

DRIVE▶RITE

AIR SUSPENSION SYSTEMS

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DR.05.013340

Mercedes-Benz 3 Series / Volkswagen Crafter

INSTALLATION INSTRUCTIONS



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Introduction

The purpose of this publication is to assist with the installation of the Drive-Rite Full-Air air suspension kit.

It is important to read and understand the entire installation guide before beginning installation or performing any maintenance, service or repair. The information here includes a hardware list and step-by-step installation information.

Drive-Rite reserves the right to make changes and improvements to its products and publications at any time. Contact Drive-Rite at +353 1 8612 632 or visit us online at www.driveriteair.com for the latest version of this manual.

IMPORTANT SAFETY NOTICE

The installation of this kit does not alter the Gross Vehicle Weight Rating (GVWR) or payload of the vehicle. Check your vehicle's owner's manual and do not exceed the maximum load listed for your vehicle.

Gross Vehicle Weight Rating = the maximum allowable weight of the fully loaded vehicle (including passengers and cargo). This number — along with other weight limits, as well as tire, rim size and inflation pressure data — is shown on the vehicle's Safety Compliance Certification Label.

Payload: The combined, maximum allowable weight of cargo and passengers that the truck is designed to carry. Payload is GVWR minus the Base Curb Weight.

Precautions

Never exceed the maximum and minimum recommended pressure limits:

- Minimum Pressure 1 Bar (14.5 p.s.i)
- Maximum Pressure 7 Bar (100 p.s.i)

NEVER DRIVE WITH DEFLATED AIRSPRINGS

Special Instructions for Air Connections

- To cut the tubing correctly an appropriate cutter must be used (not scissors)



- When inserting the tubing into the connection, it must be pushed in approximately 14mm until a 'click' is heard.
- To remove the tube, you must push the flange in on the connection and at the same time pull the tube. (No tool is necessary.)
- **ATTENTION**, when a tube is removed it is important to trim 14mm from the end before reconnection.
- It is advisable that LOCTITE or similar sealant be used on the threaded fittings.

Kit Contents

Part Name	Quantity	Picture/ Description	Part No.
Colaert trailing arm	2		DRV-7478
Bracket Kit Mercedes Sprinter 906	1		DR.03.013340
Style 140/95 Metric Air Spring	2		DR.07.019060
Subframe Spacer	2		DRV-7528
Hardware Bracket	1		DR.03.027551
M10 x 1.25 x 30 HEX HEAD BOLT	4		DR.42.013812
M10 NYLOC NUT	4		DR.43.010034
M12 X 1.75 X 30 HEX HEAD BOLT ZP	4		DR.42.013825
M12 FLAT WASHER	4		DR.44.010128
M10 x 1.5 x 80 Countersunk Bolt	2		DR.42.013909
6MM DRIVE-RITE TUBING-BLACK	10		DR.46.1364-1MB
M8 BOLTS/SF	4		DRV-7448
Compressor LFK-12 IR.300.1201	1		DRV.7408.1
AIR HOSE SHORT 140°	1		DRV-7435
FILTER CLIP X62	2		DRV.7412 C
FILTER CAP	1		DRV-7436
AIR FILTER	1		DRV-7437
Compressor mounts LFK-12	1		DRV.7413.1
Valve block	1		DRV.7405.1
HEAVY DUTY 4CNR ECU	1		DR.32.011404
Height sensors including linkage	2		DRV.7403.1
Handheld Controller 2C	1		DRV.7404.1
EJOT PT SCREW K60 X	2		DRV-7442
CABLE TIES	0.15		DR.45.019037
INTELLI HANDHELD HOLDER	1		DRV.7456
140/95 COMFORT PISTON SHELL	2		DR.08.017526
Shock Absorbers	2		DR.22.016551
M14 X 1.5 NYLOC NUT	2		DR.43.013847
SPRINTER U-BOLTS LENGTH 150MM	4		DR.48.013114U
M14 U-BOLT NUT	8		DR.43.010232
MAIN MODULAR CABLE	1		DR.31.015000
HEIGHT SENSOR CABLE SHORT	2		DR.31.015010
3 / 2x2 VALVE CABLE	1		DR.31.015014
SWITCH CABLE SHORT	1		DR.31.015016
M12 x 1.75 x 150 Cap Head Bolt	2	Subframe to Chassis	DR.42.013910
M12 x 1.75 x 80 Hex Head Bolt ZP	2		DR.42.013913
M12 Flat Washer DIN9021	8		DR.44.013897
M12 NYLOC	4		DR.42.010141
M16 x 1.5 x 80 Hex Head Bolt	1		DR.42.013911
M16 x 1.5 Nyloc Nut	1		DR.43.013992
M10x1.25-30 COUNTERSUNK BOLT	2		DR.42.012530
M10 FLAT WASHERS (QTY=1)	8		DR.44.010079
M 5 BOLTS/SF	8		DRV-7444
M12 Shock Absorber Nut	4		DR.43.013993
M5 HEX NUT	4	ECU	DRV-7445
M8x1.25-6H nyloc nut	2		DR.41.034258
M6 BOLTS/SF	1		DRV-7446
M6 HEX NUT 7703034260	1		DRV-7447
M16 FLAT WASHER	2		DR.44.010125
M10 Hex Nut	2		DR.43.013994

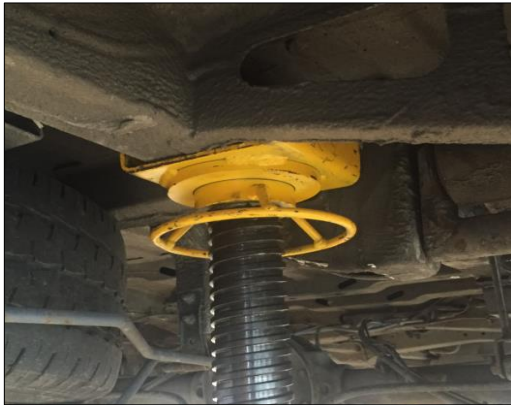
Step by Step Installation

Step 1: Secure Vehicle

Place vehicle on lift as per manufacturer's instructions.

