

MANITOU

POSI-LINK ANSWER

COMP & PRO XC

MACH



SERVICE MANUAL

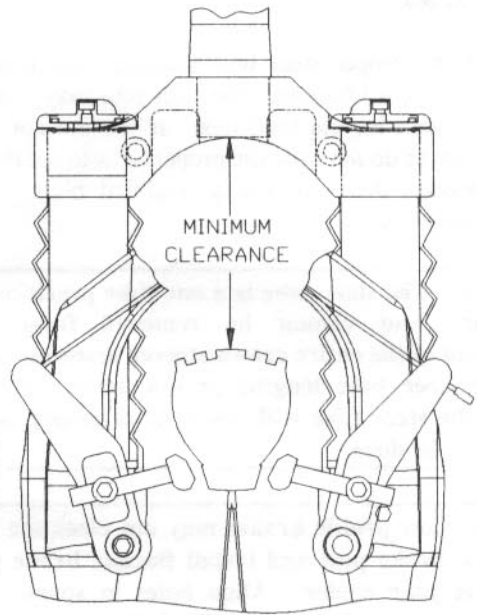
ANSWER PRODUCTS INC. VALENCIA, CA 91355
PHONE 805 257-4411 FAX 805 257-4011

FIGURE 3: TIRE CLEARANCE

IMPORTANT: When installing wheel or any new tire be sure to check the minimum tire clearance per the table in figure 3. Measure from the highest point on the tire to the bottom of the crown.

WARNING: Do not lower the fork tubes in the crown. This reduces the amount of adjuster engagement in the leg and constitutes an unsafe condition that may cause rider injury.

FORK MODEL	MIN CLEARANCE
MANITOU PRO	2 1/2" (63.5)
MANITOU COMP	2 1/8" (54MM)



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. **NOTE: ELASTOMER SPARE PARTS APPEAR IN TABLES 3 AND 4 ON PAGE 10.**

TABLE 1: SPARE PARTS

PART NAME	PART NUMBER
BRAKE POST, ALL FORKS	040921
BRAKE POST SPACER, ALL FORKS	040943
CROWN PINCH BOLTS (6MMx25MM), ALL	040809
INNER LEG, MANITOU PRO	040916
INNER LEG, MANITOU COMP	040961
COMPRESSION ROD, PRO & COMP	040923
COMPRESSION ROD SCREW, PRO & COMP	060268
2ND STAGE ELASTOMER CLIP, PRO & COMP	040968
DUST SEAL RETAINING RING, PRO & COMP	040929
DUST SEAL, PRO & COMP	040920
DUST SEAL COVER, COMP	040648
FORK BOOT	040922
FOAM DONUT WIPER	040976
BUSHING UPPER & LOWER, PRO & COMP	040918
BUSHING SPACER, PRO & COMP	040919
ADJUSTER CLIP, PRO & COMP	040808
ADJUSTER CAP, PRO & COMP	040951
ADJUSTER BODY, PRO & COMP	040952
ADJUSTER BODY O-RING	040688
ADJUSTER CAP O-RING	040524
OWNERS MANUAL, 96 PRO & COMP	040955
BRAKE POST SPACER KIT	85-3545
COMP 96 OUTER LEG / ARCH ASSEMBLY	85-3600
PRO 96 OUTER LEG/ARCH ASSEMBLY	85-3601
FORK BOOTS, BLACK 96 FORKS	85-3609
PRO & COMP ADJUSTER ASSEMBLY KIT	85-3610

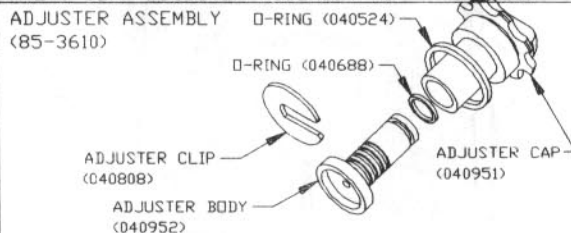


TABLE 2: CROWN/STEERER ASSEMBLY GUIDE

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)	85-3560	85-3570	85-3580
6.5 IN (165 MM)	85-3561	85-3571	85-3581
7.5 IN (190 MM)	85-3562	85-3572	85-3582
8.5 IN (216 MM)	85-3563	85-3573	85-3583
12.0 IN CM (305 MM) THREADLESS	85-3565	85-3575	85-3585
12.0 IN AL (305 MM) THREADLESS		85-3576	85-3586

CROWN/STEERER ASSEMBLY
FITS ALL 96 CROSS COUNTRY FORK MODELS
(INCLUDES ALL PARTS SHOWN)

