

Engine: V-6

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Abbreviations:

- AMM Air Mass Meter
- ECTEngine Coolant Temperature sensor
- ECUEngine Control Unit computer (either fuel injection or ignition)
- FI Fuel Injection
- FPR Fuel Pressure Regulator
- IAC Idle Air Control solenoid valve
- TB Throttle Body
- TPSThrottle Position Sensor
- VSS Vehicle Speed Sensor

Distributor Cap and Rotor Change. [Tips from Gordon McCracken] To replace the distributor cap and rotor on a B280F you will need:

- 8 mm wrench (open end and shorty socket recommended)
- 2.5mm Hex Key

Angle Mirror - useful for viewing bolts.

You will need an 8 mm wrench to remove the distributor cap shield and the distributor cap - a shorty socket wrench will come in handy reaching in between the engine fan blades to remove the distributor cap. An open end wrench 8 mm (small as possible) is recommended also. There are 3- 8mm bolts that hold the distributor cap and its shield in place. The shield over the cap is actually two piece - the top section snapping off after depressing tabs. The main section is

held in place with the 3 bolts that pass through the shield and also hold the distributor cap in place.

The 2.5mm Hex Key was needed to remove the Rotor. There were three Allen screws holding the rotor in place. Aftermarket (non-Bosch) replacement rotors may not have same type of screws - mine were Phillips. You can reuse the old screws.

PRV-6 Idle Setting Procedure. [Tips from Dan Roth, who archived them from a list] Here's the V6 idle setting procedure that I've been able to find in my archives.

One thing that could be causing your surging idle is a dirty throttle body. This is a real problem, if the TB is plugged so badly that all air regulation at idle goes through the Aux Air. Clean the throttle body, it's easy enough, but DON'T adjust the throttle stop. Just to make it clear DON'T ADJUST THE THROTTLE STOP - not till later. Just clean the TB. Now, you're going to want to balance the airflow to the cylinder banks:

The B28E has three adjustment screws near the throttle housing, the rear one is for the idle speed and about the other two the manuals only ever say: don't touch. It did need balancing afterwards, so here's what I did:

1. Run engine for 15 minutes so that it warms up.
 2. Turn rearmost (idle speed) screw in fully. That closes a passage to the front two (balancing) screws so that turning them at this point won't have any effect.
 3. Adjust the throttle stop so that the engine runs at 700 rpm. May be a little rough, but never mind.
 4. Turn two front screws in fully.
 5. Turn rear screw out four complete turns. Since step 4 resulted in the idle air passages to both banks being closed, this should not change the idle speed at all.
 6. Connect rev counter (handheld meter, not the dashboard kind) and note the exact idle speed at this point. Should still be 700rpm.
 7. Turn out center screw three complete turns. Note the new idle speed, should be around 1100-1200 revs, but this isn't critical. Just make a note of whatever the number is.
 8. Turn center screw back in fully, turn out front screw so that the engine speed increases to the same as measured in step 7. If you can't make it go that far, turn front screw out three complete turns, measure the new idle speed, turn front screw back in completely, then turn out centre screw to match the speed measured previously. The object of this exercise is to find the number of turns for both screws which will result in the same increase in idle speed. For one, that'll be EXACTLY three turns, for the other whatever it takes. Set each screw to the number of turns you so determine. Idle speed should be at about 1300-1400 rpm afterwards.
 9. Finally, use the rear screw to get idle down to 900 rpm. Then check CO level and adjust
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V-6 Poor Hot Restart. [Inquiry:Alex] A few weeks ago I made myself an LED diagnostic tool so that I could make use of the diagnostics which come with my

model of MV (760 v6) ps if any one is interested to make their own , email me and i will be happy to oblige.

To return to the story, When rigged the LED flashes 6 times (indicating that the sensor which sits on the #1 spark plug lead is not working). Is there any EASY way I can confirm the non operation of this sensor?

Another request. Periodically, the car does not start easily (engine turns for about 20 to 30 seconds) when the engine is hot and the car has been standing for say 30 mins. When it does start there is a faint smell of fuel. I have been advised via brickboard that it could be the flywheel sensor. Here in Aus I have been quoted equiv usd \$120 for the part so naturally I am keen to confirm that the flywheel sensor is not working before purchasing a new one. I would appreciate it if someone had a way of confirming the operation of this sensor as well.