When the vehicle is in position, support the rear of the vehicle using two axle stands.

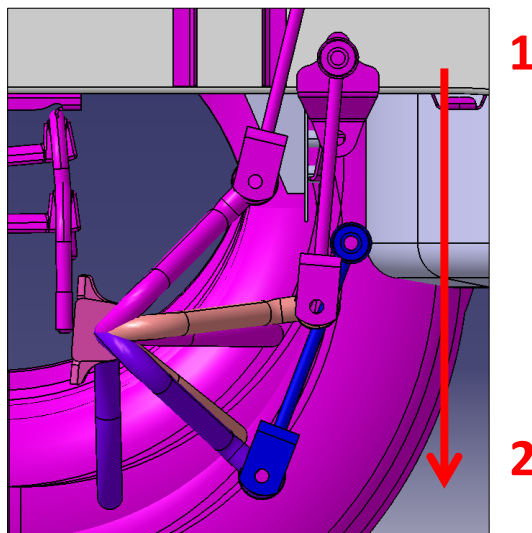
Support axle of vehicle using axle stands.



↘ Step 2: Disconnect Anti-Roll Bar

Disconnect the anti roll bar from the vehicle by the top bolt.

On removal of bolt pull the roll bar down so it is in position 2 (blue) as per picture.



Step 3: Remove Shock Absorbers

Remove the shock absorbers from the vehicle by removing the top and bottom bolts.

Retain bolts for re-installation.



Step 4: Remove U-Bolts

Remove the U-Bolts from the vehicle.

Retain the saddle bracket for re-installation.

Discard U-Bolts and nuts.



Saddle Bracket

Step 5: Remove Leaf Springs

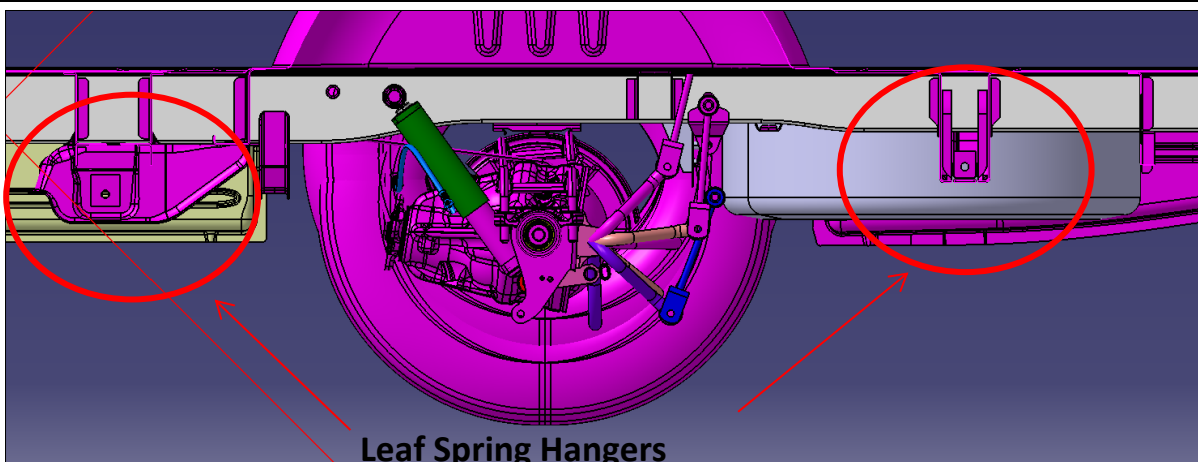
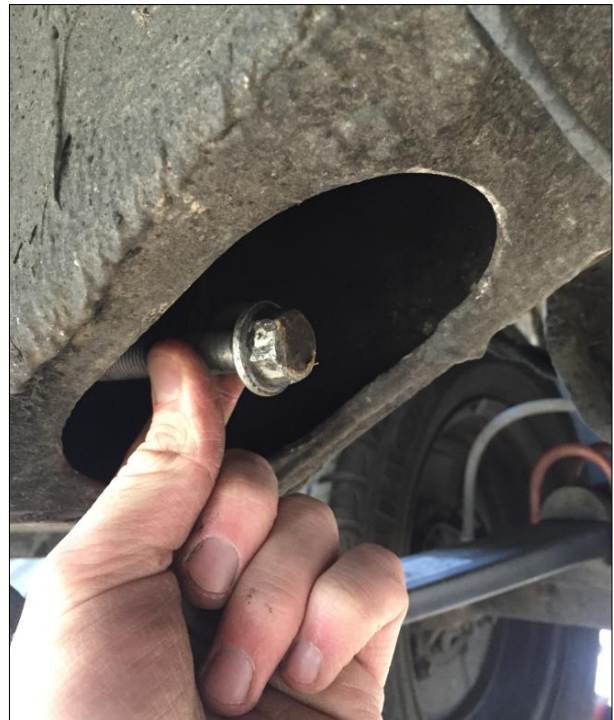
Starting at the rear of the vehicle –

First remove the rear nut and bolt holding the leaf spring to the vehicle. (When removing bolt, please note orientation of bolt) *Discard these items.*

Once complete remove the front nut and bolt. Retain bolt for re-installation.

