

Ford SVT Raptor / F-150 Front and Rear Brake Upgrade

alcon
specialist brakes & clutches



* Hose not included, works with stock brake lines

Brake Kit Limited Warranty & **Installation Instructions**

Ford SVT Raptor 2010 - 2014 & 2017 onwards
Ford F-150 2009 onwards

Important – Read this document before proceeding

AFTERMARKET 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

Alcon Full Ford F150 and Raptor 2009MY Brake Kit

Brake kit contents

These instructions cover the installation of the following Alcon brake kits:

- BKF1559BE11 – Front only brake kit
- BKR5059D07 – Rear only brake kit

Axle	Hand	Disc		caliper	Bracket kit	Pad set	Spacer kit
		Size	Part number	Part number			
Front	Left hand	347x36	DIV3430X986C24L	CIR1559BE07HZL	BSK4415X564	PNS4415X504.4	SSW0080X1015 x 4
	Right hand		DIV3430X986C24R	CIR1559BE07HZR			
Rear	Left hand	360x32	DIV3430X987C24L	CIR5059D03HZLT-RL	BSK4450X562	PNS4450X701.4	
	Right hand		DIV3430X987C24R	CIR5059D03HZRT-LL			

Service parts are available from your Alcon dealer.

Front kit service parts:

Front brake pads (axle set) -	PNS4415X504.4
Front brake disc kit (axle set) -	DKF3430X986C
Front Pad fitting kit (axle set) -	PKR4415X540KS
Front seal kit (axle set) -	CSK454145EW900SG
Front 41.3mm piston -	PSS4133X504
Front 44.5mm piston -	PSS4433X503

Rear kit service parts:

Rear brake pads (axle set) -	PNS4450X701.4
Rear brake disc kit (axle set) -	DKR3430X987C
Rear pad fitting kit (axle set)-	PKR4450X735KS
Rear Seal kit (axle set) -	CSK3535EW900SG
Rear 34.9mm piston -	PSS3530X503

Brake calipers can be refurbished via your Alcon dealer.

Brake kit BKC1559BE12 has a larger disc designed to fit 17" wheels and larger.

Please contact Alcon for 1:1 templates to confirm wheel fitment.



Caution:- Alcon rear brake kits must always be fitted with the recommended Alcon front brake kit. Failure to do so will cause potentially dangerous levels of instability. Alcon accepts no liability whatsoever for any issues related to the fitting of Alcon brake kits only to the rear of the vehicle.

Alcon Full Ford F150 and Raptor 2009MY Brake Kit

You will need the following parts depending upon variant and model year of vehicle:

2010 – 2014 Raptor

Requires – A.D.D. Tie Rod adapter kit AC011507NANA or A.D.D. Full Billet Tie Rod kit AC01150299NA (or other manufactures similar tie rod kit to provide clearance to inner face of rotor).

Vehicles with the A.D.D. spindle upgrade will already have tie rod end kit.

The kit has not been tested with other spindle upgrade kits, so would need verifying on a case by case basis.

2017 – Raptor

Requires – A.D.D. Tie Rod adapter kit AC011507NANA or A.D.D. Full Billet Tie Rod kit AC01150299NA (or other manufactures similar tie rod kit to provide clearance to inner face of rotor).

Vehicles with the A.D.D. spindle upgrade will already have tie rod end kit.

Fitment to be verified

2009 – 2016+ Standard F150

Requires - ADD Tie Rod adapter kit AC011507NANA (Full Billet Tie Rod Kit is too long for standard F-150)

2009-2011 F-150

Requires Ford Part #'s FOCL3Z-2210-C and FOCL3Z-2209-C

You will need the following tools:

- 10mm allen wrench
- 8mm allen wrench
- 13/16 socket
- 13mm socket
- 10mm wrench
- 8mm wrench

Notes and disclaimers concerning application

Important: Read these instructions carefully before fitment.

Kit specification

Alcon has engineered a range of brake kits for vehicles to replace the original brake calipers and discs. Please contact Alcon for information on the safe working limits for the vehicle when fitted with the brake kit. Where there is doubt about the suitability of the product, Alcon can run individual brake system calculations and recommend the appropriate kit.



