

INSTALLATION INSTRUCTIONS



FIAT SCUDO

ECAS AIR SUSPENSION

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Thank you for purchasing a Driverite-Firestone Air Suspension System.

All work should be carried out in a properly equipped workshop with due regard to Health and Safety Regulations. No further reference to Health and Safety Regulations will be made, but they must be considered at all times.

The kit should be opened and the contents checked against the kit contents provided. Identify the various components and familiarise yourself with them using pictures and information provided.

WARNING

Do not inflate this assembly when it is unrestricted.

IMPORTANT

This kit is not designed to increase the GVW of your vehicle. For your safety and to prevent possible damage to your vehicle, do not exceed the maximum load recommended by the vehicle manufacturer.

When fitting the wiring harness of the Driverite Air Suspension system it is advised to disconnect the battery terminals on the vehicle. Please check your vehicle workshop manual if this conflicts with any electronic vehicle management equipment. Make sure that the new wiring does not conflict with the original vehicle wiring and electronics.

Pre-Assembly Information

The fitting of the Driverite Air Suspension System must be carried out by Driverite trained personnel in an authorized workshop, equipped with appropriate equipment and tools.

When routing the tubing and harness avoid sharp bends as these can lead to airline blockages or wire breakages in the long term. All tubing must be cut at right angles with a sharp blade. Do not use a pliers to cut the tubing as this will lead to deforming the tubing and can cause air leaks.

Secure the tubing and harness to the vehicle where necessary and ensure they are not fastened to brake lines.

If it is necessary to route the tubing or harness through sheet metal then you must protect the tubing or harness from abrasion against the metal edges using rubber grommets or conduit.

The fitting instructions state where to attached the –Ve, +12V, ignition and handbrake wire. It is prohibited to attach these wires in a location which is not stated in this fitting instructions.

If the paintwork or corrosion protection layer is damaged it must be re-coated immediately. This can be done using corrosion prevention paint. Ensure only the metal work is coated and protect all other items within close proximity from any paint spray.

Any OEM parts that have been removed in order to fit the air suspension must be replaced back in their original position and condition. If there are any parts that require a torque setting (such as the shock absorbers) then the vehicle manual must be referred to in order to establish the correct torque setting.

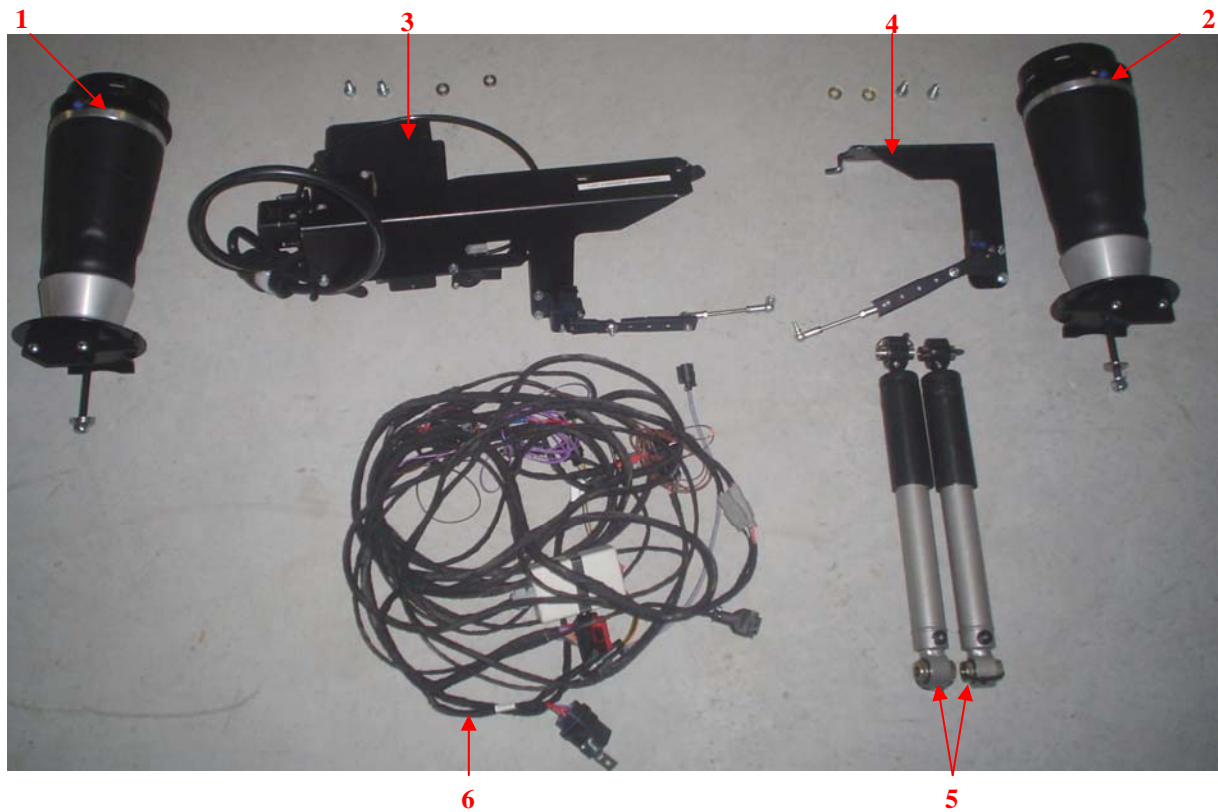
Only tighten and torque the shock absorber bolts when the vehicle is at ride height. If the torque setting in this fitting instructions differs from the torque setting stated by the vehicle manufacturer always use the one recommended by the vehicle manufacturer.

