

CAR70

Advantage Extreme Calipers

alcon
specialist brakes & clutches



Brake Caliper **Installation & Service Instructions**

CAR70

Important – Read this document before proceeding

BRAKE PRODUCTS LIMITED WARRANTY

Limited 12 Month/12,000 Mile Warranty

Alcon Components Ltd. ("Alcon") warrants that these brake products will be free from non-conformity in materials and workmanship for 12 months or 12,000 miles after installation, whichever comes first. In the event of a non-conformity, Alcon will repair or replace, at its sole discretion and option, the non-conforming product or part thereof free of charge. Simply contact Alcon using contact details to be found at www.alconusa.com and www.alcon.co.uk for instructions on obtaining repair or replacement. Any claims under this Limited Warranty must be made within 30 days of discovery of the non-conformity, or the claim will be null and void. Return of the non-conforming product or part thereof at the customer's expense, along with proof of purchase and/or mileage, may be required.

This Limited Warranty does not apply to brake products that have been damaged, misused, altered, or installed or used in a manner contrary to Alcon's instructions. Wear and tear on these brake products is normal, and is not an indication of a non-conformity. This Limited Warranty applies only to aftermarket brake products installed on passenger cars, vans and light trucks for on-road use. This Limited Warranty does not apply to any other use, including but not limited to racing, military (except for standard road vehicles armored for occupant protection), off-highway recreational, or off-highway competition.

DISCLAIMER: THIS WARRANTY IS LIMITED TO REPAIR OR REPLACEMENT ONLY

This Limited Warranty does not cover labor for removing or reinstalling the non-conforming brake product or part thereof, or for the labor or costs of other materials removed or reinstalled in order to repair or replace the Product or part thereof. TO THE EXTENT PERMITTED BY LAW, ALCON, AND ITS AFFILIATES, DISTRIBUTORS, RETAILERS OR AGENTS, DISCLAIMS ALL OTHER IMPLIED OR EXPRESS WARRANTIES INCLUDING ALL WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE, AND WARRANTY AGAINST INFRINGEMENT. TO THE EXTENT THAT ANY IMPLIED WARRANTIES MAY NONETHELESS EXIST BY OPERATION OF LAW, SUCH WARRANTIES ARE LIMITED TO THE DURATION PROVIDED BY LAW.

LIMITATION OF LIABILITY

This Limited Warranty is your sole and exclusive remedy and ALCON, and its affiliates, distributors, retailers or agents, shall not be liable for any damages, whether direct, indirect, incidental, special, consequential, exemplary, or otherwise, including property damage, lost revenues and lost profits, arising out of any theory of recovery, including statutory, contract or tort. Notwithstanding the term of any limited or implied warranty, or in the event that this Limited Warranty fails of its essential purpose, in no event will ALCON's, or its affiliates', distributors', retailers' or agent's, entire liability exceed the purchase price of this product. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitations or exclusions may not apply to you. Some states do not allow limitation on how long a limited warranty lasts, so the above limitation may not apply to you. This Limited Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Alcon Components Ltd., Apollo, Tamworth, Staffordshire, B79 7TN, United Kingdom
Revised – July, 2016

Notes and Disclaimers Concerning Application

Important: Read these instructions carefully before fitment.

Brake Product Specification

Alcon Components have engineered a range of brake calipers and discs for special applications. Brake system calculations will need to be carried out to ensure that the specification meets the requirements of current legislation and are safe to use.

Where there is doubt about the suitability of the product, Alcon can run individual brake system calculations and recommend the appropriate products.



Caution:- This brake kit must be installed by a competent and suitably qualified person. It is the installer's responsibility to ensure that any brake products fitted to a vehicle are suitable for application.

Installation and Clearance

These parts have been designed using information available at the time of design.

