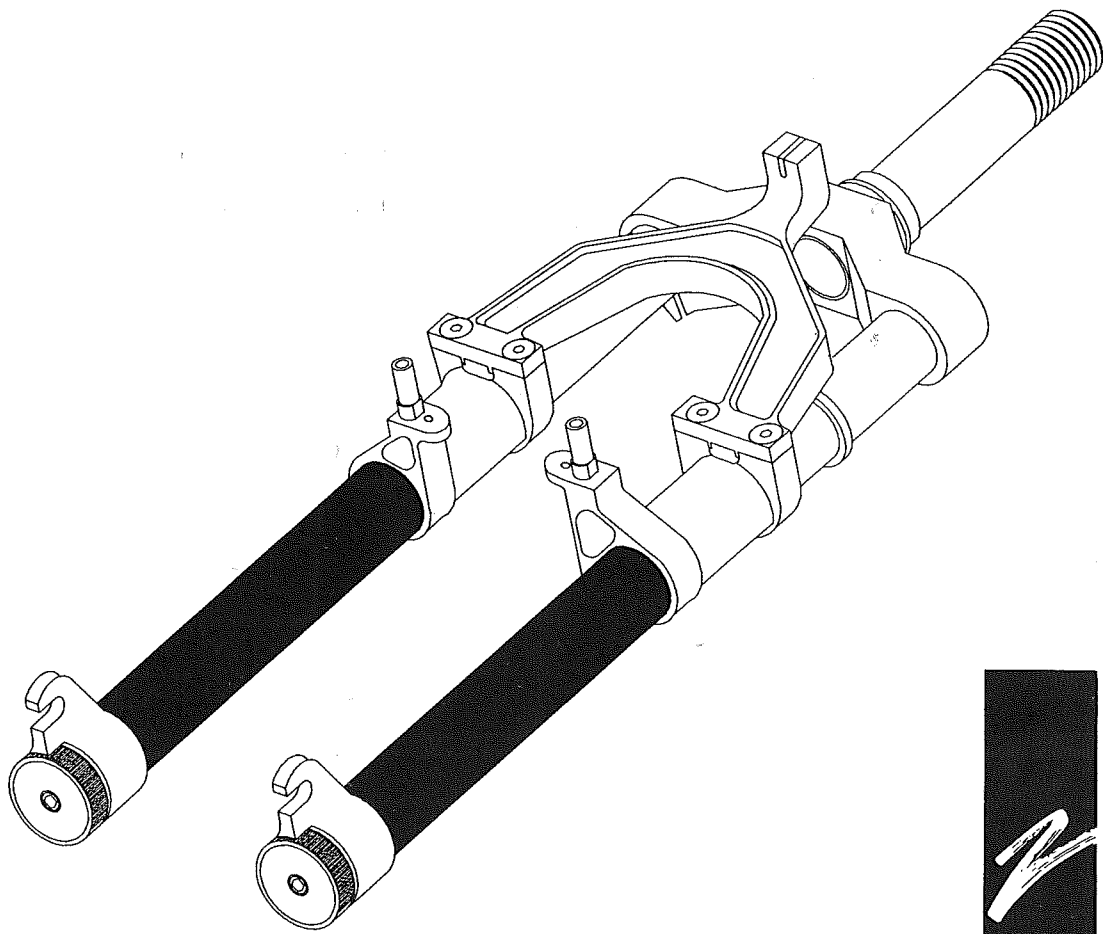


ANSWER

MANITOU

PRECISION SUSPENSION FORKS

OWNERS MANUAL



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MANITOU 2 PRECISION SUSPENSION

The Manitou Suspension Fork is **CNC** machined from high strength 6061 T6 Aluminum. The outer leg is specially precision drawn Easton E9 Aluminum. This anodized tubing is press fit into the brake flange and dropout to form a strong maintenance free outer leg assembly. The inner legs are 4130 Chromoly that are hard chrome plated for durability and rust free service.

The suspension spring rate and dampening are provided by polyurethane elastopolymers. These specially matrixed polymers provide simple yet effective and maintenance free off-road performance. Travel is 1.75 inches. Different elastopolymers can be combined in the dampening stack to adjust the ride stiffness and rebound performance. Fine tune adjustments can be made using the adjuster knob located at the bottom of the dropout. The upper and lower UHMW bushings insure exact alignment between inner and outer legs, and minimize front end flex. The 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); 1.125 (O.S.); 1.250 (EVO) and in four lengths, 5½"; 6½"; 7½"; 8½". Different density polyurethane compression 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. Adapt proper reflecting if the bicycle is going to see road use at any time.

INSTALLATION INSTRUCTIONS

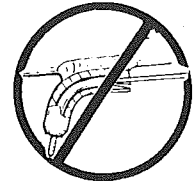
Insure that the proper Steer Tube diameter and length has been delivered with your Manitou and that the Lower Race Ring is seated on the Crown.

NOTE: The steer tube is a one time precision press fit and cannot be removed from the crown. Replacement of the entire crown/steer tube assembly must be done to change steer tube sizes. If you are not familiar with the procedure or do not have the proper tools to cut the steer tube to the exact length to fit your particular bicycle, it is recommended that you seek a qualified bicycle mechanic to perform the installation.

INSTALLATION INSTRUCTIONS (cont.)

