

Installation Manual

L.TRA.RA.C.M

Ford Transit 130/150/190
1989 → 2000





Ford Transit 130/150/190

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CONTENTS

1. FOREWORD	3
2. INTRODUCTION	4
3. VERY IMPORTANT NOTES.....	5
4. COMPLETE ASSEMBLY	7
5. INSTRUCTIONS FOR INSTALLATION	8
5.1. Fitting of Inflator Console.....	10
5.2. Tube Connection and Disconnection, Cutting and Routing	12
5.3. Spring Inflation.....	13
5.4. Spring Alignment	14
5.5. Load Sensing Valve Adjustment	14
5.6. Maintenance.....	14
5.7. Check List.....	15
6. EPILOGUE	15

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1. FOREWORD

This manual provides instructions for the installation of an auxiliary air suspension kit, developed specifically for the Ford Transit 150/150L/190L (1989—2000). To ensure correct installation of the kit, it is strongly recommend that these instructions are read thoroughly before commencing any installation work. Installation should only be carried out by a suitably qualified mechanic or specialist installation facility. We will not accept any responsibility for faults or defects arising from incorrect installation, which automatically renders the guarantee invalid.

IMPORTANT : Manufacturer's Declaration Form

A manufacturer's declaration form is provided with your kit. Following installation of the kit please ensure that this form is completed, signed by a qualified fitter and a copy is returned to DSC Nederland by post, fax or e-mail. Our e-mail address is: info@dscsystems.nl



Ford Transit 130/150/190

L.TRA.RA.C.M

2. INTRODUCTION

Thank you for choosing an auxiliary air suspension kit from the range offered by *DSC Nederland*. Auxiliary air suspension is fitted in tandem with the standard steel springs of the vehicle suspension, and provides enhancements in terms of both the stability of the vehicle and the comfort of the passengers...

Vehicle Levelling

Simply by varying the air pressure in the springs, the vehicle can be levelled both front-to-rear and side-to-side. Keeping the vehicle level optimises stability, ensures correct headlamp beam distribution and reduces tyre wear arising from uneven distribution of weight.

Straight Line Stability

Straight line stability is greatly increased at higher speeds, and when subjected to buffeting from cross-winds or large overtaking vehicles.

Reduced Body Roll

Body roll when cornering or negotiating roundabouts is significantly reduced.

Fatigue Reduction and Wear Compensation

Suspension fatigue is reduced, so helping to prevent leaf springs from sagging under repeated or constant loading. Any sagging already present can be compensated-for. This is a particular benefit for motorhomes, which are always fully laden.

Ride Comfort

Air springs help to absorb shock loads from uneven road surfaces, therefore general ride quality is much improved.

3. VERY IMPORTANT NOTES



Gross Vehicle Weight (GVW)

Air assist kits are not in themselves designed to increase the gross vehicle weight (GVW) rating of a vehicle. They do not legally allow for carriage of a load greater than the carrying capacity stated on the data plate of the vehicle.

Do not exceed the maximum load specified by the vehicle manufacturer...

- ◆ to avoid compromising passenger safety
- ◆ to prevent possible damage to the vehicle
- ◆ for legal reasons



Load Sensing Valve (LSV) Adjustment

If your vehicle is not fitted with an antilock braking system (ABS) then it will have a load sensing valve (LSV) to automatically adjust braking force under varying load conditions. This valve **must** be adjusted immediately after the fitting of an air assist kit and before the vehicle is driven again on public roads.

If the LSV is not adjusted following the fitting of an air assist kit, it may misjudge rear load conditions to the extent that the braking pressure applied to the rear brakes is not correct (e.g. the rear wheels may lock with no load on the rear axle). The consequences of this in terms of vehicle stability and safety are potentially serious.

Vehicle Upgrading

Despite the above words of caution, it is possible to upgrade the weight rating of your vehicle. This must be carried-out by a specialist supplier that will...

- ◆ carry out any necessary modifications in addition to fitting the air assist kit
- ◆ complete documentation as necessary to inform the Vehicle and Operator Services Agency (VOSA) – a mandatory requirement
- ◆ supply and fit a new weight plate to replace the original plate supplied with the vehicle

This process applies to United Kingdom registered vehicles. The process in other countries may be different.



Ford Transit 130/150/190

L.TRA.RA.C.M

Safety Guidance Note

The following very useful guidance note is available for free download from the *Health and Safety Executive* (HSE)...

