

Bicycle Brakes





Common Rim Brake Styles...

cantilever



- linear pull
- direct pull
- V-brake



Caliper Brake - side pull



Caliper Brake - centre pull

Brake Pad Wear

- brake pads should be checked for wear
 - examine how much friction material is remaining
 - keep in mind the age of the pads
 - inspect the braking surface on the rim for wear

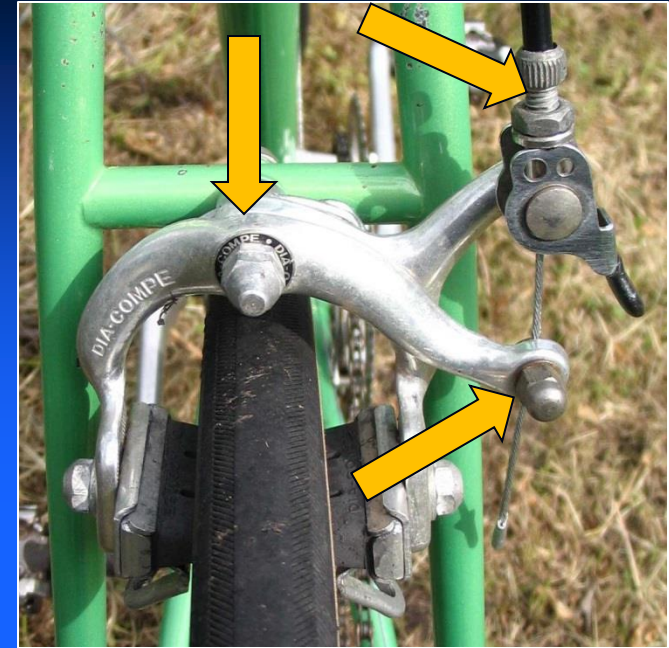


Caliper Brakes

➤ *lightly* lubricate the following with Triflow oil...

- ❖ caliper arm pivot
- ❖ barrel adjuster thread
- ❖ pinch bolt thread

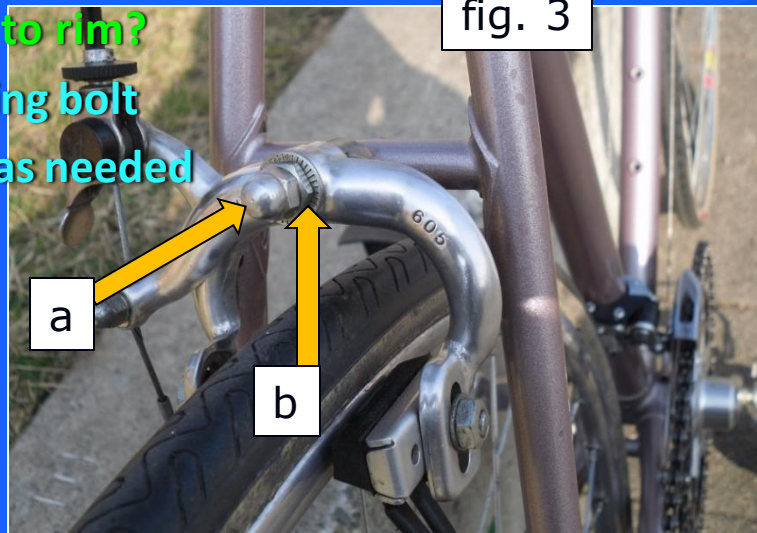
fig. 1



- caliper arms pivot off the center bolt/stud
- arms should move freely when squeezed, but should have no play or knocking (fig. 2)
- loose / sloppy arms?

- ❖ loosen locknut ("a" in fig. 3)
- ❖ adjust nut as needed ("b" in fig. 3)

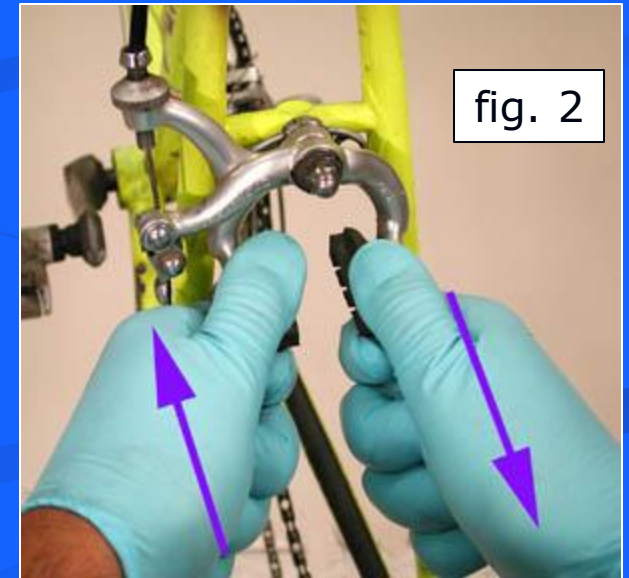
fig. 3



➤ pads not centered to rim?