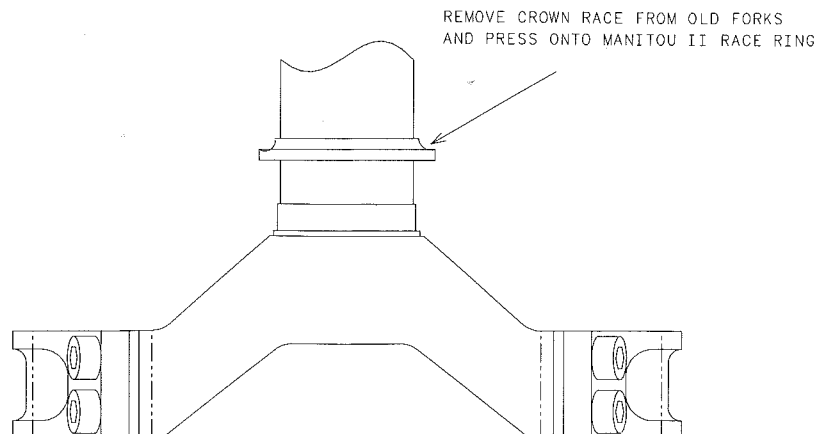
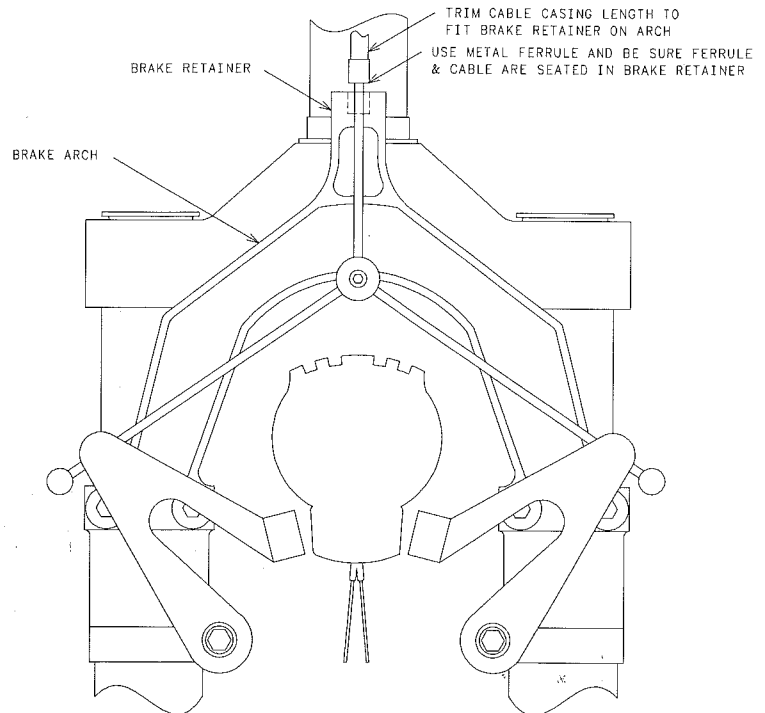
1. Remove old forks from bicycle.
2. Measure and cut the steer tube to fit bicycle.
3. Remove crown race from old forks and press onto Manitou 2 race ring until seated.
4. Clean and grease headset bearings and races of bicycle.
5. Install lower bearings on crown race.
6. Insert steer tube into head tube of frame.
7. Install upper bearings and race, tighten until slack just disappears.
8. Install washer and head lock nut.
9. Install stem and handlebars to desired height and torque stem bolt to 240 to 280 inch-lbs.

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.

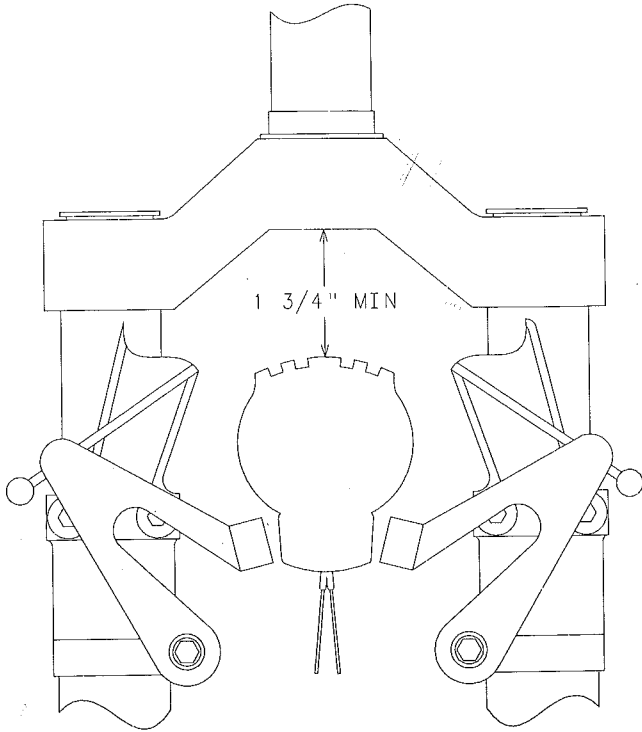


NOTE: The Manitou 2 Fork is equipped with a secondary catch dropout.

10. Adjust front wheel quick release levers to clear the 1/4" secondary catch dropout. The quick release must be tightened after it is properly seated into the counter bore. 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 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.
13. Install and adjust cantilever brakes per your bicycle or cantilever brake owners manual. Torque the 6MM bolt to 70 inch-lbs. max. Insure that outer cable is properly seated in the brake cable retainer and is free and works properly through the full range of handlebar movement.



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.



IMPORTANT: When installing wheel or any new tire be sure to check the minimum tire clearance is at least 1 3/4 inches 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 fork leg engagement at the crown. Either case constitutes an unsafe condition.

