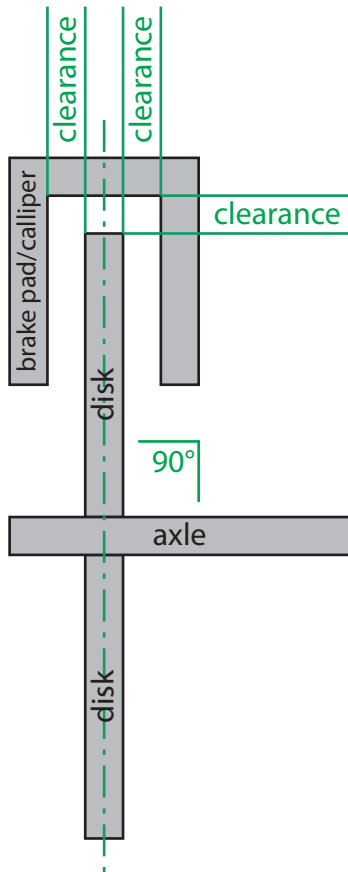


# Potential causes of disk-brake friction : page 1

## IDEAL SITUATION

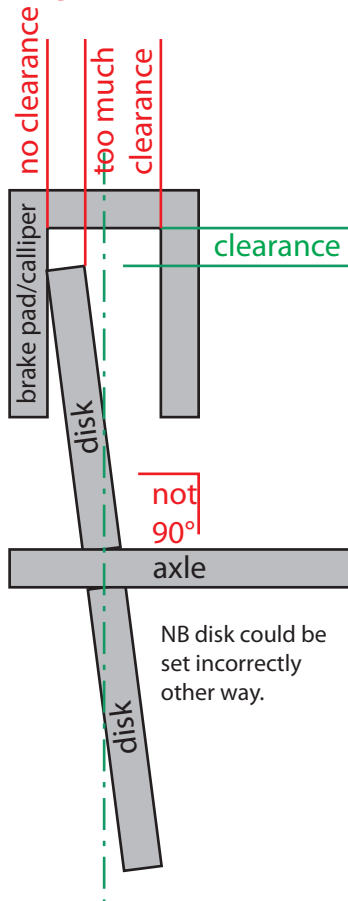
no friction



disk is 'flat' and has uniform thickness

## 3: disk at angle to axle

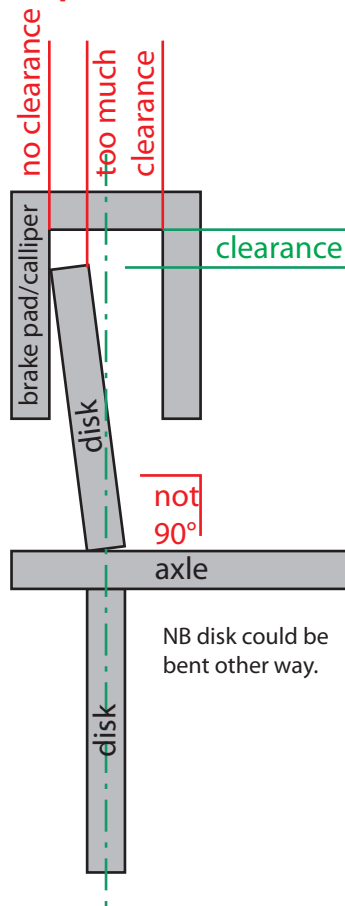
once-per-revolution friction



disk is 'flat' and has uniform thickness

## 1: disk not flat

once-per-revolution friction

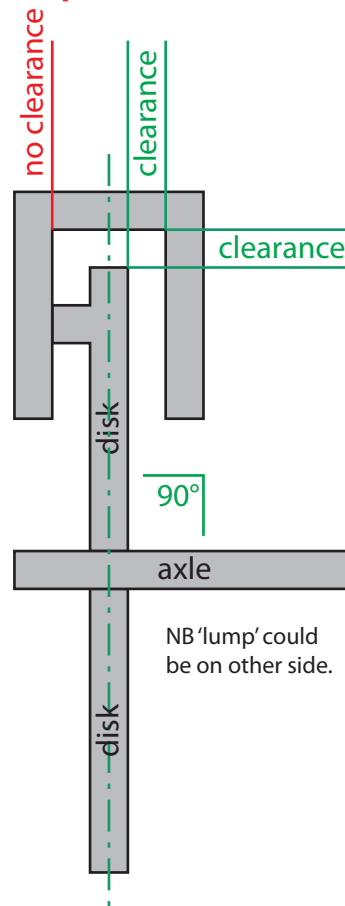


disk is not 'flat' but still has uniform thickness

NB disk could be bent other way.

