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Test center of Shanghai Huizhong Automotive Manufacturing Co.,Ltd.

# Test Report

项目名称 Project Name: Daimler H6 Seat

样品名称 Specimen Name: A9609109720 Climate Suspension Seat  
w/o pretensioner or DPD

委托方 Entrusted by: 北京光华荣昌

编制 File : 黄空曼 日期 Date: 2022.9.23

审核 Check : 刘亮 日期 Date: 2022.9.23

批准 Release: 李华 日期 Date: 2022.9.23

(上海汇众汽车制造有限公司检测中心测试专用章)

## Statement

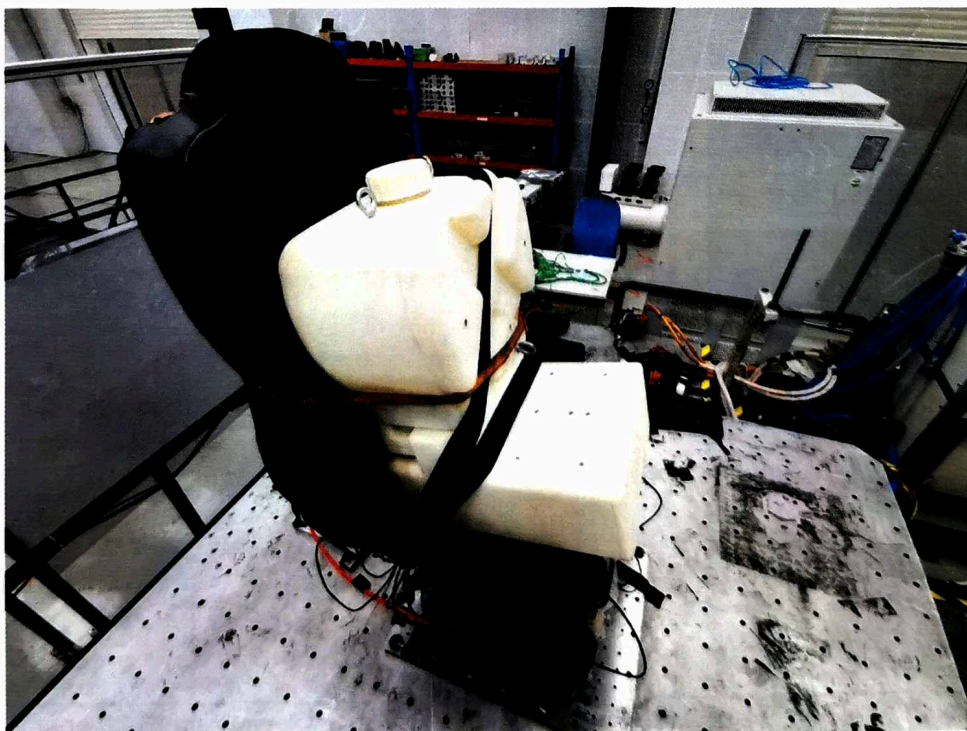
1. The test report is not valid without stamp of “测试专用章” (Test Specified Stamp) and Across-page seal.
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3. The test report is not valid without the signature of file, check and release.
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5. The entrusted party is only responsible for the test result of specimens delivered by the entrusting party.
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7. The Chinese test report has the priority in law than other language.



**Test Report Number: SHTC-MAST-22-04**

Interim: -  
Final: 1

<b>Project Title:</b>	Daimler_H6_Seat
<b>Customer:</b>	Daimler
<b>Requester:</b>	Wang Xue You
<b>Test Location:</b>	SHAC_TC
<b>Test Engineer:</b>	Liu Liang,Sun Qiu Yang,Huang Cen Min
<b>Test Sample:</b>	A9609109720 Climate Suspension Seat w/o pretensioner or DPD
<b>Bench Model</b>	MTS 353
<b>Testing Method</b>	Daimler 6 Axis Vibration Test Input
<b>Sensor Parts:</b>	Acceleration,Displacement
<b>Sensor Signal:</b>	RT(Real Time)
<b>Special Requirements:</b>	Monitor the specimen with acceleration and displacement
<b>Project Description:</b>	/
<b>Teat Date:</b>	03/08/2022 - 19/08/2022





