DORADO PRO
OWNER'S MANUAL



manitou

2010

• ENGLISH

MANITOU SUSPENSION FORKS

CONGRATULATIONS ON CHOOSING THE LATEST IN SUSPENSION TECHNOLOGY. The Dorado is fully assembled and ready to be installed on your bicycle. It comes equipped with a 1 1/8-inch steerer tube, disc brake mount adapters, and Hex Lock Thru Axle. A handlebar-mounted reflector must be used for on-road use, which is not included with your fork.

WARNING!

GENERAL CONSUMER SAFETY INFORMATION

BICYCLING IS A HAZARDOUS ACTIVITY THAT REQUIRES THAT THE RIDER STAY IN CONTROL OF HIS OR HER BICYCLE AT ALL TIMES. ANY FALL FROM YOUR BICYCLE CAN RESULT IN SERIOUS INJURY OR EVEN DEATH. READING THIS MANUAL ENTIRELY, AND PROPERLY MAINTAINING YOUR BICYCLE AND SUSPENSION FORK, WILL REDUCE THE POSSIBILITY OF INJURY OR POSSIBLE DEATH. PRIOR TO EVERY RIDE, YOU SHOULD CLOSELY EXAMINE YOUR SUSPENSION FORK (AFTER CLEANING) IN BRIGHT SUNLIGHT TO ENSURE THAT NO DAMAGE HAS OCCURRED DURING THE COURSE OF RIDING, TRANSPORTING, OR AFTER A FALL. PAY PARTICULAR ATTENTION TO THE CROWNS, INNER LEGS, OUTER LEGS, DROPOUTS, BRAKE MOUNT AREAS, AND “STRESS POINTS” (SUCH AS WELDS, SEAMS, HOLES, AND POINTS OF CONTACT WITH OTHER PARTS ETC.) DO NOT RIDE YOUR BICYCLE IF THE FORK SHOWS ANY SIGNS OF BENDING, LEAKING, CRACKING, CREAKING, SQUEAKING, CLUNKING, OR ANY OTHER UNFAMILIAR NOISES, OR IF IT IS MISSING ANY OF THE ORIGINALLY SUPPLIED COMPONENTS. CONTACT YOUR DEALER OR MANITOU CUSTOMER SERVICE AT 888/686-3472 IF YOU HAVE ANY QUESTIONS CONCERNING THE FUNCTION, INTEGRITY OR CONDITION OF YOUR FORK. ANY MODIFICATIONS NOT AUTHORIZED IN THIS MANUAL SHOULD BE CONSIDERED UNSAFE. IF YOU ARE A MODERATE OR AGGRESSIVE OFF-ROAD RIDER, OR RIDE AT LEAST THREE TIMES A WEEK OVER ROUGH TERRAIN, MANITOU RECOMMENDS RETURNING YOUR SUSPENSION FORK TO MANITOU EVERY 2 YEARS FOR A THOROUGH INSPECTION. TAKE YOUR FORK TO A MANITOU AUTHORIZED DEALER WHO CAN ARRANGE FOR SHIPMENT TO THE NEAREST AUTHORIZED SERVICE CENTER.

WARNING!

REFLECTORS

MANITOU FORKS ARE DESIGNED FOR OFF-ROAD USE, AND AS SUCH, THEY DO 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.) REQUIREMENTS FOR BICYCLES IF YOUR FORK IS GOING TO BE USED ON PUBLIC ROADS AT ANY TIME. IF YOU HAVE QUESTIONS REGARDING C.P.S.C. REFLECTORS, PLEASE CONTACT YOUR DEALER.

WARNING!

APPROPRIATE USE OF PRODUCT

IT IS CRITICAL THAT YOU SELECT AND USE THE SUSPENSION FORK THAT IS APPROPRIATE FOR YOUR ANTICIPATED RIDING STYLE, THAT YOU USE THE FORK PROPERLY, AND FOLLOW THE WARNINGS CONTAINED IN THE OWNER’S MANUAL, REGARDLESS OF THE RIDING STYLE. FAILURE TO PROPERLY MATCH THE FORK TO YOUR FRAME OR RIDING STYLE COULD CAUSE THE FORK TO FAIL, RESULTING IN A LOSS OF BICYCLE CONTROL AND POSSIBLY SERIOUS INJURY OR DEATH TO THE RIDER. IN ADDITION, AN IMPROPER COMBINATION OF FRAME AND FORK FOR THE INTENDED CATEGORY WILL VOID THE FORK’S WARRANTY. VISIT OUR WEBSITE AT WWW.MANITOUMTB.COM/ FOR MORE DETAILED INFORMATION AND GUIDANCE ON FORK SELECTION FOR YOUR RIDING STYLE. YOU SHOULD ONLY ATTACH DISC BRAKES AND ANY OTHER ACESSORIES TO THE DESIGNATED MOUNTING POINTS PROVIDED ON THE FORKS. NEVER MAKE ANY MODIFICATION TO YOUR FORK TO ATTACH ANY EQUIPMENT. THERE IS A HEIGHTENED LEVEL OF VOLUNTARY RISK ASSOCIATED WITH FREERIDING, DIRT JUMPING AND DOWNHILLING. LARGER STUNTS/JUMPS MEAN MORE POTENTIAL FOR EQUIPMENT ISSUES OR PROBLEMS AND THE LIKELIHOOD OF SERIOUS INJURY IS GREATLY INCREASED. LEARN HOW TO PROPERLY RIDE AROUND OBSTACLES ON THE TRAIL OR ROAD. HITTING OBSTACLES SUCH AS CURBS, ROCKS, TREES, ROOTS, HOLES, OR SIMILAR OBSTACLES STRAIGHT ON PUTS FORCES ON YOUR FORK IT WAS NOT DESIGNED TO ABSORB.

LANDING IMPROPERLY AFTER A JUMP OR DROP ALSO PUTS FORCES ON YOUR FORK IT WAS NOT DESIGNED

TO ABSORB. YOU SHOULD ONLY PERFORM JUMPS OR DROPS WHEN A TRANSITION OR DOWN RAMP IS AVAILABLE TO HELP YOUR BICYCLE AND FORK ABSORB THE IMPACT FORCES GENERATED DURING THE LANDING, AND BOTH WHEELS SHOULD SMOOTHLY MAKE CONTACT WITH THE TRANSITION OR DOWN RAMP AT THE SAME TIME. ANY OTHER TYPE OF LANDING IS DANGEROUS, AS IT COULD OVERLOAD THE FRAME OR FORK AND RESULT IN A COMPONENT PART FAILURE AND AN ACCIDENT OR COULD CAUSE YOU TO LOOSE CONTROL OF THE BICYCLE, EVEN WITHOUT A COMPONENT PART FAILURE. THE STEEPNESS AND LENGTH OF THE TRANSITION OR DOWN RAMP DEPENDS ON THE HEIGHT FROM WHICH YOU JUMP OR DROP. EVERY SITUATION IS DIFFERENT FOR EVERY RIDER; CONSULT WITH AN EXPERIENCED RIDER BEFORE ATTEMPTING ANY JUMP OR DROP.

FAILURE TO PROPERLY RIDE AROUND OBSTACLES ON THE TRAIL, OR FAILURE TO PROPERLY LAND AFTER A JUMP OR DROP COULD CAUSE YOUR FORKS TO FAIL, RESULTING IN A LOSS OF BICYCLE CONTROL AND, POSSIBLY, SERIOUS INJURY OR DEATH TO THE RIDER. RIDE ONLY IN AREAS SPECIFICALLY DESIGNATED FOR YOUR RIDING STYLE. DO NOT MISUSE OR ABUSE YOUR FORKS. LEARN HOW TO RIDE, AND ALWAYS RIDE WITHIN YOUR ABILITIES. OUT-OF-CONTROL RIDING PUTS THE EQUIVALENT OF YEARS OF HARD USE ON YOUR FORKS AFTER ONLY A FEW RIDES. SOMETIMES THE DAMAGE IS NOT OBVIOUS TO THE USER, BUT COULD HAVE FAILED INTERNAL COMPONENTS OR DAMAGED THE LOAD CARRYING ABILITIES OF THE MATERIALS USED IN THE CONSTRUCTION OF THE FORK.