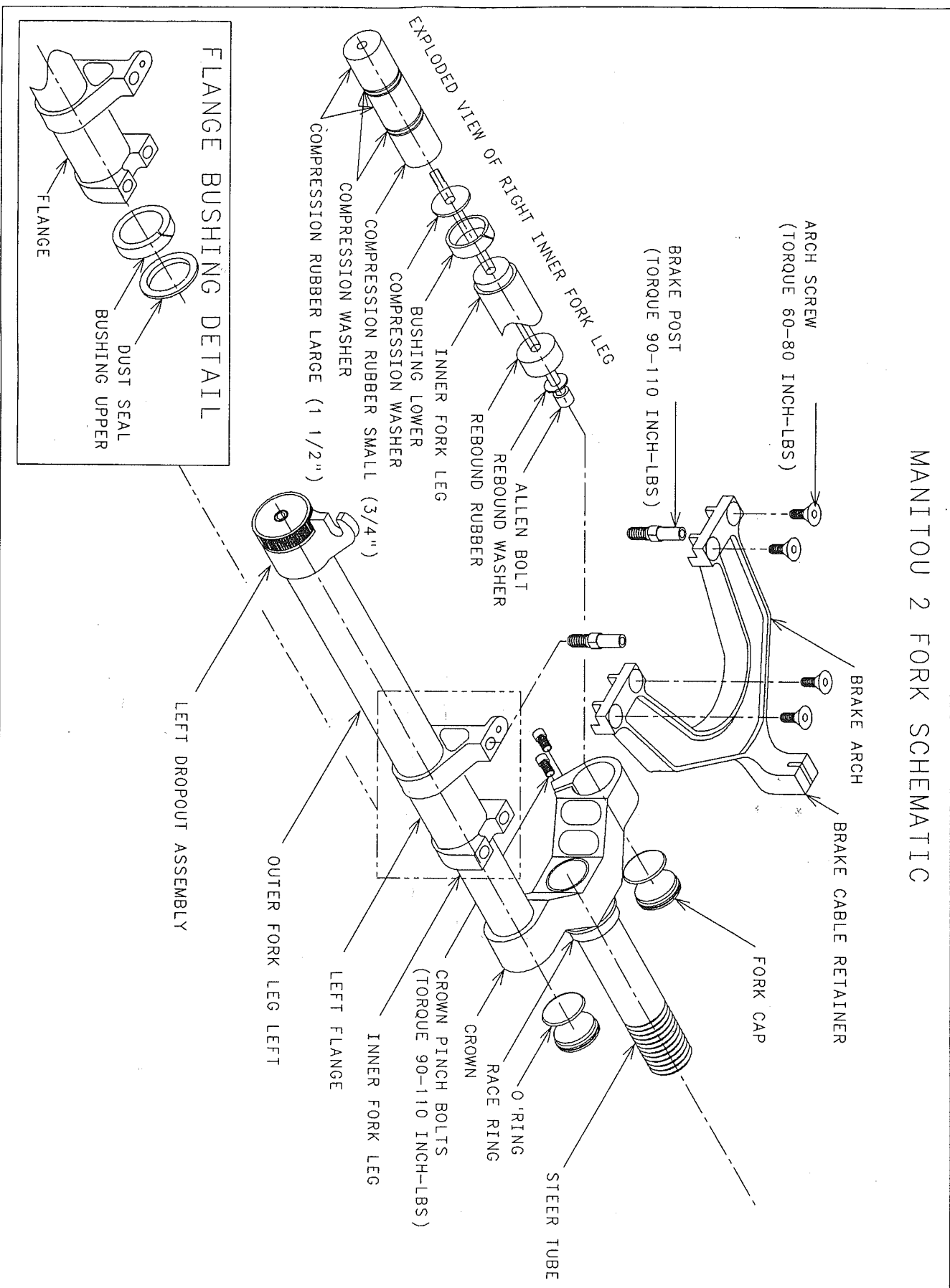
MANITOU 2 SPARE PARTS	
Part Name	Part Number
Brake Arch	040408
Brake Arch Screw	040452
Brake Post	040442
Crown Pinch Bolts (6MMx20MM)	040454
Inner Leg	040412
Inner Leg Bolt (6MMx120MM)	040172
Dust Seal	040166
Fork Cap Assembly	85-3321
Bushing Lower	040154
Bushing Upper	040155
Compression Rubber (1 1/2")	040175
Compression Rubber Small (3/4")	040197
Rebound Rubber	040163
Washer Compression	040165
Washer Rebound	040161
Outer Leg Assembly Left	040444
Outer Leg Assembly Right	040445
Dropout Adjuster Assembly	85-3320
Dropout Adjuster Knob Assembly	85-3322
Adjuster Bushing	040432
Inner Leg Bolt Hex Key	040171
Owners Manual	040450

<p>CAP ASSEMBLY</p>	<p>DROPOUT ADJUSTER ASSEMBLY</p>	<p>KNOB ASSEMBLY</p>
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CROWN/STEERER ASSEMBLY GUIDE			
STEER TUBE LENGTH	STEER TUBE DIAMETER		
	1.000 in. (25.4MM) (standard)	1.125 in. (28.6MM) (over size)	1.250 in. (31.8MM) (evolution)
5.5 inch (140MM)	85-3300	85-3304	85-3308
6.5 inch (165MM)	85-3301	85-3305	85-3309
7.5 inch (190MM)	85-3302	85-3306	85-3310
8.5 inch (216MM)	85-3303	85-3307	85-3311
Race Ring	040136	040137	040138
Crown Race Inside Dia.	(26.5MM)	(30.0MM)	(33.0MM)

CROWN/STEERER ASSEMBLY (INCLUDES ALL PARTS SHOWN)

MANITOU 2 FORK SCHEMATIC



MAINTENANCE

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.

NOTE: The cantilever brakes, brake arch, and inner leg tubes *DO NOT* need to be removed for general disassembly or cleaning. We recommend you *AVOID DISASSEMBLING* these components unless absolutely necessary.

Before every ride you should:

1. Wipe the inner legs clean.
2. Visually inspect for obvious damage.
3. Check tightness of front wheel quick release.
4. Check headset slack.
5. Insure that the front brake cable is properly seated in the cable retainer.
6. Check cantilever brake adjustment.
7. Check crown bolt torque, 90-110 in-lbs.