Once this is complete, lower the axle of the vehicle and remove the leaf springs. *Be careful not to damage rubber brake hoses on removal of leaf spring.*

Note the way in which the brake hoses route around the leaf spring.



Leaf Spring Hangers

Front of Vehicle





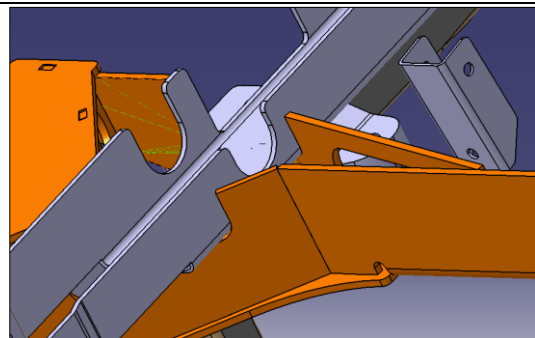
Step 6: Install Subframe

The sub frame of this kit is supplied in two pieces. For installing this subframe it is recommended to bolt (not fully torque) the left and right sections of the subframe together using the M10 nuts and bolts provided.

Each half of sub-frame is to be clamped to the chassis using G-clamps (inside face of chassis to inside face of sub-frame halves) prior to tightening fixings.



Place the subframe on the chassis, line up the cut out section to go around the anti-roll bar fixing.



Line up centre of two holes



The front section of the sub frame is designed to fit around the existing bumpstop on the vehicle.



When mounting the subframe it is important to note that it **CAN NOT** clash with the bumpstop. It must be positioned centrally around the bumpstop.



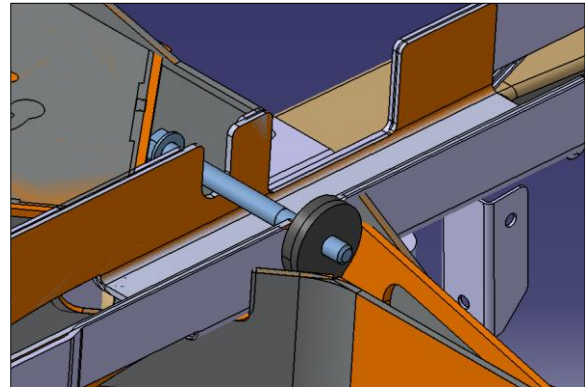
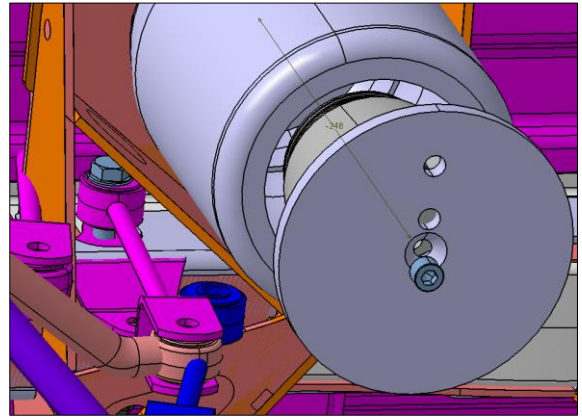
When the subframe has been correctly positioned onto the chassis, push both sides of the subframe up so that the bottom face of the sub frame is sitting flush up against the chassis.

Ensure subframe is sitting flush against chassis at both the **front and rear** of subframe.



Secure the subframe to the chassis by use of the M12 cap head bolt and subframe clamp ring.

At this point the anti-roll bar should be secured to the vehicle.

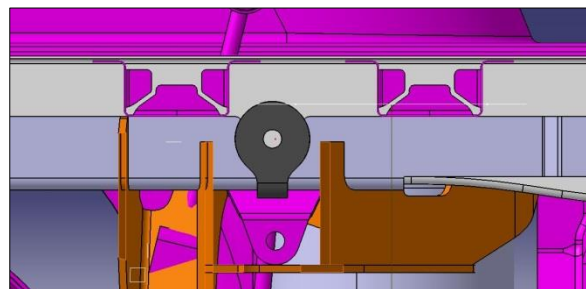
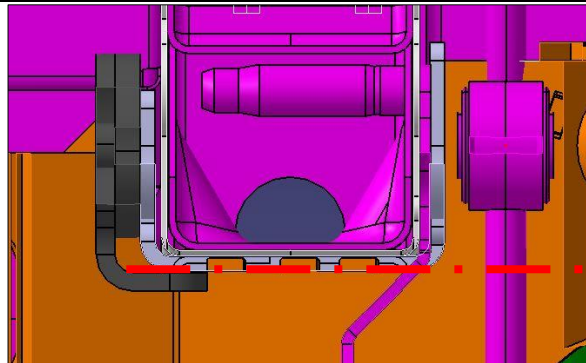


The subframe clamp ring has a small tab that should be sitting up against the bottom of the subframe before tightening.

