

ANSWER
MANITOU
PRECISION SUSPENSION FORKS

OWNERS MANUAL



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MANITOU 3 PRECISION SUSPENSION

CONGRATULATIONS FOR CHOOSING THE BEST MOUNTAIN BIKE SUSPENSION MADE. THE MANITOU 3 IS A HIGHLY SOPHISTICATED YET SIMPLE SYSTEM THAT MUST BE PROPERLY CARED FOR. IT IS MANDATORY TO READ THIS MANUAL ENTIRELY PRIOR TO WORKING ON THE MANITOU 3 FORK.

The Manitou 3 Suspension Fork is CNC machined from high strength 6061 T6 Aluminum. The outer leg is specially precision drawn Easton E9 Aluminum with anodized graphics for protection as well as style. The anodized tubing is press fit into the brake flange and dropout to form a strong maintenance free outer leg assembly. The inner legs are Easton precision taper drawn 7075 T6 Aluminum that are hard anodized and have been Teflon coated for a wear free and stiction free surface.

The suspension spring rate and damping are provided by a six inch stack of polyurethane elastopolymers with a one inch second stage elastomer to provide full travel in all conditions with a positive bottom stop. These specially matrixed polymers provide simple yet effectively tuned and maintenance free off road performance. Standard travel of 2" is easily adjusted to 2 1/2" long travel for down hill conditions. Different elastopolymers can be combined in the damping stack adjust ride stiffness and rebound performance and are easily changed with the hand removable skewer. Fine tune adjustments can be made using the adjuster knob located on top of the skewer assembly. The upper and lower UHMW bushings insure exact alignment between inner and outer legs and minimize front end flex. The forged brake arch provides extra rigidity and front end stability in rough terrain.

The Manitou Fork is fully assembled and ready to be installed onto your bicycle. Manitou suspension forks are available in three steer tube diameters 1" STD (25.4MM), 1.125 O.S. (28.6MM), and 1.250 EVO. (31.8MM) and four lengths, 5 1/2" (140MM), 6 1/2" (165MM), 7 1/2" (190MM), 8 1/2" (215MM), and 12" (305MM) threadless. Different density polyurethane compression rubbers and two 1/2" long travel kit rubbers have been included with your fork to permit tuning of the fork to your weight and riding style. Additional expanded option ride adjustment kits are available through your dealer carrying Manitou products.

IMPORTANT: The Manitou Fork is a competition off road fork, and as such does not come with proper reflectors for on road use. Have your dealer or mechanic install proper reflectors to meet the Consumer Product Safety Commission's (C.P.S.C.) standards if the fork is going to be used on the road at any time. If you have questions regarding C.P.S.C. Standards contact your dealer.

INSTALLATION INSTRUCTIONS

Figures 1, 2, & 3

Insure that the proper steer tube diameter and length has been delivered with your Manitou. The steer tube must be cut to length to fit your bicycle head tube. If you are not familiar with this procedure or do not have the proper tools to cut the steer tube it is recommended that you seek a qualified bicycle mechanic to perform installation.

NOTE: The steer tube is a one time precision press fit at the factory and cannot be removed from the crown. Replacement of the entire crown/steerer assembly must be done to change steer tube lengths or diameters.

1. Remove old forks from bicycle.
2. Measure and cut the steer tube to fit your bicycle head tube.
3. Remove crown race from old forks and press onto Manitou 3 steerer until seated on crown (Figure 1).
4. Clean and grease headset bearings and races of bicycle.
5. Install lower bearings on fork crown race.
6. Insert steer tube into head tube of frame.
7. Install upper bearings and race, tighten until slack just disappears.
8. Install washer and headset lock nut.
9. Install stem and handlebars to desired height and torque stem bolt/clamping system to manufacturers instructions.

NOTE: The Manitou 3 Fork is equipped with a secondary catch dropout.

10. Adjust front wheel quick release to clear the 1/4" secondary catch dropout. The quick release must be tightened after it is properly seated into the dropout counter bores. Insure that there is adequate thread engagement (4 or more threads with the release adjusted to lock) due to the wider adjustment. Install front wheel to bicycle per manufacturers specification.
11. Obtain new brake inner and outer cable.
12. Trim outer cable length to fit into new brake cable retainer on brake arch. Do not use old retainer.

