PRINCIPLE OF OPERATION

The Terrain Response™ system is permanently active, continuously providing benefits in traction and driveability. Further benefits are available for specific driving conditions by the selection of one of the special programs.

Based on the selected special program, the system optimises the vehicle set-up for the prevailing conditions, providing the optimum in traction, driveability and vehicle composure.

The Terrain Response special programs automatically bring in changes in vehicle drive and suspension systems that have until now been only individually and manually controllable by the driver.

The systems comprising Terrain Response are:

- Engine management.
- Gearbox management.
- Intelligent differential control.
- Dynamic Stability Control.
- Traction Control and Hill Descent Control (HDC) systems.
- Air suspension.

The system will provide a variable accelerator response, ranging from very cautious for slippery conditions (large pedal movement has a minimum effect on engine power), to very responsive (engine power is allowed to rise more quickly) when driving over sand.

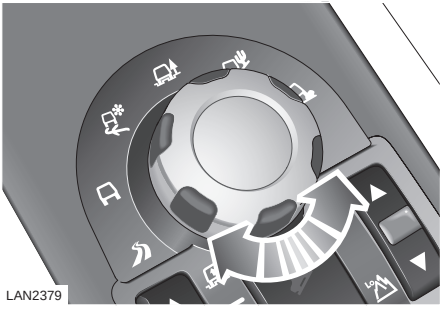
Note: *Changing from one special program to another will result in changes to the driving experience. For instance, the engine revs produced by the current throttle position might increase or decrease slightly in the new program, or the suspension could change height.*

To obtain the maximum benefit from the system, try experimenting with the different special programs in an environment that is safe and will not affect other road users.

USING TERRAIN RESPONSE

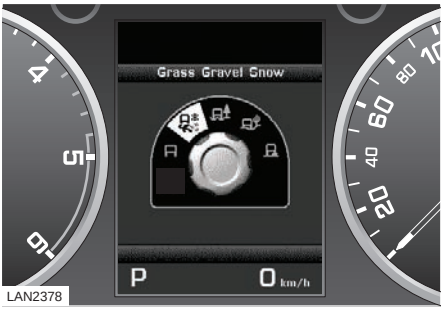
Terrain Response is designed to benefit the driver, regardless of their level of off-road driving experience. The enhanced traction system, with the control of many systems through one simple driver interface, coupled with specific advice from the message centre, will aid drivers with limited off-road experience.

Additionally, the system can enhance the skills of experienced drivers, who will benefit from the greater performance available through the selection of one of the special programs.


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With the ignition switched on, one of the indicators around the control will illuminate amber to indicate the currently selected active program. The special program indicator will also be displayed on the message centre.

Rotate the control to select the required special program.



The temperature and fuel gauges will be temporarily replaced on the message centre with a representation of the Terrain Response control. The current active program is shown as a white icon on a black background.

As you rotate the control, the icons are highlighted to show the currently selected special program. If a special program is highlighted for more than two seconds, the system will implement the program change and the message **Program selected** will be displayed.

The following special programs are available:

- Grass-gravel-snow (also includes ice)
- Mud-ruts
- Sand
- Rock Crawl

If there is no further interaction with the Terrain Response control within two seconds, the message centre will revert back to displaying the temperature and fuel gauges.

If the ignition is switched off when a special program is selected, the program will remain in the system memory for six hours and resume when the ignition is switched back on (with the exception of Grass-Gravel-Snow program which remains selected indefinitely).

The message centre will confirm that the previously selected special program is still selected.

Note: *It is possible to have the Terrain Response system configured so that if the Grass-Gravel-Snow program is selected, and the ignition is switched off, the system will default back to the General program after six hours period as per the other special programs. Consult your Dealer/Authorised Repairer.*

General program (Special programs off)



The General setting is suitable for surfaces that match typical road surfaces, including dry cobbles, tarmac or wooden planks.

All systems, except Hill Descent Control (HDC), will adopt settings based on the conditions. HDC will remain active if it was manually selected. The suspension will also change from raised to normal ride height when the vehicle starts moving.

Grass-Gravel-Snow



Choose this special program for icy surfaces and surfaces which are firm but have a coating of loose material, for example, grass, snow, gravel, pebbles or sand.

HDC will engage automatically in low range, but can be manually de-selected. See **USING HDC** (page 163).

Using the vehicle with snow chains fitted may affect operation of Terrain Response. See **USING SNOW CHAINS** (page 249).

Note: *If the vehicle cannot obtain forward traction in deep, soft snow try switching off Dynamic Stability Control (DSC). DSC must be switched on as soon as the difficulty has been overcome. See* ***USING STABILITY CONTROL*** *(page 160).*

Mud-Ruts



Choose this special program for muddy, or deeply rutted, ground that is soft and uneven. Unevenness of the ground could be caused by roots, brushwood or small logs.

