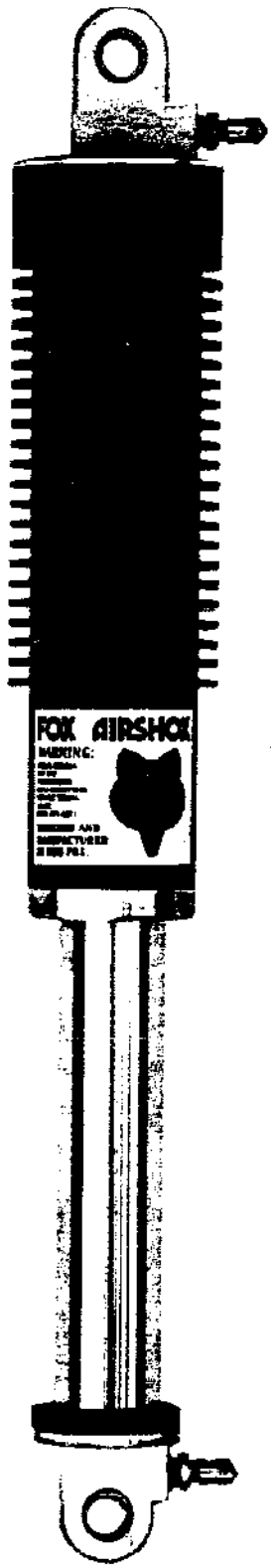


PATENT
PENDING

Owner's Manual

FOX AIRSHOX™

DESIGNED AND MANUFACTURED
by **BOB FOX**

Fox Racing Shox
3641 Charter Park Drive
San Jose, CA. 95136
(408) 269-9200

INTRODUCTION

Congratulations! You now own the finest shock absorbers ever produced for motocross!

FOX AIRSHOX have a proven record of outstanding performance, extreme reliability, and exceptionally long service life. They have been on the winning bikes in the Mint 400, the Baja 500, the AMA MX Nationals, Supercrosses, Trans-AMA's, and International Grand Prix's. They have done the job for more top pro's than any other shock absorber since the advent of long travel rear suspension.

To ensure that you get the maximum performance and long service life that these shocks are designed for, take the time now to read this Owner's Manual carefully. Read it now, before you go riding the first time!

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

Good luck and good racing,

Bob Fox

TABLE OF CONTENTS

HOW TO USE THIS MANUAL

First, read Section I. This gives complete installation instructions and tips. Don't skip anything here ... everything is important!

Then read Section II. This explains pressurizing procedures and tips. It also has a chart showing pressures to use. Don't skip anything ... everything is important!

Section III discusses tuning. This will help you get the shocks dialed-in to your personal preferences. Read it now and also have it handy for reference the first time you go riding.

Section IV covers maintenance. Not essential to read this until you've had the shocks for a month or so. However, it's a good idea to *skim* over it now, so you're familiar with what it covers.

Section V shows the parts list.

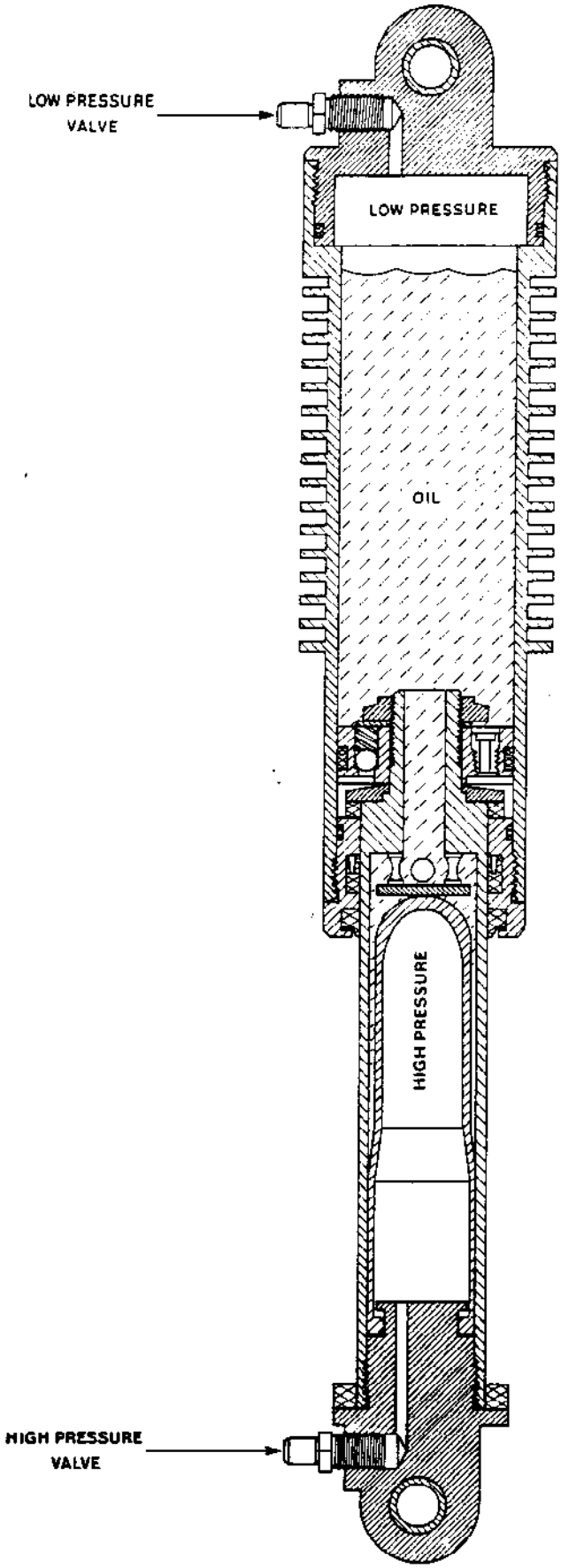
Section VI covers disassembly. Not necessary to read this in detail until later when you want to take the shocks apart. However, *skimming* thru it now is a good idea.

Section VII covers troubleshooting. Check this if you are having any problems.

Section VIII presents a quiz. After you've read the whole manual, test yourself with this quiz.

WARNING

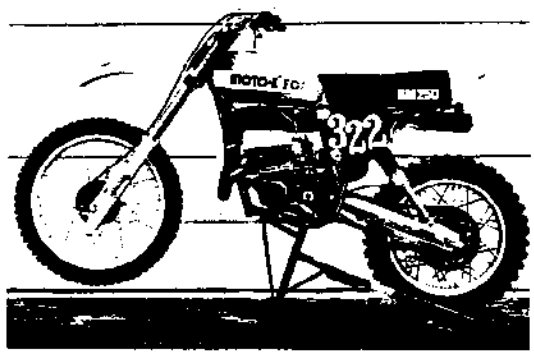
Failure to follow the instructions in this manual could cause damage to the shocks, your bike, your body, or "all of the above"!


LOW PRESSURE
VALVE
LOW PRESSURE
OIL
HIGH PRESSURE
HIGH PRESSURE
VALVE

SECTION I

INSTALLATION

1. **Always install "upside-down"** ... that is, with the shaft end down and the big end up. (Reason: shocks will have no damping if installed other way.) Air valves should normally point to the rear.



2. **Mount shocks for maximum outboard offset.** (Reason: to give maximum chain clearance.) If your shock mounts are wider than the shock eyes, add spacer washers to take up the play. Add them all on the inside, thus spacing the shock itself outward.

3. **Do not overtighten shock bolts.** The split bushings supplied can be crushed by excess torque ... especially the 10mm size. Use locknuts and/or Locktite, not heavy torque!

4. **Check for interference.** With shocks mounted, run through *full stroke* (shocks are shipped with zero pressure, so this is easy). Modify as required if any interference is noted. (1976 KTM's, for example, require a slight "dimple" in the frame just below the top shock mount).

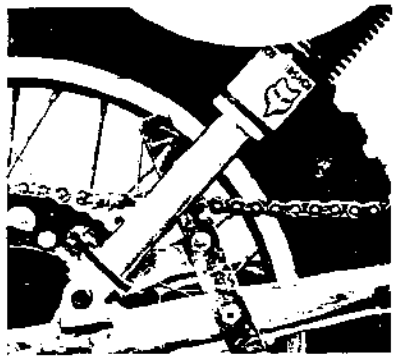
5. **Check upper air valve clearance.** Check clearance between valve and frame and/or exhaust pipe. Check at all points in travel, especially at full bottom-out. AW Maico's with 17½ shocks, and other bikes, may require slight modifications for clearance. On some bikes it may be necessary to have the upper valve pointing *forward* to prevent contact with the exhaust pipe and/or frame (this may make it more difficult to adjust pressure, if access to the valve is limited ... so, generally, forward-pointing valves are not recommended unless really necessary).

