



# 2002 Mountain Ball Bearing Disc Brake Installation Guidelines



**FOLLOW THESE INSTRUCTIONS CAREFULLY. IF YOU DO NOT UNDERSTAND THE INSTRUCTIONS, HAVE THE INSTALLATION DONE BY A PROFESSIONAL BIKE MECHANIC.**

Only levers designated for side-pull brakes, such as Avid's Speed Dial Series and AD 3 levers, can be used the Mountain Ball Bearing Disc Brake. For best operation and performance Avid highly recommends that you use an Avid Speed Dial lever and premium quality brake cable and housing. Failure to do so will reduce the performance of the system.

Avid Disc brakes are compatible with 44mm, 6-bolt, International Standard hubs.

We recommend 32 or 36 spoke wheels with a 3 or 4 cross spoke lacing pattern. **DO NOT USE RADIALLY SPOKED WHEELS.**

## WARNING

DO NOT TOUCH THE BRAKING SURFACE OF THE ROTOR WITH YOUR BARE HANDS. WEAR GLOVES, OR HANDLE THE ROTOR BY THE SPOKES. OILS FROM YOUR FINGERS WILL DEGRADE THE PERFORMANCE OF ANY DISC BRAKE. DISC BRAKES BECOME VERY HOT DURING USE. DO NOT TOUCH THE CALIPER OR ROTOR IMMEDIATELY AFTER USE. MAKE SURE THE BRAKE HAS COOLED DOWN BEFORE MAKING ANY ADJUSTMENTS.

## IMPORTANT

Brakes are a safety-critical item on a bicycle. Improper set-up or use of brakes can result in loss of control or an accident, which could lead to a severe injury.

*Avid brakes are a performance product that offer increased stopping power over standard brakes.* It's your responsibility to learn and understand proper braking techniques. Consult the owner's manual for your bicycle and a professional bike dealer. Practice your riding and braking techniques on a flat and level surface prior to aggressive riding.

The effectiveness of braking is dependent on many conditions over which Avid has no control. These include the speed of the bicycle, type and condition of the riding surface, braking lever force, proper installation and maintenance of brakes, cables, levers, brake pads, the condition of the bike, weight of the rider, proper braking techniques, weather, terrain, and a variety of other factors.

Avid brakes and levers are not intended for use on any motorized bicycle or vehicle. Any such use could result in a serious personal injury.

## ALWAYS RIDE UNDER CONTROL.

Remember, it takes longer to stop in wet conditions. To reduce the possibility of an accident and minimize trail erosion, you should avoid locking-up your wheels.

## BRAKE INSTALLATION

**TOOLS NEEDED:** 2.5mm & 5mm hex wrenches, T-25 TORX® wrench, adjustable torque wrench [5-10Nm (40-90 IN-Lbs) range,] and cable cutters.

### 1 Install the rotor

Mount rotor to hub using supplied T-25 TORX® bolts and tighten to the specified torque. **AVID logo MUST face out.** Install wheel into fork or frame.

**TORQUE:**  
6.2 Nm (55 In-Lbs)



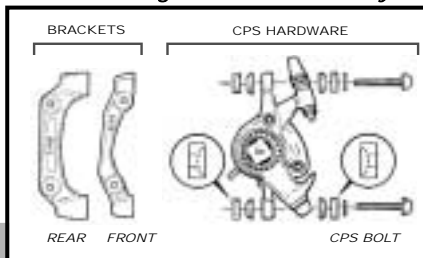
**IMPORTANT:**  
The supplied TORX® wrench is for emergencies only. Use a torque wrench to ensure proper torque value.

**WARNING** IF YOU ARE USING A HUB WITH A REMOVABLE SHIM - YOU MAY NEED LONGER ROTOR MOUNTING BOLTS. CONTACT THE HUB MANUFACTURER FOR THE RECOMMENDED BOLTS.

### 2 Mount the caliper

For International Standard Mount, bolt the caliper assembly and mounting bracket ("AVID" facing OUT) to the I.S. mounting tabs using the M6 bolts provided. Tighten to the specified torque value. Loosen slightly the two CPS bolts that attach the caliper to the mounting bracket. For Manitou forks, remove the mounting bracket, leaving the CPS bolts & washer stacks intact. Discard the bracket and install the caliper on the fork.

