

Measuring Oil Pressure & Oil Cooler Bypass Spring Tension

Jimmy Candelaria, September 2024

When you are trying to control oil pressure at RPM and idle it is all about spring tension over the valve. Spring tension specification is in the Volkswagen Service manual under the Engine section, page 35 for Type 1 and page 30 for Type 2. Installing each of these springs should not be guess work as the engine oil pressure, heating and cooling depends on these components to properly function together. There is a lot of spring tension variation even among new springs. Different manufacturers may use different wire diameter, steel construction, winding pitch, and overall length.

Spring tension is measured when the spring is compressed to the specified loaded length. To do this will require a scale on the drill press table. Set the depth control on the drill press to the specified loaded length above the scale surface. Compress the spring to the loaded length then observe and record the scale force. Install springs to your liking within the specification range then observe their performance. Swap them out as necessary to adjust for desired performance. The oil pump size used in the engine will have an effect but this component is an oil system constant making spring tension a factor for pressure adjustment response.

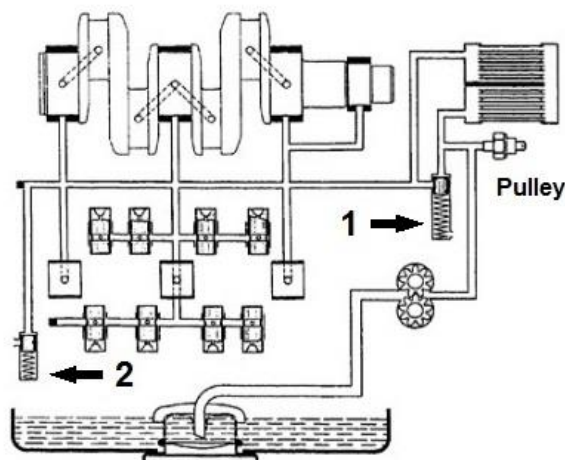


Table c. Spring Specifications

Model	Loaded length	Loaded tension
1 Pressure relief spring	44.10 mm (1 13/16 in.)	5.6-7.3 kg (12.3-16.0 lb.)
2 Pressure control spring	20.20 mm (3/4 in.)	3.1-3.6 kg (7.0-8.0 lb.)

*cooler bypass valve ② 6.8-8.4 lb.
② 12.3-16.1 lbs.

Type 1 Oil Spring Tension Specification

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3. Check the spring tension and length. Then compare your findings with those given in **Table a.**

Table a. Spring Specifications

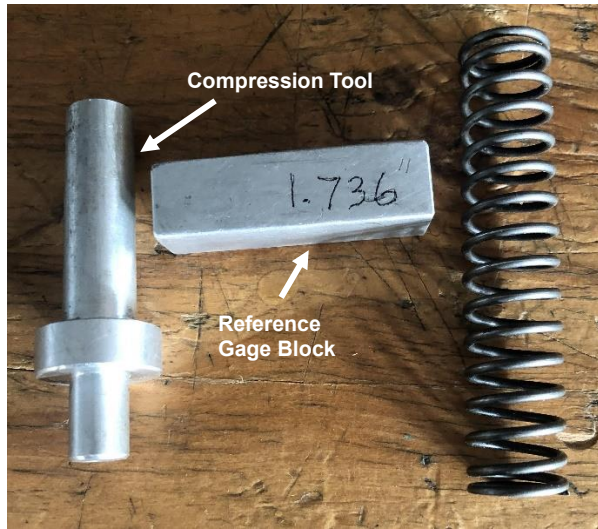
Model and part	Loaded length	Loaded tension
1968-1969 pressure relief valve spring	43.20 mm (1 1/16 in.)	2.5-4.2 kg (5.5-9.2 lb.)
1970-1971 pressure relief spring	44.10 mm (1 3/4 in.)	5.6-7.3 kg (12.3-16.0 lb.)
1970 pressure control spring	20.20 mm (1 3/16 in.)	2.9-3.6 kg (6.3-7.9 lb.)
1971 pressure control spring	20.20 mm (1 3/16 in.)	3.1-3.8 kg (6.8-8.4 lb.)
1972 and later pressure relief spring	39.00 mm (1 1/16 in.)	6.8-8.8 kg (15.0-19.4 lb.)
1972 and later pressure control spring	26.00 mm (1 1/16 in.)	1.7-2.0 kg (3.8-4.4 lb.)

Type 2 Oil Spring Tension Specification

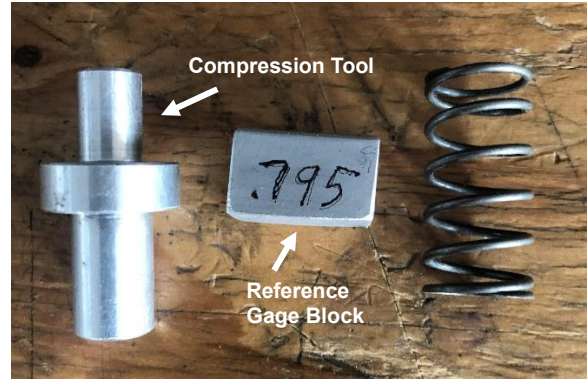
Gage blocks must be made precisely to the loaded length specification for each spring. These can be made of wood, aluminum, or plastic. They are only used for reference in setting the spring compression height. The spring compression tool shown below is designed to be insert into the drill chuck on one end and extend into the spring enough to prevent it from slipping out when under compression. The larger diameter in the middle is a stop for setting the height. Apply even pressure onto the spring until firmly against the drill press stop. Some measurement variation may be observed due to the amount of downward manual force against the drill press stop, so try to be consistent with the amount of pressure onto the drill press stop.

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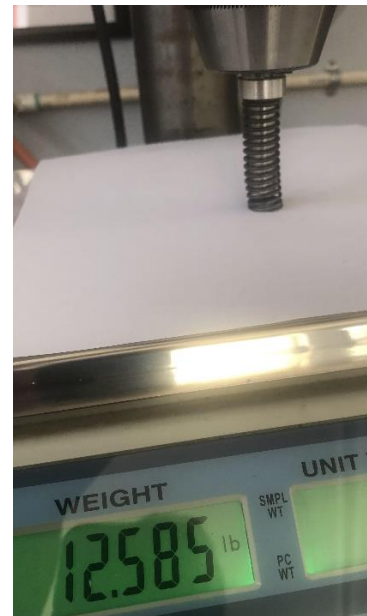
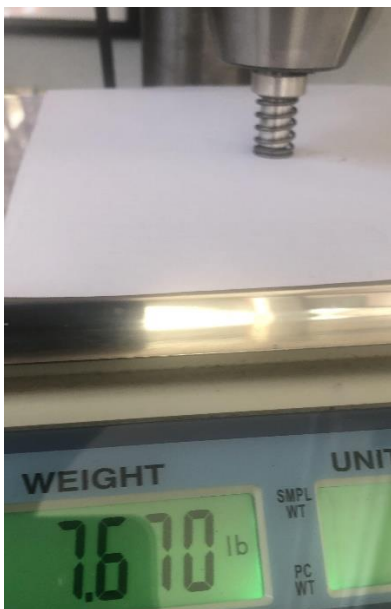
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Oil Cooler Bypass Spring



Oil Pressure Spring



Please send your comments and questions to me at Candelaria.jamesj@gmail.com. Thank you.