- ❖ loosen mounting bolt
- ❖ rotate caliper as needed

fig. 2



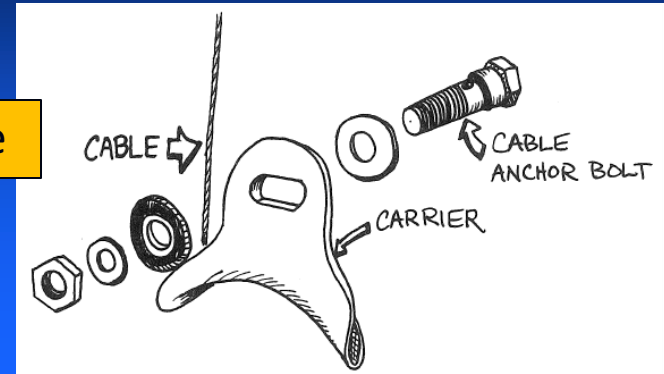
Cantilever brakes

Two methods of connecting the caliper arms...

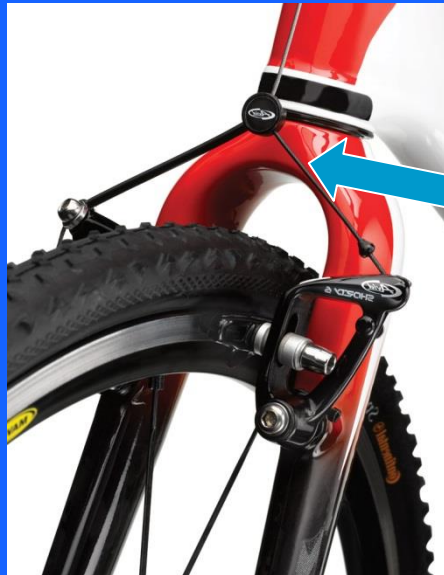
straddle wire



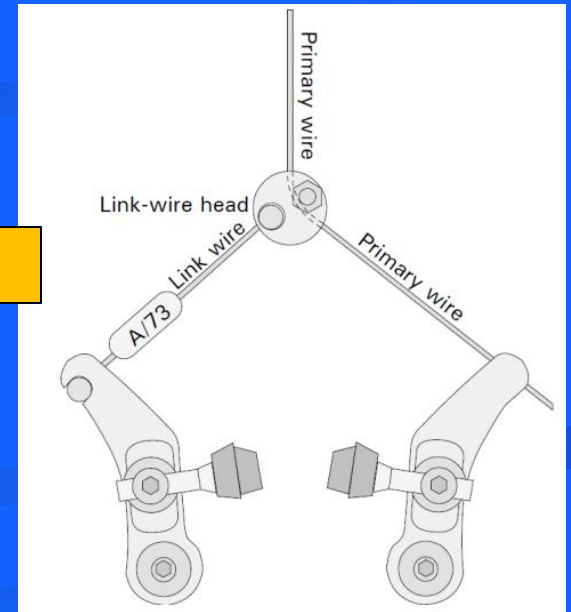
yoke



link wire

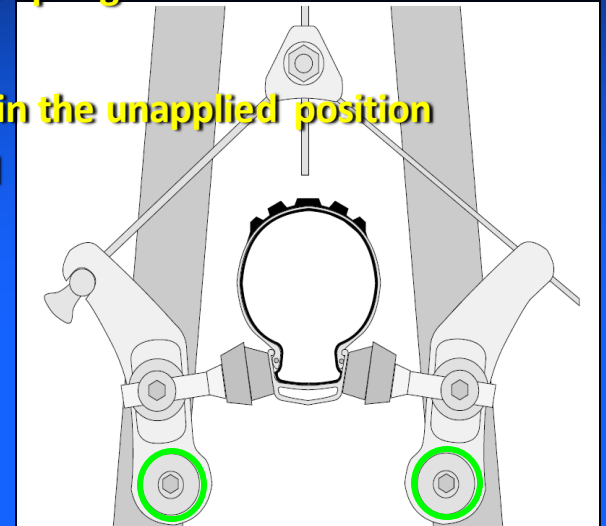


link wire



Cantilever brakes

- make sure rim is centered in the frame
- calipers mount to “bosses” on the frame/fork – lightly grease the mount surface
- mounting boss has a hole or holes to accept the end of the return spring
- left and right caliper arms and springs are different
- make sure pads are an equal distance from both sides of the rim in the unapplied position
- look for set screws on each arm to change this distance if needed



