

Owner's Manual

# FACTORY SHOX

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

### INTRODUCTION

Congratulations! You now own the finest, most easily and fully tuneable spring shock absorbers ever produced for motocross.

Fox Factory Shox are based on a new state-of-the-art design which sets new standards for tuneability and fade-free performance. Compression and rebound damping, both low and high speed, can be precisely adjusted to your personal requirements. A wide choice of dual-rate springs, straight-wound and progressive types, are available.

Fox Factory Shox are completely rebuildable. They can be taken apart and reassembled in minutes using simple tools.

To ensure that you get the maximum performance and long service life that your new shocks are 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

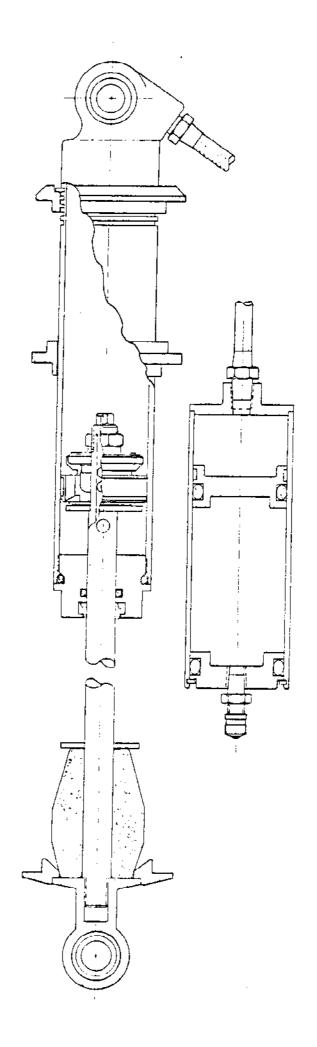
Fox Factory, Inc.

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### **WARNING!**

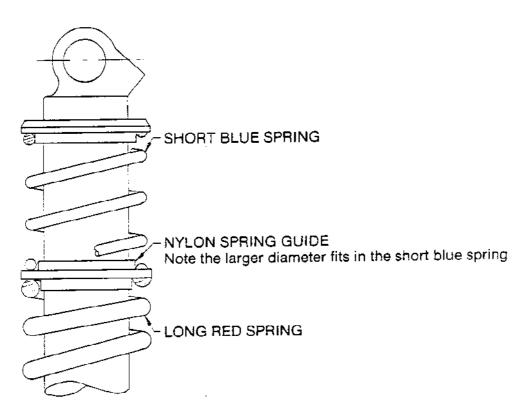
Failure to follow the instructions in this manual could cause damage to your shocks, your bike, your body, or "all of the above"!



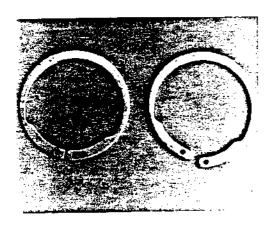
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### SECTION I. INSTALLATION

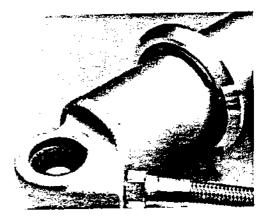
- 1. Put a light coat of grease on the heim joints before installing the shocks on your bike.
- 2. Always install with the shaft end down. This reduces unsprung weight for best performance.
- 3. Be sure to install spring guide (the circular part that separates the short and long springs) as is indicated in the diagram below. THIS IS IMPORTANT! (Reason: if installed incorrectly, the spring guide will be deformed by the long spring, causing it to rub on the shock body. This will cause "sticky" spring action.)



4. When adjusting preload, be careful not to spread the preload snap ring too far. Use snap ring pliers, and only spread the ring enough to move it from one groove to the next. If it is spread too far, it will be permanently deformed and will not seat properly in the groove. Be sure the spring retainer seats properly over the snap ring after changing preload (see photos below).







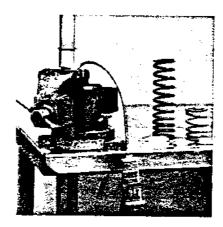
5. When installing reservoirs, route hoses to minimize contact with frame, exhaust pipe, etc. If necessary, wrap hose with "super-tape" to prevent abrasion damage at points of contact.

### SECTION II. DISASSEMBLY

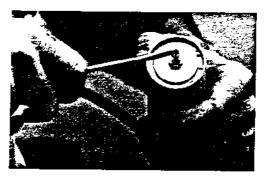
IMPORTANT NOTE: Extreme cleanliness is of utmost importance during all disassembly and assembly operations to prevent any dirt or foreign particles from getting in the shocks.

### A. TO TUNE DAMPING:

STEP 1. Remove springs, spring retainers, and spring guide from shock.



STEP 2. DEPRESSURIZE RESERVOIR. Be sure to do this before further disassembly.



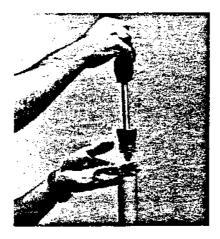
STEP 3. Clean exterior of shock and reservoir thoroughly. Remove all dirt and grit. If available, use compressed air to blow dirt out of hard-to-reach areas like the reservoir end, the shaft wiper, and the heim joints. Extreme cleanliness is crucial to prevent any dirt from getting inside the shock during disassembly or assembly. Any foreign particles, for example even a single grain of sand, will affect the valving and cause incorrect or erratic damping.



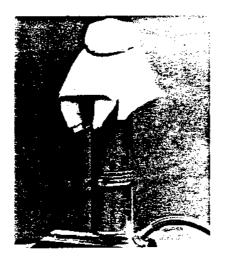
STEP 4. Hold shock in a vise and unscrew the shaft bearing with a crescent wrench. Keep shaft fully extended during this operation (otherwise you will spill a lot of oil when you remove the shaft in Step 5).



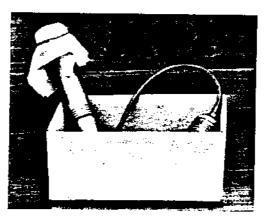
STEP 5. Keeping shaft fully extended, remove shaft assembly from body. Piston ring may fall off as you do this—be prepared to catch it.



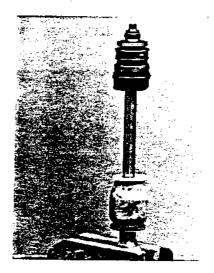
STEP 6. Inspect for any remaining dirt at the end of the body (caught between the bearing and the end of the body), and very carefully wipe any away. Cover end of body with a clean sheet of paper held on with a rubber band.



STEP 7. Take body out of vise, being careful not to spill oil. Prop body up in corner of a medium-sized box or other convenient place so oil does not spill (it is OK if a little oil spills—since you will be adding oil later—the general idea here is just to avoid making a mess).



STEP 8. Clamp shaft eyelet in vise.



STEP 9a. If you want to change the *jet* only, unscrew the old jet. You will notice some light blue powder in the threads when you do this. This is dried Loctite. Clean this thoroughly off the threads and blow away with compressed air if available. Spray the internal threads with Contact Cleaner and blow dry... this is to remove all oil and loose particles of dried Loctite. Do this 2 or 3 times if necessary. Now put a drop or two of Blue Loctite on the new jet and install. Use very light torque to avoid stripping the threads... thread jet in with your fingers until it is snug, then add another ½ to ½ turn with a small wrench.







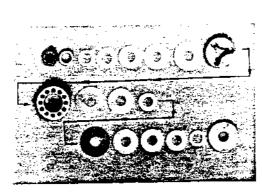
STEP 9b. If you want to change the rebound and/or compression valves, remove shaft locknut. Remove piston/valve assembly, being careful to note arrangement of all parts. Clean pistons thoroughly, Inspect pistons carefully for any small particles of dirt embedded in the surfaces that the valves seat on. If desired, the valve seat on the CD piston can be lightly lapped by running the piston face over 400 grit sandpaper placed on a *flat surface*. For the RD piston, any particles of embedded dirt can be removed with steel wool or with 400 grit sandpaper using your fingers. (Note: the RD piston has a slightly "dished" surface . . . DO NOT ATTEMPT TO SAND IT FLAT!).

