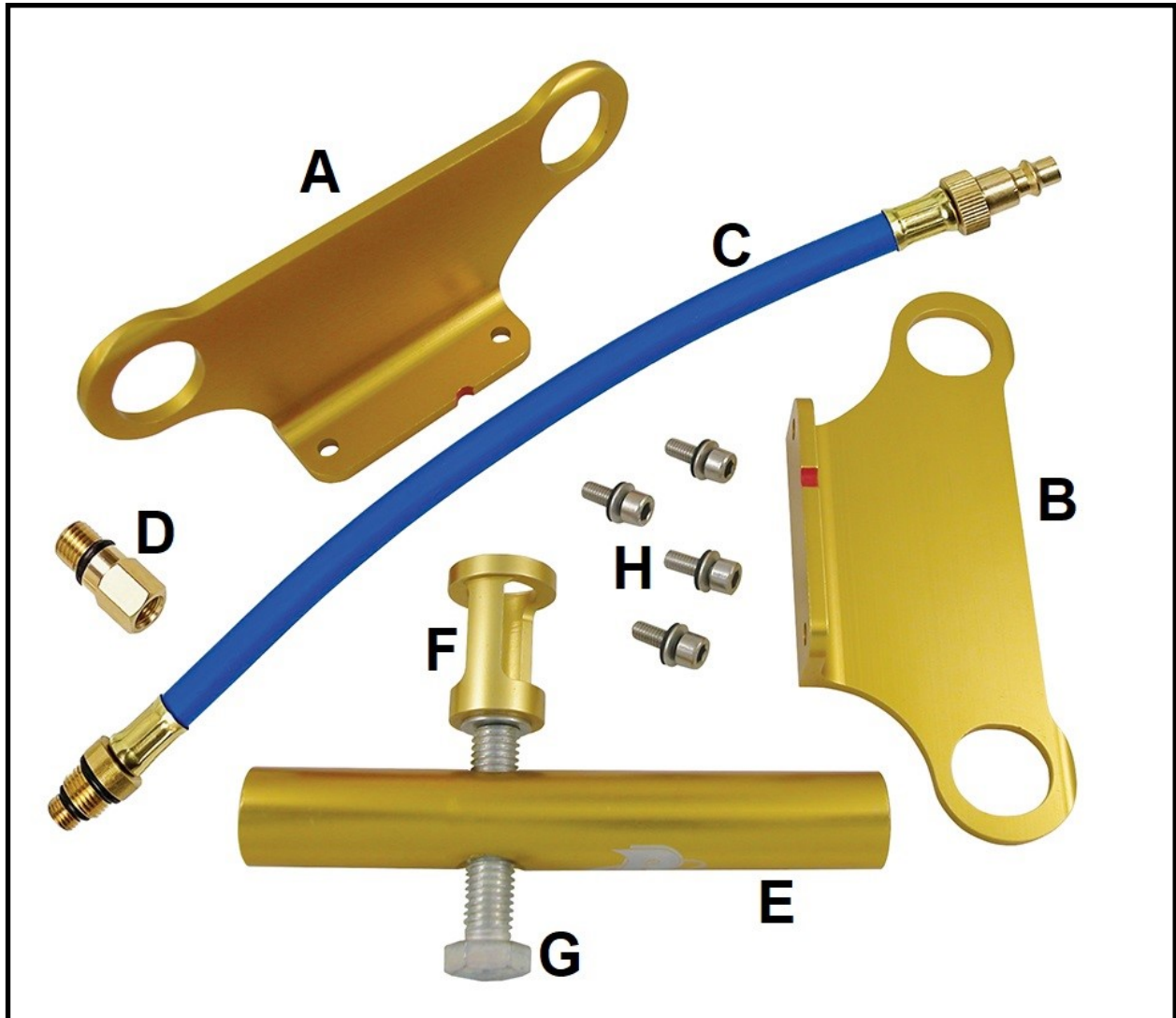




RIVA Sea-Doo Valve Spring Compression Tool

RS19050-VCT-1



Applications: Sea-Doo 1503/1630 4-TEC

Approximate Installation Time: N/A

Recommended Specialty Tools:

Metered air supply 80 psi maximum

Part #

N/A

Required Materials:

Rocker arm shaft bolts must be replaced. These are stretch bolts. Failure to replace and strictly follow the torque procedure may cause bolts to loosen resulting in engine damage. Replace using part# 420641080. These bolts are included in both the RIVA Valve Train Upgrade Kit (RS19050-VTU) and the RIVA Valve Spring Retainers Upgrade Kit (RS19050-SRU-1).



