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Installation Instructions for KPMI Part No.: 20-23850

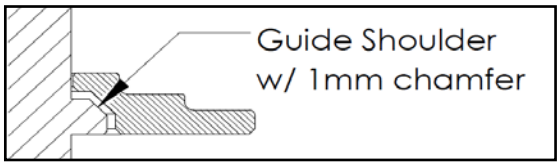
Harley Davidson • Milwaukee-Eight Engines • 2017-'23

Lightweight Racing Valve Spring Kit

A) 20-23850 Kit Includes:

Qty	Application	Description
8 - Pcs	Intake / Exhaust	HT Steel Retainers
8 - Pcs	Intake / Exhaust	HT Steel Basewashers*
8 - Prs	Intake / Exhaust	Chrome Silicon Dual Springs **
8 - Pcs	Intake / Exhaust	Viton Seals
8 - Prs	Intake / Exhaust	9° HT Steel Keepers

***VALVE GUIDE COMPATIBILITY.** This system is designed to be run with KPMI's newer style valve guides, which are shortened for increased valve lift and can be identified with a large 1mm wide chamfer on the top of the shoulder. The system is NOT compatible with older style KPMI guides. The system can also be run with the OEM guide but with reduced lift capacity due to higher guide heights. The OEM snap ring MUST be removed prior to installation.



****ROCKER BOX MODIFICATION**. Due to the larger diameter of the upper spring retainers, modifications to relieve the OEM lower rocker cover we be required to clear around the retainers. Additionally, relieving the lower rocker cover around the installed compression release valve, will provide additional freedom of movement when installing the cover.

B) Recommended Installed Height - Intake / Exhaust

1. Installed Height . . . . . **1.550"-1.560"**
2. Seat Pressure . . . . . **101 lbs**
3. Open Pressure at 0.630" lift . . . . . **317 lbs**
4. Max Valve Lift . . . . . **0.630"**

NOTE: Each spring has a sliglty tighter wind to the coils on one end. Install with tighter coils down, towards cylinderhead.

C) Notes:

1. The difference between the installed height and the coil bind height is considered "Free-Travel"

   The coil bind height is determined by compressing the spring(s) with the Retainer and Basewasher in place (a vice can be used for this operation). Once springs are compressed, measure the distance between the Retainer and Basewasher where the Outer Spring contacts them.

2. Free-travel should always be gross valve lift +0.060″ for safe operation.
3. Retainer-to-Seal / Guide clearance should also be gross valve lift +0.060″ for safe operation.
4. Failure to check valve train clearances can result in serious damage to an engine

Packaged By:_____ Date:_____ .

TECH TIPS

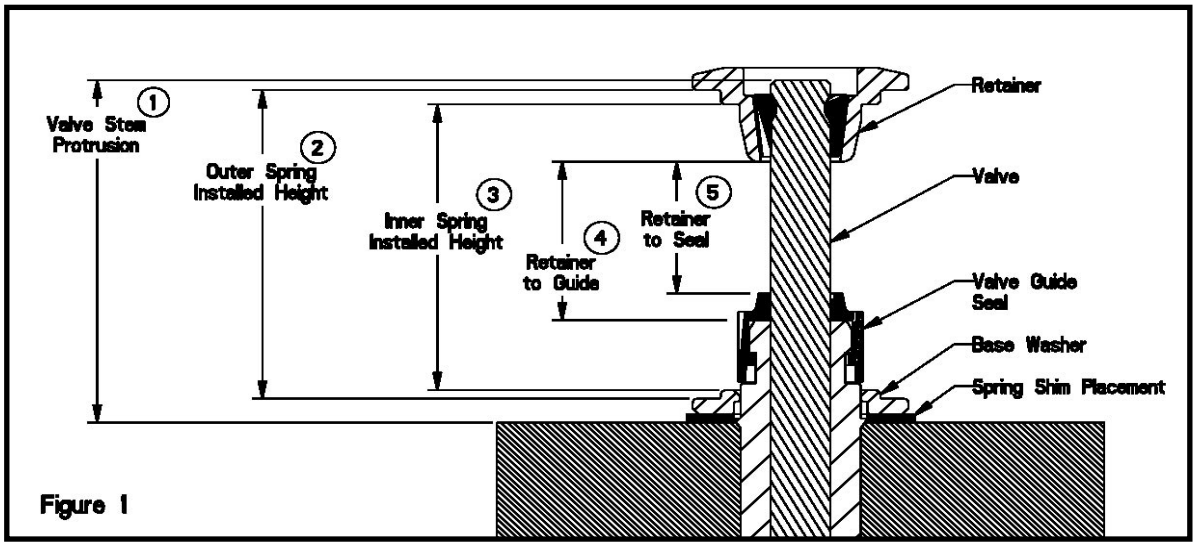


Figure 1

Valve Train Terminology

1. Stem Protrusion is measured from the tip of the valve stem to the cylinder head. See Figure 1.
2. Outer spring installed height is measured where the outer spring contacts the Retainer and Basewasher when assembled (See Figure 1).
3. Inner spring installed height is measured where the inner spring contacts the Retainer and Basewasher when assembled (See Figure 1).
4. Retainer-to-Guide clearance is the distance between the Valve Guide (w/o the seal) and the bottom of the Retainer, with the Valve in the closed position (See Figure 1 and Notes 3 & 4).
5. Retainer-to-Seal clearance is the distance between the Valve Stem Seal and the bottom of the Retainer, with the Valve in the closed position (See Figure 1 and Notes 3 & 4).

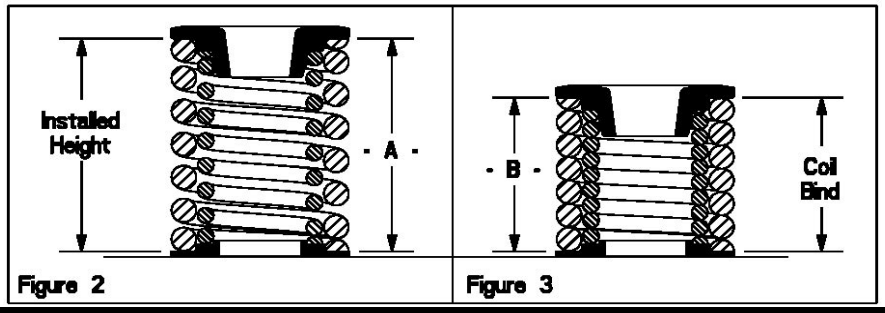


Figure 2 Figure 3

Installed Height

1. In Figure 2 the installed height is measured from where the Outer Spring contacts the Retainer and the Basewasher. This measurement is taken when the Valve, Basewasher, Retainer, and Keepers are assembled in the cylinder head.

Coil Bind / Solid Height:

1. In Figure 3 the coil bind height is determined by compressing the Spring(s) with the Retainer and Basewasher in place (a vice can be used for this operation). Once springs are compressed, measure the distance between the retainer and basewasher where the Outer Spring contacts them.

Notes:

1. The difference between the installed height and the coil bind height is considered “Free-Travel”
2. Free-travel should always be gross valve lift +0.060″ for safe operation.
3. Retainer-to-Seal / Guide clearance should also be gross valve lift +0.060″ for safe operation.
4. Failure to check valve train clearances can result in serious damage to an engine.