When cleaning the fork seal area, it is ***NOT RECOMMENDED*** to direct water spray at the seals.

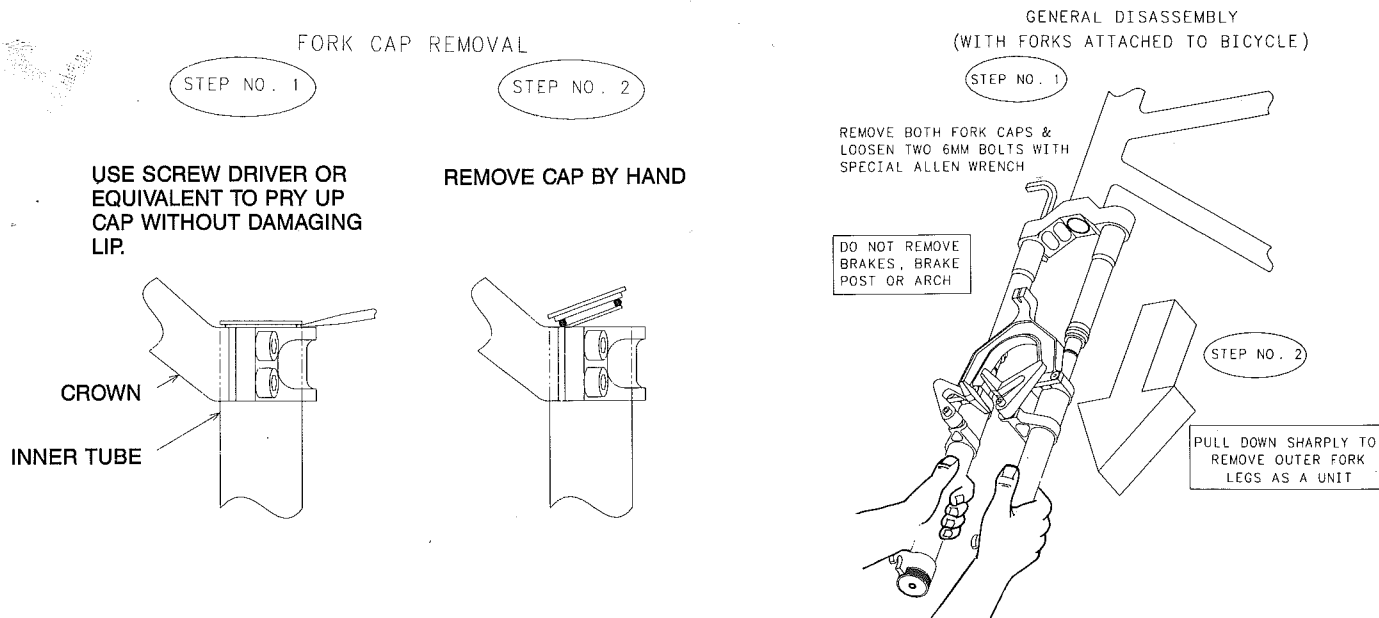
NOTE: The Manitou should not be used if any parts are damaged. Contact your local dealer for replacement parts.

GENERAL DISASSEMBLY

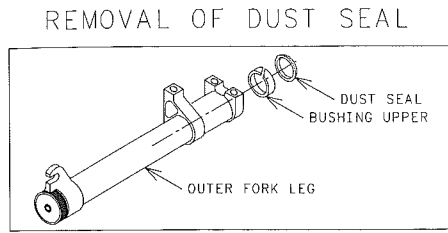
Removal of outer leg:

Note the cantilever brakes, brake arch, and inner tubes do not need to be removed for disassembly. It is recommended that brake arch bolts, brake post, and crown pinch bolts be left torqued to preserve thread locking. Fork crown and inner legs may be left installed on bicycle during disassembly.

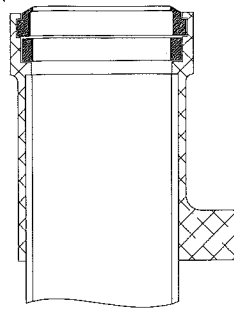
1. Gently pry to remove both fork caps.
2. Use special 5MM allen wrench to loosen 6MM×120MM bolt. Bolt and dropout adjuster knob may turn freely until adjuster bottoms at extreme firm ride setting.
3. Remove outer leg assembly by pulling it off of the inner legs. Outer legs should slide freely off of inner legs with a sharp pull at the end to pull lower bushing off of its race and complete fork tube disassembly.



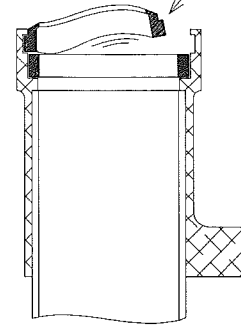
GENERAL MAINTENANCE (cont.)



DUST SEAL IS HELD
IN PLACE BY GROOVE



REMOVE BY HAND



Removal of Dust Seal & Upper Bushing

The dust seal is captured by a groove in the flange and holds the upper bushing in place. It is soft and pliable and may be removed by hand.

1. Remove dust seal by hand taking care not to damage the sealing area with sharp or metal tools.
2. Remove the upper bushing.