RIVA RACING
PERFORMANCE PRODUCTS & ACCESSORIES

RIVA Sea-Doo Valve Spring Compression Tool

RS19050-VCT-1

Notes and Precautions

We strongly recommend the use of a service manual to familiarize yourself with the various components and procedures involved with this installation. Please note that some of the original hardware removed in the disassembly process will be used in the installation process. These instructions have been written in step-by-step format and refer to illustrations. Read through instructions entirely before performing installation. Please follow these step-by-step instructions and illustrations carefully.

***** ALLOW ENGINE TO COOL COMPLETELY BEFORE PERFORMING INSTALLATION *****

***** NO SMOKING *** NO SMOKING *** NO SMOKING *****

Caution: Whenever using electric or battery operated tools inside the hull be sure it is well ventilated and no fumes are present. Failure to do so could result in a fire, or explosion and serious personal injury or death.

COMPONENT LIST

Item	Description	Part number	Quantity	notes
A	Right Support Bracket		1	
B	Left Support Bracket		1	
C	Airline	ZH-RY19040-VCT-H	1	
D	12mm Adapter		1	Assembled with Airline
E	Compression Rod		1	Assembled with cup and bolt
F	Compression Cup		1	Assembled with rod and bolt
G	Compression Bolt		1	Assembled with rod and cup
H	M6 x 16 SHCS	.6C16SHCS	4	

Your kit was inspected and verified before being carefully packaged by our staff. Please check package contents before beginning assembly. If you have a question about missing or damaged items please contact RIVA Technical Support directly at (954) 247-0705 or by e-mail at tech_support@rivaracing.com.

Use Instructions

A service manual is recommended when performing this installation. The following instructions were written based on installing the RIVA Valve Train Upgrade Kit (RS19050-VTU) or Retainers Upgrade Kit (RS19050-SRU-1). This tool allows you to install those upgrades without removing the cylinder head. **NOTE: Rocker arm shaft bolts must be replaced. These are stretch bolts. Failure to replace and strictly follow the torque procedure may cause bolts to loosen resulting in engine damage. Replace using part# 420641080.**

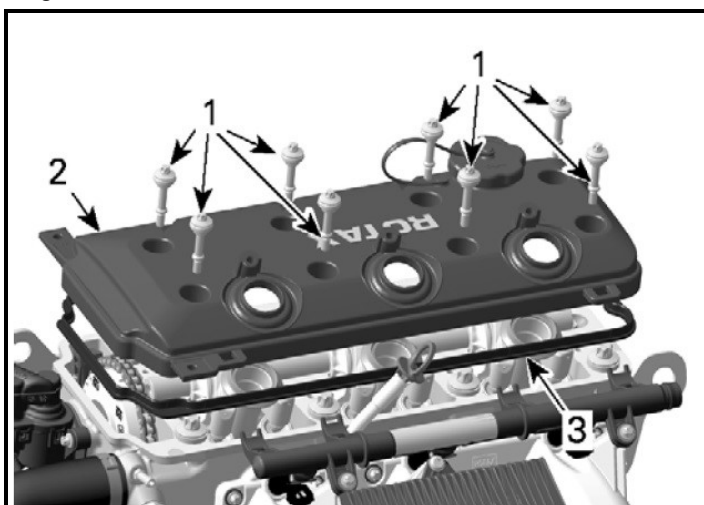
Remove D.E.S.S. lanyard and disconnect battery cables.

NOTE: Negative (black) first. Positive (red) second.

Remove ignition coils (spark plug caps).