ALL SUSPENSION FORKS REQUIRE REGULAR MAINTENANCE AND REPAIR. THE HARDER YOU RIDE, THE MORE OFTEN YOU MUST INSPECT AND MAINTAIN YOUR FORKS. IF YOUR FORKS START MAKING ANY STRANGE NOISES, CLUNKS, CREAKS, CLICKS, OR FEEL "LOOSE" OR DIFFERENT IN ANY WAY, THEY SHOULD NOT CONTINUE BEING USED, BUT IMMEDIATELY HAVE A CERTIFIED MANITOU SERVICE CENTER INSPECT AND REPAIR THE FORKS BEFORE YOU RIDE AGAIN. INSPECT YOUR FORKS REGULARLY TO SEE THAT THEY ARE NOT BENT, DEFORMED, CRACKED, or CHIPPED. If any of these conditions exist the fork SHOULD NOT BE USED. A CERTIFIED MANITOU SERVICE CENTER should INSPECT AND REPAIR THE FORKS BEFORE they are USED AGAIN.

IDENTIFY YOUR RIDING STYLE

It is critical that you select and use the suspension fork that is appropriate for your anticipated riding style, that you use the fork properly, and that you follow all warnings contained in this owner's manual regardless of riding style. Visit our website at www.manitoumtb.com for more detailed information and guidance on fork selection for your riding style.

The Dorado is a downhill-specific suspension fork. This discipline is only for professional or highly-skilled riders. It includes use on relatively high jumps (or "drops") and negotiating larger obstacles such as boulders, fallen trees or holes. These forks should be used only with disc brakes, as well as frames, wheels, and other components specifically designed for this riding style.

WARNING!

"DOWNHILL", "FREESTYLE" OR COMPETITIVE RIDING

TO RIDE DOWNHILL AT HIGH SPEED OR IN COMPETITION IS TO VOLUNTARILY ASSUME A VERY HIGH RISK, AND DOWNHILL OR FREESTYLE RIDING CAN LEAD TO SERIOUS ACCIDENTS. "DOWNHILLING" SPEEDS CAN APPROACH THOSE SEEN ON MOTORCYCLES WITH SIMILAR HAZARDS AND RISKS. WEAR APPROPRIATE SAFETY GEAR, INCLUDING A FULL-FACE HELMET, FULL- FINGER GLOVES, AND BODY ARMOR. HAVE YOUR BICYCLE INSPECTED BY A QUALIFIED MECHANIC BEFORE EVERY EVENT, AND BE SURE IT IS IN PERFECT WORKING CONDITION. ROUTINE AND THOROUGH MAINTENANCE IS EVEN MORE CRITICAL THAN WITH A BIKE NOT USED FOR DOWNHILLING OR FREESTYLE RIDING. CONSULT WITH EXPERT RIDERS AND RACE OFFICIALS ON CONDITIONS AND EQUIPMENT ADVISABLE AT THE SITE WHERE YOU PLAN TO RIDE DOWNHILL OR FREE-

STYLE. SUSPENSION AND DISC BRAKES MAY INCREASE THE HANDLING CAPABILITIES AND COMFORT OF YOUR BICYCLE AND MAY ALLOW YOU TO RIDE FASTER, BUT DO NOT CONFUSE THE ENHANCED CAPABILITIES OF A SUSPENSION BIKE WITH DISC BRAKES WITH YOUR OWN CAPABILITIES. INCREASING YOUR SKILL WILL TAKE TIME AND PRACTICE. PROCEED CAREFULLY UNTIL YOU ARE SURE YOU ARE COMPETENT TO HANDLE THE FULL CAPABILITIES OF YOUR BIKE. WHILE THE RUGGED APPEARANCE OF MOUNTAIN BIKES AND DISC BRAKES MIGHT SUGGEST THEY ARE INDESTRUCTIBLE, THEY ARE NOT. CERTAINLY THEY ARE TOUGH AND STURDY. DOWNHILL OR FREESTYLE RIDING OR RACING PLACES EXTREME STRESS ON BICYCLES AND THEIR COMPONENTS (LIKE IT DOES RIDERS). REPEATED USE OF A FORK IN DOWNHILL RIDING MAY RESULT IN SUDDEN OR PREMATURE FAILURE OF A BICYCLE OR COMPONENT RESULTING IN SEVERE INJURIES. IF YOU PARTICIPATE IN THESE TYPES OF EVENTS, THE LIFETIME OF THE PRODUCT MAY BE SIGNIFICANTLY SHORTENED DEPENDING UPON THE LEVEL AND AMOUNT OF RACING. THE "NORMAL WEAR" OF A COMPONENT MAY DIFFER GREATLY BETWEEN COMPETITIVE AND NON-COMPETITIVE USES, WHICH IS WHY PROFESSIONAL LEVEL RIDERS OFTEN USE NEW BIKES AND COMPONENTS EACH SEASON AS WELL AS HAVE THEIR BIKES SERVICED BY PROFESSIONAL MECHANICS.

WARNING!

REDUCED FORK LIFE

THE LIFE OF THIS FORK WILL BE REDUCED IF (1) YOU USE IT MORE THAN THE AVERAGE USER, (2) YOU ARE HEAVIER THAN THE AVERAGE RIDER, (3) THE TERRAIN YOU RIDE ON IS ROUGHER THAN AVERAGE, (4) YOU TEND TO BE HARDER ON COMPONENTS THAN THE AVERAGE RIDER, (5) IT IS INSTALLED OR MAINTAINED IMPROPERLY, (6) IT MUST ENDURE MORE ADVERSE ENVIRONMENTAL CONDITIONS THAN THE AVERAGE FORK (I.E. SWEAT, CORROSIVE MUD, SALTY BEACH AIR ETC.), AND/OR (7) YOU DAMAGE IT IN A CRASH, JUMP, OR THROUGH OTHER ABUSE. THE MORE FACTORS YOU MEET, THE MORE ITS LIFE WILL BE REDUCED; HOWEVER IT IS IMPOSSIBLE TO SAY HOW MUCH.

WARNING!

PRESS FIT CROWNS

THE STEERER TUBE AND STANCHION DROPOUTS ARE PRESS FIT AT THE FACTORY AND SHOULD NEVER BE REMOVED FROM THE CROWN OR DROPOUTS RESPECTIVELY. PRESSING THEM OUT WILL PERMANENTLY DAMAGE THE CROWN BEYOND REPAIR AND RENDER IT UNSAFE FOR ANY CONTINUED USE. NEVER ATTEMPT TO THREAD A THREADLESS STEERER TUBE. CUTTING THREADS WILL WEAKEN THE STEERER TUBE AND CAUSE AN UNSAFE CONDITION. OBTAIN THE CORRECT CROWN/STEERER FROM YOUR DEALER, OR CONTACT MANITOU CUSTOMER SERVICE AT 888/686-3472. REPLACEMENT OF THE ENTIRE CROWN/STEERER ASSEMBLY MUST BE DONE TO INCREASE STEERER TUBE LENGTH. REMOVING AND REPLACING THE STEERER TUBE WILL RESULT IN AN UNSAFE CONDITION AND SHOULD NEVER BE DONE.

CAUTION!

INSTALLATION INSTRUCTIONS

Ensure that the proper steerer tube has been delivered on your fork. The steerer tube may need to 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 steerer tube, it is recommended that you seek a dealer with a qualified bicycle mechanic to perform the installation. When cutting a steering column of a fork make sure to measure twice before cutting; forks cut too short during installation are NOT covered by the warranty.

BREAK-IN

Your new fork is designed to break-in during your first few rides (about 20 hours total riding time). Prior to break-in, you may notice your fork feels tight and slightly notchy. Following the break-in period, your fork will feel much smoother and will react to bumps much better than when you first put it on your

bike. After 20 hours, you may want to recheck adjustments (where applicable) to fine-tune the fork completely.

WARNING!