Ensure that surrounding components on the vehicle can still be maintained and the air suspension components cannot inhibit servicing these components.

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Kit Contents



- | | | |
|----|-------------------------------|------|
| 1. | Left hand airpring assembly | (x1) |
| 2. | Right hand airspring assembly | (x1) |
| 3. | Compressor assembly | (x1) |
| 4. | Right height sensor assembly | (x1) |
| 5. | Shock absorbers | (x2) |
| 6. | Harness | (x1) |

(For clarity purpose only the main items are listed)

Preparation

Start by removing the rear wheels for ease of installation.



There are 4 screws holding the plastic mudguard in place as indicated in the picture on the right. (Circled in red). Remove these screws and temporarily remove the mudguard.



The next step is to remove the original shock absorbers. To do this you need to remove the bottom bolt holding the shock absorber in place. (Circled in red on the picture on the right).

Please note-

Do not discard these bolts as they are to be reused.



NOTE: To avoid damage or injury always secure the rear axle to prevent tension in the parts.



Remove the top shock absorber bolt and remove the shock absorber.



Removing the Coil Springs

With the shock absorbers removed it is possible to further lower the rear axle.

Lower the axle until the coil spring becomes loose. Ensure the brake lines are not stressed during this procedure. It is now possible to remove the coil.



Remove the rubber seat attached to the chassis



The vehicle is now ready for the airspring assembly installation



Fitting the Airspring Assembly

This section shows how to mount the top bracket to the chassis.

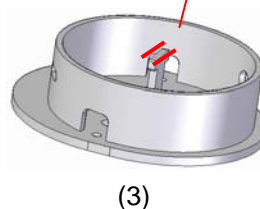
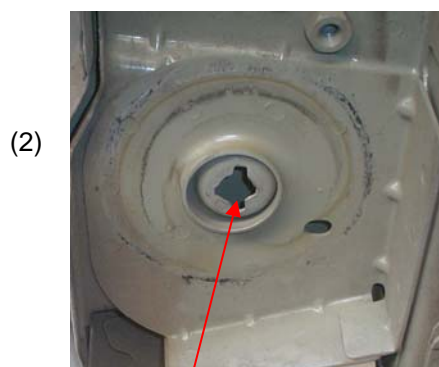
Note that there should be a sticker on each airspring assembly indicating which side it is suitable for.

There is a profiled hole in the chassis which can be seen in picture (2). This hole is used to position the upper bracket.

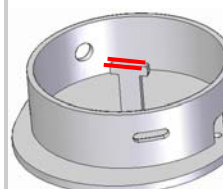
Picture (3) shows the upper bracket on the left and the complete assembly on the right. In the centre of the upper bracket there is a "T" shape. The top of the "T" should run parallel with the chassis as indicated by the red lines in picture (3) Left Side. The top of the "T" shape will slot into the profiled hole when the bracket is offered up as shown in picture (3) Right Side. At this point the air intake will be facing outboard.