[Response: Abe Crombie] The #1 plug wire sensor is polarity sensitive. Make sure the wires on coil are correct, red/white on terminal labeled 1 and blue on the terminal labelled 15. The sensor could be on plug wire reversed if someone changed the wire and slid it on wrong. This wouldn't make it have start problems when hot. The sensor is used to ID the firing order for proper knock sensor use since it has two knock sensors.

Pull the vac hose off of the fuel pressure regulator and see if it has any fuel residue in it. Run the engine and then immediately remove the return line off the fuel pressure regulator (soft rubber hose held by clamp) and see if any fuel continues to drip out of regulator. Any loss of residual pressure from system will cause hot, short shutdown starting problems. A dripping leaking fuel injector would do the same. The best way to check this out would be to use a fuel pressure gauge if available. The check valve on fuel pump can also allow fuel pressure loss when shut down.

Water Pump Change on B280 Engine. [Alex Dermedgoglo] Tips:

1. Many manuals and bulletin boards indicate that the inlet manifold needs to be removed as part of the process for removing and replacing the water pump. This is untrue. There are two rubber water hoses(a fat one and a thin one) that extend from rear of water pump to under the manifold, but can undo the clamps that attach them to the water pump.
2. Loosen the water temp sensor located close to the thermostat (obviously after detaching the connector), before you loosen water pump. This will save you the trouble of having to clamp the water pump after removal, to remove the sensor. Do the same with the screw in plug on the other side of the sensor (it requires a 10mm hex key , i think that is about 25/64ths inch)
3. Naturally, replace all rubber hoses - you may have difficulty sourcing the thin rubber hose I mentioned in 1. above, dont despair - I took the old one down to the local spares place where I was able to buy 1/3 of a metre (1 ft) of standard water hose. The piece required is only 3 - 4 inches long(75 - 100 mm)
4. When fitting the new hoses I found it helped things to spray a bit of lubricant, such as Inox, inside each hose.
5. I found it was possible to remove the pulley attached to the front of the

waterpump without loosening the alternator belt. ie I only loosened the power steering and aircon belts. Similarly, once the studs were lined up with the pulley holes, even with the belts seated in the pulley, I was able to click the pulley onto the water pump shaft (sorry dont have photo to show what I mean but anyone going through the process will know what I mean.

6. I was unable to remove the fan without removing the radiator shroud. Being a Volvo, that was not difficult to do and the process was pretty intuitive.
7. I found that I had to reinstall shroud and fan together, but I only tightened up the shroud once the fan was installed and tightened.
8. Order a set of water pump studs - less than \$1 each from FCP etc, that will save you a lot of angst as you gingerly try to remove the old ones from the old pump. I know! Been there and it is not pleasant wondering if the threads have been irretrievably damaged as you unscrew them with pliers (there is not enough unthreaded space to use a very small spanner)

Valve Lash on V-6. [Inquiry] How much time and effort that is needed in order for me to adjust my valves on my 1990 760 GLE V-6? The valves are becoming slightly noisy. [Response:] It's pretty straight forward, but on the passenger side of the car you'll have to move the compressor out of the way. If you have the tools and a reclaim machine you can remove the freon and remove the compressor completely, other wise you have to wire it to the shock tower to hold it out of the way while you work. I've done it in 3 hours at my shop but if you are doing it at home, it may be an all-day job. Make sure you

Design for an LED Sensor to Diagnose the V-6

[Design by Alex Dermedgoglou]

To make the number 1 cylinder sensor and flywheel sensor you need the following parts:

- 4 meters of single core wire;
- one crocodile clip (for positive terminal);
- one male flat spade connector (for inserting into female connector located close to left hand front strut ;
- one ~.25w LED (light emitting diode) [Note] The Radio Shack 12V LED with 30mA/80mcd should work fine without the resistor below.
- resistor 560 ohms +/- 5% (green, blue, brown, gold bands on a four-band resistor)

Assembly:

1. Cut 4 meter cable into 2 equal length pieces
2. Solder one length of cable to negative connector on LED
3. Attach spade connector to end of cable soldered to negative LED connector
4. Solder resistor to positive LED connector.
5. Solder remaining electrical cable to other resistor leg.
6. Attach crocodile clip to other end of cable connected to resistor
7. Cover whole of LED, resistor etc. with insulating tape, leaving gap to see LED flash etc.

