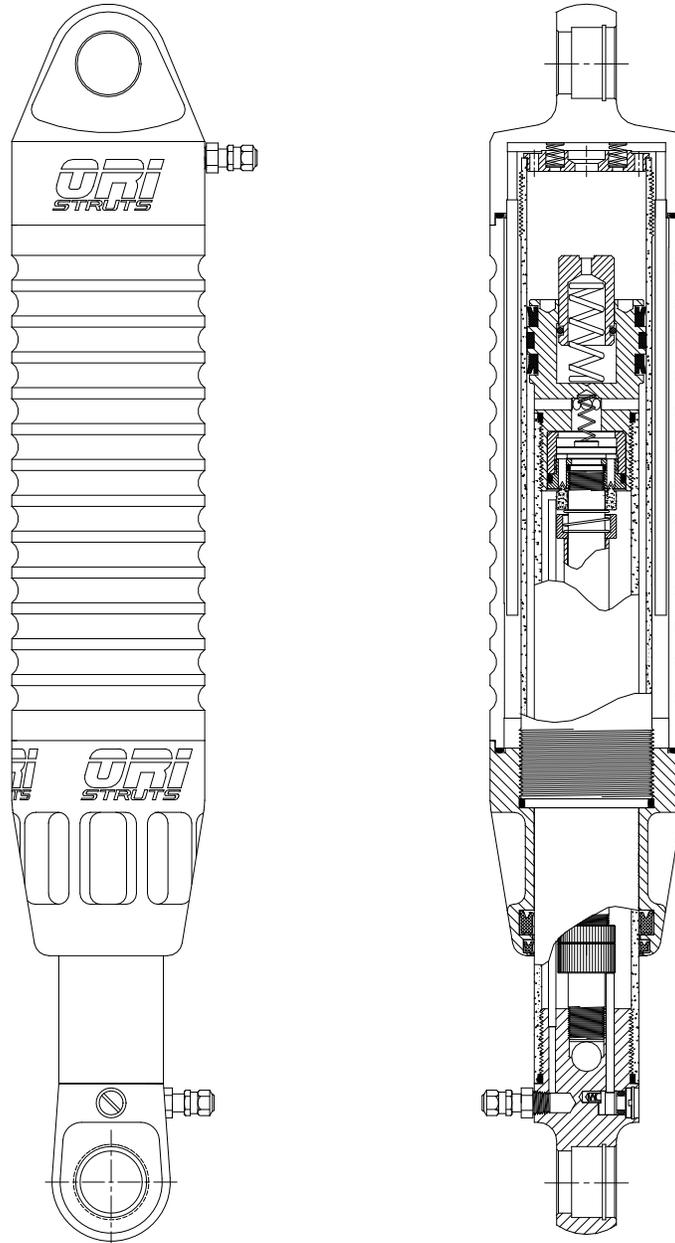


# User Guide

## **ORI** *STX Strut*

Models: STX08, STX10, STX12, STX14, STX16, STX18, STX20



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# Specifications

Model	Travel	Mounting Distance Centers Full Ext.	Piston Dia.	Piston Shaft Diameter	Mounting Bolt Diameter	Oil Volume	Total Weight Lbs. (wet)
STX08	8"	23.2"	2.0"	1.75"	1/2" or 5/8"	See Fill Procedure	9.7
STX10	10"	27.2"					10.9
STX12	12"	31.2"					12.2
STX14	14"	35.2"					13.4
STX16	16"	39.2"					14.6
STX18	18"	43.2"					16.0
STX20	20"	47.2"					17.2

	Bottom Chamber (measured with strut fully collapsed)	Upper Chamber (measured at ride height)
<b>Gas Pressure Ranges</b>	<b>35 to 300 psi</b>	<b>0 to 600 psi</b>
<b>Recommended Initial Pressures for Average Vehicle (4500 lbs.)</b>	<b>90 psi</b> (measured with strut fully collapsed)	<b>Approx. 280 psi</b> (or until ride height is where you want it)
<b>Oil Type</b>	<b>10w fork oil or shock fluid</b>	<b>2.5w suspension fluid</b>
<b>Gas Type</b>	<b>Nitrogen</b>	
<b>Mounting Angle from Vertical (leaning to right or left)</b>	<b>50° Max.</b>	

# Setup & Calibration

**Danger!** Never attempt to disassemble strut while it contains pressure. Vent internal pressure as outlined in step 3 prior to disassembly.

**Warning!** ORI Struts are intended for off-road use only. Factory vehicle warranty and safety can be compromised if suspension is altered. ORI Struts provide maximum flexibility and articulation. For high speed and cornering, anti-sway bars should be used for added body roll stability.

**REFERENCES:** Refer to figures at end of guide while following procedure

## 1 PRE-CHECK

- 1.1 Inspect mounts and mounting locations for strength.
- 1.2 Do not use the shock absorber mounts for ORI strut mounting points if the ORI struts will be replacing the vehicle spring support. In most cases shock mounts are not sufficiently strong to support vehicle weight.

## 2 MOUNT STRUTS

- 2.1 **Warning!** Ensure all struts will fully extend and compress without binding at the upper and lower mounts! Damage caused by binding will void warranty! If a binding condition cannot be prevented prior to reaching full extension or compression, use limit straps and/or bump stops to limit strut travel to operate within a safe, unrestricted range.
- 2.2 Mount strut to vehicle at desired angle, 50° maximum from the vertical position.
- 2.3 If gross vehicle weight exceeds 6000 lbs., it is suggested that you mount either additional struts or other suspension support.

### 3 VENT STRUTS

3.1 Carefully Vent Pressure From Struts According to Following Steps!

3.2 Rest vehicle on ground so that struts will collapse/compress when pressure is vented.

3.3 Remove filler valve cap from valve of upper cap and from valve at Lower Mount.

3.4 With strut in upright position only to avoid losing oil, depress valve core in upper cap valve first. Vent slowly.

**Caution!** *Vehicle will drop suddenly when upper cap pressure is vented.*

3.5 With strut in upright position only to avoid losing oil, depress valve core in lower mount.

**Caution!** *Pressure will be highest at the lower mount valve when piston shaft is extended. For safety, always vent the upper cap valve first so that piston shaft compresses completely into the strut body, then vent the valve at the lower mount.*

3.6 Re-vent both upper and lower valves after shafts compress.

### 4 CHARGE STRUTS

**Important!** Pressures between left and right side struts should be equal for level ride. Pressure can be adjusted between right and left side to compensate for uneven vehicle loading.