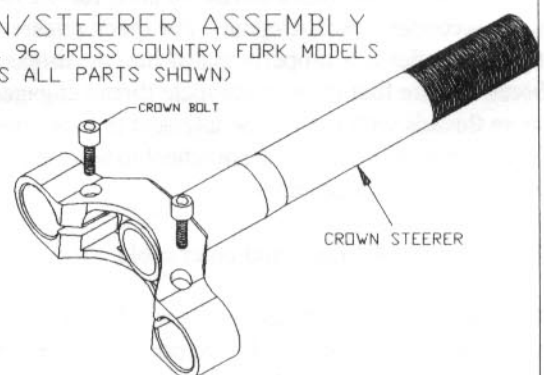


FIGURE 4: MANITOU PRO FORK SCHEMATIC

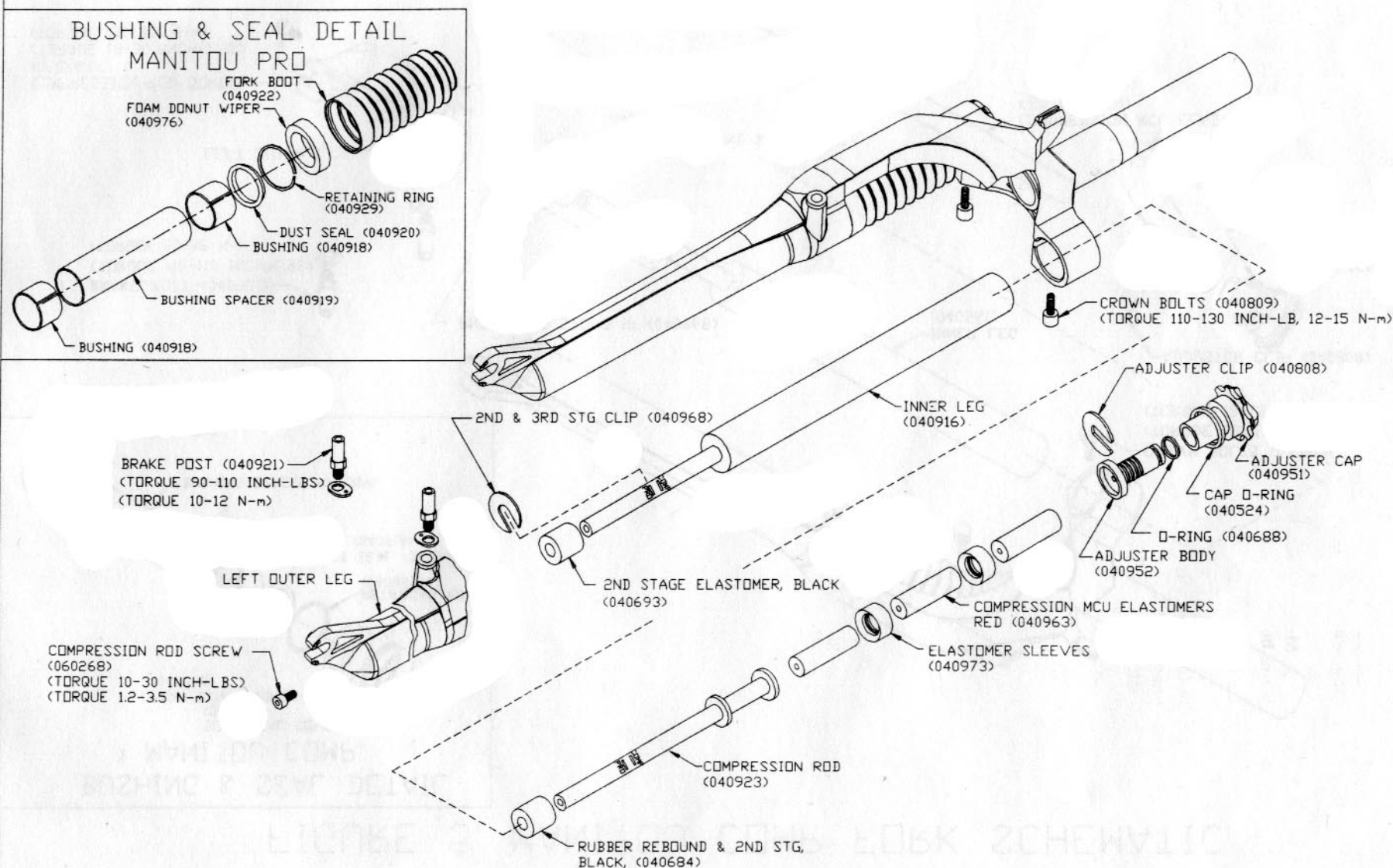