6. **Check chain clearance.** With shocks fully compressed, minimum side clearance between chain and shock is ¼". Some bikes have a lot of clearance (KTM's and RM Suzuki's, for example), and others (like Maico's and Husky's) have minimum clearance. Check your particular bike carefully! If clearance is less than the absolute minimum of ¼", shocks mounts should be rewelded to move shocks further outboard.

7. **Cut away some fins if required.** Some bikes with laydown shock geometry will need this for chain clearance at full compression. **For example,** ***Cantilever Husky's must have this done!*** Failure to do it will result in a thrown or broken chain ... and possibly *cracked engine cases.* Check your particular bike carefully. Best way to cut away fins is with a mill. Tell machinist to use a carbide-tipped cutter. Should take about 15 minutes and cost about $5.00. You can also do it with a grinder and/or file if you are careful.

8. **Check fender/tire clearance.** If the tire rubs with the shocks fully compressed, travel can be reduced by adding extra rubber bumpers (Part = 99-0140). One extra bumper will reduce stroke about one-quarter inch (¼").

9. **Fabricate an upper chain guide.** Design it to protect the shock in case the chain has excess sideplay, or comes off the sprocket. *Damage to shaft will very likely occur, sooner or later, if you do not install this protection!* Exact design and mounting will depend on your particular bike.* Here are some general tips:



   a. Use a strip of steel about 1" wide and 1/8" thick. Length about 5" to 8", depending on bike (see item "c." below).

   b. Round or angle the rear edge of guide, *so that if the chain does touch, it will glide smoothly by, rather than catching.* Adjust guide for about ¼" clearance from chain.

   c. Guide should extend about 2" above the chain. Check this with suspension fully compressed. Be sure there is no chance of the chain going over the top of the guide.

   d. Mount guide on swingarm. Use *two* mounting points so guide cannot rotate. On most bikes you can find existing mounting points; on others you may have to drill a hole or two.

10. **Check vertical alignment of shocks.** View from rear of bike. Shocks should be parallel ... they should not "lean in" or "lean out". This would cause binding during full-stroke action. If minor misalignment is noted, correct by shimming. If serious misalignment exists, shock mounts should be relocated.

11. **The first time you go riding, double-check everything for signs of interference, chain contact, or other problems. Do this before going WFO!**

* **NOTE:** If you have a 1978 Honda CR-250R, an RM Suzuki, or a KTM, you *might* get away with not installing the upper chain guide. Shock/chain clearance on these bikes is very good. With careful maintenance of chain tension, sprockets, etc., you *probably* won't have any problems. Team Honda doesn't use them on the factory bikes, and Team Moto-X Fox didn't use them on the RM Suzuki's they campaigned during the 1977 season. However, to play it safe, it might still be a good idea to install a chain guide ... a new shaft is expensive!

SECTION II

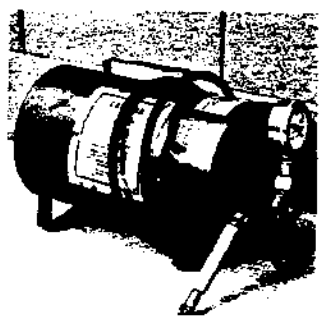
PRESSURIZING

EQUIPMENT NEEDED

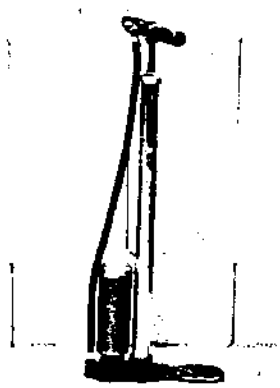
Pressurize with either nitrogen or air. **WARNING: Never use other gases such as acetylene or oxygen which you may have for welding! This could be dangerous!** You will need one of the following items to pressurize:

a. **Nitrogen tank and regulator.** This is the ideal setup. Regulator should go up to about 200 psi (14 kg/cm^2). Available at welding supply shops for about $80 to $100 complete. Nitrogen refills cost only a few dollars, are rarely needed.

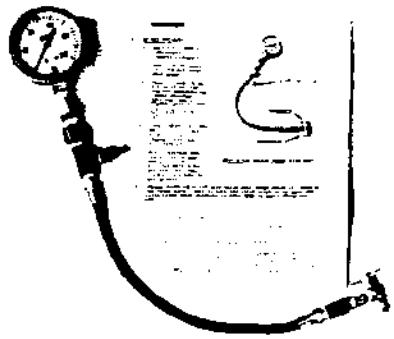
b. **Portable air tank.** A good setup. Sears, for example, has a 3½ gallon model at about $23 (#30 G 16125C). Also sold at some auto supply stores and sometimes Army Surplus. Low-cost regulators are available (Sears #30 G 16032 at about $11, for example), but are not absolutely essential.



c. **High pressure bicycle tire pump.** These work fine. Get one with built-in gauge and thumb-lock valve connector. Schwinn makes one; also several other brands. At bicycle shops for about $15. Don't get one of the $3 types with no gauge ... probably won't work here.

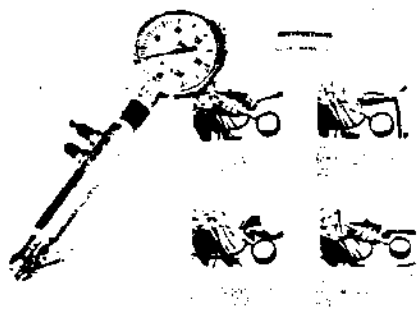


PRESSURE GAUGE.



A *special* pressure gauge is needed for checking and adjusting pressure. Most standard gauges sold in bicycle shops, auto parts stores, etc., will not work ... *they leak pressure when connecting and disconnecting.* This happens because their deflator pin opens up the valve core before a good seal is made between the valve and the gauge. A lot of pressure can escape in the fraction of a second it takes before gasket contact is made and the connection seals off.

Moto-X Fox offers pressure gauges specifically designed for the AirShox. There are two styles. The "hose-style" gauge is highly recommended for all bikes. The "handle-style" gauge is preferred by some riders and costs a little less. See Section V for ordering information.



PRESSURIZING PROCEDURE.

1. **Have shocks fully extended.** Have bike on stand or have someone hold up rear of bike. *Do not start to pressurize with shocks collapsed.* (Reason: with shocks collapsed, the oil level is near the low pressure valve, and some oil may squirt out as you pressurize.)
2. **Set high pressure FIRST (lower valve), then low pressure (upper valve).** *Always be sure high pressure chamber is pressurized before pressurizing low pressure chamber.*
3. **Readjust low pressure setting after riding.** Stop after riding 1 or 2 minutes and readjust low pressure. *It will have gone down about 15%.* This is normal. It is not due to a leak. You only have to do this *the first time* you pressurize the shocks. It is *not required again* unless you completely depressurize the shocks ... for example when you change oil.

PRESSURIZING TIPS.

a. Best method is to overpressurize somewhat, then adjust pressure downward with the pressure gauge.

b. After hard riding, allow about 60 seconds before checking or adjusting pressure. (This lets oil foam at top of shock settle, thus preventing a small oil loss when you open valve.)

c. If shocks are off bike and you want to depressurize, make sure big end of shock is "up". (If big end is "down", a stream of oil will shoot out!)

d. You should have no problem with losing oil out of the high pressure valve. If oil ever shoots out here when checking or adjusting pressure, it means the rubber bladder sprung a leak and must be replaced. If the bladder fails, the shocks will still finish the race ... but they will act as "single-pressure" shocks instead of dual-pressure.

e. Do not trust regulator settings or pump gauge readings for setting pressures. *This is not accurate!* Even if the regulator or pump gauge itself is accurate, there is usually a pressure loss as you disconnect. Do your final checking and adjusting with a good gauge!

RECOMMENDED PRESSURES.

See Table 1. These pressures will give best performance for a "typical" rider on a "typical" MX track. Start here, then experiment to suit track conditions and your particular riding style.

You must answer three questions:

1. **What does your bike weigh?** This is actual weight ready to race. Use Section "A", "B", or "C" of Table 1, depending on your bike weight.

2. **What do you weigh?** Add about 10 lbs. for weight of riding gear. For example, if your body weight is 165 lbs., use 175 lbs. in the "Rider Weight" column.