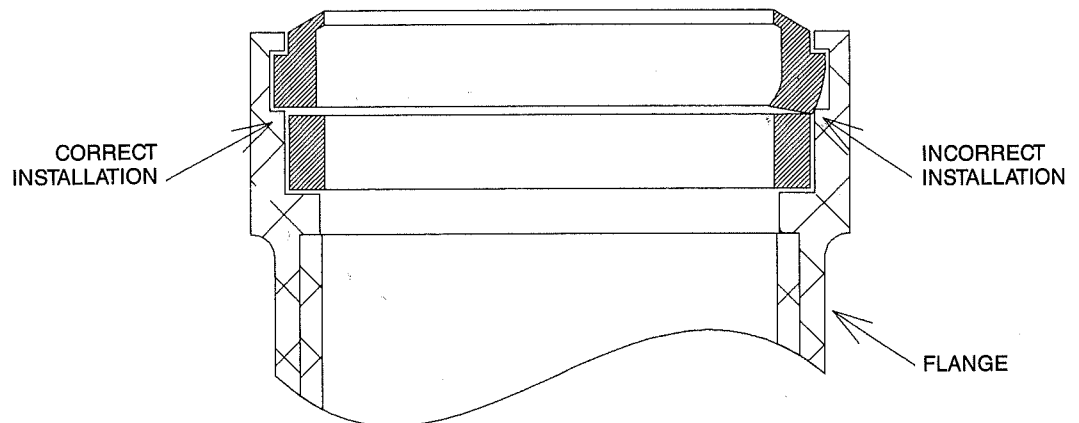
Removal of Compression Rubber and Lower Bushing

The compression rubber fits loosely over the 6MM×120MM bolt.

1. Slide compression rubbers off of 6mm bolt.
2. Remove compression washer and small compression rubber.
3. Remove lower bushing.
4. Turn inner leg upside-down if removal of 6MM bolt and rebound rubber is required.

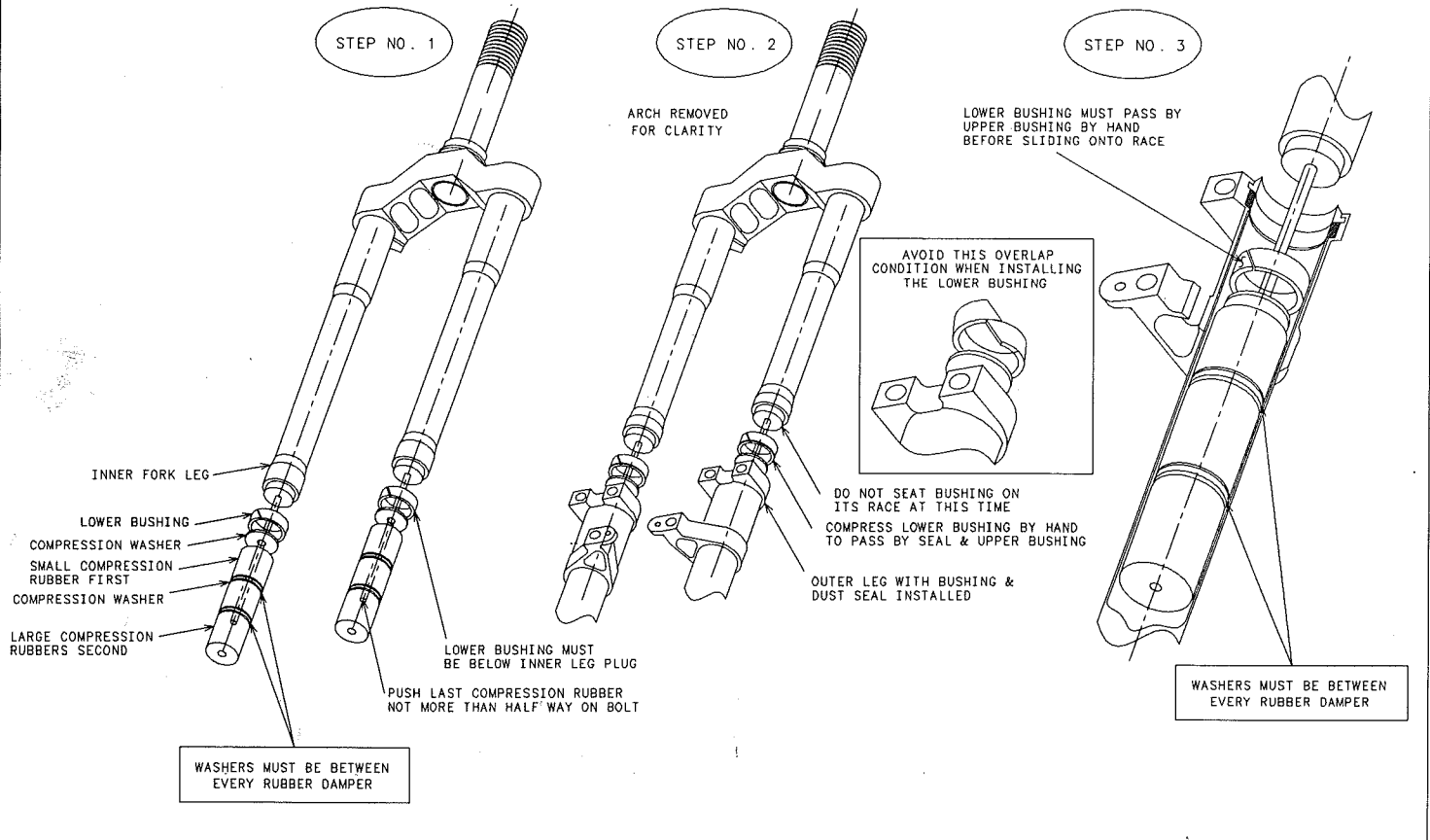
RE-ASSEMBLY

1. Clean all parts thoroughly.
2. Inspect inner and outer legs for excessive scratching or gouging.
3. Replace the bushings and dust seal if excessively worn or damaged.
4. Select new compression rubbers to change fork performance if desired.
5. Grease all parts lightly but thoroughly with a good quality waterproof molybdenum or lithium grease.
6. Place upper bushing into flanges and install dust seal. Be sure that dust seal is fully seated in its groove as shown in the illustration.



This illustration shows correct seal installation at the left, and incorrect installation at the right. Use a finger to run around the seal once installed to confirm that seal is properly installed and fully seated all around.

