

Brakes

Overview

Main parts: lever, cable & housing, mechanism

Lever yanks cable, cable pulls mechanism, mechanism slows down wheel

Levers

Multiple types of levers – main categories are road style (dropped bars), touring style (flat bars)

Levers need to match to cable bead

Many road bike levers also include gear shifter

Cable & Housing

Cable has a “bead” at one end, a small metal block that fits in the lever

Cable passes through one or more lengths of housing, which are anchored to bike via braze-ons or clips

Cable usually threaded through a barrel adjuster to facilitate small adjustments

Far end of cable secured at mechanism with cable anchor bolt

Tip of cable has a lead bead squeezed around it to prevent fraying

Mechanism

Major types of brakes – rim, disc, drum

Rim brakes use arms that squeeze brake pads onto the rim to slow the wheel

Disc brake mechanism is mounted on one side of hub, drum brake mechanism is inside hub

Disc and drum brake mechanisms outside scope of this class

Major types of rim brakes – side-pull, center-pull, cantilever, V-brake

Rim Brakes

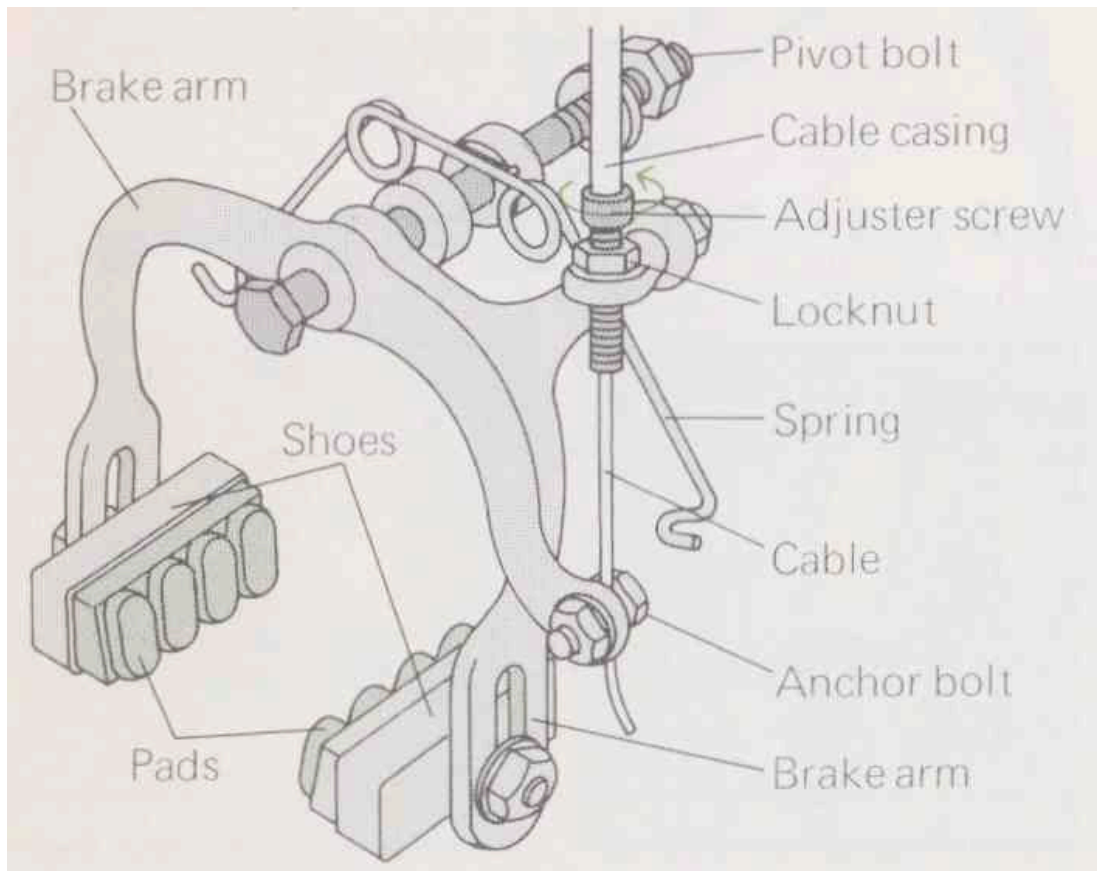
Major types of rim brakes – side-pull, center-pull, V-brake, cantilever

Springs keep brake arms away from rim during normal riding

Squeezing lever pushes brake arms towards rim (against the spring tension)