3. **What is your bike's Suspension Lever Ratio (SLR)?** SLR's for some popular bikes are listed in Table 2 ... however, this is for general reference only. Best idea is to get out a tape measure and determine your particular bike's SLR as shown in diagram by Table 2. If your bike does not happen to be listed, then you will definitely have to do this.

   Example: You have a '78 Honda CR-250R. It weighs 220 lbs. ready to race. You weigh 160 lbs. Add 10 lbs. for riding gear and your "Rider Weight" is 170 lbs. Your SLR checked out at 1.8 (in agreement with Table 2). From Table 1, Section "C", your recommended pressures are 78 psi low and 125 psi high ("85/128").

   Remember to set the *high pressure first!*

Table 1. Fox Airshox Pressure Recommendations (psi)

A. BIKE WEIGHT 170–190 LBS.								
RIDER	SUSPENSION LEVER RATIO							
WEIGHT*	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3
120 lbs.	53/85	56/90	59/94	62/99	66/106	69/110	72/115	75/120
130 lbs.	55/88	58/93	61/98	65/104	69/110	72/115	75/120	78/125
140 lbs.	57/91	60/96	64/102	68/109	72/115	75/120	78/125	82/131
150 lbs.	59/94	62/99	66/106	70/112	74/118	78/125	81/130	85/136
160 lbs.	62/99	65/104	69/110	73/117	77/123	81/130	85/136	89/142
170 lbs.	64/102	67/107	72/115	76/122	80/128	84/134	88/141	92/147
180 lbs.	66/106	70/112	75/120	79/126	83/133	87/139	91/146	95/152
190 lbs.	68/109	72/115	77/123	81/130	85/136	89/142	94/150	98/157
200 lbs.	71/114	75/120	80/128	84/134	88/141	92/147	97/155	101/162
210 lbs.	73/117	77/123	82/131	86/138	91/146	95/152	100/160	104/166
220 lbs.	75/120	79/126	84/134	90/142	94/150	98/157	103/165	107/171

B. BIKE WEIGHT 190–210 LBS.								
RIDER	SUSPENSION LEVER RATIO							
WEIGHT*	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3
120 lbs.	56/90	60/96	63/101	66/106	70/112	73/117	76/122	80/128
130 lbs.	58/92	62/99	65/104	69/110	72/115	76/122	79/126	83/133
140 lbs.	60/96	64/102	68/109	72/115	75/120	79/126	83/133	87/139
150 lbs.	62/99	66/106	70/112	74/118	78/125	82/131	86/138	90/144
160 lbs.	65/104	69/110	73/117	77/123	81/130	85/136	89/142	93/149
170 lbs.	67/107	71/114	75/120	79/126	83/133	87/139	92/147	96/154
180 lbs.	69/110	73/117	77/123	82/131	86/138	90/144	95/152	100/160
190 lbs.	71/114	75/120	79/126	84/134	88/141	93/149	98/157	103/165
200 lbs.	74/118	78/125	82/131	87/139	91/146	96/154	101/162	106/170
210 lbs.	76/122	80/128	85/136	90/144	95/152	99/158	104/166	109/174
220 lbs.	78/125	85/133	88/141	93/149	98/157	102/163	107/171	112/179

C. BIKE WEIGHT 210–230 LBS.								
RIDER	SUSPENSION LEVER RATIO							
WEIGHT*	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3
120 lbs.	58/93	62/99	66/106	70/112	73/117	76/122	80/128	83/133
130 lbs.	60/96	64/102	68/109	72/115	76/122	80/128	83/133	87/139
140 lbs.	63/101	67/107	71/114	75/120	79/126	83/133	87/139	91/146
150 lbs.	65/104	69/110	73/117	77/123	81/130	85/136	90/144	94/150
160 lbs.	68/109	72/115	76/122	80/128	84/134	88/141	93/149	98/157
170 lbs.	70/112	74/118	78/125	82/131	87/139	92/147	97/155	101/162
180 lbs.	72/115	76/122	81/130	85/136	90/144	94/150	99/158	104/166
190 lbs.	74/118	78/125	83/133	88/141	93/149	97/155	102/163	106/170
200 lbs.	76/122	81/130	86/138	91/146	96/154	100/160	105/168	109/174
210 lbs.	78/125	83/133	88/141	93/149	98/157	103/165	108/173	112/179
220 lbs.	81/130	86/138	91/146	96/154	101/162	106/170	111/178	116/186

* Add approximately 10 lbs. for weight of riding equipment.

** Latest tip for *pros* and *fast experts only*: set *high* pressure about 10% higher than shown in Table above. *No change* to *low* pressure.

Table 2. Suspension Lever Ratios for Certain Bikes (Stock)

BIKE	SUSPENSION LEVER RATIO
Honda CR-250R ('78)	1.8
Husky GP ('77)	1.8
KTM ('76, '77)	2.2
Maico AW ('76, '77)	2.2
Suzuki RM-B & RM-C	1.9

NOTE: This Table for general reference only. Your bike may have mid-year factory modifications or other model changes. Double-check your particular bike's SLR as shown below. *These SLR's do not apply with 17½ shocks (except the Honda CR-250R which has 17½ " shocks standard).*

$$\text{SLR} = \frac{\text{rear wheel travel}}{\text{shock shaft travel}}$$

Example:

Honda CR250-R
Rear wheel travel = 11"
Shock shaft travel = 6"

$$\text{SLR} = \frac{11}{6} = 1.8$$

IF TABLE 1 DOESN'T COVER YOU ...

Table 1 covers rider weights from 120 to 220 lbs., bike weights from 170 to 230 lbs., and SLR's from 1.5 to 2.2. If you or your bike don't fall within those ranges, calculate recommended pressures as follows:

Step 1: Multiply your bike weight by 0.09 (10%)

Step 2: Multiply your Rider Weight by 0.14 (14%)

Step 3: Add the numbers from Steps 1 and 2, and multiply this by your SLR. This number is your recommended low pressure. To get high pressure, multiply the low pressure by 1.6 (1.8 if you are a pro or fast expert).

Example: Your bike wight is 220 lbs., your rider weight is 240 lbs' (too high to use Table 1), and your SLR is 1.6.

Step 1: 220 times 0.09 = 19.8

Step 2: 240 times 0.14 = 33.6

Step 3: 19.8 plus 33.6 = 53.4

53.4 times 1.6 = 85

Your recommended *low* pressure is 85 psi.

Your recommended *high* pressure is 85 times 1.6 = 136 psi.
(85 times 1.7 = 145 psi if you are a pro or fast expert).

WHAT PRESSURES DO THE PRO'S RUN?

The best pressures for *you* to run depend on how much *you* weigh, how much *your* bike weighs, *your* rear end geometry (SLR), the kind or riding *you* do, *your* personal preferences, etc.

However, for *general reference*, below are listed the approximate pressures used by *pro* riders of *average weight* (say 150 to 180 lbs.) in *Supercross*, *National*, and *International Grand Prix* motocross competition. This is based on data we have been accumulating for over two years.

Type Bike	Low Pressure	High Pressure
Husky '75-'76 (13½")	75-85 psi	140-155 psi
Husky '77 (15 1/8")	70-80 psi	135-150 psi
KTM/Penton '76-'77 (13½")	95-105 psi	165-180 psi
Maico-AW '76-'77 (13½)	95-105 psi	165-180 psi
RM 250A/370A (15½")	80-90 psi	145-160 psi
RM 125B/250B/370B (14¾")	85-95 psi	150-165 psi

With 17½ **AirShox**:

Honda CR125 '77 (17")	62-70 psi	105-115 psi
Honda CR250-R '78	75-85 psi	135-145 psi
Husky '75-'77	75-85 psi	125-140 psi
Maico-AW '76-'77	77-85 psi	135-145 psi
RM 125B	73-78 psi	115-130 psi
RM 250B/370B	76-82 psi	125-135 psi

Important: If *you* weigh less than 150 lbs. or more than 180 lbs., the above pressures should *not* be considered correct for you.

Important: If *you are* about 150-180 lbs,, but are a *novice* or *intermediate* rider, the *low* pressures shown above should be about right, but the *high* pressures shown should be reduced about 15 to 25 psi.

SECTION III

TUNING

Pressures, damping, and oil quantity can be tuned to suit individual riding styles and tracks. *The most important is pressure* ... be sure to experiment to find the combination of pressures that works best for you!

TUNING PRESSURES.

Start out at the recommended pressures, then experiment. Learn how your bike feels with different pressures.

The low pressure setting controls "spring rate" for about the first 1½ inches of shock travel; after that it depends on the combination of low and high pressures. This is somewhat similar to a dual-rate spring.