The images show how the clamp ring should be mounted to the subframe.

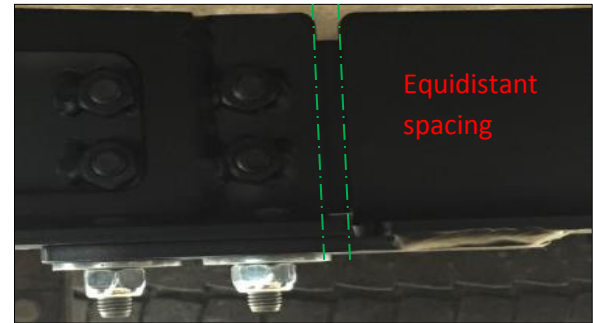
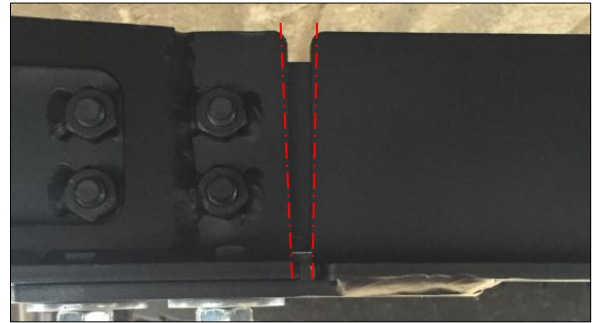
It is important that the subframe clamp ring sits completely flush with the bottom of the subframe.

Torque M12 Cap Head to approx. 150N.m



When subframe has been secured to the chassis by use of M12 Cap Head Bolt, the subframe joiners should be torqued to spec. (Approx 105Nm)

When torquing the subframe, ensure the subframe is as level with the vehicle floor as possible.



Also ensure the subframe is in full contact with the inner chassis face and there is no gap present.

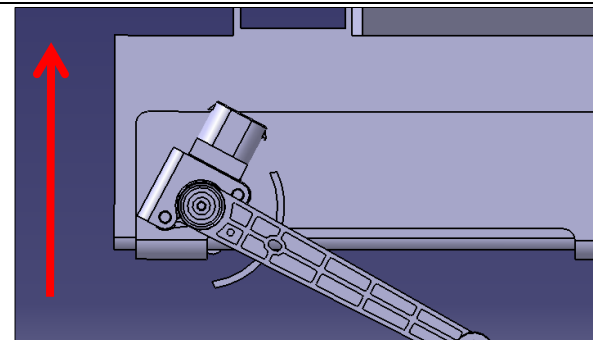
Subframe in full contact with inner chassis face



Step 7: Height Sensor to Subframe

Mount height sensors to subframe using M5 bolts provided.

When mounting the height sensor, the plug is to be facing upwards.



Step 8: Install new Trailing Arms

Install new trailing arms provided with kit to vehicle.

Place the trailing arm on top of the axle and secure to the vehicle by use of the bolt removed in Step 5. Tighten nut and bolt, do not fully torque at this stage.

Ensure new nut is used.



When trailing arm has been secured by front hanger bolt, secure trailing arm to the axle.

When fitting trailing arm to axle, ensure the locating pin on the trailing arm is correctly fitted onto the axle.

Locating pin and original mounting hole



Trailing arm sitting flush with axle



When the leaf spring has been correctly located, secure to the axle using new U-Bolts provided.

Ensure saddle bracket is re-used.

Torque U Bolt nuts to 120Nm

Saddle Bracket



Step 9: Height Sensor Lower Bracket to Trailing Arm

Mount height sensor lower bracket to trailing arm using the M14 nyloc nut provided. Height sensor bracket must be mounted at the front of the axle on the inboard U-Bolt.



Secure height sensor linkage to height sensor bracket by use of M8 nyloc nut.

Use the central hole on the height sensor bracket to mount the sensor to the bracket.

Height Sensor arm is to point to the rear of the vehicle.



Step 10: Air Spring to Subframe

Raise the axle of the vehicle

Extend the airspring and using the large holes on the subframe, locate the airspring. Rotate the airspring in a clockwise motion so the airspring locks into the subframe.

The air line fitting should be facing the front of the vehicle. *(Image shows how holes on subframe should align, when fitted to subframe)*



Tighten the airspring to the subframe (12N.m)



Once the air spring has been tightened to subframe push the airspring up into itself.



➤ Step 11: Air Spring to Trailing Arm

Place piston on air spring



Secure piston and air spring to air spring lower plate using M10 X 80 countersunk bolt.

Torque to 6 Nm, ensuring piston can rotate freely for alignment.

M12 Threaded holes are to face outboard on vehicle.



Secure lower plate to trailing arm using M12 X 30 hex head bolts.

Torque to approx 85 Nm. (Use loctite on these bolts)

(Picture used shows the right hand side of the vehicle)



Step 12: Torque suspension

Measure a distance of 60mm from the bottom of the bump stop to the axle. It is at this measurement that the trailing arm and shocks should be torqued.

Front Trailing Arm – 129Nm

Shock Absorber – 120Nm



Step 13: Panhard Rod Installation

Mount panhard rod to the subframe using nut and bolt provided.



Mount panhard adjuster bracket to left hand side trailing arm using M12 nut and bolts provided.



