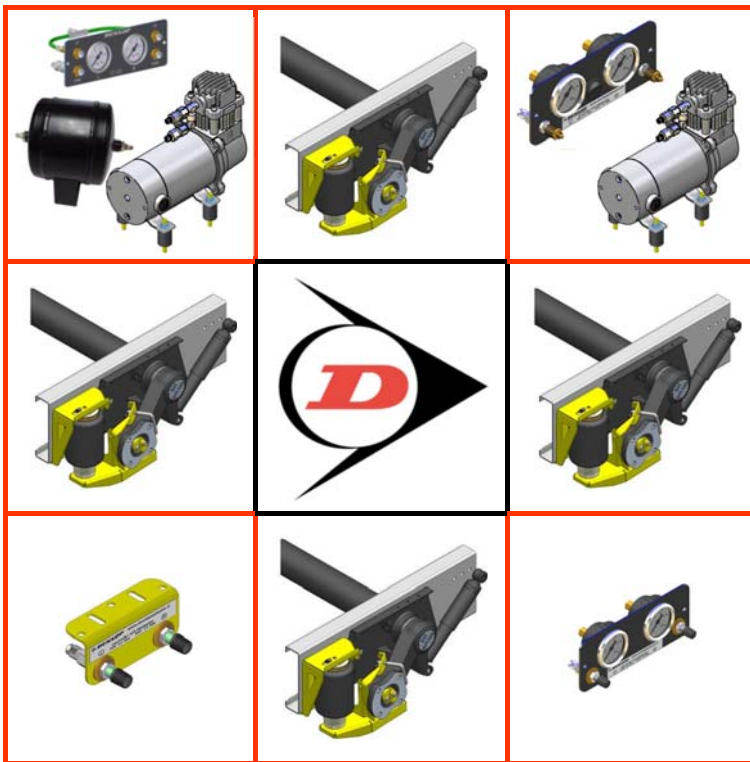


Installation Manual

L.AL.94.STA / L.AL.94.LOW

AL-KO AMC Chassis, 1994 → 2002

Single and Tandem rear axle



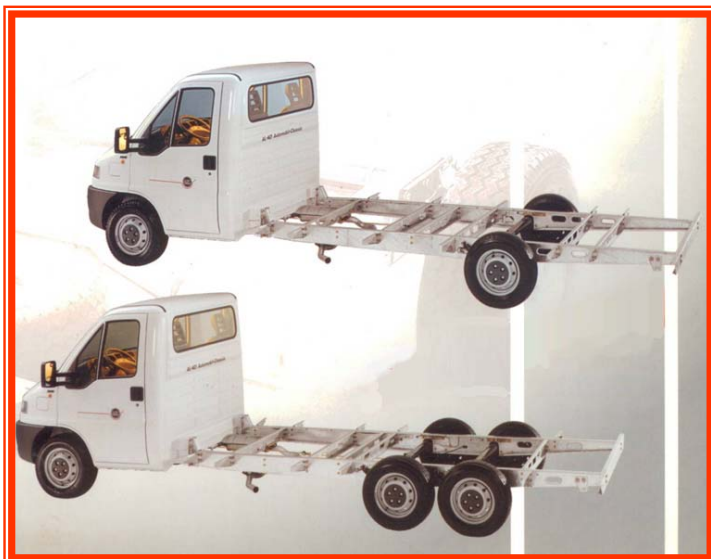
**** IMPORTANT ****
Not suitable for 'Up Going Chassis'

L.AL.94.STA

**** Important ****
The axle goes through the chassis

L.AL.94.LOW

**** Important ****
The axle goes under the chassis



L.AL.94.STA / L.AL94.LOW**CONTENTS**

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L.AL.94.STA / L.AL94.LOW**1. FOREWORD**

This manual provides instructions for the installation of an auxiliary air suspension kit, developed specifically for Motorhomes with an ALKO torsion axle. 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. DSC Nederland 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@dunlopsystems.nl

Artikel number:

L.AL.94.STA - Auxiliary air suspension for Alko chassis
L.AL.94.LOW - Auxiliary air suspension for Alko chassis

L.AL.94.STA / L.AL94.LOW**2. VERY IMPORTANT PREREQUISITES****Check the condition of the Torsion Axle of your Vehicle**

Before attempting to fit an auxiliary air suspension system to your vehicle, it is extremely important to be aware that the torsion axle of your vehicle must be in good condition. **Please observe all of the following guidelines...**

