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# FOX TWIN-CLICKER

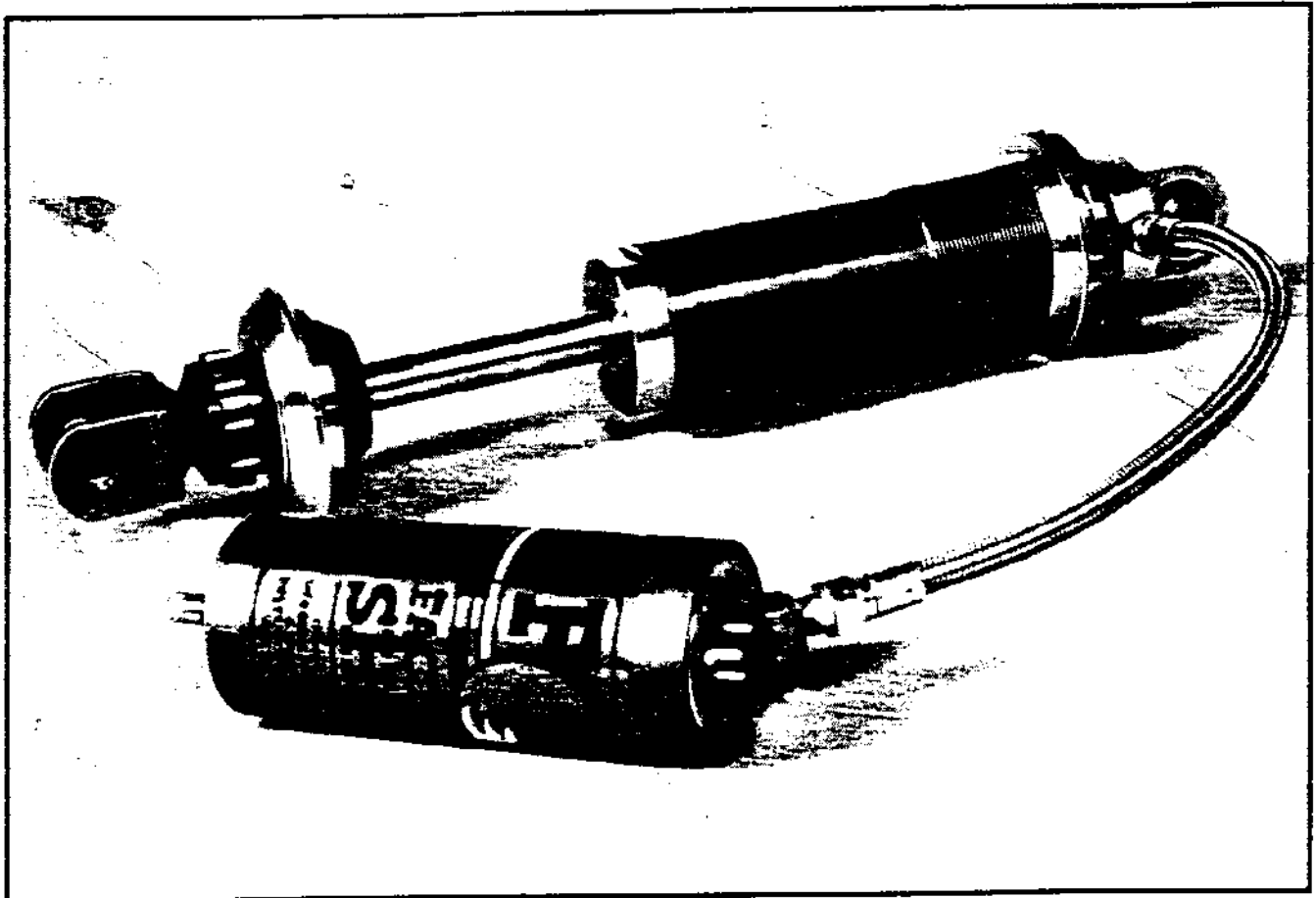
for Honda Pro-Link CR-125/250/450

Owner's Manual

with Exclusive Adjustable Compression Damping

Patent Applied for

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DESIGNED BY FOX FACTORY, INC  
DISTRIBUTED BY MOTO-X-FOX, INC.

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## INTRODUCTION

Congratulations! You now own the most easily and fully adjustable shock absorber ever produced for motocross.