Ensure the panhard adjuster bracket is facing downwards.



Using the castle nut, tighten ball joint end to panhard adjuster bracket.



Step 14: Panhard Rod Adjustment

Before adjusting panhard rod –

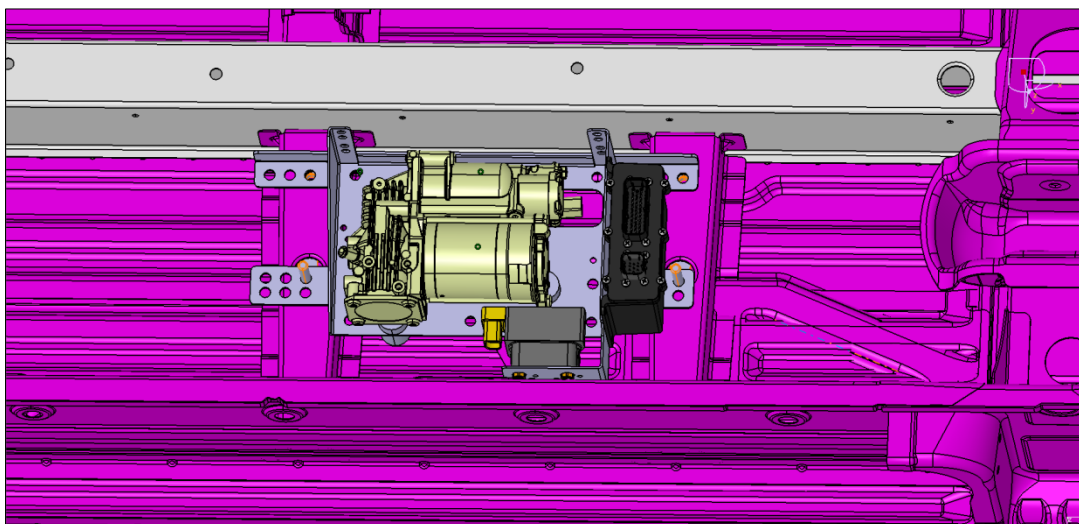
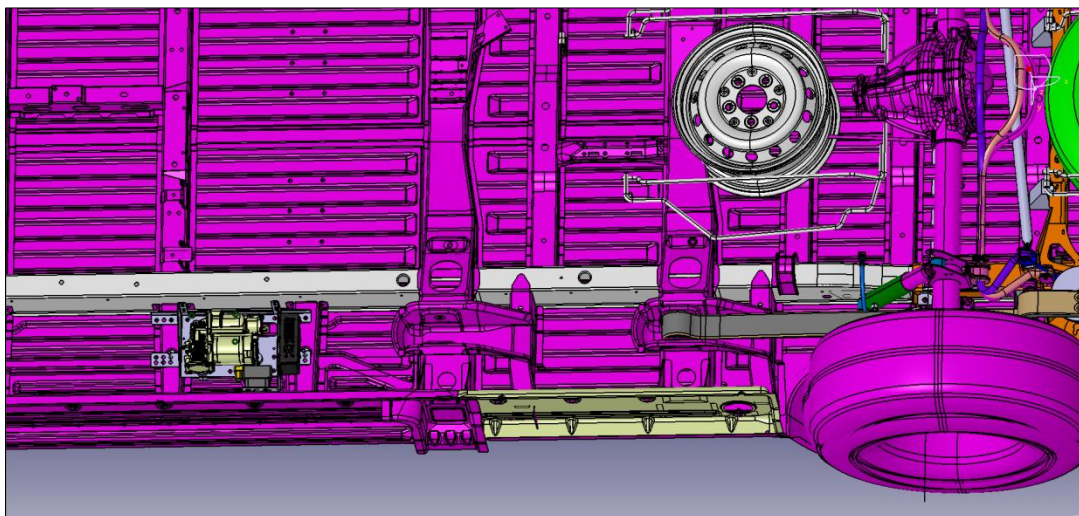
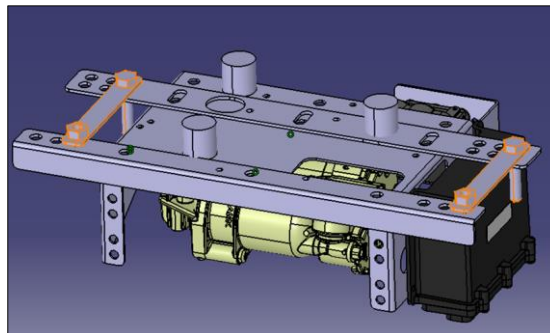
- ensure all suspension bolts and subframe bolts are torqued to specification.
- Bump stop to axle measures 60mm (Step 10)

Using the panhard rod adjuster, adjust the panhard rod so that the outer face of the chassis rail to wheel measurement is the same on both sides of the vehicle.

Once panhard rod has been adjusted, ensure nuts are locked into place so panhard rod does not come loose.

Step 15: Hardware Box Mounting

The hardware box supplied is designed to mount on the right hand side of the vehicle to the vehicle using T-Bolts and the M8 buts and bolts provided.



Step 16: Connecting the Air Lines

The Heavy Duty Valve Block has 6mm connection points at the front. Use the 6mm tubing provided and route the tubing towards the air springs. When the tubing is close to the correct Air Spring, fit the T-Piece provided.