## 1 Test build up and specification

### 1.1 Test set-up:



Image 01 Test without dummy set up



Image 02 Test without dummy set up



Image 03 Front View



Image 04 Left View



Image 05 Right View

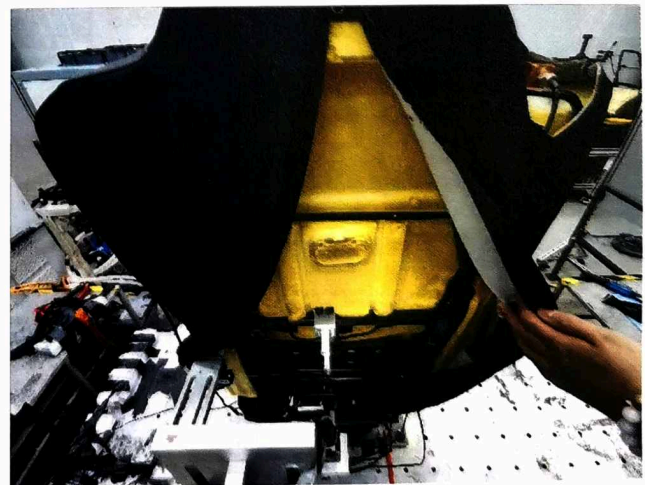


Image 06 Rear View



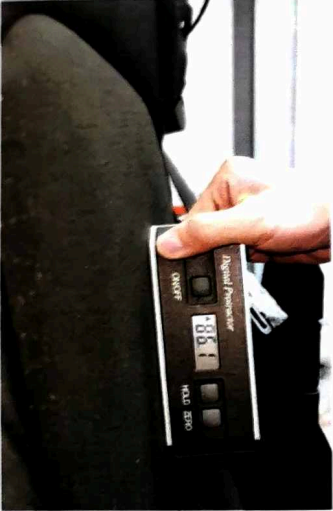


Image 07 Backrest angle: 93.9°




Image 08 Seat




Image 09 Seat angle: 16.7°


  


Image 10 0° is the Seat armrest angle parallel to the cab floor

1. Damper setting: notch 4 from below (there are 8 notches) 2. Longitudinal position: positioned fully back

### 1.2 Description of Signal input:

Rec.	Channel	Positive Polarity	Eng.	Note
Ch #	Name	Direction	Units	
1	DrSeSeRilf_a_x	Forward	m/s <sup>2</sup>	See Image 11
2	DrSeSeRilf_a_y	Left	m/s <sup>2</sup>	
3	DrSeSeRilf_a_z	Up	m/s <sup>2</sup>	
4	DrSeSeRilr_a_y	Left	m/s <sup>2</sup>	See Image 12
5	DrSeSeRilr_a_z	Up	m/s <sup>2</sup>	
6	DrSeSeRirf_a_x	Forward	m/s <sup>2</sup>	See Image 13
7	DrSeSeRirf_a_z	Up	m/s <sup>2</sup>	
8	DrSeSeRirr_a_z	Up	m/s <sup>2</sup>	See Image 14
9	DrSeSelf_a_x	Forward	m/s <sup>2</sup>	See Image 15
10	DrSeSelf_a_z	Up	m/s <sup>2</sup>	
11	DrSeSerf_a_x	Forward	m/s <sup>2</sup>	See Image 16
12	DrSeSerf_a_y	Left	m/s <sup>2</sup>	
13	DrSeSerf_a_z	Up	m/s <sup>2</sup>	
14	DrSeSerr_a_y	Left	m/s <sup>2</sup>	See Image 17



15	DrSeSerr_a_z	Up	m/s <sup>2</sup>	
16	DrSeSeBrlb_a_x	Forward	m/s <sup>2</sup>	See Image 18
17	DrSeSeBrIt_a_x	Forward	m/s <sup>2</sup>	See Image 19
18	DrSeSeBrIt_a_z	Up	m/s <sup>2</sup>	
19	DrSeSeBrrb_a_x	Forward	m/s <sup>2</sup>	See Image 20
20	DrSeSeBrrb_a_y	Left	m/s <sup>2</sup>	
21	DrSeSeBrrt_a_x	Forward	m/s <sup>2</sup>	See Image 21
22	DrSeSeBrrt_a_y	Left	m/s <sup>2</sup>	
23	DrSeSeBrrt_a_z	Up	m/s <sup>2</sup>	
24	DrSeSeBrrt_s_x	Forward	mm	
25	DrSeSeBrrt_s_y	Left	mm	
26	DrSeSeBrrt_s_z	Up	mm	