**Do not tighten the CPS bolts yet.**



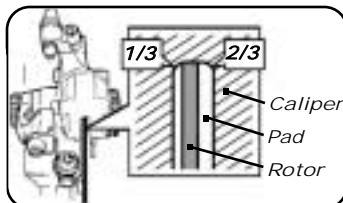
**TORQUE:**  
9-10 Nm (80-90 In-Lbs)

**DO NOT TIGHTEN YET!**

**IMPORTANT:**  
If using racks, panniers, or fenders, this is a good time to ensure there is clearance for the caliper torque arm to move through its complete range of motion.

### 3 A. Align the Caliper

Turn the inboard (closest to the wheel) knob clockwise until the rotor is properly positioned in the caliper body.



Rotor should be offset to the outboard side of the rotor slot. Ideal ratio is 1/3 to 2/3.

### B. True the Caliper

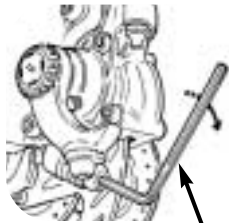
Turn the outboard pad adjustment knob in until it is *firmly* squeezing the rotor against the inboard pad - thus immobilizing the actuating arm.



**Tip:**  
If the adjuster knobs are difficult to turn, turn them back and forth a few times until they feel smooth.

## 4 Tighten the caliper

Tighten the two CPS bolts that attach the caliper to the mounting bracket. Tighten one and then the other, repeating until they are at the specified torque.



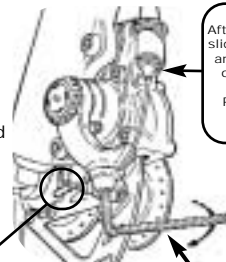
**TORQUE:**  
8-10 Nm (70-90 In-Lbs)

## 5 Install the cable

Pass the brake wire through the anchor bolt on the actuating arm. Cable slack may be removed with a fourth-hand tool. Tighten cable anchor bolt to the specified torque. Use the barrel adjuster at the brake lever to remove any remaining cable slack.

### IMPORTANT:

*After the cable is anchored, check to be sure there is no more than 20mm (3/4 in.) of excess cable beyond the anchor bolt. Trim as necessary.*



**Tip:**  
After anchoring the cable, slide the lower boot down and place one **small** dot of light grease inside.

Return the boot to its proper position.

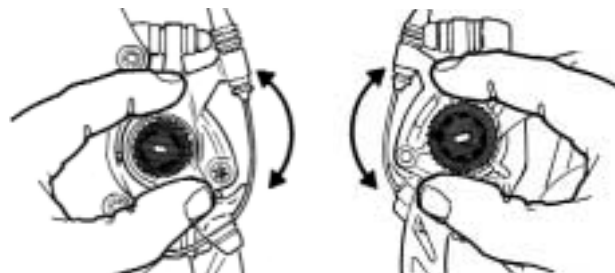
**TORQUE:**  
5-7 Nm (40-60 In-Lbs)

## 6 Adjust brake pads

Turn both pad adjustment knobs counterclockwise until desired pad/rotor clearance is achieved (approximately 2 or 3 clicks each).

### IMPORTANT:

*Only use the barrel adjuster at the brake lever to adjust for cable slack. For lever throw, use the outboard adjustment knob. For brake pad wear adjustment, use both the inboard AND outboard knobs.*



Outboard pad adjustment knob

Inboard pad adjustment knob

## BREAK-IN PERIOD, BRAKE ADJUSTMENT, AND MAINTENANCE

### Brake pad break-in period

It may take anywhere from 20 to 40 complete stops to break in Avid pads. You may begin to notice an increase in braking power after the first ride. Brake noise can occur not only during the break-in period, but off and on throughout the life of the brake pads. Noise is dependent upon factors such as brake set-up, rider weight, riding style, braking style, and riding conditions (i.e. dust, soil, etc. contamination of friction surfaces).