Remove plastic cover with BRP logo from valve cover exposing valve cover screws (bolts). Remove 8 screws (bolts) securing valve cover to cylinder head. (Figure 1)

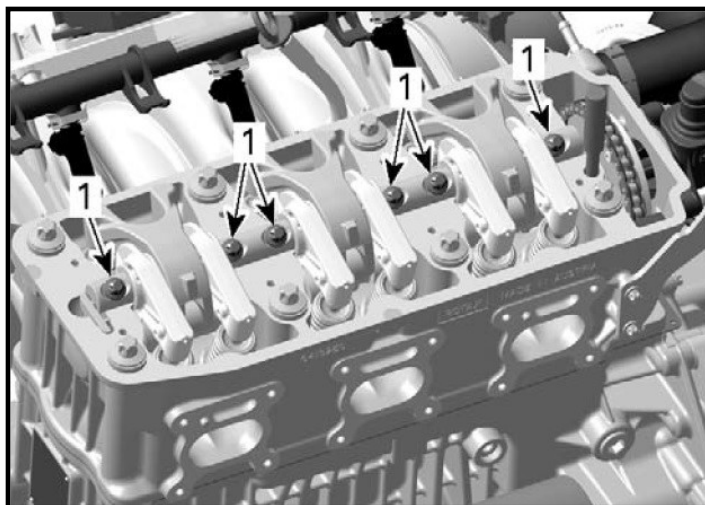
Figure 1



Remove spark plug tubes.

Remove rocker arm shaft assembly and **DISCARD** bolts (Figure 2) **NOTE: Before removing mark rocker arm shaft and cylinder head at one end for replacement reference.**

Figure 2



Install compression rod supports onto cylinder head using supplied hardware making sure red indicators are aligned with camshaft. (Figures 3 & 4)

Figure 3

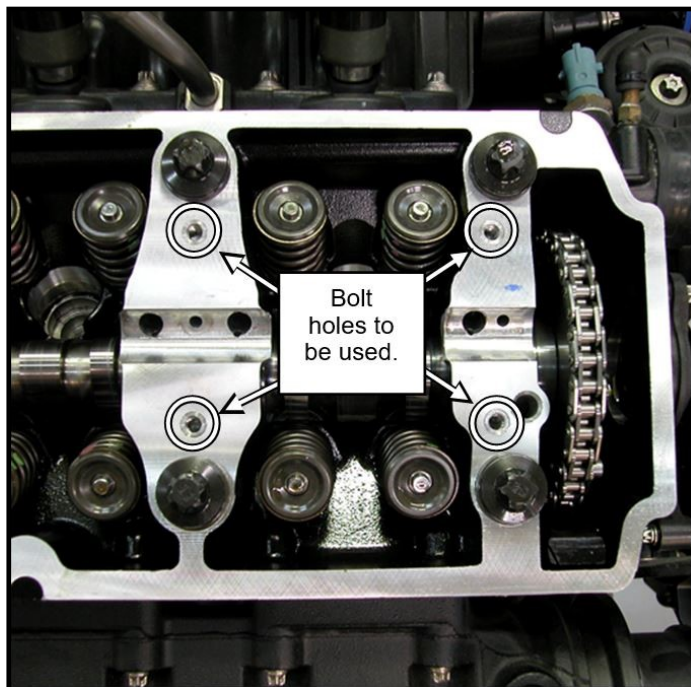
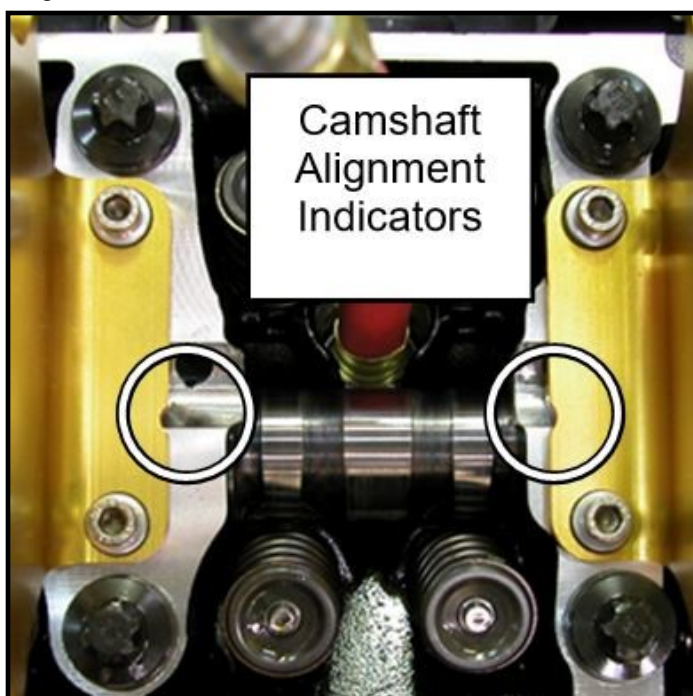