Alcon are unable to guarantee fitment to unknown wheels. 1:1 radial profile templates can be created for most applications to assess if sufficient clearance to the wheel is available. Templates come with full instructions on how to use them. It is very important that templates are printed accurately to scale. Due to differences in profile, it cannot be assumed that a larger diameter wheel will fit where a smaller one may not.

Vehicle production tolerances may exceed those that the kit will accommodate, and the points in this document must be carefully observed during installation to ensure that the correct clearances are maintained.

Wheel Spacers

Some Alcon brake kits are supplied with appropriate wheel spacers. This will widen the track width of the vehicle. This is kept to a minimum. It is the responsibility of the customer to ensure that this falls within the requirements for air transportation where applicable.

Alcon accepts no liability whatsoever for any issues of any sort arising through the fitting of alternative wheel spacers.

Pad and Disc Life

The friction material in your brake kit has been selected to offer the best compromise between stopping power and wear rate of pads and discs. However, in using the extra performance of the brake, it is likely that you will

experience a higher rate of disc and pad wear than is typical of original equipment brakes. This effect will be magnified under very hard use although it is unlikely that you will need to change pads after 100 miles as is sometimes required on race and rally cars!

Depending upon the environment and use, brake pad and disc wear can vary considerably from one vehicle to another. Potential reasons for accelerated wear are as follows:-

1, Environment

Some driving environments generate an aggressive paste between disc and pad that continually grinds the pad and disc when the brakes are not being applied.

2, Driving style

Brake pad life is not directly related to distance travelled. The number of brake applications and their severity vary significantly. If a driver is continually making heavy braking events then they are not only wearing the pads by the number of applications but accelerating the wear by running the brakes at a higher temperature. Brake pads wear more quickly at higher temperatures.

3, Brake drag

If, for any reason, the pad is continually in contact with the disc the pad and disc will wear more quickly due to friction and temperature. This could be from some sort of locked pressure, seized piston, seized pad, etc.

Alcon accepts no liability whatsoever for accelerated rate of pad or disc wear howsoever caused.

Brake Noise

Alcon have made every effort to ensure a quiet brake. Brake noise is generated by vibrations in the whole vehicle corner. A brake kit may be quiet on one vehicle make and have noise present on another.

To maintain good performance on higher performance vehicles, Alcon use higher than normal friction pad materials. These materials can be more prone to brake squeal.

Alcon accepts no liability whatsoever for any brake noise howsoever caused.

Vibration

Alcon brake discs are manufactured by methods that keep run-out and thickness variation to a minimum. They are also balanced to strict tolerances. Where a two-piece disc is supplied, the disc is finish-machined and balanced as a full assembly.

Vibration can become present should pads and discs:-
Not be installed correctly
Not be correctly bedded-in
Be subject to extreme abuse

Alcon accepts no liability whatsoever for vibrations caused by incorrect installation, improper bedding –in or extreme use.

Paint Damage

Brake fluid will damage most painted surfaces. Always try to contain or catch brake fluid during removal or fitting of brake components.

Immediately clean any brake fluid spilled onto any painted surface with clean water.

Alcon accepts no liability whatsoever for any damage to paintwork resulting from spilled brake fluid.

Heat Soak

After heavy use, do not rest your foot on the brake pedal while the vehicle is stationary. This practice will cause heat to 'soak' from the disc to the caliper and so to the brake fluid.

In extreme cases the fluid may boil, leading to very poor braking performance.

In addition, maintaining contact between pads and discs when stationary can cause pad material to adhere to the disc face and give rise to vibration.

It is good practice to always use the handbrake rather than the footbrake when the vehicle is stationary.