Your FOX TWIN-CLICKER is based on a state-of-the-art design which sets new standards for tuneability and fade-free performance. Both compression and rebound damping can be precisely adjusted to your requirements with the click of a knob.

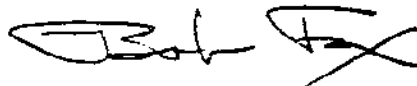
Racers discovered years ago that different damping settings work best on different tracks. Settings that work best on a sand track, for example, are not optimum on a hard-packed track. In the past, most riders just set up their shocks as best they could for typical conditions and let it go at that. The alternative was to either re-valve their shocks every weekend or else own several shocks with different valving (factory riders often carried different shocks with them for various tracks).

Now, with your FOX TWIN-CLICKER, you can set your damping to perfection for any course or event in a matter of seconds!

To ensure that you get the maximum performance and long service life that your new shock is designed for, take the time now to read this Owner's Manual carefully.

If you have any questions, comments, or problems, drop me a note.

Good luck and good racing,



Bob Fox  
President  
Fox Factory, Inc.

P.S.: Please fill out and mail the enclosed Registration Card for your new shock. We keep these on file in order to update you on any new information regarding your shock. At Fox Factory, continuous research to improve our products is an on-going process. Our interest in you, our valued customer, does not end the day you purchase one of our products.

## TABLE OF CONTENTS

Section I.	Installation.	Page 1
Section II.	Disassembly.	Page 2
Section III.	Tuning--Damping.	Page 9
Section IV.	Tuning--Spring Rate.	Page 11
Section V.	Maintenance.	Page 11
Section VI.	Troubleshooting.	Page 12
Section VII.	Parts List.	Page 13

### **WARNING!**

FAILURE TO FOLLOW THE INSTRUCTIONS IN THIS MANUAL  
COULD CAUSE DAMAGE OR INJURY TO YOUR SHOCK, YOUR BIKE, YOUR  
BODY, OR "ALL OF THE ABOVE".

## SECTION I. INSTALLATION

1. Remove stock shock from bike. Measure installed spring length for reference when installing on Fox shock.
2. Remove spring from stock shock and install on Fox shock.
3. Install Fox shock on bike:

\*Apply coat of grease on split bushings at top end of shock.

\*Note punch mark on one side of clevis near BLUE adjusting knob. Install so this punch mark faces toward rear wheel (for easy visibility). Use locknut supplied to secure clevis bolt.

\*When mounting reservoir, route hose same as stock.

\*Secure reservoir with stock clamp. Use special spacer and longer bolt supplied to tighten clamp (spacer goes between the two clamp flanges). Be sure clamp rests in groove in reservoir body. For best fit, we recommend modifying stock rubber mount by removing about 1/8" thickness of rubber in area where reservoir seats. (On bikes we have seen so far, this is easily done by peeling away a strip of rubber which has been bonded in this area. Later models may require cutting away the rubber).

\*IMPORTANT: Do NOT add extra hose clamps near middle of reservoir. If tightened excessively, it is possible for this to slightly "egg-shape" the reservoir, which could prevent free motion of the floating piston.

\*RED knob on reservoir should be located toward rear side of reservoir for easy access. Slight changes in position of RED knob can be made by slightly tightening or loosening hose connection or elbow fitting on reservoir.

\*IMPORTANT: Do not kink or sharply bend reservoir hose. Such abuse could damage this high-pressure, aircraft-quality hose. Also, PROTECT HOSE AT POINTS OF CONTACT WITH FRAME which could cause abrasion damage. Wrap with Super-Tape, or use similar method.

4. Set initial rebound and compression adjustments:

\*Rebound (BLUE knob): Turn BLUE knob clockwise (threading toward shock spring) as far as it will go. **DO NOT FORCE!** Punch mark on BLUE knob should line up with punch mark on eyelet at this position. (This is the maximum rebound position). Now back off  $1\frac{1}{2}$  turns (18 "clicks"). This is the suggested initial setting for your first test lap. After first test lap, change at your discretion (see Tuning Section for suggestions).

\*Compression (RED knob): Turn RED knob to "3" ("3" lines up with drill point mark on reservoir cap). This is suggested initial setting for your first test lap.

5. Ready to go. Get out to your favorite test area and dial the shock in to your preferences. See Tuning Section for suggestions.

## SECTION II. DISASSEMBLY

Disassembly is not required unless you want to make internal changes (e.g., increase or decrease travel), or change oil (we recommend changing oil once every 6 months--more often if you frequently ride in muddy conditions).

