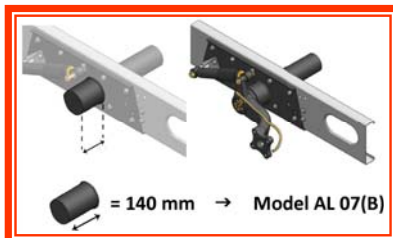
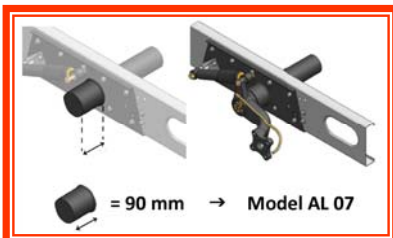
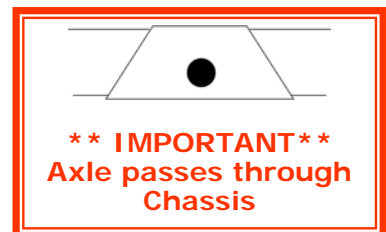
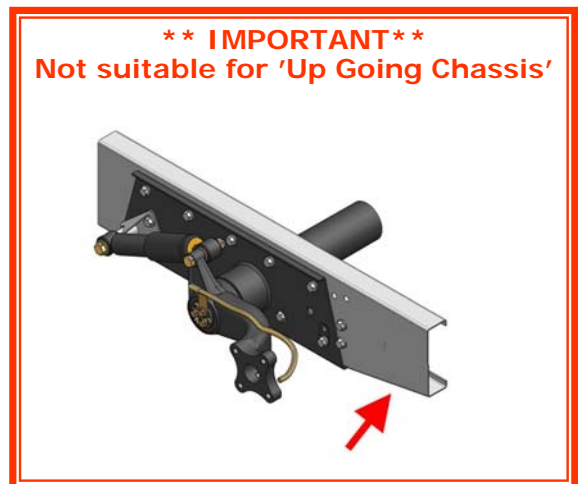
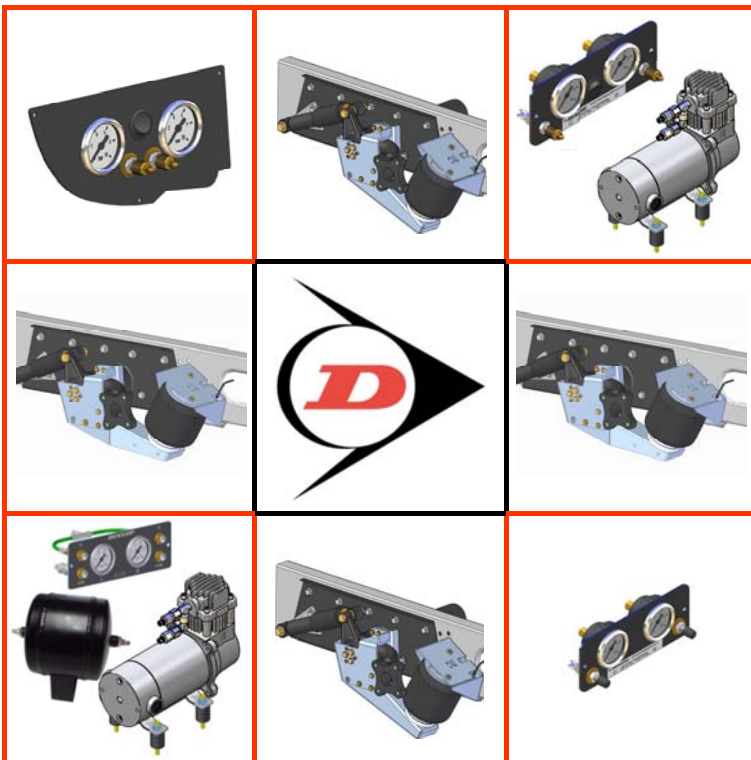


Installation Manual

L.AL.07 / L.AL.07(B)

AL-KO AMC Chassis, 2007 →

Single and Tandem Rear Axle



L.AL.07 / L.AL.07(B)

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L.AL.07 / L.AL.07(B)

1. FOREWORD

This manual provides instructions for the installation of an auxiliary air suspension kit, developed specifically for Vehicles with an ALKO AMC single and tandem torsion axle. A separate kit is required for each rear 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

L.AL.07 and L.AL.07(B) - Auxiliary air suspension for AL-KO AMC chassis

Valid for:

AMC 33L, 35LB, 35LH, 35L, 37L, 35H, 38H, 35HA, 40H, 42H, 45HT, 50HT

L.AL.07 / L.AL.07(B)

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-Ko advises a revision of the axle every 100,000 – 120,000km (62000 - 75000 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)
- ◆ There are 2 types of torsion springs. Please note that if one torsion spring breaks, AL-KO suggests that all should be replaced.
- ◆ Be aware that if the torsion bar fixing points 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.07 / L.AL.07(B)

3. INTRODUCTION

Thank you for choosing an auxiliary air suspension kit from the range offered by *DSC Nederland B.V.* 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.

L.AL.07 / L.AL.07(B)

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

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.