From the T-Piece use the tubing to connect the air spring and the inflation valve.

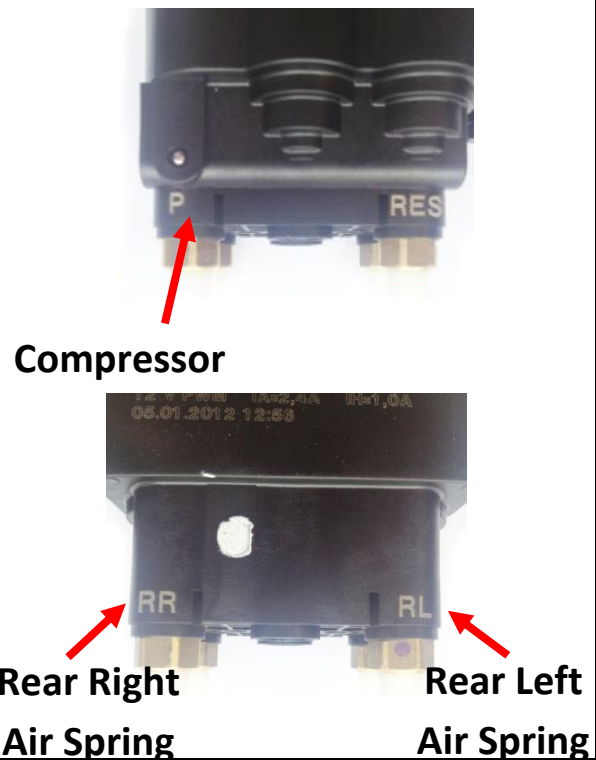
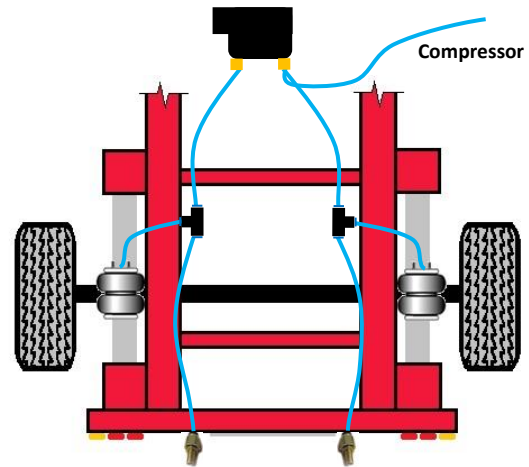
Connect an airline from the left air spring to the port on the valve block marked 'RL' *Rear Left*.

Connect an airline from the right air spring to the port on the valve block marked 'RR' *Rear Right*.

Check that there is an airline connecting the air drier on the compressor to the port at the back of the valve block. This port is marked 'P' on the valve block.

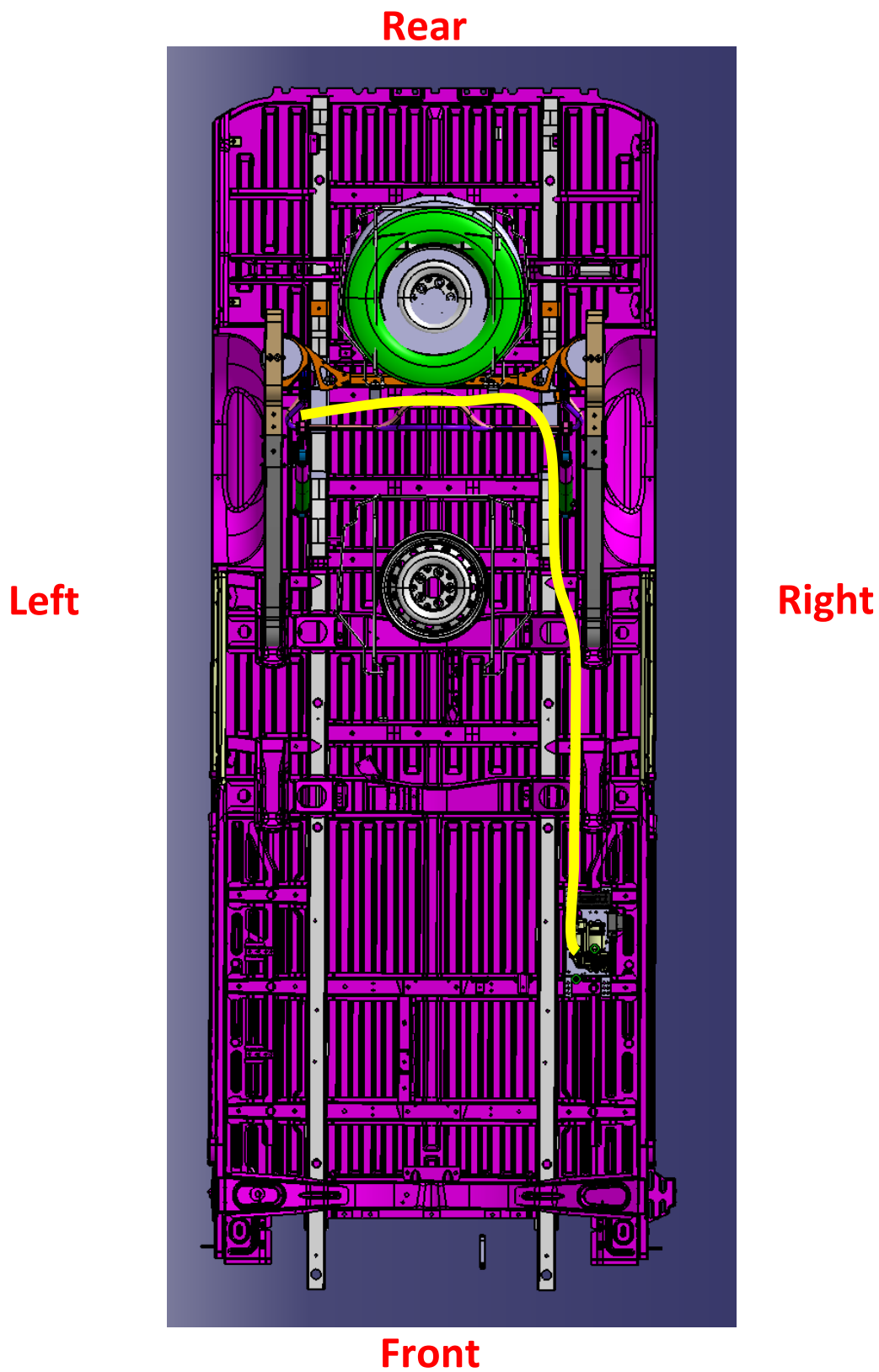
NOTE: Left port must be connected to the Left air spring and Right port must be connected to the Right Air Spring