WHENEVER YOU INSTALL ANY NEW COMPONENT ON YOUR BIKE, MAKE SURE YOU THOROUGHLY TRY IT OUT CLOSE TO HOME (WITH YOUR HELMET) WHERE THERE ARE NO OBSTACLES, TRAFFIC OR OVERLY CHALLENGING TERRAIN. MAKE SURE EVERYTHING IS WORKING PROPERLY BEFORE GOING OFF ON A RIDE OR TO A RACE.

CAUTION!

USE RECOMMENDED TORQUES AT ALL TIMES! TORQUE SPECS ARE OPTIMIZED FOR SAFETY AND LIFE OF PRODUCT. THE DORADO FORK USES A SPACER IN THE LOWER CROWN CLAMP JOINT TO OPTIMIZE CLAMP FORCE. MAKE SURE THESE ARE IN PLACE! YOU SHOULD SEE EITHER TWO WASHERS IN THE SLOT ON EACH BOLT OR 1 RECTANGULAR PLATE SPANNING BOTH BOLTS.

FORK INSTALLATION – DUAL CROWN FORKS

1. Remove the old fork from your bicycle.

2. Measure and cut the steerer tube to fit your bicycle head tube (see CAUTION above). You can use your old fork as a guide for cutting the steerer tube length. To determine which upper triple clamp your frame will need see Table 5, page 15.

3. Remove the headset crown race from the old fork and press onto the fork steerer until the race is seated snugly against the top of the crown per the headset manufacturer's instructions.

4. Clean and grease the headset bearings and races per the headset manufacturer's instructions.

5. Install the lower bearings (if applicable) on fork crown race per the headset manufacturer's instructions.

6. Insert the steerer tube into the head tube of the frame.

7. Install the upper bearings, stem spacers, upper triple clamp and stem or integrated upper handlebar stem clamp.

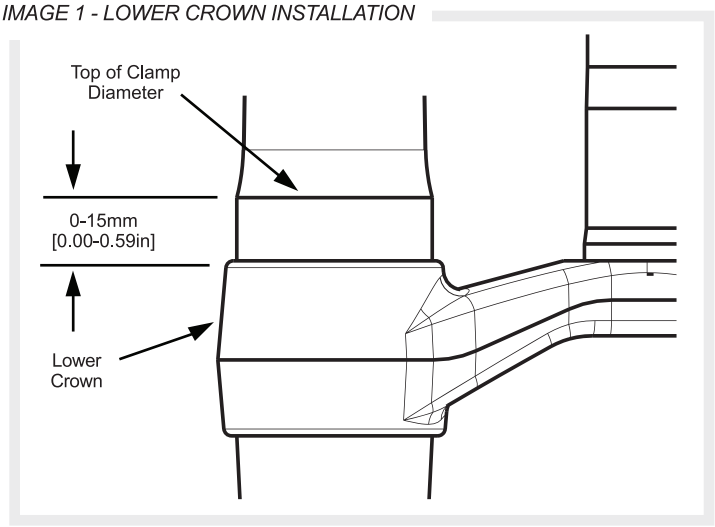
8. Install the stem cap and bolt. Tighten the bolt to headset manufacturer's specifications.

9. Install the handlebars and torque the stem pinch screws or stem clamping system to stem manufacturer's specifications.

10. Install the brake levers and adjust per the brake manufacturer's instructions.

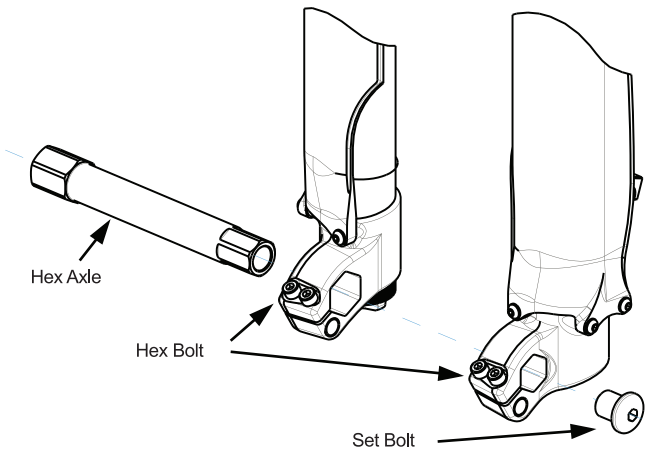
11. Adjust stanchion legs in the upper and lower crowns. Visually make sure the spacer(s) are present in the lower crown clamp joint (pinch slot). There should be either 2 small washers held in place by each bolt, or 1 rectangular spacer held by both bolts. The top of the lower clamp must be between 0mm-15mm [0.00-0.59in] below the top of the clamp diameter and should be even. Both right and left outer legs should be set at the same height +/- 1mm. Torque pinch bolts to specs found in Table 6, page 15. ***DO NOT TAKE THIS STEP LIGHTLY!*** Proper tightening technique is to tighten bolts uniformly by alternating back and forth between bolts so as to bring them up to torque simultaneously. This ensures the best alignment and uniform distribution of torque loads.

IMAGE 1 - LOWER CROWN INSTALLATION

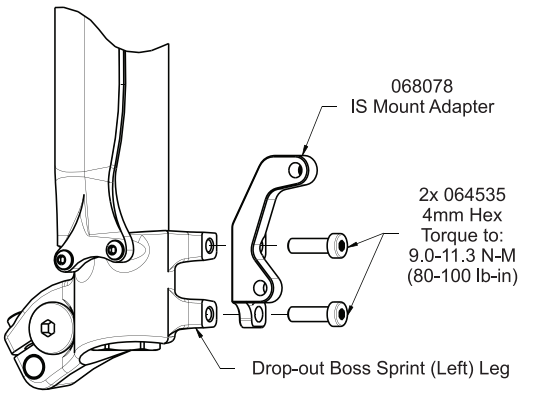


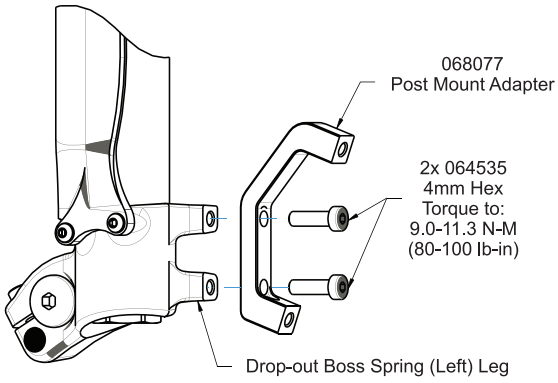
12. To install the hex axle, simply slip the axle into the dropout, small axle hex side first into the large dropout hex. (See Image 2, page 6.) Thread the set bolt into the small hex side and snug slightly. Push the fork up and down a few times to center the axle and hub and then tighten all pinch bolts to recommendations found in Table 6, page 15. Proper tightening technique is to tighten bolts uniformly by alternating back and forth between bolts so as to bring them up to torque simultaneously. This ensures the best alignment and uniform distribution of torque loads. NOTE: The axel is designed to use a 20mm X110mm hub. All other hub sizes are unsafe and will cause the fork to fail and may lead to potential injury of rider.

IMAGE 2 - AXLE INSTALLATION



IMAGES 3&4 - IS MOUNT BRAKE CALIPER ADAPTER INSTALLATION POST-MOUNT BRAKE CALIPER ADAPTER INSTALLATION





BRAKE CALIPER ADAPTER INSTALLATION

Both post-mount and IS disc brake caliper adapters are included with your fork (HBG P/N 141-23817). Identify the mounting standard of your disk brake caliper. Post-mount calipers have bolt holes parallel to the orientation of the rotor. IS calipers have bolt holes perpendicular to the orientation of the rotor. Consult your brake manufacturer's owners manual for further information. Only a 203mm [8in] rotor may be used on the Dorado.

Once the proper adapter is identified, install the adapter as shown. Use the two bolts provided in the kit (M6x1, 20mm long), Torque to 9.0-11.3 N-M [80-100 lb-in].