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. There may be fitment issues on specific issues due to:

- Model year change over
- Regional vehicle specification variations
- Non-standard wheel profiles

Alcon brake kits have been test installed on vehicles with a variety of specific wheels fitted. Alcon is unable to test install with every available wheel. The customer is responsible for ensuring sufficient wheel clearance. 1:1 radial profile templates are available at the end of this document 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

Alcon brake kits are designed to give increased pad area and disc thermal capacity. This will give improved disc and pad life when compared to the original brake system if used at the armoured weight.

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. Typical environments where this may occur include quarries and desert conditions.

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.

Notes and disclaimers concerning application (Cont'd)

Important: Read these instructions carefully before fitment.

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 a 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.

Front Brake kit Installation instructions

Remove the original calipers, discs and hoses

- Apply the parking brake.
- Raise the vehicle on suitable lift or axle stands.



Caution:- If using a jack - ensure the vehicle is standing on a hard, level and clean surface.
Do not leave the vehicle supported using only the jack. Always use axle stands.

- Remove the road wheels.
- Disconnect the hose from the hard line fitting. Push one of the rubber caps over the hard line tube-nut to stop fluid loss.
- Disconnect any pad wear indicator wires and remove the caliper (13/16" socket) with the brake hose still fitted.
- The brake hose will still contain brakes fluid. Clean any spilled fluid immediately with clean water.
- Retain the caliper mounting bolts ready for fitting the Alcon caliper.
- Remove the brake disc.
- Remove the dirt shield 8mm bolts, then the dirt shield.



Fit the new caliper mounting bracket

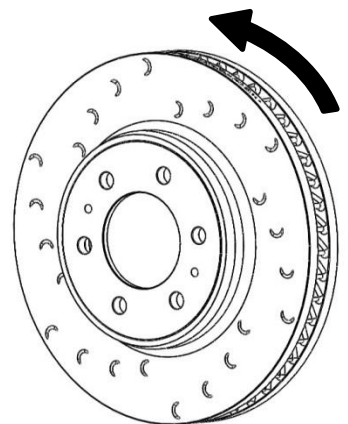
- Fit the caliper mounting bracket to the knuckle using the original caliper's mounting bolt
Note that the face of the bracket marked 'DISC' should be towards the disc
- Torque the bolts to the original manufacturer's specification.

Fit the new 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.

The brake discs are handed by the direction of the grooves cut into the disc friction surfaces. They must be fitted to the correct side of the vehicle. Direction of rotation is marked on the outside diameter of the disc. This is also shown in the image (right).

Curved vanes (fins) are used to increase the structural integrity of the disc giving additional strength. They are not used for additional cooling. The discs are manufactured using non-handed castings. This means that the vanes may appear to go in the wrong direction on one side of the vehicle. Curved vanes only help cooling on very high-speed vehicles as used on high levels of motorsport.



Front Brake kit Installation instructions (cont'd)

- Fit the disc to the hub.
- 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.

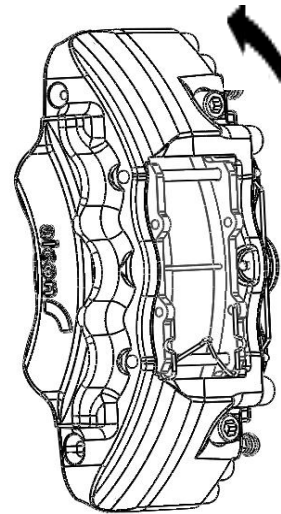


Fit the new caliper

Ensure that the brake pads, pad retaining pins and anti-rattle spring are fitted to the caliper. The retention and anti-rattle concept are similar to those used on the original vehicle caliper.

The Alcon caliper is only handed by the position of the anti-rattle spring. This needs to be at the bottom of the caliper (as seen in the image – right).

- Position the caliper over the disc and secure using the supplied caliper to bracket bolts. Do not fully torque the bolts at this stage.