- **Never** install air springs if there is any indication of faults within the axle assembly
- AL-AL-KO recommends a replacement of the axle every 100,000—120,000 km (62,000—75,000 miles)
- Air springs serve only to assist the torsion springs
- Observe whether the vehicle is listing significantly to one side, which would indicate a damaged or broken torsion spring
- Lift the rear of the vehicle until the lever arm rests against the bump stop and...
 - ... observe that the lever arm moves smoothly during lifting, so indicating adequate lubrication
 - ... listen in the area near to the lever during lifting, since noise may indicate a broken torsion spring. If in doubt, repeat the lift using some means of improving audibility (ideally a stethoscope if available, or alternatively a screwdriver or length of bar touching the lever at one end and an ear at the other)
 - ... lift a road wheel by hand and observe the lever arm in its housing for backlash. This should not exceed approximately 0.5mm.
- The axle has three splined torsion bars. Be aware that if the fixing points of these bars are broken, then the lever arm may dismount from its housing with the vehicle in motion!
- Try to find out whether any galling of the bearings has taken place
- Remove grease nipples and check the quality of the grease (make a point of greasing the nipples as a matter of course)

L.AL.94.STA / L.AL94.LOW**3. 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.

4. 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

L.AL.94.STA / L.AL94.LOW**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.

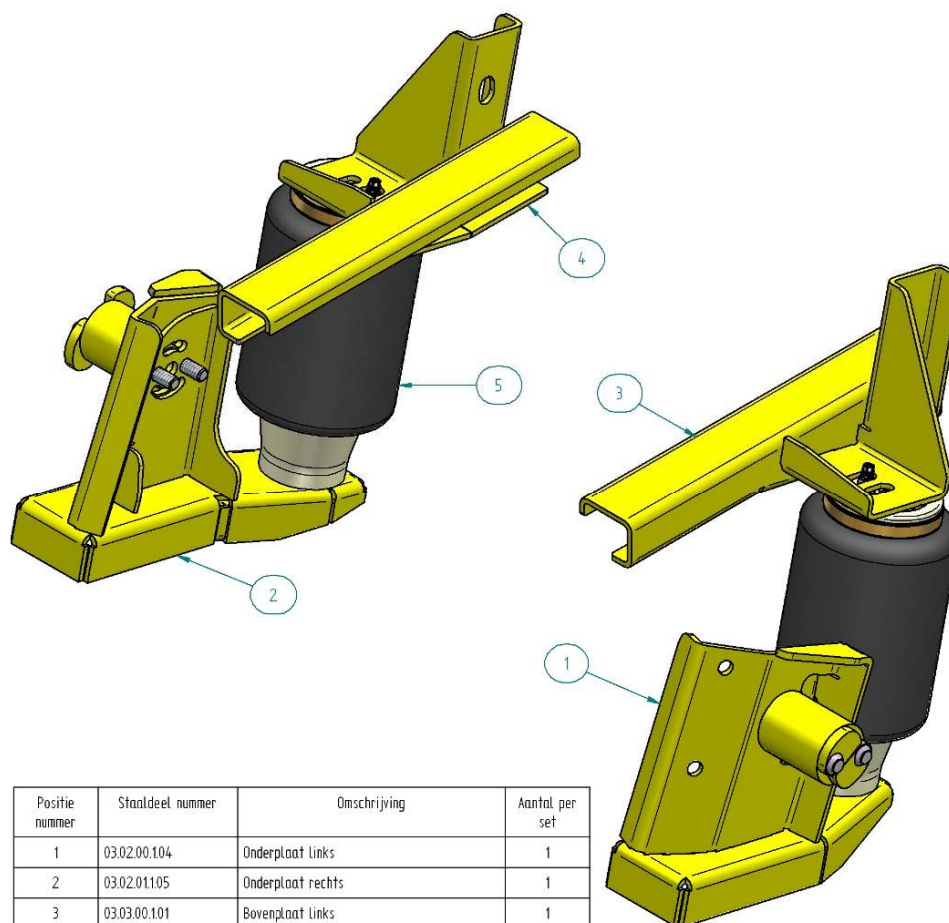
Installation Manual

5. CONTENTS OF THE AIR SUSPENSION KIT

<i>Nr.</i>	<i>Description</i>	<i>Quantity</i>
1.	Lower bracket – left hand	1
2.	Lower bracket – right hand	1
3.	Upper bracket – left hand	1
4.	Upper bracket – right hand	1
5.	Air spring SZ 55-20	2