### BASIC DISASSEMBLY

Step 1. Clean shock thoroughly. Be sure shock is meticulously clean before beginning disassembly.

Step 2. Depressurize reservoir. Do this with air valve pointed away from your face and body.

**WARNING!:** Never attempt disassembly before depressurizing shock. This could cause severe injury!

Step 3. Unscrew shaft bearing. Hold shock upright with body eyelet clamped in soft-jaw vise. Use extra-large crescent wrench (or special wrench #97-5640 available from Moto-X Fox) on bearing flats.

If you do not have a large enough crescent wrench, turn shock upside down and clamp bearing flats in soft-jaw vise. Now break bearing loose by turning body end cap with a crescent wrench. Do this just enough to break bearing loose ( $\frac{1}{2}$  to  $\frac{1}{2}$  turn), then turn shock upright to complete removal of bearing (otherwise oil will pour out).

Step 4. Remove shaft assembly. After bearing is unscrewed, the entire bearing/piston/shaft assembly comes out together.

Step 5. Remove piston assembly. (Skip this step if you only want to change oil).

\*Remove locknut at end of shaft.

\*Remove piston assembly, carefully noting exact position of all parts. Lay out parts in exact order of removal.

\*Do not remove bearing unless you wish to change seal or wiper.

\*Make changes required (e.g., install new shaft spacer for more or less travel).

\*Reassemble piston assembly.

Step 6. Pour out old oil.

Step 7. Unscrew hose from reservoir. Carefully remove any particles of teflon tape on the end of the hose or in the threads of the elbow fitting.

Step 8. Pour out old oil from reservoir.

Step 9. Pressurize reservoir to 20-50 psi, then depressurize. Have ends of reservoir pointed away from your face and body when you do this.

**WARNING!** Do not skip this step. This could cause severe injury or damage.

NOTE: Purpose of this step is to correctly locate the floating piston in the reservoir. If the piston is not properly located, it is possible to have insufficient air space for shaft travel. This could cause extreme pressures and possible explosive failure of the shock.

- Step 10. Pour fresh oil into reservoir. Oscillate reservoir about vertical position and tap to help remove air bubbles. Have RED knob set at "1" while doing this. Use a lightweight oil such as Spectro Suspension Fluid 5 wt. or Bel-Ray LT-100. Fill reservoir with oil, then set aside.
- Step 11. Pour fresh oil into body. Have eyelet end of body clamped in vise. Hold finger over end of hose while adding a few inches of oil in body. Now point hose downward and momentarily release finger to allow brief stream of oil to flow from hose. Now...
- Step 12. ...Thread hose into reservoir. This is a little tricky, and requires rotating the reservoir in a tumbling motion about the hose axis. Do NOT tighten with wrench. Handtight is OK for now.
- Step 13. Fill body with oil. With body still clamped in vise, and reservoir hanging down, finish adding oil to body. Fill right to the top.
- Step 14. Install bearing/piston/shaft assembly. With shaft fully extended, slowly immerse piston assembly in oil. It helps to wiggle the piston assembly around somewhat to eliminate trapped air. Have paper towels or shop rags handy to wipe up excess oil which will flow down the body. Use care to avoid scratching teflon surface of piston ring on internal threads at end of body.
- Step 15. Tighten bearing with large crescent (or special Fox wrench) to about 50-70 ft-lbs.
- Step 16. Press in reservoir air valve to release slight pressure.

NOTE: When bearing was installed, some oil was displaced into the reservoir. This relocated the reservoir floating piston to its correct final position. This created a slight air pressure in the reservoir. By depressing the air valve stem, you release this slight pressure to ensure that the floating piston stays in its correct final position.