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*

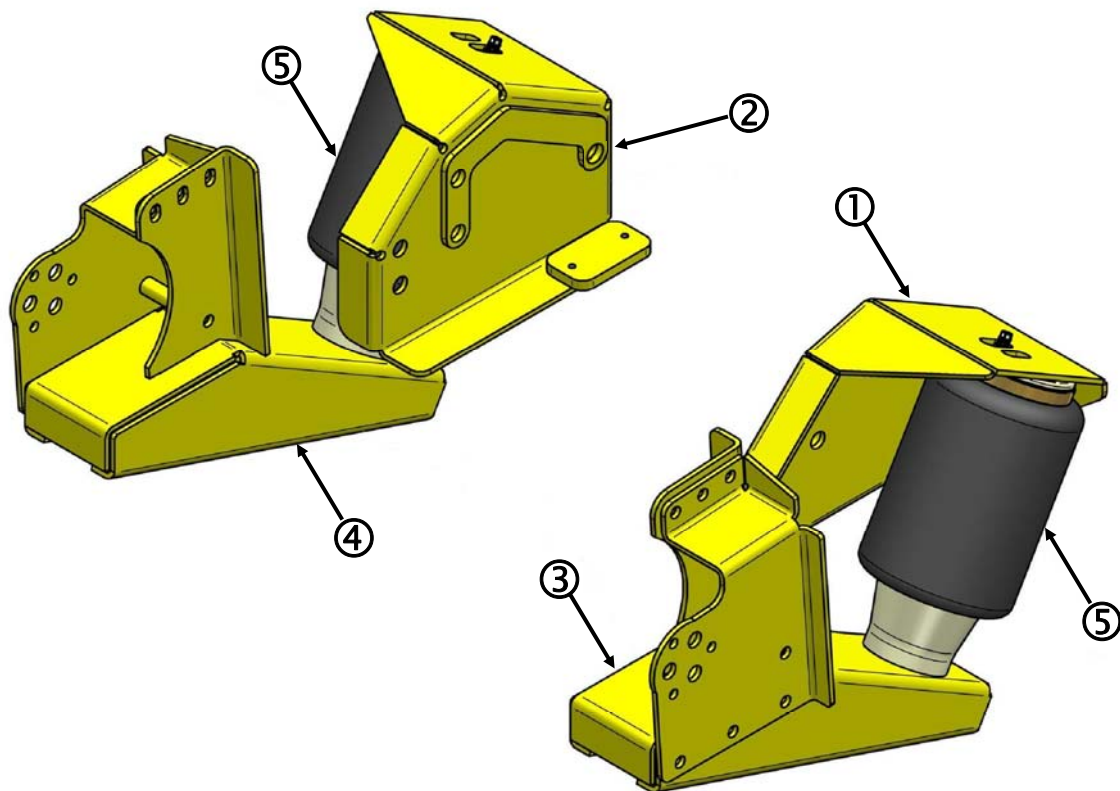
The uniform resource locator (URL) for this document is...

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

L.AL.07 / L.AL.07(B)

5. CONTENTS OF THE AIR SUSPENSION KIT L.AL.07

Number	Part Number	Description	Quantity
1	03.05.00.101	Upper Bracket - Left	1
2	03.05.00.102	Upper Bracket - Right	1
3	03.05.00.104	Lower Bracket - Left	1
4	03.05.00.105	Lower Bracket - Right	1
5	OP.LB.CO.SZ5520	Air Spring SZ 55-20	2



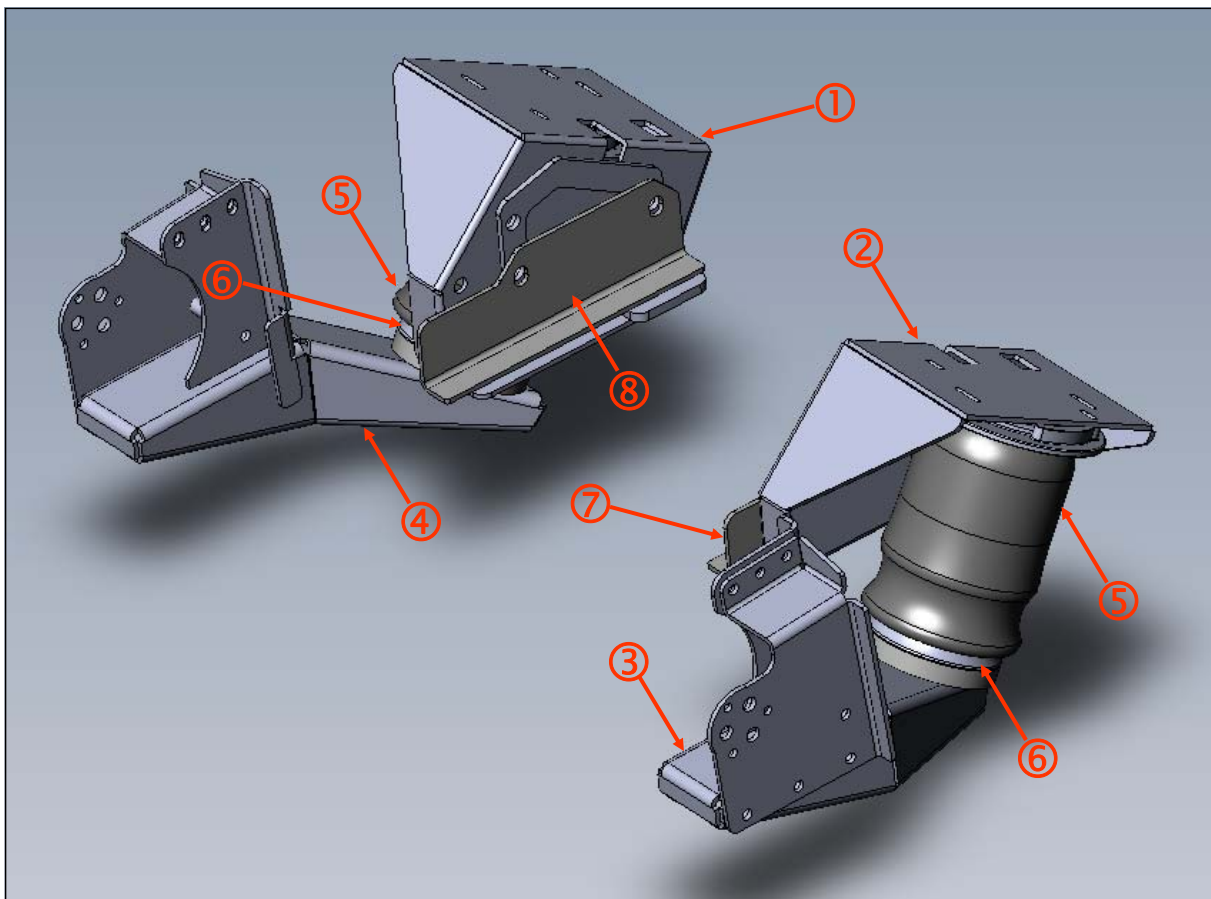
Other parts, not shown above...

- Bolts and Nuts, as necessary
- Black and Blue Tubing
- Cable Ties
- 'Schrader' Type Valves
- Manufacturer's Declaration of Conformity Form
- Installation Manual

L.AL.07 / L.AL.07(B)

6. CONTENTS OF THE AIR SUSPENSION KIT L.AL.07(B)

Number	Description	Quantity
1	Upper Bracket - Right	1
2	Upper Bracket - Left	1
3	Lower Bracket - Left	1
4	Lower Bracket - Right	1
5	Air Spring - 6-inch (150mm) Dunlop	2
6	Plastic Spacer Disc	2
7	Reinforcing Plate - Left	1
8	Reinforcing Plate - Right	1



Other parts, not shown above...