Not in the assembly drawing

- All bolt and nuts needed
- Black (left side) and blue (right side) air lines
- Tie wraps
- Schrader valves or other option
- Declaration of conformity
- Installation manual



Positie nummer	Staaldeel nummer	Omschrijving	Aantal per set
1	03.02.00.104	Onderplaat links	1
2	03.02.01.105	Onderplaat rechts	1
3	03.03.00.101	Bovenplaat links	1
4	03.03.00.102	Bovenplaat rechts	1
5	0P.LB.CO.SZ5520	Rollatg SZ-55-20	2

L.AL.94.STA / L.AL94.LOW

6. INSTRUCTIONS FOR INSTALLATION



Preparation and Precaution



Before beginning installation, ensure that you have sufficient clearance, the wheels need to be free from the floor. Use a jack if necessary.



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

Check if you have the correct kit picture 26 is L.AL.94.LOW and picture 28 is L.AL.94.STA (the difference is in the chassis plate)

6.1. General Torque Recommendations

METRIC TORQUE CHART in N.m.			
SIZE	CLASS 8.8	CLASS 10.9	Aluminium and PA6G
M6 x 1	10	14	4
M8 x 1.25	23	34	9
M10 x 1.5	48	67	18
M12 x 1.75	83	117	31
M16 x 2	200	285	80

- When both the bolt and nut are made from steel then use column class 8.8 or 10.9.
- For the air springs use the column of Aluminium and PA6G.
- For all other materials it is up to the discretion of the person skilled in the art.

The following instructions make reference to the diagrams on pages 14 to 17 inclusive.

L.AL.94.STA / L.AL94.LOW**6.2 Installing of the left side**

1. Install the lower bracket to the suspension arm, according to the drawings, if necessarily lift the vehicle a bit out of the springs.
2. Push the swing-bolts as far as possible into the centre hole.
3. If necessarily insert a big screwdriver into the centre hole so if you tighten slightly the M10 self securing nuts. Convince yourself the swing-bolts are grapping behind the centre hole.
4. Secure the M10 nuts not totally, it should be still possible to turn the lower bracket in to the final position after the u-bolt is installed.
5. Install the u-bolt around the suspension arm into the lower bracket.
6. Tighten now the swing-bolt definitely.
7. Attach the air spring to the upper bracket with the M10 x 25 bolt, washer and spring washer. Do not tighten totally. Attach also the air hose (Blue is right and black is left)..

High entrance

8. Remove the front bolts from the axle.
9. Install the upper bracket and air spring and use the M12 x 35 mm bolt.

Standard entrance

8. Attach the upper bracket on the bottom side around the chassis and push the plate against the sketch plate of the axle.
9. To avoid shifting, drill a hole in the middle of the plate trough the and secure the plate with the M6 bolt and nut.
10. Align the air spring so it is straight positioned, secure the air spring to the under bracket by using the M12 x 25 imbus bolt and washers. Aligning is much more easy when you can enter a little air into the air springs.
11. Tighten now all the bolts.

6.3 Installing of the right side

Identical as the left side.

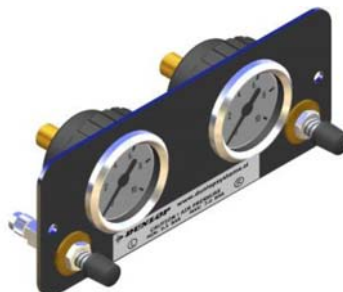
L.AL.94.STA / L.AL94.LOW

6.4 Fitting of Inflator Console

Option Valves



Option 1



Option 2



Option 3



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

- 'Option Valves', having two valves and a bracket (above, top-left)
- 'Option 1', 'Option 2' or 'Option 3', having both valves and pressure gauges

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...

Console with Valves Only...

- 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

Console with Valves and Gauges...