## 2: disk not uniform

once-per-revolution friction



disk is flat but does not have uniform thickness

NB 'lump' could be on other side.

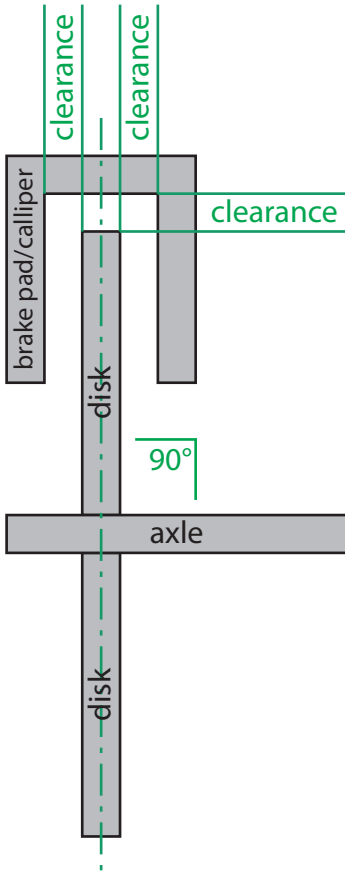
In cases of once-per-revolution friction, both the brake and disk should be replaced because both will have suffered more wear than should have occurred and because disk is likely to be poorly manufactured.

Fortunately, the friction I'm experiencing is once-per-revolution, i.e. not constant. Hence the frame manufacture and assembly, disk placement, brake width, brake height and brake angle are within tolerance (i.e. correct enough) and so the frame does not need to be replaced.

However, slight deviations from perfection could exacerbate once-per-revolution friction. Also, there could be combinations of these causes.

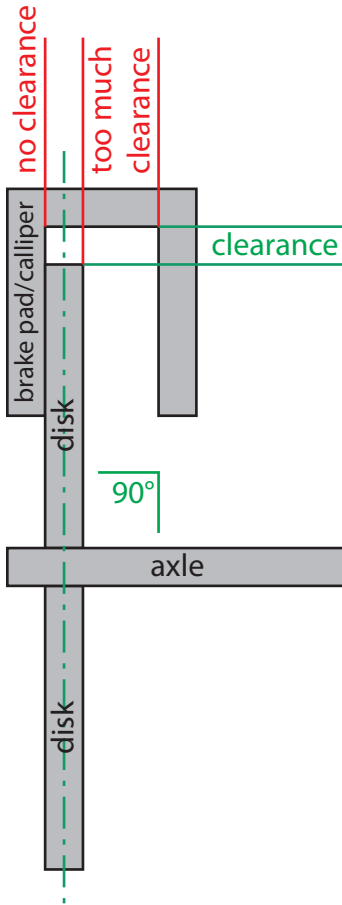
# Potential causes of disk-brake friction : page 2

## IDEAL SITUATION no friction



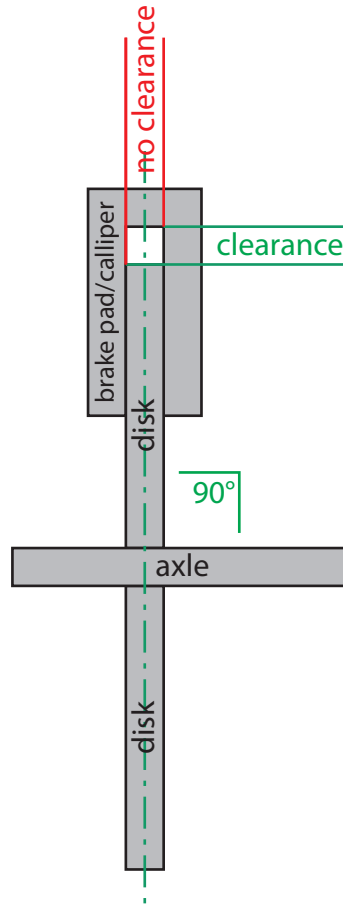
disk is 'flat' and has uniform thickness