The kit has been designed specifically for the application and clearances have been checked so the caliper should fit without clearance issues. In case there are any variations in vehicle specification – please check the following:

- To prevent overheating, radial clearance between the disc and caliper will not be less than 2mm in all directions.
- When the pads are fitted, the top edge of the pads will be around 0.8mm below the disc outside diameter.
- 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 wheel spacer and road wheel to check there is a minimum of 2.5mm clearance between the wheel and caliper in all directions.
- Remove the road wheel.
- Torque the caliper to mounting bracket bolts to 106-110Nm.
- Check that new pads move freely in the caliper.



Front Brake kit Installation instructions (cont'd)

Re-fit the brake hose

- Connect the hose to the caliper. Ensure copper gaskets are fitted either side of the banjo (between banjo and caliper housing; between banjo bolt head and banjo).
- Torque the banjo bolt to 28Nm.
- Ensuring hose is not twisted, re-connect it to the vehicle, including the original fastenings to the original manufacturer's recommended torque settings.
- Check that the brake hose 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.
- Do not apply any twist into the brake hose.

If fitting a front only brake kit, please go to page 13.

Rear Brake kit Installation instructions

Remove the original calipers, discs and hoses

- Apply the parking brake.
- Raise the vehicle on suitable lift or axle stands.
- Release the parking brake



Caution:- If using a jack - ensure the vehicle is standing on a hard, level and clean surface. Do not leave the vehicle supported using only the jack. Always use axle stands.

- Remove the road wheels.
- Disconnect the hose from the hard line fitting. Push one of the rubber caps over the hard line tube-nut to stop fluid loss.
- Disconnect any pad wear indicator wires and remove the caliper with the brake hose still fitted.
- The brake hose will still contain brakes fluid. Clean any spilled fluid immediately with clean water.
- Retain the caliper mounting bolts ready for fitting the Alcon caliper.
- Remove the brake disc.

If you own a 2009-2011 F-150 – fit Part #'s FOCL3Z-2210-C and FOCL3Z-2209-C (available from your local Ford dealer) in line with supplier's instructions.

If you own a 2012-2014 F-150 – please continue with the instruction below:

Modify the dirt shield.

The Alcon disc is larger than the original disc to increase thermal capacity and brake torque. The Alcon caliper is larger in size than the original caliper in order to allow for a larger brake pad.

The original dirt shield was designed to fit closely to the original disc and caliper. Therefore it will require modification for use with the Alcon brake kit.

Areas that touch the caliper and disc will need to be removed and some parts manipulated away from the disc.



Fit the new caliper mounting bracket

- Fit the caliper mounting bracket to the knuckle using the original caliper's mounting bolt
Note that the face of the bracket marked 'DISC' should be towards the disc
- Torque the bolts to the original manufacturer's specification.

Rear Brake kit Installation instructions (cont'd)

Fit the new disc

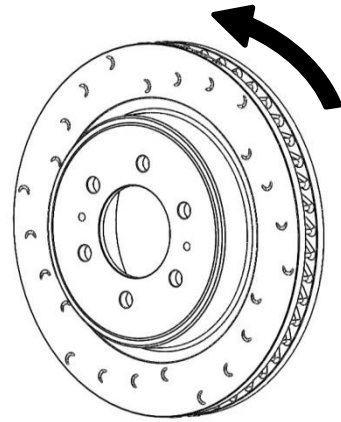
- Ensure that the hub flange is completely flat and clean.
- Note that any 'bruising' or out of flatness will cause brake vibration.
- If necessary, prepare the hub face to remove any high spots prior to fitting the brake disc.

The brake discs are handed by the direction of the grooves cut into the disc friction surfaces. They must be fitted to the correct side of the vehicle. Direction of rotation is marked on the outside diameter of the disc. This is also shown in the image (right).

Curved vanes (fins) are used to increase the structural integrity of the disc giving additional strength. They are not used for additional cooling.

The discs are manufactured using non-handed castings. This means that the vanes may appear to go in the wrong direction on one side of the vehicle. Curved vanes only help cooling on very high-speed vehicles as used on high levels of motorsport.

- Fit the disc to the hub.



Fit the new caliper

Ensure that the brake pads, pad retaining pins and anti-rattle spring are fitted to the caliper.

- Fit the caliper with the bleedscrew uppermost.
- Position the caliper over the disc and secure using the supplied caliper to bracket bolts. Do not fully torque the bolts at this stage.



