

Document Information

Location: Chassis - Suspension

Topic: Suspension Degraded or Suspension Failure warning message

Condition: Various driving styles at road or track conditions

Diagnostic Trouble Codes:

CCU:

Various suspension fault codes (DTC's)

Measure

In the event of a customer complaint for "Suspension Degraded" or "Suspension Failure" warning messages, carry out the following steps:

1. Save all current DTC's to PDF
2. Save CCU Actual Values to PDF
3. Ensure campaign **15 M 004 - McLaren Senna - Platform 4.7 Update** has been carried out
4. Check for any external fluid leaks from the dampers and accumulators (repair any leaks before continuing to the next step)

Ride Height Check

5. Measure and record the ride heights in Sport and Race modes according to SIS instruction;

Chassis / Suspension - Wheels and Tyres Front / Wheels and Tyres - Service Procedures / EA-RM-04B004-00-001 - Perform Wheel Alignment Check

Care Point: Vehicle must be on a geometry ramp to be able to measure the ride heights accurately

Care Point: Make sure the fuel tank is half full with fuel and 75kg distributed as follows: 25kg on each seat and 12.5kg in each footwell.

Specification values of Ride Height:

Ride Height	Front	Rear
Race	73mm +/- 4mm	107mm +/- 4mm
Sport	105mm +/- 4mm	128mm +/- 4mm

6. If the ride heights are within specification as per the table above, proceed to Step 13.

7. If the ride heights are **not** within specification, the suspension calibration of maybe incorrect, therefore carry out steps 8 to 12

8. Within the **Suspension Calibration** sequence in CCU, run **Depressurise** option and monitor pressure values (Use **Special tool 15SA538CP** allow excess fluid to be captured in an external container)

(a) If pressures are close to 0 bar, proceed to Step 9

(b) If pressures are not near 0 bar (+/- 3 bar), run **Depressurise** option again and then proceed to Step 9

9. Once the system is depressurised select **Pressure Sensor Calibration**

10. Return to **Suspension Calibration** sequence and run **Pressurise** option this time to re-pressurise the system

11. Within **Suspension Calibration** sequence select **Ride Height Calibration**, to carry out the calibration as requested in the sequence

12. Save CCU Actual Values to PDF post ride height calibration

13. In the event of one of the following is applicable, perform check of the nitrogen pre-charge of the heave accumulators as described in the **Heave Accumulator Pre-charge Check, Fill and Bleed** section below

(a) Power steering pump keeps running on and off (cyclic operation)

(b) Excessive stiff ride from one or more axles

(c) Vehicle is in the workshop for annual service that includes accumulator check

(d) Vehicle is in the workshop for pre-post track check

Heave Accumulator - Pre-charge Check, Fill and Bleed Instructions

Care Point: Currently the process to check the pre-charge of the accumulators is not available on SIS.

Use the following SIS instructions to gain access to the front and rear heave accumulators:

EA-RM-02A053-02-001 - Remove/Install Mechanism - Front Active Aero

EA-RM-03A075-05-001 - Remove/Install Floor Panel - Diffuser

Once the Heave accumulators are accessible carry out the steps below:

Care Point: The Hydac Universal Charging and Testing unit (Part Number FPU-1-025F2,5G5A3K) is required to perform the check below. This tool is not supplied by Unipart and has to be sourced locally



Specification values of Heave Accumulator Pressures:

Location	Pre-charge pressure	Tolerance
Front left - Compression	7.4 bar	+/- 0.25
Front right - Rebound	8.4 bar	+/- 0.25

Location	Pre-charge pressure	Tolerance
Rear left - Compression	7.9 bar	+/- 0.25
Rear right - Rebound	10.52 bar	+/- 0.25

