### TECHNICAL BULLETIN LTB00625NAS2 08 APR 2015



© Jaguar Land Rover North America, LLC

NOTE: The information in Technical Bulletins is intended for use by trained, professional Technicians with the knowledge, tools, and equipment required to do the job properly and safely. It informs these Technicians of conditions that may occur on some vehicles, or provides information that could assist in proper vehicle service. The procedures should not be performed by 'do-it-yourselfers'. If you are not a Retailer, do not assume that a condition described affects your vehicle. Contact an authorized Land Rover service facility to determine whether this bulletin applies to a specific vehicle.

Changes are highlighted in gray

#### **SECTION: 204-00**

'Knock' Sound From Front Suspension

#### <u> AFFECTED VEHICLE RANGE:</u>

Range Rover Sport (LW)

Model Year: 2014-2015

**VIN:** EA000002-FA375914

#### **MARKETS:**

NAS

#### **CONDITION SUMMARY:**

**Situation:** A 'knock' sound from the front suspension may be heard inside the vehicle when traveling over an uneven road surface. The sound may be noticeable, when one of the front wheels travels over a uneven surface while the opposite front wheel remains on a smooth surface.

 $\textbf{Cause:} \ \ \textbf{This may be caused by the operation of the Dynamic Response system actuators.}$ 

Action: Should a customer express this concern, follow the Diagnostic Procedure outlined below.

#### **PARTS:**

NOTE: if required, an allowance of approximately US\$53.65 (£35.00) for the Dynamic Response system fluid (Texaco cold climate fluid PSF14315 [33270]) and Loctite 243 has been provided and should be claimed using code 'ZZZ001'.

LR048454	Reservoir - Dynamic Response system fluid (if required)	Quantity: 1
LP061527	Valve block - Dynamic Response system (if required)	Quantity: 1

#### TOOLS:

NOTE: This is an 'Active Bulletin' that will display a functional programming shortcut if accessed within a diagnostic session using SDD.

SDD with latest DVD and Calibration File; first available on DVD137.07 v.171 Jaguar Land Rover-approved Midtronics battery power supply

#### **WARRANTY:**

NOTE: if required, an allowance of approximately US\$53.65 (£35.00) for the Dynamic Response system fluid (Texaco cold climate fluid PSF14315 [33270]) and Loctite 243 has been provided and should be claimed using code 'ZZZ001'.

NOTE: Repair procedures are under constant review, and therefore times are subject to change; those quoted here must be taken as guidance only. Always refer to TOPIx to obtain the latest repair time.

NOTE: DDW requires the use of causal part numbers. Labor only claims must show the causal part number with a quantity of zero.

DESCRIPTION	SRO	TIME (HOURS)	CONDITION CODE	CAUSAL PART
Valve block - Dynamic Response system - Renew	60.60.20	2.5	42	LR061527
Pressure test - Dynamic Response system	60.90.20	0.40	42	LR046089
Reservoir - Dynamic Response system - Renew	60.60.12	0.2	42	LR048454

NOTE: Normal Warranty procedures apply.

#### **DIAGNOSTIC PROCEDURE:**

1. NOTE: use customer-supplied occurrence information (speed/road surface/symptom) to understand what is the most probable root cause of the noises observed.

SYMPTOM: single 'knock' OR a series of isolated 'knocks':

- **Drive Cycle / Conditions:** single-wheel and dual-wheel inputs from speed bumps /damaged road surfaces or similar while traveling ONLY in a forward direction at speeds of up to 25mph (40kmh).
  - Action: perform the Service Instruction outlined below.





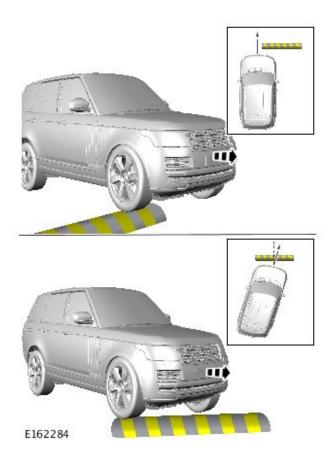


E162272

## 2. NOTE: VIN LW000002-LW354204 only.

#### **SYMPTOM:** 'knock' noise:

- **Drive Cycle / Conditions:** noise occurs during single wheel inputs (one side only) at speeds up to 12mph (20kmh). Noise occurs when traveling in both forward AND reverse direction. Noise can also be heard during dual wheel input but to a lesser extent. Test both sides of the vehicle independently.
  - Action: refer to Technical Bulletin LTB00604NAS, Front Air Spring / Damper Hydraulic Fluid Leak.