Install new valves (see Section III, TUNING, for recommendations). Be very careful to install valves in correct sequence as shown in diagrams in Section III.

Before tightening locknut, be certain that the RD valves are fully seated on the piston—be sure they are not "hung-up" on the shaft groove just below the shaft threads (if they are, they will be ruined when you tighten the locknut!).

Tighten locknut to 110-120 in-lbs. (9-10 ft-lbs.) torque. DO NOT OVERTORQUE! If excess torque is applied, you will damage the RD piston, the RD Stop Plate, and the RD valves, and they will have to be replaced! If too much torque is used, RD valves will not stay flat—they will become "wavy" (something like a potato chip).

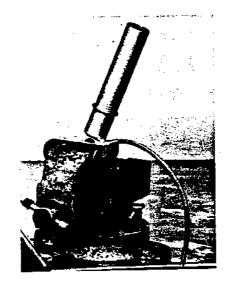






STEP 10. Remove shaft assembly from vise.

STEP 11. Put body back in vise. Lean shock slightly to one side—about 10° to 15° angle from vertical.

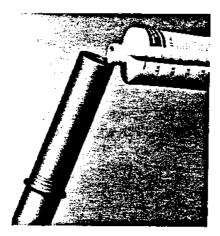


STEP 12. Pressurize reservoir to approx. 25-50 psi, then depressurize. Comments:

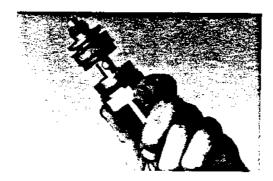
- a) Purpose of this is to push reservoir piston all the way to the end of the reservoir. This gives maximum air volume in the reservoir, which minimizes pressure changes or "pump up" when the shocks heat up.
- b) When the shaft assembly is installed later, oil is displaced as the bearing is screwed in. This moves the reservoir piston back slightly to provide a small volume of oil to make up for the very slight oil loss at the shaft during normal operation of the shock over a period of time.
- c.) WARNING! Never skip this step! If shocks are assembled with reservoir piston in wrong position, it could cause extreme hydraulic pressure due to the lack of air space available for shaft inward travel. This could possibly blow out the end of the reservoir, which could cause possible injury.



STEP 13. Add oil until level is about 1/4" from top of body.



STEP 14. Take shaft assembly and slide bearing approx. 1/2" to 3/4" from Top Out Plate.



STEP 15. Reinstall piston ring on piston. Notice small slot on CD piston under the valves (slot cuts through valve seat). Line up the piston ring gap with this slot and hold piston ring in this position for next step.



STEP 16. Install shaft assembly in body. Install so that piston ring gap (and piston slot) is on the high side of the tilted shock body as you slowly immerse piston in the oil. This allows air trapped under the piston to escape. Be sure to hold piston ring firmly on the piston—especially at the ends of the piston ring—so it does not come out of its groove. After piston is fully immersed in oil, push shaft in farther until bearing contacts end of body.

Push down slowly on bearing to allow any trapped air to escape. Be sure oil is overflowing from the body during this operation (otherwise there may be an air pocket under the bearing). Now screw in bearing and tighten with crescent wrench (about 50 to 75 ft-lbs. torque). Do not use Loctite on bearing threads. Clean off overflowed oil with paper towels.

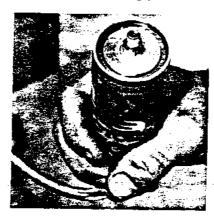
IMPORTANT: To ensure elimination of all air, the entire shaft installation should be done slowly and smoothly. Do not pull shaft partially back out, after piston is immersed in the oil (this may create air pockets). If for some reason you have to pull back on the shaft, pull it all the way back out, then start over again. Although a small amount of air in the oil will NOT degrade the performance of your Fox Factory Shox, it is still best to try to eliminate all air completely. DO NOT STROKE SHOCK UNTIL RESERVOIR HAS BEEN PRESSURIZED.







STEP 17. Check that snap ring in reservoir is properly seated in its groove. Be sure reservoir end cap is properly seated against the snap ring. WARNING: if snap ring or reservoir cap is not properly seated, reservoir cap could blow out during pressurization, causing possible injury.



STEP 18. Pointing reservoir away from your face and body (this is a safety precaution), pressurize reservoir to 200 psi  $\pm$  10 psi. Thread air valve cap back on.



STEP 19. Holding shock with shaft end UP, push shaft in a few times. Check that shaft returns smoothly to fully extended position. Also check that shock does not have a "soft spot" or "mushy" feeling during the first inch or so of travel ... this would indicate a large air pocket inside the shock.



STEP 20. Reinstall springs, etc., and remount shock on bike.

### B. TO CHANGE OIL

Refer to previous pages and follow Step #1 through Step #6 to remove shaft assembly from body.

STEP 21. Pour oil out of shock.



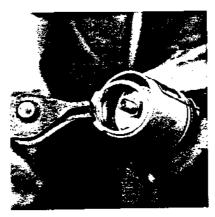
STEP 22. Unscrew reservoir from hose. Do NOT unscrew hose from body. Pour old oil out of reservoir.



STEP 23. Push reservoir end cap about 1" further into reservoir body. Depress air valve to allow air to escape as you do this.



### STEP 24. Remove reservoir snap ring.



STEP 25. Using medium-grit sandpaper, sand edges of snap ring groove thoroughly to completely remove any burrs or sharp edges. If this is not done thoroughly, the O-rings may be damaged during the next operation. After sanding, wipe out and blow out dirt and grit thoroughly.



STEP 26. Push out reservoir piston and reservoir end cap. Use blunt screwdriver with about 5" long blade (or something similar) inserted into hose end of reservoir. These parts should push out easily except when the O-rings reach the snap ring groove at the end of the reservoir ... a little extra force will be required to push past this point.

After removal, clean parts thoroughly and inspect O-rings carefully for any cuts or nicks. Replacement of the O-rings is recommended, but not absolutely necessary if not damaged.



STEP 27. Flush out body and reservoir thoroughly, using mechanic's solvent or equivalent. Blow clean and dry with compressed air if available.

STEP 28. Clean threads at end of hose and threads in end of reservoir thoroughly. Finish cleaning by spraying Contact Cleaner on threads, then blow dry.



STEP 29. Apply 3 or 4 drops of Blue Loctite or Red Loctite on hose threads. (Absolutely DO NOT USE TEFLON TAPE or any other tape-type sealant here . . . no matter how careful you are, pieces of the tape almost always end up getting into the oil, causing erratic damping). Thread hose into reservoir and tighten.





STEP 30. With shock body held in vise, pour fresh oil into reservoir. Spectro Suspension Fluid (5 wt.) or Bel-Ray LT-100 oil are recommended. However, any good shock oil will perform very well. When pouring oil in:

- a) Hold reservoir somewhat below level of the top of shock body.
- b) Hold reservoir so it is at about a 15° to 30° angle from vertical, and slowly pour oil against side of reservoir. (Do NOT hold reservoir vertical and pour oil straight down . . . this causes the oil to splash and create bubbles.)
- c) Pour oil in until it is about 1/4" to 1/4" from top of reservoir. Wait about 15 seconds and add more oil if the level goes down (note that oil is also flowing through the hose into the body). Hold reservoir at a steady height while doing this, or the oil level will go up and down as the level in the shock body and reservoir keep trying to balance.
- d) If there are any bubbles in oil, wait until they rise to the surface and dissipate before proceeding with next step.



STEP 31. Holding reservoir in one hand and reservoir piston in other hand (with O-ring and piston ring installed), slowly push piston into reservoir about 1". Note:

- a) Piston should be oriented so piston ring goes in first, then the O-ring.
- b) Be sure piston ring does not come out of its groove—especially hold in the ends of the piston ring to prevent this. Check visually when ring is about ¾ of the way in, that the ends have not come partially out of the groove.
- c) It is a little tricky to hold and install the piston with one hand if you haven't done it before. If a friend is handy to hold the reservoir while you use both hands to install the piston, it is easier.