FIGURE 1: RACE INSTALLATION

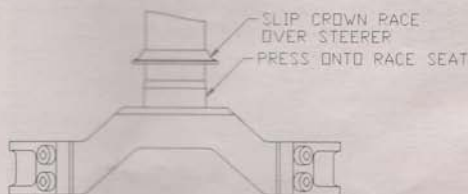


FIGURE 2: BRAKE CABLE ROUTING

IMPORTANT: Do not run your brake cable through the stem cable system of your bicycle. Bypass the stem routing completely and go directly to the brake arch of the Manitou Fork.

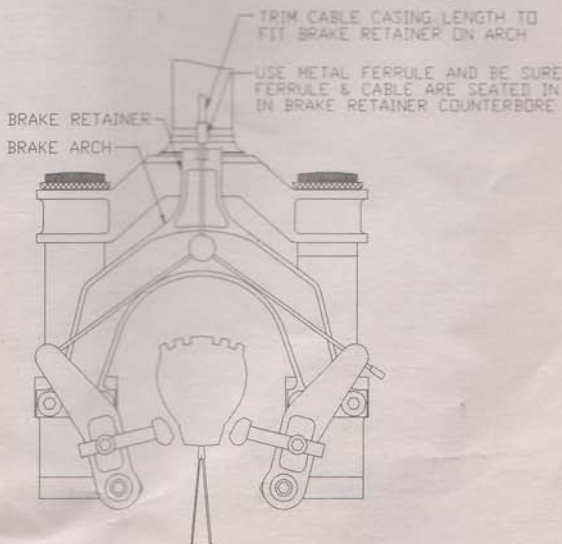
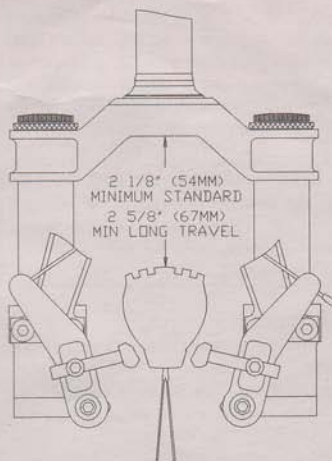


FIGURE 3: TIRE CLEARANCE

IMPORTANT: When installing wheel or any new tire be sure to check the minimum tire clearance is at least 2 1/8 inches (54MM) for the standard travel setup and 2 5/8 inches (67MM) for long travel. Measure from the highest point on the tire to the bottom of the crown.

WARNING: Do not raise or lower the fork tubes in the crown. This could cause lack of proper tire clearance when the fork compresses or reduce the amount of skewer thread engagement in the leg. Either case constitutes an unsafe condition that may cause rider injury.



SPARE PARTS

Tables 1&2

Spare parts can be ordered through your dealer. If you have any problems that you cannot resolve with your dealer, you may call Answer Products customer service at (805) 257-4411, 8:00 AM to 5:00 PM Monday through Friday.