4.1 Rest vehicle on a level, flat surface.

4.2 **Lower Mount Charge** (lower chamber)

4.2.1 First, vent all pressure from the Upper Cap Valve to lower vehicle until struts fully compressed.

**Warning!** It is not recommended that you vent or pressurize lower mount when piston shaft is extended. Pressure can reach 2000 psi at full extension, posing a potential safety hazard, and can damage your pressure gage if it is attached.

- 4.2.2 With piston shaft fully compressed, charge with nitrogen gas to approximately 90 psi pressure. *Pressure in the piston shaft is essential for proper rebound damping operation, and helps prevent body roll and strut push-off, or unloading.*
- 4.2.3 **High Pressure:** Maximum resistance to piston shaft extension and ride will be stiff, but very stable.
- 4.2.4 **Low or Zero Pressure:** Piston shaft will fully extend easily, causing excessive body roll and poor rebound damping, but soft ride.
- 4.2.5 You will likely need to readjust pressure to achieve desired ride height, optimal strut operation and ride comfort.
- 4.2.6 **Important:** Oil volume in the piston shaft has a great effect on how the struts compress and extend. Ensure that oil volumes are equal for left and right side struts. See Oil Fill Procedure.

#### 4.3 **Upper Cap Charge** (upper chamber)

Do this step after pressurizing the lower mount in previous step.

- 4.3.1 *Method 1:* With vehicle weight resting on struts, charge the main cylinder through the Upper Cap Valves with nitrogen gas until the vehicle lifts to desired ride height. Bounce the vehicle several times to settle the suspension and recheck ride height.
- 4.3.2 *Method 2:* Lift vehicle off ground, allowing struts to fully extend. Measure exposed piston shaft at each wheel to ensure right and left side struts are at equal extension length. Charge Upper Cap Valves with nitrogen gas to desired pressure and lower vehicle to ground.

#### 4.4 Record final pressures at upper caps and lower mounts for later reference.

**Important!** If your vehicle rides too soft, and sways or rolls excessively while cornering, increase gas pressure both at the upper cap valve and at the lower mount valve. The higher the charge, the more stable the vehicle will become, but this will also decrease your vehicle's ability to flex and articulate easily.

#### 4.5 REPEAT PROCEDURE FOR REMAINING STRUTS

### 5 COMPRESSION DAMPING ADJUSTMENT

You can vary compression damping by blocking existing holes in the compression damping valve installed in the top of the cylinder, or by drilling additional holes. You will need to remove the strut from the vehicle, vent all pressure (see step 3), and remove Upper Cap. *Use only 2.5w suspension fluid in the upper chamber.*

You can block holes by tapping them to an 8-32 thread, and then install 8-32 set screws with thread locking compound. We recommend that you only block or add one hole at a time as this will significantly affect when the compression damping valve closes.

- Added holes will slow the velocity-sensing valve closing (faster compression damping, softer ride, but possible bottoming out).
- Blocked holes will close the valve sooner (slower compression damping, stiffer ride).

### 6 REBOUND DAMPING ADJUSTMENT

#### 6.1 7-Position Hydraulic Rebound Damping

6.1.1 Adjust hydraulic rebound damping by turning Damper Screw in Lower Mount to one of 7 positions.

6.1.2 Full clockwise (+) for maximum damping (slowest rebound)

6.1.3 Full counter-clockwise (-) for minimum damping (fastest rebound)

*Note: Excessive rebound damping will cause struts to fade when driving fast over rough roads. Ride height will quickly lower and struts will bottom out.*

## 7 REBOUND DAMPING INTERNAL CALIBRATION

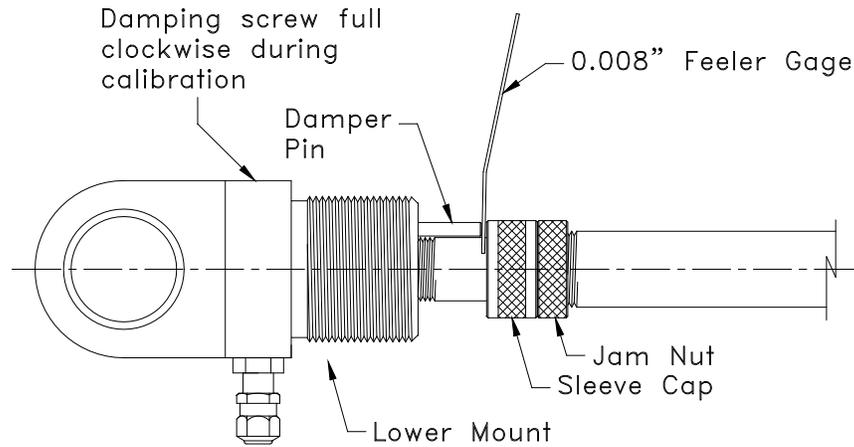


Figure 1

- 7.1 With strut either on or off the vehicle, vent all pressure from strut while in the upright position.
- 7.2 Remove strut from vehicle.
- 7.3 Turn strut upside down and clamp piston shaft securely in protected soft jaws of vise.
- 7.4 Unscrew and remove lower mount assembly from piston shaft.
- 7.5 Turn rebound damping screw full clockwise until it stops.
- 7.6 Insert a 0.008" feeler gage between sleeve cap and damper pin.  
*Factory setting is 0.008" clearance. You may wish to change clearance for either a slower rebound damping adjustment range (less clearance) or a faster rebound damping adjustment range (greater clearance). Adjust calibration in 0.002" increments to achieve desired rebound damping adjustment range.*
- 7.7 Loosen sleeve cap and jam nut and adjust nut positions until a slight drag is felt when sliding the feeler gage.

- 7.8 Securely tighten jam nut against sleeve cap and recheck clearance with same 0.008" feeler gage. You should still feel a slight drag as you pull the feeler gage. Readjust position of jam nut and sleeve cap if necessary.
- 7.9 Return damper screw adjustment position to midway between full clockwise and full counter clockwise stop positions. Fine tune adjustment to desired position according to vehicle ride performance.
- 7.10 If piston shaft oil is lost during calibration, completely drain and refill piston shaft according to piston shaft oil fill procedure.
- 7.11 You Can Further Slow Compression Damping.**
- 7.11.1** Use 15w or 20w fork oil in piston shaft instead of standard 10w.
- 7.11.2** Stack the four Belleville springs as two opposing sets: Each pair of springs fitted together convex side to concave side. Then, face the concave side of each pair toward each other.
- 7.11.3** Recalibrate the 0.008" gap to 0.006".
- 7.12 Reinstall strut to vehicle.