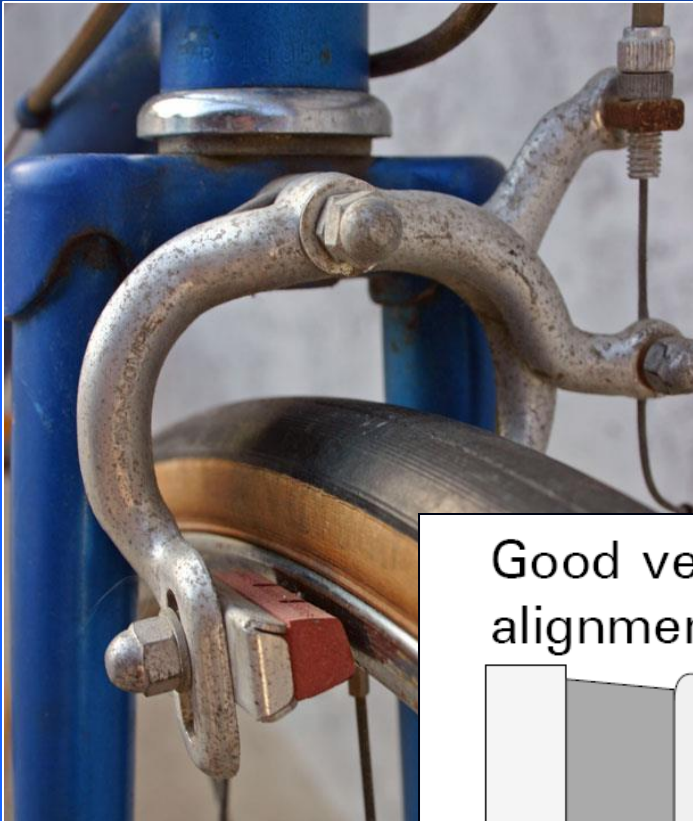
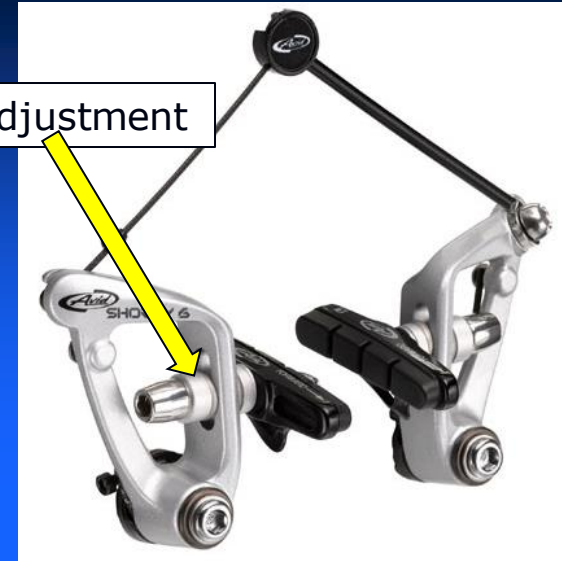
lightly lubricate mounting bosses with grease



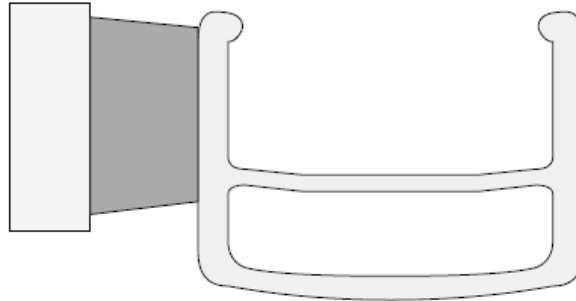
Brake pad-to-rim alignment

- brake pad-to-rim contact is critical

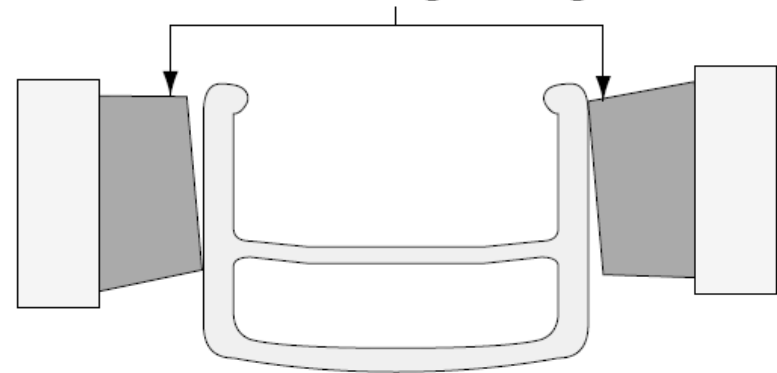
pad mounting points allow for pad adjustment