- Bolts and Nuts, as necessary
- Black and Blue Tubing
- Cable Ties
- 'Schrader' Type Valves
- Manufacturer's Declaration of Conformity Form
- Installation Manual

L.AL.07 / L.AL.07(B)

7. 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!

7.1. General Torque Recommendations

METRIC TORQUE CHART in N.m				
SIZE	CLASS 8.8	CLASS 10.9	Aluminium	PA6G
M6 x 1	10	14	4	3
M8 x 1.25	23	34	9	6
M10 x 1.5	48	67	18	11
M12 x 1.75	83	117	31	18
M16 x 2	200	285	80	47

- When both the bolt and nut are made from steel, use either class 8.8 or 10.9.
- For the air spring of both L.AL.07 and L.AL.07(B), refer to Aluminium and PA6G.
- For all other materials, tightening torque is left to the discretion of a person skilled in the art.

The following instructions make reference to the diagrams on pages 16 to 22 inclusive.

7.2. Installing the Upper Brackets

1. Attach the spacer plates to the upper brackets using M6 x 14 bolts with both flat washers and spring washers - Figures 3 and 4
2. Remove the three M12 flange head bolts - Figures 5 to 7
3. Attach the upper bracket to the chassis, not forgetting the spacer bracket and washer between the upper bracket and the chassis - Figures 8 to 10. Secure the bracket using M12 x 40 bolts with washers and self-locking nuts. Note that it may be necessary to drill holes since not all brands of motorhome have the same hole pattern. The holes in the brackets of your kit are positioned where recommended by AL-KO for popular motorhome brands. Use the reinforcing plate for the L.AL.07(B) kit.

In case needed, a hole pattern is appended - See Page 23. This page can be used as a template provided that, on the printed page, the dimension shown is exactly 130mm.

L.AL.07 / L.AL.07(B)

7.3. Installing the Lower Brackets

1. Remove the three fixing bolts that secure the torsion bar - Figures 11 and 12
2. Remove the three M6 bolts so that the cover plate can be removed - Figures 13 to 15. This plate is no longer needed and may be discarded.
3. Attach the lower bracket at the position vacated by removal of the cover plate, using the original bolts - Figures 16 to 20 - at the same time attaching the hand brake cable support (the cable may need to be bent a little in order to achieve a good fit against the support)
4. Place the spacing tube with the M8 x 80 bolt and washer through the hole in the top bracket - Figures 21 to 23
5. Attach the lower bracket to the suspension plate as shown in pictures 24 to 31.



L.AL.07 / L.AL.07(B)

7.4. Installing the Air Springs

The following procedural steps apply to both L.AL.07 and L.AL.07(B) except where designated...

a = L.AL.07 **b** = L.AL.07(B)

1. Connect the tubes to the air springs, using black for the left side and blue for the right side (see Section 7.6). Guide the tube through the designated hole in the upper bracket (the one closest to the chassis) .
- 2a. **L.AL.07**: Attach the air spring to the upper bracket, using a single M10 x 20 bolt with washer and locking ring. Do not tighten the bolt as yet - Figures 32a and 33a
- 2b. **L.AL.07(B)**: Attach the air spring to the upper bracket, using two M6 x 18 bolts with washers and locking rings. Do not tighten the bolts as yet - Figures 32b and 33b. Depending of the displacement between the upper and the lower brackets, choose the correct combination of holes such that alignment of the air spring will be possible at a later stage.
3. Replace the wheels and lower the vehicle until the lower bracket is almost in contact with the underside of the air spring piston - Figure 34
4. Carefully inflate the air spring a little until the air spring piston is actually in contact with lower bracket - Figures 35 and 36
- 5a. **L.AL.07**: Attach the piston to the lower bracket using a single M12 x 40 bolt with washer and locking ring. Do not tighten the bolt as yet - Figures 37a and 38a.
- 5b. **L.AL.07(B)**: Attach the piston and disc to the lower bracket using a single M10 x 40 bolt with washer and locking ring. Do not tighten the bolt as yet - Figures 37b and 38b.
6. Position the vehicle at the desired ride level. Align the air springs (see Section 7.9), and finally tighten the bolts at both the top and the bottom to secure the springs to the brackets.

L.AL.07 / L.AL.07(B)

7.5. Fitting of Inflator Console



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

- 'Option Valves', with two valves only (top left)
- 'Option 1', 'Option 2' and the special console, each with two valves and gauges

Mount the console in a position of your choice whereby it is firmly fixed, has some protection from the environment (particularly important for a 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...

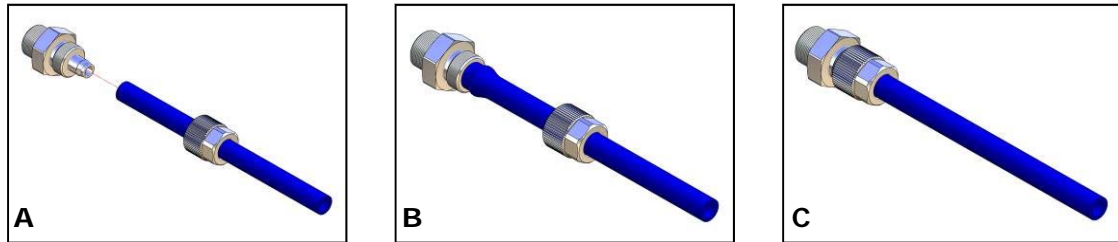
- in the vehicle cabin, within reach and sight of the driver
- Beside, under the driver seat
- in the wall of a cupboard (motorhomes)
- in a service shutter

L.AL.07 / L.AL.07(B)

7.6. 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.07 / L.AL.07(B)

7.7. Brake modification

Your vehicle has ABS and so there is no need for any adjustment of the braking system.

7.8. Spring Inflation

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



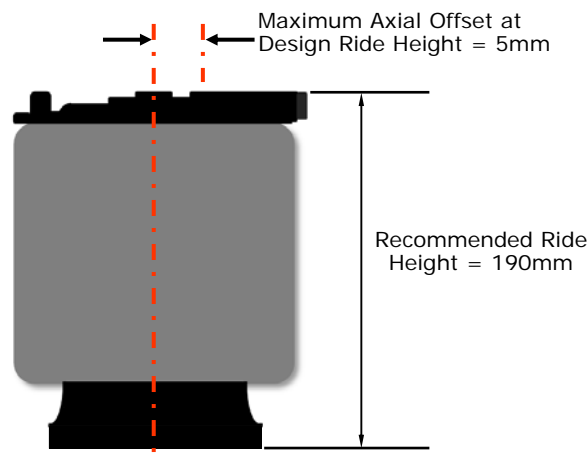
Maximum and Minimum Pressure

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.

