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1987-2013 Kaw KLR 650 Shaft Assembly Install

Spring Removal

1. Clamp the Shock securely in a vice using Aluminum Soft Jaws or equivalent being careful not to damage the unit in any way.
2. Using a mechanical or Hydraulic Spring Compressor (the unit shown in the picture is Race Tech part number TSSC 02) remove the stock spring from the shock. (1.2, 1.3 and 1.4)

PICTURE 1.2

PICTURE 1.3

PICTURE 1.4

Shock Shaft Removal

1. Remove the black plastic Schrader valve cover, the cover will not be used on reassembly. The black plastic cover can be very difficult to remove and will most likely be destroyed. (Picture 2.1)
2. Clamp the shock in the vice with the shock body facing up as shown. (Picture 2.2)
3. Remove the valve core from the Schrader valve. Use caution when removing the Schrader valve core as the oil inside the shock is pressurized. Wrap a rag around the top of the shock and lightly crack the Schrader core open, wait to remove the core completely until the pressure has been released. It is normal for some oil to come out during this time. (Picture 2.2)
4. After all the pressure has been released, return the shock to it's upside down position (shaft up) in the vice. Using a sharp chisel (a wood chisel works well here) locate the seam between the shock body cap and the shock body. Drive the chisel between the body and the cap until it stops, at this point angle the chisel up and drive the cap off the body. (Picture 2.3,2.4 and 2.5)
5. With the body cap removed push the seal head down with a suitable tool. Race Techs seal head depressing tool is shown, although a flat blade screw driver will work, use caution when using a screwdriver not to damage the shock body. (Picture 2.6)
6. Pushing the seal head down will expose two round wire clips, remove the clips using a small screwdriver or pick tool being careful not to damage the shock body. (Picture 2.7)
7. After the clips are removed use a plastic mallet and lightly tap the shock shaft to remove it from the shock body. (picture 2.8 and 2.9)
8. With the shaft removed slide the preload adjuster off the shock body. (Picture 2.10)
9. You will be reusing the stock shock body and preload adjuster, clean these parts in a low flash point solvent before reassembly begins.

PICTURE 2.1

PICTURE 2.2

PICTURE 2.3

PICTURE 2.4

PICTURE 2.5

PICTURE 2.6

PICTURE 2.7

PICTURE 2.8

PICTURE 2.9

PICTURE 2.10

Shock Assembly

1. Clamp the shock body securely in the vice and install the preload adjuster.
2. With the Schrader valve core out, slide a piece of rubber tubing (1/4 inch I.D. fuel line is good) over the Schrader valve. Using a suitable tool clamp off the tubing so it will flow no oil. (Picture 3.1)
3. Keeping the line clamped off, fill the shock body with Race Tech US1 shock fluid or equivalent. (Picture 3.2 and 3.3)
4. Locate the included floating piston. (Picture 3.4) Coat piston band and o-ring with a light coating of shock fluid. (Picture 3.4)
5. With the shock body completely topped off with oil insert the floating piston into the shock body flat side first. (Picture 3.5)
6. Push the piston into the body while simultaneously releasing the clamp on the hose attached to the Schrader valve, continue pushing the piston into the body until the o-ring seats on the I.D. of the shock body, place the clamp back on the hose. (Picture 3.6)
7. Before the bleeding process can begin the floating piston height must be set. This step is critical, if the piston height is not set properly the shock will not use full travel and could be damaged.
8. Remove the clamp from the hose and push the piston into the body to a depth of 125mm. Use a caliper or straight rule to measure the distance, the distance is measured from the outer edge of the piston (its highest point) to the edge of the body as shown. If the piston is pushed to far into the body you will have to start the process over. (Picture 3.7)
9. Once the piston is set, place the clamp back on the hose. Remove the hose from the Schrader valve and quickly (trying not to lose any oil) install the Schrader valve core. The oil in the nitrogen chamber is used to

hold the piston in place during the bleeding process, it will later be removed. Once the Schrader is in place fill the shock body to the top with oil. (Picture 3.8)