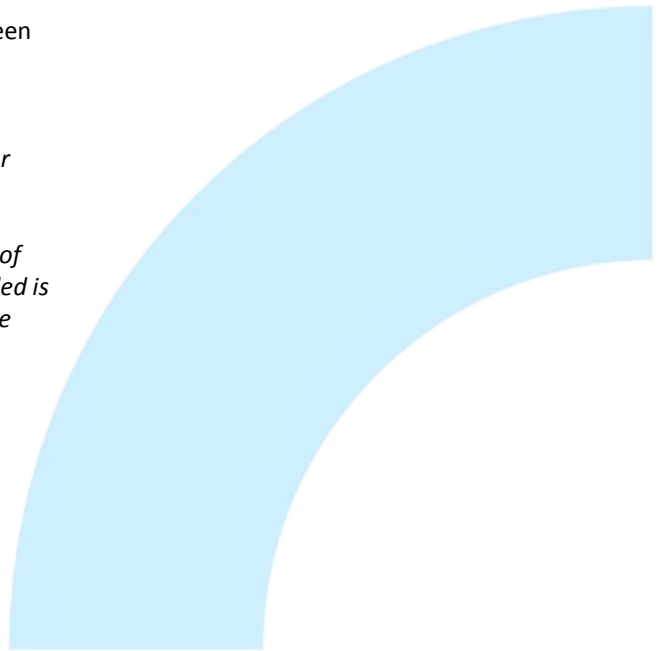
General Modifications

Do not make any modifications to the parts supplied in the brake kit.

Alcon accepts no liability whatsoever for the consequences of using brake products that have been modified without its express written approval.

Keep this document with your Owners Handbook for reference.

Every effort has been made during the preparation of this literature to ensure that the information provided is correct. However, Alcon reserves the right to change information without notice.



Attention Vehicle Owner: Important Notes

Getting the best from your Alcon Advantage Extreme / Super kit brake conversion

Your new Advantage Extreme / Super kit road car brake kit is derived from the brakes that Alcon supply to top motorsport teams throughout the world. The best professional race and rally drivers have to take care of their brakes to maintain optimum performance, and provided the following care points are observed, you too will maintain your brakes in peak condition and will continue to enjoy the very highest level of road braking performance.

Bedding In

The life and performance of both pads and discs are reliant upon correct bedding. Always ensure that with new pads or discs, the bedding procedure detailed in the installation instructions is adhered to. Failure to do so could result in reduced disc and pad life, sub-standard performance or vibration.

Brake Fade

Your brake kit uses a friction material that will out-perform conventional road car pads. Nevertheless, all friction materials, whether for road or race, have an upper limit of operation beyond which performance will deteriorate. If, under extreme use, you experience a degree of brake fade you will need to 'protect the brake' by backing off in order to allow the brakes to cool and regain friction performance.

Cleaning

As discs and pads wear during use, a metallic dust is created, which adheres to other car parts such as calipers, wheels and bodywork. If allowed to remain for any period of time, this material can become difficult to remove, especially on components that are subject to heat, such as wheels and calipers. All affected components should be washed regularly with warm water and mild detergent. If a specialist wheel cleaning product is to be used, extreme caution is advised as some products are aggressive to plated surfaces and paint finishes. Any brake fluid spilt on painted surfaces, including calipers, should be immediately and thoroughly removed with clean water, so as to prevent damage to the paint.