When in place the assembly is turned 90° clockwise (when looking up from the bottom), so the air intake is facing the rear of the vehicle as indicated in picture (4). The "T" shape will now be running perpendicular to the chassis.

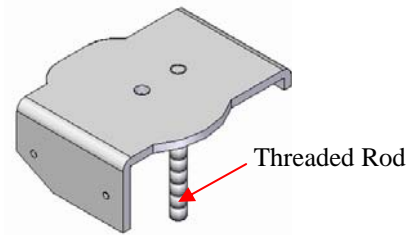
This is the final position of the upper bracket



Turn 90 degrees clockwise



The lower bracket should come pre-assembled in the kit. If it is not assembled it should be bolted to the airspring using the 3/8" UNC bolt.



The threaded rod on the lower bracket is passed through the hole in the spring seat (circled in red).



On the lower bracket the chamfer is always facing left and towards the rear of the vehicle.



The lower bracket is bolted in place from the bottom using the angled washer, normal flat washer and nyloc nut. The widest side of the angled washer should be facing the front of the vehicle.



Fitting The Compressor/Height Sensor Assembly —

There are 2 x M10 captive nuts (circled in red) welded to the floor of the vehicle. These are located on both sides behind the airspring. The 2 nuts on the left hand side will be used to fix the compressor assembly in place.



Insert the tab of the compressor (see picture (3)) bracket into the horizontally slotted hole (see picture (1)) in the upper bracket.

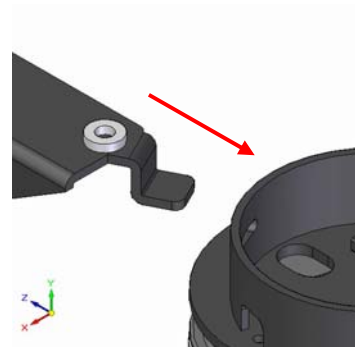
Use the 10mm spacers (shown in grey in picture (2)) between the compressor bracket and the captive nut.

Secure in place using the M10 bolts and spring washers. When tightened the compressor bracket will also secure the upper bracket in position.

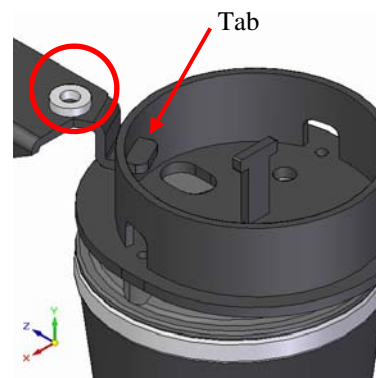
(1)



(2)



(3)



Torque the M10 bolts to 40NM

Torque: 40 NM

CHECK



The left and right height sensors should be premounted onto their brackets.
Connect the height sensor arms to the lower bracket via the threaded bar.
Check that the distance from the end of each ball joint is 62mm.

CHECK



Fix the ball joint to the bracket using the M6 Nyloc nut and flat washer



Repeat the steps on page 10 and 11 with the right height sensor bracket on the right side of the vehicle.

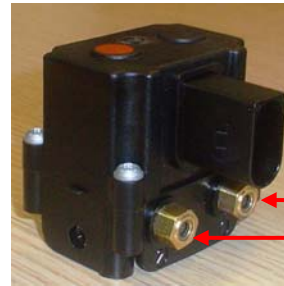


Connecting The Air Lines/Emergency Valves

Connect an airline from the left air spring to the port on the valve block marked 2.
Connect an airline from the right air spring to the port on the valve block marked 1.
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.



CHECK



Locate the air filter in a clean, dry location. Run an air line from the compressor intake to the air filter.



Decide on a convenient location for the emergency inflation valves.
Cut the airline that runs from the left airspring to the valve block. Insert the 6mm tee piece and run a short length of tubing from the tee to the chosen position for the inflation valve.
Repeat on the opposite side.
Use the inflation valves to bring the vehicle to ride height. The recommended ride height is 455mm from the wheel arch to the centre of the wheel for this vehicle as shown in the picture on the right.