Experiment with low pressure changes first. Change in steps of about 5 psi at a time. Here's what to look for:

a. Pressure is *too low* if action over rough *gas-on* sections is rough. What's happening is you are getting too much "squat" under acceleration ... this leaves very little suspension travel remaining for the actual bumps!

b. Pressure is *too high* if overall action is stiff and springy, especially over small bumps and in *gas-off* sections such as downhills and entering corners.

The low pressure setting you end up with should normally be within 10 psi of the recommended pressure.

Experiment with high pressure changes next. Change in steps of about 10 psi. Remember that changes here will have absolutely no effect for about the first 1½ inches of shock travel ... that portion of the travel is completely determined by the low pressure setting. Hence you should concentrate only on performance in rough *gas-on* sections and off jumps ... the places on the course where you are using full travel.

The high pressure setting you end up with should normally be within 20 psi of the recommended pressure.

TUNING DAMPING.

Rebound damping is controlled by a jet and a pop-off valve. Both of these are in the piston.

The jet controls damping at slow shaft speeds (small bumps). The pop-off valve opens at faster shaft speeds (large bumps), to provide a secondary oil flow path. This prevents the shocks from "pumping down" over a series of large bumps, by by-passing the excessive damping which would otherwise build up.

Damping can be fine-tuned by changing the jet orifice diameter and/or the pop-off valve spring. Most riders, however, should not do this ... damping will be correct for most riders as set at the factory. However, if you do want to experiment, here are some guidelines:

1. Experiment with jet size first. Drilled-out Holley carburetor main jets are used. These are available at most auto parts stores, or from the Moto-X Fox (see Section V). The Table below shows the standard jet orifice size used for production, as well as the maximum and minimum sizes recommended for experimenting. Use standard number drills to drill the Holley jets to the desired size. For example, a standard #29 drill (0.136 dia.) is used to drill out the STD jets for the 15½" shocks.

SHOCK SIZE	MIN. JET DIA.	STD. JET DIA.	MAX. JET DIA.
13"	.106"	.116"	.122"
13 1/2"	.112"	.120"	.128"
14 1/2"	.120"	.128"	.136"
14 3/4"	.128"	.136"	.144"
15 1/8"	.132"	.140"	.147"
15 3/4"	.132"	.140"	.147"
16 1/4"	.132"	.140"	.147"
16 3/4"	.140"	.147"	.157"
17"	.144"	.152"	.162"
17 1/2"	.144"	.152"	.162"
17 3/4"	.144"	.152"	.162"

2. If you want to experiment with the pop-off valve spring, consult the chart below.

SPRING NUMBERS**

	13"	13 1/2"	14 1/4"	14 3/4"	15 1/8"	15 3/4"	16 1/4"	16 3/4"	17"	17 1/2"	17 3/4"
XSoft:	# 2.7	# 2.6	# 2.5	# 2.2	# 2.1	# 2.1	# 2.1	# 2.0	# 2.0	# 2.0	# 2.0
Soft:	2.9	2.8	2.7	2.5	2.4	2.4	2.4	2.2	2.1	2.1	2.1
STD:	3.1	3.0	2.9	2.7	2.6	2.6	2.6	2.4	2.2	2.2	2.2
Firm:	3.3	3.2	3.1	2.9	2.8	2.8	2.8	2.6	2.4	2.4	2.4
XFirm:	3.5	3.4	3.3	3.1	3.0	3.0	3.0	2.8	2.6	2.6	2.6

****NOTE:** These are spring numbers, *not part numbers* ... to order, see Section V for corresponding part numbers.

Example: You have 17½" Airshox. You feel they may be "pumping down" slightly over a series of large bumps. You want to try less damping. From the chart above, you see that your shocks have the #2.2 spring (all Airshox are produced at the factory with the STD spring only). For softer damping, try the #2.1 (soft) or #2.0 (XSoft) springs.

TUNING OIL QUANTITY.

Correct oil quantity is vital for good shock performance. Too much oil and you won't get full travel. Too little oil and you'll be bottoming-out hard.

FOX AIRSHOX are supplied with the "Standard Fill" (see Maintenance) quantity of Bel-Ray LT-100. This quantity is ideal for most riders.

To test for correct oil quantity, pull the rubber shaft bumpers up about an inch on the shafts. Now do a few fast laps on a rough course, using your favorite pressure settings. One of three things will happen:

"A": You don't get full travel. The rubber bumpers do not get pushed back to the ends of the shafts.

"B": The shocks bottom out hard. The bumpers are at the ends of the shafts *and* you felt hard bottoming-out.

"C": Just right. You got full travel and did not bottom out hard.

For Condition "A" you should remove some oil. How much?? ... Use this rule: *Remove 5 cc oil from each shock for every quarter of an inch you are short of full travel.* For example, if you are ½ inch short of full travel, remove 10 cc from each shock. Test again and you should get full travel.

For Condition "B" you should add some oil. How much?? ... Use this rule: *Add 5 cc oil to each shock, then test again.* If the shocks still bottom-out hard, add 5 cc more. It should never be necessary to add more than 10 cc extra.

HOW TO ADD OIL.

1. Depressurize low-pressure chamber, with shocks on bike.
2. Remove valve core from low-pressure valve.
3. Squirt oil into shock thru low-pressure valve. Use an eyedropper. *Measure quantity accurately!* You can do this by using a small graduated cylinder (available at camera shops ... under darkroom supplies), or by precalibrating your eyedropper so you know how much it holds.
4. Reinstall valve core and repressurize.

Caution: Use care to keep dirt out of the valve core when doing this. After pressurizing, check for good valve core seal by using "saliva test" on end of valve. Look for bubbles.

HOW TO REMOVE OIL.

1. Take shocks off bike.
2. Depressurize low-pressure chamber.
3. With big end *down*, push in low-pressure valve stem and drain off desired amount of oil into measuring device. Use a small graduated cylinder.

   Note: Do this carefully! Do not accidentally let out too much oil! Do not knock over the graduated cylinder! Do not spill the oil all over ... get it all in the graduated cylinder!
4. Reinstall shocks on bike and repressurize.

SECTION IV

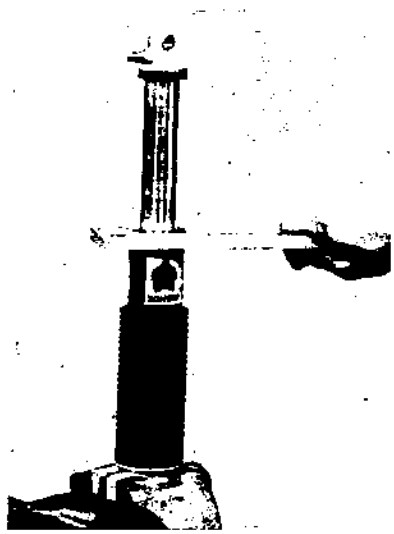
MAINTENANCE

Change oil about once a month. This assumes you are racing every weekend. Use Bel-Ray LT-100 only.

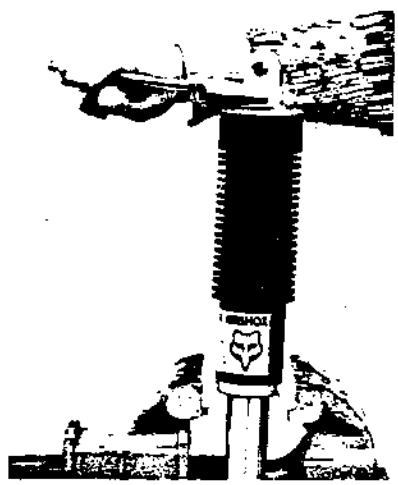
HOW TO CHANGE OIL.

1. Completely depressurize shock. **Warning: Never attempt disassembly with shock pressurized!!!**
2. Unscrew bronze shaft bearing.

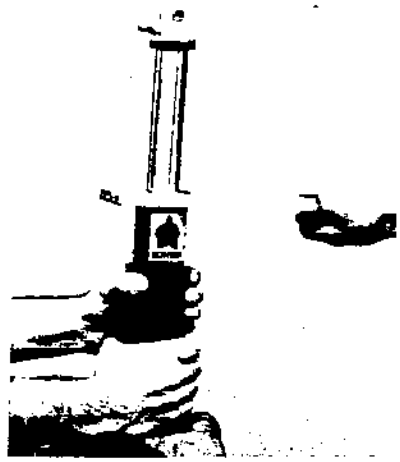
   Method A: With big end in vise, use large smooth-jawed wrench or special wrench available from Moto-X. Be sure wrench has very snug fit on flats ... if wrench is loose, it could deform or round the flats.