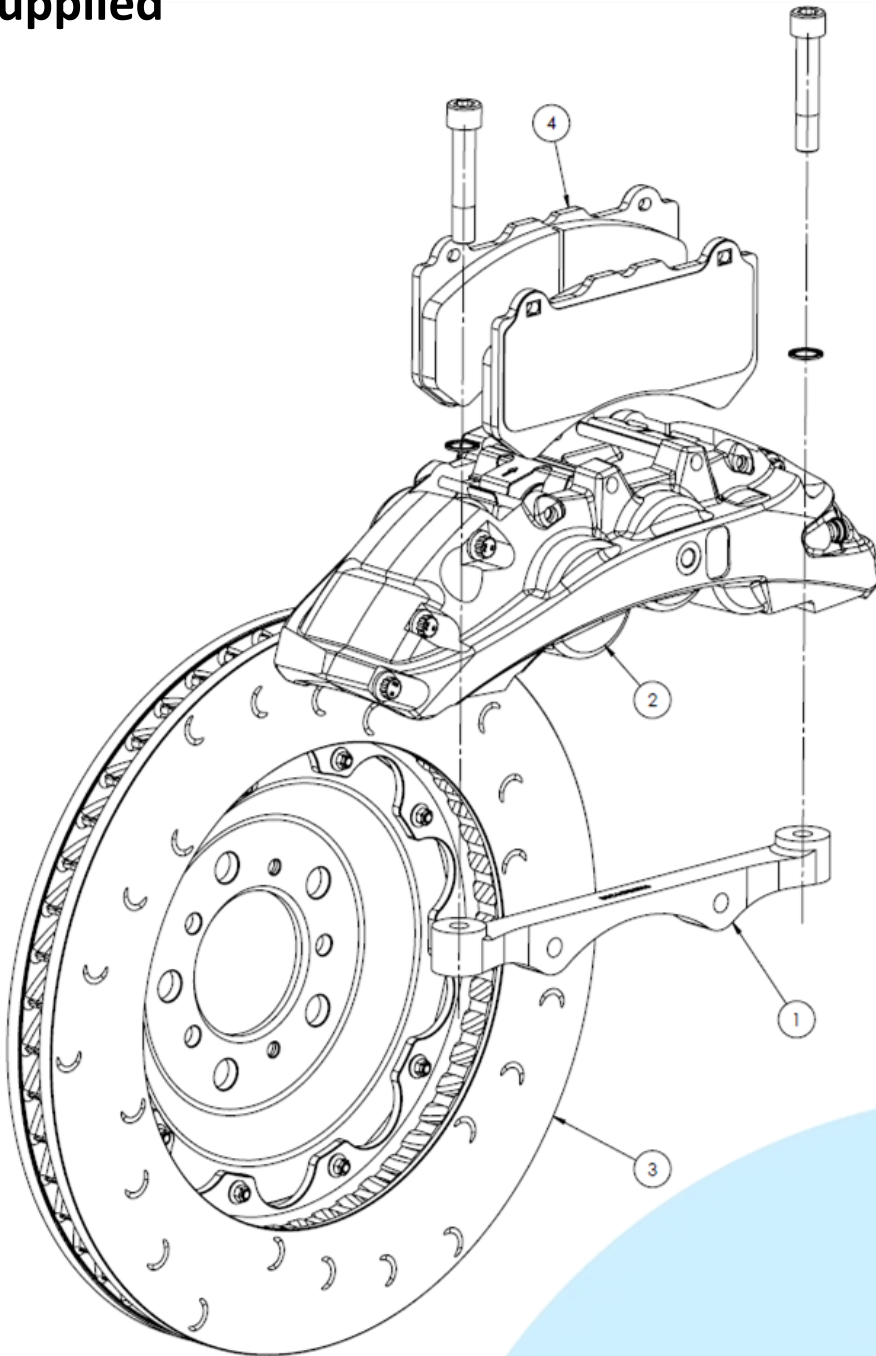
N.B. This brake upgrade kit is intended for road use. If used on a racetrack or in competition, the user does so entirely at his or her own risk, and Alcon accepts no liability whatsoever for any consequences of such use.

Keep this document with your Owners Handbook for reference.

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Items Supplied



Item	Description	Qty
1	Bracket Kit	2
2	Brake Caliper Assembly (Left Hand and Right Hand supplied)	2
3	Brake Disc Assembly (Left Hand and Right Hand supplied)	2
4	Brake Pads (Set of 4)	4

Installation Instructions

Important: Read these instructions carefully before fitment.

Alcon Advantage Extreme brake kits / Super kits are designed to replace the original brake calipers and discs. However, vehicle production tolerances may exceed those that the kit will accommodate, and the points below must be carefully observed during installation to ensure that the correct clearances are maintained. This brake kit must be fitted by a suitably qualified mechanic.