Brake pads on brake arms contact rim and slow the wheel

Side-Pull Brake



This diagram is for a side-pull brake on a low-end bike

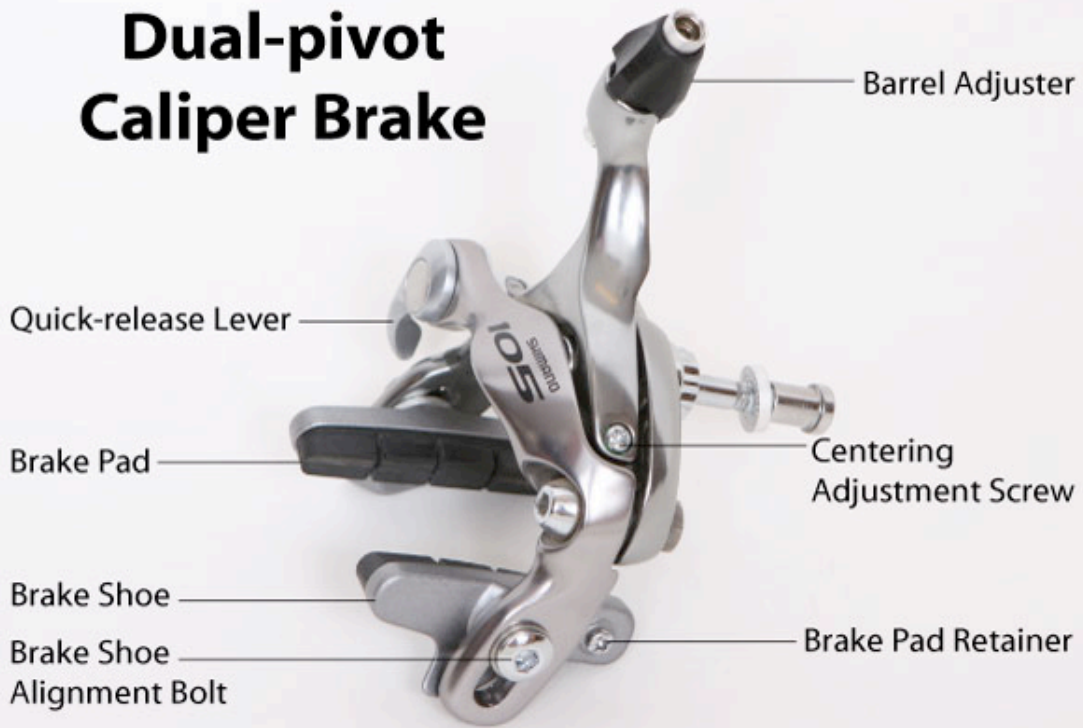
High-end bikes can also use side-pull, but a better quality version

You may need a small wrench or adjustable wrench to undo locknut or loosen cable anchor bolt

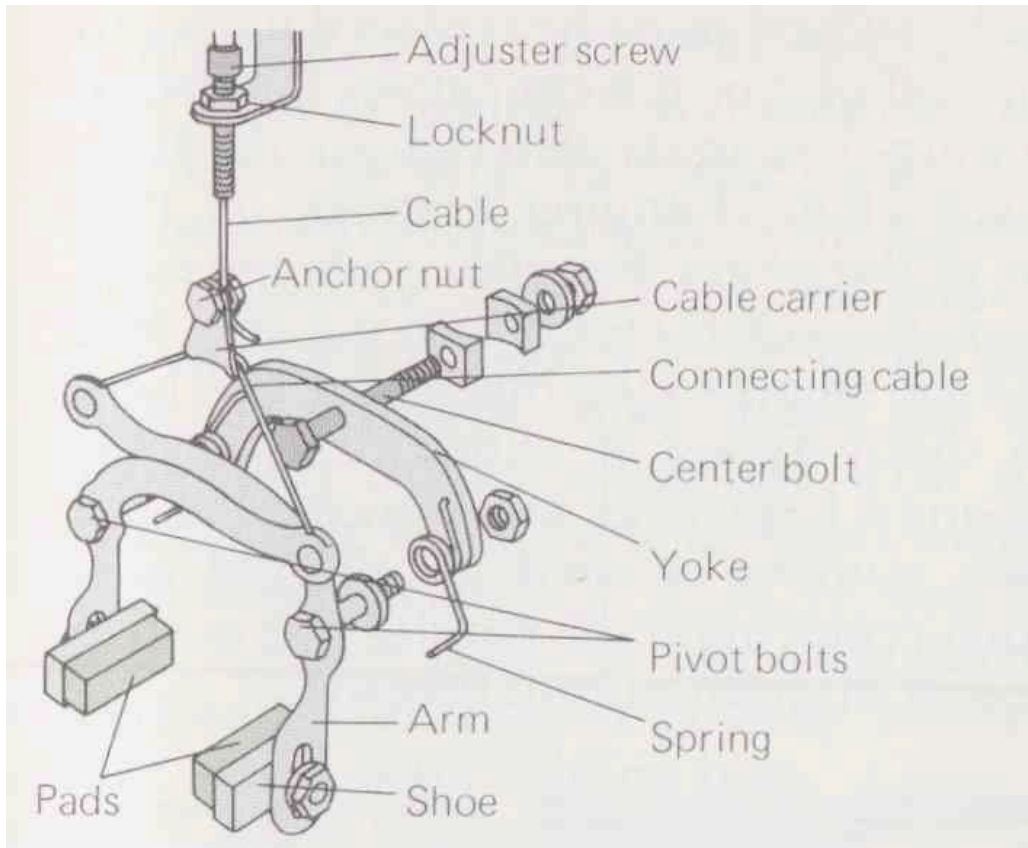
Centering brake can be tricky, adjust by loosening pivot bolt slightly, move brake, re-tighten pivot bolt

