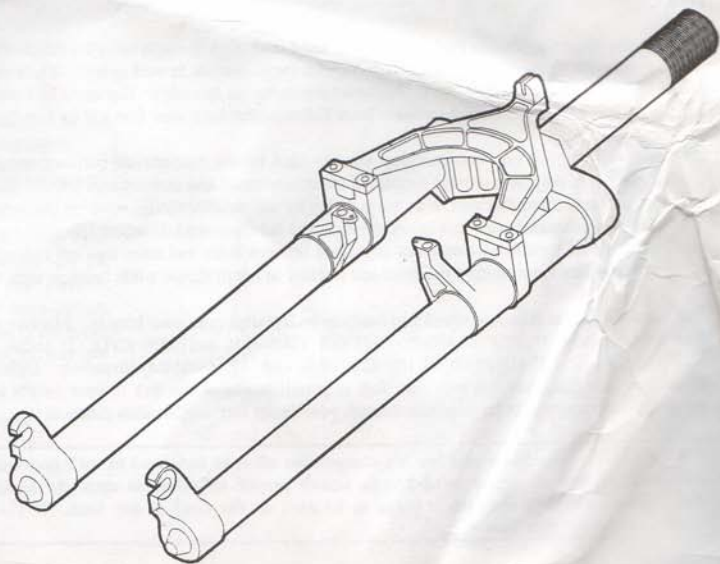


ANSWER

MANMANTOU[®]



OWNERS MANUAL



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MANITOU SPORT 94 PRECISION SUSPENSION FORK

CONGRATULATIONS FOR CHOOSING ONE OF THE BEST MOUNTAIN BIKE SUSPENSION FORKS MADE. THE MANITOU SPORT 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 SPORT FORK.

The Manitou Sport 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 the race-proven polyurethane elastopolymer damping stack. These specially matrixed polymers provide simple yet effectively tuned and maintenance free off road performance. Suspension travel is 1 3/4" and has been tuned this year to be more active for the smaller bumps while at the same time more progressive for the larger ones. Different elastopolymers can be combined in the damping stack to adjust ride stiffness and rebound performance. The upper and lower UHMW bushings insure exact alignment between inner and outer legs and minimize front end flex. The CNC machined brake arch provides extra rigidity and front end stability in rough terrain while being as light as possible.

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 elastomers 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 Sport 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 Sport 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 manufacturer's 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

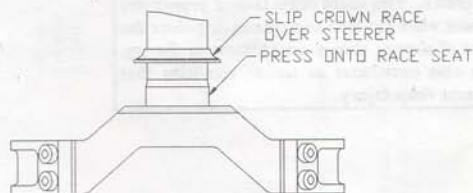


FIGURE 2: BRAKE CABLE ROUTING

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

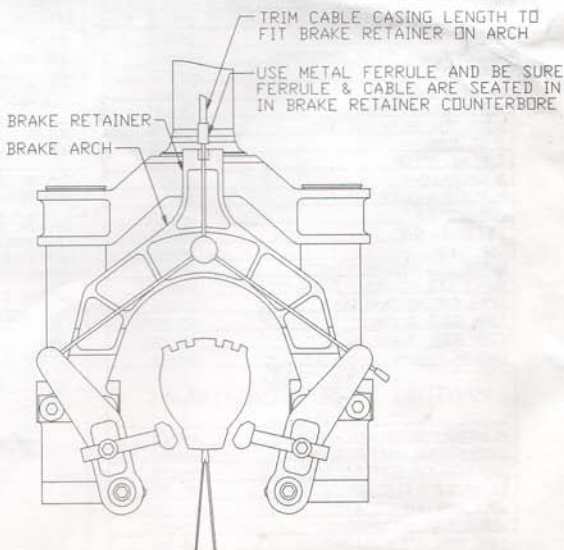
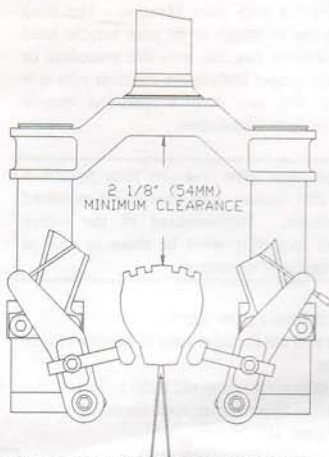