7.9. Spring Alignment



In Alignment
The axes of the air spring top plate and piston are parallel and coaxial.



CAUTION!

Before tightening the bolts that connect the air spring top plate to the upper bracket and piston to the lower bracket, set the vehicle at design ride height (spring height ideally between 17.0 and 19.0cm) and ensure that the spring is as closely in alignment as possible (maximum axial offset between top plate and piston = 5 mm).

L.AL.07 / L.AL.07(B)

7.10. 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 7.1)?
- ...air springs set in alignment (Section 7.9)?
- ...enough free space around the air springs to avoid wearing?
- ...all metal parts wax coated (Section 7.11)?
- ...manufacturer's declaration form completed and a copy 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.

7.11. Maintenance

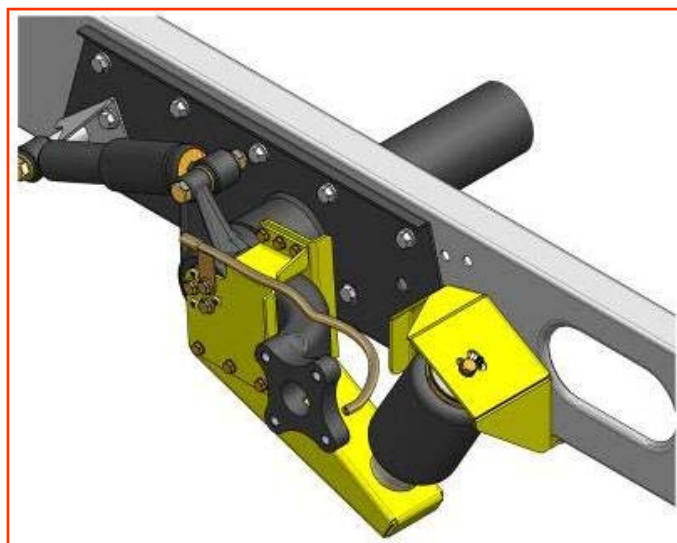
Following installation, it is recommended that all metal parts are coated with a protective substance such as body wax. Following each winter, check the wax coating and re-coat as necessary.

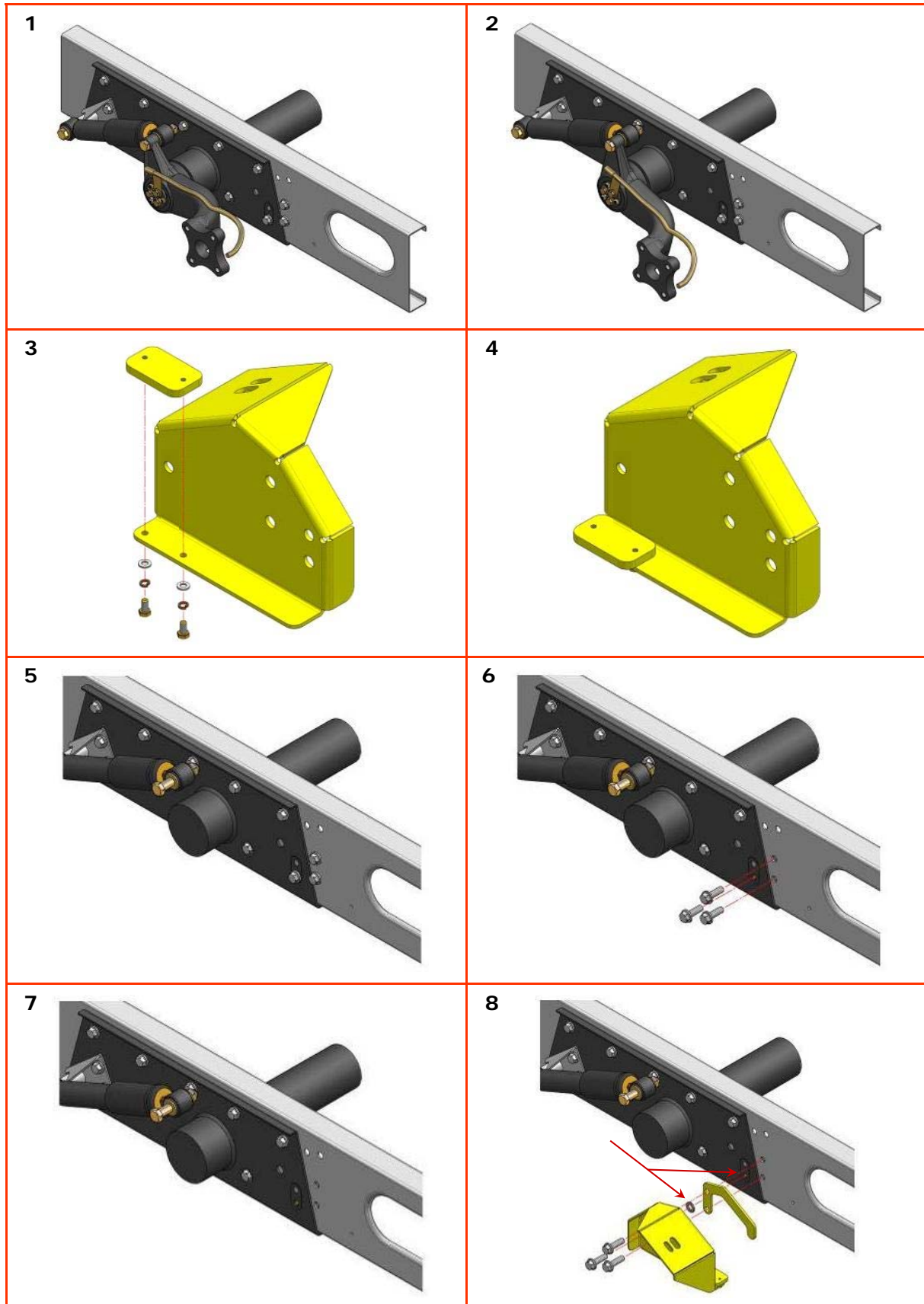
The system does not require very much maintenance other than...