Good vertical-angle alignment



Poor vertical-angle alignment

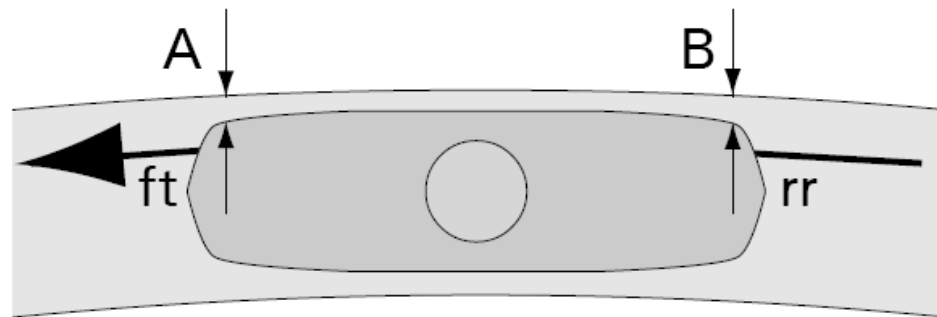


36.9 The vertical angle of the pad face should closely match the vertical angle of the rim's braking surface.

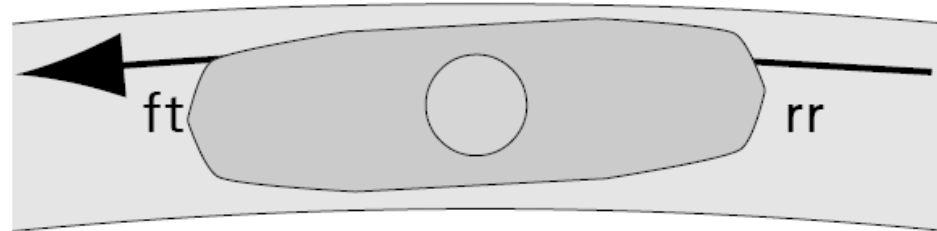
Brake pad-to-rim alignment



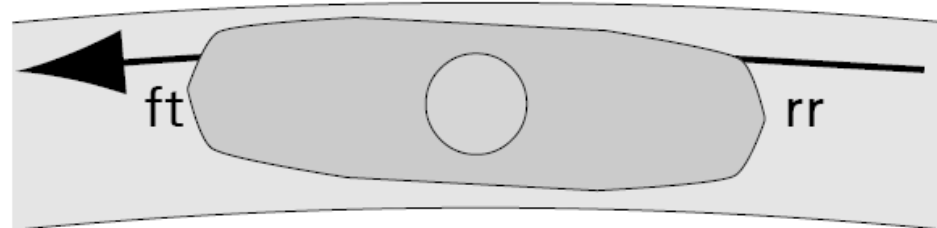
Good tangent
($A = B$)