Table 1: Signal description

1.2 Install the sensor on the seat according to the position shown in the figure:

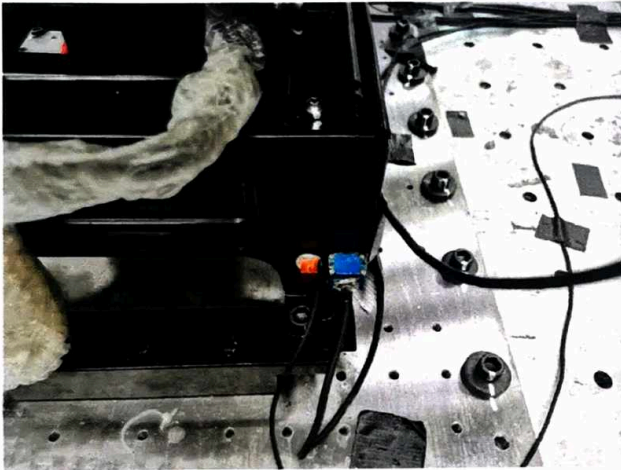


Image 11 Channel 1-3\_DrSeSeRilf\_a\_x,y,z

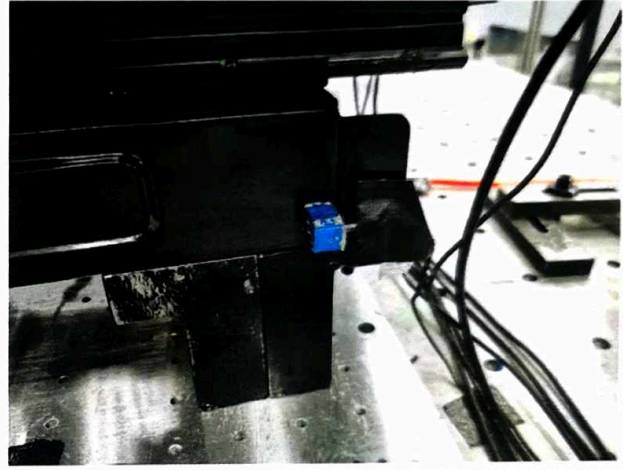


Image 12 Channel 4-5\_DrSeSeRilr\_a\_y,z



Image 13 Channel 6-7\_DrSeSeRirf\_a\_x,z

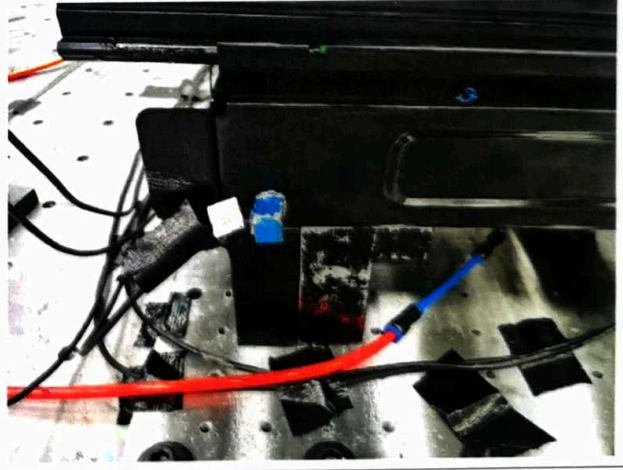


Image 14 Channel 8\_DrSeSeRirr\_a\_z



Image 15 Channel 9-10\_DrSeSelf\_a\_x,z

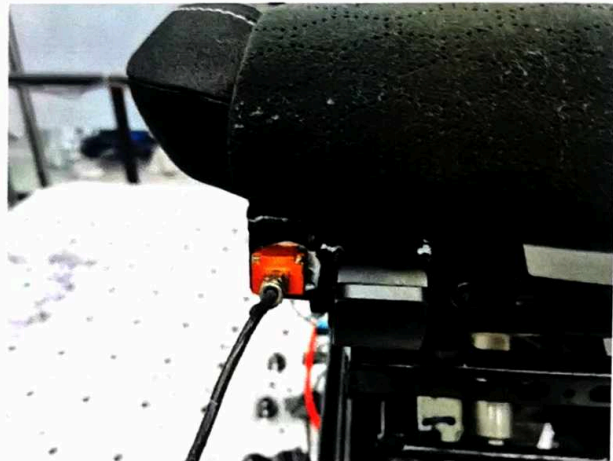