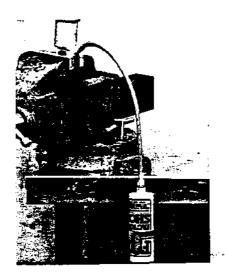


STEP 32. Turn reservoir upside down and let it hang vertically from the hose. (Piston will not fall out . . . O-ring holds it in.) Let reservoir hang for about 1 minute while you tap lightly on the sides with the plastic end of a screwdriver or similar object.

Now hold reservoir *vertical* (hose end UP) and *slowly* push piston *all the way in* until it contacts the far end of the reservoir. Use blunt screwdriver or similar tool to do this. Be sure reservoir is *vertical* (not at an angle). Be sure you push piston *all the way in*.

### Comment:

Reason for this step is as follows ... When piston was installed (Step 31), a small pocket of air was trapped under the piston. By letting the reservoir hang vertical from the hose, the pocket of air travels to the other end of the reservoir (hose end). Then when the piston is pushed in, the air pocket travels through the hose and out through the oil in the shock body. It is important to push the piston up *slowly* (it should take 10 or 15 seconds), since, if the piston is pushed up in one quick stroke, the air pocket will create turbulence which will generate small bubbles in the oil in the shock body. If some bubbles do occur, it is OK, but you will have to wait several minutes for them to rise to the surface and dissipate before continuing.)





STEP 33. Install reservoir end cap in reservoir. Push in about 1".



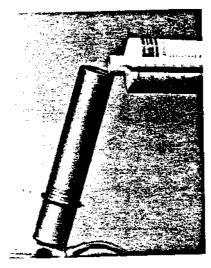
STEP 34. Install snap ring in reservoir. Note that edges on snap ring are quite square on one side and slightly rounded on other side. Install so that side with square edge faces outward. Be sure snap ring is properly seated in its groove (WARNING: end cap could blow out during pressurization if snap ring is not properly seated.)

Now pull reservoir end cap back out by pulling on air valve, until reservoir cap is seated against snap ring.



STEP 35. Slowly pour oil into the shock body until it is about ¼" from the top. Have shock body at approx. 10° to 20° angle from vertical and pour oil against side of shock. (Do NOT have shock body vertical and pour oil straight down, since this will cause splashing and turbulence which will create small air bubbles.)

Check for air bubbles in oil before continuing. If bubbles exist, wait for them to rise to the surface and dissipate. (This may take several minutes if there are a lot of small bubbles.) Now complete reassembly by following Steps 14 through 20 on previous pages.



# C. MISCELLANEOUS OPERATIONS

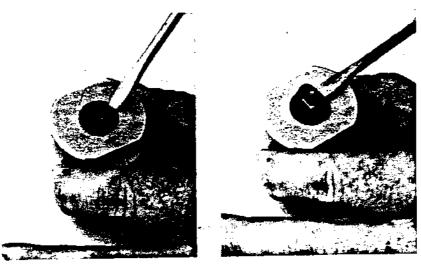
# INSTALLING NEW SHAFT O-RING AND WIPER:

Disassemble per Step 1 through Step 8 in previous section. Remove piston assembly per first part of Step 9b. Now:

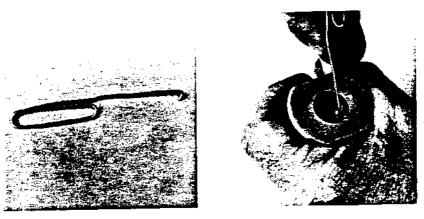
STEP 36. Slide bearing off shaft.



STEP 37. Use small screwdriver to pry out old wiper.



STEP 38. Use piece of wire or paperclip with small hook bent on end to hook into old O-ring and pull out.



STEP 39. Hold new O-ring between thumb and forefinger and squeeze slightly to produce oval shape. Insert into hole in bearing from the *bottom* of the bearing (the end of the bearing that goes inside the shock). Push in until forward end of O-ring is in the area of the O-ring groove. (Note: some bearings have a groove about ¼" in from the bottom of the bearing . . . do NOT install O-ring in this groove!)





STEP 40. Now insert small finger of your other hand into the other end of the bearing and work a portion of the O-ring into the groove. (This is a little tricky to do. You may find it easier to use the eraser end of a pencil instead of your small finger.) Once you get a portion of the O-ring in the groove, it is relatively easy to get the rest in.



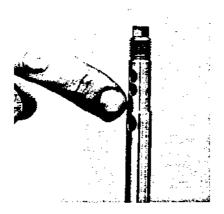
STEP 41. Install new wiper by squeezing it into an oval shape, then pushing one end into the groove. Now push wiper, a portion at a time, into the groove. If it "hangs up" slightly at the edge, use eraser end of pencil or blunt screwdriver to push it down and in.





STEP 42. Apply light coat of oil on new wiper and O-ring. Also apply light coat of oil on the "step" or "shoulder" portion of the shaft. Inspect for sharp edges or burns in this area of shaft which could nick the O-ring, and remove if necessary. Now slide bearing back onto shaft. It helps to "wiggle" or oscillate the bearing slightly to help get the wiper past the "step" portion of the shaft. After bearing is on, inspect "step" portion of shaft carefully for any small shavings of black rubber which would indicate that the O-ring or wiper were cut during installation.

Now reassemble per second part of Step 9b and Step 10 through Step 20 in previous section.





### INSTALLING NEW SHAFT:

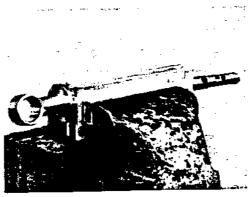
Basic disassembly and reassembly of the shock is as covered in previous sections.

Disassembly of shaft and shaft eyelet is not necessary or recommended unless one of the parts is damaged.

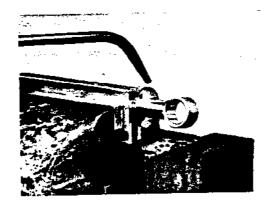
STEP 43. Press out rubber bushing or heim joint from eyelet. Use a socket from a socket wrench set which just barely fits inside the eyelet to help drive out heim joint.



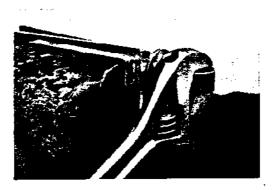
STEP 44. Clamp shaft in vise using aluminum blocks in contact with shaft to protect surface. If you have access to a machine shop, a ½" collet or a typical mill vise with flat, hardened steel jaws is preferable.



STEP 45. Use propane torch or welding torch to heat eyelet to approx. 300°-350° F. (This weakens the Red Loctite on the threads.)



STEP 46. Use crescent wrench to unscrew eyelet. Avoid shaft slipping or turning in vise or collet, as this could damage shaft surface.



STEP 47. Clean threads on shaft and eyelet with Contact-Cleaner. Apply several drops of Red Loctite on threads and reassemble.

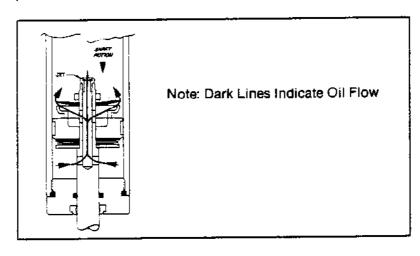
### SECTION III. TUNING—DAMPING

### A. PRINCIPLES OF OPERATION

The damping action of Fox Factory Shox is described in this section. We have attempted to present this information in a simplified, easy-to-read style, so that you don't need an engineering degree to understand it. A good basic understanding of how your shocks work will help you tune them to exactly meet your requirements and preferences.