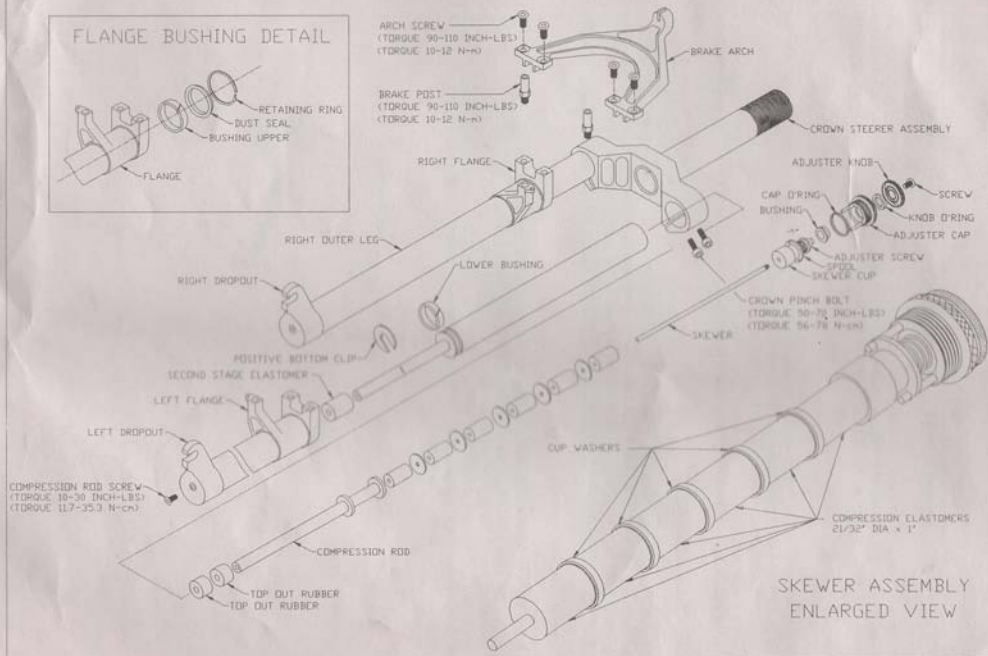
MANITOU 3 SPARE PARTS	
PART NAME	PART NUMBER
BRAKE ARCH	040408
BRAKE ARCH SCREW	040452
BRAKE POST	040442
CROWN PINCH BOLTS (5MMx20MM)	040646
INNER LEG	040549
COMPRESSION ROD	040632
COMPRESSION ROD SCREW	040644
POSITIVE BOTTOM CLIP	040634
SKEWER	040625
DUST SEAL, RETAINING RING	040640
DUST SEAL	040166
BUSHING UPPER	040155
BUSHING LOWER	040154
REBOUND RUBBER 3/4 x 1/2	040612
BOTTOM RUBBER 3/4 x 1	040613
COMPRESSION RUBBER 21/32 x 1	040617
OUTER LEG ASSEMBLY LEFT	85-3510
OUTER LEG ASSEMBLY RIGHT	85-3511
ADJUSTER CAP ASSEMBLY	040630
ADJUSTER KNOB ASSEMBLY	85-3512
OWNER'S MANUAL	040655

ADJUSTER CAP ASSEMBLY	

TABLE 2: CROWN/STEERER ASSEMBLY GUIDE			
STEER TUBE LENGTH	STEER TUBE DIAMETER		
	1.000 IN (25.4 MM) STANDARD	1.125 IN (28.6 MM) OVERSIZE	1.250 IN (31.8 MM) EVOLUTION
5.5 IN (140 MM)	85-3400	85-3410	85-3420
6.5 IN (165 MM)	85-3401	85-3411	85-3421
7.5 IN (190 MM)	85-3402	85-3412	85-3422
8.5 IN (216 MM)	85-3403	85-3413	85-3423
12.0 IN (305 MM) THREADLESS	85-3404	85-3414	85-3424

CROWN/STEERER ASSEMBLY (INCLUDES ALL PARTS SHOWN)	

FIGURE 4: MANITOU 3 FORK SCHEMATIC



MAINTENANCE

NOTE: The Manitou should not be used if any parts are damaged. Contact your local dealer for replacement parts.

Your Manitou Fork is nearly maintenance free. However, moisture and contamination may build up inside the fork. Although this does not affect the performance of the Manitou, to insure long life it is recommended that the fork be periodically disassembled, cleaned, dried and re-greased. When cleaning the fork, it is **NOT RECOMMENDED** to direct water spray at the seals.

