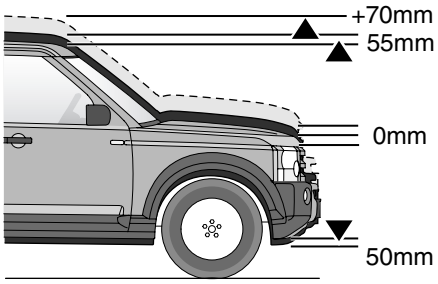
Air suspension

PRINCIPLE OF OPERATION



E80695

The air suspension system maintains the correct vehicle height by controlling the quantity of air in the vehicle's air springs.

Unless stated otherwise, height changes may only be made while the engine is running and the driver and passenger doors are closed.

When the air suspension system lifts the vehicle, it normally uses compressed air stored in its reservoir. The suspension will rise much more slowly if this reservoir is depleted due to repeated raising and lowering of the suspension.

On-road height

The normal height for the vehicle.

Off-road height

This is 55 mm (2.2 in.) higher than on-road height. It provides improved ground clearance and approach, departure and break-over angles. See **TECHNICAL SPECIFICATIONS** (page 268).

Off-road height can be selected at any speed up to 40 km/h (24 mph). When the system is at off-road height, the system will automatically select on-road height if the vehicle speed exceeds 50 km/h (30 mph).

Note: *If Terrain Response is in use, some of its programs/range combinations will adjust suspension height automatically.*

Note: *If the trailer socket is in use, increased supension height control will be inhibited.*

Extended mode

If the vehicle is grounded while at off-road height and traction control is induced, the system provides additional lift to clear the obstruction. Extended mode is activated automatically and cannot be selected manually.

Access height

WARNING

Ensure that the vehicle is clear of people and obstacles before lowering the suspension. Remember that the difference between off-road height and access height is 105 mm (4.1 in.).

This is 50 mm (2.0 in.) lower than On-road height. It provides easier entry, exit and loading of the vehicle.

The suspension will automatically rise from access height when the vehicle speed exceeds 10 km/h (6 mph).

If access height was selected directly from off-road height, the system will return to off-road height when the vehicle speed exceeds 10 km/h (6 mph). Otherwise the system will lift the suspension to on-road height.

High speed height

This feature lowers the suspension ride height by 20 mm (0.75 in), if the vehicle exceeds 160 km/h (100 mph) for longer than five seconds. This action is automatic and cannot be over-ridden. Ride height will return to normal when vehicle speed remains below 130 km/h (80 mph) for 30 seconds.

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Locked at access height (crawl mode)

This mode enables the vehicle to be driven at low speeds at access height, to give increased roof clearance in multi-storey car parks, etc.

Locked at access height can be selected when the vehicle speed is below 10 km/h (6 mph). When the vehicle is in this mode, On-road height will be selected automatically if the vehicle speed exceeds 40 km/h (24 mph).

Suspension warning indicator

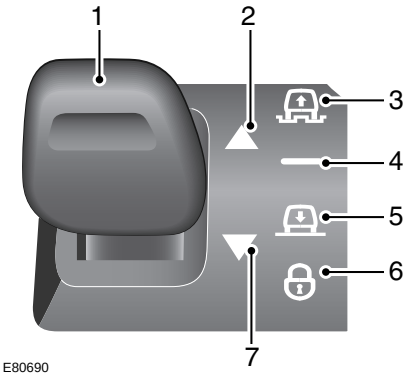
The suspension warning indicator in the instrument pack illuminates both red and amber briefly as a bulb check when the starter is turned to position **II**.

If the indicator illuminates amber, a suspension fault has been detected, but the vehicle can still be driven normally.

If the indicator flashes red, a serious suspension fault has been detected and the vehicle should be driven slowly until qualified assistance can be obtained.

The first illumination of the indicator will be accompanied by a warning chime.

ADJUSTING THE SUSPENSION



1. Raise/lower switch
2. Raising indicator
3. Off-road indicator
4. On-road indicator
5. Access indicator
6. Lock indicator
7. Lowering indicator

Suspension height indicators

Indicators **2** or **7** will illuminate to show the direction of movement. They extinguish when the height change is completed.

If a height change is requested that is not allowed, such as attempting to raise the height of the vehicle with the engine not running, indicators **2** and **7** will flash twice and a chime will sound. A message will be displayed on the message centre.

