

Feuling Camplate Tools

Keep calm under pressure

A highly problematic and misunderstood component of the modern Twin Cam engine is the camplate

pressure relief valve. It's been said that a majority of oil pressure problems with the Twin Cam engine are related to a

malfunctioning pressure relief valve; either the relief valve sticks in the bore and/or it fails to seat and seal properly which causes leakage. And any leakage at the relief valve results in a loss of oil pressure.

The sole purpose of the camplate pressure relief valve is to protect the engine from too much oil pressure. For example, when you fire up your cold engine with thick 20W50 oil the relief valve is designed to open and prevent engine damage such as oil leaks caused by excessive oil pressure. However if the valve is not functioning properly you may encounter alarmingly low oil pressure figures.

We like to see the camplate pressure relief valve seated and sealed from 0 to 30 psi with a full pop off pressure of 50-60 psi. The sealing from 0-30 psi is much more important than the full pop off psi of 50-60. It is also important that the relief valve sits back down on the seat and re-seals at about 30 psi after having opened. These recommended settings will ensure the engine is protected and receives the most oil pressure available which is especially important on those hot days that can generate extremely high oil temperatures and low oil pressure.

Contrary to what most people believe, there is no magic spring or shim out there that can make the relief valve function properly. The same principle for sealing up valves in a cylinder head applies here. Just as you wouldn't install a higher pound



valve spring to fix a leaky valve in a cylinder head, you can't just install a stiffer spring and expect the relief valve to seat and seal itself. The complete pressure relief valve must be seated to seal properly.

The only way to know exactly what is going on with the relief valve is to pressure test it, and the best way to do this is



with Feuling's complete pressure test tool #9010. We recommend pressure testing the complete anytime it is out of the engine. It is important to test the complete prior to disassembling the relief valve so you know how it is currently performing. The Feuling tool provides an ideal workstation for servicing the complete.

To service the relief valve, remove the roll pin, spring and relief valve plunger. Feuling tool #9000 can be used to hold the spring down while you remove/install the roll pin. Inspect and clean the complete bore and plunger valve. Use sand paper or an abrasive pad to remove any debris or burrs, then clean and reassemble the plunger valve using a spray lubricant on the bore and valve. To re-seat the



The arrow indicates the complete oil port where you can feel for air leakage.

plunger valve, hold it down with a punch, turn up the air on the tool regulator while holding down and centering the plunger with the punch, then give it a good whack with a hammer. This process will create a new seat and may need to be performed multiple times in order to obtain the desired results.

The next step is to re-install the spring, inspect for leakage and check the pop off pressure. You may want to use a 1/8" pin punch to hold the spring in place for ease of testing and spring adjustments, thus eliminating the need to re-install and remove the roll pin each time.

If your existing spring is not reaching the desired pop off pressure of 50 - 60 psi, Feuling recommends replacing the spring. (See Feuling part #8018.) You can also adjust your existing spring, but note that if you stretch the factory spring, it may collapse and lose pressure after multiple cycles. Once the desired settings are reached, Feuling recommends cycling the completed assembly numerous times to ensure proper operation.

Remember, oil is the lifeblood of your engine. Like your own heartbeat or blood pressure, you need to make sure such vital systems are operating within spec to keep the old mill turning! **W**

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