Remove Original Caliper and Disc

- Raise the vehicle on a suitable lift or stands and remove the wheels.
- Clamp the flexible brake hose to reduce brake fluid loss and disconnect the hose from the caliper. Disconnect any pad wear indicator wires and remove the caliper.
- Remove the brake disc.

Fit New Caliper and Disc

- Ensure that the hub flange is completely flat and clean.

Note that any 'bruising' or out of flatness will cause brake vibration.

If necessary, prepare the hub face to remove any high spots prior to fitting the brake disc.

Fit the disc assembly to the hub. The discs are handed and must be fitted to the correct side of the vehicle, with direction of rotation as shown right. With the disc assembled to the hub, check that there is a minimum of 5mm clearance between the disc inner face and the lower suspension/steering joint.

- Unless special longer bolts are provided in the kit, use the original bolts and washers to loosely bolt the mounting bracket to the upright. Locate the caliper over the disc and fit the caliper retaining bolts. Do not tighten at this stage. The caliper must be orientated so that the disc rotates past the small piston first, and with bleed screws uppermost.

- To prevent overheating, radial clearance between the disc and caliper must not be less than 2.5mm in all directions.

When the pads are fitted, the top edge of the pads should be approximately 0.8mm below the disc outside diameter and the disc must be central in the caliper within +/- 0.5mm. Check that the clearance between the outer diameter of the bell and the inner radius of the pad back-plate is at least 1.5mm. Use the 0.5mm shims provided to lift the caliper on the bracket or to adjust the bracket position until the caliper is correctly positioned. Fit an equal quantity of shims to each end of the bracket as required.

- Fit the road wheel to check there is a minimum of 2.5mm clearance between the wheel and caliper in all directions.

- Do not make any modifications to the caliper. Alcon

accepts no liability whatsoever for the consequences of using a caliper that has been modified without its express written approval.

- When the caliper/bracket assembly has been positioned correctly and clearances have been checked, remove and clean the bracket to upright mounting bolts. Apply thread locking compound to the threads, fit the bracket to the upright and tighten the bolts to the vehicle manufacturers' specified torque.

- Remove the caliper retaining bolts and apply thread locking compound to the threads. Fit each bolts with the washer provided and tighten to 108Nm

- Check that new pads move freely in the caliper. With the pistons pushed back into the bores, there should be a minimum clearance of:

0.25mm between the piston end and pad backplate
0.4mm between end of the pad and the caliper

- Remove the original hose and replace with the braided hose supplied. Connect the hose to the caliper and, ensuring it is not twisted, connect it to the vehicle, including the original fastening clip. Check that the brake line length allows for all combinations of steering lock and suspension movement and that the hose does not come into contact with any suspension component, the wheel or the tyre in any position.

- Tie-back the pad wear indicator wires.



Bleeding Instructions

- Bleed the brakes in accordance with the vehicle manufacturer's instructions. Completely flush the system using the new Motul fluid supplied in the kit. The caliper bleed screws must be tightened to 18Nm (cold). To prevent damage to the painted caliper, remove any excess brake fluid from caliper immediately with clean cold water, particularly in the area around the bleed screw thread and in the end of each bleed screw. If any fluid remains in the centre hole of the bleed screw, remove it using a clean dry tissue then rinse with clean cold water again. Check the complete hydraulic system for leaks before driving the vehicle.

- When the brake system has been sufficiently bled and a firm brake pedal has been achieved, replace the road wheels.

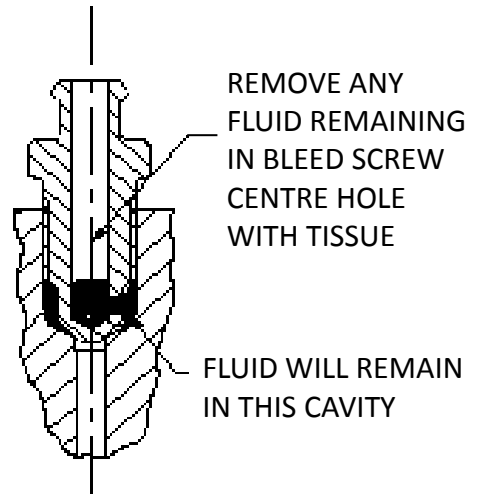
- The brakes should now be checked for correct operation by driving the vehicle, making a few light brake applications from low speed in a safe location. Stopping performance of a newly fitted brake kit will be low initially, as all friction materials require a period of bedding in before optimum performance is achieved.