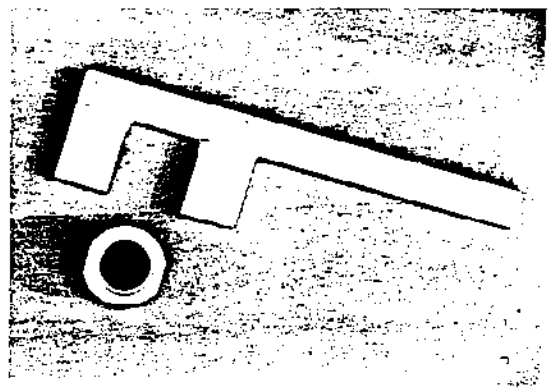
   Method B: With bearing in vise, use crescent wrench on big end cap. *Do not apply any crushing pressure on bearing flats with vise!!*



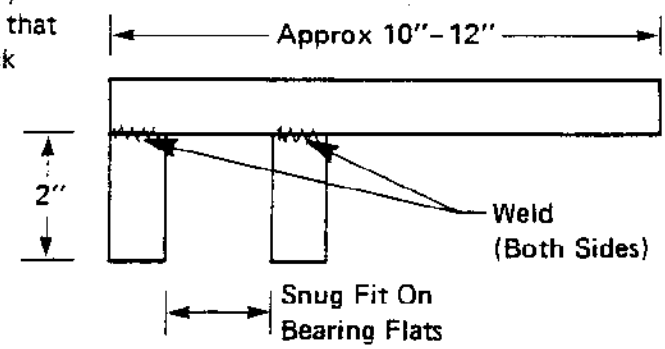
NOTE: Sometimes the large aluminum end cap will start to unscrew instead of the bronze bearing. If this happens, retighten. Then have someone grab the finned body to help resist your torque (Method A), or add to your torque (Method B). With this help, the bronze bearing should break loose instead of the end cap.



The Moto-X Fox Bearing Wrench:
(P/N 99-0340)



If you have access to welding equipment, make your own wrench per the sketch at the right. Be sure that wrench fits very snugly across bearing flats. Tack weld and check fit before final weld.



MAT'L: Steel Bar
Approx 3/8" Thick x 1"Wide

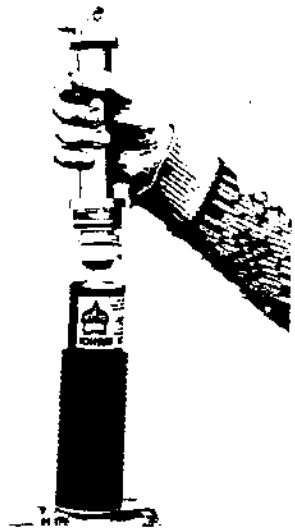
3. Remove shaft assembly.

4. Drain oil. Flush inside of body with solvent and wipe clean and dry. Hang shaft on nail or hook for about an hour to let all oil drain out.

5. Refill with LT-100. Use oil quantity shown in Table below. Measure oil quantity very accurately! Wait at least 60 sec. to allow oil to drain out of graduated cylinder into shock.

6. Reinstall shaft assembly. Apply about *2 drops* of Locktite to threads of bearing (*Do not* use more or you may never be able to get the bearing off again!) Tighten down with medium torque (about 40 ft-lbs ... exact value not critical).

   Note: Extremely high torque is not good ... this could deform or "round" the bearing flats. A new bearing would then be required.



STANDARD OIL REFILL QUANTITIES**

SHOCK LENGTH	OIL QUANTITY
13"	151 cc
13 1/2"	158 cc
14 1/4"	168 cc
14 3/4"	177 cc
15 1/8"	182 cc
15 3/4"	192 cc
16 1/4"	192 cc
16 3/4"	213 cc
17"	213 cc
17 1/2"	213 cc
17 3/4"	230 cc

** **NOTE:** If you changed from the Standard Oil Fill as discussed in Tuning Oil Quantity in the previous section, make the same change to the above quantities when refilling.

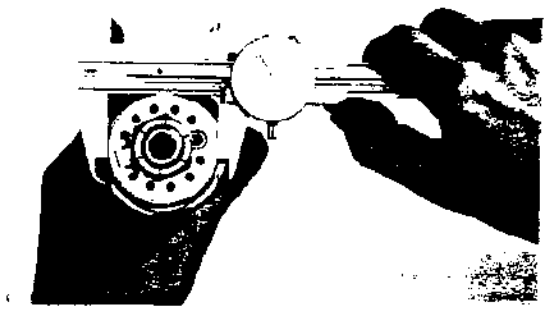
INSPECTION.

Inspect following items when changing oil:

a. Visually inspect circular valve on shaft side of piston. This valve should seat flat on the piston. If valve is jammed open by dirt, remove piston and clean. Wet-sand piston with 400-grit sandpaper then reinstall.

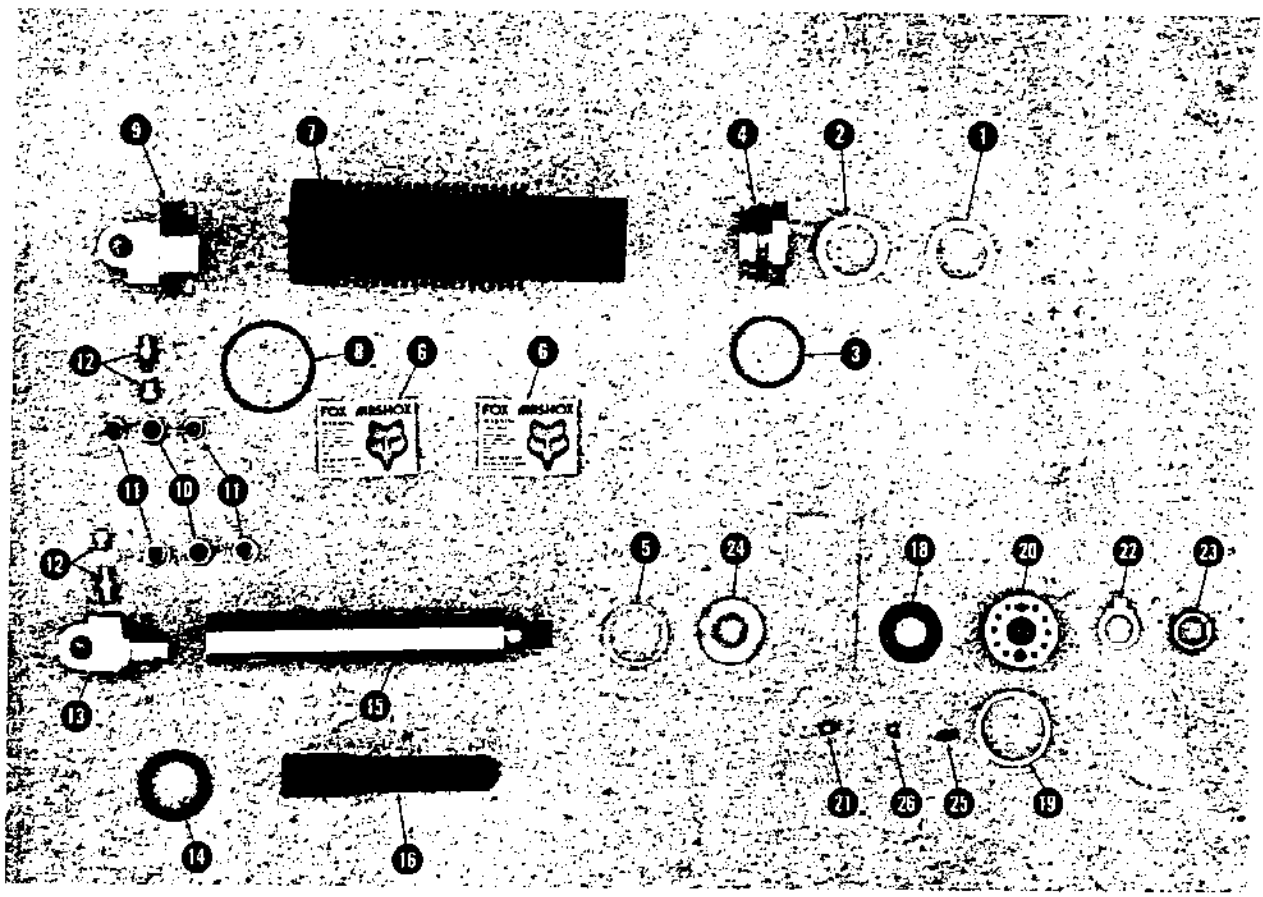
b. Inspect top-out bumper ring for wear, or signs of tearing.

c. If you have calipers or a micrometer, check piston ring diameter. Replace ring if less than 1.883" diameter. (Ring will last at least 12 months under normal conditions.)