### REBOUND DAMPING ("RD")

On the rebound stroke, the oil "trapped" below the piston must flow through the piston assembly to the other side. On Fox Factory Shox, this oil flows into a hole in the shaft and then flows through the piston assembly via two possible paths:

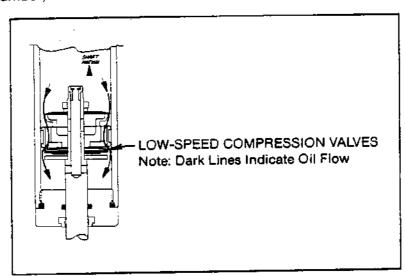


- 1. Low-Speed Rebound Damping: oil can flow through the jet orifice at the end of the shaft. This is the main flow path at low shaft speeds (i.e., over small bumps where rebound travel is only an inch or two). Thus, low speed rebound damping is tuned by changing the jet size. A smaller jet gives more low speed damping, and vice-versa.
- 2. High-Speed Rebound Damping: oil can also flow from the shaft into an inner chamber in the piston. From there it can push open the thin steel valve discs on top of the piston. Since the rebound piston is slightly "dished", these valves are "preloaded" and do not open until a certain minimum pressure is reached. However, once they do open, the oil flow area they provide quickly becomes much greater than the area of the small jet hole. Thus, the predominant flow path at high shaft speeds (i.e., over large bumps where rebound travel is several inches). Tuning of high-speed rebound damping, therefore, is accomplished by changing the thickness, total number, and/or diameter of the individual valve discs. A stiffer valve stack gives more high-speed damping, and vice-versa. Jet size has only a secondary effect.

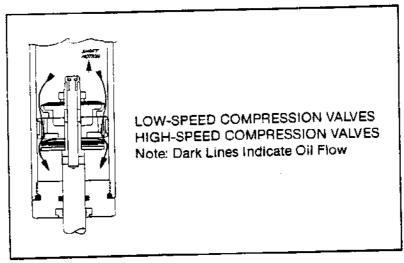
### COMPRESSION DAMPING ("CD")

On the compression stroke, oil "trapped" above the piston must flow through the piston to the other side. On Fox Factory Shox, this oil flows into an open chamber on the lower side of the piston via 12 holes. This chamber is covered by two stacks of thin steel discs which act as the valving, metering oil flow out of the chamber. The first stack ("Low-Speed CD Stack") consists of 3 or 4 valves directly in contact with the piston face. The second stack ("High-Speed CD Stack") consists of 4 to 6 valves which "back up" the first stack. This design gives the best of both worlds . . . soft response for smooth control over small bumps, yet firm response to prevent bottoming out over big bumps and jumps. Damping is controlled as follows:

1. Low-Speed Compression Damping: at low shaft speeds (i.e., over small bumps and/or at slow bike speeds), the oil flow rate through the piston is not great, so only a small amount of valve deflection occurs. Thus, only the Low Speed CD Stack deflects. Since there are only 3 or 4 valves, this gives very soft compression response. Low-speed CD is tuned by changing the thickness, total number, and/or diameter of these valves.



2. High-Speed Compression Damping: at high shaft speeds (i.e., large bumps and jumps and/or high bike speed), more valve deflection occurs to accommodate the high oil flow rate. The outer edges of the two valve stacks touch and now the two valve stacks act together to meter oil flow. This combined action prevents the severe bottoming-out which would occur with just the Low Speed CD Stack acting alone. High-speed compression damping is therefore tuned by changing the thickness, total number, and/or diameter of the valves in the High Speed CD Stack.



You may be wondering, "What about the jet . . . oil flows through it on the compression stroke, so doesn't it affect compression damping also?" Good question! The answer is, "Yes, it does." But only very slightly! The reason is that typical piston speeds on compression strokes are several times faster than on rebound strokes (this can be seen in slow motion movies), so that the flow area of the jet is much smaller than the flow area under the CD valves at typical compression speeds. Since only a small amount of oil flows through the jet (compared to the amount that flows under the CD valves), the jet has only a very small effect.

### B. JETS

Ten jet sizes are available, from the smallest at .052" diameter to the largest at .104" diameter. See Parts List for specific sizes and Part Numbers. See Section E for Tuning Recommendations.

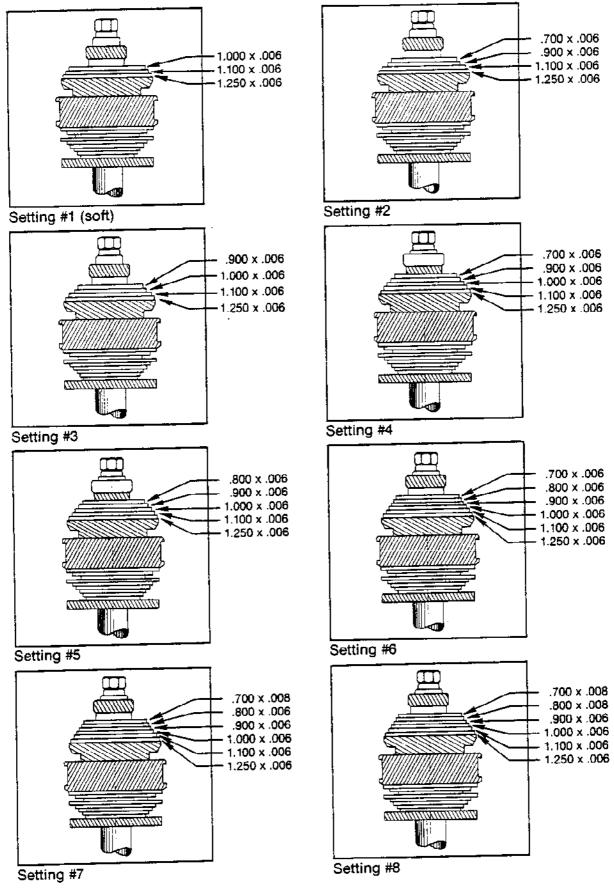
# C. REBOUND DAMPING VALVE STACKS

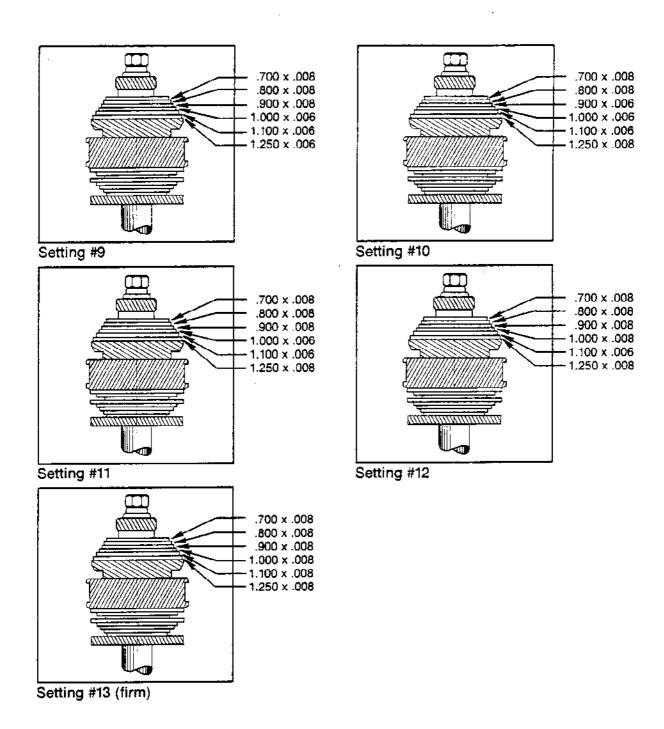
Thirteen different rebound damping valve settings are available. The #1 setting is softest, the #13 is the stiffest. See Section E for Tuning Recommendations.