Bedding Procedure

- At a suitable safe location, perform a number of increasingly hard brake applications from 100km/h(60mph) almost to rest. After approximately six applications, allow the brakes to cool by driving at 80km/h (50mph) without further brake applications. The pads and discs should now be bedded-in.

- If possible, avoid very heavy brake applications for the first 400km (250 miles) of use.

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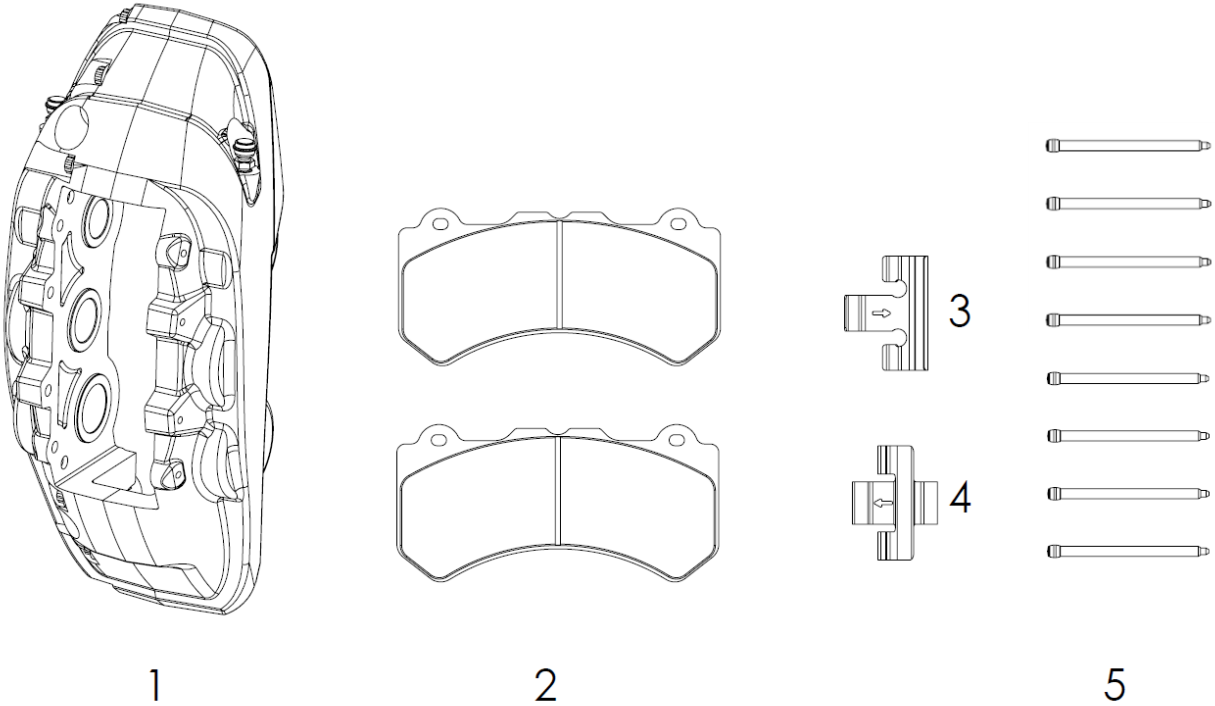


Alcon CAR70 Caliper



Caution: This brake kit must be installed by a competent and suitably qualified person. It is the installer's responsibility to ensure that any brake products fitted to a vehicle are suitable for application.