Before every ride you should:

1. Ensure that quick release skewers are properly adjusted and tight.
2. Wipe the inner legs clean & check entire fork for obvious damage.
3. Check tightness of front wheel quick release.
4. Check headset stack.
5. Ensure that the front brake cable is properly seated in the cable retainer & check brake adjustment

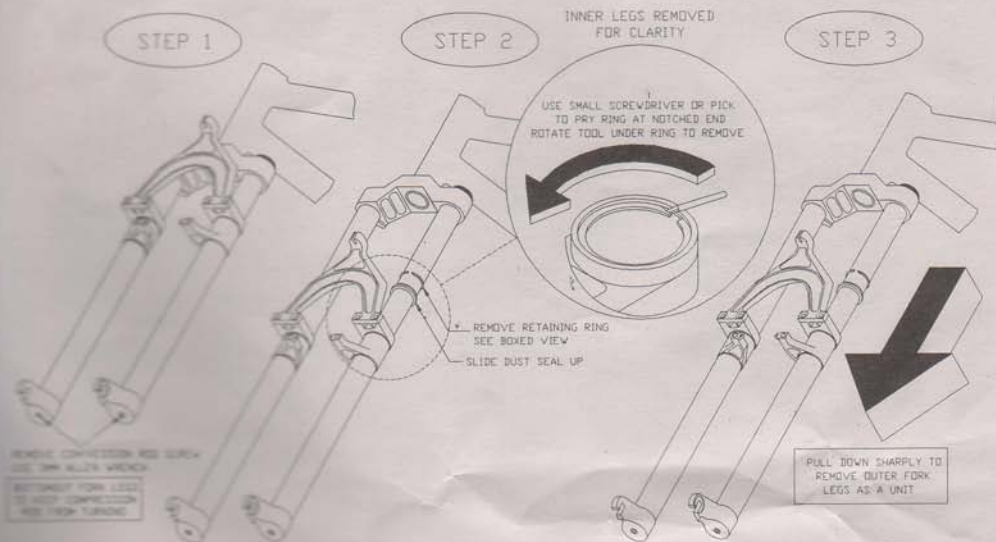
GENERAL DISASSEMBLY

NOTE: The cantilever brakes, brake arch, and inner legs **DO NOT** need to be removed for general disassembly or cleaning. We recommend you **AVOID DISASSEMBLING** these components unless absolutely necessary. Fork crown and inner legs may be left installed on bicycle during disassembly. It is also not necessary to disassemble the Manitou 3 for compression elastomer replacement. Elastomer replacement is accomplished by removing the skewer assembly per figure 6.

Removal of outer legs Figure 5:

1. Remove both 5MM lower compression rod screws. Bottomout fork to prevent the compression rod from turning while removing screws. Pull outer legs down gently to get more room to work with the seal.
2. Use a small screwdriver or point tool to remove retaining ring (Figure 5).
3. Pry up dust seal until it is above flange.
4. Pull outer leg assembly down sharply to force upper bushing out of the flange. It may be necessary to pull several times before upper bushings pop out of the flange.

FIGURE 5: FORK DISASSEMBLY



Skewer & Compression Rod Removal Figure 6:

1. Remove positive bottom clip from the groove in compression rods.
2. Slide off the 1" second stage elastomer.
3. Unscrew and remove the skewer assemblies by hand.
4. Turn fork upside down to remove the compression rods. Giving the rods a quick upward thrust and catching them works also.
5. Remove the lower bushing if desired.