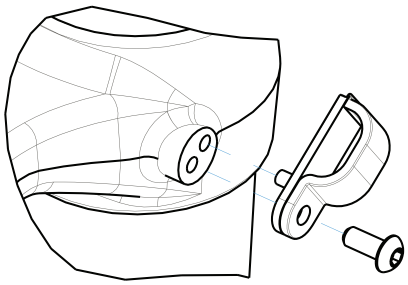
BRAKE HOSE INSTALLATION

WARNING!

FAILURE TO PROPERLY ROUTE AND SECURELY ATTACH THE FRONT BRAKE HOSE TO THE FORK CAN CAUSE SERIOUS INJURY OR DEATH.

Included with your fork is a small, black brake hose guide (P/N 09-23481) that can be attached to the lower crown to aid in routing the hoses to disc brake calipers. Also included is a standard zip tie to secure the hose to the bash guard. The preferred method is to route the hose so that it runs inside the spring leg, secured to the bash guard, then through the brake hose guide. The hose should be loose through the lower crown hose guide so the hose is free to translate up and down. Make sure the brake line is not crimped and does not touch the tire as the fork moves through its range of travel.

IMAGE 5 - BRAKE HOSE INSTALLATION



WARNING!

WHEN INSTALLING THE WHEEL WITH A PROPERLY INFLATED TIRE, CHECK TO MAKE SURE THE FORK ACHIEVES MINIMUM TIRE CLEARANCE. FAILURE TO CONFORM TO RECOMMENDED TIRE CLEARANCE SPECIFICATIONS MAY CAUSE THE TIRE TO STOP SUDDENLY DURING USE CAUSING PERSONAL INJURY OR DEATH. Measure minimum tire clearance from any point on the profile of the tire upward to the bottom of the crown (Image 7). Compare to Table 1, page 15. for minimum tire clearance. Measure the tire at maximum width (Image 7). Compare with Table 1 for maximum tire width.

INITIAL SET-UP

MEASURING TRAVEL (the total amount of up and down movement)

To determine how much travel your fork has, simply measure the distance from the top of the drop-out to the seal on the outer leg. See Image 6 below to determine travel.

IMAGE 6

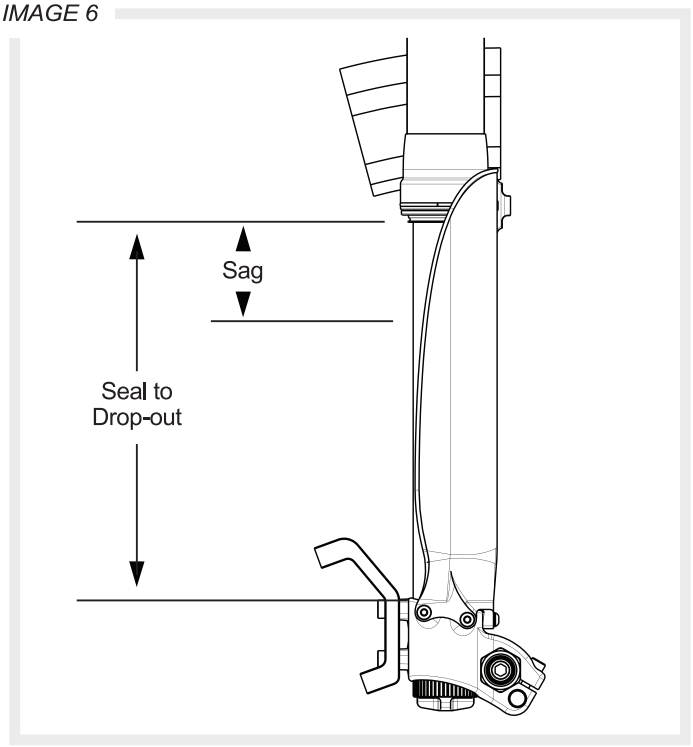
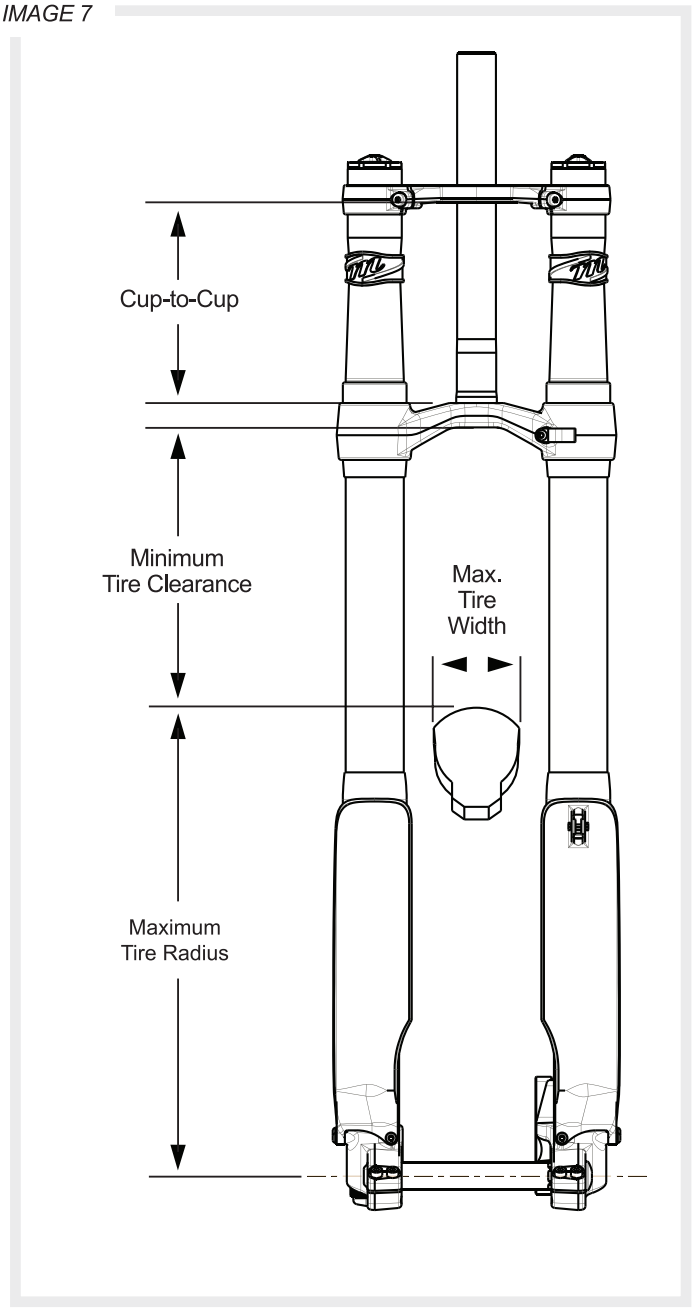


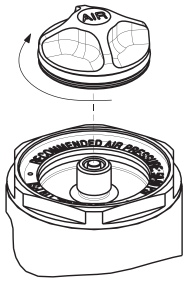
IMAGE 7



ADJUSTING MAIN SPRING AIR PRESSURE

The Dorado's air spring is performance tuned to be high-volume, low-pressure for quick, linear break-away and progressive bottoming ramp-up. The negative and positive air chambers are linked with a poppet valve; the chambers auto-equalize when set-up properly. Manitou recommends using a pump equipped with a pressure bleed valve to accurately adjust air pressure. The air spring comes pressurized from the factory at 75 PSI; recommended air pressure is 50 – 90 PSI, but is not to exceed 110psi.

IMAGE 8 - SCHRADER VALVE



INCREASING AIR PRESSURE

Remove the Schrader valve cap from the top of the left leg (spring leg). Thread on pump's Schrader valve fitting snuggly. If the fork already has pressure in it, the pressure gauge will read a non-zero pressure when the valve is engaged. Pump up air spring until desired pressure is read on gauge. Minimize pressure loss by removing the pump's Schrader valve fitting quickly. Replace Schrader valve cap.

DECREASING AIR PRESSURE

Remove the Schrader valve cap from the top of the left leg (spring leg). Thread on the pump's Schrader valve fitting snuggly. If the fork already has pressure in it, the pressure gauge will read a non-zero pressure when the valve is engaged. Depress the pressure bleed valve on the shock pump until desired pressure is read on gauge. Minimize pressure loss by removing the pump's Schrader valve fitting quickly. Replace Schrader valve cap.