When cutting the air tube, it is vital that the tube is not cut at an angle. This could cause an air leak. It is recommended that a tube cutter or a sharp blade is used.



Step 17: Electrical Harness Routing

The picture below shows the recommended routing for the electrical harness.



Step 18: Connecting and Routing the Wire Harness

IMPORTANT:

- Attach all wire harness securely to the underneath of the vehicle using nylon ties.
- Do not attach to brake lines.
- Protect the harness from any sharp edges or sources of heat.

The harness is routed starting from the compressor.

Connect the large compressor connection on the on the harness to the motor of the compressor

Connect the small compressor connection on the harness to the solenoid on the air drier.

These connections will 'click' when fully inserted.



CHECK

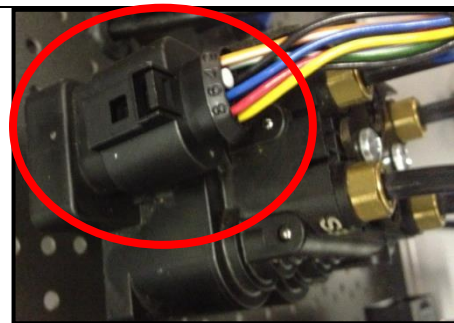


Connect the valve block to the harness as shown.

This connection will 'click' when fully inserted.



CHECK



Connect the ECU to the harness as shown.

Secure any excess harness to the chassis using cable ties.



CHECK



Route the Right Height Sensor connection to where it is *intended* for the Right Height Sensor to be located. Repeat for the Left side.

Each Height Sensor should be labelled however if they are not :

Left Height Sensor has a **brown/white** wire for the output.

Right Height Sensor has a **green** wire for the output.

It is important these connections are placed on the correct side of the vehicle.



Left Height Sensor Connection (Brown Wire)



Right Height Sensor Connection (Green Wire)



Switch location

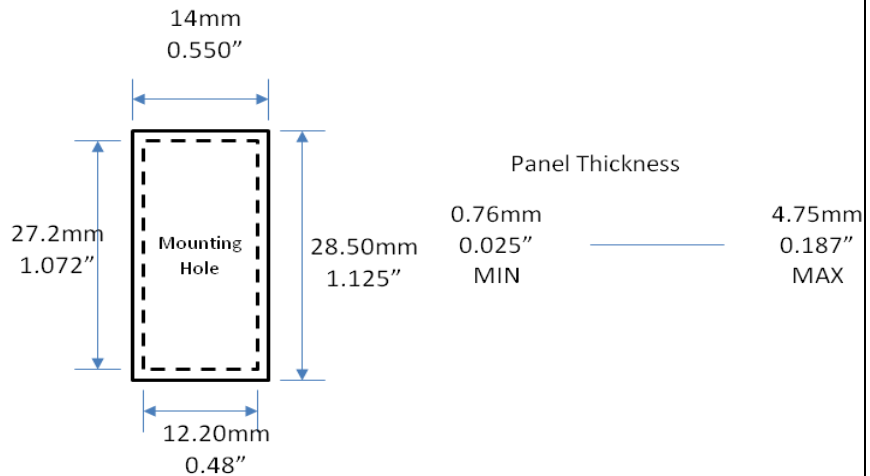
Start by routing the height selection switch, diagnostic/handheld connector and service switch to the interior of the vehicle. Place in desired locations.



Step 19: Mounting Switches

Service Switch Mounting

If you decide to mount the service switch selection switch, please use the guideline to the right.



Step 20: Connecting the Wiring

Hand Brake Connection (If enabled)

The purpose of the handbrake wire is to ensure the vehicle must be in park and handbrake applied to use the Lowered Height on the vehicle. This is a safety feature to prevent damage to the vehicle

This wire is usually **Brown**.



Speed connection (If enabled)

The purpose of the Speed Connection is to control the Lowered Height and Upper Heights of the system.