INSPECTION

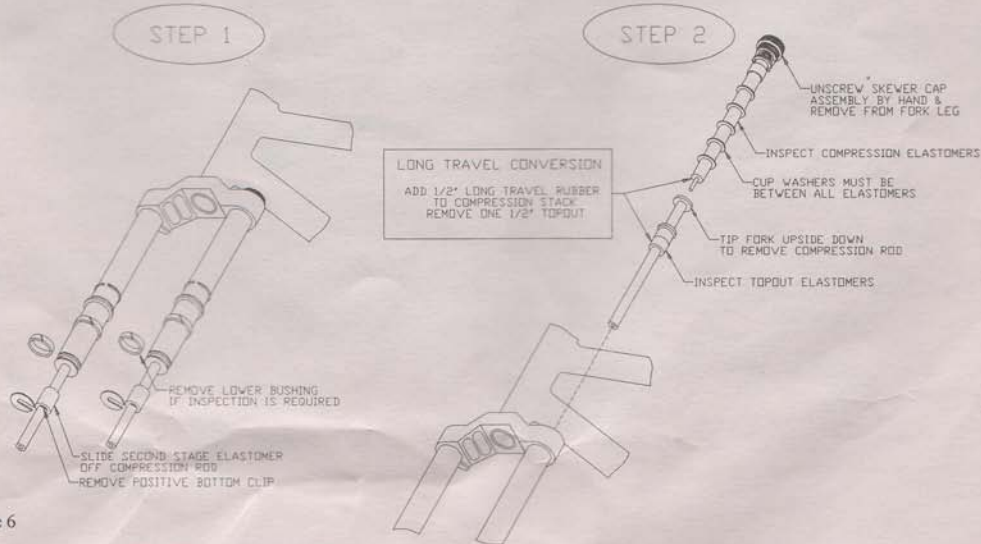
1. Check the dust seal for tears or damage. Replace if needed.
2. Inspect the lower and upper bushing for excessive wear or damage. Checking the drag between the lower bushing installed on the inner leg and the outer leg and then separately the upper bushing installed in the flange and the inner leg is a good indication of wear. Drag should be very slight, enough to hold the weight of the inner leg but not more. Replace if necessary.
3. Check all elastomers for splitting, cracks or other obvious damage. Replace if necessary.
4. Check the skewer rod for straightness. If bent beyond straightening replace.
5. Check smooth action of the adjuster. Clean and regrease threads if necessary.
6. Check the outer leg I.D. for deep gouges or dents. Replace if damaged.
7. Check the inner leg O.D. for deep gouges, check for other obvious damage. Minor wear resulting in removal of the black dye is not detrimental to the hard anodized surface. Replace if needed.
8. Check compression rod positive bottom clip grooves for damage. Replace if damaged.
9. Insure that positive bottom clips are flat and tightly engage the compression rod groove. Replace if needed.

LONG TRAVEL CONVERSION

NOTE: To convert the Manitou to Long Travel, 2 1/2" (63.5 MM), it is necessary to disassemble per the disassembly instructions. Long travel will raise the ride height 1/2" (12.7MM) from 16.0" (40.6CM) to 16 1/2" (41.9CM).

1. Install only one 1/2" (12.7MM) topout elastomer on each compression rod (Figure 6).
2. Add 1/2" (12.7MM) blue long travel elastomer to each compression stack. Each stack should have 6 1/2" (165MM) of elastomer (Figure 6).
3. Proceed with reassembly.

FIGURE 6: SKEWER & COMPRESSION ROD REMOVAL



REASSEMBLY

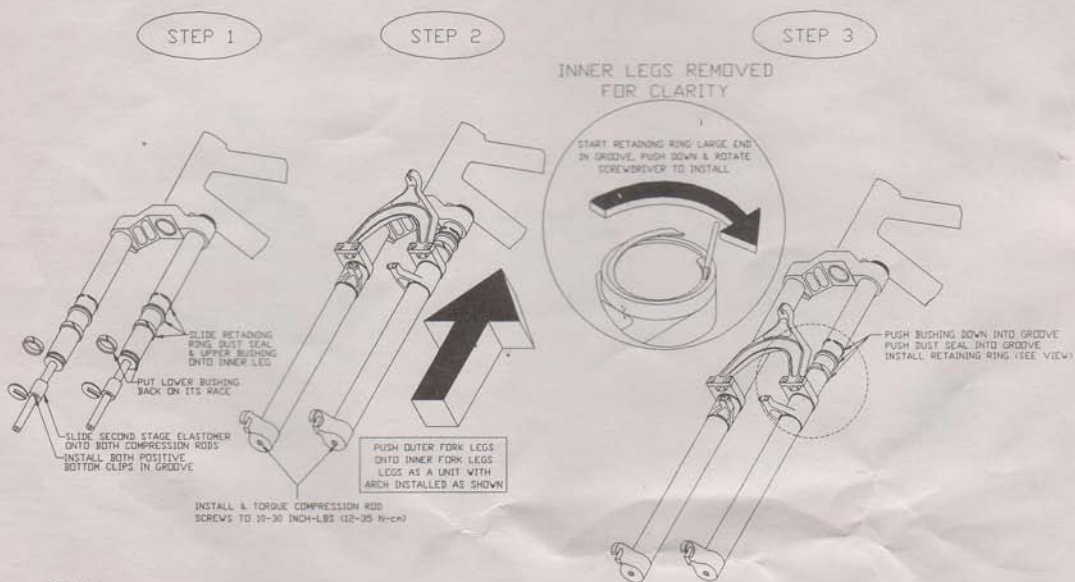
Skewer & Compression Rod Installation Figure 6 & 7