A “third hand” tool is useful for squeezing shoes together (to oppose spring tension) during maintenance

Dual-pivot Caliper Brake



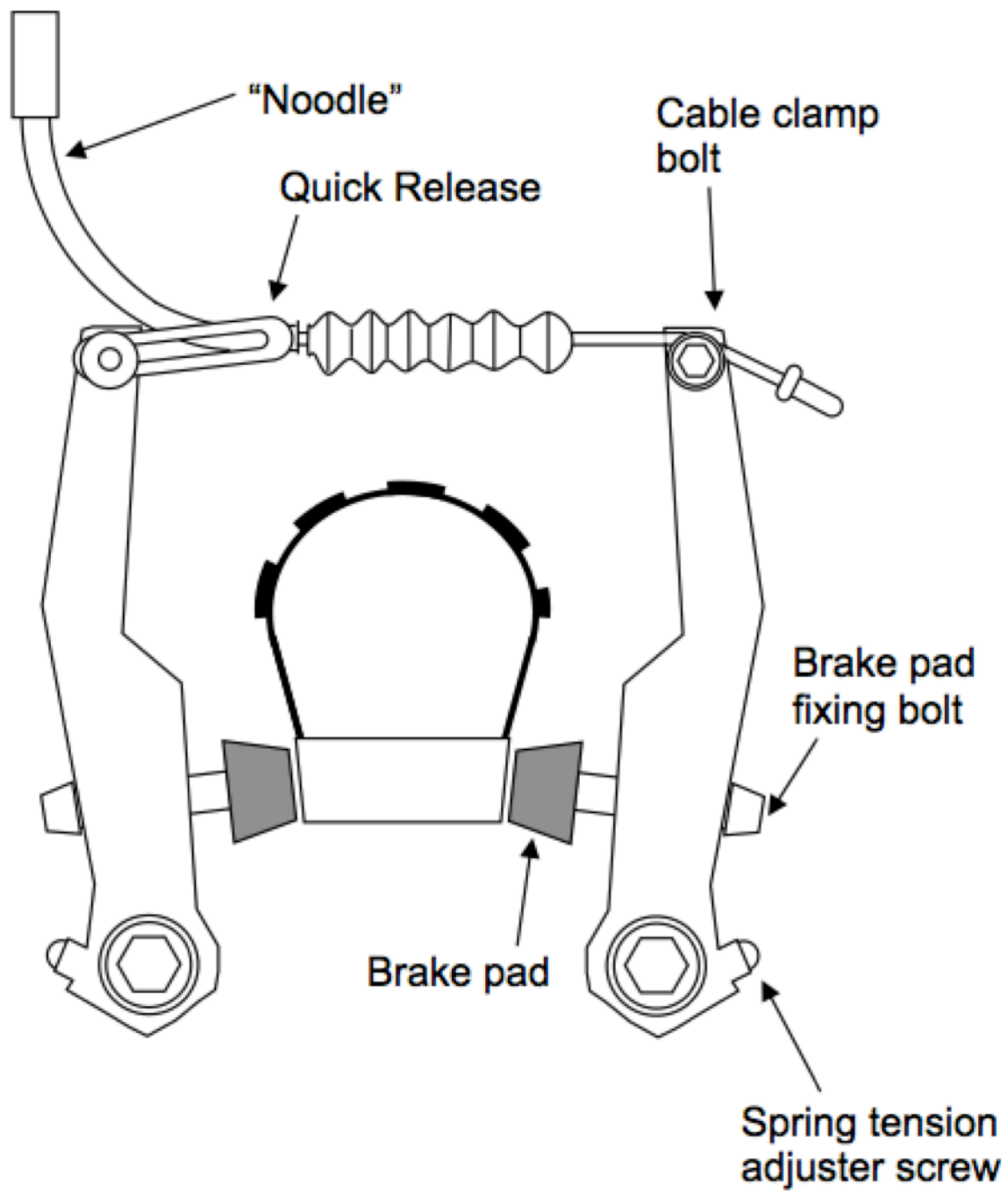
“Dual-pivot” brakes are a high-end variety of side-pull, uses hex nuts, better materials