SECTION V

PARTS LIST



ITEM	PART #	DESCRIPTION	PRICE/QTY
1.	99-0010	Shaft Wiper	$ 9.95 pair
2.	99-0020	Shaft Seal	$ 9.95 pair
3.	99-0030	O-Ring, Bearing (Std. O-Ring #2-131)	$ 1.65 pair
4.	99-0040	Shaft Bearing	$19.95 each
5.	99-0050	Top-Out Bumper	$ 2.95 pair
6.	99-0060	Airshox Label	$ .50 pair
7.	99-0071	Body, 13"	$49.95 each
	99-0072	Body, 13 1/2"	$49.95 each
	99-0073	Body, 14 1/4"	$49.95 each
	99-0074	Body, 14 3/4"	$49.95 each
	99-0075	Body, 15 1/8"	$49.95 each
	99-0077	Body, 15 3/4" or 16 1/4"	$49.95 each
	99-0078	Body, 16 3/4" or 17" or 17 1/2"	$49.95 each
	99-0079	Body 17 3/4"	$49.95 each

PARTS LIST (Continued)

ITEM	PART #	DESCRIPTION	PRICE/QTY
8.	99-0080	O-Ring, Cap (Std. O-Ring =2-139)	$ 1.65 pair
9.	99-0091	Large End Cap, 16 1/4", 17 1/2" &17 3/4"	$23.35 each
	99-0092	Large End Cap, all sizes except above	$23.35 each
10.	99-0100	Eyelet Bushings	$ 1.95 each
11.	99-0111	Split Reducer Bushings, 8mm	$ 4.95 set of 8
	99-0112	Split Reducer Bushings, 10mm	$ 4.95 set of 8
12.	99-0120	Air Valve	$ 2.95 pair
13.	99-0130	Shaft Cap	$19.95 each
14.	99-0140	Shaft Bumper	$ 1.65 pair
15.	99-0151	Shaft, 13"	$41.65 each
	99-0152	Shaft, 13 1/2"	$41.65 each
	99-0153	Shaft, 14 1/2"	$41.65 each
	99-0154	Shaft, 14 3/4"	$41.65 each
	99-0155	Shaft, 15 1/8"	$41.65 each
	99-0156	Shaft, 15 3/4" or 16 1/4"	$41.65 each
	99-0157	Shaft, 16 3/4", 17" or 17 1/2"	$41.65 each
	99-0158	Shaft, 17 3/4"	$41.65 each
16.	99-0161	Bladder, 13", 13 1/2" 14 1/2"	$ 5.95 each
	99-0162	Bladder, 14 3/4", 15 1/8", 15 1/2" 15 3/4", 16" 16 1/4"	$ 5.95 each
	99-0163	Bladder, 16 3/4", 17", 17 1/2", 17 3/4"	$ 5.95 each
17.	99-0170	Valve, small (pre 6/78 Airshox only)	$ 1.00 pair
18.	99-0180	Valve, Large	$ 1.35 pair
19.	99-0190	Piston Ring	$ 7.50 each
20.	99-0201	Piston	$ 8.35 each
21.	99-2106	Jet, .106" orifice	$ 2.00 pair
	99-2112	Jet, .112" orifice	$ 2.00 pair
	99-2116	Jet, .116" orifice	$ 2.00 pair
	99-2120	Jet, .120" orifice	$ 2.00 pair
	99-2128	Jet, .128" orifice	$ 2.00 pair
	99-2136	Jet, .136" orifice	$ 2.00 pair
	99-2140	Jet, .140" orifice	$ 2.00 pair
	99-2144	Jet, .144" orifice	$ 2.00 pair
	99-2147	Jet, .147" orifice	$ 2.00 pair
	99-2152	Jet, .152" orifice	$ 2.00 pair
	99-2157	Jet, .157" orifice	$ 2.00 pair
	99-2162	Jet, .162" orifice	$ 2.00 pair
22.	99-0221	Spring Retaining Washer	$ .50 each
23.	99-0231	Locknut	$ 1.50 each
24.	99-2425	Top-Out Plate	$ 3.50 each
25.	99-2520	Rebound Spring, #2.0	$ 1.50 pair
	99-2521	Rebound Spring, #2.1	$ 1.50 pair
	99-2522	Rebound Spring, #2.2	$ 1.50 pair
	99-2523	Rebound Spring, #2.3	$ 1.50 pair
	99-2524	Rebound Spring, #2.4	$ 1.50 pair
	99-2525	Rebound Spring, #2.5	$ 1.50 pair

PARTS LIST (Continued)

ITEM	PART #	DESCRIPTION	PRICE/QTY
25.	99-2526	Rebound Spring, #2.6	$ 1.50 pair
	99-2527	Rebound Spring, #2.7	$ 1.50 pair
	99-2528	Rebound Spring, #2.8	$ 1.50 pair
	99-2529	Rebound Spring, #2.9	$ 1.50 pair
	99-2530	Rebound Spring, #3.0	$ 1.50 pair
	99-2531	Rebound Spring, #3.1	$ 1.50 pair
	99-2532	Rebound Spring, #3.2	$ 1.50 pair
	99-2533	Rebound Spring, #3.3	$ 1.50 pair
	99-2534	Rebound Spring, #3.4	$ 1.50 pair
	99-2535	Rebound Spring, #3.5	$ 1.50 pair
26.	99-0260	1/4" Ball Valve	$ .50 pair
	99-0270	Negative Spring, 16 3/4", 17 3/4"	

AIRSHOX ACCESSORY ITEMS.

99-0310	Owner's Manual	$ 2.95 each
99-0340	Shaft Bearing Wrench	$ 8.95 each
99-0350	Shaft Seal Installation Tool	$ 6.95 each
99-0360	Shaft Clamp, Split	$ 9.95 each
99-9000	Rebuild Kit (includes 2 shaft seals, 2 shaft wipers, 2 bearing O-rings, 2 top-out bumpers, and 1 seal installation tool).	$24.95 per kit
98-0200	Deluxe Pressure Gauge, 0-200 psi	$29.95 each
98-2200	Deluxe Gauge With Hose, 0-200 psi	$39.50 each

SECTION VI

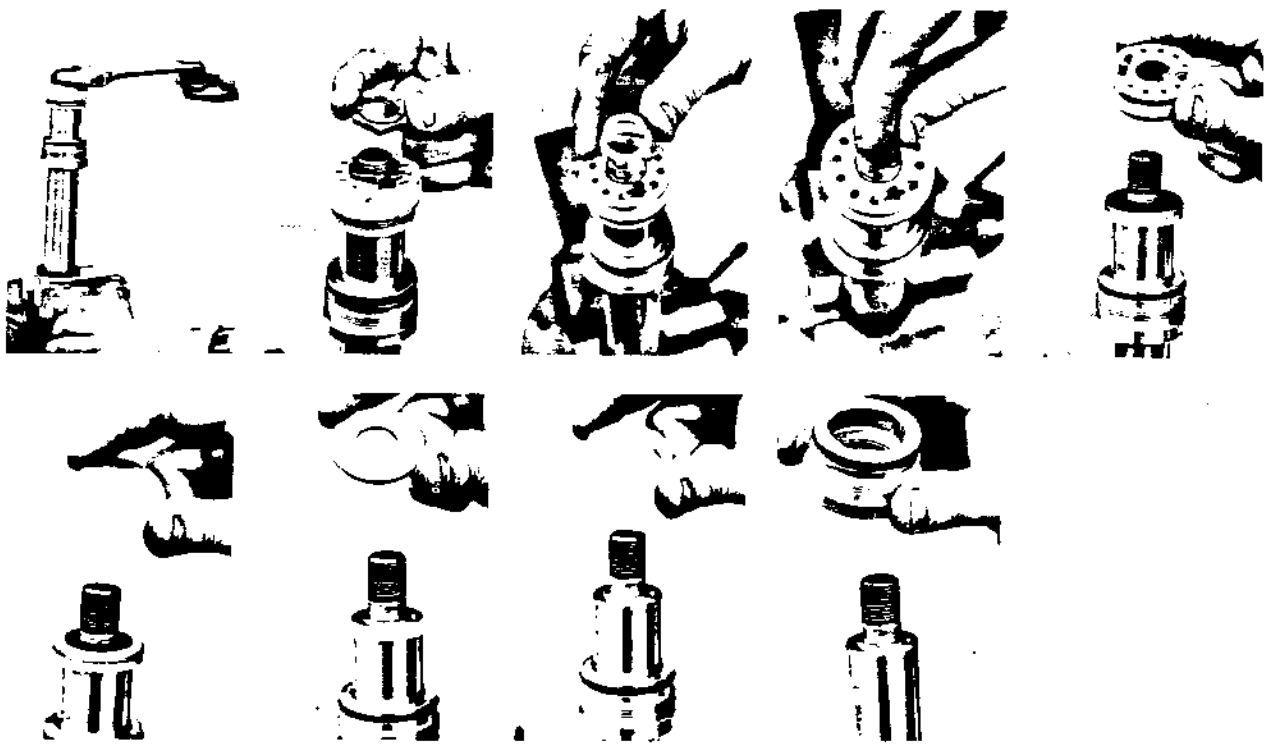
DISASSEMBLY

The basic first step is removal of the shaft assembly, as described in Maintenance. Disassembly beyond that point will depend on the particular part(s) you want to get at.