Pad Retainer Kit Contents



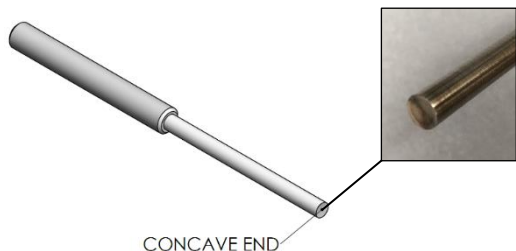
CAR70			
PRK4470X601			
ITEM No	PART NUMBER:	DESCRIPTION:	QUANTITY:
1	CAR7059	CALIPER ASSEMBLY	1
2	PNF4470X102.4	BRAKE PAD	2
3	SSA4470X002	ANTI RATTLE CLIP – 'B'	1
4	SSA4470X005	ANTI RATTLE CLIP – 'A'	1
5	PSA0080X910	PAD RETAINING PIN ASSY Ø6x95.1	8

Note: Each pad change will require four pad pins.

You will need the following tools:

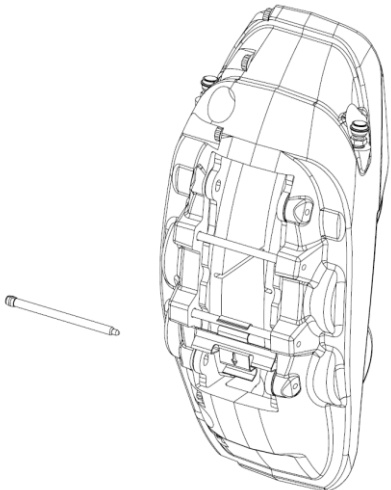
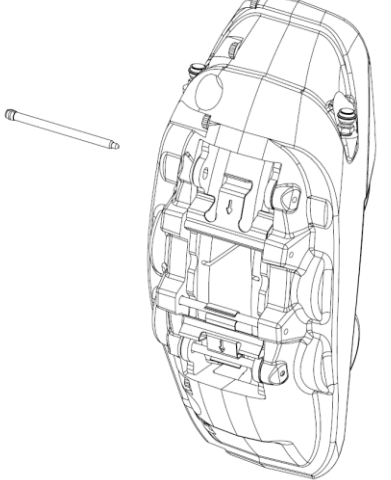
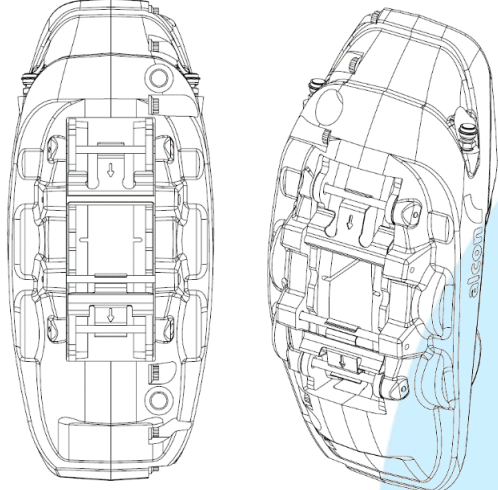
Ø6mm concave end punch

Suitable hammer



INSTALLATION GUIDE

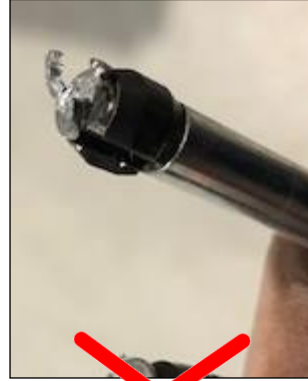
STEP 1		<p>Fit pads into caliper.</p> <p>Check pads are correctly orientated and friction material faces toward the centre line of the disc.</p> <p>Slide pads into the caliper until pad holes are correctly aligned with pin holes</p>
STEP 2		<p>Enter two central pad pins and drive fully home using concave tipped Ø6mm punch and suitable hammer.</p> <p>Take care not to contact the painted assembly.</p>
STEP 3		<p>Identify each anti-rattle clip as 'A' or 'B'</p>