Figure 4



Install supplied 12mm adapter to supplied airline. Install airline assembly into spark plug receiver for cylinder being serviced. (Figure 4) Using a metered airline, pressurize cylinder to **80psi maximum**. **NOTE: When pressurizing cylinder cam chain guide may rise out of cylinder head. Simply hold in place or push back into place.**

Use Instructions

Insert compression rod into supports and align compression cup with valve. (Figures 5 & 6)

Figure 5

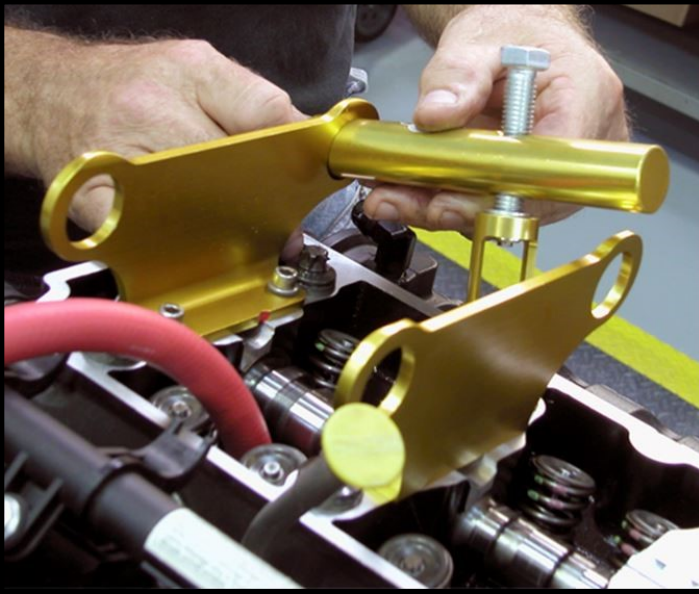
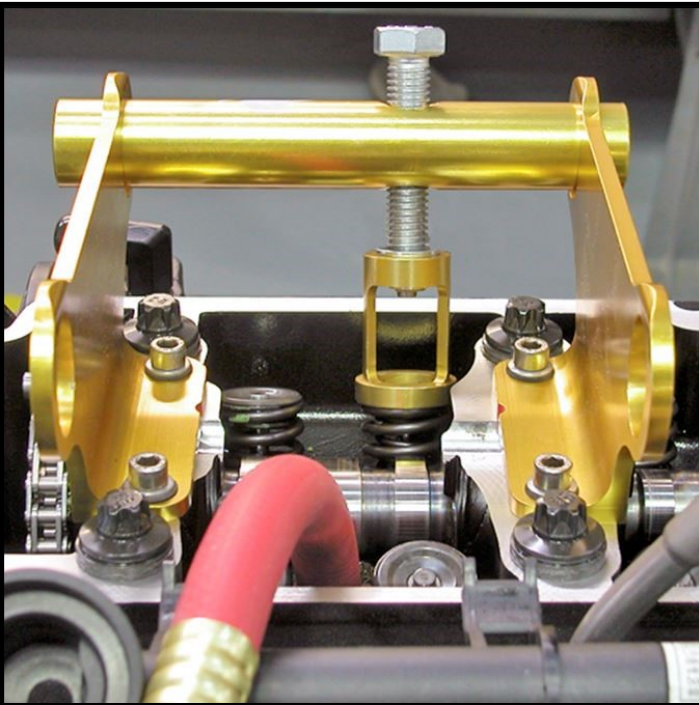
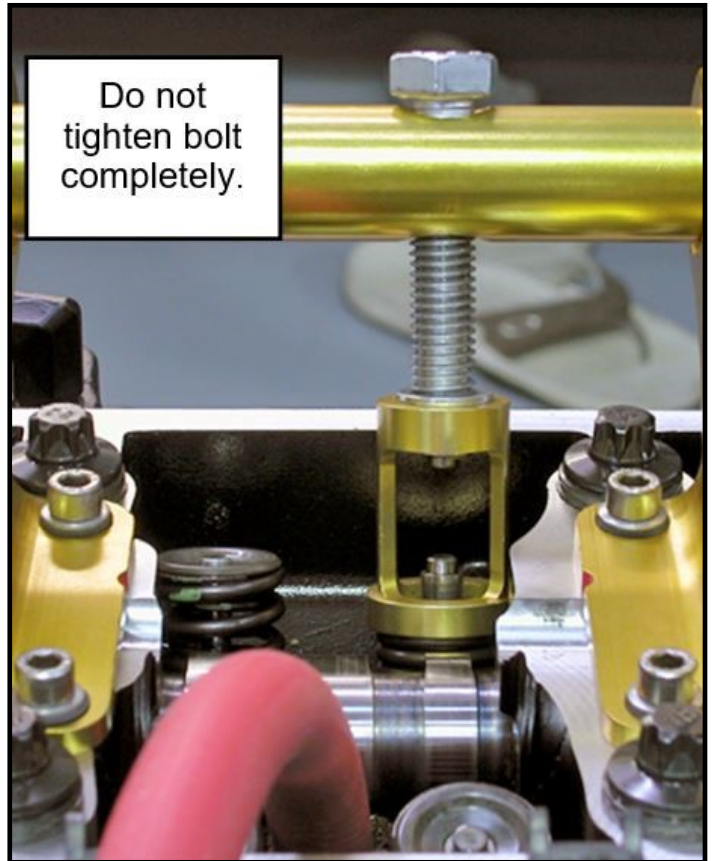