#### 3. SYMPTOM: 'click' / 'rattle' noise:

- Drive Cycle / Conditions: harsh cornering, rapid acceleration, and abrupt braking
  - Action: refer to Technical Bulletin LTB00618NAS, 'Click' / 'Rattle' Noise From Engine Compartment When Driving.
    - If this does not solve the customer concern, remedial work may be required to the steering rack.

#### 4. SYMPTOM: 'rattle' noise:

- Drive Cycle / Conditions: 'rattle' noise occurs when driving at speeds up to 20mph (32kmh) over surfaces shown
  - Action: refer to Technical Bulletin LTB00618NAS, 'Click' / 'Rattle' Noise From Engine Compartment When Driving.



E162256

### **SERVICE INSTRUCTION:**

- 1. Check the Dynamic Response system fluid reservoir for leaks:

  - If no leak is present, continue to the next step.
    If a leak is present, replace the Dynamic Response system fluid reservoir (see TOPIx Workshop Manual, section 204-06).





2. NOTE: fixings do not require replacement unless stated.

NOTE: this Technical Bulletin is written in a specific order where the most likely causes of this issue are dealt with first. The most likely causes will also give the biggest benefit if addressed. It is therefore imperative that the steps are followed in order.

NOTE: refer to TOPIx for all torques not explicitly specified in this document.

NOTE: replacement of any suspension component which affects suspension geometry must be followed by conducting a four-wheel alignment check following the procedure highlighted in the vehicle Workshop Manual.

NOTE: Vehicle Testing: it is important to identify a test route that highlights the customer concern of suspension knock and re-test the vehicle over the same test route when identified in the following procedure. The test route should include roads that have a uneven road surface or drain covers that allow single wheel inputs. The vehicle speed that highlights the issue should be noted during the initial appraisal of the customer concern and then replicated on subsequent test drives.

NOTE: typically, noise from the Dynamic Response system can be observed at low vehicle speeds (10-25mph / 16-40 km/h). Some occurrences of hydraulic knock should be expected. Only excessive / abnormal knocking noise indicates a concern.

**Front Suspension Knock Diagnostic Test:** vehicles fitted with the Dynamic Response system are expected to exhibit a low level of hydraulic knock from the system during normal operation as the input forces are reacted by the Dynamic Response system. Where there is a customer complaint of excessive / abnormal knocking noise, the following steps should be taken.

- Verify the customer concern.
- Check and rectify basic faults before beginning diagnostic routines.

- Visually inspect for obvious signs of mechanical damage.
- Ensure all tire pressures are set according to the tire label in the driver's door opening.
- Ensure the same test route is used for road test after any remedial work.

# 3. NOTE: do NOT remove the Dynamic Response system fuse when diagnosing front suspension knock as it will change the forcing into the suspension.

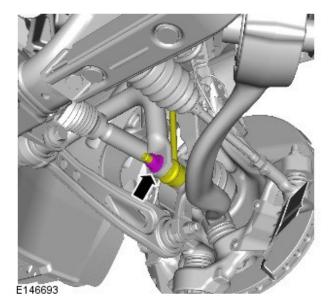
Front Suspension Knock Diagnostic Test (refer to step 1 of Diagnosis Procedure).

• If the noise is still present, continue to the next step.

## 4. NOTE: a small amount of pivot is normal.

Check the front stabilizer bar links for visible play:

- Grasp the link by hand and attempt to move it up/down.
  - If visible play is not found, continue to the next step.
  - If visible play is found, renew the stabilizer bar link(s) (see TOPIx Workshop Manual, section 204-01).



#### 5. Carry out road test.

- If the noise is not present, no further action required. Return vehicle to customer.
- If the noise is still present, continue to the next step.
- **6.** Check the front stabilizer bar arm for play:
  - · Disconnect the front stabilizer bar links.
  - Grasp the front stabilizer bar arm by hand and attempt movement.
    - If the front stabilizer bar arm does not have greater than ± 10mm of play, continue to the next step.
    - If the front stabilizer bar arm has greater than ± 10mm of play, perform a system bleed.
      - Initially only bleed the front stabilizer bar actuator as detailed in TOPIx Workshop Manual, section 204-06.

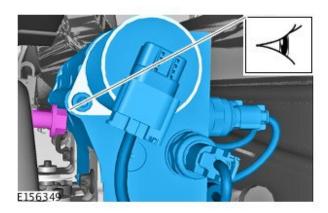
#### 7. Carry out road test:

- If the issue is not present, return the vehicle to the customer.
- If the issue is still present, continue to the next step.