FIGURE 3: TIRE CLEARANCE

IMPORTANT: When installing wheel or any new tire be sure to check that minimum tire clearance is at least 2 1/8 inches (54MM). 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 SPORT SPARE PARTS	
PART NAME	PART NUMBER
BRAKE ARCH	040441
BRAKE ARCH SCREW	040452
BRAKE POST	040442
BRAKE POST SPACER	040592
CROWN PINCH BOLTS (5MMx20MM)	040646
INNER LEG	040713
M6-1.0 x 120 BOLT	040172
DUST SEAL COVER	040647
DUST SEAL RETAINING RING	040640
DUST SEAL	040166
BUSHING UPPER	040155
BUSHING LOWER	040154
REBOUND WASHER	040212
CUP WASHER	040717
INNER LEG CAP	040709
CAP O'RING	040439
OUTER LEG ASSEMBLY LEFT	040719
OUTER LEG ASSEMBLY RIGHT	040718
12" x 6MM HEX WRENCH	040121
FORK BOOT, CLEAR	85-3508
FORK BOOT, BLACK	85-3509
OWNERS MANUAL	040716
MANITOU SPORT ELASTOMERS	
REBOUND RUBBER 3/4 x 1/2	040163
COMPRESSION RUBBER 3/4" RED	040197
COMPRESSION RUBBER 1 1/2" BLUE	040177
EXTRA SOFT RIDE KIT (BLACK)	85-3500
SOFT RIDE KIT (BLUE)	85-3501
STOCK RIDE KIT (RED)	85-3507
HARD RIDE KIT (YELLOW)	85-3502

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) OVSERIZE	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)

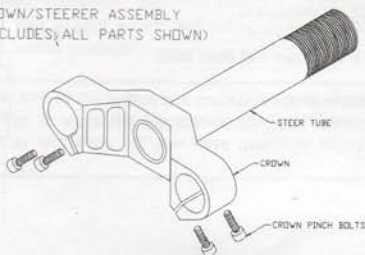
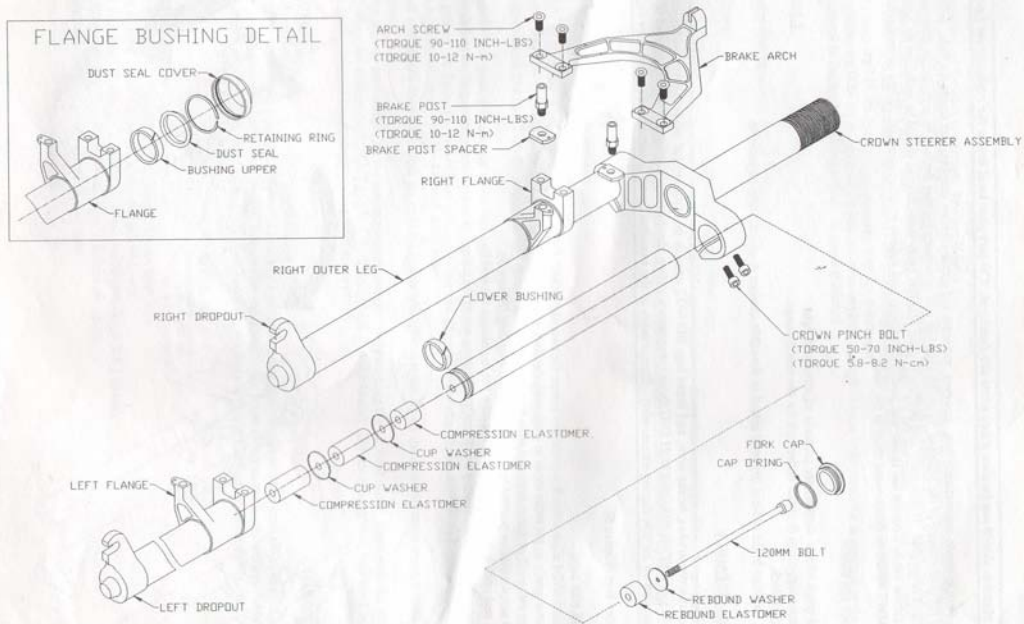


FIGURE 4: MANITOU SPORT 94 FORK SCHEMATIC



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. Disassembly and overhauling the Manitou every three months should be sufficient for normal conditions. Extreme use or frequent use in wet and muddy conditions may require monthly overhaul. When cleaning the fork, it is **NOT RECOMMENDED** to direct water spray at the seals.