PM85, July 2007 *Safe recovery (and repair) of buses and coaches fitted with air suspension*

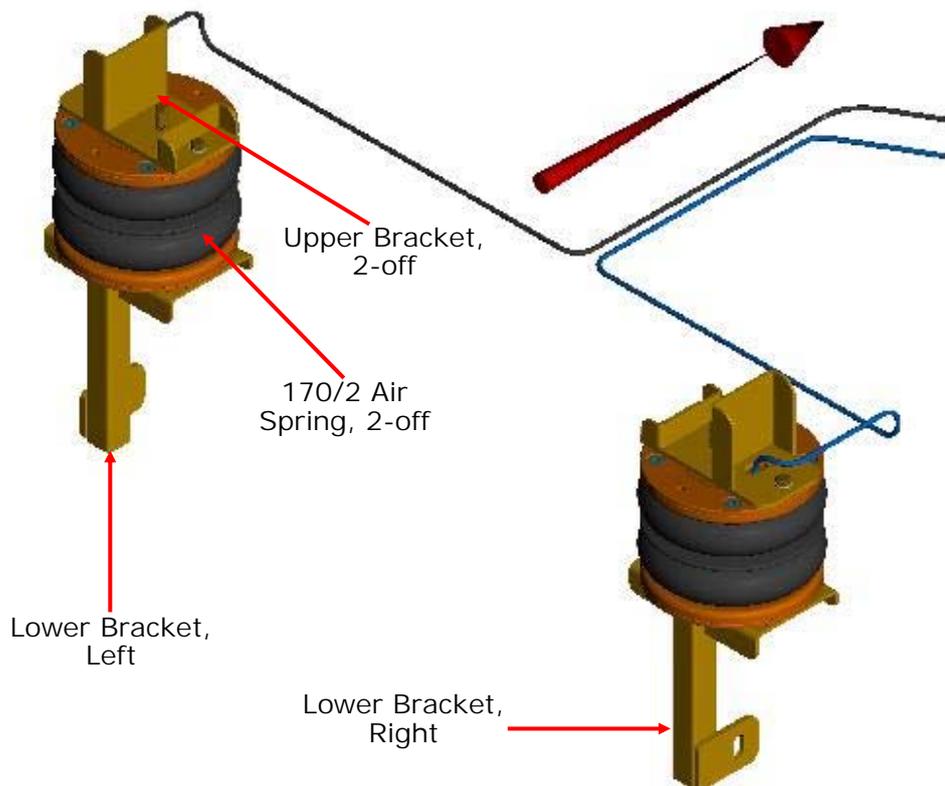
The uniform resource locator (URL) for this document is...

<http://www.hse.gov.uk/PUBNS/pm85.pdf>

Ford Transit 130/150/190
L.TRA.RA.C.M

4. COMPLETE ASSEMBLY

The complete assembly is shown by the diagram below...



In addition to the parts illustrated above, the kit comprises of...

- either a two-valve inflator console or (optionally) a console with pressure gauges
- cable Ties
- a Manufacturer's Declaration form
- installation Instructions

5. INSTRUCTIONS FOR INSTALLATION



Preparation and Precaution

Before beginning installation, ensure that you have sufficient clearance between the axle and the chassis. Use a jack if necessary. Install at one side of the vehicle at a time.



Pay attention to your safety at all times during installation - always use axle stands to support the vehicle!



Recommended Tightening Torque

During fitting of the air automatic air suspension system, it is recommended that nuts and bolts are tightened in accordance with the following table...

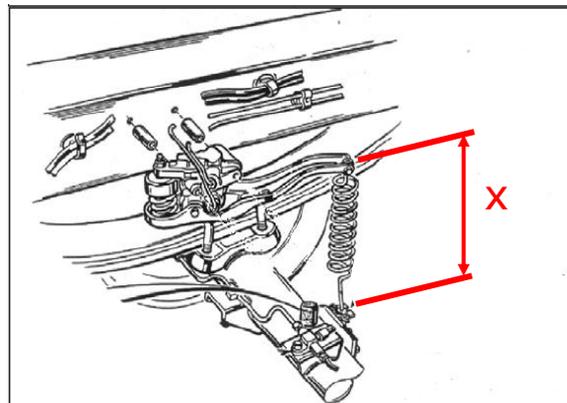
METRIC TORQUE CHART IN N.m		
SIZE	CLASS 8.8	CLASS 10.9
M6 x 1	9.9	14.0
M8 x 1.25	24.0	34.0
M10 x 1.5	48.0	67.0
M12 x 1.75	83.0	117.0
M16 x 2	200.0	285.0

- When both the bolt and nut are made from steel use either class 8.8 or 10.9
- For all other materials, tightening torque is left to the discretion of a person skilled in the art

** IMPORTANT PRLIMINARY STEP **

Before beginning installation of the air assist kit, it is very important to carry-out the following preliminary step with the vehicle standing on its wheels and laden to a 'normal' payload state...