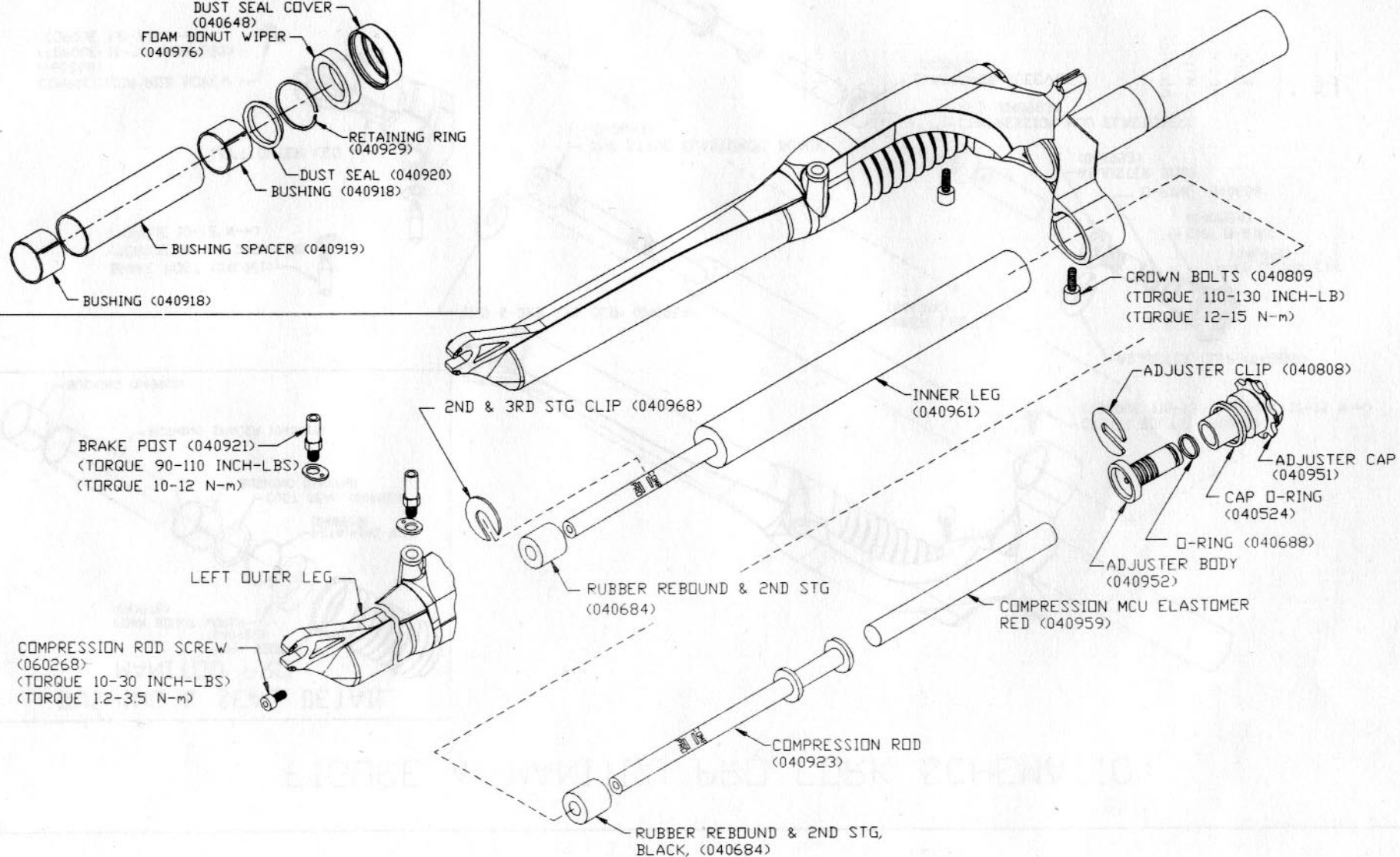
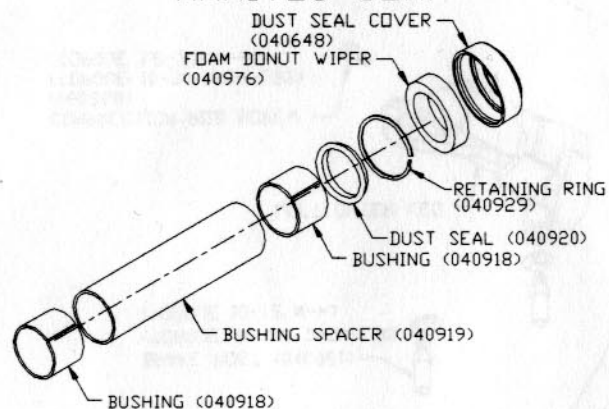