- Step 17. Unscrew hose from reservoir. Place reservoir aside temporarily, keeping it upright so that oil does not leak out. Place finger over hose to prevent oil flow.
- Step 18. Bleed air bubbles out of shock:
- \*Clamp upper shock eyelet in vise with shaft pointing downward about 15 to 30 degrees from vertical. Clamp on front/rear sides of eyelet such that hose points in direction parallel to vise jaws and at 15 to 30 degree upward angle. (The idea here is to ensure that the area where the hose exits the shock is the highest point, so the air bubbles can be bled out).
  - \*Immerse end of hose in container of oil (transparent plastic bottle preferred).
  - \*Slowly stroke shaft all the way in, then all the way out. Make sure end of hose is fully immersed in oil while doing this.
  - \*Take end of hose out of oil and point straight up.
  - \*Wait 2-3 minutes, then immerse end of hose in oil and stroke shock again.
  - \*Repeat above steps until bubbles no longer appear when shaft is stroked.
  - \* Finish with shaft fully extended and hose pointing straight up.
- Step 19. Carefully apply teflon tape to hose threads. Do NOT apply teflon tape to the first two threads (this will come off and get in the oil, affecting damping). Apply teflon tape starting at about the third thread. Before applying teflon tape, wipe excess oil off threads and, while holding finger over end of the hose, spray threads with Contact Cleaner. This helps teflon tape "stick" to the threads, making it easier to wrap.
- Step 20. Thread hose into the reservoir. This is easiest if you leave the shock clamped in the vise with the shaft end pointing down. Hold the reservoir upright in one hand. Bend the hose down with the other hand, then rotate the reservoir to thread in the hose. Tighten hose securely with wrench.
- NOTE: Position of reservoir when mounted will depend on final tightening of hose. Check on bike to determine exact final tightening. Hose should not be kinked or twisted with reservoir mounted.



Step 21. Repressurize reservoir to 190-200 psi. Use nitrogen (preferred) or air. Be sure reservoir end caps are properly located flush with the ends of the reservoir, and be sure wire retaining rings for end caps are in place before pressurizing. (The wire retaining rings can only be removed by pushing the reservoir caps in about  $\frac{1}{2}$ ". But do not do this unless it is necessary to disassemble the reservoir for some reason). Point ends of reservoir away from your face and body when pressurizing.

Step 22. Reinstall shock on bike.

### MISCELLANEOUS DISASSEMBLY

Basic disassembly and assembly are covered above. The following covers other specific operations.

#### A. Installing New Shaft Wiper and Seal.

\*Remove wire ring from shaft.

\*Remove bearing from shaft.

\*Remove old seal (O-Ring) and wiper. Use paper clip and bend small "hook" at one end with needle-nose pliers to help remove these parts.

\*Install new seal and wiper. Lubricate thoroughly with grease before installing.

\*Reinstall bearing on shaft. Apply grease at shoulder and wire ring groove on shaft to help wiper and seal pass these points without damage. Push bearing on slowly and wiggle slightly to help wiper and seal pass over shoulder and groove on shaft. Be very careful not to cut or nick teflon surface in bearing on shaft threads. After installing bearing, inspect shoulder and groove areas of shaft for possible small pieces of black rubber. This would indicate that the O-Ring or wiper has been cut and the above procedure must be repeated with a new wiper and O-Ring.

\*Complete reassembly of shock.

B. Installing New O-Ring on Rebound Metering Needle.

This is not necessary unless this O-Ring fails, which would be very rare. Failure would be indicated by oil leaking out in the area of the BLUE knob.

\*Unscrew metering jet at end of shaft.

\*Turn BLUE knob full out (minimum damping position).

\*Shake shaft up and down until metering needle and aluminum rod fall out. (By shaking shaft, aluminum rod inside shaft impacts on metering needle to force it out).

\*Remove old O-Ring and install new one. Apply grease on O-Ring and metering needle and push O-Ring on from pointed end of metering needle.

\*Reinstall aluminum rod and metering needle.

\*Reinstall metering jet. Before installing, clean mating threads with Contact Cleaner and apply Blue Loctite. Apply light torque only on metering jet or it could break.

\*Heat end of shaft under heat lamp (or similar device) for 10-15 minutes to setup Loctite, then reassemble shock.

C. Disassembling Reservoir.

This is not necessary unless there is an O-Ring failure or other problem, which would be rare. Failure would be indicated by leaking air or oil from reservoir or by oil coming out of air valve when depressurizing (failed O-Ring on floating piston).

\*Depressurize reservoir.

\*Remove hose from reservoir and drain oil from reservoir.

\*Push in ends of reservoir about  $\frac{1}{2}$ " and remove wire retaining rings.

\*Remove reservoir ends.

\*Push out floating piston.

\*Do not disassemble adjustable compression damping assembly unless there is O-Ring failure indicated by oil leaking out under RED knob. See following procedure "D" if this is necessary.

\*Replace O-Rings as required.

\*Reassemble reservoir. Be sure wire retaining rings are properly seated as indicated by end caps located flush with ends of reservoir.