MEASURING SAG (Sometimes call "static" or "laden" sag, this is the amount your suspension compresses due to the weight of your body when in a natural riding position. Damping adjustment on the Dorado has no effect on static sag.)
To measure sag, you'll need a tape measure, a pencil, a piece of paper and a helper.

1. With an initial pressure setting in the recommended range, measure the distance (M) from the top of the dropout to the dust seal when no one is sitting on the bike and write down this measurement. (Remember the exact locations of the two points because you'll need to use them later.)

2. Have the rider sit still on the bike. Gently lift up on the front of the bike, and release, allowing the suspension to settle back. Measure the distance (SAG1) between the same two points as in step one. It is important to be in the normal riding position (weight centered) with your feet on the pedals.

3. Repeat measurement after gently pushing down on the front of the bike, and allowing it to settle back, returning to a neutral position (SAG2).

4. Subtract the second measurement from the first "un-weighted" measurement in each case. Take the average of the two. [(M – SAG1) + (M – SAG2)] / 2 = AVG SAG. The resulting measurement is the average static sag, and properly accounts for friction. (see Table 3, page 15.) The difference between SAG1 and SAG2 will decrease as the fork breaks in, and may increase as the fork approaches a service interval, is improperly installed, or if damage has occurred.

5. To increase air spring pressure remove the Schrader air cap located on the top of the left leg and using a dedicated shock pump (Manitou part #85-4162), inflate the fork with the desired pressure. Be aware that in most cases, the slight hiss of air that is heard while removing the pump is caused by air moving out of the hose, rather than out of the fork. Also understand that reattaching the air pump will ALWAYS result in a lower pressure reading as air must leave the fork to pressurize the volume of the air pump. In a properly functioning shock pump, a consistent change in pressure will be seen when reattaching the pump. If the change is inconsistent, the pump seal or Schrader valve may be damaged.

6. To decrease air spring pressure, remove the Schrader air

cap located on the top of the left leg and using a dedicated shock pump (Manitou part #85-4162), depress the pressure bleed valve until the desired pressure is reached. Be aware that in most cases, the slight hiss of air that is heard while removing the pump is caused by air moving out of the hose, rather than out of the fork.

DAMPING SYSTEM

The Dorado is equipped with the following Damping technologies: Externally Adjustable TPC+ Compression Damping, Externally Adjustable High Speed Compression Damping, Integrated
Hydraulic Bottom-Out Resistance Circuit, and Externally Adjustable Rebound Damping. All these technologies are contained in an open-bath cartridge, making it lightweight, quick to bleed, and easy to set-up.

WARNING!

THE DAMPING SYSTEM IS AN OPEN BATH SYSTEM. OIL MAY INTERNALLY LEACH OUT OF THE DAMPING CARTRIDGE DURING SHIPPING OR IF YOUR BIKE IS STORED UPSIDE-DOWN. THE FORK SHOULD BE BLED PRIOR TO USE IF THE FORK IS NOT STORED UPRIGHT. FAILURE TO DO SO MAY RESULT IN POOR PERFORMANCE.
To bleed the cartridge, hold fork upright or as mounted on bike. Turn rebound adjuster knob to "Full Closed" Position. Stroke fork 10-20 times or until rebound speed is slow throughout travel of fork. Reset rebound adjuster knob to desired setting. The bleed process may be supplemented by also turning the TPC+/ red compression adjusted to the "full closed" position.

COMPRESSION DAMPING ADJUSTMENT

The Dorado is equipped with both an external "TPC+ Compression" damping adjustment and an external "High Speed Compression" damping adjustment, as well as a dedicated independent hydraulic bottom-out circuit. These damping technologies allow greater adjustability for specific events encountered on terrain; this allows the fork to be plush during stutter bumps and firm during bottoming while giving the rider the necessary adjustment to tune the Dorado to any riding conditions.

There are three distinct damping stages through the travel of the fork. The first stage, 0-100mm [0-4in] of travel, is dedicated to high-speed unsprung wheel movement and low speed rider trail movement. The second stage, 100-160mm [4-6in] of travel is dedicated to high-speed sprung weight movement of the rider and bike. The third stage, 160-203mm [6-8in] of travel, is dedicated to bottoming resistance.

Typically, a "high speed" compression event is characterized by a high shaft velocity incident caused by either the unsprung wheel mass being forced towards bike chassis or the sprung rider mass being forced towards the ground. In the first case the high shaft velocity is caused by the bike, at high speeds, coming in contact with a small obstacle (less than 100mm [4in]; i.e. stutter bumps, rocks, and roots). Even at lower bike speeds, high shaft velocities will be reached on more abrupt obstacles (square edged bumps.) See Image 9, page 10.

Generally, it is desirable for the fork to be plush (minimal damping force) when encountering a high speed event of this nature and should travel through the stroke with minimal movement translated to the rider. This damping characteristic is set by the High-Speed Adjuster. The High-Speed Adjuster is located on the bottom of the right dropout. It is black and encircles the red TPC+ adjuster. The High-Speed Adjuster, when turned clockwise (counter-clockwise when referenced from the handlebars), will make the suspension firmer during short–travel, high-speed events. Turning the High-Speed Adjuster counter-clockwise (clockwise when referenced from the handlebars) will make the suspension plusher during high-speed events. The High-Speed Adjuster is equipped with 20 detent positions. NOTE: WHEN THE HIGH-SPEED ADJUSTER (OUTER KNOB) IS TURNED, THE TPC+ ADJUSTER (INNER KNOB) WILL FOLLOW. THIS WILL NOT CHANGE THE SETTING OF THE TPC+ ADJUSTER. THE TPC+ ADJUSTER SETTING WILL ONLY CHANGE IF TURNED INDEPENDENTLY OF THE HIGH-SPEED ADJUSTER.

In the second case of high-speed shaft velocity, gravity forces the rider's mass downward, deep into the fork's travel (more than 100mm [4in]) from landing a jump or a drop. See Image

IMAGE 9 - HIGH SPEED, SHORT TRAVEL IMPACT

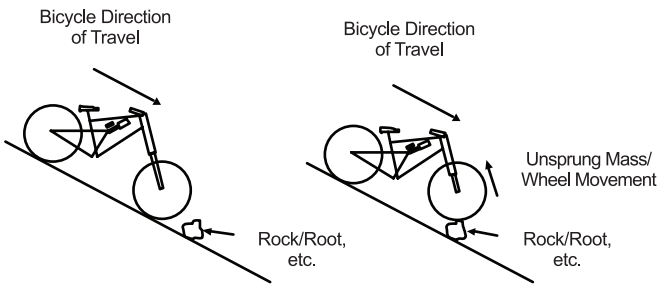
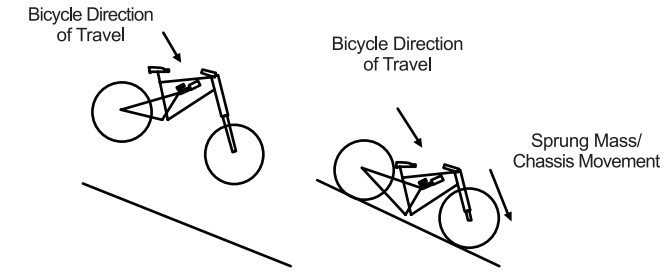


IMAGE 10 - HIGH SPEED, DEEP TRAVEL IMPACT



10, page 10. This damping characteristic is set by the TPC+ Adjuster. The TPC+ Adjuster is located on the bottom of the right dropout. It is red and is encircled by the black High-Speed Adjuster. The TPC+ Adjuster, when turned clockwise (counter-clockwise when referenced from the handlebars) will make the suspension firmer during high-speed, deep-travel events. Turning the TPC+ adjuster counter-clockwise (counter-clockwise when referenced from the handlebars) will make the suspension plusher during high-speed, deep-travel events. The TPC+ Adjuster is equipped with 20 detent positions.