Center-Pull Brakes

Straddle cable ends can be quick-release

V-Brakes



Tightening a spring tension screw increases tension, moves pad closer to rim

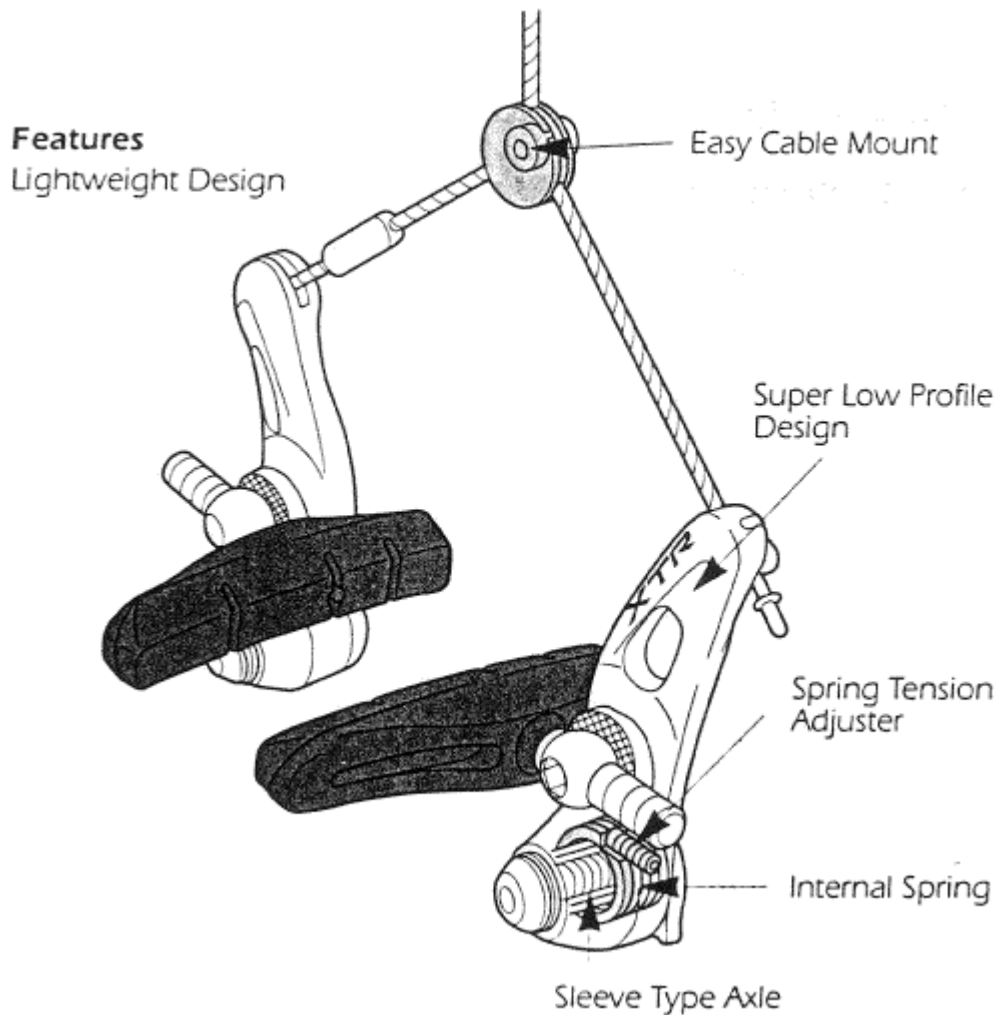
Always loosen spring tension screw on opposite side to compensate

Check "noodle" for correct placement in quick-release bracket

"Noodle" can get damaged easily

Springs can fall off when brake is released, but they're easy to put back

Cantilever Brakes



Quick-release is by popping out short cable on left in diagram

Some models use a straddle cable and carrier bracket in the middle, similar to center-pull

Common Brake Issues

Most common issue is one shoe rubbing – sometimes correctable with barrel adjuster

If barrel adjuster cannot tighten brake sufficiently, loosen it back and take out slack at cable anchor bolt

Brake pads when engaged should entirely touch the rim, not tire or empty space – fix at pad mounts

Pads on high-end brakes can be adjusted in multiple dimensions, including angle

Replace pads when worn down to wear line etched in the rubber surface

Squeaking brakes are OK if they still work – don't spend time on it when marshaling rides

Ideally, brake pads are “toed in” so front of pad contacts rim first as you squeeze lever.

Sticky or frozen brakes – loosen cable anchor bolt and try to move cable through housing. Look for kinks in cable or damage to housing. Lubricant on cable often helps, especially in rust situations