Measure and record the distance **X**, as indicated by the diagram, between the upper and lower mounting points of the load sensing valve (LSV) linkage spring.



Ford Transit 130/150/190

L.TRA.RA.C.M

1. Attach the air spring to the lower bracket using two M8x20 bolts with washers
2. Attach an air tube to port at the top of the air spring, with reference to Section 5.2 and the following...

 Blue tube: Right side of vehicle

 Black tube: Left side of vehicle

3. Remove the bump stop
4. Attach the upper bracket at the position from where the bump stop was removed in the previous step, using an M12x30 bolt and locking washer - See Figure 1
5. Remove the shock absorber lower bolt
6. At the left side of the axle, carefully bend the brake lines to the side in order to provide clearance for the air suspension parts - see Figure 2
7. Run the air line through the hole in the top plate and place the assembly of air spring and lower bracket onto the axle from the rear - See Figure 3
8. Reattach the shock absorber via the lower bracket extension using a M12x80 bolt with locking washer
9. Lower the vehicle so that the top of the air spring is in contact with the top plate. Take care not to trap the air line.
10. Attach the air spring to the top plate using two M8x20 bolts with washers



Figure 1. Top Plate Attachment

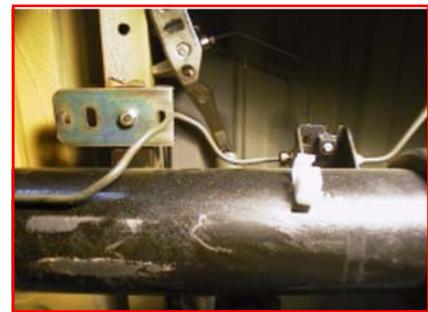


Figure 2. Brake lines around the axle

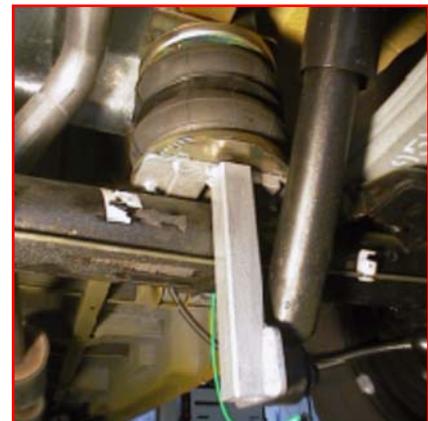
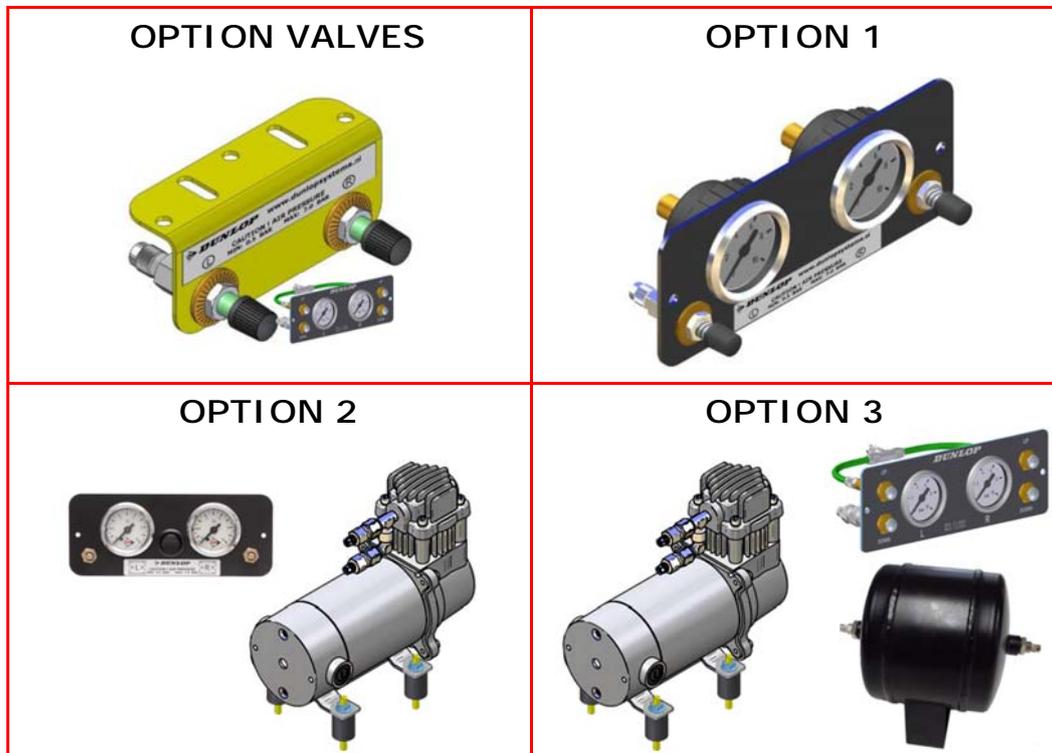