Image 16 Channel 11-13\_DrSeSerf\_a\_x,y,z



Image 17 Channel 14-15\_DrSeSerr\_a\_y,z



Image 18 Channel 16\_DrSeSeBrlb\_a\_x

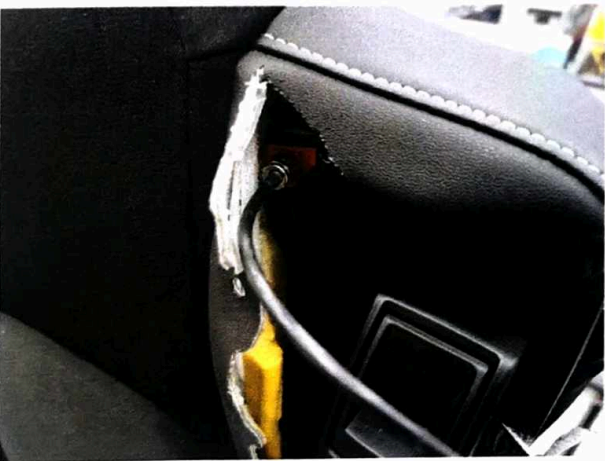


Image 19 Channel 17-18\_DrSeSeBrlt\_a\_x,z



Image 20 Channel 19-20\_DrSeSeBrrb\_a\_x,y



Image 21 Channel 21-23\_DrSeSeBrrt\_a\_x,y,z

1.3 Prepare a test dummy as shown below:



Image 22 Lower Part Weight

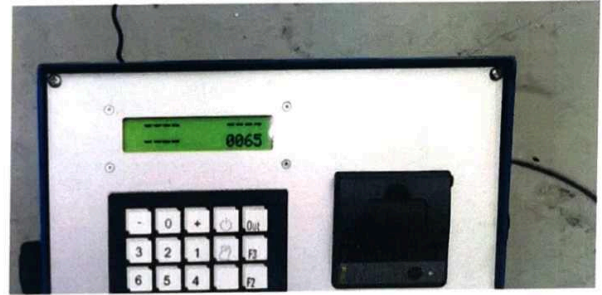


Image 23 Total Weight

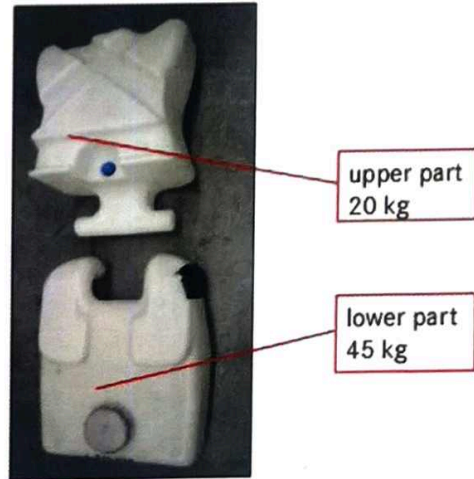
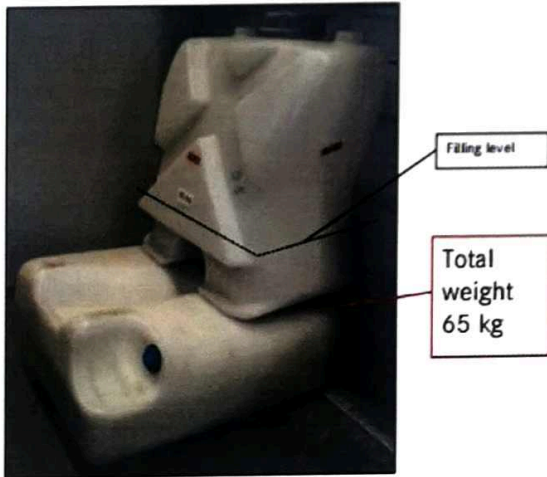