# REBOUND DAMPING VALVE SETTINGS

OUTSIDE DIAMETER	1.250"	1.100"	1.000"	0.900"	0.800"	0.700"
DIAMETER  DIAMETER  DIAMETER  DIAMETER  DIAMETER  DIAMETER  DIAMETER	.006 .006 .006 .006 .006 .006 .006 .006	.006 .006 .006 .006 .006 .006 .006 .006	.006 none .006 .006 .006 .006 .006 .006 .006 .00	none .006 .006 .006 .006 .006 .006 .008 .008	none none none none .006 .006 .006 .008 .008 .008	none .006 none .006 none .008 .008 .008 .008 .008

# For tuning convenience, each setting is illustrated below.





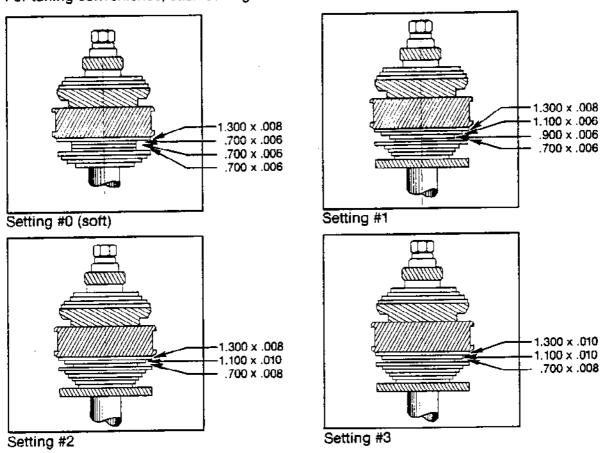
### D. COMPRESSION DAMPING VALVE STACKS

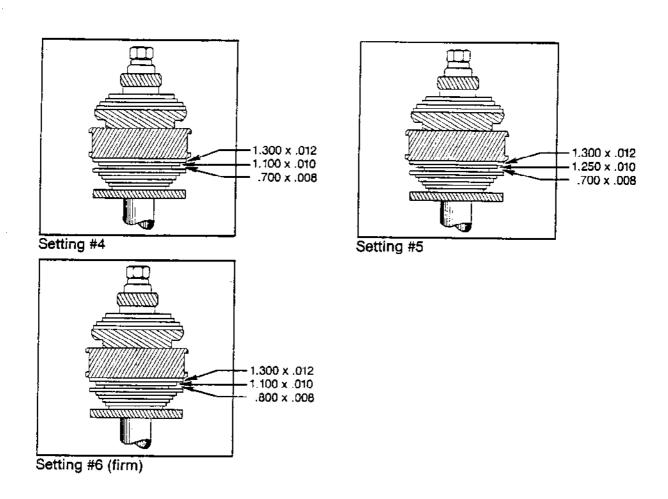
Seven different Low Speed Compression Damping settings and ten different High Speed Compression Damping settings are available. See Section E for Tuning Recommendations.

### LOW SPEED COMPRESSION DAMPING SETTINGS

OUTSIDE DIAMETER	1.300"	1.250″	1.100"	0.900"	0.800"	0.700"
SETTING 0. soft	.008	none	none	none	none	3x's.006
1.	.008	none	.006	.006	none	.006
2.	.008	none -	.010	none	none	.008
ā. l	.010	none	.010	попе	none	.008
4.	.012	none	.010	none	none	.008
5.	.012	.010	none	none	none	.008
6. firm	.012	лопе	.010	none	.008	none

For tuning convenience, each setting is illustrated below.



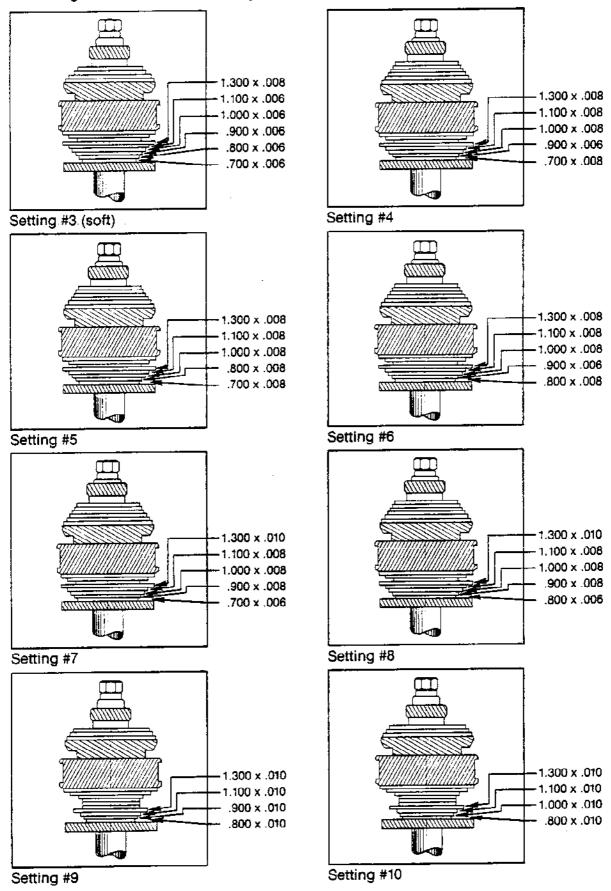


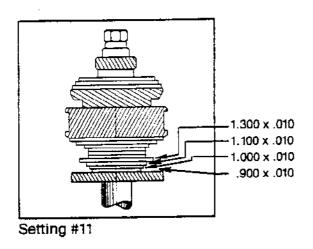
### HIGH SPEED COMPRESSION DAMPING SETTINGS

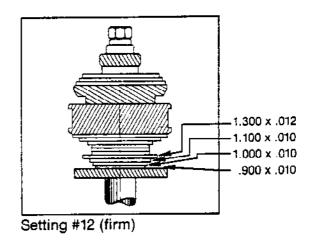
	OUTSIDE DIAMETER	1.300"	1.100"	1.000"	0.900"	0.800"	0.700"
SETTING	CE,						
3. soft	-	.008	.006	.006	.006	.006	.006
4.		.008	.008	.008	.006	none	.008
5.		.008	.008	008	none	.008	.008
6.	ļ	.008	.008	.008	.006	.008	none
7.	ĺ	.010	.008	.008	.008	none	.006
8.		.010	.008	.008	.008	.006	лопе
9.		.010	.010	none	.010	.010	none
10.		.010	.010	.010	none	.010	none
11.		.010	.010	.010	.010	none	none
12. firm		.012	.010	.010	.010	none	none

NOTE: In the above chart, testing showed that HCC#1 and HCD#2 settings were too soft for all riders and therefore are not listed.

For tuning convenience, each setting is illustrated below.







### E. TUNING RECOMMENDATIONS

### **GENERAL**

The damping your new shocks are set up with is shown on one end of the shipping box. For example:



### These shocks have:

Low Speed Compression Damping: #3 Setting
High Speed Compression Damping: #7 Setting
Low Speed Rebound Damping: .093" Jet
High Speed Rebound Damping: #3 Setting

The damping your new shocks were set up with at the factory is suitable for the majority of average weight riders on typical motocross tracks. However, in working with many different riders, we have found considerable variation exists in their preferred "perfect" damping settings. The "perfect" damping settings for you will depend on many factors, including your weight, your bike's weight, springs used, your riding style, your rider classification (novice, expert, etc.), your personal preferences, track conditions, etc.

Although you most likely will be completely pleased with the damping of your shocks as received, many riders will be interested in tuning them to perfection for their particular preferences. We encourage this!

"Perfect" damping control is as important as fine-tuning your engine, when it comes to cutting precious seconds off your lap times. Fox Factory Shox were especially designed to offer a full range of tuning possibilities. Just as important, they were designed to offer ease and simplicity of disassembly for making the tuning changes.

Disassembling the shocks and changing damping may look complicated the first time you read this manual. However, most riders who have basic mechanical ability will find that it is really quite easy. It takes longer to read the instructions than to actually do it! Once you know how, it's easy! Since no special tools are needed (except for a 200 psi source of air or nitrogen pressure for charging the reservoir . . . and most riders will know someone with AirShox who has a nitrogen tank to borrow), many riders will want to tune damping themselves, rather than having their dealer do it.

### OIL VISCOSITY

Do NOT try to change the damping on your Fox Factory Shox by changing the oil viscosity. This will NOT work! Changes must be made by changing the valves or jet only.

Comment: The following explains why this is true, just in case you are curious (if not, you can skip this).

The reason is that your Fox Factory Shox have been *specifically designed* to *not* be sensitive to viscosity changes. That is, they are "viscosity insensitive". (P.S.: This wasn't easy to do! It took literally hundreds of hours of designing and testing, and re-designing and re-testing, to achieve "viscosity insensitivity".)

At first, this seems like a bad design idea. After all, wouldn't it be nice to be able to change damping by just changing oil viscosity, like you can on some shocks? Well, yes, but there's a "rub" here...