\*Pressurize reservoir to 20-50 psi, then depressurize.

**WARNING!** Do not skip this step. This could cause serious injury or shock failure. See previous Basic Disassembly Section.

\*Fill reservoir with oil, pouring oil through hole for hose.

\*Hand-tighten hose to reservoir.

\*Stroke shaft in about 2" to 3" and hold there for the next two steps. (This locates the floating piston at its correct final position).

\*Depress air valve stem to release slight pressure in reservoir.

\*Disconnect hose from reservoir.

\*Bleed shock as covered in Basic Disassembly Section.

\*Reconnect hose to reservoir and repressurize as covered in Basic Disassembly Section.

#### D. Disassembling Adjustable Compression Damping Assembly.

\*Clamp Assembly Housing lightly in soft-jaw vise, with one jaw against flat on housing.

\*Unscrew Plate from end of Housing with Crescent wrench.

\*Remove flat-head screw in middle of RED knob with allen wrench.

\*Remove RED knob. Be careful not to lose two small springs and two steel balls under RED knob.

\*Remove Compression Adjusting Drum (the part with 8 holes in it) by pushing in on the stem which the RED knob was attached to.

\*Replace O-Ring on stem. Grease O-Ring before installing.

\*Reassemble. Clean all threads with Contact Cleaner and apply Blue Loctite before assembly.

\*IMPORTANT: When installing RED knob, be sure it is set at "1" when the largest hole in the drum is lined up with the hole in the housing. It is possible to install the RED knob 180 degrees from correct position if you are not careful...then the numbers on the RED knob would not correspond with the correct holes.

### OTHER DISASSEMBLY

Disassembly other than covered in the foregoing should rarely, if ever, be required. Call Moto-X Fox at (408) 371-1221 if any questions arise.

### SECTION III. TUNING--DAMPING

Basic initial settings for rebound and compression are covered in the Installation Section. Go out to your favorite test area and try a few laps with these settings. Do NOT go 100% WFO; instead, try to concentrate on how the rear of your bike is working.

Now make changes and try again. Tune your senses in to the changes in handling. Keep testing until the shock is perfectly dialed in to your preferences for that particular track.

#### IMPORTANT:

1. Change only ONE thing at a time---either compression or rebound.
2. At first, make BIG changes. For example, on compression go from "3" all the way to "8". On rebound make changes of one full turn (12 "clicks").

These are big enough changes so you will definitely notice the difference right away! The idea here is to "bracket" the best setting. Then you can "fine-tune" from there.

EXAMPLE (Rebound):

With the rebound at  $1\frac{1}{2}$  turns (18 "clicks") from maximum, perhaps the bike feels too "springy". Now increase damping one full turn (12 "clicks" clockwise...threading BLUE knob toward the shock spring) and try again. Maybe now it feels too stiff; perhaps you notice "packing-down" in some sections. OK, you've already got it "bracketed"... ..somewhere between these two settings should be just right. Now try a setting somewhere in-between (perhaps back it off  $\frac{1}{2}$  turn--6 "clicks"), and ride again.

The KEY point here is: make BIG changes at first. Do not make "1 click" or "2 click" changes until you have closely "bracketed" the best setting. Note that a "1 click" change is very small---even a pro would have difficulty noticing the difference.

EXAMPLE (Compression):

With the compression set at "3", perhaps the bike feels too soft. Now go all the way to "8". This will probably feel too stiff. Now try "5". And so on.

NOTE: Another good thing about making BIG changes at first is this: You will "learn", perhaps for the first time in your career, exactly what too much or too little rebound damping and too much or too little compression damping really feels like!

In the past, many riders probably weren't really sure what was wrong with their shock(s). Maybe they felt their shock wasn't right, but they didn't really know what the problem was. Maybe they took their shock(s) apart and changed damping; but this probably took an hour or so to do and by then the track had changed or they had a hard time remembering exactly how the bike felt before.

Now, with your new FOX TWIN-CLICKER, you can learn very quickly!

This "learning process" is important for another reason. When riding at a different track, you will quickly recognize what changes you want to make to dial your shock in perfectly for that particular track. This is important because practice time is often very limited.

### SPECIAL DAMPING.

The wide range of compression and rebound damping available in your new shock should suit 99% of all riders. However, for unusual applications or conditions where the standard adjustment range is not satisfactory, it is also possible to re-valve the shock internally. If you have a special application, supply Moto-X Fox with all pertinent details and we will make recommendations.