## 8 OIL FILL PROCEDURES (struts come from factory with oil)

Stroke	Main & Outer Cylinders Combined 2.5w Suspension Fluid (ml or cc)		Piston Shaft 10w Fork Oil (ml or cc)
	Measured by Volume (ml or cc)	Measured by Oil Depth all oil in the Main Cylinder (inches)	
8	171	3.3	170
10	216	4.2	220
12	261	5.1	270
14	307	6.0	320
16	352	6.8	370
18	397	7.7	420
20	442	8.6	470
22	488	9.5	520
24	533	10.4	570
26	578	11.2	620
28	624	12.1	670
30	669	13.0	720

### 8.1 Main & Outer Cylinders Oil Fill

Main Cylinder: 2w Suspension Fluid.

- 8.1.1 Remove strut from vehicle.
- 8.1.2 Vent all pressure following procedure in step 3.
- 8.1.3 Remove Upper Cap. *You may use a nylon strap wrench to grip lower cap, and a suitable wrench to grip flats on upper cap.*
- 8.1.4 Fill Main Cylinder to volume shown in chart for Combined Main & Outer Cylinders. *You may need to extend the piston shaft.*

8.1.5 Reinstall Upper Cap. Tighten until you achieve metal-to-metal contact between Upper Cap and ringed outer shell.

**Alternate Method** (through Schrader valve)

8.1.6 Remove strut from vehicle.

8.1.7 Vent all pressure following procedure in step 3.

8.1.8 Remove valve core from upper cap Schrader valve.

8.1.9 With strut upside-down, pump piston shaft to full compressed position to force all oil from main and outer cylinders.

8.1.10 Extend piston shaft.

8.1.11 Return strut to upright position.

8.1.12 Fill strut through Schrader valve stem using squeeze bottle and hose.

8.1.13 Reinstall valve core. *It is recommended that you use a new core.*

## 8.2 Piston Shaft Oil Fill

Piston Shaft: 10w Suspension Oil or Motorcycle Fork Oil

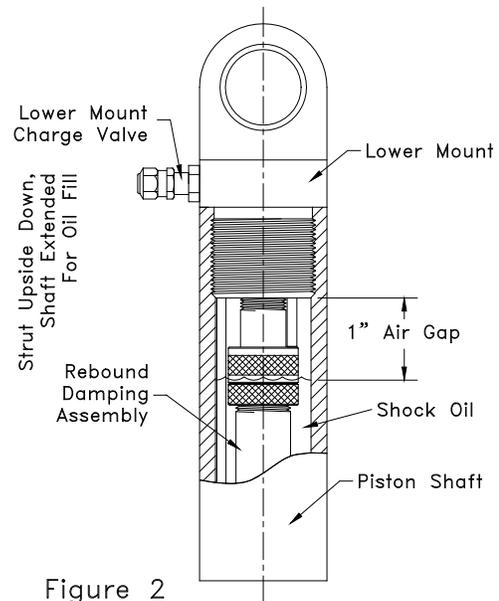
8.2.1 Vent pressure per step 3.

8.2.2 Oil volume in the piston shaft has a great effect on how the struts compress, extend, and on the park position. Strut must be removed from vehicle, fully extended, and in upside-down position.

8.2.3 Clamp Piston Shaft so as not to nick or scratch chrome surface.

8.2.4 Unscrew and remove lower mount and rebound damper assembly.

*Sometimes the end pieces will unscrew from the assembly and remain inside the piston. If this happens, pour out the oil and loose parts. The damper body assembly can be removed by threading a 5/8-24 rod into the damper body and pulling straight out. You can use*



*the rod that is screwed into the lower mount. Refer to assembly drawings to ensure you have all the parts removed. Reassemble parts and tighten firmly by hand pressure only.*

- 8.2.5 Fill piston shaft with oil according to volume shown in chart.
- 8.2.6 With piston shaft still clamped, move strut body up and down a few inches to circulate oil inside strut. Movement will be very stiff.
- 8.2.7 Move strut body up as far as you can, compressing strut. You will notice the oil level drop inside the shaft.
- 8.2.8 Reinstall the lower mount and damper assembly after calibration. Tighten with wrench across lower mount flats. Strike wrench with steel hammer to secure threads.
- 8.2.9 (There will be approximately a 1" air gap after Lower Mount 19 is fully inserted into the piston shaft.)
- 8.2.10 Zero air gap will result in a hydraulic lock condition, preventing the piston shaft from extending. This is because there is no space for pressurized nitrogen to provide the counter air spring function.
- 8.2.11 Too much air gap, or loss of oil, will cause the piston shaft to push off, or unload. There will be no noticeable park position, and body roll will be excessive.

## **9 BUMPSTOP STROKE ADJUSTMENT**

Set oil level in main cylinder according to table in Oil Fill Procedure. You can add or remove oil to adjust the bump stop stroke distance. Do not add more than 100cc.

*Operation: As the piston shaft approaches full compression, all nitrogen gas in the main cylinder is transferred to the outer cylinder and oil above the Piston will be trapped between the piston and Upper Cap. This oil cushions end-of-stroke movement as it is forced to pass through damping ports in the Upper Cap. The oil then passes to the outer cylinder where it is later scavenged back to the main*

*cylinder via Return Tubes in the outer cylinder when the piston shaft extends. The last 1" of compression stroke is further dampened by an integral bump stop piston that telescopes within the main piston.*

# TROUBLESHOOTING

**DANGER!** Prior to performing maintenance on strut ensure that all pressure is vented. See Setup & Calibration Step 3.

<p>1. Struts on uphill side unload, extend, push off.</p>	<ol style="list-style-type: none"> <li>1 Increase pressure at lower mount, or decrease pressure at upper cap.</li> <li>2 Low oil volume and/or pressure in piston shaft.</li> <li>3 Leaky main piston seals are allowing pressure to transfer from underside to topside of piston.</li> <li>4 Leaky lower cylinder seal is allowing pressure to transfer from underside to topside of piston</li> <li>5 Installation of a rear anti-sway bar might be needed for high sprung weight. Engine torque and trailing arm configuration can also greatly influence vehicle tilt.</li> <li>6 Vehicle center of gravity too high can cause uphill struts to unload (extend) due to weight transfer to downhill struts             <ol style="list-style-type: none"> <li>6.1 Upper strut mounts should be above vehicle center of gravity.</li> </ol> </li> <li>7 Right and left side upper strut mounts too close to vehicle center. Move mounts outward.</li> <li>8 Increase rebound damping at all struts to minimize reaction to motor torque and sudden changes in vehicle tilt.</li> </ol>
<p>2. Vehicle rides rough.</p>	<ol style="list-style-type: none"> <li>1 Too much oil in strut will cause piston shaft to hydraulic lock against upper cap before full compression stroke is reached</li> <li>2 Excessive pressure in strut at both top and bottom valves. Decrease pressures. 90 psi in bottom chamber will soften ride.</li> <li>3 Heavy vehicles that require high charge pressures will benefit from addition of a remote reservoir to soften spring rate.</li> </ol>