Low range is recommended for this program. If low range is not selected, the message centre will prompt you.

If the Mud-Ruts program and low range are selected together, the vehicle ride height will be raised automatically.

HDC is automatically engaged in both high and low range whenever the Mud-Ruts program is selected, but can be manually de-selected. See **USING HDC** (page 163).

Sand



Choose this special program for sand and other dry, yielding ground. Also use for deep gravel.

The characteristics of the traction control system are modified to provide greater mobility in this program. See **SAND LAUNCH CONTROL** (page 162).

Note: *Where the sand is damp or wet, the Mud-Ruts special program may be more appropriate.*

Note: *If the sand is extremely soft and dry causing the wheels to sink and hindering forward traction, try switching off Dynamic Stability Control (DSC). DSC must be switched on as soon as conditions permit. See* ***USING STABILITY CONTROL*** *(page 160).*

Rock Crawl



Choose this special program on rocky terrain and other solid ground, which demands high levels of wheel displacement and careful vehicle control. This program can be used for crossing river beds strewn with submerged rocks.

HDC is automatically engaged when the Rock Crawl program is selected.

You can only select Rock Crawl in low range. If you try to select it in high range, you are prompted to select low range. This program will optimise the vehicle suspension and traction system to provide good low-speed control.

The characteristics of the traction control system are modified in this program. See **ROCK CRAWL PRECHARGE** (page 162).

Wading

When driving through water less than 600 mm (24 inches) deep, select the Terrain Response program suitable for the surface beneath the water.

Increased suspension height

When a special program requires increased suspension height, the system will automatically raise the suspension, unless there is a trailer attached plugged into the trailer socket.

Driver override options

The following two systems controlled by Terrain Response can also be operated by the driver.

- Air Suspension
- Hill Descent Control

In some special programs, the Terrain Response system will switch on HDC and, in low range, the system will automatically raise the suspension to off-road height.

You can cancel both the HDC and ride height selections at any time. If HDC or a specific ride height has not been selected by the system, you can select them at any time. HDC and ride height selections will be confirmed through the message centre and by the individual system information indicators, irrespective of whether the system or driver selected them. Use of special programs may prompt warnings and other information to be displayed on the message centre.

Note: *Use the CommandShift function on the gearbox to lock the vehicle in a particular gear when in a special program.*

Inappropriate program selection

CAUTION

Selecting an inappropriate special program will impair the vehicle's response to the conditions and reduce the life of the suspension and drive systems.

If you try to select an inappropriate special program, such as choosing Rock Crawl while in high range, the relevant indicator lamp will flash amber. The message centre will provide further information. If the appropriate action is not taken within 60 seconds, the warnings will cease and the message centre will show the active program

If the system becomes totally inoperable, all of the special program indicators will be switched off and the message centre will display a relevant message.

Terrain response

Messages

The following table lists the messages relating to Terrain Response that could appear in the message centre.

Message	Meaning	What to do?
CAUTION! RISK OF GROUNDING WITH SUSPENSION AT NORMAL HEIGHT	Terrain Response system selected off-road height but you have manually lowered the vehicle (or the system cannot raise the vehicle).	Raise suspension manually to off-road height if possible and appropriate.
PROGRAM CHANGE IN PROGRESS	Temporarily impossible to select a new program. Due to ABS or DSC activity or the overheating of the electronic differentials.	If conditions change within 60 seconds, the chosen program is selected. If differentials are overheated, wait for further information. When differentials have cooled, try to reselect the special program.
RECOMMEND LOW RANGE IS SELECTED FOR MUD-RUTS PROGRAM	Low range is recommended for Mud-Ruts special program.	Select low range.
RECOMMEND RAISING SUSPENSION TO OFF ROAD HEIGHT IN DEEP MUD-RUTS	Mud-Ruts program is being used in high range. Suspension raised automatically in low range.	Raise suspension manually to off-road height or select low range.
RECOMMEND STARTING IN 2ND/3RD GEAR FOR SLIPPERY CONDITIONS	In slippery conditions start off in a higher gear than usual.	Select second/third gear.
SELECT LOW RANGE TO ACTIVATE ROCK CRAWL	Vehicle is not in low range, so Rock Crawl cannot be used.	Select low range.
TERRAIN RESPONSE SPECIAL PROGRAMS NOT AVAILABLE	There is a fault on the Terrain Response system or one of the associated systems.	Full Terrain Response programs are not available, so drive with care. Seek qualified assistance immediately.
TRAILER CONNECTED OFF ROAD HEIGHT NOT SELECTED AUTOMATICALLY	Vehicle has not achieved off-road height as trailer is attached.	If a trailer is connected, do nothing. If something else is attached (e.g. bike rack), raise vehicle to off-road height manually. If nothing is connected, check trailer socket for faults.