The kit has been designed specifically for the application and clearances have been checked so the caliper should fit without clearance issues. In case there are any variations in vehicle specification – please check the following:

- To prevent overheating, radial clearance between the disc and caliper will not be less than 2mm in all directions.
- When the pads are fitted, the top edge of the pads will be around 0.8mm below the disc outside diameter.
- 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.

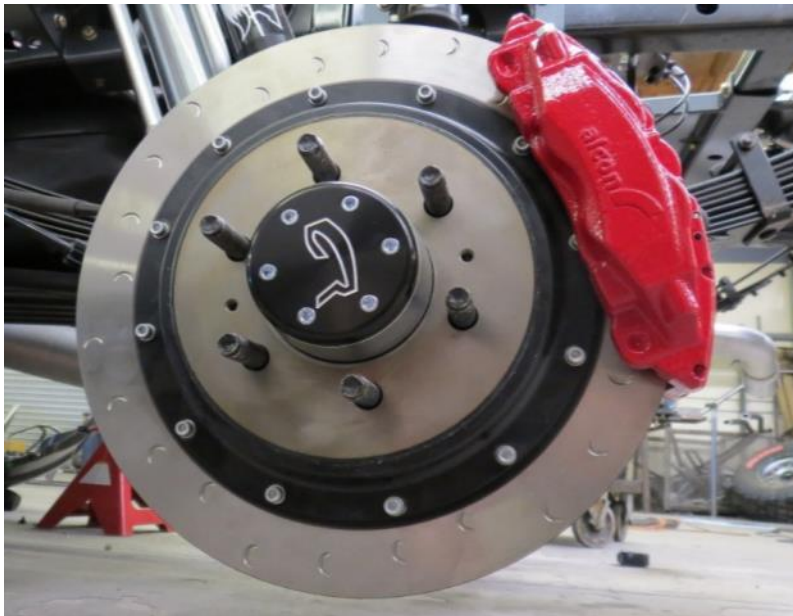
Rear Brake kit Installation instructions (cont'd)

- Fit the wheel spacer and road wheel to check there is a minimum of 2.5mm clearance between the wheel and caliper in all directions.
- Remove the road wheel.
- Torque the caliper to mounting bracket bolts to 83-87Nm.
- Check that new pads move freely in the caliper.



Re-fit the brake hose

- Connect the hose to the caliper. Ensure copper gaskets are fitted either side of the banjo (between banjo and caliper housing; between banjo bolt head and banjo).
- Torque the banjo bolt to 28Nm.
- Ensuring hose is not twisted, re-connect it to the vehicle, including the original fastenings to the original manufacturer's recommended torque settings.
- Check that the brake hose 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.
- Do not apply any twist into the brake hose.



Brake kit Installation instructions

Bleed the brakes

- Bleed the brakes in accordance with the vehicle manufacturer's instructions.
- Only use DOT 4 brake fluid.
- The caliper bleed screws must be tightened to 18Nm (cold).
- To prevent damage to any painted surface, remove any spilled brake fluid immediately with clean cold water.
- Remove any fluid in the area around the bleed screw thread and in the end of each bleed screw.
- Check the complete hydraulic system for leaks before driving the vehicle.

Re-fit the road wheels

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

Torque the wheel nuts to the original manufacturer's specification.

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 new pads and discs

Purpose: The two main reasons for bedding discs and pads in Alcon high performance brake kits are:-

- To thermally condition the discs by raising the temperature gradually, thus reducing thermal shock and preventing pad material from depositing unevenly on the disc surface.
- To wear material from the pad surfaces until there is full-face contact with the disc. This may take longer to achieve than the duration of the bedding procedure but pad area contact will increase during normal driving.

Procedure:

- Drive the vehicle to a road that allows the following procedure to be carried out safely and within the law.
- From any speed between 40 and 60 mph (60 and 100 km/h), apply light to moderate pedal effort to reduce speed by about 30mph (50km/h). Avoid coming to a complete stop if possible and accelerate back to speed. After approximately ten applications, allow the brakes to cool by driving without further brake applications. It will take approximately 120miles (200 km) of urban driving to complete bed-in of the pads.

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.



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.



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

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