Figure 6



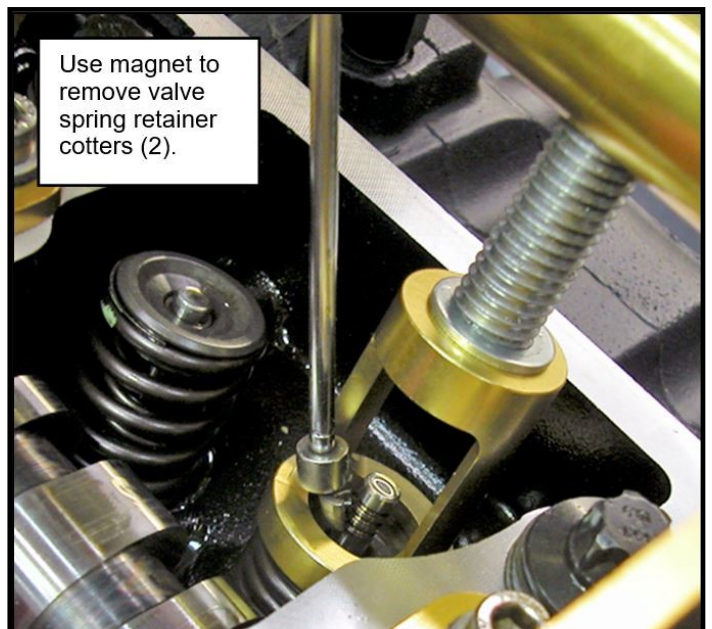
Tighten compression bolt until compression cup seats on valve spring retainer. (Figure 6) Check alignment. Tighten compression bolt enough to expose valve spring retainer cotters. (Figure 7)

Figure 7



Remove valve spring retainer cotters (2). (Figure 8) **TIP: Use a magnet!**

Figure 8



Loosen compression bolt completely. Rotate compression rod to allow access to valve.

If installing RIVA Valve Spring Retainers Kit (RS19050-SRU-1) remove OEM valve spring retainer and replace

Use Instructions

with retainer from RIVA Upgrade Kit.

If installing RIVA Valve Train Upgrade Kit (RS19050-VTU) remove OEM retainer, inner, and outer valve springs. Install upgrade kit parts in this order: base washer/spacer, inner and outer spring and retainer . **NOTE: Base washer/spacer and valve spring retainer install one way only.** (Figure 9)