### SECTION IV. TUNING--SPRING RATES

We recommend using the standard Honda springs with your new shock.

For your convenience, listed below in order of stiffness are the standard Honda part numbers:

<u>Prolink 125:</u>	<u>Rate</u>	<u>Part Number</u>
	Soft	104313
	Std.	102490
	Firm	104314
<u>Prolink 250 &amp; Open:</u>	<u>Rate</u>	<u>Part Number</u>
	Soft	102753
	Std.	102752
	Firm	102751

### SECTION V. MAINTENANCE

1. Clean shock periodically, particularly after riding in muddy conditions. Especially clean caked mud off shaft between motos to prolong seal life.
2. Change oil every 6 months. More often if you frequently ride in muddy conditions.

## SECTION VI. TROUBLESHOOTING

1. Problem: Loss of air pressure. (This is indicated if the BLUE knob does not "click" in any position. Note that there is no "click" when the BLUE knob is completely backed off, but it should "click" when turned in.  
  
Solution: Remove shock from bike. Repressurize and immerse in container of water. Locate leak and correct per procedures covered in Disassembly Section.
  
2. Problem: Oil leak.  
  
Solution: Determine source of leak and correct per procedures covered in Disassembly Section.
  
3. Problem: Insufficient or erratic damping.  
  
Solution: Likely cause is dirt or foreign particles in valving. Disassemble shock and piston assembly. Clean and inspect all parts thoroughly. Change oil.

SECTION VII. PARTS LIST

<u>Item</u>	<u>Part No.</u>	<u>Description</u>	<u>Price/Qty</u>
1	97-6010	Body Cap	\$28.00/each
2	97-6020	Press Fit Bushing	\$8.00/each
3	97-6030	Split Bushing	\$8.00/pair
4	97-5150	O-Ring (Bearing Outer/End Cap)	\$1.00/each
5	97-6050	Hose	\$12.00/each
6	97-6060	Spring Guide	\$7.00/each
7	97-6070	Preload Ring	\$10.00/pair
8	97-6080	Shock Body	\$40.00/each
9	97-6090	Rebound Washer	\$2.50/each
10	97-6100	Rebound Valves	\$10.00/set
11	97-6110	O-Ring (Piston)	\$4.00/each
12	97-5280	Piston Ring	\$6.00/each
13	97-6130	Piston	\$26.00/each
14	97-6140	Compression Valves	\$10.00/set
15	97-5230	Top-Out Plate	\$2.50/each
16	97-5140	Shaft Seal	\$1.00/each
17	97-5130	Shaft Wiper	\$4.00/each
18	97-5170	O-Ring (Metering Needle)	\$1.00/each
19	97-6190	Metering Needle	\$10.00/each
20	97-6200	Shaft	\$35.00/each
21	97-6210	Adjusting Rod	\$4.00/each
22	97-6220	Bearing w/Insert & Bumper	\$25.00/each
23	97-6230	Wire Ring (Spacer)	\$1.00/each
24	97-6241	Top-Out Spacer: Standard travel	\$8.00/each
	97-6242	Minus 1" travel	\$8.00/each
	97-6243	Minus 1/2" travel	\$8.00/each
	97-6244	Plus 1/2" travel	\$8.00/each
	97-6245	Plus 1" travel	\$8.00/each
25	97-5320	Shaft Locknut	\$2.50/each
26	97-5190	Metering Jet	\$12.00/each
27	97-6270	Bottom-Out Bumper	\$6.00/each
28	97-6280	Spring Retainer	\$10.00/each
29	97-6290	Wire Ring (Spring Retainer)	\$1.00/each
30	97-6300	Adaptor Ring (Spring Retainer)	\$10.00/each
31	97-5030	Dust Cover	\$8.00/pair
32	97-5040	BLUE Knob	\$22.00/each
33	97-6330	Clevis Nut	\$4.00/each
34	97-6340	Clevis Weldment	\$20.00/each
35	97-5050	Cross Pin	\$1.00/each
36	97-5480	O-Ring (AC Housing)	\$1.00/each
37	97-5440	Wire Ring (Reservoir)	\$2.00/pair
38	97-5430	Detent Spring	\$2.50/pair
39	97-5410	O-Ring (RED Knob)	\$1.00/each
40	97-5450	O-Ring (Adjusting Drum)	\$1.00/each
41	97-5390	Screw (RED Knob)	\$1.00/each