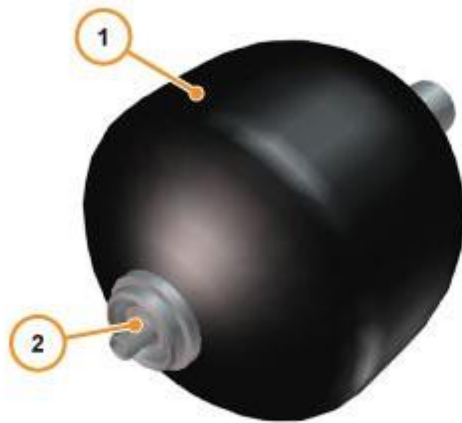
Accumulator Pressure Check, Fill and Bleed Procedures

- Ensure appropriate Personal Protective Equipment (PPE) is worn
- Before any work on the hydraulic system you must depressurise the system using the MDS

- After work on the hydraulic system you must re-pressurise the system using the MDS

Pressure check

1. Connect MDS and select Suspension Calibration sequence in CCU
2. Depressurise the system using the MDS, select Depressurise option within the (Depressurise/Pressurise Suspension System) ensure system pressures are below 3 bar at the end of sequence before carrying any work on the suspension system
3. Remove cap from accumulator gas valve (2)
4. Slightly loosen accumulator gas valve fixing (2) a 1/4 turn. M8 8 Nm



5. Ensure the pressure release valve (3) is firmly closed (left handed thread). It is not necessary to have the charge hose connected to the valve body at this stage whilst checking the pressure

6. Attach the valve body to accumulator. Ensure adaptor valve body is correctly installed to accumulator

7. Slowly rotate adaptor valve spindle anti-clockwise until the pressure gauge (6) needle begins to move

8. Complete one more full turn, take a reading of the accumulator gas pressure. If the pressure is above tolerance (see specification tables above, proceed to section Bleed Accumulator

9. If the pressure is below tolerance, proceed to section Fill Accumulator

10. If pressure is within tolerance, continue in this section by closing accumulator gas valve (2) by rotating valve spindle (5) clockwise, do not tighten with the valve body spindle

11. Remove adaptor valve body

Bleed Accumulator

1. Follow the instructions 1-6 above to set up the valve body to the accumulator. Risk of component damage. Do not open the pressure release valve (3) quickly or completely. Damage can occur to the accumulator or valve body (left handed thread)

2. Slowly open pressure release valve (3) then close again, check the pressure again, continue to do this until the pressure is correct

3. When the require pressure is reached rotate the valve spindel (5) clockwise to close the accumulator gas valve (2)

4. Remove the valve body (4) from the accumulator (1)

5. Torque the accumulator gas valve (2) M8 8 Nm



Fill Accumulator

1. Set up nitrogen bottle and regulator, connect regulator outlet hose to valve body (4). The outlet pressure of the nitrogen gas bottle and regulator must not exceed 20 bar. Ensure outlet valves on the nitrogen gas bottle and regulator are closed.
2. Install charge hose to valve body (4). Ensure hose from nitrogen gas bottle to valve body is correctly attached before continuing.
3. Slowly open outlet valve on nitrogen gas bottle, do not allow the pressure to go above the required pre-charge value as per the table above.
4. Slowly open outlet valve on gas bottle regulator. Once the correct pre-charge pressure has been reached, close the outlet valve on regulator.
5. Check pressure gauge (6).
6. If required, repeat procedure until required pressure is reached.
7. When the required pressure is reached, rotate valve spindle (5) clockwise to close accumulator gas valve (2).
8. Remove valve body (4) from accumulator (1).
9. Torque the accumualtor gas valve (2) M8 8 Nm

10. Check system for leaks.

11. Install components in reverse order.

12. Re-pressurise the system using the MDS, select Pressurise option within the (Depressurise/Pressurise Suspension System) section of the Suspension Calibration sequence in CCU.



Parts Information

N/A

Warranty Information

Resolution Category

Casual Part Number: N/A

Casual Part Name: N/A

Casual Issue: N/A

Rectification: N/A

Time: N/A

Attachments

N/A

KA Updates Information

28/01/2021

Added special tool part number 15SA538CP

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