FIGURE 5: MANITOU COMP FORK SCHEMATIC

BUSHING & SEAL DETAIL MANITOU COMP



MAINTENANCE

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

Your Manitou Fork is nearly maintenance free. However, moisture and contamination may build up inside the fork. Although this may 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: Frequent cleaning and re-oiling of the foam donut wiper located under the fork boots or dust seal covers will keep the fork performing well and prevent wear and damage to internal parts.** 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 any obvious damage.
3. Check headset slack.
4. Insure that the front brake cable is properly seated in the cable retainer & check brake adjustment

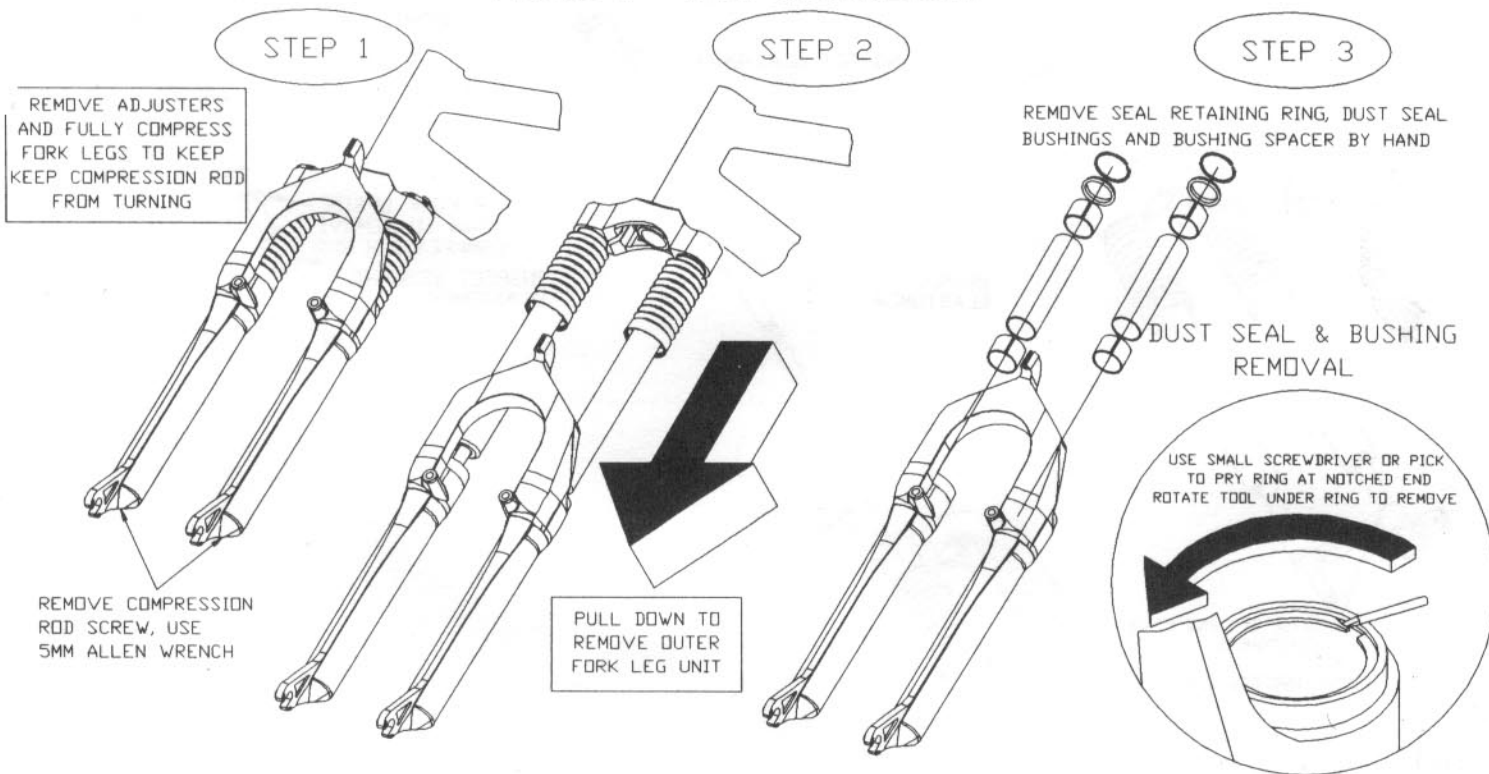
GENERAL DISASSEMBLY

NOTE: The Fork does not need to be removed from the bicycle for general disassembly-assembly or cleaning and the inner legs may be left in the crown. It is also not necessary to disassemble the 96 Manitou Forks for compression elastomer replacement. Elastomer replacement is accomplished by removing the adjuster assembly per figure 7

Removal of outer leg / arch assembly Figure 6:

1. Remove both 6MM lower compression rod screws. Bottom out fork to prevent the compression rod from turning while removing screws.
2. Pull outer leg assembly down to remove from the inner legs and crown.
3. Remove fork boots or dust seal cover and foam donut wiper inside boot and dust seal cover.
3. Use a small screwdriver or point tool to remove retaining ring (Figure 6).
4. Remove dust seal and upper bushing.
5. Remove bushing spacer by hand.
6. Remove lower bushing. It may be necessary to use a small hook, like a spoke, to catch the bottom edge of bushing and pull it out.