Before every ride you should:

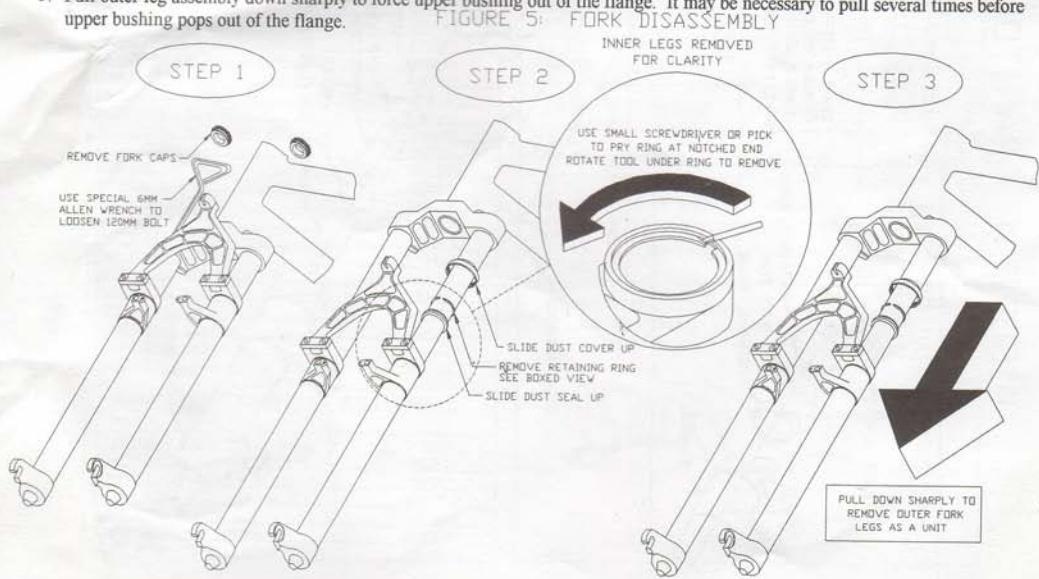
1. Ensure that quick release skewers are properly adjusted and tight.
2. Wipe the inner legs clean & check entire fork for obvious damage.
3. Check headset slack.
4. Insure that the front brake cable is properly seated in the cable retainer & check brake adjustment

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. Disassembly of the Manitou Sport is required for elastomer replacement.

Removal of outer legs (Figure 5)

1. Remove both fork caps.
2. Use the special 6MM allen wrench provided to loosen the two 6MMx120MM screws.
3. Pull legs down gently to get more room to work with the dust seal and retaining ring.
4. Lift dust seal cover off of flange boss and slide it up inner fork leg.
5. Use a small screwdriver or pointed tool to remove retaining ring (Figure 5).
6. Pry up dust seal until it is above flange taking care not to damage the seal lip.
7. Pull outer leg assembly down sharply to force upper bushing out of the flange. It may be necessary to pull several times before upper bushing pops out of the flange.



INSPECTION

1. Check dust seal cover for tears or obvious damage. Replace if needed.
2. Check the dust seal for tears or damage. Replace if needed.
3. 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.
4. Check all elastomers for splitting, cracks or other obvious damage. Replace if necessary.
5. Check the outer leg I.D. for deep gouges or dents. Replace if damaged.
6. 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.

REASSEMBLY

120MM Screw and Elastomer Stack (Figure 6)

1. Clean all parts thoroughly.
2. Slide retaining ring, dust seal, and upper bushing onto inner legs.
3. Put rebound washer and rebound elastomer onto 120MM screw and drop down into inner legs. Shake to get screw through inner leg plug.
4. Grease 120MM screw thoroughly and slide on desired compression elastomers. A cup washer must be between every elastomer.
5. Grease and install lower bushing on inner leg plug.

Outer leg Installation (Figure 7)

1. Grease I.D. of outer leg in and below upper bushing seat.
2. Install outer legs as a unit onto inner legs. Force lower bushings past flange area.
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. While pushing down with a screwdriver rotate to feed ring into the groove, see figure 6 view). Install the ring so the end gap is oriented straight back. This will leave ring in the best position for removal later.
6. Slide dust seal covers down inner fork leg onto the flange boss. Be sure the lip on the dust seal cover snaps into the groove in the flange boss.
7. Push outer legs up until compression elastomers touch dropout while pushing the 120MM screw down with the special allen wrench. Start and tighten the 120MM screw to 30-40 INCH-LB (3.5-4.7 N-cm). Do not over tighten, just hand tight by hand with the special wrench is sufficient.