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

'Comfort' Packages

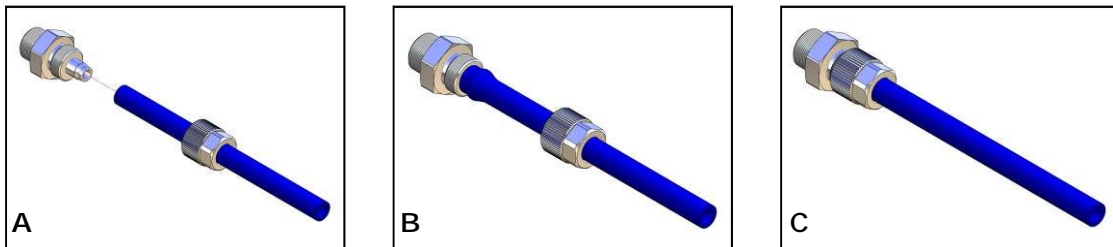
The 'Option 2' and 'Option 3' panels, as shown above, are each part of a *Comfort Package* that is supplied with a compressor (and also an air reservoir in the case of the 'Option 3' panel) for ease of spring inflation and ride height setting. For further information please ask your dealer.

L.AL.94.STA / L.AL94.LOW

6.5 Tube Connection and Disconnection, Cutting and Routing

Connection and Disconnection

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



- A. Slide a nut over the end of the tube
- B. Push the tube onto the connector as far as possible
- C. 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

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.

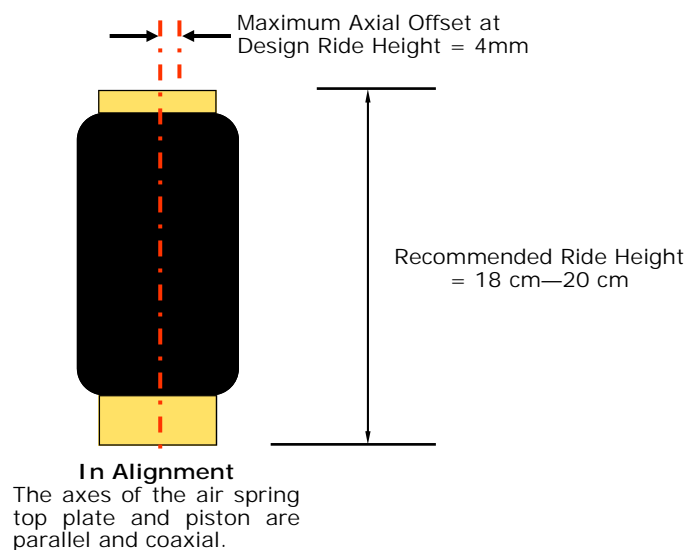
L.AL.94.STA / L.AL94.LOW**6.6 Spring Alignment**

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 2.0 bar**

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 2.0 bar (29 psi) should be maintained at all times in order to avoid possible compression damage to the springs.



L.AL.94.STA / L.AL94.LOW**6.7 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 (Section 6.1)? | <input type="checkbox"/> |
| ...air springs set in alignment (Section 6.9)? | <input type="checkbox"/> |
| ...all metal parts wax coated (Section 6.11)? | <input type="checkbox"/> |
| ...manufacturer's declaration form completed and returned? | <input type="checkbox"/> |