... The "rub" is this: As you know, all shocks heat up during a race. Now, when they heat up, the oil thins out—i.e., the *viscosity changes*. *All* oils do this. For a typical shock oil, the viscosity at 200° F (a typical temperature for a fast rider on a rough track) is only about 10% of its viscosity at 70° F (at the start of the race).

So what? ... Well, if a shock is designed so that damping can be changed by changing oil viscosity, then that means that when the shock heats up the damping will also change. You've heard the word for that phenomenon before ... FADE! Put another way, if damping can be changed by changing viscosity, then the damping will change when the shock heats up ... in other words, FADE!

So this is why damping on Fox Factory Shox can't be adjusted by changing oil viscosity (you can go from 5 wt. to 30 wt. and there will be no difference). And this is why hundreds of hours were spent designing them to be "viscosity insensitive" (Fox Factory Shox set new standards for no-fade performance).

And this also means that any shock that can be adjusted by changing oil viscosity is, by definition, a shock that will fade. Think about it!

### TUNING

Go out and ride. Tune your senses to what the rear of the bike is doing. Concentrate on what the bike is doing, *not* on going 110% WFO! Sometimes you know the bike isn't handling quite right, but, for example, it may be hard to tell whether the problem is too little rebound damping or too much compression damping. Sometimes the difference in "feel" is subtle, and you have to really concentrate to tell. An experienced friend watching you ride usually helps. Developing a good "feel" for what the rear of the bike is doing isn't easy. Often it takes years of experience to get really good at it.

In the following we will try to describe what happens, and what to "fee!" for, when damping isn't quite right. However, it is difficult to describe some of these things in words, and some of

the distinctions are subtle. So, if you have trouble relating some of this with your actual riding, don't worry about it. Instead, if the damping doesn't seem quite right, just make your best guess as to what change will help. Then try it. If it works better, great! If it gets worse, well, you've learned something . . in this case, make another change in the opposite direction. For example, if you installed a smaller jet and it got worse, then try a larger jet. If this improves it, great! If it gets worse again, then you know that the original jet was best, so go back to it. Keep experimenting like this until the shocks are "perfect" for you!

# LOW SPEED REBOUND DAMPING

# Symptoms of Too Much Low Speed Rebound Damping:

Rear end tends to washout or slide-out on hard-packed sweeper turns with small bumps— especially off-camber "washboard" turns. Rear end skips too much when braking on "washboard" sections—does not develop good braking power. Poor rear wheel hook-up when accelerating over series of small bumps or "washboard" sections. In general, rear end seems to be well-controlled in the situations—it is not oscillating up and down too much—but it just doesn't seem to develop good traction.

(Note: all these problems arise because the excess damping keeps the rear wheel from extending fast enough to follow the low spots between the small bumps—the result is poor traction.)

# Symptoms of Too Little Low Speed Rebound Damping:

The symptoms here are similar to the above ... tendency to slide-out on "washboard" turns and poor braking over washboard sections, for example. The critical difference in this case is that the back of the bike is bouncing up and down too much ... whereas with too much damping it was not bouncing too much, it was just getting poor traction. Too much kicking up especially noticeable when braking on downhill sections with small bumps or washboard surface.

### HIGH SPEED REBOUND DAMPING

# Symptoms of Too Much High Speed Rebound Damping:

Rear end gets harsh and hard to control when hitting series of medium or large rolling-type bumps at high speed ... first few bumps in the series don't seem bad, but after that the rear end gets harsh and starts jumping around.

(Note: what is happening here is that the shocks are "packing down". Too much damping keeps the wheel from extending enough before you hit the next bump. Thus, when you hit the first bump you have, say, 10" of travel to absorb it and it feels fine ... but then you hit the second bump and only have maybe 8" of travel left (since the wheel didn't extend fast enough). By the time you hit the fifth or sixth bump, you maybe have only 3" or 4" of travel left ... no wonder the rear end feels harsh! ... you might as well be riding a 10 year old bike with only 4" travel!)

# Symptoms of Too Little High Speed Rebound Damping:

Rear end kicks up when hitting large rolling-type bumps at high speeds ... you tend to land on the front wheel. (Note: it is best to test on rolling bumps—not square-edged bumps—since kicking-up on square-edged bumps could be due to incorrect compression damping as well as incorrect rebound damping). Kicking is especially noticeable on steep downhills with deep rolling bumps. Also, after landing from jumps, rear of bike may tend to "jump off the ground".

# LOW-SPEED COMPRESSION DAMPING

# Symptoms of Too Much Low-Speed Compression Damping:

Rear end is harsh over small bumps. Rear end skips when braking hard on washboard surfaces ... shock seems to stay almost rigid, instead of absorbing the bumps. Especially noticeable on downhill washboard surfaces.

# Symptoms of Too Little Low-Speed Compression Damping:

Shocks bottom-out on medium-sized bumps. Shocks bottom out at bottom of deep, smooth gullies, or rising portions of deep, rolling sand whoops.

## HIGH-SPEED COMPRESSION DAMPING

# Symptoms of Too Much High-Speed Compression Damping:

Rear end is harsh at high speeds over large or medium square-edged bumps. Shocks stay too rigid ... do not use enough travel to absorb bumps. Shocks rarely or never seem to bottom out, even off the biggest jumps.

# Symptoms of Too Little High-Speed Compression Damping:

At high speed, rear end takes medium square-edged bumps smoothly, but bottoms out too easily on larger bumps. Bottoms out too easily off jumps. Bottoms out badly at high speeds over large square-edged bumps, kicking up rear end violently.

### SUMMARY OF DAMPING SYMPTOMS

Damping Adjustment	Best Places on Track For Testing	"Perfect" when
1. Low-Speed Rebound Damping	Small bumps; sweeper turns over washboard sections; off-camber washboard turns; braking on washboard surfaces	Heavy enough to prevent rear end bouncing or oscillation, yet light enough to allow rear wheel to extend fast enough to maintain good contact with ground. Rear end tracks well on washboard sweepers and off-camber washboard turns; brakes well on washboard.
High-Speed     Rebound Damping	Series of medium or large rolling-type bumps on high-speed sections; fast downhill sections with deep rolling bumps.	Heavy enough to prevent rear end kicking up, yet light enough to prevent "packing down" on series of bumps.
Low-Speed     Compression     Damping	Small bumps and medium bumps; deep, rolling sand whoops; washboard sections; deep, smooth gullies.	Heavy enough to prevent bottoming out on medium bumps or rising portions of sand whoops or at bottom of deep, smooth gullies, yet light enough to allow shock to stroke smoothly on small bumps and avoid skipping when braking on washboard surfaces.
High-Speed     Compression     Damping	Large square-edged bumps in fast sections; big jumps	Heavy enough to prevent excess bottoming out off jumps or over large square-edged bumps, yet light enough so shock strokes deeply to absorb these bumps without harshness or rigidity.

### **TUNING NOTE**

It is common practice for riders to "test" shock absorber damping two ways. One way is to stroke the shock in and out by hand and notice the damping resistance. The other way is to push down or jump down on the back of the bike and observe the shock response.

These tests are useful, but *very limited*. You should be aware that these tests *only* involve *low-speed* damping action. They tell you *nothing* about shock response at medium and high shaft speeds! (This applies to all shocks, not just Fox Factory Shox).

It is important for you to realize this when tuning your shocks. Remember that, with these two tests, you will be able to notice tuning changes that affect low-speed damping (i.e., jet changes and Low-Speed CD Stack changes). But you will not be able to notice the changes that affect high-speed damping. The only way to notice high-speed damping changes is by actual hard riding.

### **TUNING RECOMMENDATIONS**

The percentage change in damping when going from one setting (e.g., High Speed CD #8) to the next setting (High-Speed CD #9) is fairly small. This is so you can really fine-tune your shocks.

However, a "one-step" change is hard to notice. Therefore, we recommend making changes of two steps at a time.

For example, if after testing you feel HCD #8 is too soft for you, try HCD #10 (a two-step change). If that feels just right, then fine, you've got it. On the other hand, if that now feels a little too stiff, then you've got it "bracketed" . . . change to HCD #9 and that should be just right! The above comments apply to Jet changes, Rebound Damping Stack changes, and Low-Speed Compression Stack (LCD) changes also.