<p>3. Strut sits higher or lower than strut on opposite side</p>	<ol style="list-style-type: none"> <li>1 Charge pressure uneven. It is very important to follow pressurization procedure.</li> <li>2 Main piston seals or main cylinder seal is leaking and allowing pressure at underside of piston to transfer to topside of piston.</li> </ol>
<p>4. Strut will not compress entire length of stroke</p>	<ol style="list-style-type: none"> <li>1 It is normal to see 5/8" of piston shaft chrome showing at full compression.</li> <li>2 Too much initial gas charge pressure.</li> <li>3 Too much oil in strut. See Oil Fill Procedure.</li> <li>4 Bump piston dislodged from piston.</li> <li>5 Piston coming unscrewed from piston shaft. Reassemble with blue Loctite 242. Tighten with impact wrench.</li> </ol>
<p>5. Strut leaks oil or pressure, or strut pressure/ride height seem to increase.</p>	<ol style="list-style-type: none"> <li>1 Changes in outside temperature or strut temperature will cause charge pressure gasses to expand or shrink. This will have a visible effect on ride height giving the impression of pressure leakage.</li> <li>2 Identify source of leak by submersing strut in water while pressurized, or by applying a soapy wet solution around suspect leak areas of strut.</li> <li>3 Check for scratches on piston shaft.</li> <li>4 Lower seals worn or damaged. Replace seals.</li> <li>5 Check for looseness of piston shaft. If it is very loose replace piston wear band and inspect for excessively worn Lower Cap.</li> <li>6 Check that all O-rings are in good condition</li> <li>7 Filler valve is leaking either at stem 1/8 NPT thread or at core. Use Teflon tape or other sealant on threads when installing stem.</li> <li>8 Tighten lower cap securely against upper cap.</li> <li>9 Initial charge pressure is too low. High pressure seals in lower cap seal better as charge pressure is increased, but can leak at low charge pressures (less than 35 psi).</li> </ol>

<p>6. Seals blow out, or seal life is abnormally short</p>	<ol style="list-style-type: none"> <li>1 Too high gas pressure.</li> <li>2 Too much oil in strut.</li> <li>3 Struts overloaded – mount additional struts or other suspension support.</li> <li>4 Incompatible strut oil is softening seal compound. Be sure to use strut oil compatible with Nitrile rubber and Polyurethane.</li> <li>5 Extremely dirty driving conditions. Keep piston shaft clean or use rubber shock boots.</li> <li>6 Use of high pressure wash is forcing contaminants into seals trapping abrasives within the seals.</li> <li>7 Check condition of wiper seal. Its function is to keep contaminants from reaching pressure seal.</li> </ol>
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<p>7. Rebound damping is not enough – strut extends too quickly</p>	<ol style="list-style-type: none"> <li>1 No pressure or low pressure in piston shaft. There must be a positive pressure at the lower mount throughout the entire stroke, 35 psi minimum at full compression.</li> <li>2 Lower Mount hydraulic damper screw set incorrectly. See Rebound Damping Adjustment.</li> <li>3 Not enough oil in piston shaft—see Setup &amp; Calibration.</li> <li>4 Contaminated oil. Drain, clean, flush and refill assembly.</li> <li>5 Wrong oil in strut – if oil foams it will not dampen. Anti-foam suspension oil must be used.</li> <li>6 Piston shaft oil is too light viscosity – change to heavier viscosity</li> <li>7 Malfunctioning or broken hydraulic damping parts.</li> <li>8 Air leak between damper body and metering plate, or floating valve not sealing—sand surfaces flat and smooth.</li> <li>9 Too much spring pressure on floating valve (call factory for correct spring to install).</li> <li>10 Check rebound damping calibration or loose jam nut at adjustment (see Rebound Damping Internal Calibration).</li> </ol>
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<p>8. Piston shaft hits hard at full compression.</p>	<ol style="list-style-type: none"> <li>1 Not enough charge pressure at upper cap.</li> <li>2 Not enough oil in upper chamber above piston.</li> <li>3 Outer cylinder return tube(s) missing or dislodged from upper cap. Remove upper cap to inspect.</li> <li>4 Thin O-ring at top end of main cylinder broken or out of position. Older ST version struts have no O-ring, but instead, the main cylinder upper threads are sealed to the upper cap threads with thread sealant compound.</li> <li>5 Too strong compression valve springs. Use weaker springs so valve will close sooner to begin compression damping.</li> </ol>
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<p>9. Piston shaft hits hard at full extension.</p>	<ol style="list-style-type: none"> <li>1. Not enough charge pressure at lower mount.</li> <li>2. Not enough oil in piston shaft.</li> <li>3. Poor quality oil in piston shaft.</li> <li>4. Outer cylinder return tube missing.</li> <li>5. Contaminated oil. Drain, clean, flush and refill assembly.</li> <li>6. Air leak between damper body and metering plate causing rebound damping oil to cavitate. Check for contamination or damage to valve sealing faces.</li> <li>7. Floating valve not sealing—sand surfaces flat and smooth.</li> </ol>
<p>10. Vehicle sways, or rolls excessively</p>	<ol style="list-style-type: none"> <li>1 Heavy vehicles (over 4500 pounds GVW) will require higher gas charge both above and below the strut piston. Add pressure to main cylinder <i>and</i> to piston shaft proportionally to maintain desired ride height. The greater the pressure above and below the piston, the greater the stability. This strategy can also be used for lighter vehicles.</li> <li>2 Install anti-sway bars. Heavy vehicles have even more need of an anti-sway bar than relatively light vehicles.</li> <li>3 Not enough pressure in piston shaft.</li> <li>4 Ride height set too high. This raises your vehicle center of gravity and increases tendency to sway and roll. Decrease main cylinder pressure, or increase piston shaft pressure (preferred).</li> <li>5 Upper strut mounts too close together. Mount as wide as possible.</li> </ol>