1. Clean all parts thoroughly.
2. Slide retaining ring, dust seal, and upper bushing onto inner legs.
2. Grease Compression rods lightly.
3. Drop compression rods down into inner legs. Shake to get rod through inner leg plug.
4. Clean skewer cap threads thoroughly. Grease threads on inside of inner leg.
5. Grease skewer rod and install desired compression elastomers. A washer must be between every elastomer.
6. Back off adjusters to soft setting and install skewers assemblies into inner legs.
7. Slide on both 1" (25.4MM) second stage elastomers until just past positive bottom clip groove.
8. Install positive bottom clip.
9. Grease and install lower bushing on inner leg plug.

Outer leg Installation Figure 7

1. Install outer legs as a unit onto inner legs. Force lower bushings past flange area until dropouts contact compression rods.
2. Install and torque both 5MM compression rod screws to 10-30 inch-lb. (12-35 N-cm).
3. Using a screwdriver like tool push the upper bushing down into the flange. Take care not to damage bushing or scratch the inner leg.
4. Using similar tool push the dust seal down into its cavity.
5. Install retaining ring by starting the wide end in the flange groove. Pushing down with a screwdriver rotate to feed ring into the groove, see figure 7 view). Install the ring so the end gap is oriented straight back. This will leave ring in the best position for removal later.
6. Readjust preload adjuster knobs to desired preload.

FIGURE 7: FORK REASSEMBLY



BRAKE ARCH

NOTE: Manitou 2 and Manitou 3 brake arches are interchangeable but are not interchangeable with Manitou 1 & M-Sport.

Removal:

1. Disconnect the cantilever brake cable from the brake retainer on the arch.
2. Remove the four 6MM allen screws.
3. Remove arch.

Reassembly:

1. Clean all mating surfaces and threads.
2. Install arch onto flanges
3. Install four 6MM allen screws.
4. Torque 6MM allen screws to 90-110 inch-lb. (10-12 N-m).
5. Replace cantilever brake cable in brake retainer.

INNER FORK LEGS Figure 8

During normal maintenance the inner fork legs do not need to be removed from the crown. It is recommended that the torque joints be left undisturbed.

Disassembly:

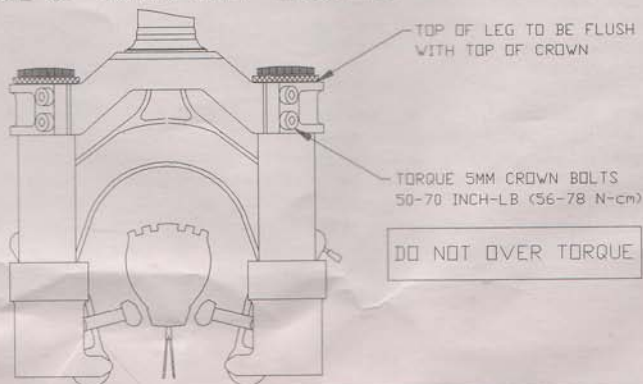
1. Loosen the four 5MM allen screws located in the crown.
2. Remove skewer assemblies.
3. With twisting movement remove the inner fork legs.

Reassembly:

1. Clean mating surfaces of crown and inner fork legs.
2. Install inner fork legs into crown so top of leg is flush with crown surface.
3. Install skewer assemblies until hand tight.
4. Tighten and torque four 5MM allen bolts to 50-70 inch-lb. (56-78 N-cm).
5. Inspect to verify 2 1/8" (54MM) minimum clearance between tire and crown.

WARNING: Do not over tighten crown pinch bolts. Tighten only to 50-70 inch-lb (56-78 N-cm). Over tightening may collapse inner legs and bind skewer threads.