FIGURE 6: FORK DISASSEMBLY



Compression Elastomer & Compression Rod Removal Figure 7:

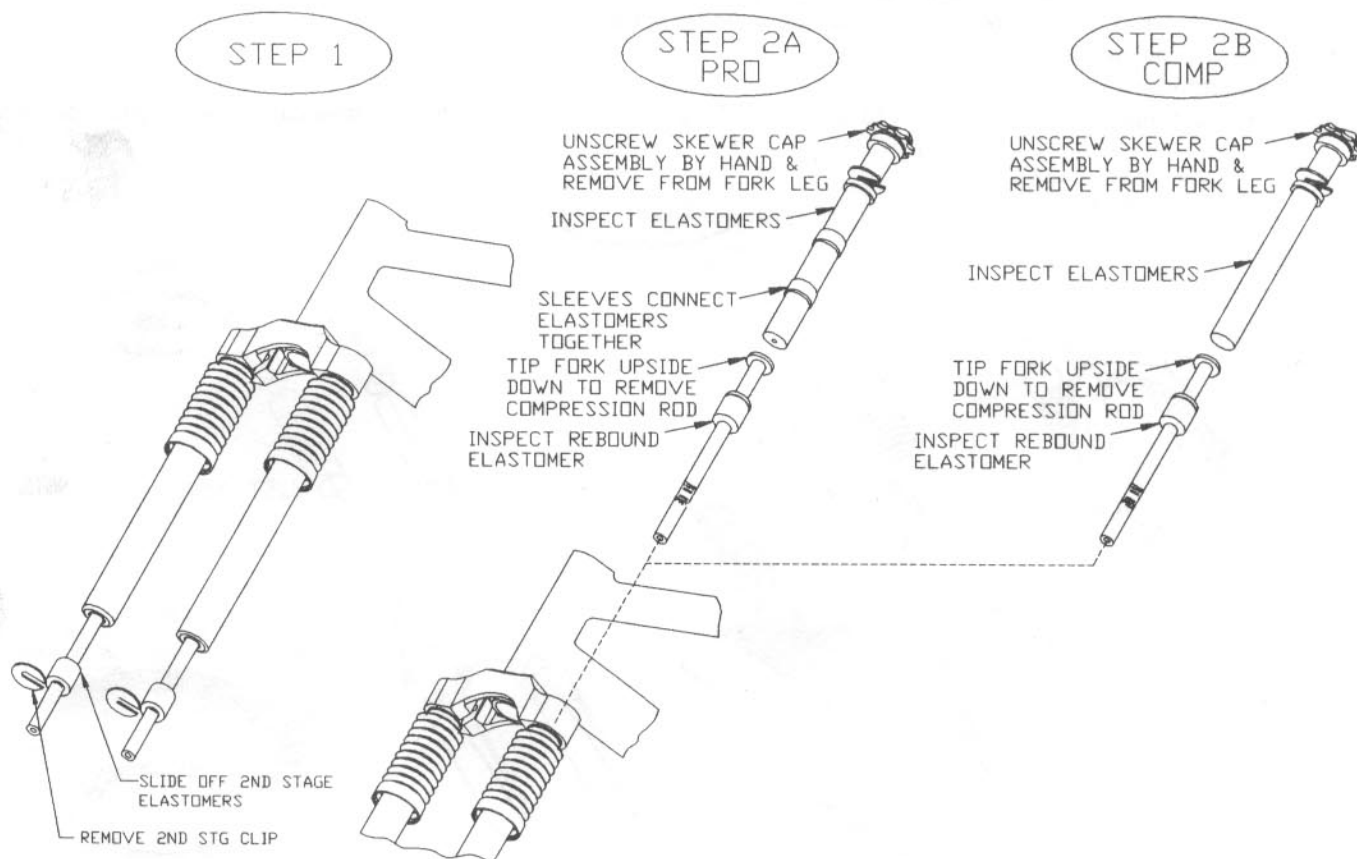
1. Remove 2nd stage clip from the groove in compression rods.
2. Slide off the second stage elastomers.
3. Unscrew and remove the adjuster assemblies by hand.
4. Turn fork upside down to remove the compression rods. If forks are installed on the bicycle give the rods a quick upward thrust and catch them as they pop up above crown.

INSPECTION

1. Check the fork boots or the dust seal covers and foam donut wiper for tears, wear through or obvious damage.
2. Check the dust seal for tears or damage. Replace if needed.
3. Inspect the lower and upper bushing for excessive wear or damage. **Note: The upper and lower bushing are identical and may be interchanged.** Check the drag between the bushings and the inner legs. 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 adjuster clip and grooves in the adjuster body. Replace if bent or damaged.
6. Check the outer leg / arch assembly for nicks or deep gouges on outside and inside. Replace if damaged.
7. Check the inner leg O.D. for deep gouges, check for other obvious damage. Minor wear resulting in color change is not detrimental to the gold hard anodized surface. Replace if wear is excessive or legs are damaged.
8. Check the inner legs at the bottom of the crown for cracks or for flaking anodize. Replace if cracked or if gold anodize coating is beginning to flake.
9. Check compression rod 2nd stage clip grooves for damage. Replace if damaged.
10. Insure that 2nd stage clips are flat and tightly engage the compression rod groove. Replace if bent or loose on compression rod.
11. Check the underside of the crown for cracks. Replace if cracked.