Fitting the New Shock Absorbers

Ensure that the bushings are correctly located in position on the shock absorbers.

Ensure that:

The top bushes have a diameter of 12mm.



CHECK

The bottom bushes have a diameter of 14mm.



CHECK

NOTE:

The black cover on the shock absorber body is at the top.

Diameter
12mm



Diameter
14mm

Before installing the adjustable shock absorber you should check that it is adjusted correctly.

Turn the wheel (or flat head screw) clockwise until it cannot turn any further.

If the shock absorber supplied is not adjustable (does not have the adjusting wheel) then you can disregard this step.

CHECK



Once the vehicle is at ride height (See page 12) the shock absorbers can be torqued.

Shock absorber upper bolt=105Nm

CHECK



Shock absorber lower bolt=165Nm

CHECK

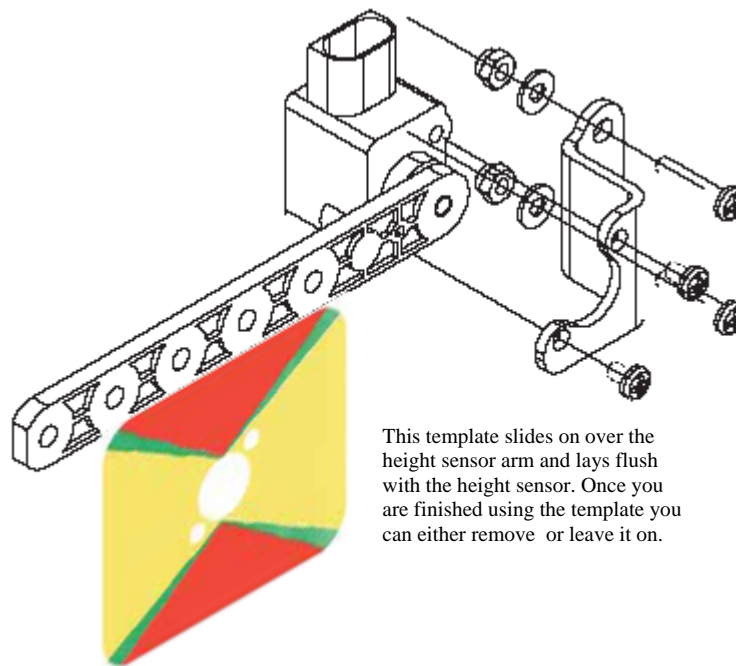


Height Sensor Template

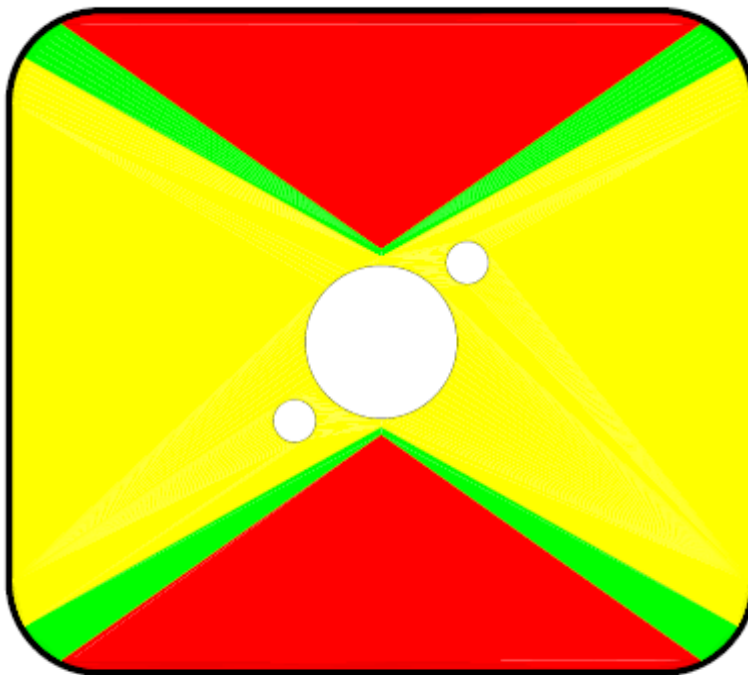
The height sensor arrangement has already been tested for this kit to ensure it is working within its tolerance.

