



**Installation Instructions for KPMI Part No: 80-80600**  
**Yamaha • Apex and RX-1 Snowmobiles • 2003-'10**  
Lightweight Racing Valve Spring Kit

A) 80-80600 Kit Includes

| <u>Qty</u> | <u>Application</u> | <u>Description</u>     |
|------------|--------------------|------------------------|
| 12 - Pcs   | Intake             | Titanium Retainers     |
| 8 - Pcs    | Exhaust            | Titanium Retainers     |
| 20 - Prs   | Intake / Exhaust   | Chrome Silicon Springs |
| 12 - Pcs   | Intake             | H.T. Steel Basewashers |
| 8 - Pcs    | Exhaust            | H.T. Steel Basewashers |
| 8 - Pcs    | Exhaust            | Solid Viton Seals      |

**\*Note: KPMI Exhaust Stem Seals 80-80641 are required when installing Spring Kit 80-80600. However, OEM Intake Stem Seals are acceptable for use with Spring Kit 80-80600.**

B) Recommended Installed Height - Intake / Exhaust

|                                |                      |
|--------------------------------|----------------------|
| 1. Installed Height            | <b>1.095"-1.105"</b> |
| 2. Seat Pressure               | <b>40.00 lbs</b>     |
| 3. Open Pressure at .365" lift | <b>84.50 lbs</b>     |
| 4. Max Valve Lift              | <b>0.365"</b>        |

C) Notes

- 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.*
- Free-travel should always be gross valve lift +.060" for safe operation.
- Retainer to seal and retainer to guide clearance should also be gross valve lift +.060" for safe operation.
- Failure to check valve train clearances can result in serious damage to an engine

Packaged By: \_\_\_\_\_

Date: \_\_\_\_\_

# TECH TIPS

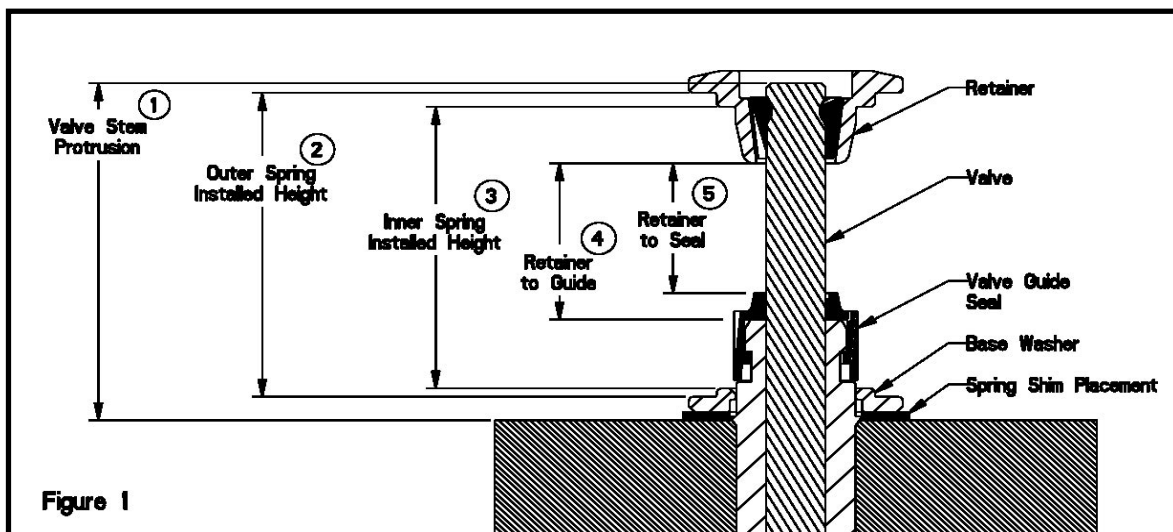


Figure 1

## 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 1 and Notes 3 & 4.

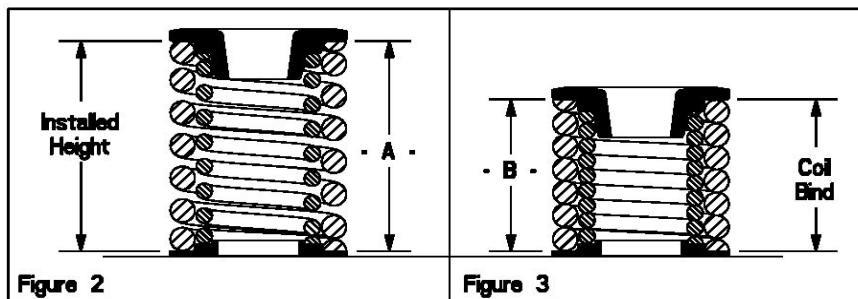


Figure 2

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 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.