Poor tangent

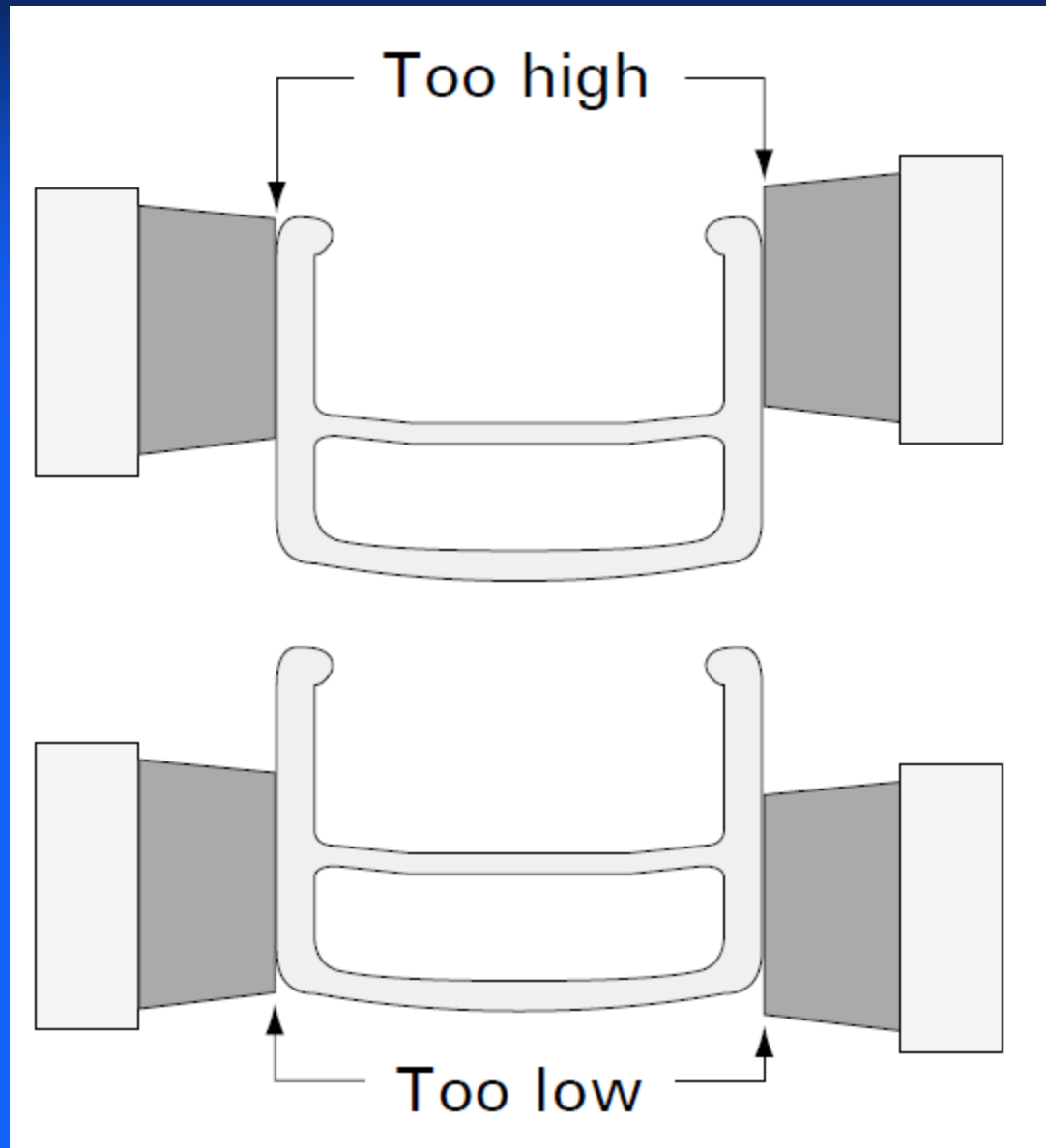


Poor tangent



36.23 When pad-tangent alignment is correct, the upper front and rear corners of the pad are equidistant from the top of the rim.