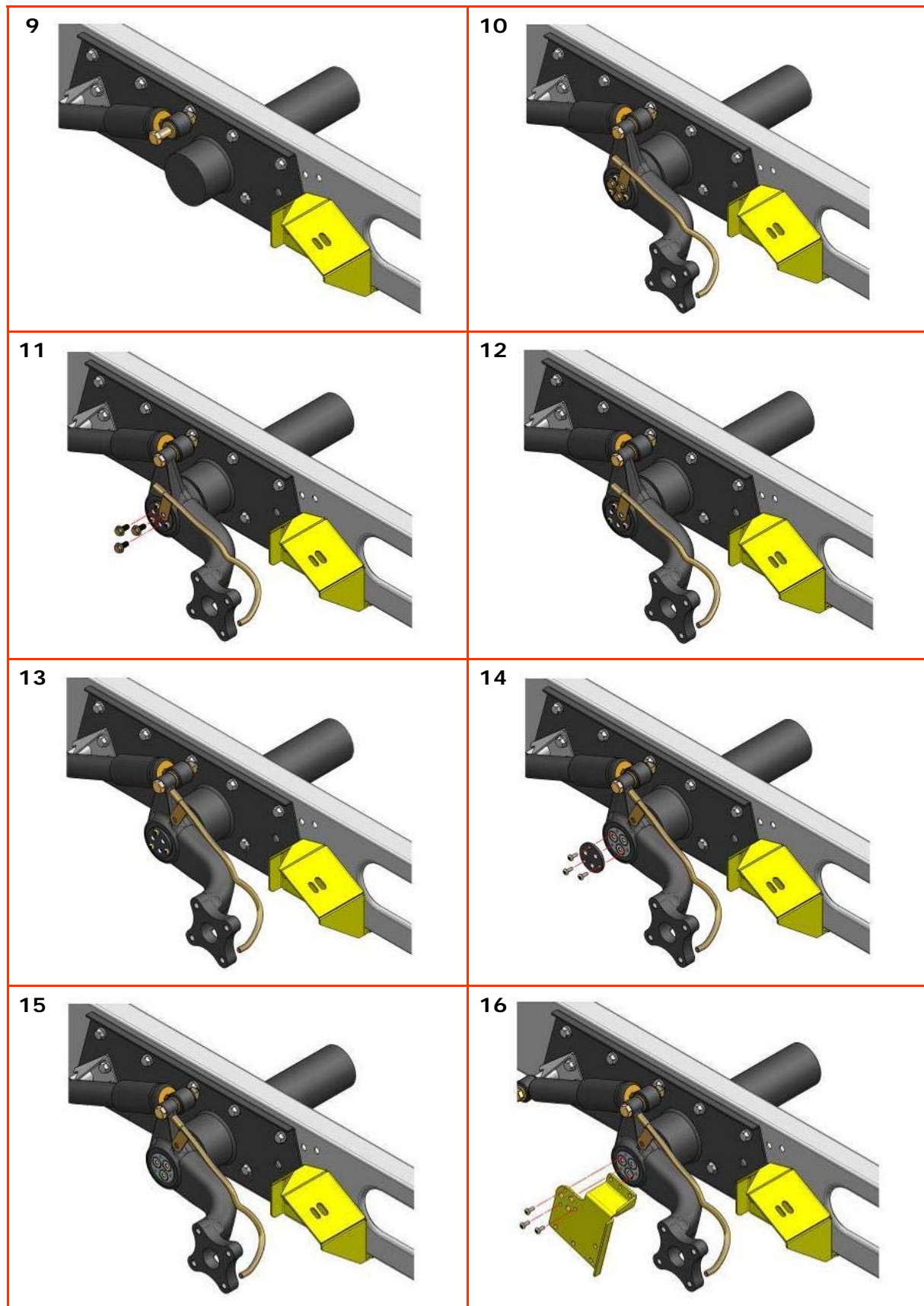
- ◆ to maintain air pressure in the springs. Much like a tyre, the system may lose a little air over time.
- ◆ to keep the air bellows clean. It is suggested that, when washing the vehicle, the bellows are inspected and cleaned as necessary (preferable by spraying). Look in particular for stones or grit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