FIGURE 8: CROWN BOLT TORQUEING



ADJUSTING RIDE QUALITIES Figures 9, 10, & 11

Manitou forks offer a wide adjustment range to suit individual riding preference and weight by simply changing the urethane elastomers. The Manitou 3 fork has been tuned to achieve 2" (51MM) of travel and has a softer ride that better absorbs large bumps while staying extremely active on smaller ones. Fine tune adjustments can be made using the preload adjusters located on top of the fork crown. Each production fork comes with an all red compression stack appropriate for an aggressive rider of 155-180 lb. The fork also includes a pair of softer elastomers (blue) and firmer elastomers (yellow) to allow moderate customization of the ride.

Fine Tuning:

Fine tuning adjustments can be made by rotating the adjuster knobs located on top of the crown. Rotating the knob clockwise will firm the ride adding preload to the compression stack. This will firm initial travel for small bumps but will not limit the full travel for larger bumps. Rotating the knobs counter clockwise will soften the ride. Five revolutions of the adjuster knob will take the adjuster from full soft to the extreme firm ride setting changing the preload by 1/2 inch (12.7MM). It is not necessary to have the right and left adjusters set exactly the same. Having them turned at approximately the same number of revolutions will sufficiently balance the damping forces.

Coarse Tuning:

The Manitou 3 is tuned to provide more travel and a softer ride than previous Manitou forks and other suspension fork designs. Normal riding should result in 1 3/4" (44.5MM) to 1 7/8" (47.5MM). Large hits should use full travel of 2" (51MM). An excessively soft compression stack will rely too heavily on the second stage elastomer. A mushy feel with frequent noticeable bottoming will occur. An excessively firm compression stack will not use full travel. If your forks are too soft or too firm and need coarse tuning remove the skewer assembly, replace the elastomers and ride test. Disassembly of the fork is not required. In addition to the replacement elastomers provided with the fork, an expanded soft ride and firm ride kit are available through your dealer as an accessory. The soft ride kit is a complete set of blue compression elastomers and the firm ride kit is a complete set of yellow compression elastomers. Each set contains twelve 21/32 dia" elastomers. Any combination of colors can be used to obtain the ride that suits your preference, although it is not recommended to use a soft elastomer like blue in a stack of hard elastomers like yellow. The soft elastomer will be overpowered by the firm ones.

Manitou forks seem to become firm in cold weather. Elastomer spring rate testing indicates that the elastomers unlike oil hydraulic systems are nearly unaffected by temperature ranging from 32F-120F (0C-50C). Thickening of the grease in the fork however can cause extra stiction causing the fork to feel more firm. Changing to a light oil like Silkolene or Tri-Flow lube will eliminate the stiction.

FIGURE 9: FINE TUNING WITH ADJUSTERS

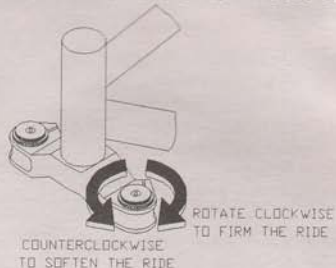
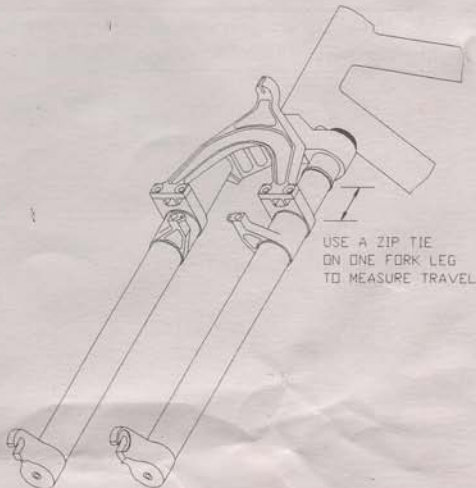


FIGURE 10: ELASTOMER RIDE KITS

ELASTOMER ADJUSTMENT KIT SPECIFICATIONS		
COLOR	RIDE KIT	PART NO.
BLUE	SOFT	85-3503
RED	STOCK	SEE TABLE 1
YELLOW	HARD	85-3504

FIGURE 11: ZIP-TIE TRAVEL INDICATOR



TROUBLE SHOOTING

The adjuster knob is locked and will not turn:

The adjuster is probably at one extreme end of the travel. Unscrew the skewer cap assembly and remove the skewer to see if the adjuster is at the extreme firm or soft end of its travel. The spool will almost be off of the two dowel pins at the extreme firm setting. Unlock the knob by rotating it clockwise, if at the extreme soft setting, or counter clockwise, if at the extreme firm setting.