# Parts & Tools (call for current prices)

Item	Qty./Assy.	PN	Description
1	4	PF-075	1/2" Misalignment Spacer (for 1/2" mounting bolt)
2	4	PF-076	5/8" Misalignment Spacer (for 5/8" mounting bolt)
3	2	PC-029B	Spherical Bearing, 5/8" Bolt Hole
4	2	PC-077B	Retaining Ring, Spherical Bearing
5	1	PF-132	Upper Cap (specify color)
6	2	PC-008	Filler Valve Assy. (includes 6W,X,Y)
6W	2	PC-008W	Filler Valve Cap
6X	2	PC-008X	Filler Valve Core
6Y	2	PC-008Y	Filler Valve Stem
7	2	PC-174	O-Ring, Shell
8	19	PF-136B	ST Return Tube 8" Stroke
	-	PF-136C	ST Return Tube 10" Stroke
	-	PF-136D	ST Return Tube 12" Stroke
	-	PF-136E	ST Return Tube 14" Stroke
	-	PF-136F	ST Return Tube 16" Stroke
	-	PF-136G	ST Return Tube 18" Stroke
	-	PF-136H	ST Return Tube 20" Stroke
9	3	PC-217	Spring, Compression Valve
10	1	PF-216	Compression Damping Valve
11	1	PC-200	O-Ring, Cylinder
12	1	PF-047B	Main Cylinder, 8" Stroke
	-	PF-047C	Main Cylinder, 10" Stroke
	-	PF-047D	Main Cylinder, 12" Stroke
	-	PF-047E	Main Cylinder, 14" Stroke
	-	PF-047F	Main Cylinder, 16" Stroke

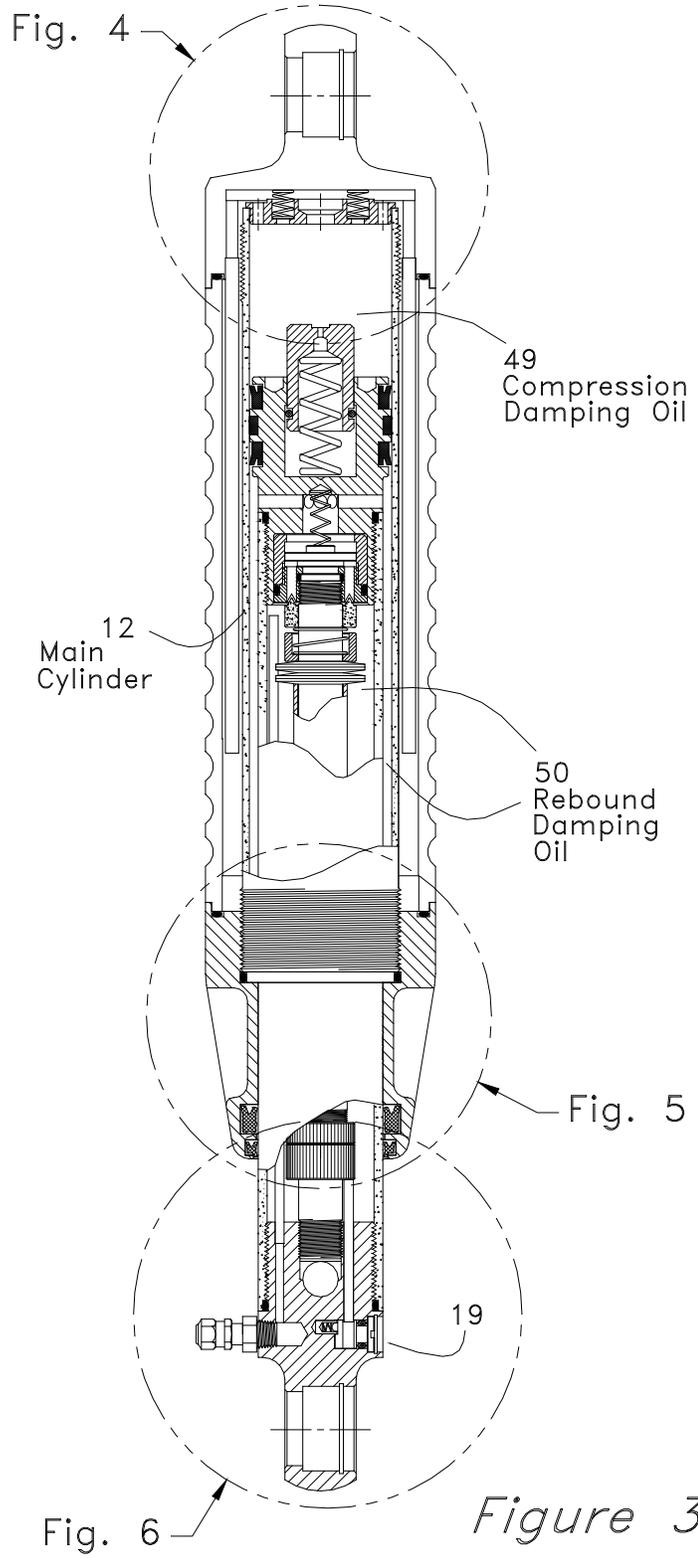
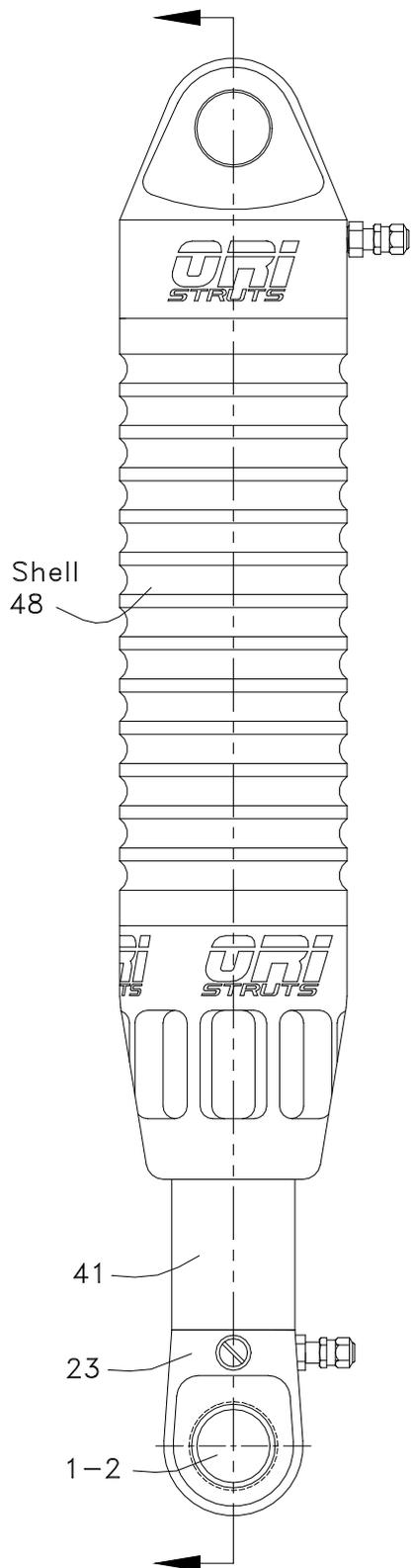
Item	Qty./Assy.	PN	Description
	-	PF-047G	Main Cylinder, 18" Stroke
	-	PF-047H	Main Cylinder, 20" Stroke
13	1	PC-011	O-Ring, Lower Cap
14	1	PF-135	Lower Cap (specify color)
15	1	PC-046	Rod Seal
16	1	PC-045	Wiper Seal
17	1	PC-032	Spiral Retaining Ring, Damper Screw
18	1	PC-033	O-Ring, Damper Screw
19	1	PF-147	Rebound Damper Screw
20	1	PC-024	Steel Ball, 1/8"
21	1	PF-031	Spring, Damper Screw Detent
22	1	PF-154	Detent Cup
23	1	PF-036	Lower Mount (specify color)
24	1	PF-137B	Vent Tube, Lower Mount, 8" Stroke
	-	PF-137C	Vent Tube, Lower Mount, 10" Stroke
	-	PF-137D	Vent Tube, Lower Mount, 12" Stroke
	-	PF-137E	Vent Tube, Lower Mount, 14" Stroke
	-	PF-137F	Vent Tube, Lower Mount, 16" Stroke
	-	PF-137G	Vent Tube, Lower Mount, 18" Stroke
	-	PF-137H	Vent Tube, Lower Mount, 20" Stroke
25	2	PC-037	O-Ring, Lower Mount & Piston
26	1	PF-146	Damper Pin
27	1	PF-152	Sleeve Cap
28	1	PF-153	Sleeve Jam Nut
29	1	PF-151B	Stop Sleeve 8" Stroke
	-	PF-151C	Stop Sleeve 10" Stroke
	-	PF-151D	Stop Sleeve 12" Stroke