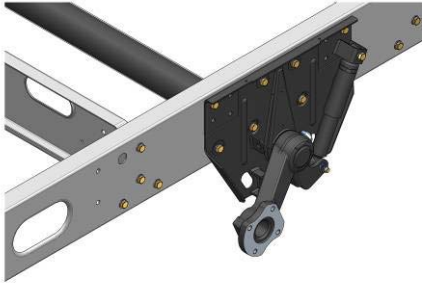
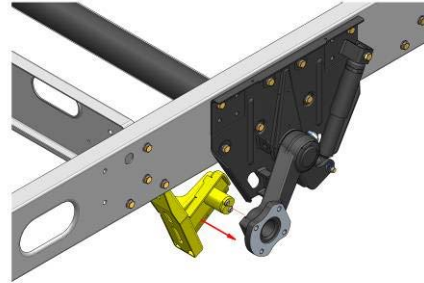
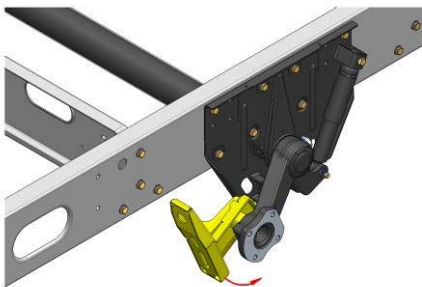
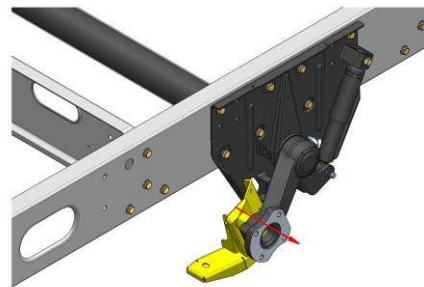
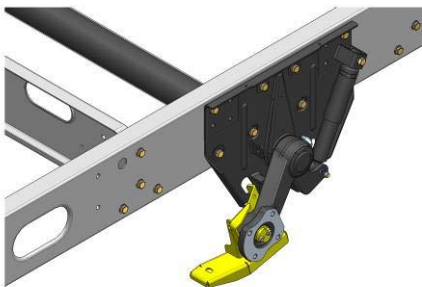
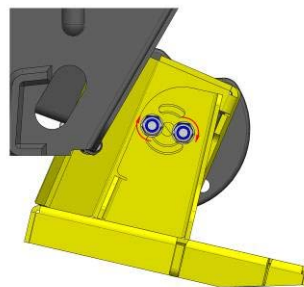
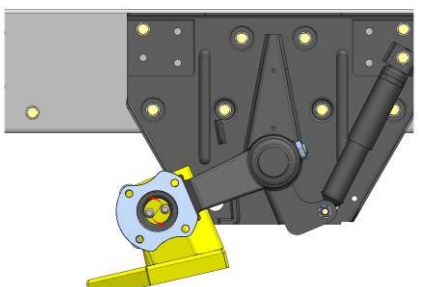
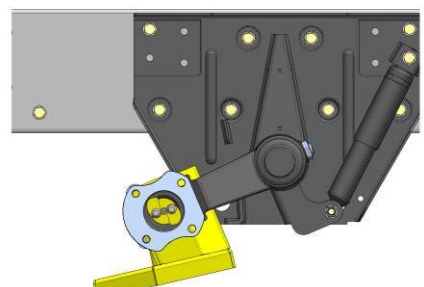
A wait of 24 hours is recommended in order to ensure that the vehicle has maintained its stance and that there are no air leaks present.

6.8 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 bellows clean. It is suggested that, when washing the vehicle, the bellows are inspected and cleaned as necessary (preferable by spraying). Look in particular for stones or grit trapped between convolutes, as this may damage the bellow.
- ◆ to check the protective substance and recoat as necessary

L.AL.94.STA / L.AL94.LOW**7. INSTALLATION DIAGRAMS****1****2****3****4****5****6****7****8**

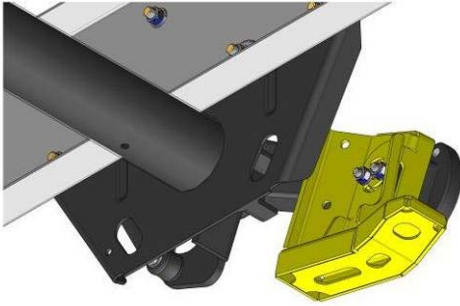
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Fiat Ducato X230

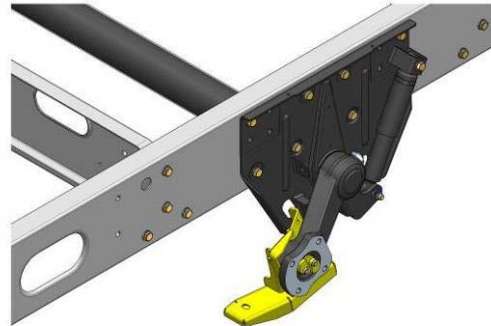
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L.AL.94.STA / L.AL94.LOW