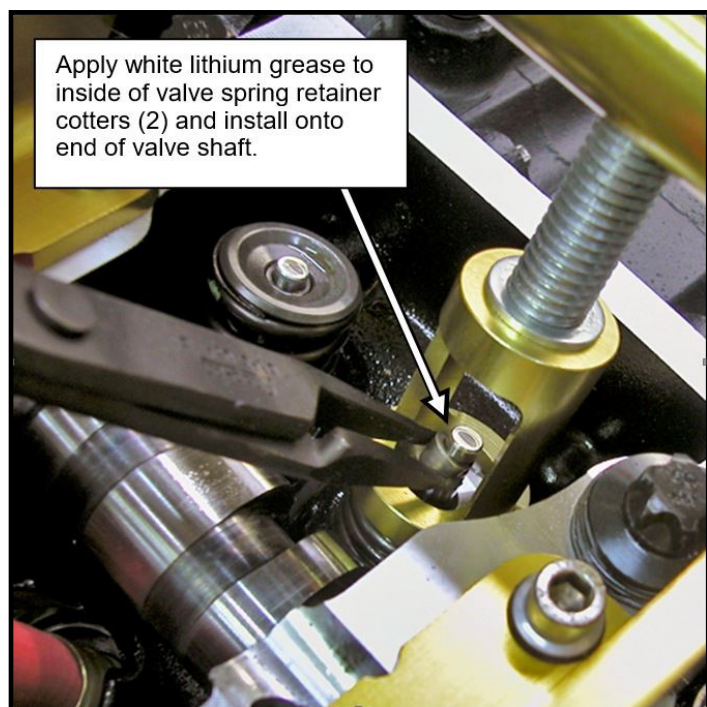
Figure 9



Rotate compression rod and realign compression cup with valve spring retainer. Tighten compression bolt until compression cup seats on valve spring keeper. Check alignment. Tighten bolt enough to expose end of valve shaft.

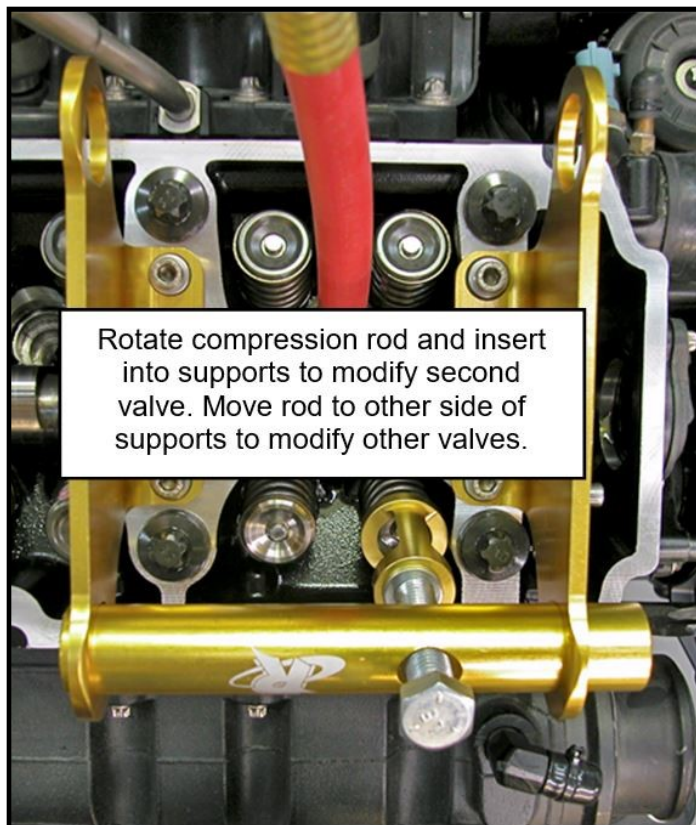
Apply white lithium grease to inside of OEM valve spring retainer cotters (2). Install onto end of valve shaft. (Figure 10) Loosen compression bolt completely and rotate compression rod to allow access to valve. Thoroughly inspect valve spring assembly to ensure cotters are seated properly. **CAUTION: An improperly locked valve spring will cause engine damage.**

Figure 10



Remove compression rod from supports. Rotate 180-degrees and insert into supports for same valve set. (Figure 11)

Figure 11



Repeat process of removing OEM parts and replacing with RIVA upgrade parts for second valve.

Remove compression rod from supports and insert into opposite side for remaining valves. **EG- If procedure began with intake valves you would now modify exhaust valves.** Repeat process of removing OEM parts and replacing with RIVA upgrade parts for remaining valves.

After modifying all 4 valves carefully release air pressure from cylinder. Remove supplied air hose.

Remove compression rod supports. Repeat process of removing OEM parts and replacing with RIVA upgrade parts for second and third cylinder.

Thoroughly inspect valve train for misaligned valve spring keepers, valve springs and foreign objects.