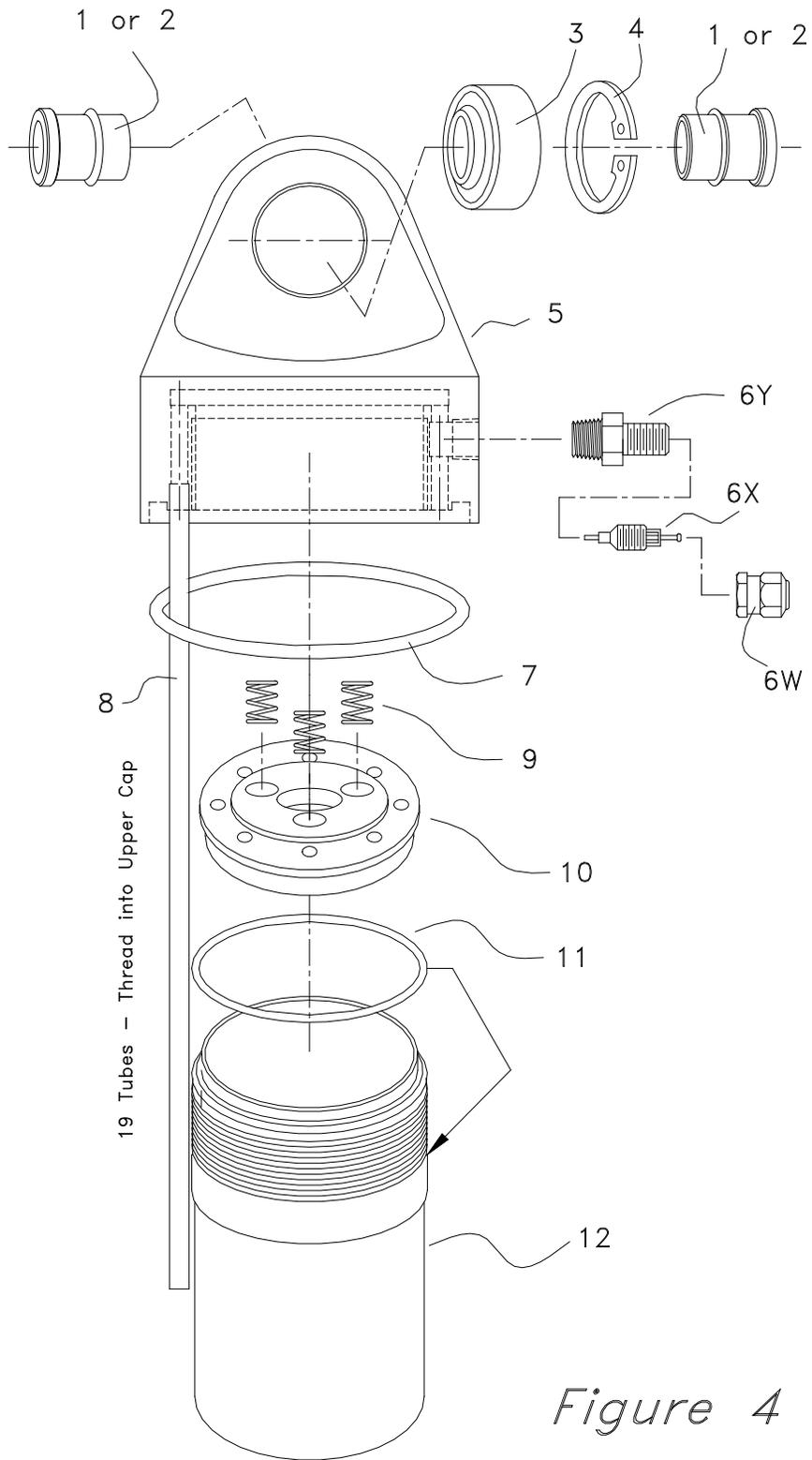
Item	Qty./Assy.	PN	Description
	-	PF-151E	Stop Sleeve 14" Stroke
	-	PF-151F	Stop Sleeve 16" Stroke
	-	PF-151G	Stop Sleeve 18" Stroke
	-	PF-151H	Stop Sleeve 20" Stroke
30	1	PF-140B	Draw Tube 8" Stroke
	-	PF-140C	Draw Tube 10" Stroke
	-	PF-140D	Draw Tube 12" Stroke
	-	PF-140E	Draw Tube 14" Stroke
	-	PF-140F	Draw Tube 16" Stroke
	-	PF-140G	Draw Tube 18" Stroke
	-	PF-140H	Draw Tube 20" Stroke
31	4	PC-141	Belleville Spring
32	1	PF-148	Damper Spring Seat
33	1	PF-155	Damper Metering Spring
34	1	PF-145	Metering Plate
35	1	PC-173	O-Ring, Draw Tube
36	1	PF-143	Damper Body
37	1	PC-027	O-Ring, Damper Body
38	1	PF-142	Floating Valve
39	1	PF-149	Spring, Floating Valve
40	1	PF-150	Damper Case
41	1	PF-044B	Piston Shaft 8" Stroke
	-	PF-044C	Piston Shaft 10" Stroke
	-	PF-044D	Piston Shaft 12" Stroke
	-	PF-044E	Piston Shaft 14" Stroke
	-	PF-044F	Piston Shaft 16" Stroke
	-	PF-044G	Piston Shaft 18" Stroke