FORK LEG ASSEMBLY INSTRUCTIONS



7. Slide rebound washer and rubber onto 6MM bolt and drop into inner leg. Shaking it gently will help the bolt find the hole in the inner leg plug.
8. Slide on the lower bushing, compression washer, small compression rubber, intermediate compression washer and large compression rubbers. Compression washers must be between all compression rubbers. Slide last large compression rubber only half way onto bolt to leave enough room to work with the lower bushing.
9. Repeat process for second leg.
10. Turn dropout adjuster knob counter-clockwise to the extreme soft setting.
11. Slide lower legs over compression rubber stack.

NOTE: Do not slide the lower bushing onto the inner leg plug. The fork will not be able to be assembled with the lower bushing seated on the inner leg plug.

IMPORTANT: Lower bushing must pass through upper bushing by hand *BEFORE* sliding on race of inner leg. It will not go through the upper bushing any other way. (See step 2 & 3).

12. Squeeze lower bushings by hand and push them past the upper bushings taking care not to overlap ends (see step 3 window).
13. With both lower bushings past upper bushings start one inner leg into dust seal. Hold in that position while gently starting other inner leg into other dust seal taking care not to damage the dust seals.
14. Continue to slide lower legs until bottomed on the compression rubbers.

REASSEMBLY (cont.)

15. By hand push both legs up until inner legs bottom out. With continued bottoming pressure on lower legs, using the special allen wrench force the long allen bolt down through the elastomer damping stack with strong downward pressure while turning to start threading the long allen bolt into the dropout adjuster assembly. Once started, turn only two to three revolutions before moving to the other leg. Repeat process. Once both allen bolts are started satisfactorily, tighten and torque to 30-40 in-lbs.

IMPORTANT: After torqueing, the dropout adjuster will be locked in the extreme soft ride setting. By hand rotate the dropout adjuster knob clockwise to unlock the adjuster screw. Using the special allen wrench and applying slight rotation as if unscrewing the long allen bolt will help unlock the adjuster.

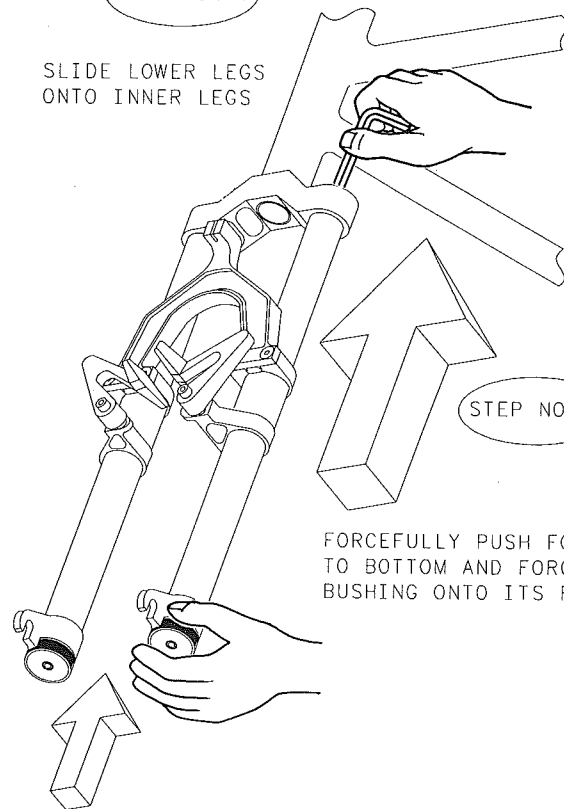
NOTE: Properly tightening the long allen bolt will seat the lower bushing in its permanent position and set the dampen stack preload. Fine tuning of the preload is accomplished with the dropout adjuster mechanism.

16. Replace fork caps.

RE-ASSEMBLY (WITH FORKS ATTACHED TO BICYCLE)

STEP NO. 1

SLIDE LOWER LEGS
ONTO INNER LEGS



STEP NO. 2

FORCEFULLY PUSH FORKS UP
TO BOTTOM AND FORCE LOWER
BUSHING ONTO ITS RACE

BRAKE ARCH

NOTE: Manitou 2, Manitou 1, and MSport brake arches are not interchangeable.

Removal:

1. Disconnect the cantilever brake cable from 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 60-80 in-lbs.
5. Replace cantilever brake cable in brake retainer.

INNER FORK LEG

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

Disassembly:

1. Loosen the four 6mm allen screws located in the crown.
2. With twisting movement remove the inner fork legs. Fork caps may be left in place.

Reassembly:

1. Clean mating surfaces of crown and inner fork legs.
2. Install inner fork legs into crown so top of chromoly tube is flush with crown surface.
3. Rotate inner legs until the 1/8" dia. vent holes are lined up with crown pinch bolt slots. (See Step 2, pg. 9.)
4. Tighten and torque four 6MM allen bolts to 90-110 in-lbs.