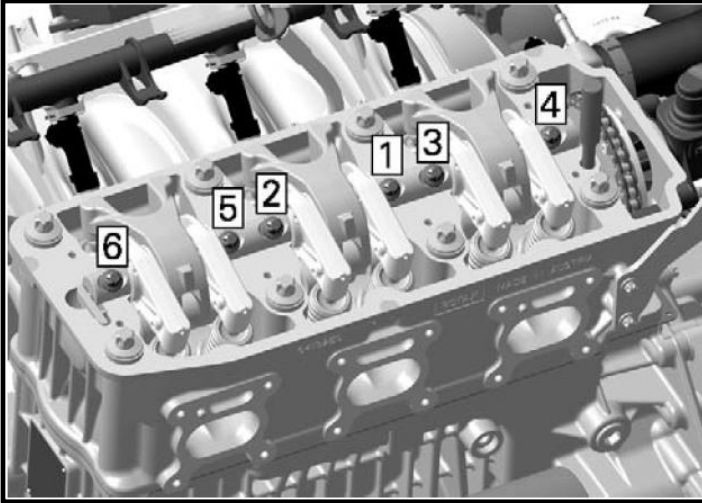
Apply BRP 4-stroke XPS oil to rocker arm shaft.

Install rocker arm shaft assembly. **NOTE: Rocker arm shaft assembly can only be installed one way. Use markings applied during removal.**

Secure rocker arm shaft using supplied bolts. **NOTE: Reference Figure 12 for proper torque sequence.** Torque at first to 7 ft•lbs / 10 N•m. Torque again to 14 ft•lbs / 20 N•m. Finish tightening by turning each bolt an additional 90-degrees. **DO NOT APPLY THREAD LOCK.**

Use Instructions

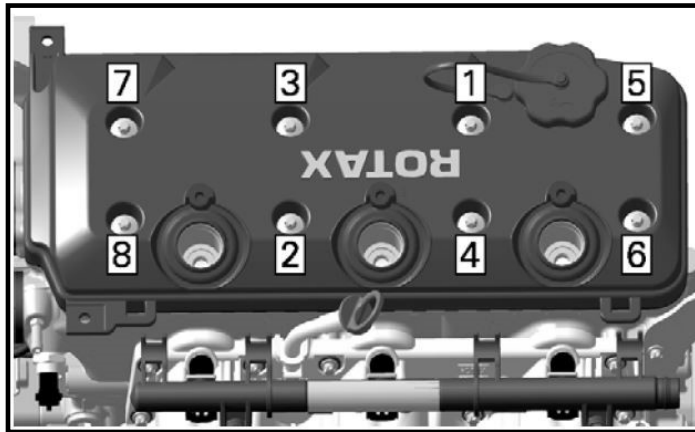
Figure 12



Install spark plug tubes.

Clean outer edge of cylinder head. Install valve cover making sure sealing ring is properly seated. **NOTE: Reference Figure 13 for proper torque sequence. Torque to 7 ft•lbs / 10 N•m. DO NOT APPLY THREAD LOCK.**

Figure 13



Install plastic cover with BRP log onto valve cover.

Install ignition coils (spark plug caps).

Reconnect battery cables. **NOTE: Positive (red) first. Negative (black) second.**

Remember, the water belongs to everyone.

Please ride responsibly and respect the environment!

Technical Support

For answers to questions regarding installation or trouble shooting RIVA Performance Products contact:

RIVA Technical Support directly at (954) 247-0705 or by e-mail at tech_support@rivaracing.com.

Limited Warranty

RIVA Valve Compression Tools carry a 30 day limited warranty to the original purchaser. They are warranted to be free of defects in materials and workmanship under normal use and service. Customer modified components will be void of warranty. This warranty is limited to defects in the primary components only. Finish and/or wear marks in or on primary components are not covered under this warranty.

RIVA Racing's liability is expressly limited to the repair or replacement of the components contained within or associated with this kit. RIVA Racing agrees to repair or at RIVA's option, replace any defective unit without charge, if product is returned to RIVA Racing freight prepaid within the warranty period. Any equipment returned which, in RIVA's opinion, has been subjected to misuse, abuse, overheating or accident shall not be covered by this warranty.

RIVA Racing shall have no liability for special, incidental or consequential damages or injury to persons or property from any cause arising from the sale, installation or use of this product.

No other warranty, express or implied, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose, applies. Various states do not allow for the limitation of incidental or consequential damages and therefore the above exclusion or limitation may not apply to you.

Warranty does not include the expenses related to freight or transportation of parts or compensation for any inconvenience or loss of use while being repaired. A copy of the original invoice and a Return Authorization Number (RA#) must accompany all warranty claims.