During extreme High-Speed events, the rider's mass forces the fork deep into its travel (more than 160mm [6in]). During these severe bottoming events the damper will engage the Hydraulic Bottom-Out Resistance Circuit. This dedicated circuit creates a cushion that is both position- and shaft-velocity-dependent; the faster and deeper the fork enters the Hydraulic Bottom-Out, the more force it generates to prevent the fork from bottoming. The Hydraulic Bottom-Out is factory tuned, and is non-adjustable.

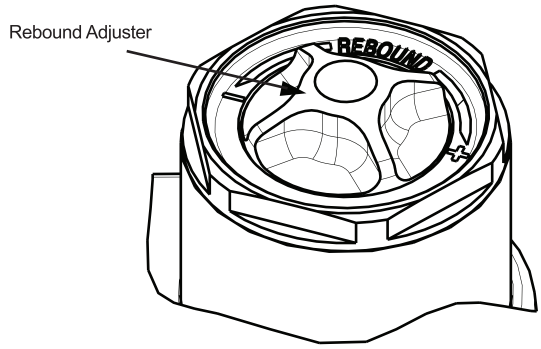
A "Low-Speed" event is characterized by a short-travel (less than 100mm [4in]) low-shaft-velocity as a result of changes to the bike's trail stance (i.e. berms, G-outs, pedaling, & braking). The low-speed characteristics of the fork will be dictated by the TPC+ adjuster. Note also that the lower the shaft velocity, the more this condition is controlled by spring force (air pressure). In longer duration events such as braking for several seconds, the AMOUNT of dive is controlled by air pressure, while the SPEED of dive is controlled by damping.
It is the rider's responsibility to ensure their fork is tuned properly to account for rider weight, spring rate, tire pressure, terrain style, and riding style. It is recommended that the fork is tested on "easy" terrain in various High-Speed Adjuster and TPC+ Adjuster settings to both feel the range of adjustment and find the ideal setting for the course.

REBOUND DAMPING ADJUSTMENT

The importance of proper rebound setting can not be over-emphasized. It plays a major role in maximizing traction, bike control, and even ride quality, especially over small bumps. Rebound damping controls the speed at which the fork returns to the static sag position. This can mean the wheel moving down to follow the back side of a bump (traction, ride quality) OR the bike/rider moving upward after a landing, g-out, or braking event (bounce, kick-back.) During a high-speed, short-travel event it is desirable to have the fork return to static sag position quickly to prevent "pack-up". "Pack-up" is when the fork does not return fast enough through a series of stutter bumps and the fork becomes low in the travel, minimizing the available travel for additional high speed events, and forcing the suspension into a firmer range of spring force, causing

harshness and a reduction in traction. Contrarily, during high-speed, deep-travel events it is desirable to have the fork return to the static sag position more slowly to prevent loss of traction, or bounce after the event. It is the rider's responsibility to ensure their fork is tuned properly to account for rider weight, spring rate, tire pressure, terrain style, and riding style. It is recommended that the fork be tested on "easy" terrain in various rebound settings to both feel the range of adjustment and find the ideal setting for the course. The Rebound Adjuster is located on top of the right leg (See Image 11 below). It is blue and is equipped with 20 detent positions. Turning the Rebound Adjuster clockwise will make the suspension return slower. Turning the Rebound Adjuster counter-clockwise will make the suspension return faster.

IMAGE 11 - REBOUND DAMPING ADJUSTMENT



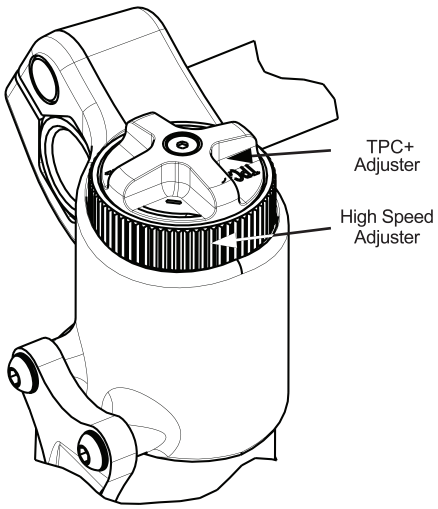
TRAVEL ADJUSTMENT

The Dorado is capable of being internally adjusted from 203mm of travel to 180mm of travel. This may be done with no change to the spring rate for a given spring air pressure. The comp-rod assembly must be removed for this operation. If the fork is not yet installed on the bike, skip to step 4.

CAUTION!

Cleanliness is critical to performance and reliability of air systems, and indeed all seals and bushings. Maintain a clean work area, free of lint, dust, and metal shavings from threads or external sources such as steer tube cutting. Clean parts with isopropyl alcohol as needed.

IMAGE 12 - COMPRESSION DAMPING ADJUSTMENTS



1. Loosen the four drop-out pinch bolts (two per dropout) using a 4mm hex wrench; do not remove the pinch bolts from the dropouts.

2. Remove the Hex Axle bolt using a 6mm hex wrench. Slide the 20mm Hex Axle out of the drop-outs and wheel hub.

3. Remove brake caliper completely from left dropout, along with brake cable from left leg guard.

4. Remove the Schrader valve cap on top of the left leg (spring leg). Relieve all air pressure from the air valve using a shock pump with a pressure relief valve and pressure gauge. The pressure gauge should read 0 PSI before removing the pump. Do not replace the valve cap yet.

5. Using a 36mm wrench loosen (but do not remove) the top cap on the on top of the left leg (spring leg).

6. It is recommended that the left leg, spring leg, be completely removed for this operation. Loosen, but do not remove, the two pinch bolts on the left side (spring side) of the lower crown, and the one pinch bolt on the left side (spring side) of the upper crown using a 5mm hex wrench. Slide the left leg (spring leg) completely out from the upper and lower crowns. Be careful not to lose clamp spacers in lower crown.

7. Holding the leg upright, continue to remove the top cap from the top of the outer leg. Slide the outer leg down.

8. Using a 13mm open wrench hold the flats on the comp rod adapter (it may be necessary to slide the bottom-out spacer down to gain access) and remove the top cap with a 36mm wrench. Do this over an oil pan, as some oil may spill.

9. Turning the leg upside down, allow the Splash-Bath oil to drain into an oil pan. DO NOT REUSE OIL; DISCARD PROPERLY WITH LOCAL OIL RECYCLER. When all oil has drained, remove the outer leg by sliding it away from the dropout.

10. Using a 20mm open-end wrench, loosen the comp-rod end cap and remove the comp-rod assembly form the leg. Do this over an oil pan, as some oil may spill.

11. Locate the top-out nut (16mm) and screw (20mm) on the comp-rod. Loosen and unthread the nut from the screw, then slide apart to reveal the retaining ring. Lightly splay the retaining ring to remove from groove and move to groove corresponding to the desired travel position; 203mm is the position closest to the air piston, 180mm is the position closest to the end cap. Rethread the top-out screw and bolt over the retaining ring, torque to 3,4 N-M [30 IN-LB]. (See Image 13)

12. It is recommended to replace the air piston seal at this time. Coat the air piston with Splash Bath (HBG P/N 85-0023). Insert the air piston into the leg being sure to minimize contact between the threads and o-ring. Pour an additional 5cc of Splash Bath on top of the inserted piston. Using a 20mm crow's foot torque wrench tighten the comp rod end cap to 6.8-9.0 N-M [60-80 LB-IN].

13. Slide the outer leg back onto the inner leg. Using a 13mm open wrench hold the flats on the comp rod adapter. Tighten the top cap with a 36mm torque wrench to 1.7-2.8 N-M [15-25 LB-IN]. Pour 30cc Splash Bath (HBG P/N 85-0023) into outer spring leg.

14. Making sure the leg assembly is fully extended, thread the top cap into the outer leg, hand tight, being sure the o-ring is engaged.