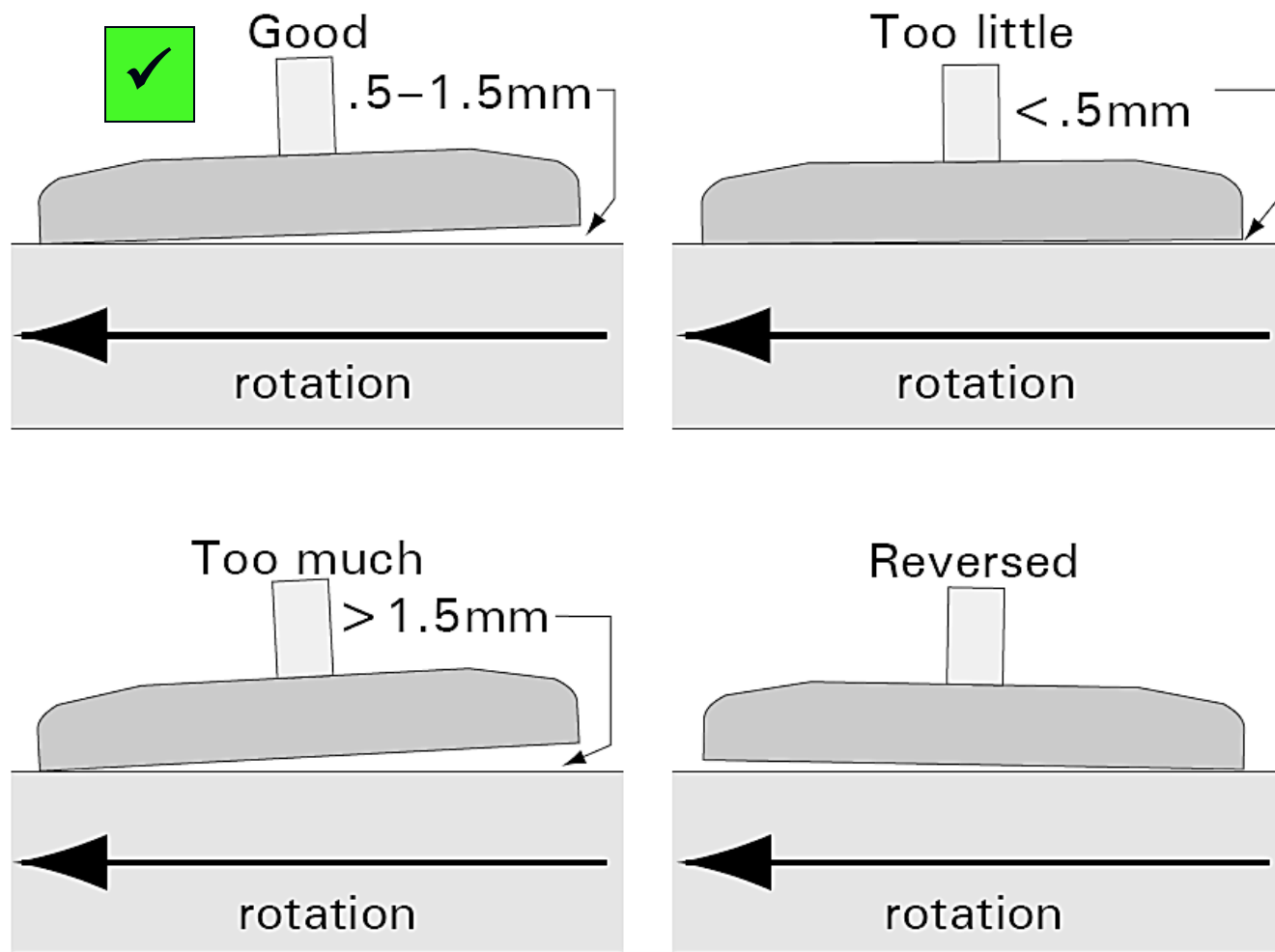
Brake pad-to-rim height





Brake Pad Toe-In

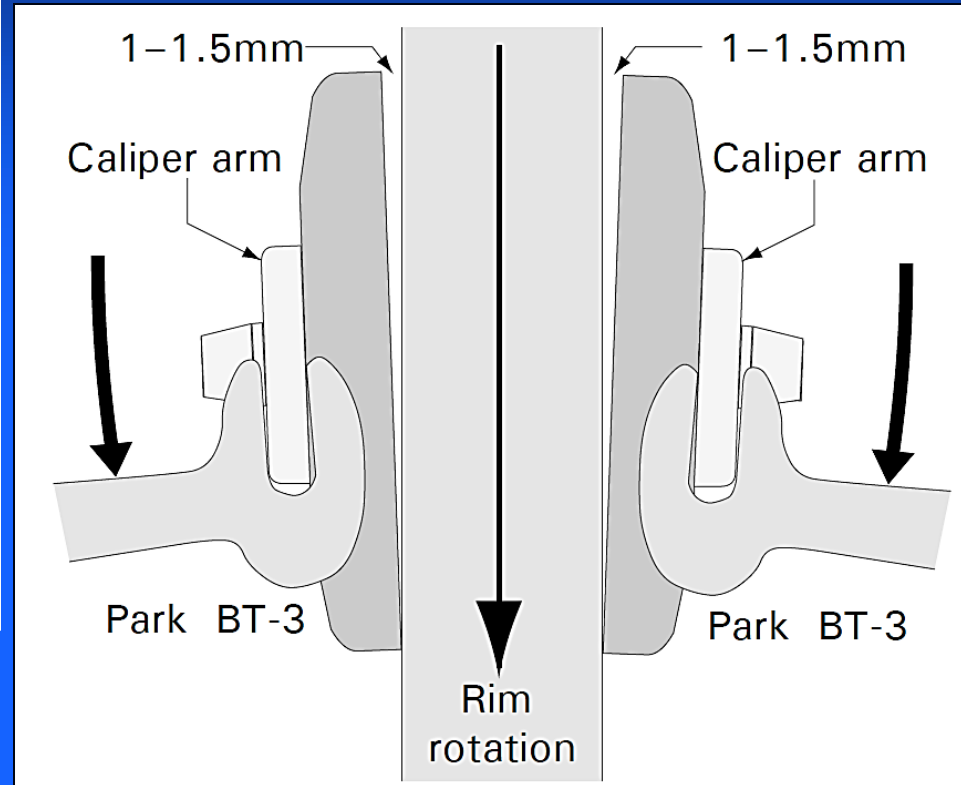
- **toe-in will help minimize/eliminate brake squeal**
 - **squeal is caused by high frequency flexing & rebound**



36.11 Properly toed pads should clear the rim by $.5-1.5\text{mm}$ at the entry-end of the pad when the exit-end just touches the rim.