Fork seems to "top out" or has a slight clunking feel when front wheel comes off the ground:

Excessive preload will result in a "top out" if the adjuster is at the extreme firm setting. Selecting elastomers with that better fit your weight and riding style and having the adjuster set mid range will eliminate "top out". Also if you have converted your fork to long travel and removed both top out elastomers then the fork will clunk at the top. Disassemble per instructions and put one top out elastomer back in.

It is difficult to start the skewer cap because of excessive elastomer preload:

If the preload adjuster is at the max preload and you are using firm elastomers it may be difficult to start the adjuster cap threads. Rotate the adjuster knob counter clockwise to reduce preload. If you converted your fork to long travel by adding the 1/2" long travel elastomer but did not remove one of the topping elastomers there will be excessive preload. Disassemble the fork per instructions and remove one of the top out elastomers.

The fork feels less active and is not getting the travel it used to when it was new:

Chances are that the fork is developing stiction. Greasing the skewer so the elastomers slide easily will help. Complete disassembly, cleaning, and regreasing is also recommended periodically especially after mud rides. This will keep the fork in good shape and working like new.

Outer legs feel loose on inner legs and bushings, a knock or rock can be felt when pushed from side to side:

Either the lower bushing is missing or wore out. Disassemble per instructions, check both the upper and lower bushings for excessive damage and replace if necessary. Clean, grease, and reassemble.

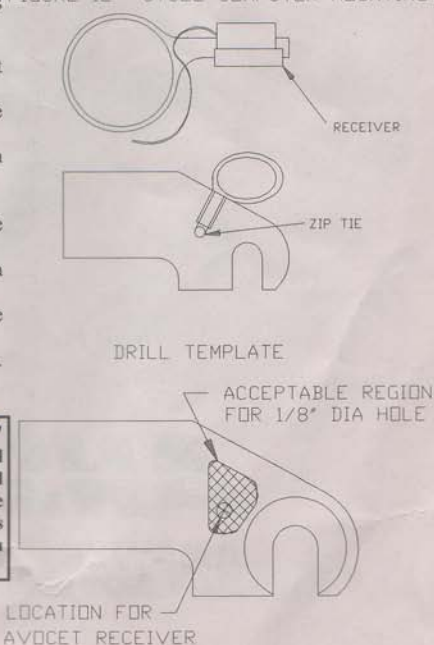
CYCLE COMPUTER INSTALLATION INSTRUCTIONS Figure 12

Follow the instructions in your owners manual with the following exceptions:

1. Remove the front wheel and locate the receiver on the top of the right dropout.
2. Use the template to locate any holes drilled in the dropout in the acceptable region.
3. Use a center punch or nail to punch mark the location of the hole in the right dropout.
 - Drill 1/8" dia. hole through the dropout.
5. Attach the receiver to the dropout by passing a zip tie through the hole and the receiver and tighten it securely (see sketch).
6. Attach the wire to the wheel side of the fork leg using zip ties or a strip of electrician's tape. Wind the wire around the brake arch and then the front brake cable casing on its path up to the handlebar mount. Do not attach the wire to the bicycle frame or any other part that does not turn with the handlebar and fork. Doing so will reduce the life span of the wire.

Note: The drill template shows the acceptable region to drill a 1/8" (3MM) dia. hole through the dropout. Drilling in other areas could damage the dropout. The template also shows the recommended location for the Avocet receiver. Use the newer Avocet adjustable receiver identified by its lateral ratchet slider. Old Avocet receivers are fixed position and will not perform correctly on the Manitou Fork.

FIGURE 12: CYCLE COMPUTER MOUNTING



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