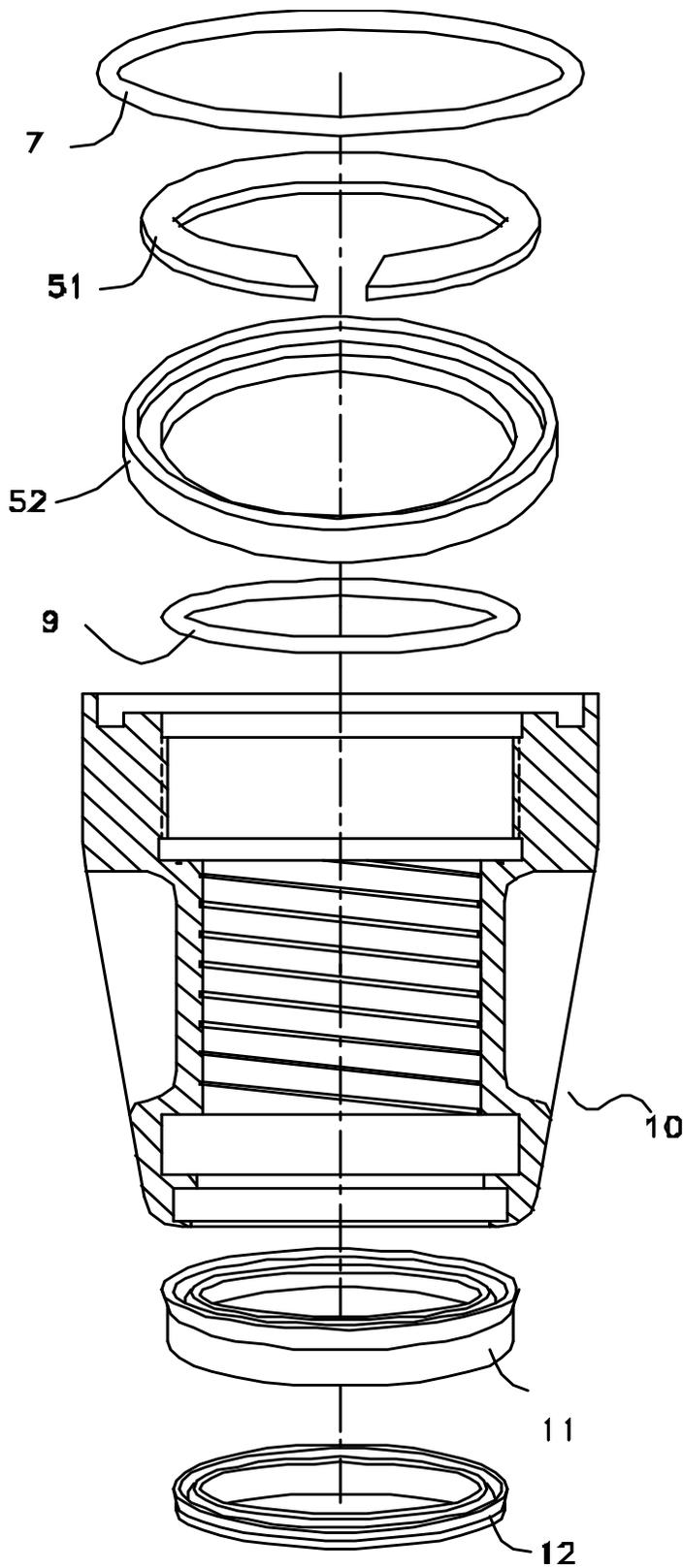
Item	Qty./Assy.	PN	Description
	-	PF-044H	Piston Shaft 20" Stroke
42	1	PF-041	Piston
43	2	PC-123	Piston Seal
44	1	PC-049	Wear Ring
45	1	PF-168	Spring, Compression Plunger
46	1	PC-169	O-Ring, Compression Plunger
47	1	PF-167	Compression Plunger
48	1	PF-133B	ST Shell 8" Stroke (specify color)
	-	PF-133C	ST Shell 10" Stroke (specify color)
	-	PF-133D	ST Shell 12" Stroke (specify color)
	-	PF-133E	ST Shell 14" Stroke (specify color)
	-	PF-133F	ST Shell 16" Stroke (specify color)
	-	PF-133G	ST Shell 18" Stroke (specify color)
	-	PF-133H	ST Shell 20" Stroke (specify color)
49	1	SP-127	Suspension Oil, 2.5w Ultra Light (compression damping)
50	1	SP-128	Suspension Oil 10w (rebound damping)
51	1	PC-223	Retaining Ring, Cylinder
52	1	PF-217	Cylinder Flange

**Tools & Misc. Items**

TF-001	Piston Spanner Wrench
TC-002	Nylon Strap Wrench
TC-003	Rod Seal Installation Tool
TC-004	Retaining Ring Pliers
TF-005	Aluminum Soft Jaws
AD-Logo10	10" Oval Sticker "ORI Struts" (Red/White)







