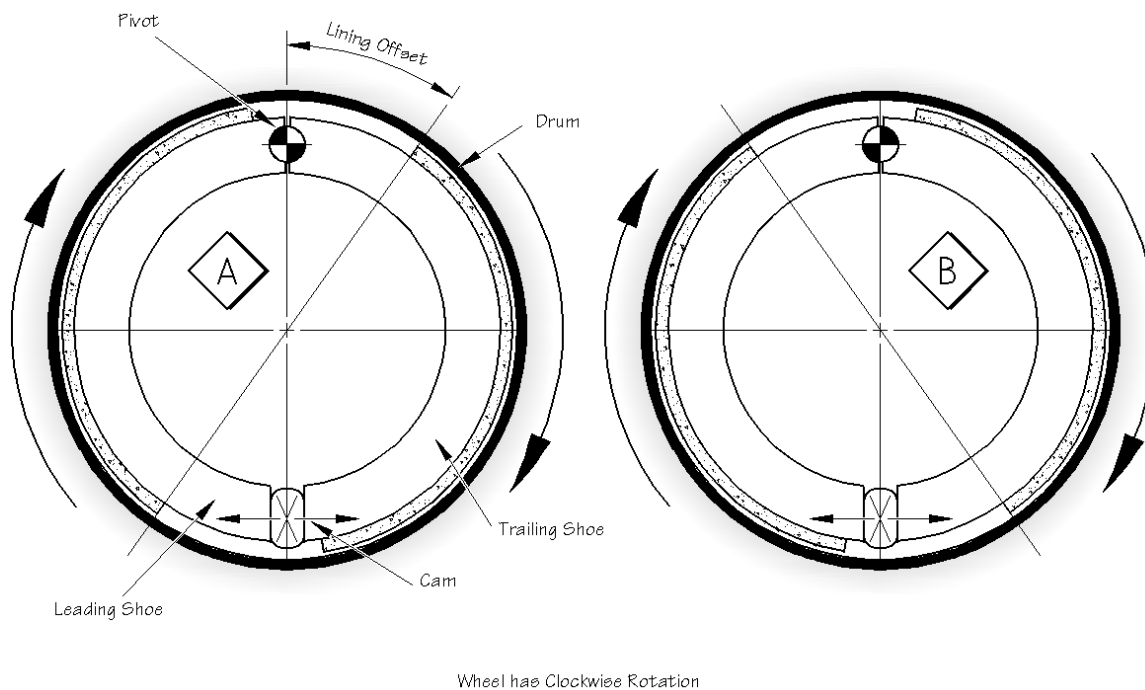


To Lead or TrailThat is the question?

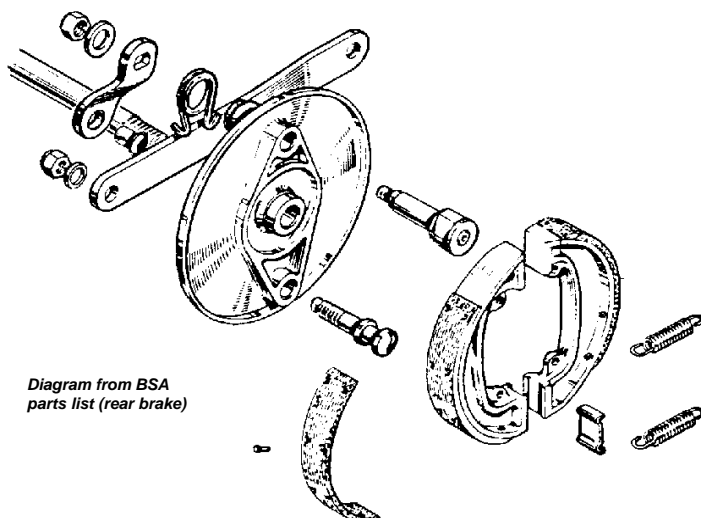
I was assembling the rear brake on a 1971 BSA B50 (conical hub) the other day... This brake is a single leading shoe, but on inspection the two shoes are not the same. The lining is offset circumferentially around the shoe. This means that they can be fitted the wrong way round, but which way is correct A or B?