Note: Using your fork with any damaged or cracked parts is dangerous and could result in serious injury. Contact Answer Products Technical Service if you have any questions concerning the safety of your fork.

FIGURE 7: ELASTOMER & COMPRESSION ROD REMOVAL



RE-ASSEMBLE

Note: If you do not feel qualified, do not have the proper tools, or have problems re-assembling your fork you should take it to a qualified bicycle mechanic that has experience working on mountain bike suspension systems.

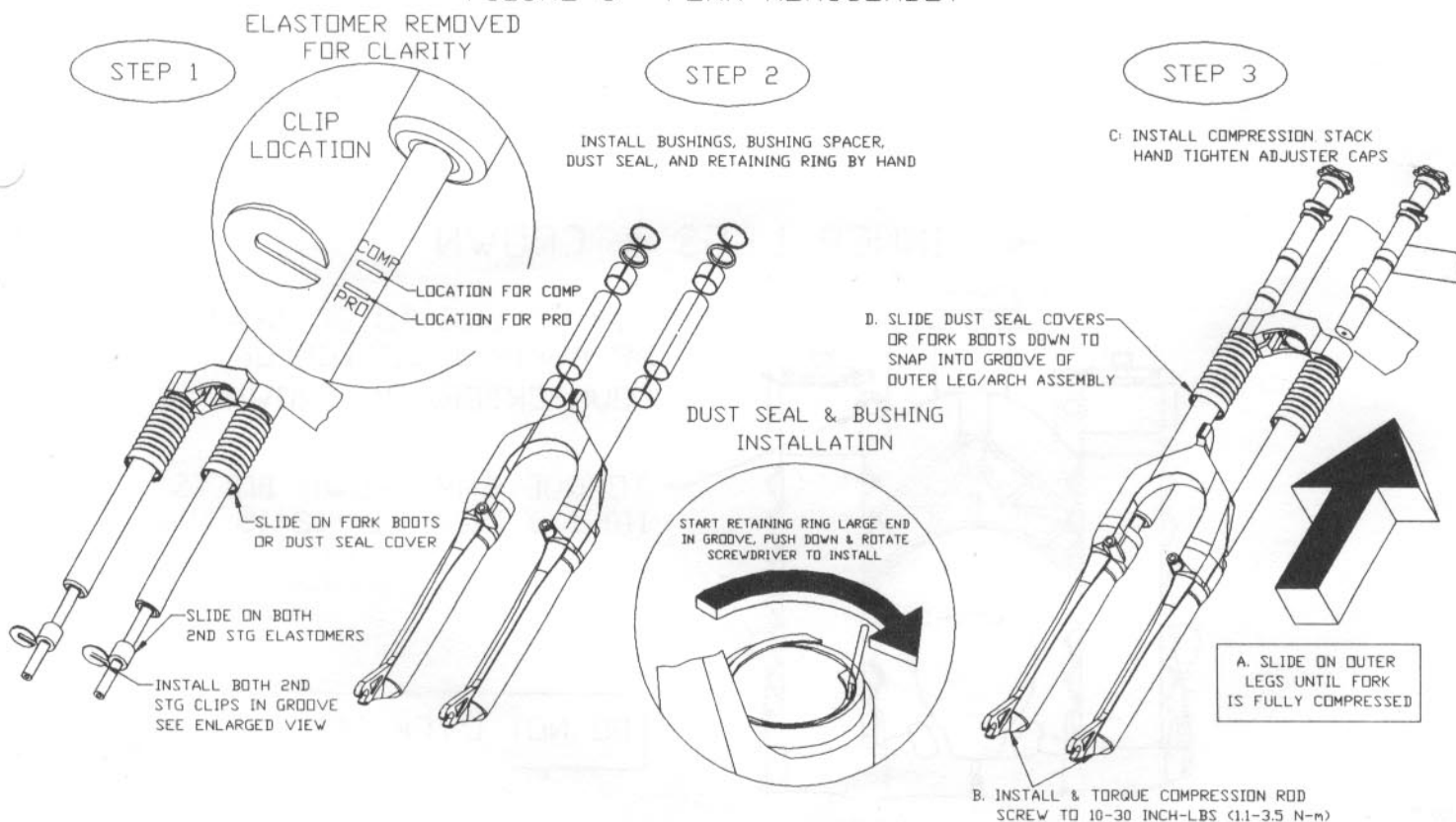
Compression Rod Installation Figure 7 & 8:

1. Clean all parts thoroughly.
2. Grease Compression rods lightly. Be sure rebound elastomer is installed onto compression rod.
3. Drop compression rods down into inner legs. Shake inner leg to get rod through inner leg plug.
4. Clean adjuster cap threads thoroughly. Clean threads on inside of inner leg.
5. Position adjuster clip in desired groove of adjuster body to set preload (Pro & Comp).
6. Assemble elastomer and sleeves together, stick into adjuster body, and install elastomer stack into inner leg (Pro only)
7. Drop one piece Comp elastomer into inner leg (Comp only).
8. Slide on 3/4" black second stage elastomers until just past clip groove.
9. Install 2nd stage clip. **Note: The grooves are marked, see view figure 8. Use the top groove for Comp and the lower groove for Pro. The clip must be in the proper groove to avoid bottoming the tire on the crown. Riding with the clip missing or in the wrong groove is unsafe and may cause serious injury.**

Outer leg Installation Figure 8:

1. Install both bushings with bushing spacer between them
2. Lightly grease the inside diameter of both bushings.
3. Install dust seals.
4. Install seal 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 8 view. Install the ring so the end gap is oriented straight back. This will leave ring in the best position for removal later.
5. Clean and oil foam donut wiper with a light weight oil.
6. Slide dust seal cover onto inner legs, slide foam wiper up into skirt of dust seal cover (Comp).
7. Slide fork boots onto inner legs, slide foam wiper up into skirt of fork boot (Pro).
8. Slide Outer leg / Arch assembly onto inner legs.
9. Install and torque both 6MM compression rod screws to 10-30 inch-lb. (1.1-3.5 N-m).
10. Slide fork boots or dust seal covers onto the outer leg groove. Be sure the lip snaps into the groove.

FIGURE 8: FORK REASSEMBLY



BRAKE ARCH

NOTE: The 96 Mach 5 fork brake arch is permanently bonded to the outer legs with the Posi-link process and is not removable. If the unit is damaged or if the bond is broken or separated it must be replaced. Using the fork with a damaged brake arch bond is unsafe and could cause serious injury.

INNER FORK LEGS & CROWN

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 Figure 13:

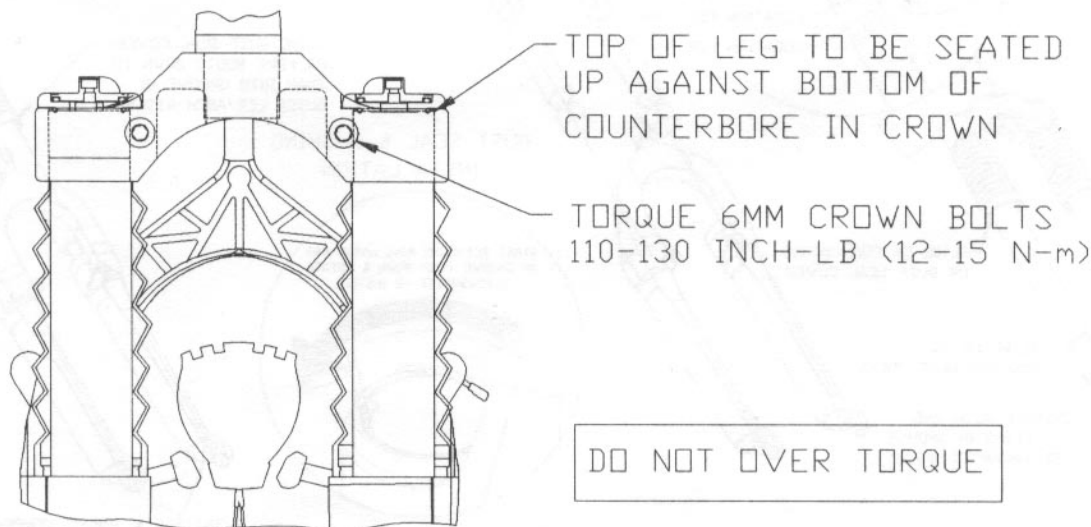
1. Loosen the two 6MM allen screws located in the crown.
2. Remove adjuster assemblies.
3. With twisting movement remove the inner fork legs.

Re-assemble:

1. Clean mating surfaces of crown and inner fork legs.
2. Install inner fork legs into crown until they bottom up against the step at the top of the crown.
3. Install adjuster assemblies until hand tight.
4. Tighten and torque two 6MM allen bolts to 110-130 inch-lb. (12-15 N-m).
5. Inspect to verify minimum clearance between tire and crown per figure 3, page 3.

WARNING: Do not over tighten or under tighten crown pinch bolts. Tighten only to 110-130 inch-lb. (12-15 N-m) . Over tightening may collapse inner legs and bind skewer threads. Under tightening may cause legs to slip in crown.

FIGURE 9: INNER LEGS & CROWN



ADJUSTING RIDE QUALITIES Figures 10 & 11

Manitou forks offer a wide adjustment range to suit individual riding preference and rider weight by simply changing the MicroCellular elastomers. 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. Softer blue elastomers, and harder yellow elastomers are available from your authorized Manitou Dealer..