### SECTION VI. TUNING-SPRING RATES

The following charts show the wide selection of springs available for your shocks. Procedure:

Step 1: Refer to Table I to determine correct length of springs for your shocks.

Step 2: Refer to Table II or III to determine part numbers for the spring rates you select. (Table III shows recommended springs for most popular bikes.)

TABLE I

SHOCK LENGTH		SPRING APPLICATION
Inches	Millimeters	Short / Long
13.75	349	2¾" / 7½"
14.25	362	23/4" / 71/2"
14.75	375	2¾" / 7½"
15.25	387	2¾" / 9"
15.75	400	3½" / 9"
16.00	406	3½" / 9"
16.50	419	3½" / 9"
16.75	425	3½" / 9"
17.00	432	3½" / 9"
17.50	445	3½" / 9"
18.00	457	3½" / 10½"

TABLE II

SPRING Wire	S: (Long Red)	•					
Diamete	er	71/2"	71/2" Length		_ength	101/2"	' Length
(Inches	) Color Code	Part No.	Rate	Part No.	Rate	Part No.	Řate
.283	Purple	96-1505	126	96-1705	104	96-1905	88
.295	Pink	96-1510	146	96-1710	- 120	96-1910	101
.306	Yeilow	96-1515	166	96-1715	136	96-1915	116
.312	Orange	96-1520	178	96-1720	146	96-1920	124
.331	Dark Blue	96-1525	198	96-1725	166	96-1925	141
.331	White	96-1530	217	96-1730	179	96-1930	152
.343	Dark Green	96-1535	246	96-1735	203	96-1935	172
.295	Yellow	96-2570	Med-Soft	96-2770	Med-Soft	96-2970	Med-Soft
.312	Black	96-2575	Medium	96-2775	Medium	96-2975	Medium
.331	Powder Blue	96-2580	Med-Firm	96-2780	Med-Firm	96-2980	Med-Firm
.343	Lime Green	96-2585	Firm	96-2785	Firm	96-2985	Firm
SPRING	iS: (Short Blue)						
		2¾"	' Length	3	3½" Length		
.225	Pink	96-2170	Soft	96-23	70 Soft		
.243	Yellow	96-2175	Med-Soft	96-23		Soft	
.263	Orange	96-2180	Medium	96-23		ım	
.283	Powder Blue	96-2185	Med-Firm	96-23	85 Med-f	irm	
.295	White	96-2190	Firm	96-23	90 Firm		
.306	Lime Green	96-2195	X-Firm	96-23		n	

TABLE III

SPRING APPLICATION CHART

### LIGHT RIDER SHOCK SPRING OPTION LENGTH **LENGTHS** LONG STD. LONG PR BIKE SHORT MEDIU MEDIUM SOFT 146 15.75" 31/2"/9" P/N 96-1720 P/N 96-2 P/N 96-2375 CAN-AM MX-6 MEDIU MEDIUM 146 16.00" 31/2"/9" P/N 96-2380 P/N 96-1720 P/N 96-2 HONDA CR-125 1980 MEDIU MEDIUM 136 P/N 96-2 P/N 96-1715 17.50" 31/2"/9" P/N 96-2380 HONDA CR-250R, RZ, RA **MEDIUM** 136 MEDIU P/N 96-2 16.50" 31/2"/9" P/N 96-2380 P/N 96-1715 **HUSQVARNA 1980 MX** MEDIUM FIRM 166 234"/71/2" P/N 96-2185 P/N 96-1515 KTM-125 1980 14.25" MEDIUM FIRM 178 13.75" 234"/71/2" P/N 96-1520 KTM-250 1980 P/N 96-2185 MEDIUM I MEDIUM FIRM 166 15.75" P/N 96-1725 P/N 96-2 31/2"/9" P/N 96-2385 KTM-420 1980 166 MEDIUM 14.75" 234"/71/2" P/N 96-2180 P/N 96-1515 MAICO MAGNUM MEDIUM FIRM 166 MEDIUM F P/N 96-1725 P/N 96-2 15.25" 2%"/9" P/N 96-2185 MAICO M-1 MEDIUM 166 14.75" 2¾"/7½" P/N 96-2180 P/N 96-1515 SUZUKI RM-100N,T MEDIUM FIRM 166 MEDIUM I 16.75" 31/2"/9" P/N 96-2385 P/N 96-1725 P/N 96-2 SUZUKI RM-250/420N.T MEDIUM SOFT 136 MEDIU P/N 96-2 16.50" 31/2"/9" P/N 96-2375 P/N 96-1715 SWM MX 1980

### NOTES:

- 1. "Light" rider = 125-145 lbs.
  - "Medium" rider = 145-165 lbs.
  - "Heavy" rider = 165-185 lbs.
- 2. These recommendations are for fast amateur or expert riders. Novice riders may prefer springs in the next lower weight category.
- 3. If you have an application not listed above we will be glad to assist you in determining the proper springs. The following is the information we will need from you: length of swingarm (pivot bolt to rear axle); distance from swingarm pivot bolt to upper shock mount; length of shock; rear wheel to fender clearance; bike weight; rider weight; rider skill level (Novice/Expert/Professional).

RECO	MMENDED SPF	RINGS	4			
	MEDIUM RIDER	3	HEAVY RIDER			
SHORT	LONG STD.	OPTIONAL LONG PROG.	SHORT	LONG STD.	OPTIONAL LONG PROG.	
MEDIUM	146		MEDIUM	166	MEDIUM FIRM	
P/N 96-2380	P/N 96-1720		P/N 96-2380	P/N 96-1725	P/N 96-2780	
MEDIUM FIRM	166	MEDIUM FIRM	MEDIUM FIRM	203	FIRM	
P/N 96-2385	P/N 96-1725	P/N 96-2780	P/N 96-2385	P/N 96-1735	P/N 96-2785	
MEDIUM	146	· · · · · · · · · · · · · · · · · · ·	MEDIUM FIRM	166	MEDIUM FIRM	
P/N 96-2380	P/N 96-1720		P/N 96-2385	P/N 96-1725	P/N 96-2780	
MEDIUM FIRM	146		MEDIUM FIRM	166	MEDIUM FIRM	
P/N 96-2385	P/N 96-1720		P/N 96-2385	P/N 96-1725	P/N 96-2780	
FIRM P/N 96-2190	178 P/N 96-1520		FIRM P/N 96-2190	217 P/N 96-1530		
FIRM	198		EXTRA FIRM	246	FIRM	
P/N 96-2190	P/N 96-1525		P/N 96-2195	P/N 96-1535	P/N 96-2585	
FIRM	179		EXTRA FIRM	203	FIRM	
P/N 96-2390	P/N 96-1730		P/N 96-2395	P/N 96-1735	P/N 96-2785	
MEDIUM FIRM P/N 96-2185	178 P/N 96-1520		MEDIUM FIRM P/N 96-2185	198 P/N 96-1525		
FIRM	179		EXTRA FIRM	203	FIRM	
P/N 96-2190	P/N 96-1730		P/N 96-2195	P/N 96-1735	P/N 96-2785	
MEDIUM FIRM P/N 96-2185	178 P/N 96-1520		FIRM P/N 96-2190	198 P/N 96-1525		
FIRM	179	FIRM	FIRM	203		
P/N 96-2390	P/N 96-1730	P/N 96-2785	P/N 96-2390	P/N 96-1735		
MEDIUM	146		MEDIUM FIRM	166	MEDIUM FIRM	
P/N 96-2380	P/N 96-1720		P/N 96-2385	P/N 96-1725	P/N 96-2780	

### **PRELOAD**

Correct preload setting is important for best results. In general, minimum preload is best. The best places on the track to test preload are washboard surfaces entering corners and on downhills. Too much preload will cause skipping and bouncing in these places.

A common mistake by riders is to try to compensate for bottoming out by increasing preload greatly. This will help the bottoming out problem somewhat, but at the expense of poor handling in the situations indicated above. A better solution is to increase compression damping or, possibly, use slightly heavier springs.

# SECTION V. MAINTENANCE

- 1. Grease heim joints periodically.
- 2. Change shock oil about once every 3 to 6 months. More often if you ride in the mud.

