



## VW VE Pump Diagnostic Troubleshooting

### **Hard Start**

1. Insufficient fuel supply, replace fuel filter.
2. One or more glow plugs bad or not getting power.
3. Worn drive shaft support bushings in pump (from over tightened timing belt)
4. Water in fuel
5. Air leaks on suction side of fuel system
6. Injection pump needs repair
7. Low Compression

### **No Start, fuel to injectors (smoke out exhaust while cranking)**

1. Cranking speed too slow
2. Pump timed incorrectly to engine.
3. Glow plugs not operating properly.
4. Low compression.
5. Incorrect fuel (water, gas etc)
6. Insufficient fuel or restricted fuel supply, dirty filter etc.
7. Injection pump needs repair

### **No Start, no fuel delivery to Injectors**

1. Electric Shut off solenoid failed or not getting power
2. Check for insufficient fuel supply, replace fuel filter.
3. Injection pump needs repair.

### **Low Power**

1. Replace fuel filter
2. Check for full throttle travel
3. Plugged or dirty fuel strainer in tank
4. Dirty air filter
5. Air in fuel supply system
6. Incorrect or poor quality fuel.
7. Injection pump needs repair.

### **Blue/White Smoke**

1. Pump to engine timing retarded. This would be more pronounced when the engine is cold or at wide open throttle with no load.
2. Low Compression
3. Coolant temperature too low
4. Incorrect or poor quality fuel

5. Air in fuel, restricted fuel supply (dirty filter or strainer)
6. Injectors worn, poor atomization
7. Injection pump worn, need repairs

### **Black Smoke**

1. Dirty air filter or restricted air inlet
2. Pump to engine timing incorrect.
3. Injectors worn or malfunctioning
4. Over fueled, excessive engine load or lugging engine
5. Poor quality fuel
6. Valve adjustment
7. Exhaust restriction

### **Miss, Rough Run**

1. Injector problem; crack the injection lines to pinpoint the injector, then remove and test the injector. If you can't get the injector tested then move that injector to a different cylinder and see if the miss follows the injector.
2. Air in fuel system.
3. Low Compression, on one or more cylinders.
4. Valve adjustment out of specification.
5. Idle speed too low.
6. Possible problem inside injection pump
7. It is un-likely that a rotary injection pump will deliver very little fuel on just one cylinder due to the design of the pump. Often one outlet that appears to have less fuel delivery could be an injector sticking open on the preceding cylinder in firing order or the way the line is positioned. We have tested dozens of pumps that visually (to the customer) had low output on a specific cylinder, but the fuel deliveries were even between cylinders on the test stand and a different fault was found on the engine.

### **Fuel Knock**

1. Cold advance lever still pulled out.
2. Air in fuel
3. Injectors worn or sticking open
4. Pump to engine timing incorrect

### **Surge**

1. Rear support bracket missing or incorrect parts used.
2. Air leaks on suction side of fuel system, look for air entering pump.
3. Injection pump worn, needs repairs

### **Slow to decelerate**

1. Excessive engine blow by, check the air filter, if the back side is soaked with oil from blow-by tube this is a sign of excessive blow by.
2. Injection pump worn, needs repaired

### **INJECTION PUMP TIMING**

1. To check injection pump timing, set crankshaft to TDC on No.1 cylinder and align marks on flywheel and clutch housing. Check marks on injection pump sprocket and mounting plate.
2. If timing needs adjustment, remove plug from injection pump cover and install adapter and dial indicator in place of plug. Preload dial indicator to .097" (2.5 mm).
3. Turn engine slowly counterclockwise until dial indicator needle stops moving. Zero indicator. Turn engine clockwise until TDC mark on flywheel is lined up with reference mark.
4. Check dial indicator against specifications listed in table. If out of adjustment, loosen bolts on mounting plate and support.
5. Turn pump to adjust timing and tighten bolts.