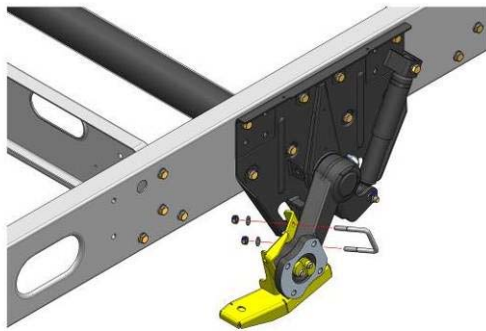
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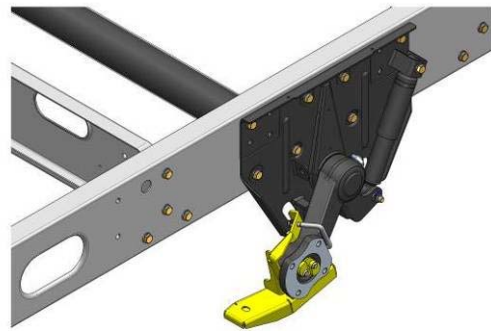
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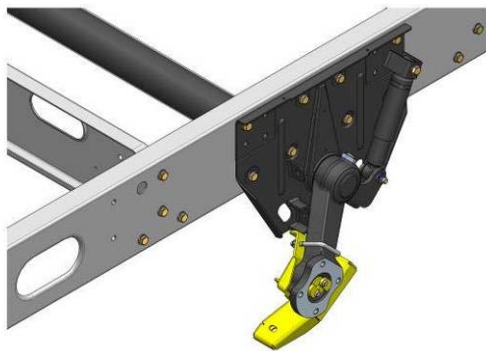
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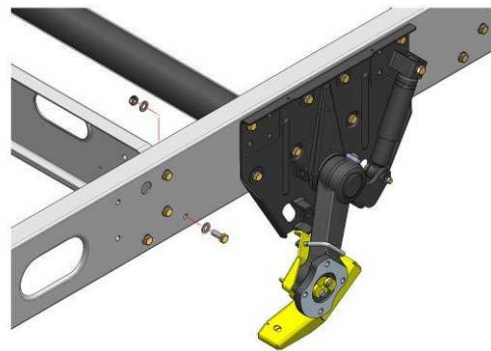
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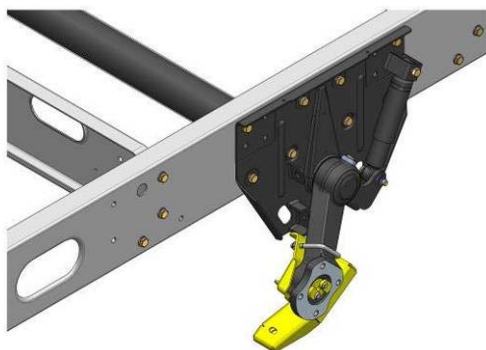
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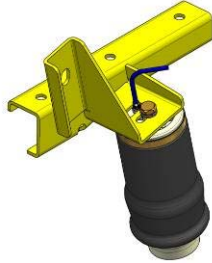
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Fiat Ducato X230

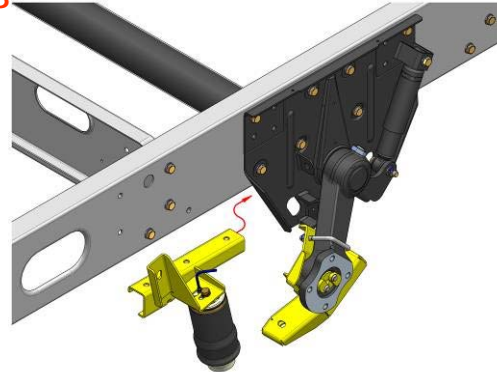
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L.AL.94.STA / L.AL94.LOW