A flashing indicator **2** or **7** indicates that the system is in a waiting state or shows that it will automatically override the driver's choice if speed criteria are exceeded.

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Access height

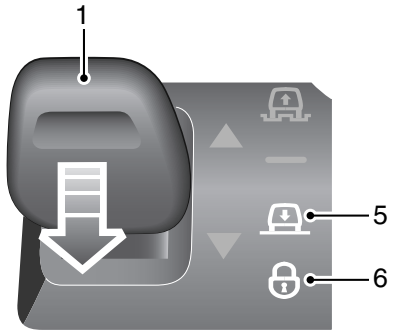
If access height is selected while vehicle speed is above 20 km/h (12 mph), indicators 5 and 7 will flash while the system waits for the vehicle to slow down. The system will cancel the access height request if the vehicle does not slow sufficiently within one minute.

When the vehicle slows down to 20 km/h (12 mph), indicator **4** will extinguish as the system goes to the part-lowered height. Indicator **5** will be lit and indicator **7** will continue to flash.

The vehicle must slow down to 8 km/h (5 mph), within one minute to prevent access height cancellation. Indicators **5** and **7** will be lit. When access height is reached, indicator **7** will extinguish.

Access height may be selected up to 40 seconds after the starter switch is turned off, provided that the driver's door has not been opened within this time.

Locked at access height crawl mode



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When the suspension is at on-road or access height and the vehicle speed is below 35 km/h (22 mph), press the raise/lower switch **1** in the down direction for one second. Indicators **5** and **6** will illuminate to confirm the selection, and a chime will sound.

Locked at access height can be cancelled by pressing the raise/lower switch in the up direction for one second. Indicator **6** will extinguish.

Note: *When locked at access height is cancelled, the suspension will rise to on-road height if the vehicle speed is greater than 10 km/h (6 mph).*

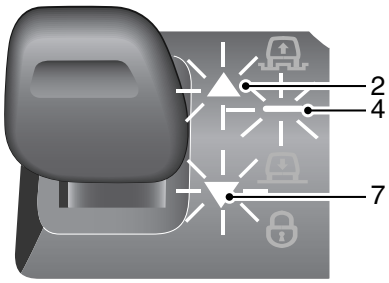
Access height from off-road height

When the suspension is at off-road height, press switch 1 down, then press it again before indicator 7 goes out.

The system will remember to return the suspension to off-road height automatically if the vehicle is driven above 10 km/h (6 mph).

Air suspension

Automatic height change warnings



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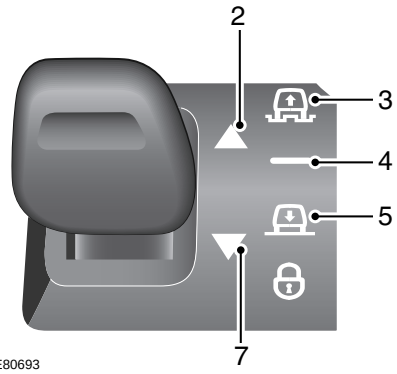
When the suspension is at off-road height, access or locked at access height, the suspension height will change automatically when vehicle speed exceeds predetermined levels.

When the suspension is at off-road height or locked at access height, it warns the driver that the vehicle is approaching a speed threshold. A chime will sound, a message will be displayed on the message centre and the on-road indicator **4** and either **2** or **7** will flash.

The off-road height speed warning is shown above. If the vehicle slows down, the warning will disappear.

Door open override

If a door is opened during a height change while the vehicle is at rest, the height change will be restricted.



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The indicator for the target height **3**, **4** or **5** will remain lit and the lifting indicator **2** or the lowering indicator **7** will flash.

The height change will resume if all of the doors are closed within 90 seconds.

If the doors are not closed within this time, the raising indicator **2** or the lowering indicator **7** will extinguish and the indicators showing the heights above and below the current position will be illuminated.

Selecting a new height using the raise/lower switch **1**, or driving off will reset the system.

Extended mode

If the vehicle is grounded and traction control is induced, the system raises the vehicle clear of the obstruction. Extended mode is activated automatically and cannot be selected manually.

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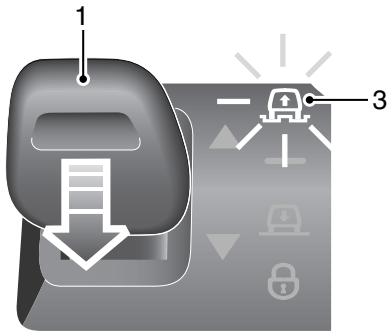

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When extended mode is activated, indicator **3** will flash. A message will be displayed on the message centre.