*Figure 5*

# Piston Shaft Assembly

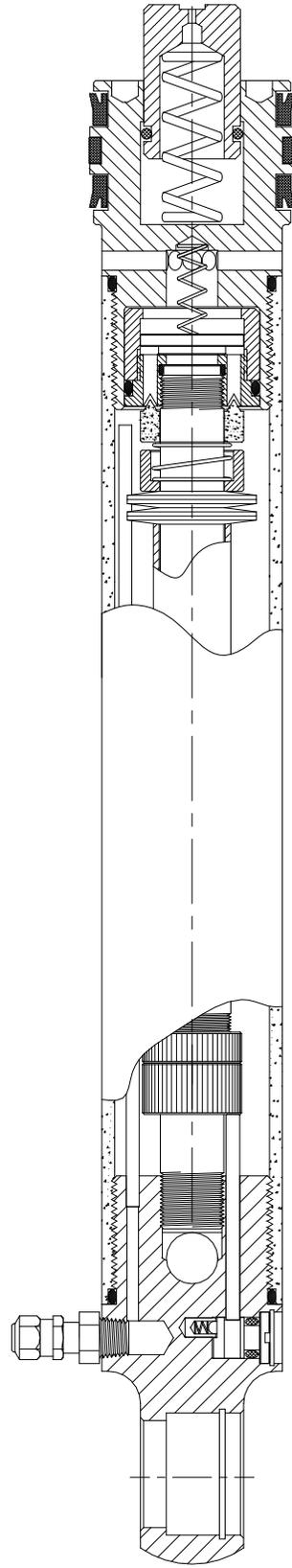


Figure 6A

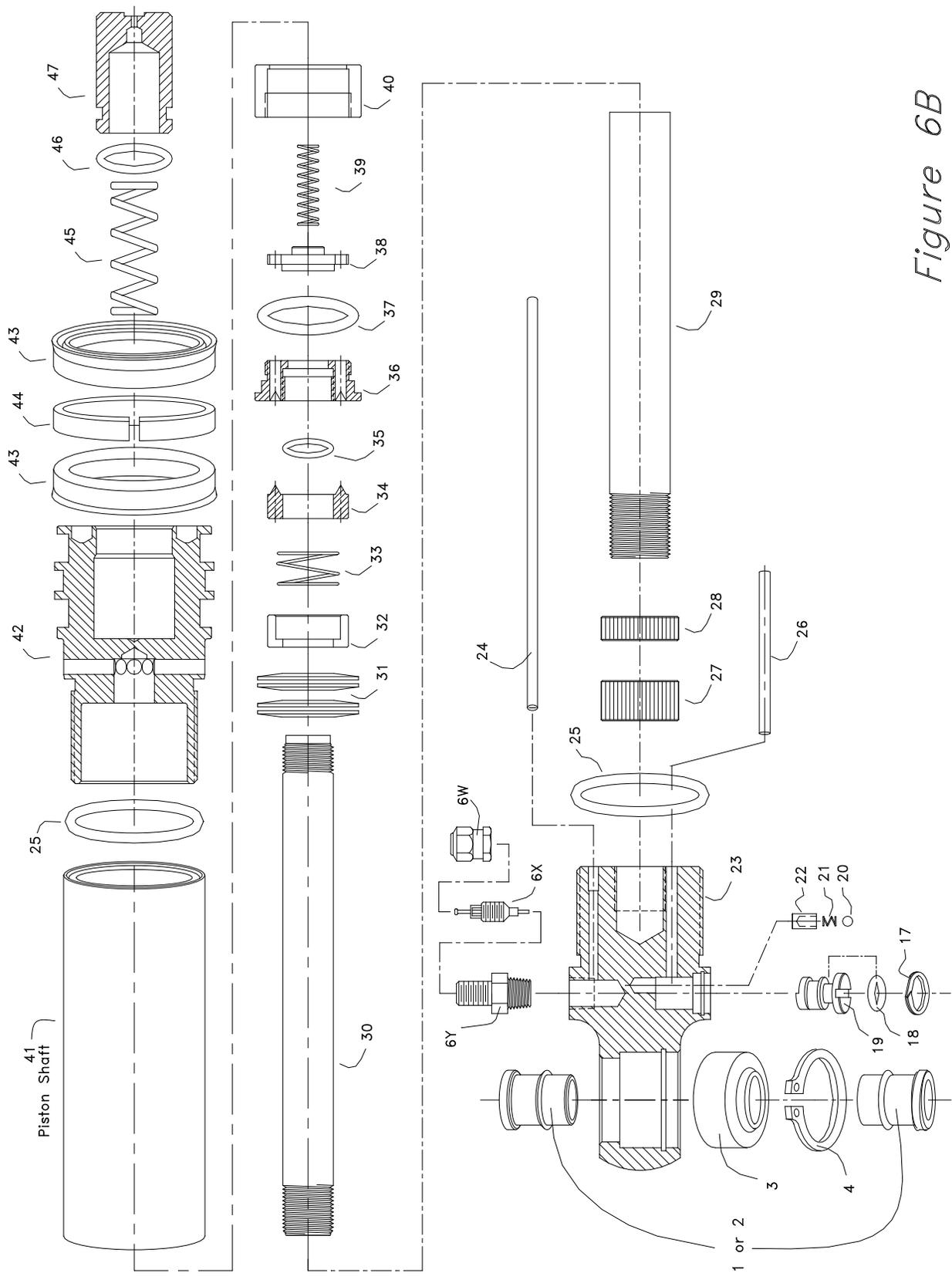


Figure 6B

# **ORI *Factory Warranty***

ORI parts and labor are covered for the original owner against factory defects and workmanship for a period of 30 days from date of purchase. Product must be returned to an authorized dealer or the factory for warranty repairs – ORI will not be responsible for repairs performed by the customer. 30 day warranty includes racing and competition use.

ORI parts are covered for the original owner against factory defects and workmanship for a period of one year from date of purchase. Call factory for shipment of replacement parts. Defective parts need not be returned unless requested by factory. One year warranty does not apply to racing and competition use.

Warranty does not cover cost of product removal and installation, or damage to product resulting from improper assembly, mounting, operation or overloading. Vehicle damage due to product failure is not covered. It is the customer's responsibility to ensure that product is mounted in a safe and secure manner, maintained and pressurized properly, and not installed in such a way so as to cause abnormal operation. Warranty void if product is altered or modified in any way, or used for any purpose other than for an off-road vehicle application. Neither ORI Off-Road Innovations, Inc., nor any representative thereof, nor any advertising shall imply or suggest in any way that any ORI product can prevent an accident and/or personal injury. ORI cannot be held responsible for claims made by dealers and other parties not duly appointed by ORI to make such claims.

***See User Guide for Proper Assembly, Mounting, Operation and Maintenance***

## ***Return Policy***

Allow four weeks for shipping and repair of 30-day warranty goods. For U.S. domestic warranty returns, ground shipping and insurance both ways are paid by ORI. For international warranty claims, ORI will cover the cost of defect parts and shipping cost of those parts. Expedited shipping costs will be the customer's responsibility.

Returns other than for warranty, and within the 30-day warranty period, are subject to a 10% restocking fee. Product must be returned in its original container or suitable packaging so as not to allow damage during shipment. Return shipping, insurance and packaging costs are the customer or dealer's responsibility. Cost to repair goods damaged by recipient or during uninsured shipment will be deducted from return goods credit.

Send to:

Off-Road Innovations, Inc.  
200 Campbell Avenue  
Bowdon, Georgia 30108  
Office: 770-258-1554  
Fax: 770-258-1555