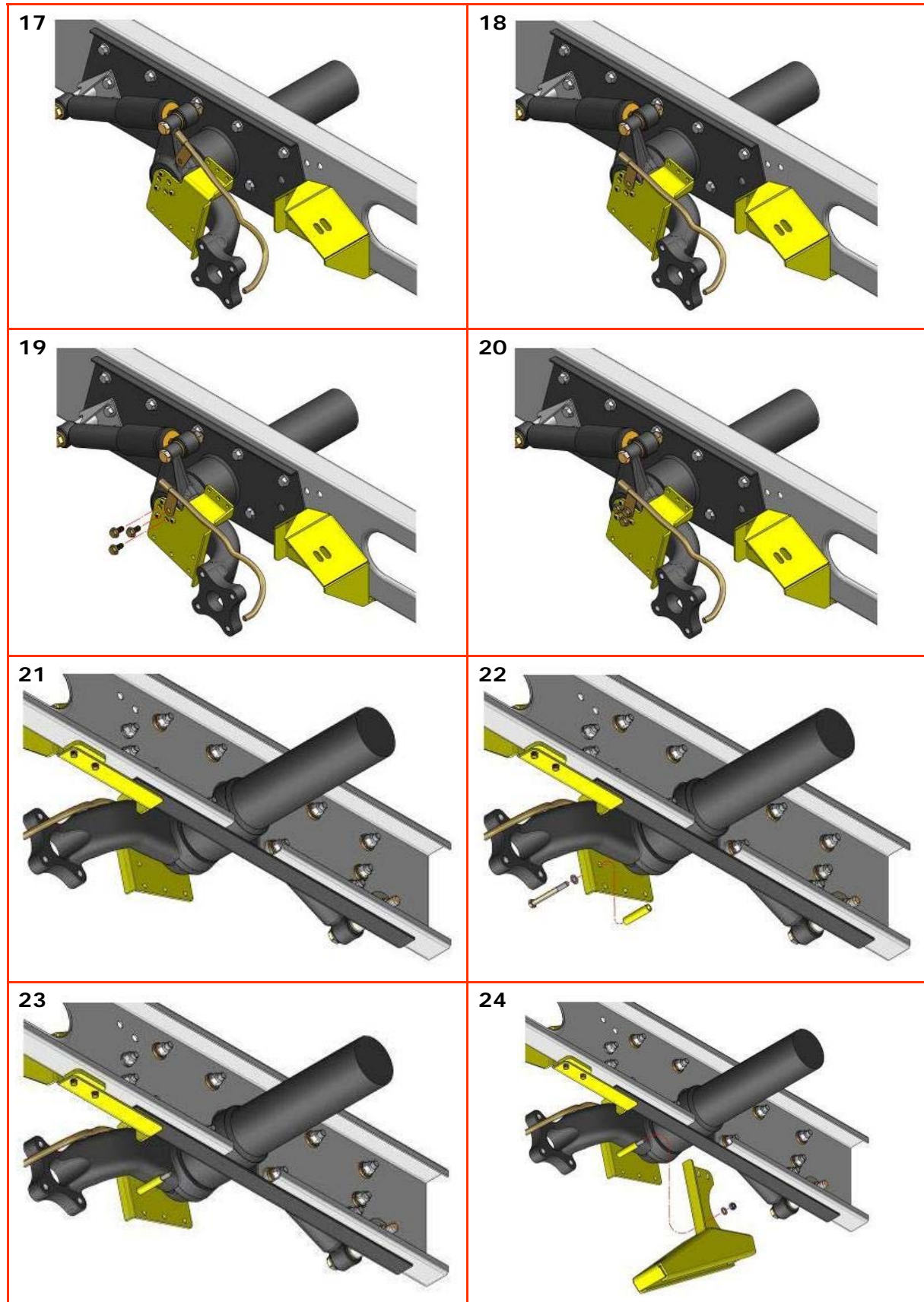
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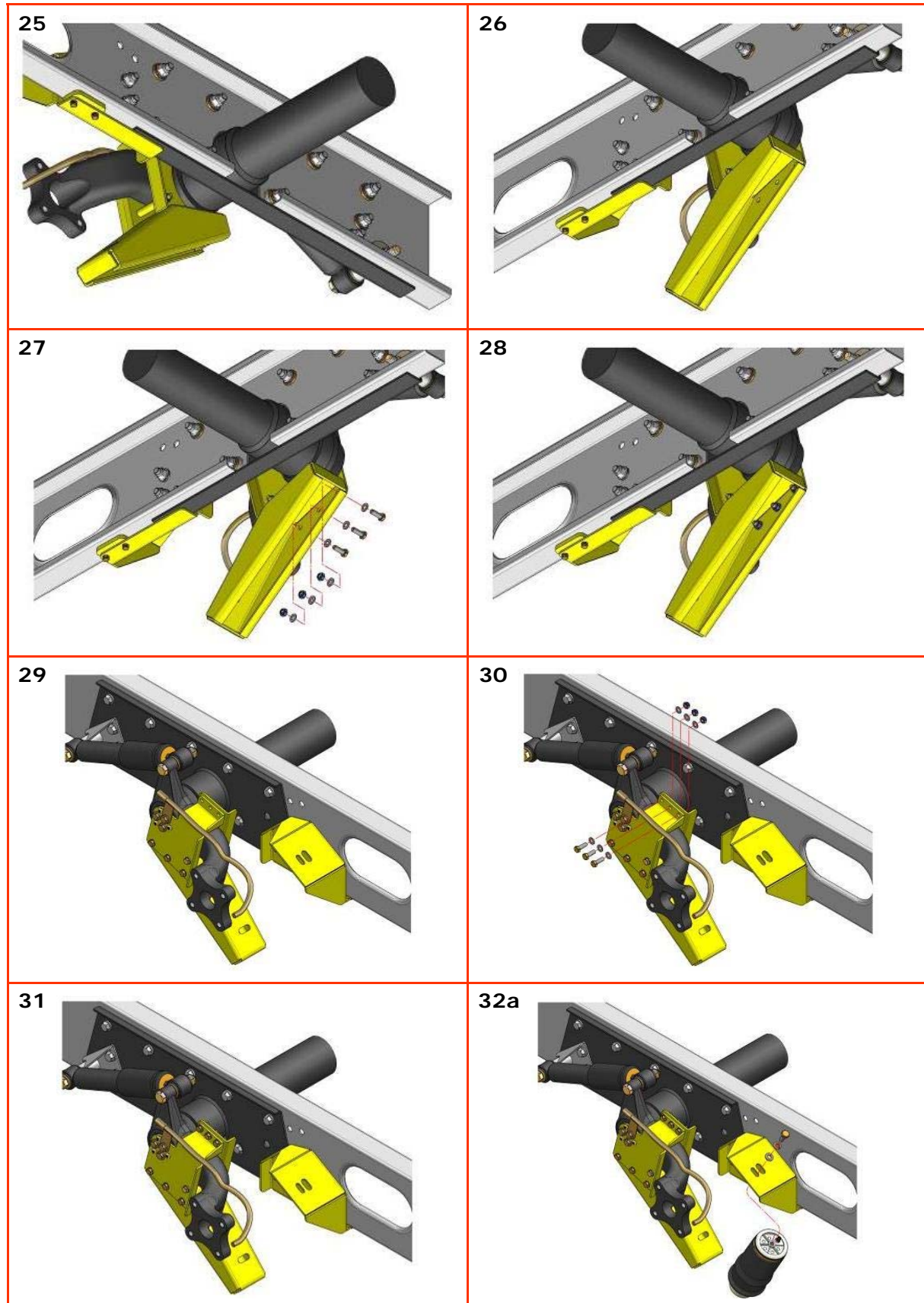
8. INSTALLATION DIAGRAMS



L.AL.07 / L.AL.07(B)

L.AL.07 / L.AL.07(B)

L.AL.07 / L.AL.07(B)

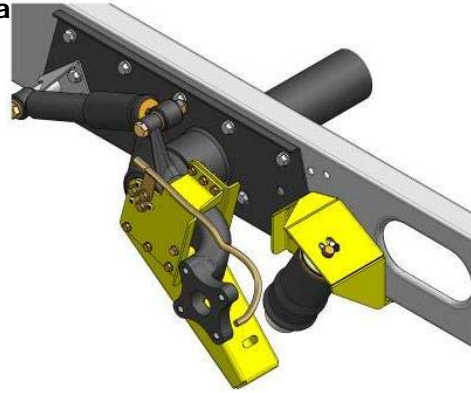
L.AL.07 / L.AL.07(B)

L.AL.07 / L.AL.07(B)