When the axle is hanging (max rebound) the height sensor arm must not enter the lower red section on the template.

When the suspension is compressed onto the bump stops in the shock absorbers (max jounce) the height sensor arm must not enter the upper red section on the template.



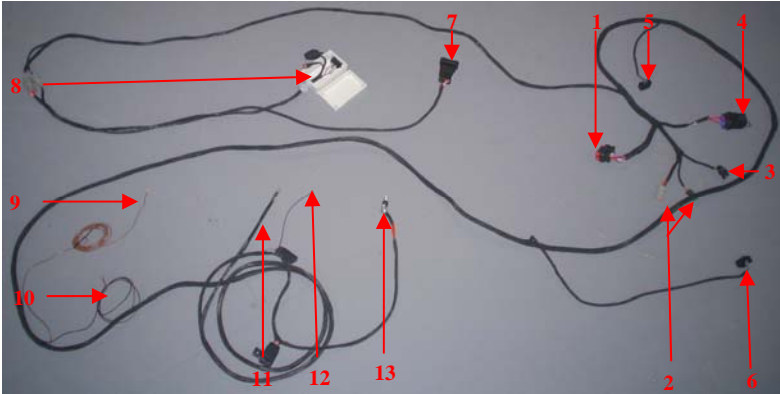
This template slides on over the height sensor arm and lays flush with the height sensor. Once you are finished using the template you can either remove or leave it on.



This template is to scale and can be cut out of the manual and placed over the height sensors as outlined above to establish if the height sensors are working within their tolerances.

Connecting/Routing the Harness

Harness Layout



- 1. ECU Connection
- 2. Compressor Connections
- 3. Valve Block Connection
- 4. Compressor Relay
- 5. Left Height Sensor Connection
- 6. Right Height Sensor Connection
- 7. User Interface
- 8. Programme Box
- 9. Handbrake Wire (Brown)
- 10. Speed Signal Wire (Black/Red)
- 11. Ground Wire (Black)
- 12. Ignition Wire (Purple)
- 13. Constant Live Wire (Red)

The harness is routed starting from the compressor. Connect the compressor to the harness as shown in the picture on the right.



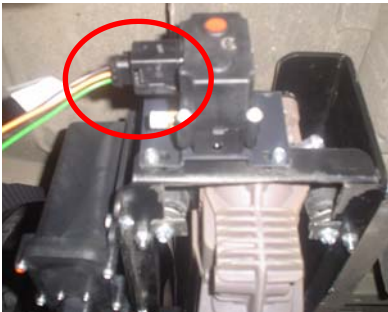
CHECK



Connect the valve block to the harness as shown.



CHECK



Connect the ECU to the harness as shown. Secure any excess harness to the chassis using cable ties.



CHECK

NOTE:
Ensure the harness is not exposed to any sharp objects or close to the exhaust.
Do not attach the harness to the brake lines.



Connect the right height sensor connection to the right height sensor. Repeat for opposite side.



CHECK

NOTE:

That there are 3 wires in each height sensor connection on the harness. 2 of these are common—black/blue and red/blue.

The remaining third wire can be used to identify the left from the right height sensor.

The connection with the green wire goes to the right height sensor while the connection with the brown/white wire goes to the left height sensor.

Left Height
Sensor
Connection



Right Height
Sensor
Connection



Disconnect the User interface and the Programme box.



Located the Programme box and the User interface in a convenient location inside the cabin at the rear of the vehicle.



Connecting The Handbrake Wire

Route the remainder of the harness including the brown handbrake wire and the purple ignition wire towards the front of the vehicle and into the cabin through the rubber grommet in the floor. Route the handbrake wire to the base of the handbrake



There are three screws holding the handbrake shroud in place. Two at the front and one at the rear. Remove these screws and the plastic shroud.



Locate and temporarily remove the terminal at the base of the handbrake. There are two wires in this terminal. These wires control the handbrake signal light on the dash.



The handbrake wire (brown) on the Driverite harness is cut to length and soldered to the brown wire on the terminal.