### Spring tension adjustment

If necessary, spring tension can be adjusted by turning the spring tension adjustment screw with a 2.5mm hex wrench. Turning the screw clockwise increases spring tension, which equals harder lever pull.



### Cable slack adjustment

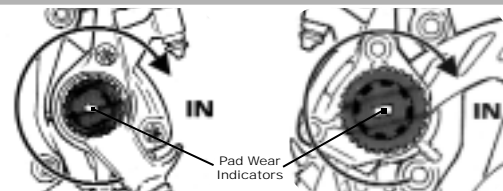
Use the barrel adjuster on the brake lever to remove any cable slack from the system. Turn the adjuster out until there is no free play in the lever, but not so far that the torque arm on the caliper is advanced. The torque arm should return completely when the brake lever is released.



### Pad wear adjustment

As with any brake, you will need to compensate for brake pad wear over time. To do this, turn both inboard and outboard red adjusting knobs **CLOCKWISE** 1 or 2 clicks as needed to restore your brake to optimum settings. **DO NOT use your barrel adjuster to compensate for pad wear.**

A pad wear indicator is at the center of each knob. As the knob is turned in, the indicator will retract deeper into the knob giving a visual indication of approximately how much the pads have worn.



Pad Wear Indicators

### Before each ride

- Check cables for signs of wear or fraying.
- Squeeze the brake lever firmly and check for proper brake function. Adjust for pad wear if necessary.
- Check pads for wear and replace if necessary.
- Make sure rotors are free of foreign substances and oils.

### Pad replacement

A pad should be replaced when its total thickness (backing plate & friction material) is less than 3mm. To remove the pads, back both adjuster knobs all the way out (counter-clockwise,) then squeeze the pad tabs together and pull both pads straight out of the caliper. Reverse the process for installation of the new pads. Squeeze the brake pad/spring clip assembly together then press firmly into the caliper until it "clicks" into place.

### LIMITED WARRANTY

Avid, LLC (Avid) warrants to the original consumer purchaser of every Avid product that the product shall be free from defects in workmanship and materials for a period of one (1) year from the original date of purchase. The sole remedy under this warranty is limited to, at Avid's sole discretion, repair or replacement of the defective product. Labor and shipping costs are excluded from this warranty. This warranty only applies to the original consumer purchaser and is not transferable.

**THIS WARRANTY DOES NOT COVER** normal wear and tear (including, without limitation, brake pad wear), or defects or failures that are related in any way to improper installation or follow-up maintenance, accident, abuse or neglect (including, without limitation, thread damage). Since Avid has no control over the product's final use, Avid also does not warrant the suitability of the product for specific riders and/or uses. **IN NO EVENT SHALL AVID BE RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, WHETHER BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT OR PRODUCTS LIABILITY, INCLUDING WITHOUT LIMITATION, PERSONAL INJURY DAMAGES, PROPERTY DAMAGE OR ECONOMIC LOSSES.** Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

**AVID MAKES NO OTHER EXPRESS WARRANTIES. ALL IMPLIED WARRANTIES, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY LIMITED TO THE ONE (1) YEAR DURATION OF THIS WARRANTY.** Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Claims under this warranty may be initiated with any Avid dealer. If this is not practical, you may contact Avid in writing at the address listed below. Dated proof of purchase must accompany all warranty claims.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.



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### Care and cleaning

Extreme care must be taken when cleaning both the bicycle and its new disc brakes. Under normal use, it is not necessary to clean the caliper rotor or pads. If necessary, use only water and dish detergent to wash the caliper and rotor - being sure to thoroughly rinse all soap residue from the rotor. Dry with a clean paper towel.

### WARNING

**DISC BRAKES ARE OIL SENSITIVE! DO NOT SPRAY ANY SOLVENTS OR LUBRICANTS IN THE VICINITY OF THE ROTORS OR BRAKE PADS. NEVER TOUCH THE PAD SURFACE OR ROTOR SURFACE WITH YOUR FINGERS. DOING SO WILL SIGNIFICANTLY DEGRADE BRAKING PERFORMANCE.**