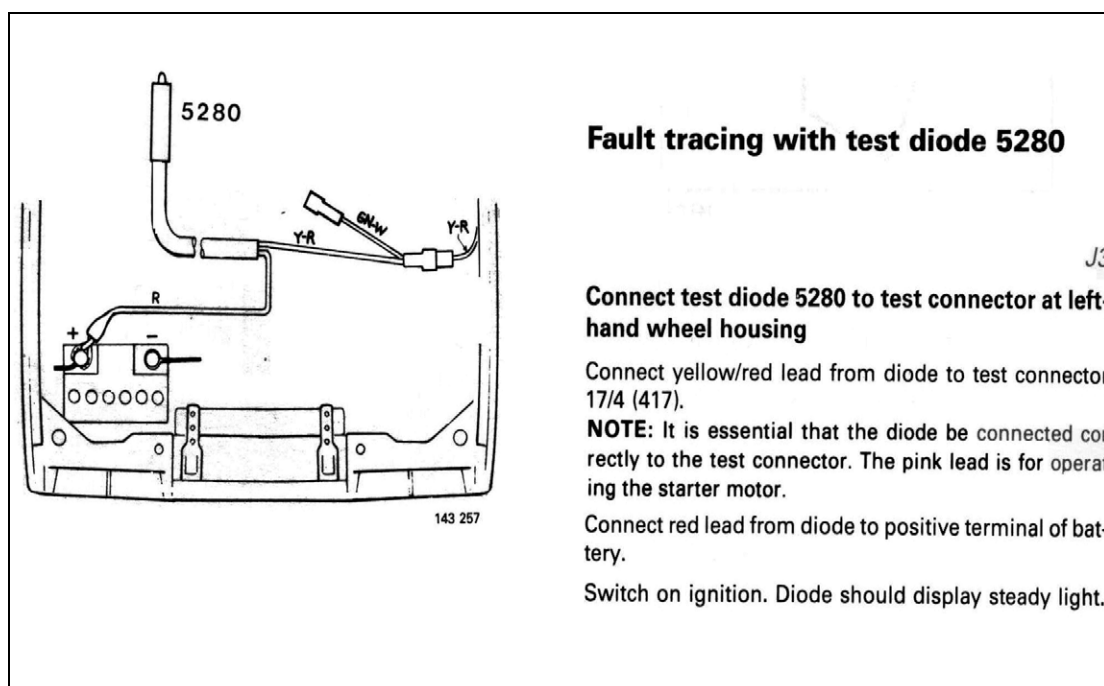
To use (see the attached diagram):

1. attach crocodile clip to positive of battery terminal
2. attach spade connector
3. feed LED display through into passenger compartment so that can be observed whilst driving
4. close bonnet and start engine

If there are any problems the LED will flash the following codes

- 1 flash - Engine knock has occurred, activating knock-controlled timing retardation. Can be due to inferior grade fuel, excessive engine temperature, faulty plug, intake system leakage or engine carbonization (due to frequent cold start and idling).
- 2 flashes - Faulty signal from temperature sensor
- 3 flashes - not used
- 4 flashes - Faulty signal from knock sensors or faulty knock detection circuit (internal to control unit).
- 5 flashes - Faulty load signal from fuel system control unit
- 6 flashes - Faulty signal from No 1 cylinder detector

The unit will flash out the code, then there will be a noticeable delay, when it will flash the code again. Some of the codes will only be flashed under load, so if you get no code at idle, take the car for a drive, accelerating etc. The attached drawing shows sensor connection.



Preventive Maintenance for B280 V-6. See the section under [Buying Used](#) for preventive maintenance tips.

Parts and Tools for B280 PRV-6. See [Special T Auto](#) in Forney, TX for parts and tools for the PRV-6 engine.

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