STEP 4		<p>Select anti-rattle spring (A) and place in the caliper on the side closest to the large bore (loaded abutment). Locate across the top of the pads, and aligning so that the arrow points in direction of disc rotation (towards the large bore).</p> <p>Push to load clip and enter / drive home pad pin.</p>
STEP 5		<p>Select anti-rattle spring (B) and place in the caliper. Locate across the top of the pads, and aligning so that the arrow points in direction of disc rotation (towards the large bore).</p> <p>Enter and drive home remaining pad pin.</p>
STEP 6		<p>Check pins are fully home, anti-rattle clip is central in the caliper, arrow is pointing in the direction of disc rotation and the clip pin location sections are fully seated on the pins.</p>



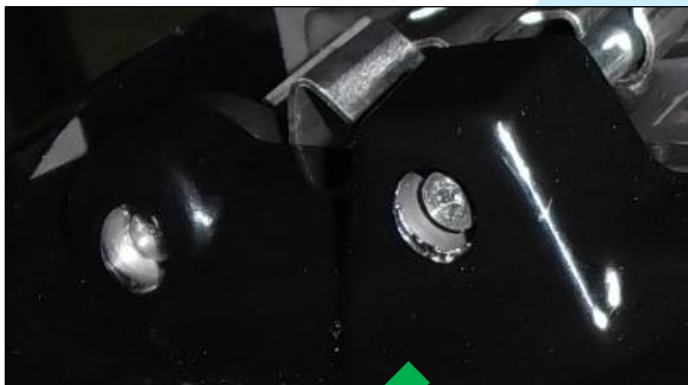
Caution: Check pad pin head for signs of damage during installation.

Example damage



If any damage is found remove pad pin and replace.

Incorrect seal location – not driven fully home.



Servicing and maintenance instructions

- Pads should be examined regularly for wear and condition.
- Replace pads when less than 2mm of friction material remains anywhere over the surface.
- When fitting new pads, thoroughly clean the pad location faces in the caliper, removing any debris and brake dust with brake cleaner and a stiff brush.
- The protruding pistons must be wiped clean before they are pushed back into the bores.
- Discs must be replaced when the total thickness has worn below the minimum indicated on the disc or when any of the face grooves across either inner or outer face have worn away.
- If a disc shows any sign of cracking, which may occur after heavy usage, it must be replaced.
- Remember to bed-in new pads and discs as described on the previous page.
- Replacement of caliper seals is recommended after the brake system has been subjected to high temperature, as may be generated in circuit driving or long mountain descents. Remove pistons by gentle application of line pressure. To prevent any of the pistons being dislodged from the bore, fit a temporary shim (worn out pads are ideal) into the pad aperture on both sides of the caliper. When all pistons protrude from the bores by at least 12mm, disconnect the hose, remove the caliper from the vehicle and remove pistons by hand or using a piston removal tool, available from Alcon. Take care to catch the brake fluid as the pistons are removed. So as not to damage seal grooves, use a brass 'spoon' to remove seals. Clean bores and pistons thoroughly with a clean cloth and brake fluid. Pistons with scratches or damage on the outside diameter must be replaced. With clean hands to prevent contamination of parts, lubricate seals, bores and pistons with clean brake fluid before re-fitting. Ensure no foreign matter enters the open bores.
- Re-fit the caliper and bleed as described above.



Caution: This brake kit must be serviced by a competent and suitably qualified person. It is the installer's responsibility to ensure that any brake products fitted to a vehicle are suitable for application.



UK
Phone : +44 (0)1827 723700
E-mail : info@alcon.co.uk

USA
Phone : +1 (704) 799-2723
E-mail : info@alconusa.com

www.alcon.co.uk