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Installation Instructions for KPMI Part No: **20-2110**

Harley Davidson • Shovelhead® 74" (7075-T6 H.A.) • 1966-'77

Lightweight Racing Valve Spring Kit

A) 20-2110 Kit Includes

Qty	Application	Description
4 - Pcs	Intake / Exhaust	7075-T6 H.A. Retainers
4 - Prs	Intake / Exhaust	H.T. Steel Keepers
4 - Prs	Intake / Exhaust	Chrome Silicon Springs
4 - Pcs	Intake / Exhaust	H.T. Steel Basewasher *

*This basewasher is counterbored allowing for a 0.665" outside diameter seal to sit inside the base for additional seal to retainer clearance.

B) Recommended Installed Height - Intake/Exhaust

1. Installed Height . . . . . **1.450"-1.470"**
2. Seat Pressure . . . . . **171 lbs**
3. Open Pressure at 0.550" lift . . . . . **385 lbs**
4. Max Valve Lift . . . . . **0.550"**

C) 0.600" Lift Installed Height - Intake/Exhaust

1. Installed Height . . . . . **1.500"-1.520" ****
2. Seat Pressure . . . . . **150 lbs**
3. Open Pressure at 0.600" lift . . . . . **385 lbs**
4. Max Valve Lift . . . . . **0.600"**

**In order to achieve the 1.500” lift installed height, you will need to spot face the surface under or around the valve guide to a diameter greater than the basewasher and modify the basewasher by boring a 0.780” hole through the center so that it can rest on the head. At this point the basewasher can be shimmed to achieve the recommended installed height.

Or, in some cases, depending on the condition of the cylinder heads, using the offset retainers supplied in this kit and slightly increasing the depth of the counter bore on the bottom of the basewasher will also allow you to achieve the 1.500” installed height.

D) 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 or springs 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 +.060″ for safe operation.
3. Retainer to seal and retainer to guide clearance should also be gross valve lift +.060″ for safe operation.
4. Failure to check valve train clearances can result in serious damage to an engine

Packaged By:_____ Date:_____ .

TECH TIPS

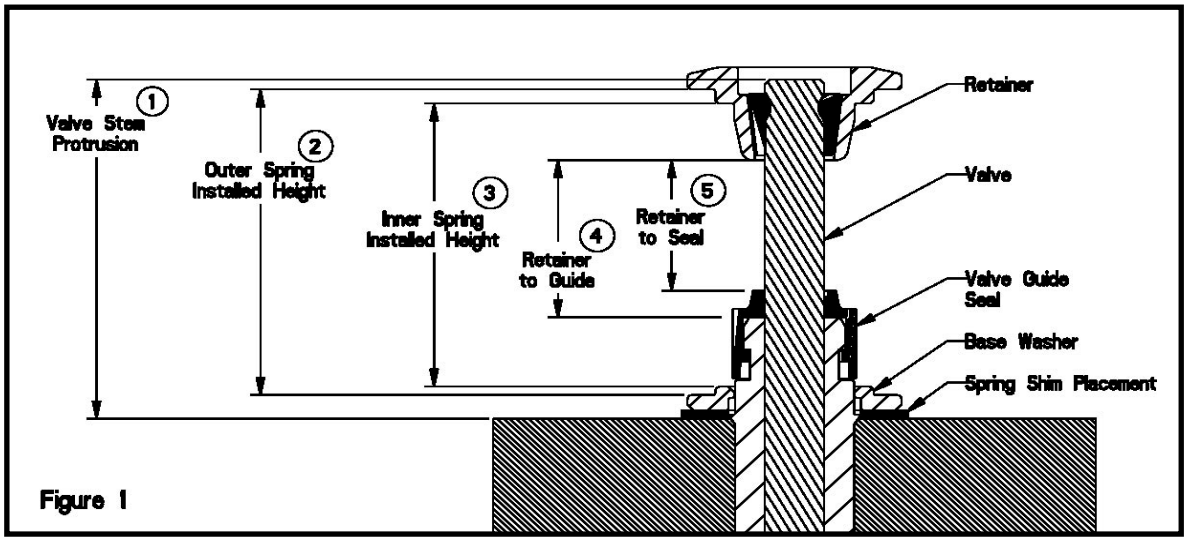

Figure 1

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 lower component when assembled. See Figure 1.
3. Inner spring installed height is measured where the inner spring contacts the retainer and lower component 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 1and Notes 3 & 4.

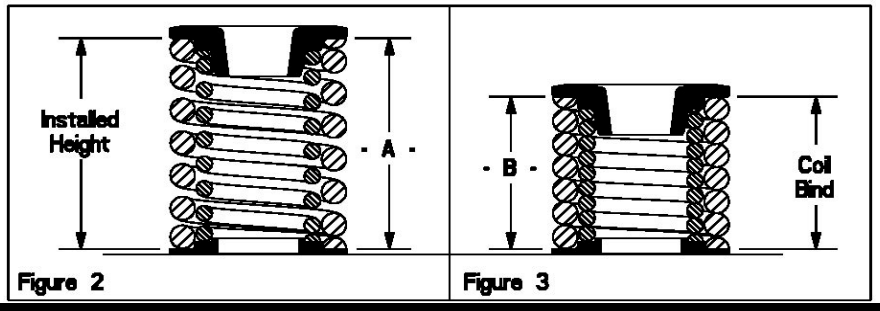

Figure 2

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 or springs 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 +.060″ for safe operation.
3. Retainer to seal and retainer to guide clearance should also be gross valve lift +.060″ for safe operation.
4. Failure to check valve train clearances can result in serious damage to an engine.