## 4: disk in wrong place on axle CONSTANT friction



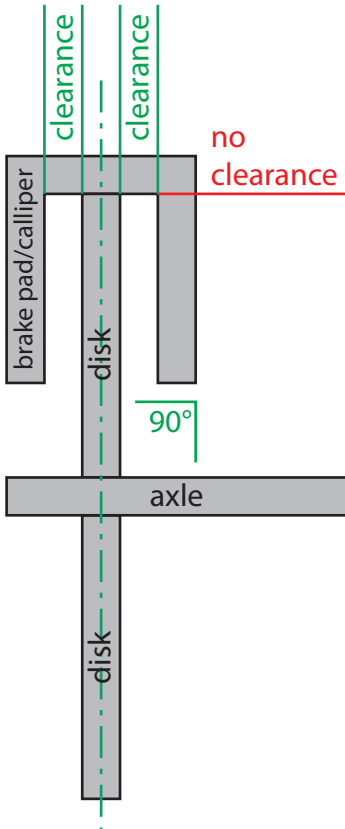
disk is 'flat' and has uniform thickness

## 5: brake too narrow CONSTANT friction



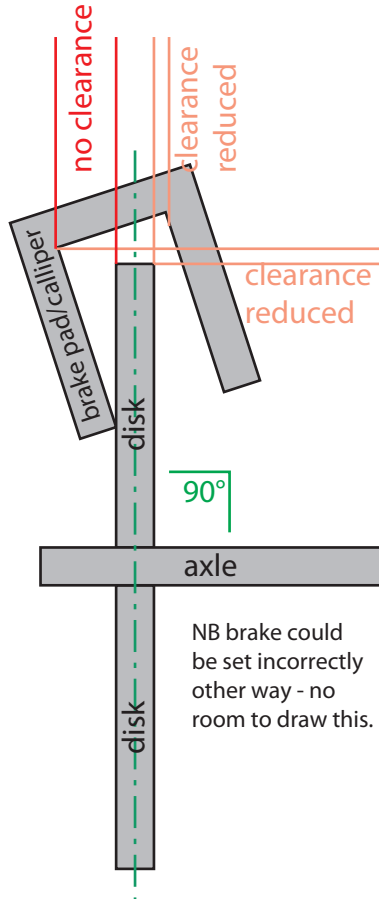
disk is 'flat' and has uniform thickness

## 6: brake too low CONSTANT friction



disk is 'flat' and has uniform thickness

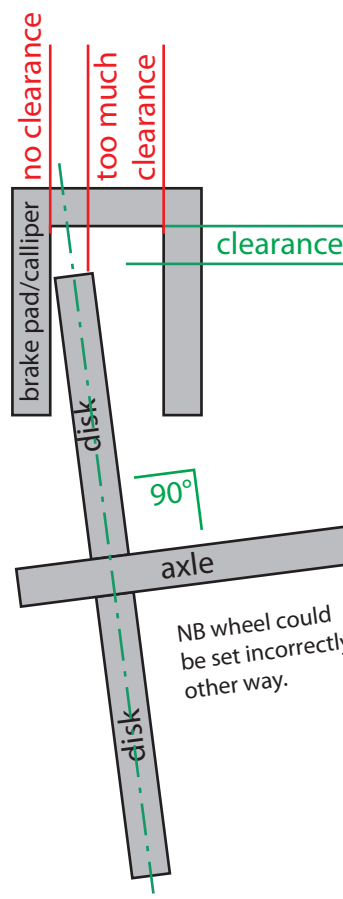
## 7: brake at angle CONSTANT friction



disk is 'flat' and has uniform thickness

NB brake could be set incorrectly other way - no room to draw this.

## 8: wheel set at angle CONSTANT friction



disk is 'flat' and has uniform thickness

NB wheel could be set incorrectly other way.

I do not believe that the wheel, disk and/or brake have been correctly manufactured but set poorly – if they had at least one of the mechanics (who I know to be experienced and knowledgeable) who has worked on the bike would have fixed friction by now.

Further, it's now known that this brand of brake has been manufactured poorly.

In cases of constant friction, both the brake and disk should be replaced because both will have suffered more wear than should have occurred.

The ultimate cause of constant friction could be

1. the frame tubes being incorrectly shaped and/or assembled
2. the mounting points being attached incorrectly to an otherwise correctly made and assembled frame tubes.
3. The wheel being incorrectly mounted in a correct frame.

In cases 1 and 2, the frame should also be replaced because such faults are irreparable.

Fortunately, the friction I'm experiencing is once-per-revolution, i.e. not constant. Hence the frame manufacture and assembly, disk placement, brake width, brake height and brake angle are within tolerance (i.e. correct enough) and so the frame does not need to be replaced.

However, slight deviations from perfection could exacerbate once-per-revolution friction.