Figure 3. Placement of the Air Spring

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5.1 Fitting of Inflator Console



Your kit is supplied with one of the inflator options shown above...

- **STANDARD** : Inflation valves only
- **OPTION 1** : Inflation valves and pressure gauges
- **OPTION 2** : Inflation valves, pressure gauges and electrically-operated air compressor
- **OPTION 3** : Inflation valves, pressure gauges, electrically-operated air compressor and air reservoir

Ford Transit 130/150/190

L.TRA.RA.C.M

Mount the console in a position of your choice whereby it is firmly fixed, has some protection from the environment (particularly important for the console with gauges) and is easily accessible. Suggested possible locations include...

'Standard' Console...

- on the rear bumper
- at the rear beside the license plate
- on the chassis next to a rear wheel
- in a service shutter
- beside the fuel cap

'Option 1', 'Option 2' or 'Option 3' Console...

- in the vehicle cabin, within reach and sight of the driver
- in the wall of a cupboard (motorhomes)
- in a service shutter

'Comfort' Packages

The 'Option 2' and 'Option 3' panels, as shown above, are each part of a *Comfort Package* that is supplied with a compressor (and also an air reservoir in the case of the 'Option 3' panel) for ease of spring inflation and ride height setting. For further information please ask your dealer.

The photograph below shows all of the parts of Comfort Package 'Option 2'...

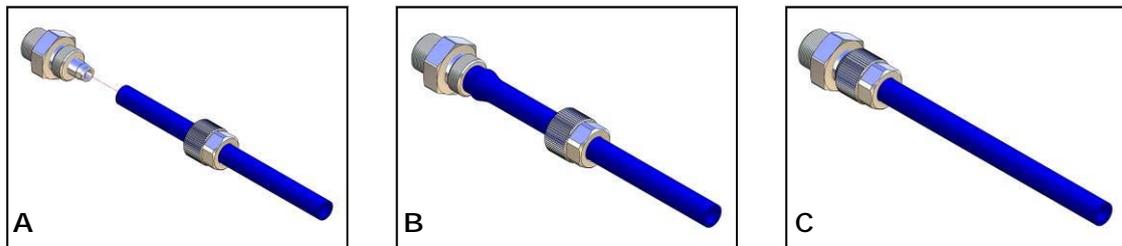


Comfort Package 'Option 2'

5.2 Tube Connection and Disconnection, Cutting and Routing

Connection and Disconnection

Tubes are connected as shown by the diagrams below...



- Slide a nut over the end of the tube
- Push the tube onto the connector as far as possible
- Feed the nut up to the connector, fully tighten by hand and finally tighten one additional turn using spanners

Cutting

To achieve good sealing and air-tight fitting of tube ends to their connecting parts, it is very important to cut tubing cleanly and squarely. A dedicated guillotine action tubing cutter is recommended, or a craft knife if such a tool is not available. Do not use electrician's side cutters.



A dedicated tubing cutter -
Recommended



Electrician's Side Cutters
NOT Recommended



Ford Transit 130/150/190

L.TRA.RA.C.M

Routing

Study the underside of the vehicle and decide how to route each branch of the air circuit...