32b



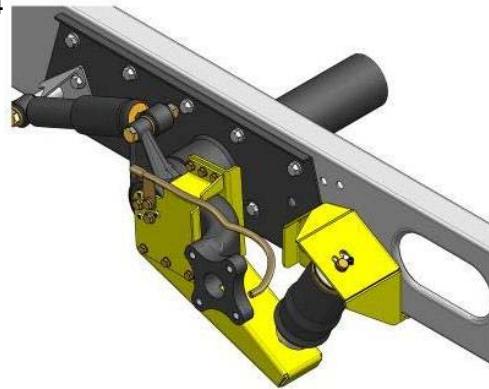
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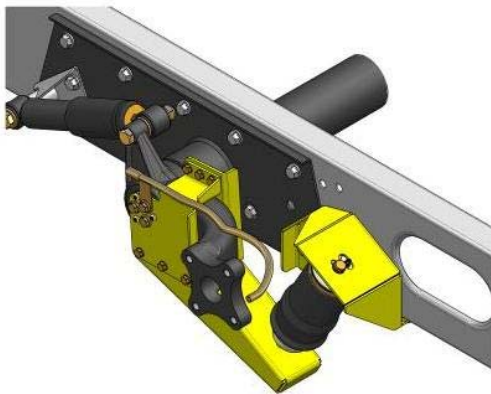
33b



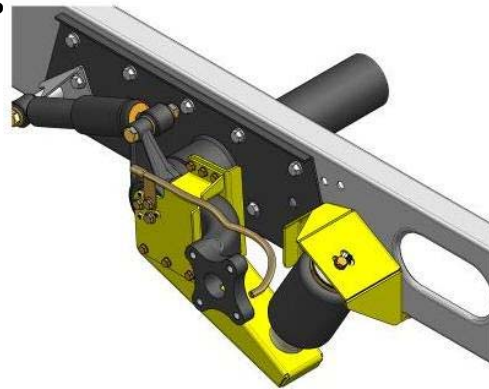
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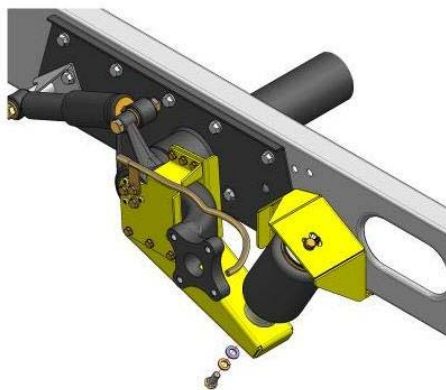
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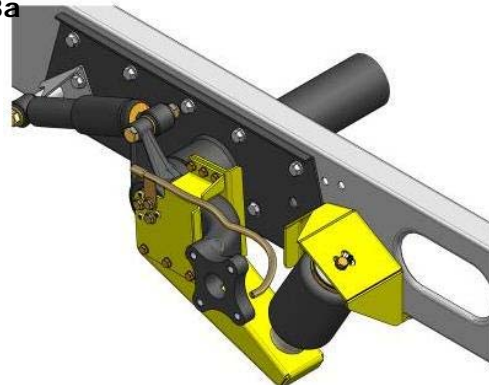
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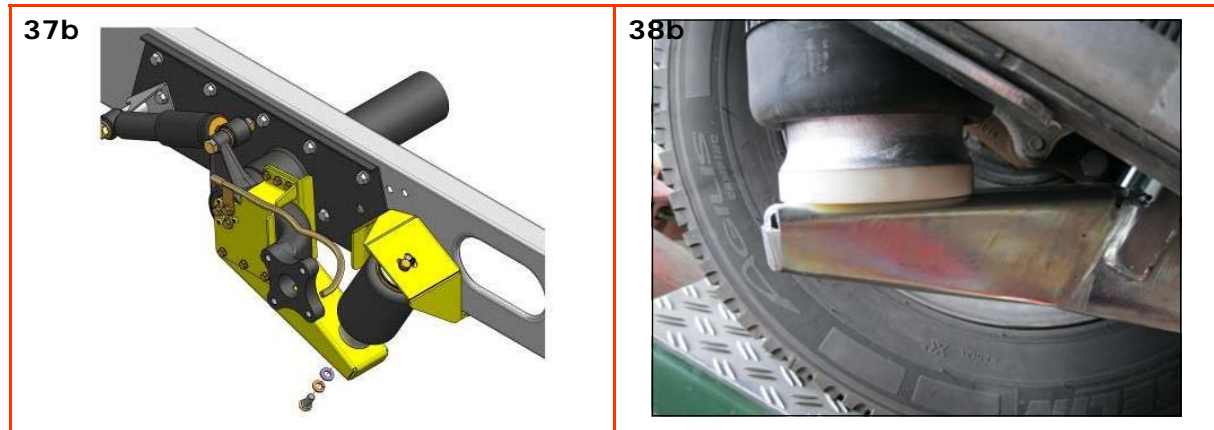


37a

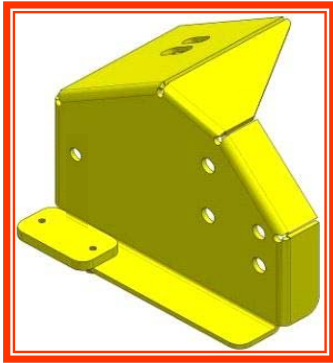


38a



L.AL.07 / L.AL.07(B)