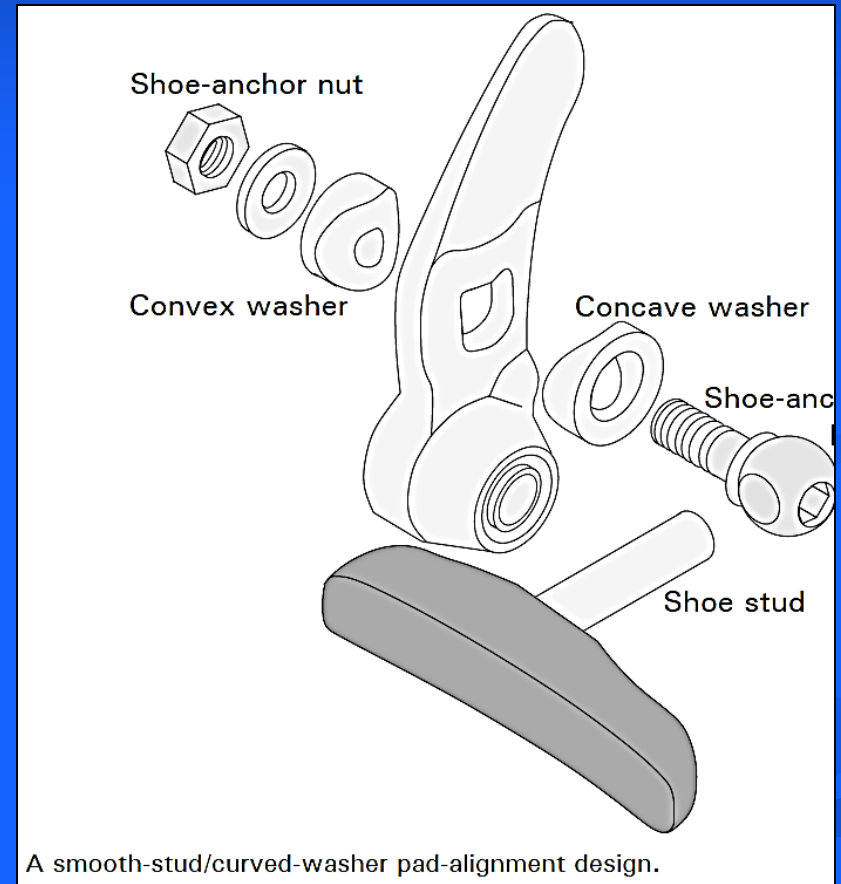
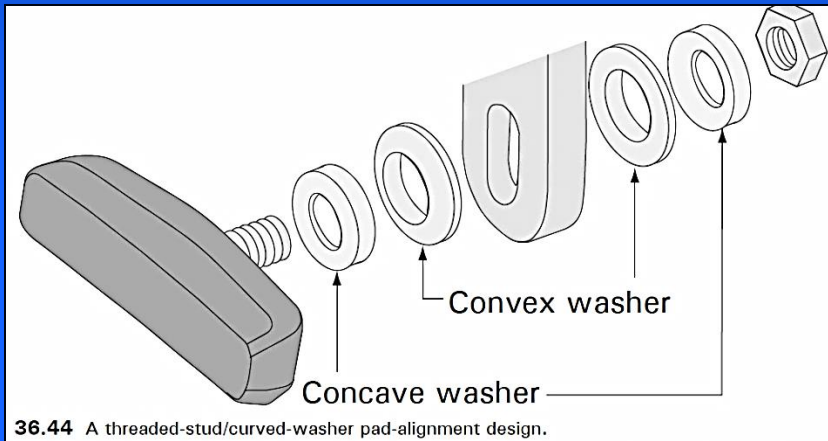
Side-Pull Toe Alignment

- caliper arms are bent slightly...



Cantilever Brake Adjustments

- these require you be patient as you are adjusting height, toe-in & rotation angle all at once
 - this normally requires numerous attempts before it's correct



Ah, that should be good enough...