To exit extended mode, either press the raise/lower switch **1** briefly up or down or drive the vehicle at a speed greater than 5 km/h (3 mph) for 30 seconds.

Additional lift whilst in extended mode

When extended mode is invoked and the automatic lifting of the vehicle has been completed, the driver can select an additional lift in order to clear the obstacle. This can be particularly useful when extended mode has been invoked on soft surfaces.

To request additional lifting, wait for the raising indicator **2** to extinguish then press and hold the switch **1** for three seconds whilst pressing the brake pedal. A chime will sound to confirm that the request has been accepted. Indicator **2** will be illuminated while the vehicle is being lifted.

To exit extended mode briefly press either the raise or lower switch. Alternatively, the vehicle will automatically lower if driven at a speed greater than 5 km/h (3 mph) for 30 seconds.

Suspension freeze

If the system is attempting to change the suspension height and it detects that the suspension is prevented from moving, the system will freeze all movements.

This can be caused by attempting to lower the vehicle on to an obstacle or attempting to lift the vehicle against an obstruction.

The indicators operate in the same way as described in extended mode and the same message will be displayed on the message centre. As in extended mode, to exit this freeze state, either press the switch **1** up or down, or drive the vehicle at a speed greater than 20 km/h (12 mph).

Remote operation

WARNINGS

The remote control will operate normally from inside the vehicle. It is therefore important to keep it out of reach of children at all times.

When operating the remote control from inside the vehicle, ensure that a responsible adult checks for obstructions under the vehicle and and supervises the lowering process.

Care should be taken with all suspension height changes when a trailer is attached to the vehicle.

The remote control can be programmed to operate the air suspension.

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AIR SUSPENSION MESSAGES

When a message centre is fitted to the vehicle, messages relating to the air suspension system may be displayed. For an explanation of those messages, refer to the following table.

Message	Meaning	What to do?
CAUTION! RISK OF GROUNDING WITH SUSPENSION AT NORMAL HEIGHT	Displayed when the Terrain Response system would normally have provided off-road height but the driver has manually lowered the vehicle (or the system cannot raise the vehicle).	Raise suspension manually to off-road height if possible and appropriate.
RECOMMEND RAISING SUSPENSION TO OFF ROAD HEIGHT IN DEEP MUD-RUTS	In deep ruts it is beneficial to raise the vehicle to off-road height. This is done automatically in low range but has to be done manually if mud/ruts program is used in high range.	Raise suspension manually to off-road height.
RESET SUSPENSION HEIGHT IF CLEAR OF OBSTACLE	Suspension still in extended mode.	Check if vehicle is clear of obstacle. If clear, select required suspension.
SLOW DOWN OR VEHICLE WILL LOWER/RAISE	Vehicle will automatically lower/raise if vehicle speed increases.	Choose to slow down or accept height change.
SUSPENSION CLOSE DOOR TO CHANGE HEIGHT	Air suspension height change is prevented because a door is open.	Close all doors.
SUSPENSION FAULT	A fault has been detected in the air suspension system. System may still operate normally.	Seek qualified assistance immediately.
SUSPENSION FAULT MAX SPEED 50 km/h (MAX SPEED 30 mph)	A major fault has been detected in the air suspension system. Height cannot be controlled.	Drive slowly until fault can be rectified.
SUSPENSION FAULT NORMAL HEIGHT ONLY	A fault has been detected in the air suspension system. Only normal height is available.	Seek qualified assistance immediately.

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Message	Meaning	What to do?
SUSPENSION FAULT STOP SAFELY STOP ENGINE	Major component failure.	Stop vehicle immediately and seek qualified assistance.
SUSPENSION SPEED TOO HIGH TO CHANGE HEIGHT	A height change has been requested but is prevented because speed is too high.	Reduce vehicle speed.
SUSPENSION START ENGINE TO RAISE VEHICLE	Vehicle height can only be raised with the engine running.	Start the engine.
SUSPENSION WILL RAISE WHEN SYSTEM COOLED	Air suspension compressor is cooling. Lifting will resume when compressor has cooled.	Wait for suspension to carry out lifting sequence.