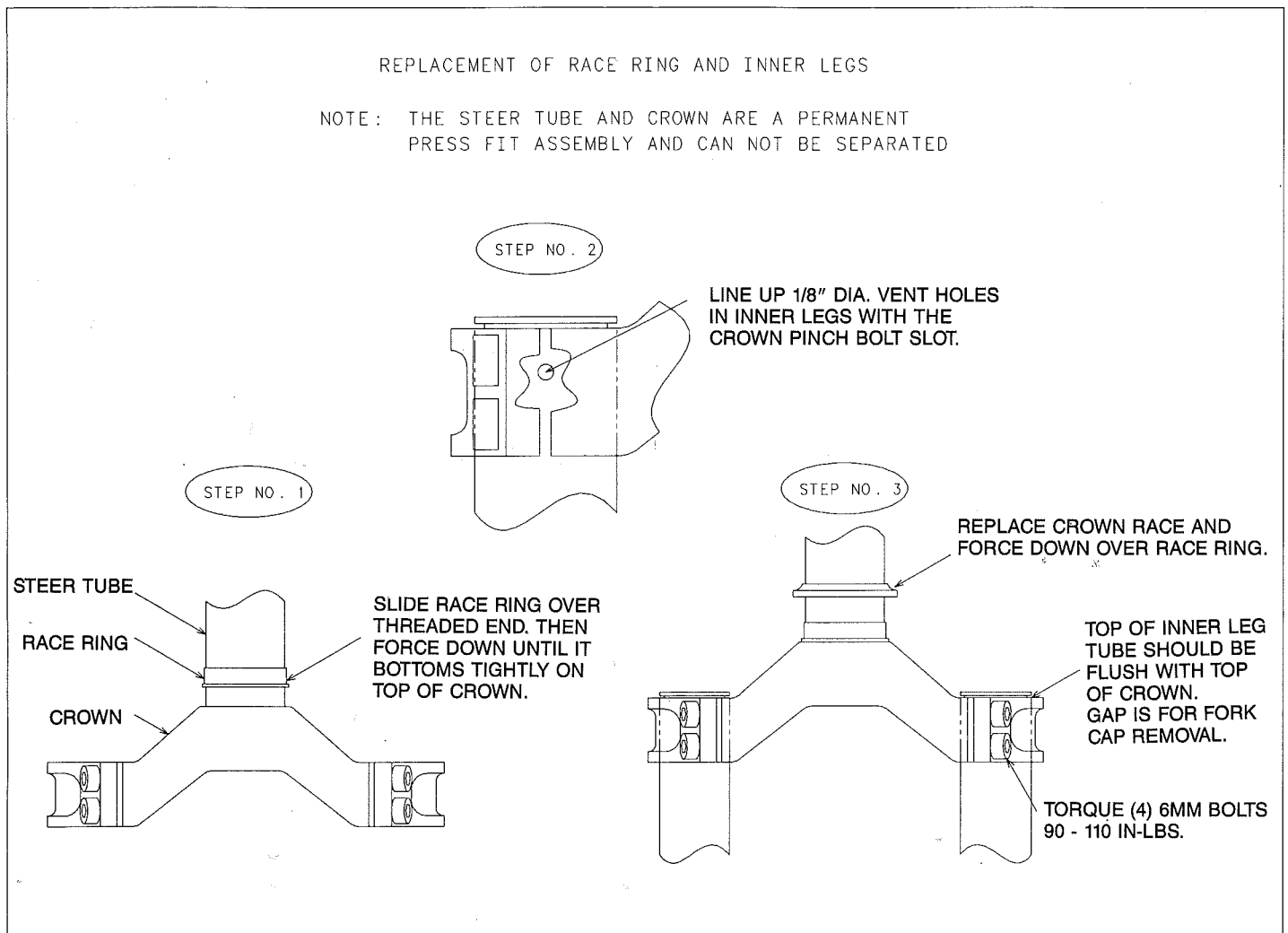
WARNING: Do not over tighten crown pinch bolts to the point of bottoming crown slot.

STEER TUBE AND RACE RINGS

The steer tube is precision press fit into the crown and can not be disassembled. Disturbing the press fit will result in unacceptable holding power for future use. Changing steer tube diameter and length can only be accomplished by replacing the crown steer tube assembly. Removal of the race ring from the steer tube will probably damage it beyond use. It is recommended that a new one be used if removed.

Race Ring Replacement:

1. Remove crown race.
2. Pry race ring up from top crown surface.
3. Using a crescent shaped drift or equivalent, tap race ring off end of steer tube.
4. Obtain new race ring.
5. Install race ring over threaded end of steer tube and without damaging tap down until firmly seated on top of crown.
6. Press crown race onto race ring until firmly seated.



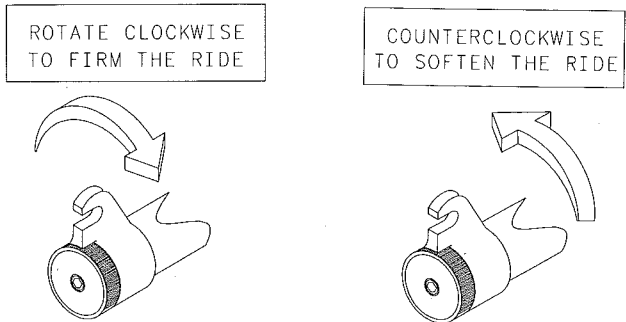
WARNING: Do not raise or lower the fork tubes in the crown. This could cause lack of proper tire clearance when the fork compresses or reduces the amount of fork leg engagement at the crown. Either case constitutes an unsafe condition.

ADJUSTING THE RIDE QUALITIES

Manitou forks offer a wide adjustment range to suit individual riding preference and weight by simply changing the urethane elastomers. Additional fine tune adjustment can be obtained by using the dropout adjuster mechanism. Each production fork comes with urethane cartridges (red) appropriate for an aggressive rider of 155-180 lbs. The production model also includes a pair of softer cartridges (blue) and stiffer cartridges (yellow) to customize the ride.

Fine Tuning:

Fine tuning adjustments can be made by rotating the adjuster knob. Rotating the knob clockwise will firm the ride adding preload to the damping stack. This will firm the ride throughout the full range or travel. Rotating the knob counterclockwise will soften the ride. Five revolutions of the knob will take the adjuster from the full soft to the extreme firm ride setting changing the preload by 1/2-inch. 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.