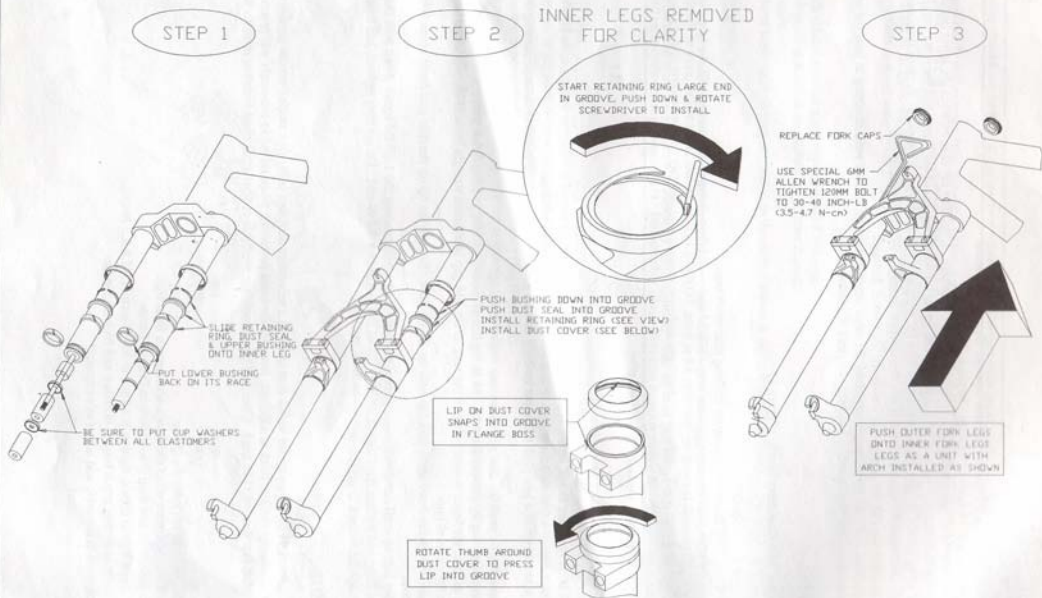
DUST BOOTS

The Manitou Sport 94 comes equipped with a dust seal and a secondary dust seal cover that snaps onto the outside of the flange. For most riding conditions the seal stack is adequate, however for extra protection when riding in extremely wet or muddy conditions it is recommended that dust boots be used. Clear and black boots are available at your authorized Manitou dealer.

To install:

1. Remove the inner legs from the crown.
2. Pull the dust seal covers off of the flange and remove from legs.
3. Slide on dust boots and snap onto groove in O.D. of flange.
4. Replace inner legs in crown, tighten & torque to 50-70 inch-lb. (5.8-8.2 N-cm).
5. Extend boots until they touch bottom of crown and fix with zip tie.
6. Re-attach front brake cable and adjust as necessary.

FIGURE 6: FORK REASSEMBLY



BRAKE ARCH

NOTE: Manitou Sport 94, Manitou 2 and Manitou 3 brake arches are interchangeable but are not interchangeable with Manitou 1 & M-Sport 93.

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 7)

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:

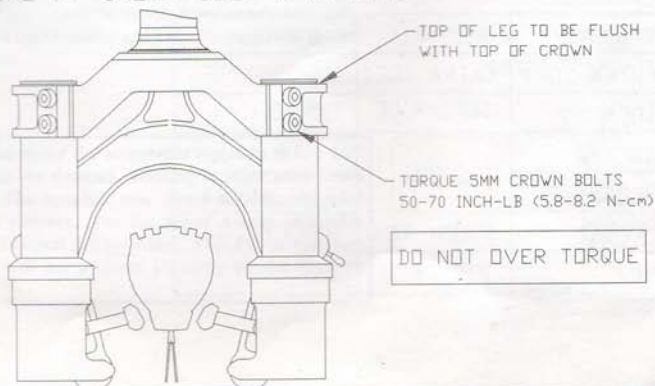
1. Loosen the four 5MM allen screws located in the crown.
2. Remove fork caps.
3. With twisting movement remove the inner fork legs.