REMOVING PISTON.

Unscrew shaft lock nut. Remove spring retainer washer, being careful to prevent spring from jumping out and getting lost. Remove piston. Turn piston upside-down and ball valve will drop out. Do not lose ball valve.

When reinstalling piston, clean all oil from threads and apply several drops of Locktite to locknut. Tighten to about 40 ft-lbs. Exact torque is not critical. *However, do not apply extreme torque ...* if extreme torque is used, the piston may be deformed and the valve will not seat properly! If in doubt about that, sand the piston on a flat surface with 400 grit sandpaper until the entire surface is level (especially the area near the I.D.).



CHANGING JET OR POP-OFF SPRING.

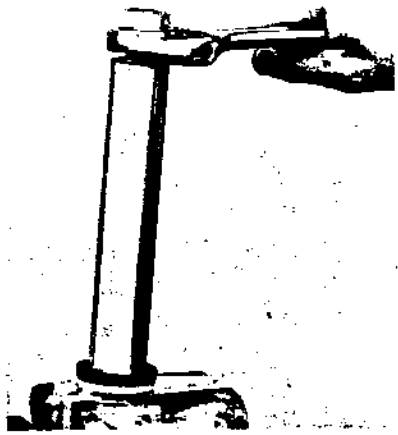
With locknut and spring retainer removed, jet or pop-off spring can be changed. If jet is removed, use a drop of Locktite when installing new one.

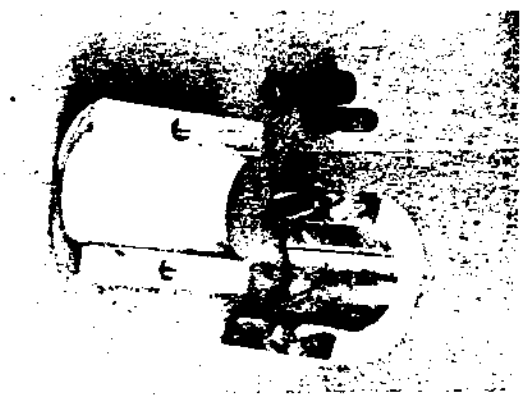
REMOVING SHAFT END CAP.

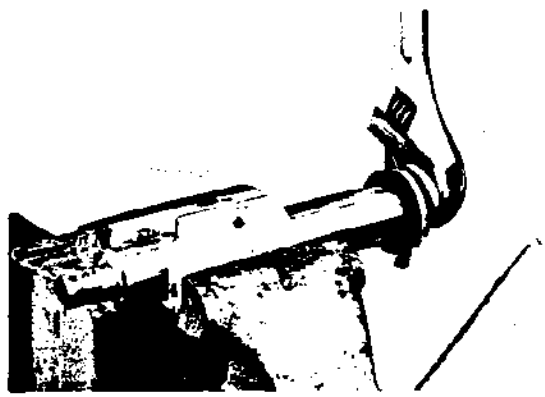
Method A: "Double-nut" technique. This will work if cap is not too tight. *Do not* exceed 80 ft-lbs or you could damage the threads. You will need 2 plain 3/4 x 16 nuts. If cap does not break loose, use Method B or C.

Method B: Try this if you have 35 mm triple clamps. Shaft will fit perfectly. You can do as shown in photo, or with triple clamp still on bike. *Do not* clamp anywhere near the cap end ... this would just squeeze the shaft even tighter on the end cap!

Method C: Use Split Clamp (Part #99-0360). This is the best way. *Do not* clamp near cap end ... apply clamp at piston end of shaft.





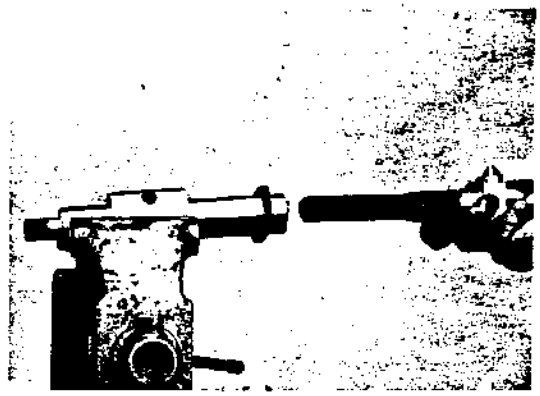


When reinstalling, these methods are not needed. The end cap and the piston locknut are tightened at the same time. Apply 2 drops *(not more!)* of Locktite to the end cap threads. Tighten to about 40 ft-lbs.

REPLACING BLADDER.

Bladder will come out with the shaft end cap. Once bladder is out it is very difficult to install again due to a certain amount of swelling. Therefore, *never remove bladder unless you are ready to replace it with a new one.*

When installing new bladder, depress air valve to allow bladder to assume its natural shape before inserting in shaft.



REMOVING LARGE END CAP.

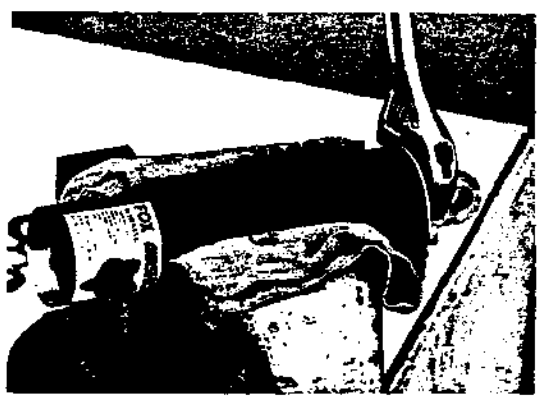
Apply *light* pressure to finned portion of the body with a vise and unscrew cap with a crescent wrench. Removal should never be necessary unless O-ring fails. **Note:**

a. Apply *light* pressure only or you could deform the body.

b. Use a piece of rubber between vise and body (use old inner tube).

c. Never place either *end* of shock body in vise ... *finned part only!*

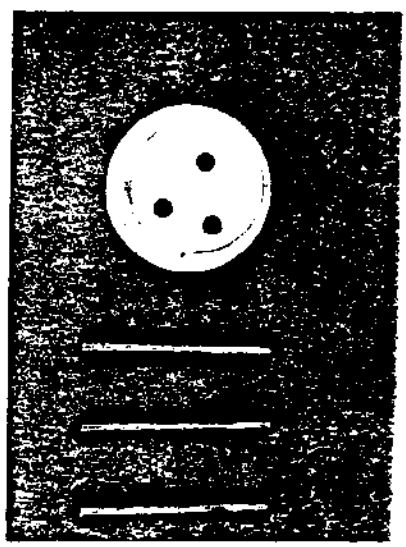
d. *Do not* use Locktite on threads when reinstalling ... it tends to gall on aluminum against aluminum.

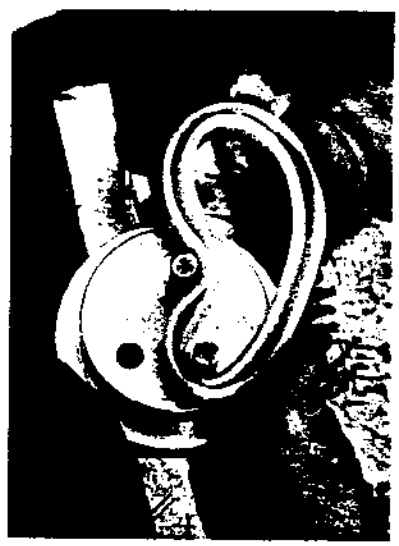


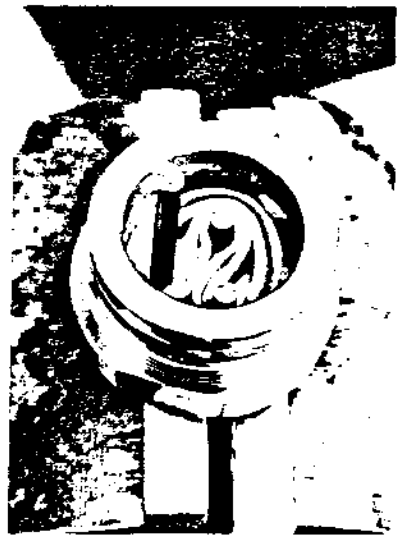
REPLACING SHAFT SEAL AND WIPER.