Fine Tuning Pro & Comp:

Fine tuning adjustments are made by removing the adjuster assembly, removing the adjuster clip and replacing it in a different groove. The groove closest to the top is the softest setting, while the groove closest to the bottom provides maximum preload and is the firmest setting.

Elastomer Replacement Tuning:

Normal riding should result in 2 1/4" travel for the Pro, and 1 7/8" travel for Comp. Large hits should use full travel. Using a zip tie as shown in Figure 11 is a good way to measure travel. If you are riding a Pro you may remove the boots to measure the travel. 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 elastomer replacement remove the adjuster assemblies, replace the elastomers and ride test. Table 5 can be used as a starting point for selecting the correct elastomers. Disassembly of the fork is not required. Soft and firm ride kits 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. For the Pro 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. The Comp utilizes one 6" long elastomer. Replace it with either a softer blue or a more firm yellow elastomer to obtain the desired ride quality.

The 1996 Manitou Mach 5 forks should not become firm in cold weather, temperatures below 45 F (7 C). The MicroCellular elastomer is more stable under a greater temperature range than previous elastomers. Extremely cold temperatures below 20 F (-7 C) will affect the elastomers. Using the next softer elastomer than the one you would normally use in warmer temperatures should provide a comparable ride quality.

FIGURE 10: FINE TUNING PRO & COMP

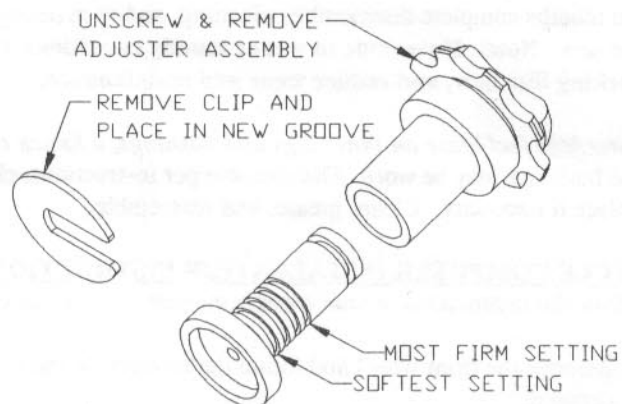


FIGURE 11: ZIP-TIE TRAVEL INDICATOR

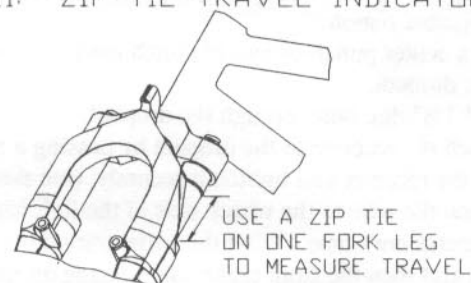


TABLE 3: ELASTOMER RIDE KITS COMP

COLOR	STIFFNESS	RIDE KIT	PART NO.
BLUE	SOFT	SOFT RIDE	85-3596
RED	MEDIUM	STOCK RIDE	85-3597
YELLOW	FIRM	FIRM RIDE	85-3598
COMP REBOUND & 2ND STAGE			040683

TABLE 4: ELASTOMER RIDE KITS PRO

COLOR	STIFFNESS	RIDE KIT	PART NO.
BLUE	SOFT	SOFT RIDE	85-3593
RED	MEDIUM	STOCK RIDE	85-3594
YELLOW	FIRM	FIRM RIDE	85-3595
PRO REBOUND RUBBER			040684
PRO 2ND STAGE ELASTOMER			040693
PRO ELASTOMER SLEEVE			040973

TABLE 5: ELASTOMER SETTING CHART

TERRAIN OR RIDER WEIGHT	SMOOTH MILD	MEDIUM AVERAGE	ROUGH AGGRESSIVE
90-130 LB (41-59 KG)	ALL BLUE	BLUE & SOME RED	MOSTLY RED
130-160 LB (59-72 KG)	BLUE & SOME RED	MOSTLY RED	RED
160-190 LB (72-86 KG)	MOSTLY RED	RED	RED & YELLOW
OVER 190 LB (86 KG)	RED	RED & YELLOW	YELLOW

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" if the adjuster is at the extreme firm setting. Selecting MCU elastomers with that better fit your weight and riding style and having the adjuster set mid range 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. Cleaning and applying fresh oil to the foam donut wiper will help however every two months complete disassembly, cleaning, and re-greasing is recommended. This will keep the fork in good shape and working like new. **Note: If you ride in wet or muddy conditions it is recommended that you use fork boots to keep you fork clean, working like new, and reduce wear and maintenance.**

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

The bushings may be worn. 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 13:**

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.

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 and render that fork unsafe to use. 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 13: CYCLE COMPUTER MOUNTING