- To minimise the risk of chafing, avoid running tubing over metal edges as much as possible
- Avoid close proximity to heat sources such as the exhaust assembly
- Choose a route that provides as much protection as possible from dirt, debris and any solid objects that may impact the underside of the vehicle

It is recommended that tubes are guided alongside brake lines as much as possible.



Use cable ties ('tie wraps') to secure tubing to the chassis, taking care not to over-tighten them.

5.3 Spring Inflation

Once installation of the air assist kit is complete, inflate the springs via the inflator console taking careful note of the following...



Maximum and Minimum Pressure

Maximum Pressure 7.0bar **Minimum Pressure 0.5bar**

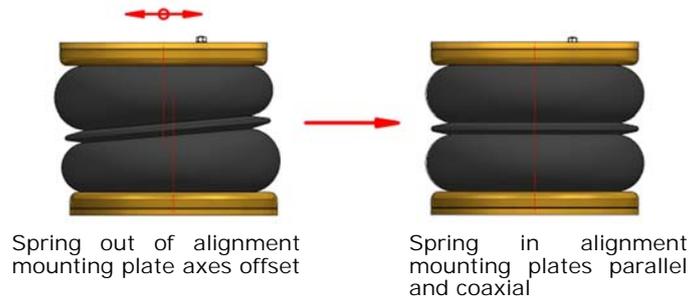
Do not exceed 7.0bar (101psi), which is the recommended maximum charge pressure for the air springs.

The springs may be deflated if the vehicle is to be stored for a lengthy period without use, but a pressure of at least 0.5bar (7.25psi) should be maintained at all times in order to avoid possible compression damage to the springs.

Ford Transit 130/150/190

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5.4 Spring Alignment



CAUTION!

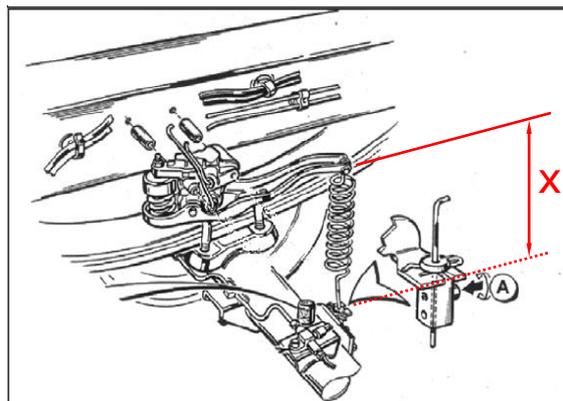
Before fully tightening the bolts that secure the air spring to the upper and lower brackets, set the vehicle at ride height (spring height approximately 14cm) and ensure that the springs are correctly aligned.

5.5 Load Sensing Valve Adjustment

Complete the following procedure in order to ensure that braking forces will be the same with the air assist kit installed as was the case before installation...

With the vehicle standing at ride height and laden to a similar payload state to that set in the preliminary step, and the air springs correctly aligned, loosen the bolt marked **A**

Now adjust the LSV spring linkage in order to re-establish the distance **X** between the upper and lower mounting points, as originally measured as a preliminary step (see Page 8), then re-tighten bolt **A**



5.6 Maintenance

Following installation, it is recommended that all metal parts are coated with a protective substance such as body wax. Following each winter, check the wax coating and re-coat as necessary.

The system does not require very much maintenance other than...

- ◆ to maintain air pressure in the springs. Much like a tyre, the system may lose a little air over time.
- ◆ to keep the air springs clean. It is suggested that, when washing the vehicle, the springs are inspected and cleaned as necessary (preferably by spraying). Look in particular for stones or grit trapped between convolutes, as this may damage the spring.



Ford Transit 130/150/190

L.TRA.RA.C.M

5.7 Check List

Before driving the vehicle following completion of installation of the auxiliary air suspension system, please check...

...all bolts tightened to the recommended torque (Page 8)?

...air springs set in alignment (Section 5.4)?

...all metal parts wax coated (Section 5.6)?

...manufacturer's declaration form completed and returned?



A wait of 24 hours is recommended in order to ensure that the vehicle has maintained its stance and that there are no air leaks present.

6. EPILOGUE

DSC Nederland hopes that you enjoy the benefits that your *DUNLOP* air suspension system will provide for you. To ensure optimal performance, we advise that you have your system checked frequently by qualified personnel. As recommended in the fitting instructions, it is important to coat all the steel parts with a protective substance such as body wax.