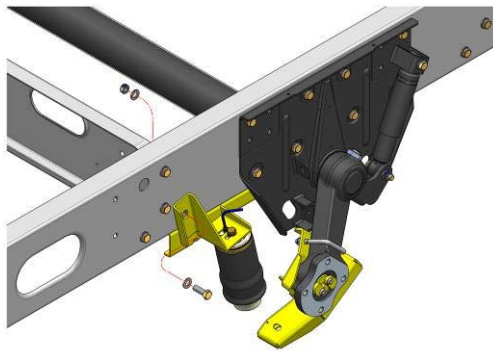
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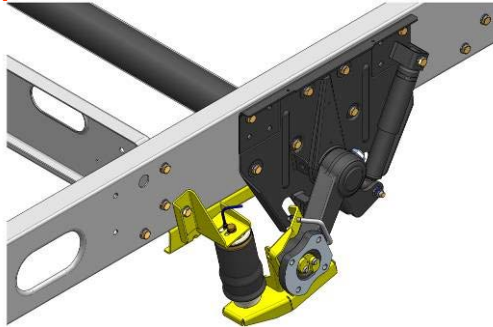
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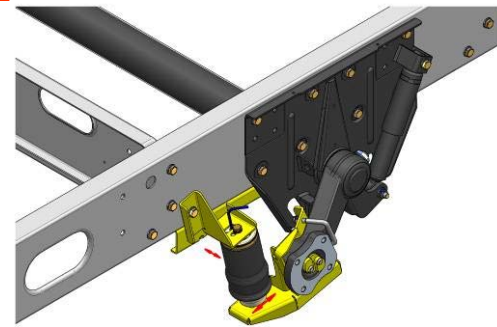
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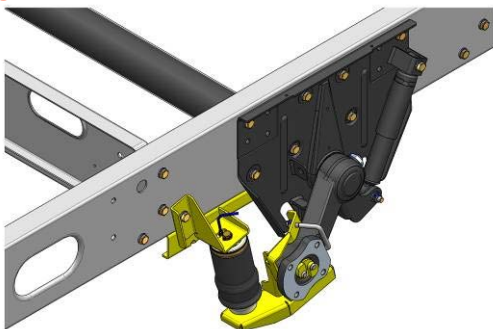
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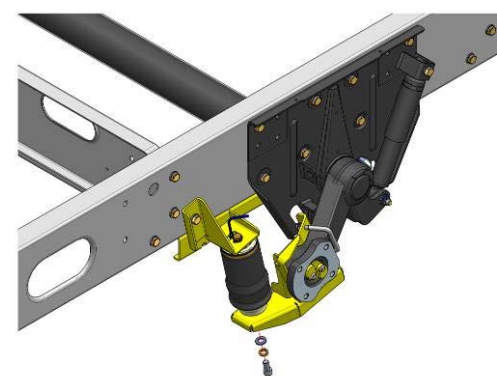
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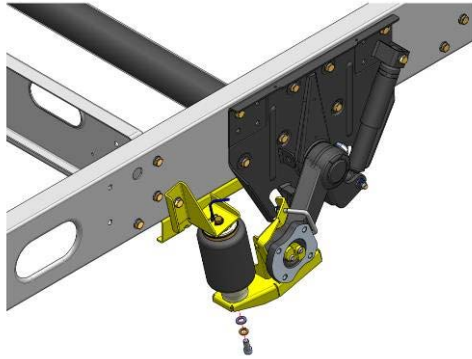
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Fiat Ducato X230

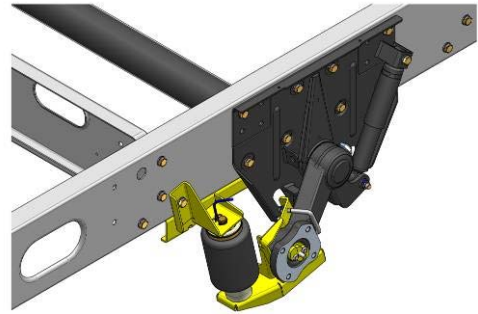
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L.AL.94.STA / L.AL94.LOW

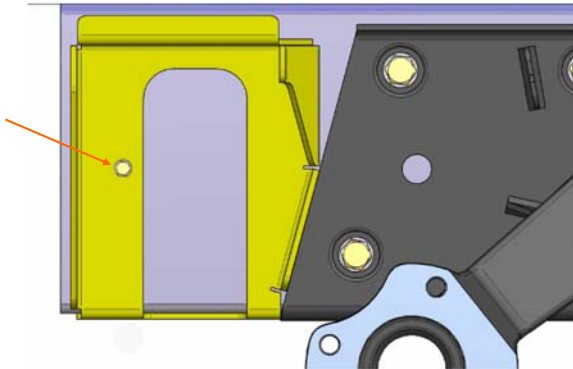
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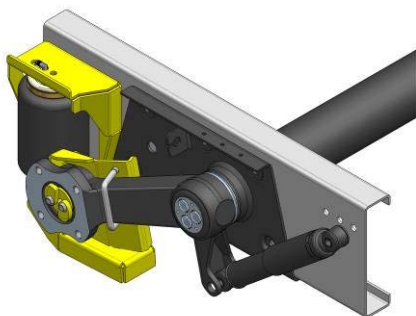
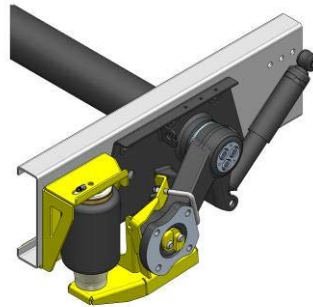
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27



