Brake Upgrades for FWD/4WD with 5x100 stud pattern

These started out as my original front brakes, & because I'm more of a twisty road person, than straight line speed, I didn't think they'd be adequate.
These are a single piston floating calliper.

First upgrade was to a set of ST185 Jap spec front callipers.

I didn't need to change discs, which I've been told is the same for all Celicas up to ST20x models, Camrys, etc

The only mod needed was to grind away some of the brake backing plate to clear the calliper.

The brake lines bolts straight up with old fittings & hub-to-calliper bolts are identical.
Only problem is that you can't buy these brake pads from Toyota, as the Aussie ST185 GT4 had a single piston calliper.
I took the old pads to a brake shop & they were able to match it.
Eg Bendix makes pads that suit.

After fitting these I found I had a brake balance problem (not helped that my rear struts were stuffed) caused by locking the rear drums. So I converted these to discs (there is another article on doing this)

Next step was to really get serious.
I managed to locate a set of ST205 discs & callipers off a half cut that wouldn't fit the donor car. (The discs are not Toyota items and came pre-slotted)

As you can see they are much bigger than either of the other callipers I'd used.

The brake pads are also larger.

There are a couple of traps I've discovered after getting these brakes which do not make them a straight bolt on.

These are all caused by the calliper mounting position.

The single & twin piston callipers are mounted on the wheel side of the hub, meaning the hub is simply drilled while the calliper is tapped.

The four piston calliper, due to its size is mounted on the other side of the hub. This means that the calliper is drilled while the ST205 hub is tapped.

(The wheel nuts are temporary for mounting purposes)

All 3 callipers have the same spacing for the mounting holes.

The extra wire with green clip is for the ABS

The bolts for the ST205 are the same overall diameter as the others


ST205 & ST185

This means the hubs need to be drilled out & tapped to accept a bigger bolt that will go through the ST205 calliper. The calliper also needs to be drilled out to accept the larger bolts. Any machine shop should be able to do this accurately.


ST205 M12 bolt & replacement M14 bolt (yet to be shortened)
These are all high tensile parts

The next big hurdle was when I tried to fit the disc & calliper onto the hub at the same time.
While the disc went on, & the calliper offset is correct, the mounting holes for the calliper didn't line up by about 5mm.
Because the ST205 Celica GT4 has a unique double wishbone suspension, it was created around these brakes. Therefore the mounting holes have been positioned further out.
The fix for this is to get the disc machined down from 315mm diameter to 300mm diameter.
I had been told that this was required, but the reason was so that the ST185 wheels cleared the callipers, but now we know the truth.

ST205 disc after being machined down to 300mm

The last hurdle is to get new front brake lines.
Because the ST205 calliper is so large, the original flexible brake lines do not reach.
The ST205 has a solid metal line running from the calliper to the upper wishbone, then a flexible line from there.

Disc & Calliper fitted to car (yes they'd been painted by now)

I was able to overcome this problem by using brake lines off of the ZZE122R Corolla. They were the same length from the car to the strut, but about 2cm longer from the strut to the calliper. To improve the length again, I bent the bracket that holds the brake line to the strut forward slightly.

Caldina hose at the top vs Corolla hose

Due to the width of the callipers, there is now a very tight fit between them & the wheel.

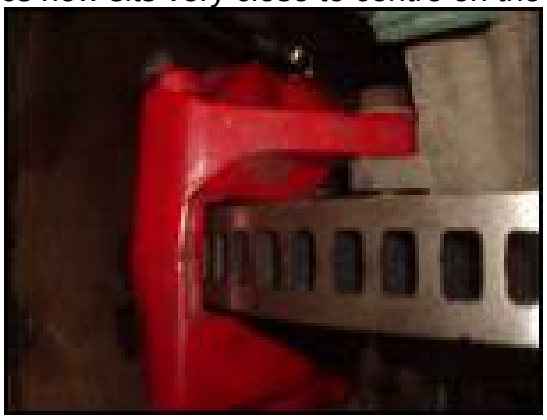
Tight clearance of about 5mm

Because of the offset clearance, most 17” rims will not clear these, although the ones pictured will. (If you’re game to drive with 18” rims, you may have better luck)

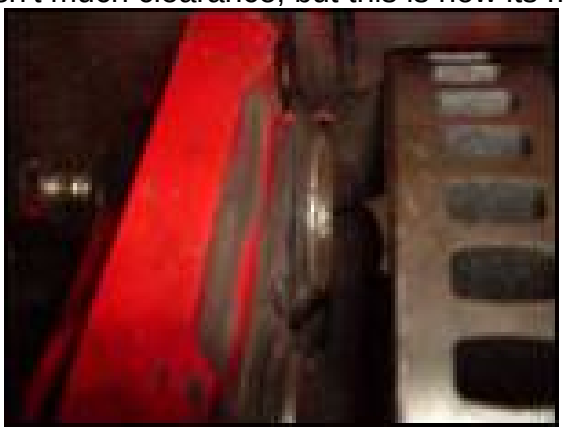
I bought some new DBA slotted discs to suit the ST205
These were then machined down as were done to the previous ones.
(Forgot to get a pic though)

After fitting them to my car, I found that the outer edges were hitting on the inside outer edge of the calliper
This meant that I had to get some material machined off the calliper where it fits up to the steering knuckle.
This meant that the calliper now sits slightly further out.
Not much material was required to be removed. Only 50thou or 1.5mm.
Apparently it took heaps longer to secure the calliper to be milled rather than the milling itself.
Note: that not all cars will have this issue. When doing this upgrade to earlier model cars, in particular the ST18# Celicas, they require a spacer behind the rotor to move it outwards to centre on the calliper.

The discs now sits very close to centre on the calliper



And there isn't much clearance, but this is how its meant to be:



After fitting the discs, I found I had clearance problems with the lower ball joints.



This was solved with a bit of “clearance grinding”.
Be warned though that you don’t grind too much off the ball joint as you’ll break into the inner case.