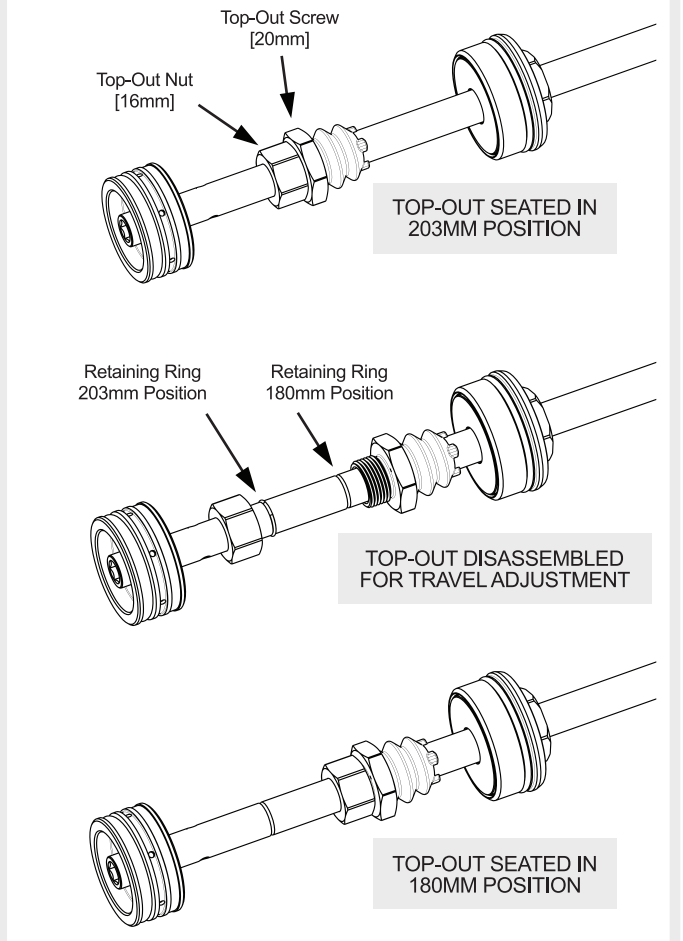
15. Slide the outer leg (spring leg) completely into the upper and lower crowns. The top of the lower crown must be within 0-15mm below of the top of the clamp diameter (see Image 1, page 5). Tighten the two pinch bolts evenly by alternating back and forth on the left side (spring side) on the lower crown, and the one pinch bolt on the left side (spring side) on the upper crown using a 5mm hex torque wrench to 10.7-12.4 N-M [95-110 LB-IN]. DO NOT TAKE THIS STEP LIGHTLY!

16. Using a 36mm wrench tighten the top cap to 8-9.0 N-M [60-80 LB-IN]. The upper crown pinch bolt may need to be loosened to do this, to relieve compression on the top cap threads. Do not forget to retighten upper crown pinch bolt in this case.

17. Fill the valve on top of the left leg (spring leg) with desired air pressure. Recommended air pressure is 50 – 90 PSI. Replace the Schrader cap.

18. Remount the wheel and Hex Axle and brake caliper per manufacturer's specifications. First tighten the hex Axle to 3.4-4.5 N-M [30-40 IN-LB] using a 6mm hex torque wrench. Then uniformly tighten all four pinch bolts to 3.4-4.5 N-M [30-40 IN-LB] by alternating between bolts using a 4mm hex torque wrench.

IMAGE 13 - TRAVEL ADJUSTMENT



MAINTENANCE

Your fork requires periodic maintenance, cleaning and inspection. This is because moisture and contamination may build up inside the fork depending on the severity of riding conditions. To maintain top performance, it is recommended that the fork be periodically disassembled, cleaned, dried and relubricated. You can download service and tuning instructions on the web at www.manitoumtb.com.

SUGGESTED SERVICE INTERVALS FOR DORADO

NORMAL CONDITIONS
Short, Infrequent Rides
Disassemble fork per Service Manual. Clean outer leg and replace Semi Bath oil every 6 months. Service damping systems by changing the damper oil every year. Check the oil level sitting on top of the air piston every two months per directions found on www.manitoumtb.com.
Long, Frequent Rides
Disassemble fork per Service Manual. Clean outer leg. Replace Semi Bath oil every 4 months. Service damping systems by changing the damper oil every year. Check the oil level sitting on top of the air piston every 6 weeks per directions found on www.manitoumtb.com.
SEVERE CONDITIONS
Short, Frequent Rides
Disassemble fork per Service Manual. Clean outer leg casting and replace Semi Bath oil every four months. Service damping systems by changing the damper oil every year. On air fork models, check the oil level sitting on top of the air piston every 6 weeks per directions found on www.manitoumtb.com
Long, Frequent Rides
Disassemble fork per Service Manual. Clean outer leg casting and replace Semi Bath oil every three months. Service damping systems by changing the damper oil every year. On air fork models, check the oil level sitting on top of the air piston every 4 weeks per directions found on www.manitoumtb.com.

WARNING!

BEFORE EVERY RIDE YOU SHOULD:

1. Ensure that the Hex Axle is properly installed per instructions.

2. Ensure that all bolts are tightened to the appropriate torque recommendations by the parts' respective manufacturers.

3. Wipe the inner legs and clean the fork. Check the entire fork for any obvious damage.

4. Check the headset for proper adjustment. To check for a loose front headset apply the front brake with both wheels on level pavement and push the bike forwards and backwards rapidly to see if you hear the headset rattling. If it is then it is too loose. Follow headset manufacturer's instructions to tighten.

5. Ensure that the front brake cable is properly routed and check brake adjustment. Follow brake manufacturer's instructions.

CHECKING DAMPING OIL LEVEL

WARNING!

SETTING THE PROPER OIL LEVEL IN YOUR SUSPENSION FORK IS CRITICAL. THE DAMPING IS LOCATED IN THE RIGHT LEG OF YOUR FORK. INSUFFICIENT OIL VOLUME WILL ALLOW FOAMING AND REDUCE PERFORMANCE. EXCESS OIL WILL RESTRICT TRAVEL AND MAY CAUSE DAMAGE TO THE SYSTEM AND CREATE AN UNSAFE RIDING CONDITION. FINISH READING THIS ENTIRE SECTION PRIOR TO ALTERING THE OIL LEVEL.

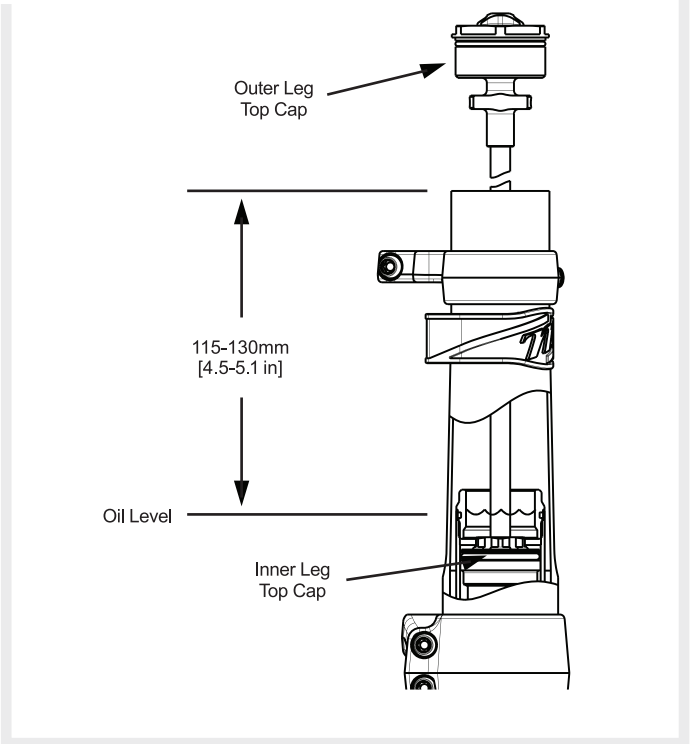
To check the oil level it is recommended that the right leg (damping leg) be completely removed from the rest of the fork for this operation. Loosen, but do not remove, the two pinch bolts right side (damping side) on the lower crown, and the one pinch bolt on the right side (damping side) of the upper crown using a 5mm hex wrench. Slide the right leg (damping leg) completely out from the upper and lower crowns. Do not lose the clamp spacers in the pinch slot of lower crown.