10. Pour some shock oil into a container, dip the Gold Valve side of the piston into the oil and slowly rotate it, you will see air bubbles rise as you do this, continue this process until there are minimal air bubbles escaping from the piston assembly. (Picture 3.9)
11. Wrap the piston band around the piston. (Picture 3.10)
12. Insert the shaft assembly into the shock body as shown, be careful not to pinch or damage the piston band as it goes in. (Picture 3.11)
13. Once the piston is inside the shock body give the shaft a solid push through the stroke, air in the shock oil after the push will rise to the top, let the shock sit until you see no air in the oil. The air bubbles lying on top of the oil can be lightly brushed away with your finger. (Picture 3.12 and 3.13)
14. After the air has dissipated slowly draw the shaft up. The rebound feed holes in the side of the shock shaft must remain submerged in oil at all times, pulling them out of the oil will result in air being sucked into the system requiring the need to start the process over. Add oil as needed during this process. With the shaft up, give it a solid push through the stroke, there should be a reduction in the amount of air bubbles, wait until the bubbles clear and repeat this process until no air bubbles come out. (Picture 3.14)
15. Once the bleeding process is complete, draw the shaft up as if you were still bleeding the shock. The shaft will remain up at this point do not push it through its stroke. Top the shock body off with oil.
16. Holding the shaft up bring the seal head down into the oil until the o-ring seats as far as it will go in the body. Keep pressure on the seal head as you remove the Schrader valve core and push the seal head into the body exposing the retaining clip grooves. (Pictures 3.15,3.16 and 3.17)
17. Install the retaining clips into the grooves as shown, make sure the clips are properly seated in the grooves. (Picture 3.18 and 3.19)
18. With the clips installed push the shaft down until the bottom out bumper touches the body cap. (Picture 3.20)
19. Using an air hose with a long slender tip that will fit into the Schrader valve, purge the oil from the nitrogen chamber of the shock. Be sure to cover with a rag before using the compressed air. Repeat this process until all the oil is removed from the nitrogen chamber, a little residue is ok. (Picture 3.21 and 3.22)
20. Once the oil has been removed from the nitrogen chamber, install the Schrader valve core.
21. Using a nitrogen charging gauge slowly feed nitrogen into the shock until the shaft extends on its own, shut the gauge off for the moment and check that the seal head is seated properly against the clips. Once you have verified that the seal head is seated properly continue filling the shock to 175 P.S.I. If the shaft does not extend on its own the floating piston has not been set properly disassemble the shock and start again. (Pictures 3.23 and 3.24)
22. Install the Schrader valve cap. (Picture 3.25)
23. Push the shock through its travel going all the way till the bumper touches several times, if the shock will not compress until the bumper touches the floating piston has not been set properly, disassemble the shock and start again. (Picture 3.26)
24. Using a plastic mallet tap the press fit body cap into place. (Pictures 3.27 and 3.28)
25. Set the rebound adjuster to the specification in your setup sheet.

The rebound adjuster is the knob located on the bottom of the shaft assembly. Turn the knob clockwise (in) until it stops. Turn the knob counter clockwise (out) the desired number of clicks.

PICTURE 3.1

PICTURE 3.2

PICTURE 3.3

PICTURE 3.4

PICTURE 3.5

PICTURE 3.6

PICTURE 3.7

PICTURE 3.8

PICTURE 3.9

PICTURE 3.10

PICTURE 3.11

PICTURE 3.12

PICTURE 3.13

PICTURE 3.14

PICTURE 3.15

PICTURE 3.16

PICTURE 3.17

PICTURE 3.18

PICTURE 3.19

PICTURE 3.20

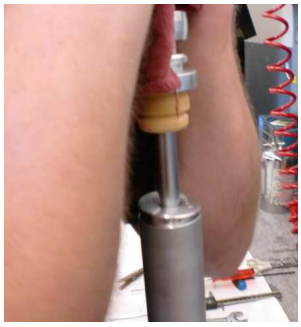
PICTURE 3.21

PICTURE 3.22

PICTURE 3.23

PICTURE 3.24

PICTURE 3.25



PICTURE 3.26

PICTURE 3.27

PICTURE 3.28

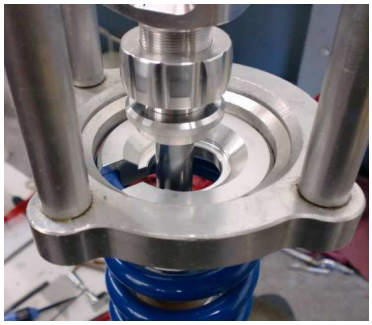
Spring Installation

1. Set the preload adjuster to its minimum setting. Install the spring on the shock as shown. (Picture 4.1)
2. Using a tape measure, document the free length of the spring. Spring free length should be measured from one flat surface on the end of the spring to another, do not measure from the round portion of the end coil. Write this number down you will need it later. (Picture 4.2)
3. Using a Spring Compressor (Race Tech screw type shown) compress the Spring and install the Lower Spring Retainer. Remove the Spring Compressor from the shock. (Picture 4.3 and 4.4)
4. Measure the installed length of the spring using the same method as before. The difference between the free length measurement and the installed length measurement is the minimum preload. Use the preload adjuster to set the spring to the recommended number in your setup sheet. This number may be the same as the minimum preload number, this is normal. (Picture 4.5 and 4.6)

PICTURE 4.1

PICTURE 4.2

PICTURE 4.3



PICTURE 4.4

PICTURE 4.5

PICTURE 4.6

Shock Installation

1. The flat washer included in the kit is used on the lower shock bolt to provide proper spacing. Install the washer on the lower shock bolt as shown. (Pictures 5.1 and 5.2)
2. Install the shock on the motorcycle and torque all fasteners to factory specifications.
3. Have fun!! Go Ride!!

PICTURE 5.1

PICTURE 5.2

If you need assistance please contact Race Tech Technical Support at 951.279.6655