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. Tighten and torque four 5MM allen bolts to 50-70 inch-lb. (5.8-8.2 N-cm).
4. Replace fork caps.
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. (5.8-8.2 N-cm).

FIGURE 7: CROWN BOLT TORQUEING



ADJUSTING RIDE QUALITIES (Figures 8 & Table 2)

Manitou forks offer a wide adjustment range to suit individual riding preference and weight by simply changing the urethane elastomers. The Manitou Sport fork has been tuned to achieve 1 3/4" (44.5MM) of travel and has a more active ride that better absorbs small bumps while being progressive enough for the large ones. Each production fork comes with two 1 1/2" blue and one 3/4" red compression elastomers and is appropriate for a moderate rider of 145-170 lb. The fork also includes a pair of softer elastomers (blue) and firmer elastomers (yellow) to allow moderate customization of the ride.

Coarse Tuning:

Normal riding should result in 1 1/2" (38.5MM) to 1 5/8" (41MM) of travel. Large hits should use full travel of 1 3/4" (44.5MM). An excessively soft compression stack will use full travel frequently and put excessive stress on the elastomers. 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, disassemble per owners manual instructions and replace the elastomers and ride test. 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 four 1 1/2" and two 3/4" elastomers and four cup washers. 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 black 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 temperatures 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 Tetra Bike lube will eliminate the stiction.

FIGURE 8: ZIP-TIE TRAVEL INDICATOR

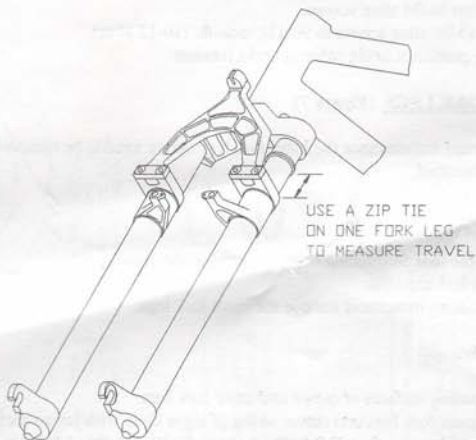


TABLE 2: ELASTOMER RIDE KITS

COLOR	STIFFNESS	RIDE KIT	PART NO.
BLACK	EXTRA SOFT	EXTRA SOFT	85-3500
BLUE	SOFT	SOFT RIDE	85-3501
BLUE	SOFT	STOCK	1 1/2" 040177
RED	MEDIUM		3/4" 040197
RED	MEDIUM	STOCK RIDE	85-3507
YELLOW	FIRM	FIRM RIDE	85-3502

TROUBLE SHOOTING

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". Selecting elastomers with that better fit your weight and riding style will eliminate "top out".

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. Complete disassembly, cleaning, and re-greasing is recommended periodically especially after mud rides. This will keep the fork in good shape and working like new. Greasing the 120MM bolt helps eliminate stiction as the elastomers slide up and down.

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.

It is difficult to get 120MM bolt threaded into the dropout in the reassembly process.

Trying to get this bolt started in a blind hole at the bottom of a long tube is tricky at best. Follow the reassembly instructions carefully. Some helpful hints are:

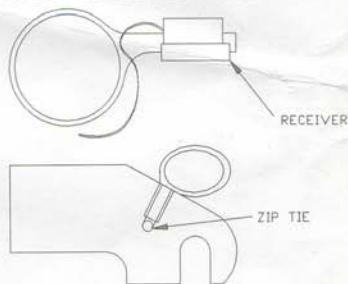
1. Try keeping the fork as close to vertical and not tipped when attempting to get the bolt started. If the bolt still does not start, try tipping slightly in one direction and then the other.
2. Do not tighten one side and attempt to do the other. You need all the slack in the system you can get to help maneuver the other bolt to get it started.
3. Do not push up too hard with the lower legs. The end of the bolt needs to be able to "seek" the threaded hole in the dropout. Alternating light to medium pressure may help. When the bolt does find the countersink leading to the threads a slight click can be heard or felt.

CYCLE COMPUTER INSTALLATION INSTRUCTIONS **Figure 9**

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.
4. 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.

FIGURE 12: CYCLE COMPUTER MOUNTING



DRILL TEMPLATE

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.

