-0056	SBHCS 10-32x.75

# PFI Pegasus Fuel Injection EZ Installation Instructions

- PFI wiring diagram Notes**
1. One six pin connector.
  2. Two three pin connectors.
  3. Connect Gnd lead directly to Bat
  4. Connect +12Bat directly to Bat
  5. Connect +12VDC to ign switch.



**3 Pin Connector**  
 Pinout:  
 A-V+  
 B-Gnd  
 C-Signal



**6 Pin Connector**  
 Pinout:  
 1-V+ Bat  
 2-V+ Switch  
 3-Fuel Pump  
 4-Ign1  
 5-Ign2

**ECU Wire Color Code**

- Red/w- V+ Bat
- Red- Switch
- Blk-Ground
- Orange-+5 VDC
- White-Ign2
- Yellow-Ign1
- Grey-Inj2
- Brn-Inj1
- Purple-FPump
- Green-IPS
- Blue-TPS