IMPORTANT : Manufacturer's Declaration Form

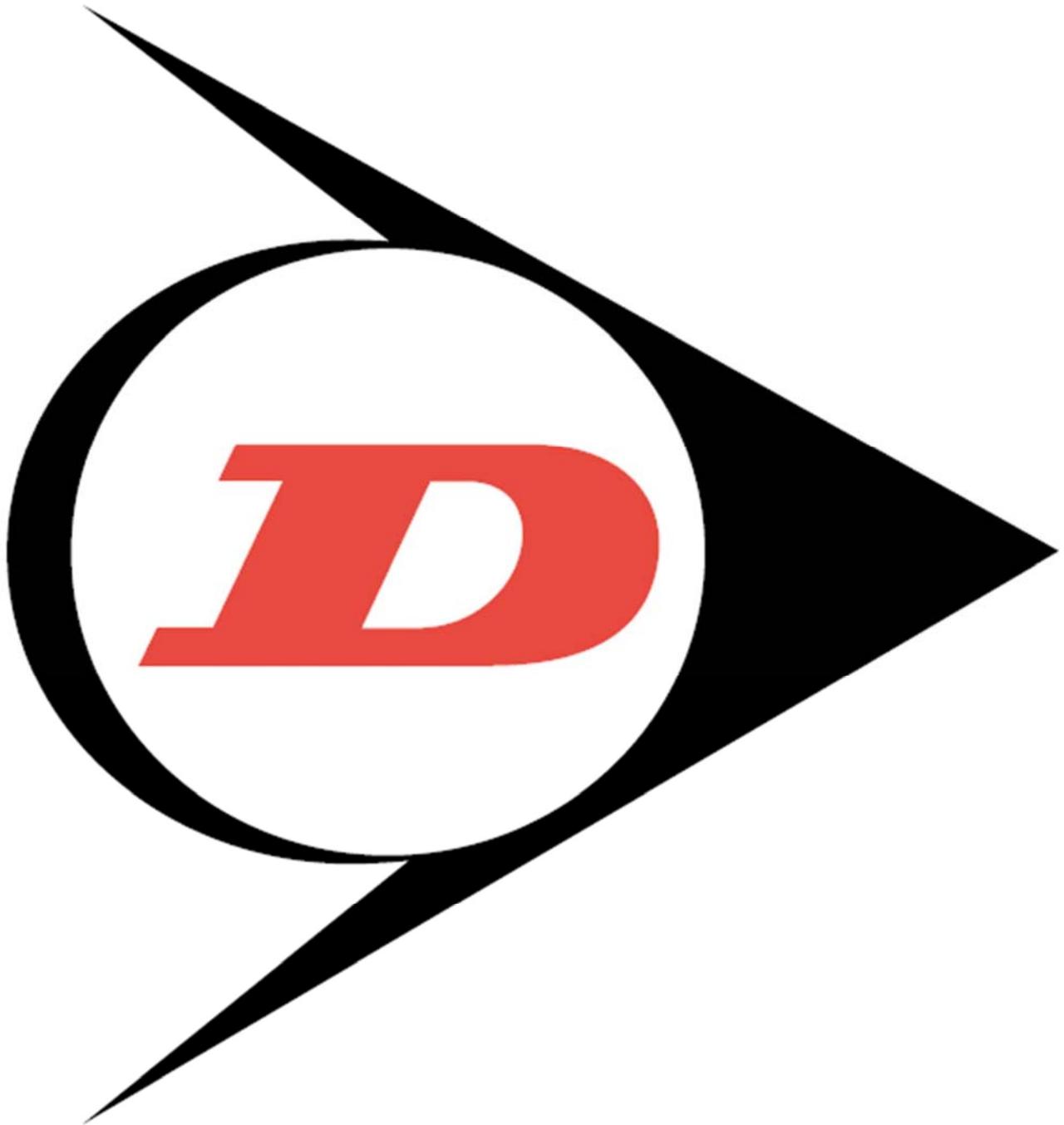
A manufacturer's declaration form is provided with your kit. Following installation of the kit please ensure that this form is completed, signed by a qualified fitter and a copy is returned to DSC Nederland by post, fax or e-mail. Our e-mail address is: info@dscsystems.nl

As a condition of your warranty, modifications to the system may only be carried out by personnel of DSC Nederland.

Enquiries

For general enquiries please contact one of our dealers. You can find them on our website.

www.dscsystems.nl



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