# 8. NOTE: View of the end of hydraulic valve block from front of vehicle.

Check the valve block-to-body stud clearance:

 There should be 5mm clearance between the valve block body and the plastic body fastener that secures the fuel lines. • Where no or very little clearance exists, continue to the next step.



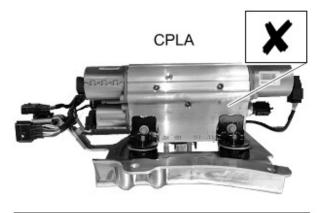
Remove the plastic body fastener and drill an axial hole 5mm diameter through the head; this will allow the body stud to pass through the head of the fixing.

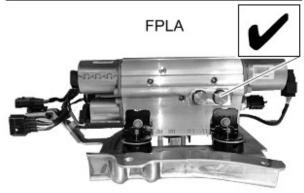


After performing all listed remedial actions, it is possible that a low level of residual knocking noise may still be present. This low level of knocking noise may be caused by the Dynamic Response system's hydraulic operation. If the concern has not improved to an acceptable level, continue to the next step.

10. NOTE: On strong customer complaint please confirm which level of valve block is fitted. Valve block shown removed for clarity.

If the vehicle is not fitted with the latest level (FPLA) valve block, install new valve block (see TOPIx Workshop Manual, section 204-06).



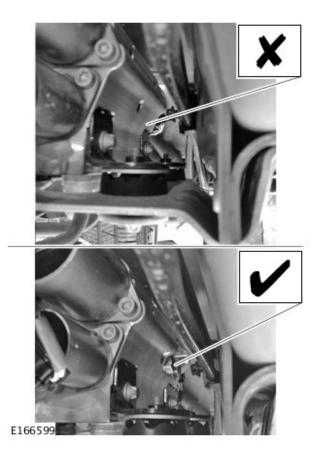


E166598

11. NOTE: Aero shield removal is required (see TOPIx Workshop Manual, section 204-06).

Identification off vehicle:

• If the vehicle is not fitted with the latest level (FPLA) valve block , install new valve block (see TOPIx Workshop Manual, Section 204-06) and then proceed to Step 14. If the vehicle is fitted with the latest level valve block then please proceed to Step 32.



NOTE: Using SDD Carry out Dynamic response module - Valve block replacement to any vehicle being fitted with a new FPLA level valve block.
NOTE: Using SDD Carry out Hydraulic system test to All vehicles once valve block has been replaced.
12. CAUTION: A Jaguar Land Rover-approved Midtronics battery power supply must be connected to the vehicle battery during SDD diagnosis / module programming.
CAUTION: Ensure all ignition 'ON' / ignition 'OFF' requests are carried out; failure to perform these steps may cause damage to control modules in the vehicle.
NOTE: SDD must be loaded with DVD137.07 v.171 or later.
Connect the Jaguar Land Rover-approved Midtronics battery power supply to the vehicle battery.
<b>13.</b> Connect SDD to the vehicle and begin a new diagnostic session, by reading the VIN for the current vehicle and initiating the data collect sequence.
14. NOTE: When requested, select 'FPLA' valve. Follow the SDD prompts.
15. Turn ignition 'ON' (engine not running).
<b>16.</b> Connect the Symptom Driven Diagnostics (SDD) system to the vehicle and begin a new session.
17. Follow the on-screen prompts, allowing SDD to read the VIN and identify the vehicle and initiating the data collect sequence.
<b>18.</b> Select 'Service functions' from the Session Type screen.
<ul><li>19. Select the 'Selected Symptoms' tab, and then select:</li><li>Dynamic response module &gt; Valve block replacement</li></ul>
20. Select 'continue'.
21. Select the 'Recommendations' tab, and then select 'Run' to perform the 'Dynamic response module - Valve block replacement' option.
22. Follow all on-screen instructions to complete this tasks.
23. Select 'Diagnosis' from the Session Type screen.
24. Select the 'Selected Symptoms' tab, and then select:

- Chassis Suspension system > Vehicle dynamic suspension
- 25. Select 'continue'.
- **26.** Select the 'Recommendations' tab, and then select '**Run**' to perform the 'Dynamic response hydraulic control system test' option.
- **27.** If the Dynamic response hydraulic control system test succeeds then proceed to next step, if it fails then investigate reported failure.
- 28. Exit the current session.
- **29.** Disconnect the SDD and the battery power supply from the vehicle.
- 30. NOTE: After performing all remedial actions, it is possible that a low level of residual noise will still be evident, This is due to the systems hydraulic operation. The system is working correctly and this noise does not adversely affect vehicle stability or performance. If the customer is still not accepting of this then please contact your local Customer Relationship Centre (CRC) team to discuss the case.

If noise levels have improved to a suitable level, return vehicle to customer.