# SECTION VI. TROUBLESHOOTING

1. Problem: Erratic damping or loss of damping.

- A) First, check for possible loss of air pressure in one or both reservoirs. If there is no pressure, determine source of leak by pressurizing reservoir and immersing in water-leak at O-ring or air valve is possible. Correct leak and repressurize to 200 psi. If reservoir pressure is OK, then problem is probably caused by dirt or foreign particles in
- B) Disassemble shock and reservoir, disassemble piston and all valves, clean entire shock the oil. thoroughly, and install new oil.
- 2. Problem: "Sticky" spring action.
  - Solution: Check for spring guide "upside down". See Section I, "Installation", item #3. Correct if necessary. Spray dry lubricant on shock body in area where spring guide rubs (where paint is worn off).
- Problem: Loss of reservoir pressure.
  - Solution: Check for air leak at air valve or reservoir O-ring. Pressurize reservoir and immerse in water to find leak. Replace air valve or O-ring as required.
- 4. Problem: Too much "kick" when braking on washboard surfaces, especially on downhills. Solution:
  - A) Reduce spring preload and/or
  - B) Use softer short spring and/or
  - C) Install smaller jet and/or
  - D) Reduce low-speed compression damping.
- 5. Problem: Miscellaneous damping problems.

Solution: See Section III, "Tuning".

# SECTION VII. PARTS LIST

		<u> </u>	
ITEM	PART #	DESCRIPTION	PRICE
1 1	95-0010	EYE ASSEMBLY W/HEIM STD	13.50 each
•	95-0011	EYE ASSEMBLY + ¼"	13.50 each
	95-0012	EYE ASSEMBLY + ½"	13.50 each
	95-0013	EYE ASSEMBLY + ¾"	13.50 each
2	95-0020	SPHERICAL BEARING	10.00 each
_	95-0030	EYELET BUSHING 8mm	6.00 set of 8
	95-0031	EYELET BUSHING 10mm	6.00 set of 8
4	95-0041	BOTTOM OUT BUMPER 2.5"	15.00 pair
5	95-0050	BUMPER RING	2.50 pair
6	95-0060	SHAFT BEARING W/SEALS	15.00 each
7	95-0070	BEARING WIPER	2.50 pair
8	95-0080	BEARING O-RING (INNER)	1.50 pair
9	95-0090	BEARING O-RING (OUTER)	1.50 pair
10	95-0100	TOP OUT PLATE	5.00 each
11	95-0110	CD PISTON	12.50 each
12	95-0120	PISTON RING	7.50 pair
13	95-0130	RD PISTON	12.50 each
14	95-0140	RD STOP PLATE	2.50 pair
15	95-0150	SHAFT LOCKNUT	2.50 pair
16	95-0160	BODY SNAP RING	1.50 pair
17	95-0170	SPRING RETAINER, BODY	10.00 pair
18	95-0180	SPRING GUIDE	4.00 pair
19	95-0190	SPRING RETAINER, SLOTTED	10.00 pair
20	95-0200	RESERVOIR HOSE	10.00 each
21	95-0210	RESERVOIR BODY	20.00 each
22	95-0220	RESERVOIR PISTON	5.00 each
23	95-0230	RESERVOIR PISTON RING	5.00 pair
24	95-0240	RESERVOIR PISTON O-RING	1.50 pair
25	95-0250	RESERVOIR CAP	5.00 each
26	95-0260	RESERVOIR CAP O-RING	1,50 pair
27	95-0270	RESERVOIR SNAP RING	1.50 pair
_	95-0290	RESERVOIR MOUNT PAD	4.00 set of 4
	95-0300	HOSE CLAMP	5.00 set of 4
	95-0310	LABEL	1.50 pair
64	95-1052	JET .052"	4.00 pair
	95-105 <del>9</del>	JET .059"	4.00 pair
	95-1067	JET .067"	4.00 pair
	95-1073	JET .073"	4.00 pair
İ	95-1078	JET .078"	4.00 pair
	95-1086	JET .086"	4.00 pair
1	95-1089	JET .089"	4.00 pair
1	95-1093	JET .093"	4.00 pair
1	95-1098	JET .098"	4.00 pair
	95-1104	JET .104"	4.00 pair
40	95-1200	SHAFT, 13.75"	21.75 each
	95-1201	SHAFT, 14.25"	21.75 each
	95-1202	SHAFT, 14.75"	21.75 each
	95-1203	SHAFT, 15.25"	21.75 each
	95-1204	SHAFT, 15.75" & 16.00"	21.75 each
	95-1205	SHAFT, 16.50" & 16.75"	21.75 each
	95-1206	SHAFT, 17.00" & 17.50"	21.75 each
	95-1207	SHAFT, 18.00"	21.75 each
50	95-1300	BODY, 13.75"	25.00 each
	95-1301	BODY, 14.25"	25.00 each
	95-1302	BODY, 14.75"	25.00 each
	95-1303	BODY, 15.25"	25.00 each
			,,,,,,,,,,,,

ITEM	PART #	DESCRIPTION	PRICE
ŀ	95-1304	BODY, 15.75" & 16.00"	25.00 each
}	95-1305	BODY, 16.50"	25.00 each
Ì	95-1306	BODY, 17.00" & 17.50"	25.00 each
	95-1307	BODY, 18.00"	25.00 each
60	95-8001	#1 RD VALVE STACK	8.00 pair
	95-8002	#2 RD VALVE STACK	8.00 pair
	95-8003	#3 RD VALVE STACK	8.00 pair
	95-8004	#4 RD VALVE STACK	8.00 pair
	95-8005	#5 RD VALVE STACK	8.00 pair
	95-8006	#6 RD VALVE STACK	8.00 pair
	95-8007	#7 RD VALVE STACK	8.00 pair
	95-8008	#8 RD VALVE STACK	8.00 pair
	95-8009	#9 RD VALVE STACK	8.00 pair
	95-8010	#10 RD VALVE STACK	8.00 pair
	95-8011	#11 RD VALVE STACK	8.00 pair
	95-8012	#12 RD VALVE STACK	8.00 pair
	95-8013	#13 RD VALVE STACK	8.00 pair
61	95-8100	#0 LO SPEED CD STACK	6.00 pair
	95-8101	#1 LO SPEED CD STACK	6.00 pair
	95-8102	#2 LO SPEED CD STACK	6.00 pair
	95-8103	#3 LO SPEED CD STACK	6.00 pair
	95-8104	#4 LO SPEED CD STACK	6.00 pair
	95-8105	#5 LO SPEED CD STACK	6.00 pair
	95-8106	#6 LO SPEED CD STACK	6.00 pair
62	95-8203	#3 HI SPEED CD STACK	8.00 pair
	95-8204	#4 HI SPEED CD STACK	8.00 pair
	95-8205	#5 HI SPEED CD STACK	8.00 pair
	95-8206	#6 HI SPEED CD STACK	8.00 pair
	95-8207	#7 HI SPEED CD STACK	8.00 pair
	95-8208	#8 HI SPEED CD STACK	8.00 pair
	95-8209	#9 HI SPEED CD STACK	8.00 pair
	95-8210	#10 HI SPEED CD STACK	8.00 pair
	95-8211	#11 HI SPEED CD STACK	8.00 pair
	95-8212	#12 HI SPEED CD STACK	8.00 pair
	95-9000	REBUILD KIT*	3.95 each
28	95-0320	MANUAL	4.95 each
20	99-0120	AIR VALVE	2.95 pair

<sup>\*</sup>Includes 2 bearing O-ring inner, 2 bearing O-ring outer and bearing wiper.

The following is a list of parts that can be ordered through local bearing supply houses as well as Moto-X Fox. One such dealer in California is King Bearing.

ITEM	DESCRIPTION	STANDARD PART #
7	Bearing Wiper	8600-0500-4180
8	Bearing 'O' Ring (inner)	2-112
9	Bearing 'O' Ring (outer)	2-218
16	Body Snap Ring	5108-162
24	Reservoir Piston 'O' Ring	2-321
26	Reservoir Cap 'O' Ring	2-321
27	Reservoir Snap Ring	5008-156