Bleed the fork by pumping 10-20 times. This will ensure an accurate appraisal of oil level. Use a 36mm wrench to remove the top cap on the right outer leg (damping leg). It is not necessary to remove the rebound knob for this operation. Slide the outer leg all the way down the inner leg locating the

oil height. With the top cap and rebound shaft at full extension, the oil level should cover the entire cartridge top cap. Only the rebound shaft and inner leg top cap should be protruding above the oil surface. If the cartridge top cap is visible, add SAE 5WT suspension fork oil until the top cap is completely immersed in the damping oil. This oil height should equate to 115-130mm [4.5-5.1in] from the top of outer leg. Fully extend the outer leg away from the dropout before replacing outer top-cap. Replace top-cap and bleed the system by stroking 10-20 times with the rebound in "full closed" position. If a significant amount of oil was added, the oil level should be checked again at this point. The rebound should be smooth and consistent to the very top of extension (no air pockets). The leg may now be replaced into the crowns per required torque specs.

NOTE: Use SAE 5WT suspension fork oil from high quality manufacturers such as Motorex or Maxima.

IMAGE 14 - DAMPING OIL HEIGHT CHECK



CHECKING SPLASH BATH OIL (SPRING LEG ONLY)

Bleed fork by pumping 10-20 times. Keep fork vertical for remaining procedures. Use a 36mm wrench to remove the top cap on the left leg (spring leg). It is not necessary to remove the Schrader cap for
this operation. Slide the outer leg down the inner leg to have ample view into the leg. A flashlight may aide in locating the oil height. With the top cap and comp-rod at full extension, the oil level should cover the entire inner spring leg and top cap. Only the comp-rod and outer leg should be protruding above the oil surface. If the top cap is visible, add Splash Bath (HBG P/N 85-0023) until the top cap is completely immersed in the damping oil. Replace top-cap and bleed the oil by stroking 10-20 times. The leg may now be replaced into the crowns per required torque specs

REPLACING SPLASH BATH OIL (SPRING LEG ONLY)

Use a 36mm wrench to remove the top cap on the left leg (spring leg). It is not necessary to remove the Schrader cap for this operation. Slide the outer leg down the inner leg to allow oil to drain into an oil pan. DO NOT REUSE OIL, DISCARD OF PROPERLY WITH LOCAL OIL RECYCLER. When fully drained, pour 30cc of Splash Bath (HBG P/N 85-0023) into the outer leg. With the top cap and comp-rod at full extension, the oil level should cover the entire inner spring leg and top cap. Only the comp-rod and outer leg should be protruding above the oil surface. If the top cap is visible, add Splash Bath (HBG P/N 85-0023) until the top cap is completely immersed in the Splash Bath oil. Replace top-cap and circulate the oil by stroking 10-20 times. The leg may now be replaced into the crowns per required torque specs found in Table 6.

CHECKING AIR PISTON LUBRICATION OIL

NOTE: It is recommended to replace air piston o-ring during this procedure. Remember to maintain absolute cleanliness including no lint, cloth fibers, metal flakes, etc.

Apply shock pump to Schrader valve at top of left (spring leg) and relieve all air pressure with pump pressure relief valve. Use a 36mm wrench to remove the top cap on the left

leg (spring leg). Slide the outer leg down the inner leg to the dropout. Using a 13mm open wrench hold the flats on the comp rod adapter (it may be necessary to slide the bottom-out spacer down to gain access) and remove the top cap with a 36mm wrench. Do this over an oil pan, some oil may spill. Turning the leg upside down, allow the Splash-Bath oil to drain into an oil pan.

DO NOT REUSE OIL; DISCARD PROPERLY WITH LOCAL OIL RECYCLER. When all oil has drained, remove the outer leg by sliding it away from the dropout. Using a 20mm open-end wrench, loosen the comp rod end cap and remove the comp-rod assembly from the leg. Do this over an oil pan, some oil may spill. Allow oil to drain off of piston and out of inner leg. If available, replace air piston o-ring at this time. Do not wipe oil from piston; this may contaminate the seal and result in poor performance. If cleaning is needed, use only isopropyl alcohol. Dip the air piston in Splash Bath (HBG P/N 85-0023). Insert the air piston back into leg. Be careful to insert the piston straight to avoid cutting the seal on the threads. Pour an additional 5cc of Splash Bath (HBG P/N 85-0023) on top of the piston. Replace the spring leg top cap, and replace the outer leg. Pour 30cc of Splash Bath (HBG P/N 85-0023) into the outer leg. With the top cap and comp-rod at full extension, the oil level should cover the entire inner spring leg and top cap. Only the comp-rod and outer leg should be protruding above the oil surface. If the top cap is visible, add Splash Bath (HBG P/N 85-0023) until the top cap is completely immersed in the Splash Bath oil.

Replace top cap and circulate the oil by stroking 10-20 times. The leg may now be replaced into the crowns per required torque specs found in Table 6, next page. Make sure clamp spacers are present within the lower crown pinch joint. (2 round washers per bolt or 1 rectangular plate spanning both bolts)

TABLE 1 - WHEEL CLEARANCE

FORK TRAVEL	MINIMUM TIRE CLEARANCE	MAXIMUM TIRE RADIUS	MAXIMUM TIRE WIDTH
180MM	189MM	345MM (Image 7, p.7)	80MM (Image 7, p.7)
203MM	212MM	345MM (Image 7, p.7)	80MM (Image 7, p.7)

TABLE 2 - TRAVEL MEASUREMENT

FORK TRAVEL SETTING	SEAL TO DROPOUT MEASUREMENT
180MM	185MM (Image 6, p.7)
203MM	208MM (Image 6, p.7)

TABLE 3 - SAG MEASUREMENT

FORK TRAVEL SETTING	RECOMMENDED SAG
180MM	35-45MM (Image 6, p.7)
203MM	35-45MM (Image 6, p.7)

TABLE 4 - VOLUME

DAMPING OIL VOLUME	SEMI BATH OIL VOLUME	PISTON LUBRICATION OIL [SEMI BATH]
160 ml	30 ml	5 ml

TABLE 5 - DUAL CROWN SIZING

CUP-TO-CUP MEASUREMENT*	DUAL CROWN SIZE
131 - 159MM	SMALL (Flat Upper Crown)
154 - 183MM	LARGE (Drop Upper Crown)

*Cup-to-cup measurement is the distance from the bottom of the lower headset cup to the top of the upper headset cup. (See Image 7, p.7).

TABLE 6 - RECOMMENDED TORQUE SPECIFICATIONS

ITEM	TORQUE SPECIFICATIONS- NM (IN-LBS)
DUAL CROWN CLAMPS	10.7 - 12.4 NM (95-110 IN-LB)
HEX AXLE PINCH BOLTS	3.4 - 4.5 NM (30-40 IN-LB)
HEX AXLE END SCREW	3.4 - 4.5 NM (30-40 IN-LB)

WARRANTY

Any Hayes Bicycle Group (HBG) product found by the factory to be defective in materials and/or workmanship within one year (two years in European Union countries) from the date of purchase will be repaired or replaced at the option of the manufacturer, free of charge, when received at the factory or authorized distributor locations with proof of purchase, freight prepaid. Any other warranty claims not included in this statement are void. This includes assembly costs (for instance by the dealer), which shall not be covered by HBG.

This warranty does not cover breakage, bending, or damage that may result from crashes or falls. This warranty does not cover any defects or damage caused by alterations or modification of new HBG products or parts or by normal wear, accidents, improper maintenance, damages caused by the use or abuse of the product, or failure to follow instructions contained in the applicable instruction manual. Any modifications made by the user will render the warranty null and void.

The cost of normal maintenance or replacement of service items, which are not defective, shall be paid for by the original purchaser. This warranty is expressly in lieu of all other warranties, and any implied are limited in duration to the same duration as the expressed warranty herein. HBG shall not be liable for any incidental or consequential damages. Customers in countries other than USA should contact their dealer or local HBG distributor.

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