The system will raise the vehicle to Ride Height from Lowered Height and lower the vehicle from the Upper Height to Ride Height once the speed threshold is passed.

This must be enabled in software for it to work.

This wire is usually **Red/Black**.



Ignition connection (required)

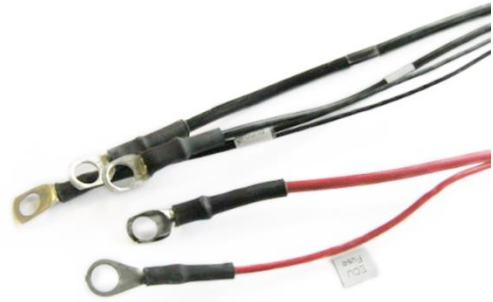
Connect ignition wire to a vehicle ignition source.

This wire is usually **Purple**.



Step 21: Connecting the Positive and Ground Wires

Feed the harness along the bulkhead to where the battery is located.



Connect Main power wire (Red) to the positive side of the battery.

Feed the Negative/Ground (Black) wire from the harness to the battery compartment and attach it to the –Ve terminal on the battery.



CHECK



- ***Check all connections.***
- ***Ensure all bolts are securely fastened.***
- ***Check that the fuses are inserted.***

Step 22: Calibration

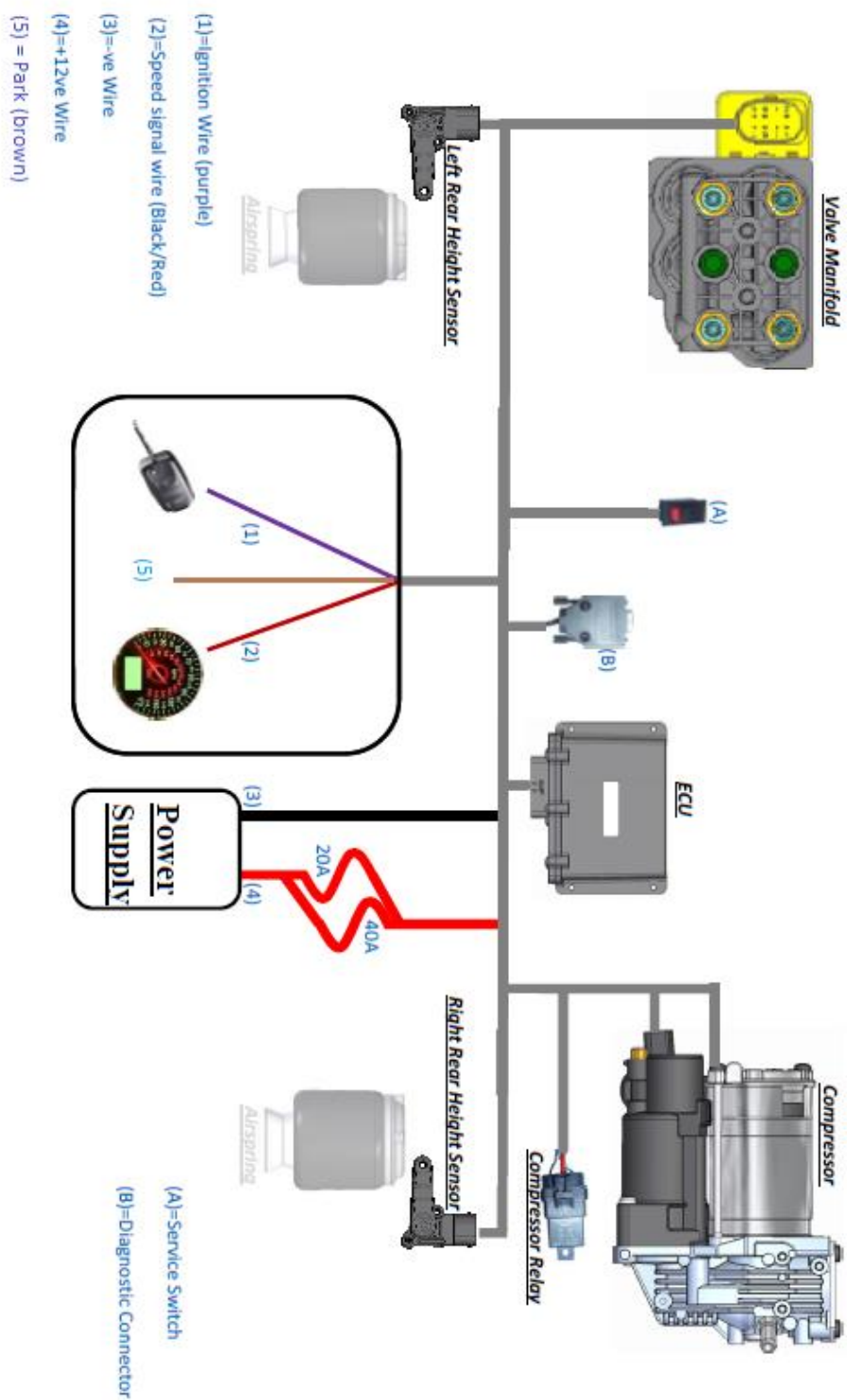
Mesure 465mm from wheel centre to wheel arch.

It is at this measurement that the vehicle heights should be calibrated.

Refer to Intelliride Manual supplied with kit.



Step 23: Electrical Diagram



Step 24: Pneumatic Diagram