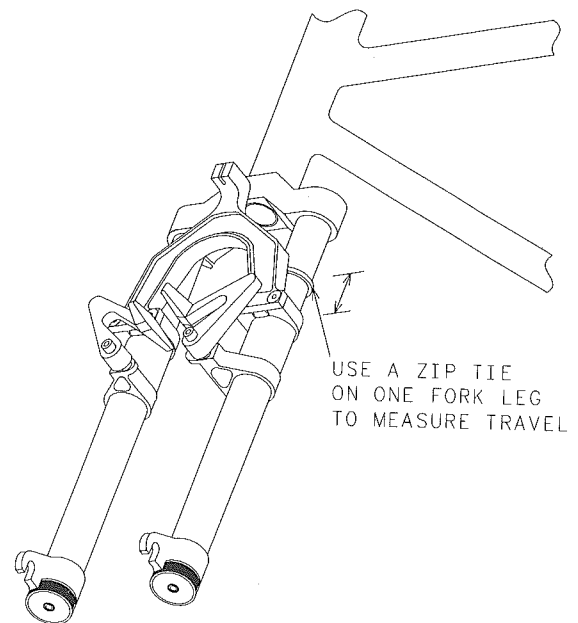


Coarse Tuning:

Although the Manitou 2 may feel like it is working good you want to tune it to take full advantage of the travel. Placing a "zip tie" on one of the fork legs is a good travel indicator. You should be getting 1 1/4" to 1 1/2" of travel during normal riding. Large hits or gullies should use full travel up to 1 3/4". If your fork is too firm or too soft and needs coarse tuning adjustment follow the steps in the "General Disassembly and Reassembly" section. This will expose the damping stack and allow you to change the elastomers and reassemble the forks easily. Begin by changing the short elastomers that were included with your Manitou fork. The blue polymer will soften the ride while the yellow polymer will firm up the ride. If you find that further adjustment is necessary you can purchase from your local dealer a "Soft" or "Firm" Ride Kit that allows you to change out all the polymers in two different densities. It is possible to mix the various colors (densities) of polymers to achieve the exact ride qualities you desire but always use a compression washer between every polymer. A total of twelve polymers are included in each Ride Kit. Part No.'s and descriptions are in the chart at right. See page two for ordering information.

The Manitou's polymers can get stiffer in extreme cold temperatures. If you ride during winter months where temperatures are consistently lower, you might consider using the next level softer polymers until normal riding temperatures return.

ELASTOMER ADJUSTMENT KIT SPECIFICATIONS			
COLOR	STIFFNESS	RIDE KIT	PART NO.
Black	Extra Soft	Soft Ride	85-3501
Blue	Soft		
Red	Medium	Stock	040175 (4) 040197 (2)
Yellow	Firm	Firm Ride	85-3502
Brown	Extra Firm		



TROUBLE SHOOTING

The dropout adjuster knob is locked and will not turn.

During the assembly and torquing of the 6MM bolt the adjuster knob will lock in the extreme soft ride setting. If it is locked too tightly to turn by hand either use a 3MM allen wrench in the knob screw or remove the fork caps and use the special 5MM allen wrench to apply just enough counterclockwise rotation to the 6MM bolt to help unlock the adjuster while turning the adjuster knob **clockwise** by hand.

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

Excessive or lack of preload will result in a "top out" if the dropout adjuster has been set to the extreme firm or soft ride setting to fit your weight and riding style. Disassembling the fork and replacing either one or all of the polymers with the next firmer color and using medium preload will eliminate the topping.

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

The lower bushing is not properly seated on its race. Disassemble the fork per instructions and check the bushings for damage. Check to see if the lower bushing was incorrectly installed and the ends overlapped. Replace bushings if damaged and reassemble per instructions.

Fork seems harsher and not as compliant as when it was new:

Your fork might need to be cleaned and lubricated to return to optimum performance. Disassemble per instructions, clean all components in solvent, and dry well. Inspect the dust seals carefully and replace if worn or damaged. These are what keep the inner workings of the fork clean and free of contamination. Grease the 6MMx120MM bolt, all bushings, and seal surfaces with a high quality molybdenum or lithium waterproof grease and reassemble per instructions.

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

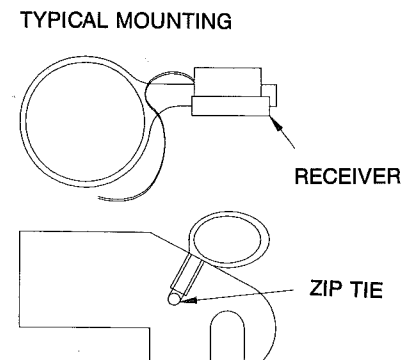
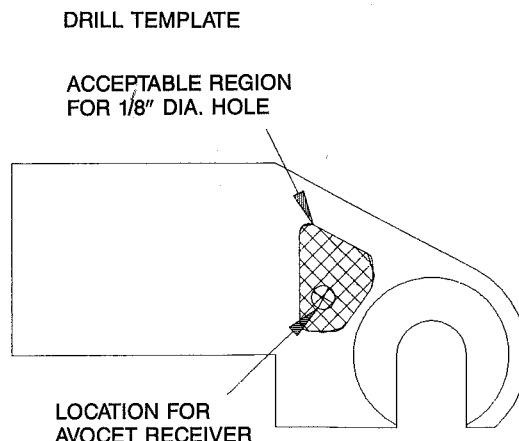
Trying to get this bolt started in a blind hole at the bottom of a long tube is tricky at best. Follow the instructions on page 7 carefully. Some helpful hints are:

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

1. Follow the instructions in your owners manual with the following exceptions:
2. Remove the front wheel and locate receiver on the top of the right dropout.
3. Use the template to check that any holes drilled in the dropout are in the acceptable region.
4. Use a center punch or nail to punch mark the location of the hole in the right dropout.
5. Drill 1/8" dia. hole through the dropout.
6. Attach the receiver to the dropout by passing a zip tie through the hole and the receiver and tighten it securely (see sketch).
7. Attach the wire to the wheel side of the fork leg using the 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" 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.



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