Adjusting cable tension & pad clearance

- screw in the **barrel adjuster** all the way, then back it out 1 turn
 - barrel adjuster is located at the brake lever or at the brake caliper
- squeeze the calipers so the pads are 2mm away from the rim
- pull on the cable to remove all slack
- tighten cable pinch bolt



Brake Lever Travel

- lever should not move more than $\frac{1}{2}$ to $\frac{3}{4}$ of it's total travel
- if it gets too close to the grip, or bottoms out as this one does, readjust cable tension



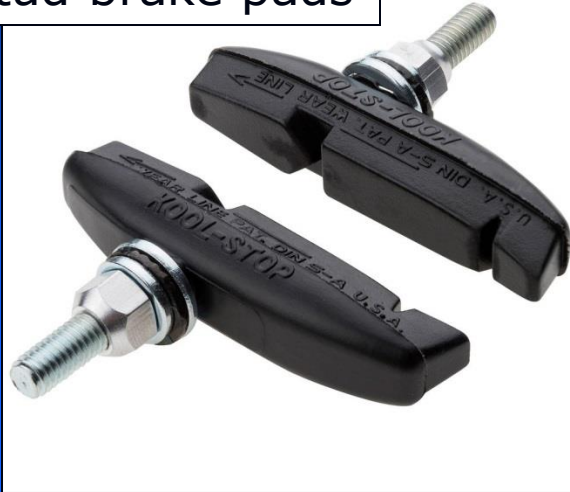
Cleaning Brake Pads & Rim

- brake pads and the rim's braking surface should be cleaned with rubbing alcohol or Brakleen
 - grease or assembly oil will be on the braking surfaces from the work you have been performing on the bike!

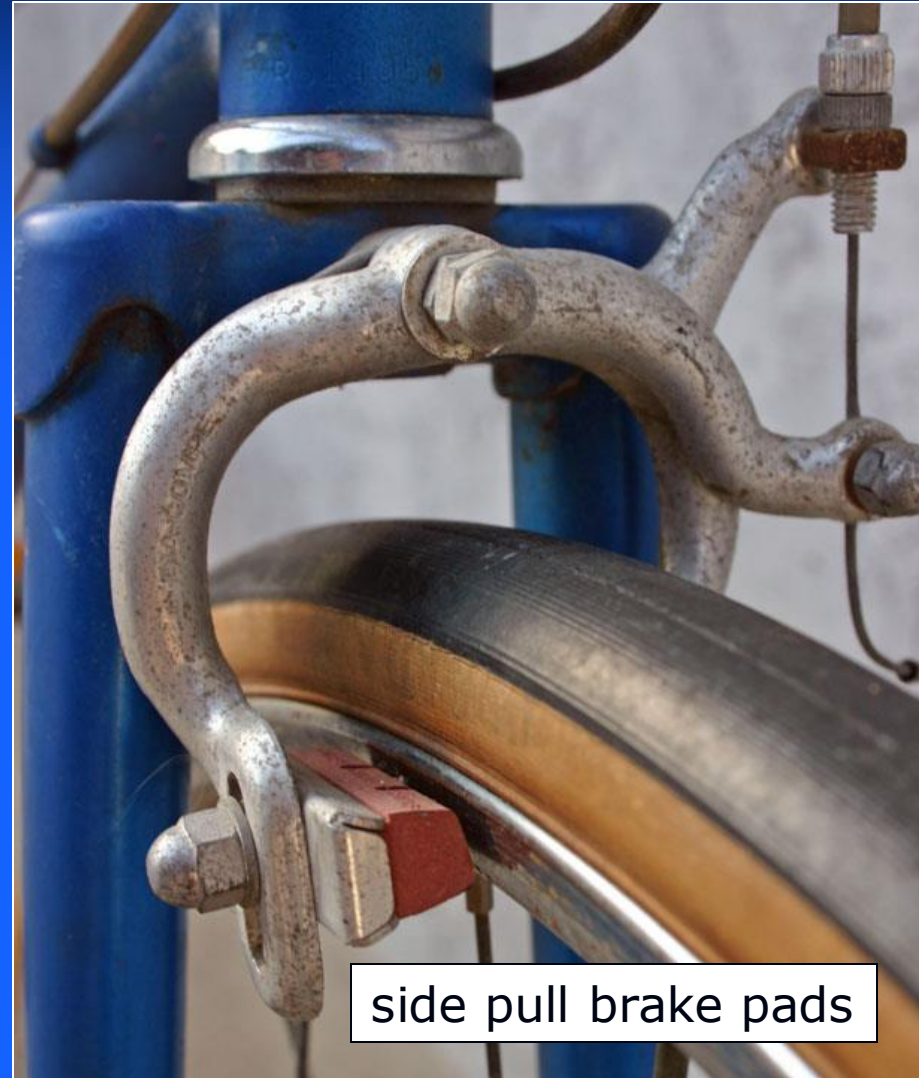


Brake Pad Styles

threaded stud brake pads



brake pads with smooth post



side pull brake pads

Disc Brakes

- are becoming more popular
 - they offer better braking with friction material similar to cars
 - easier to adjust
 - the wheel is no longer the wear surface
 - better braking in wet conditions
 - can be operated...
 - ❖ mechanically (via cable)
 - ❖ hydraulically (using fluid under pressure – like cars)

