



## Installation Instructions for KPMI Part No: **80-82050**

Yamaha • Various 450's • 2003-'06

WR450F • 2003-'06 / YZ450F • 2003-'05

### Cylinder Head Service Kit

This kit is verified for the model year range listed above. Certain components in this kit may have larger coverage and are labeled accordingly. When installing KPMI Cylinder Head Service Kits it is important to maintain these highly stressed components in accordance with factory service limits. Always consult with qualified professionals suited to inspect your machine.

#### A) 80-82050 Kit Includes

KPMI P/N	QTY	Description	Specification
80-80206	1 Set	Spring Kit	Includes: Ti Retainers, CrSi Valve Springs, H.T. Steel Basewashers, 4.5mm Red Viton Seals*
80-80213H	2 Pcs.	Intake, Standard (Outer) Valve	Valve • White Diamond® • Stainless
80-80215H	1 Pc.	Intake, Standard (Center) Valve	Valve • White Diamond® • Stainless
80-80217H	2 Pcs.	Exhaust, Standard Valve	Valve • White Diamond® • Stainless
80-80220	3 Pcs.	Intake, Standard Valve Guide	Valve Guide • Mng. Brz. Bronze
80-80230	2 Pcs.	Exhaust, Standard Valve Guide	Valve Guide • Mng. Brz. Bronze
80-82051	1 Set	Gasket Kit	Includes: 95 mm Head Gasket (1), Base Gasket (1), Exhaust Gasket (1), Cam Chain Tensioner Gasket (1), Oil Line Washers (2), Head Drain Washers (1), Oil Line Washers 4 Req (1)

\* NOTE: It is important to use the valve stem seals included in the KPMI labeled bags. These valve stem seals are designed for specific compatibility with the KPMI spring kit. The COMETIC® gasket kit may contain additional valve stem seals, however these should NOT be used with the KPMI spring kit and can be discarded.

#### B) Recommended Installed Height - Intake/Exhaust

- |    |                             |                 |
|----|-----------------------------|-----------------|
| 1. | Installed Height            | 1.100" - 1.110" |
| 2. | Seat Pressure               | 39 #            |
| 3. | Open Pressure at .300" lift | 76 #            |
| 4. | Open Pressure at .380" lift | 86 #            |
| 5. | Max Valve Lift              | 0.380"          |

#### C) Notes

- The inner valve spring registers on the O.D. of the valve guide. If shimming is required be sure that the inner spring can still register on the valve guide
- 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

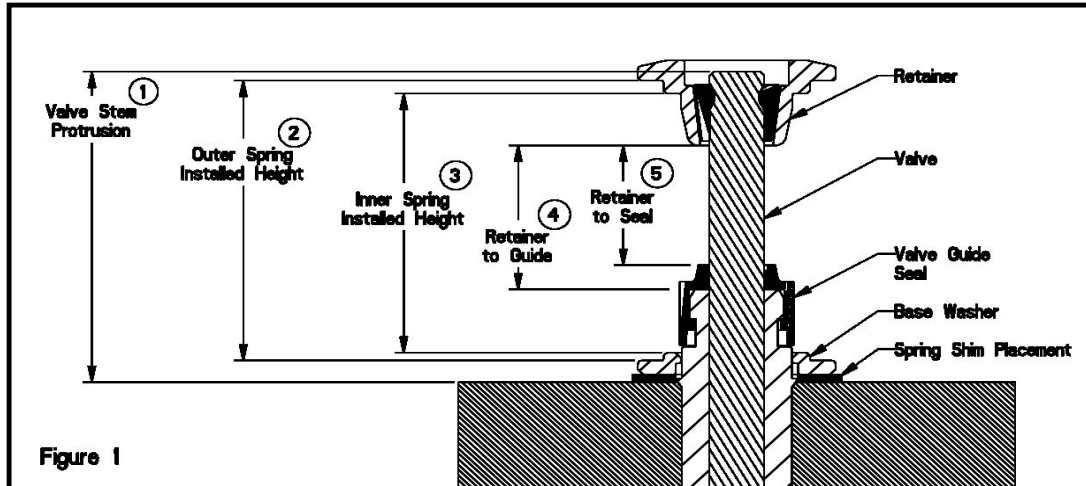


Figure 1

## 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.

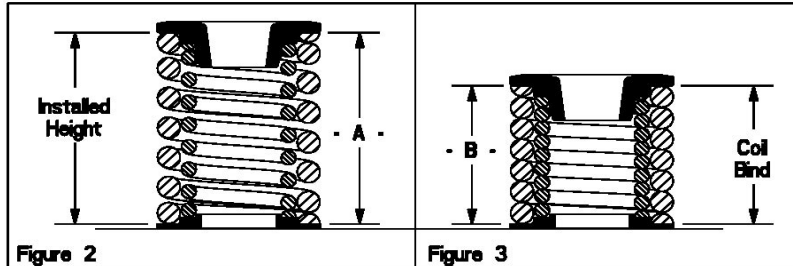


Figure 2

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.