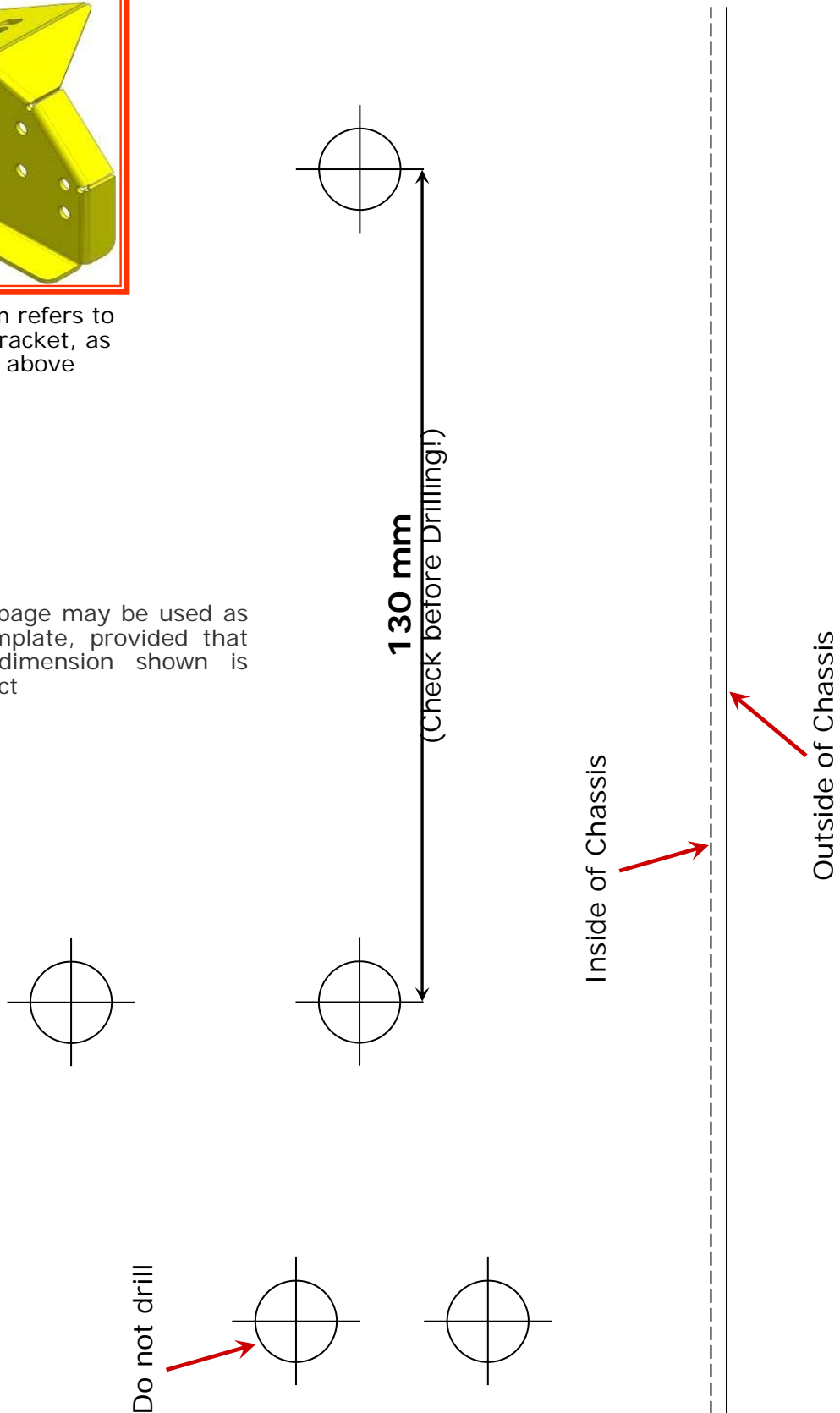
L.AL.07 / L.AL.07(B)



This diagram refers to the upper bracket, as depicted above



This page may be used as a template, provided that the dimension shown is correct



L.AL.07 / L.AL.07(B)

9. 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

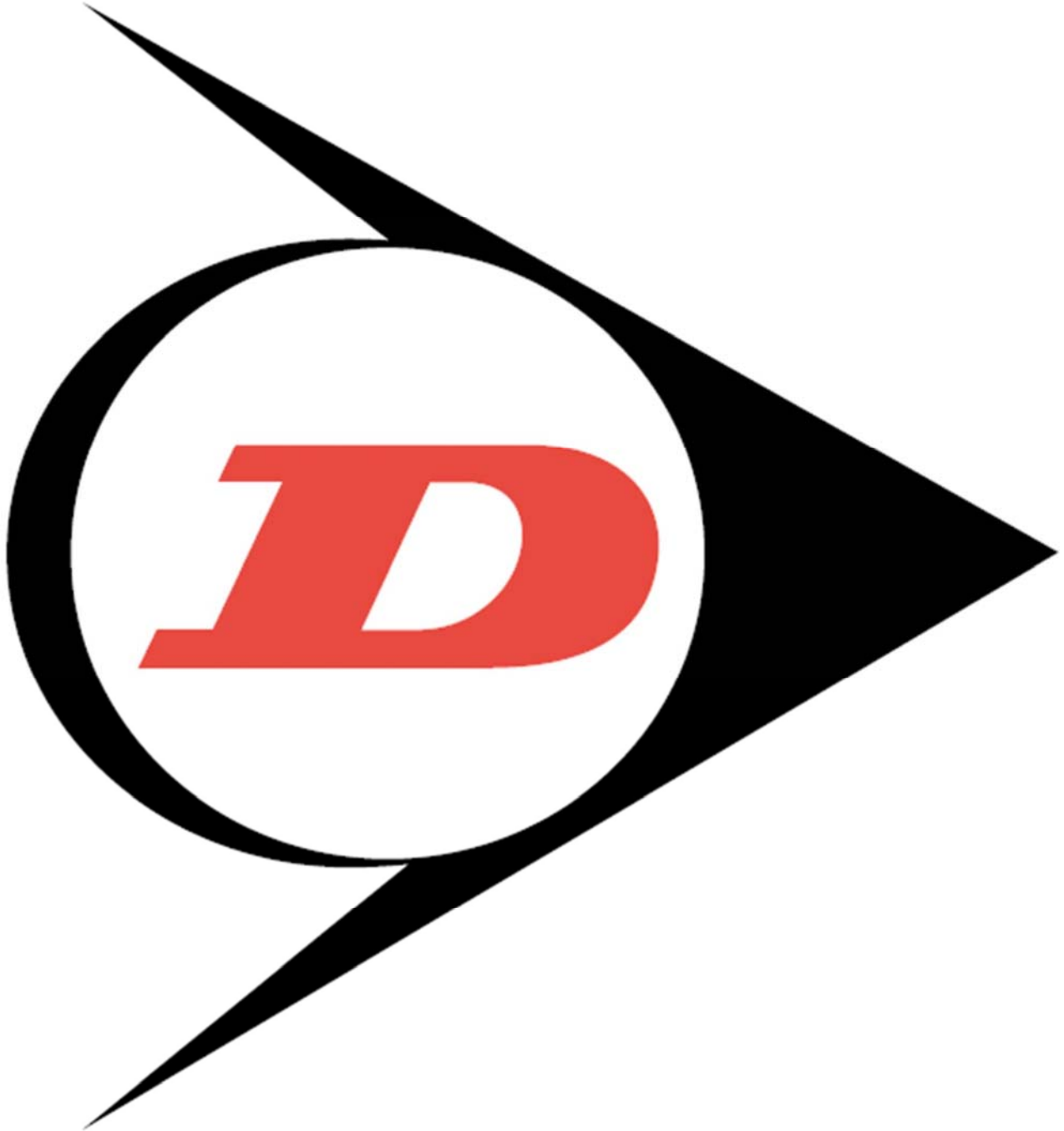
A manufacturer's declaration form is provided with your kit. Following installation of the kit please ensure that this form is completed, signed by a qualified fitter and a copy is returned to DSC Nederland by post, fax or e-mail. Our e-mail address is: info@dunlopsystems.nl

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.

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