28



L.AL.94.STA / L.AL94.LOW**8. 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

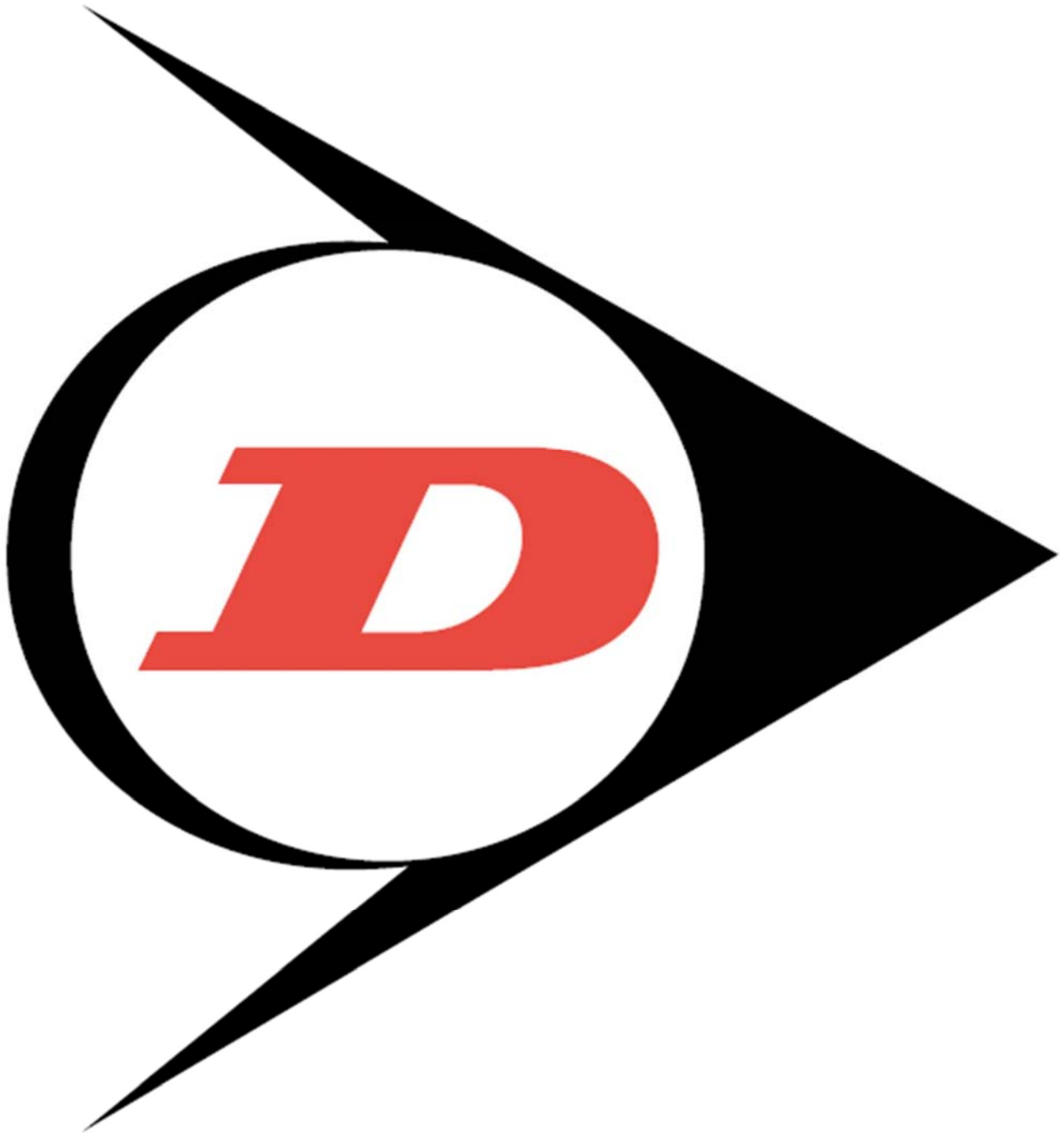
A manufacturer's declaration form is provided with your kit. Following installation of the kit please ensure that this form is completed, signed by a qualified fitter and a copy is returned to DSC Nederland by post, fax or e-mail. Our e-mail address is: info@dunlopsystems.nl

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.dunlopsystems.nl



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