Connecting The Ignition Wire

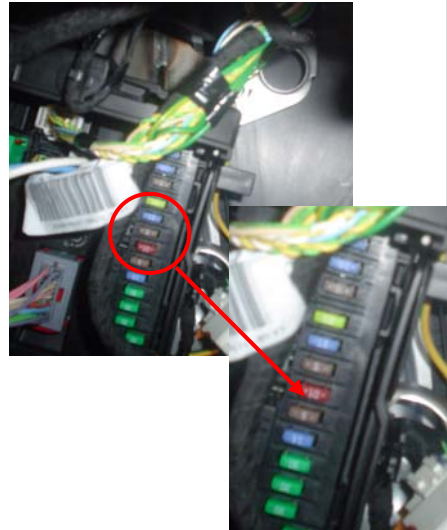
Route the remainder of the harness into the battery compartment.



The purple ignition wire is then routed into the fuse box at the steering wheel.



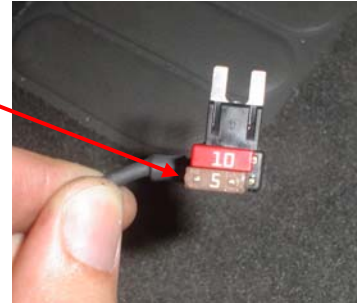
Locate the 10A mini fuse in the fuse box as shown in the picture on the right.



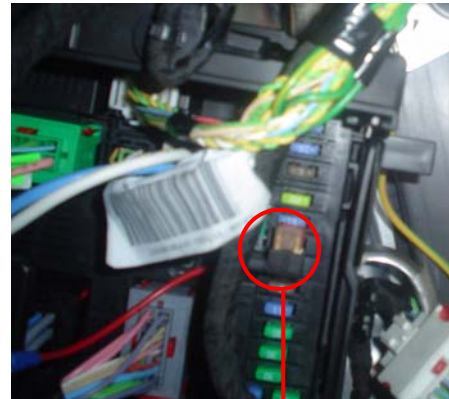
Temporarily remove this fuse



At the end of the ignition (Purple) wire on the Driverite harness there is a dual housing mini fuse holder. There should be a 5A fuse inserted into the end furthest from the male spades on the housing. Place the removed 10A fuse in the remaining slot as shown.



Insert the 2 exposed spades on the housing into the slot on the fuse box that was previously used to hold the 10A fuse. Replace the plastic cover over the fuse box.



Connecting The Ground Wire

The black wire is connected to the ground (-ve terminal) on the battery as shown.



Connecting The Constant Live Wire

Lift the red tab on the positive terminal on the battery as shown.



This will reveal a constant live location point. Remove the circled M8 nut.



Place the 8mm ring terminal at the end of the red wires on the Driverite harness over the stud and secure the nut back in place



Check all connections.
Ensure all bolts are securely fastened
Follow the programming instructions on the following pages to programme and calibrate the heights.

NOTE:

There is a time delay in the system.

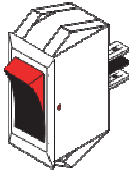
Place the sticker that states "This vehicle is fitted with DriveRite air suspension" on a visible location on the vehicle.

Programming The System (Program Switch)

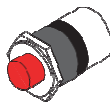
Step 1: Programming Setup

NOTE: PLEASE ENSURE ALL MEASUREMENTS ARE ACURATELY TAKEN

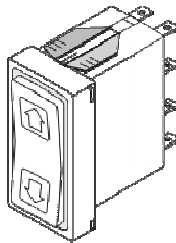
- Chock the front wheels to stop the vehicle from moving during the programming process.
- Leave the handbrake off until you are finished programming the suspension system.
- Turn the IntelliRide system off using the service switch. When the system is off the side of the switch will be red.



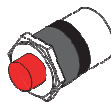
- Locate the push button program switch in the harness. This is in the programme box at the rear of the vehicle together with the service switch and the diagnostic connector.



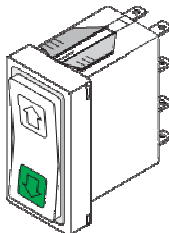
- Turn on the vehicle's ignition and leave it on until the entire programming of the vehicle's heights is completed.
- There should be no lights on the height selection switch at this time.