Putting them back on in same way as they came off, is not much use if they have been dismantled potentially 35 times before! In the diagram, you can see that the shoe linings are offset circumferentially around the shoe. In "A", there is a large gap of shoe without lining. Surely, If there was no gap there

would be greater contact area (better braking) and both shoes would be the same (easier manufacturing and servicing). On the surface a longer lining sounds like better way to go, so there must be a good technical reason for the offset, shouldn't there?



Let's have a look at the genuine factory literature:



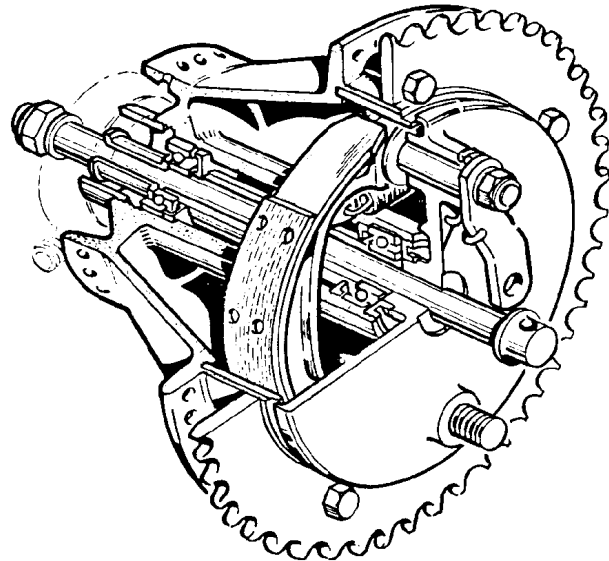
In the garage I keep a copy of the spare parts book, so this was the first port of call. You can see the lining offset on the shoes quite clearly. On this bike, the brake plate is on the left hand side of the wheel. So, for forward motion the drum will be rotating clockwise in the diagram. Which is as shown diagrammatically in "B" above. That is the lining gap on the leading shoe is offset, away from the cam. The trailing shoe has its lining gap nearer to the cam.

Great, that solves it, so assemble everything like that and struggle for a few seconds to get the spindle in without dislodging the spacer inside the speedo drive.

Now, once back inside the house I had a look in the Workshop Manual....

Low and behold, there is a cutaway view of the rear drum, the brake plate is on the left side of the bike so would be rotating anti-clockwise in this picture. You can see the large chunk of missing lining. Wait a minute, this is viewed from the other side of the bike to the one in the parts book and now it looks like pattern "A" with the lining offsets reversed in position from the diagram in the Parts List!

Drawing from the BSA Workshop Manual



OK, so there must be a misprint in one of the books, not really surprising considering things that must have been going on in the factory at the time. But which book is correct?

To decide which way is correct, we need to go back to first principles and think why the brake has been designed with the lining offsets in the first instance.

If the linings were symmetrical then, because of the self servo action, the leading shoe would always do the most braking and the lining would always wear down faster than the one on the trailing shoe. This is not good from a servicing point of view, because shoes are sold in pairs and only one would be worn out every time.

The part of the shoe which sees the most frictional force in contact with the drum, is the bit nearest to the cam. If the lining is cut away in the area near the cam, then the braking efficiency is reduced. We need to keep both linings the same from a manufacturing point of view. So by making them shorter and offsetting them as is "B" we **increase** the power of the **trailing** shoe and **decrease** that

of the **leading** shoe. The net effect then, is to equalise the work of each shoe. This means that forces within the brake are more evenly distributed and that wear on each shoe should be similar. So, that means that in this example, the diagram in the BSA Workshop Manual is correct, and the BSA Parts List wrong. Which I guess is the best way round.

But did Triumph get it right when they redraw the whole parts list for their badge engineered T25?

Their parts list diagram is still wrong, but viewed from the opposite side of the wheel!