1. Grasp wiper lip with small pliers and remove.
2. Pry seal out of groove with a small screwdriver. Moderate force is required, so use care not to stab yourself. It is easiest if bearing is flat on your workbench. Pry between seal lips.

3. Wash bearing thoroughly in solvent. Make sure there is no dirt in grooves.
4. Mount new seal on Seal Installation Tool (Part #99-0350), and install in bearing. Use vise to hold two of the pins as shown in photos. Pull pins out and help seal into groove with your fingers.







5. Install new wiper. This can be done without tools. Use your thumbs as shown.

6. Before reinstalling bearing on shaft, check shaft very carefully for possible damage ... large dings, nicks from the chain, etc. Touch up any small defects with fine sandpaper. Any major defects may require replacement of the shaft. New seals should give at least 6 months service unless shaft flaws cause premature failure.

SECTION VII

TROUBLESHOOTING

It is unlikely that you will have any serious trouble with your pair of FOX AIRSHOX. However, here are some possible problems with suggested solutions.

1. **Problem:** "One of the shocks is losing pressure."

   Solution: First, be sure this is really happening. This is very unusual. Possibly a "practical joker" let some air out, or something else unusual happened.

   If shock really does lose pressure, most likely cause is a loose, dirty, or defective air valve. No Teflon tape on air valve threads could also do it. Bad O-ring or shaft seal also possible.

   Any signs of oil loss? Try to locate leak with "saliva test" on air valves. If nothing else works, take shock off bike and immerse in bucket of water (or bathtub!).

2. **Problem:** "The shocks are bottoming-out hard."

   Solution:
   a. Are pressures way below recommended values?
   b. Have you been riding several months without changing oil? Oil level will be low. You must change oil periodically. See section on Maintenance.
   c. You may have to add about 5 cc oil to each shock. See "Tuning Oil Fill".
   d. Did a lot of oil accidently squirt out of the low pressure valve when adjusting pressure? If a lot of oil is ever lost, shock should be taken apart, drained, and refilled.

3. **Problem:** "The shocks aren't getting full travel."

   Solution:
   a. Are pressures way above recommended values?
   b. Check for interference with frame, swingarm or shock brackets preventing full travel.
   c. Is track you are riding on rough enough to expect full travel?
   d. You may have to remove about 5 cc oil from each shock. See "Tuning Oil Fill".

4. **Problem:** "The shocks are topping-out."

   Solution: A *slight* topping feeling is normal, particularily if you run relatively high pressures.

   However, if topping is severe, something is wrong. Most likely cause is dirt or metal chip jamming open the damping valve on the piston.

   Find out which shock has lost damping. Take both shocks off bike, depressurize, and compare the damping. (Remember to stroke them with the big end *up*). If one has very little damping compared with the other, disassemble and check for jammed damping valve.

5. **Problem:** "Oil squirted out of the lower valve when I tried to adjust the high pressure."

   Solution: The rubber bladder sprung a leak. Must replace.

   Close the valve quickly to minimize oil loss. Do not use the lower valve again until you install the new bladder. Set pressure thru the top valve only ... set it at about half-way between your usual high and low pressures. The shock will now function as a "single-pressure" airshock ... good enough to finish riding or racing until you can fix it.

6. **Problem:** "One of the shocks is leaking oil."

   Solution: Where is the leak?

   Leaking shaft seal is shown by oil on shaft. This seal should normally last at least 6-12 months. If your shocks are newer than that, check for nicks or dings in shaft as cause of seal failure. If shock is on chain side, check for damage from chain (did you install upper chain guide as recommended in Installation?).

   Oil on shaft could also be caused by defective O-ring on shaft bearing. If you trace oil leak path to the junction between the bronze shaft bearing and the shock body, then this O-ring is the problem.

   Oil coming out at the end of the shaft (under the rubber bumper) indicates a defective O-ring on the bladder. Sometimes a small leak here on new shocks will seal off after the first hour of riding time ... try this before taking apart.

   Oil leaking at big end of shock indicates defective O-ring on large end cap.

SECTION VIII

QUIZ

1. When reassembling, how much Locktite should you put on the bearing threads?
2. How much torque should you use on the piston locknut?
3. How can you change the bladder without taking the shock completely apart?
4. You think a bladder may be blown. Describe how you would check this without removing the shocks from the bike. Assume you have a nitrogen setup and a pressure gauge.
5. A bladder is blown, but you don't have time to fix it or change the shock. The next race starts in 5 minutes. What do you do?
6. The pressures you are running seem about right, but the shocks bottom-out hard in a few places. What do you do, and how do you do it?
7. How can you check to see if the shocks are using full travel?
8. If the pressures seem about right, but you don't get full travel even off big jumps, what can you do?
9. How much oil should you refill shocks with? What kind?
10. What visual check should you make after tightening down the piston locknut?
11. How often should you remove the bladders to check for wear?
12. Piston ring should be replaced if it measures less than _____"?
13. Extreme torque on bearing flats could damage what part?
14. Should Locktite be used on piston locknut? On shaft cap threads?
15. After riding, you feel the low pressure setting is too soft. You connect the Moto-X Fox "hose gauge" (Part #98-2200) and it reads 70 psi. So you increase it to 75 psi and go back out. *What did you do wrong???*

(Answers are on next page)

ANSWERS.

1. About 2 or 3 drops ... *not more*, or you may never get it off again!
2. About 50 to 55 ft-lbs ... *not more*, or you could "bow" the compression damping washers.
3. Use split clamp (Part =99-0360) on shaft and remove shaft cap with crescent wrench.
4. Let all pressure out of low pressure valve *(first)*, then let pressure out of high pressure valve. *If* there is no pressure at high pressure valve, then most likely the bladder is blown (especially if oil comes out when valve core is depressed.) To be absolutely sure, connect pressure gauge to *low* pressure valve and connect nitrogen pressure to *high* pressure valve ... if the pressure gauge registers the nitrogen pressure, this proves the bladder is blown. (A very *slight* pressure registered is normal ... this just indicates the bladder is expanding, but not leaking).
5. Set pressure at upper valve at *average* of high and low pressures you use. For example, if you normally run 80/130, set it at 105. *Do not use lower valve (oil will squirt out).*
6. Add 5cc oil to each shock. Use eyedropper. Remove valve core from upper valve and add oil there. See Section III for correct procedure.
7. Pull black rubber shaft bumpers up an inch or two on shaft before riding. Check position again after riding.
8. Remove 5cc oil for each 1/4" short of full travel. See Section III for correct procedure.
9. See Refill Oil Quantity Table in Section IV. Use Bel-Ray LT-100 only.
10. Check that compression damping washers seat flat on other side of piston. Make sure they aren't "bowed". If washers seem to have a slight permanent "bow" in them, replace with new ones. In emergency, turn washers over so they "bow" *toward* piston, rather than away from it.
11. Do not remove bladders unless they fail. You will not be able to get used bladder back in, due to swelling.
12. Replace if less than about 1.883" dia while mounted on piston. New rings are about 1.890 to 1.895.
13. This could damage the bearing. You would notice "wrinkles" on top of bearing by flats. If this happens, it squeezes the wiper too tightly against the shaft, giving excess friction. You will see deformed area easily if it happens. Replace bearing.
14. Yes, use plenty on locknut. On shaft cap, use about 2 drops.
15. This was a trick question. You probably wouldn't know the answer unless you had a "hose gauge" and had read the instructions that come with it. Here's what happened:

    You actually decreased pressure, you did not increase it! *Always remember* that when you get a reading with *any* gauge, *it takes away some of the pressure.* For example, for 17½" shocks, the "hose gauge" takes about 10 psi from the low pressure chamber and about 25 psi from the high pressure chamber. Thus, when the gauge read 70 psi, the pressure really *was* about *80* psi (70 + 10) ... when you set it at 75 psi you actually decreased the pressure. Complete, easy-to-use details on this are given in the pressure gauge instructions.