- Push the program switch three times within six seconds.



- The lower light on the height selection switch should start blinking. This will be indicating that lowered height needs to be programmed into the ECU.



Step 2: Programming the Lowest Vehicle Height

- Set the lowest height of your vehicle's suspension by either using inflation valves at each corner or jack stands.

Note:

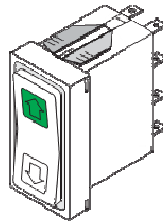
The lowest height cannot be fully deflated. The lowered position should be a minimum of 5mm from where the bounce bumper stops. This small gap is required to allow for a tolerance as the suspension height is controlled by the ECU. Without this small tolerance, the ECU will not achieve the lowered height if the suspension is stopped before the ECU believes the lowest vehicle height is reached.

The recommended lowered height is 420mm from the wheel arch to the centre of the wheel.

- When both rear corners of the vehicle are at the lowered height that you determine, hold the program switch in for eight seconds.



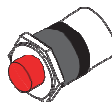
- The top light on the height selection switch should start blinking indicating that the ride height needs to be programmed into the ECU.



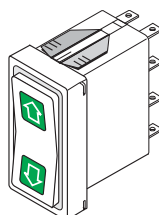
Step 3: Programming the Vehicle Design (Ride) Height

- Set the ride height of your vehicle's suspension by either using inflation valves at each corner or jack stands. When the vehicle is at the ride height that you determine, hold the program switch for eight seconds.

The recommended ride height is 455mm from the wheel arch to the centre of the wheel.



- Both lights on the height selection switch should start blinking back and forth. This will indicate that the calibration height needs to be programmed into the ECU.

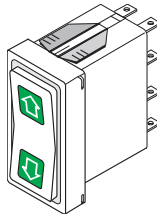


Step 4: Programming Calibration Height

- This calibration step teaches the relative suspension reaction to the IntelliRide system. Specifically this sets the internal tolerance bands and provides a relationship between the voltage that the ECU reads and the suspension height.
- Lower the height of each corner by 25mm by either using inflation valves at each corner or jack stands.
- When the vehicle is at the calibration height, hold the program switch for eight seconds, and then release.



- Both lights in the height selection switch should be on at the completion of programming.



- Turn off the vehicle's ignition, and switch the service switch off so that it is all black and not showing red. After the vehicle's ignition is turned back on, the system will put the vehicle at standard ride height.

Additional Note – 3rd Height Function:

INTELLIRIDE offers a very versatile and flexible computer system that allows you to regulate the height and lowering of the vehicle.

Typically 2 heights are provided :

1) Ride Height

2) Access lowered height.

We can also provide an IntelliRide ECU that gives a 3rd height option for extra height typically used for off-road or multiple height settings if required. In this case the speed signal wire must be connected.

Height Settings Visual

Ride Height at 455mm



Access Height at 420mm



Checklist

Height Sensor Checklist

CHECK

1. Height sensor orientation is correct
2. Is the threaded bar set to the correct length (62mm end to end)?

☐☐

General Checklist

CHECK

1. Ride height and access height has been set at the correct measurement
2. Shock absorbers have been adjusted to the correct setting
3. Shock absorbers have been torqued at ride height and to the correct torque setting
4. All other butts and bolts are secure and torque where stated
5. Harness, air-line and connectors are secure
6. The system was checked for air leaks
7. There is 15mm clearance around the airsprings
8. The ECU, compressor and valve block have been connected to the harness. An audible click is heard when the connection is sealed.
9. Height sensors connection are in their correct side and have been connected to the harness. An audible click is heard when the connection is sealed.
10. Air Suspension Stickers have been applied
11. The back page titled "Service Information" on the User Operation Manual (which will be kept in the vehicles glove box) has been completed
12. User Operation Manual has been placed in the glove box

☐☐☐☐☐☐☐☐☐☐☐☐

For troubleshooting please refer to the "User Operation Manual" supplied with this kit.

Note:

The "User Operation Manual" should be stored in the vehicle that has been installed with the air suspension. This can be referred to by the end user for reference.

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Notes

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