Image 24 Test Dummy



**1.5 Iterate the road profiles:**

Track	Length(s)
Track04+01_51kmh_T1_3_R3	99.5
Track05_35kmh_T3_3_R3	43.3
Track12_36kmh_T2_3_R1	144.6
Track09_BPR3_T1_3_R1	92.1
Track06_25kmh_T1_3_R1	59.8

**1.6 Start the test. The sequence file is shown below:**



**2. Load reference**

During this test, the drive files, which were generated during iteration, were played out using RPCpro TESTpro software.

During test phase the Test rig is controlled on displacement of longitudinal, lateral, vertical; and angle of roll, pitch, yaw.

**2.1 Test specifications**

Daimler test program (H6 seat) and customer' s requirements.

**2.2 Technical Requirements**

Type	Requirements
Seat Frame Structure	No crack or off-welding on seat frame (defect detection needed).
	No weird Sound or Noise.
	No deformation on Metal Sheet.
	No looseness of the screw (torque should be measured and mark should be made before test).
Seat Back Adjustment	Unlock smoothly to use, no feeling of abnormal block.
	Engaged tooth plate should not be slipped out by hand disturbing.
	The operating force of the recliner handle should be recorded before, in the middle of, and after the test.
	Seat Back Angle adjustment should be smooth, no feeling of abnormal block.
Seat Cushion	Cushion should be smooth to fold or lay down.
	No several deformation, crack on Seat Cushion Pan.
Whole Seat	No obvious deformation or damage on outlook appearance (Fabric cover,



	foam and plastic part).
	The waving value of longitudinal and latitudinous shaking by 350N loading. No standard value but to record every day. (acc.to displacement sensor).
	The clearance of longitudinal and latitudinous shaking by 70N loading. No standard value but to record every day. (acc.to displacement sensor).
Seat Belt system	Seat Belt is good to use after whole test mileage; No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected on the new designed retractor position.
Base Plate	No break of spot-welding. No break of looseness on the screw fixing seat and base plate.
Seat Suspension Frame	No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected; No air breakage of valve system or air bag; No function failure of suspension use.
Seat Frame Beams	No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected;
Tilt System	No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected; The new designed tilt structure showed a good performance during whole test mileage, no teeth slip occurred and the position could be maintained perfectly.
Sliding Rail	No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected; The sliding rail could be locked, unlocked or adjusted smoothly after whole test mileage.
Seat Back Frame	No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected; Especially no structure failure of curving and welding position detected.
Seat Riser	No crack, structure tearing, severe deformation or weld off detected on seat riser. The screw connection between rail and seat riser maintained well.
Dummy's position	A mark on the dummy should be made to record the position change, just use for position correction, no critical evaluation.

### 2.3 Test success items

Test results	
Seat Frame Structure	No crack or off-welding on seat frame.
	No weird Sound or Noise.
	No deformation on Metal Sheet.
	No looseness of the screw.
Seat Back Adjustment	Unlock smoothly to use, no feeling of abnormal block.
	Engaged tooth plate doesn't slipped out by hand disturbing.
	Seat Back Angle adjustment is smooth, no feeling of abnormal block.



Suspension	Frame Situation-no crack.
	No Abnormal Sound.
	Airbag Appearance Situation-no abrasion damage.
	Air Path Situation-no leakage or abrasion damage.
	Height Adjustment and Fast Lowering function normal.
	Sheet Metal Deformation-no Serious Deformation.
	Internal-Roller of suspension scissors-bracket Situation-working Smoothly.
	Damper Lever Oil Leakage-no Oil Leakage.
	No Screw Loosen.
Seat Cushion	Cushion is smooth to fold or lay down.
	No several deformation, crack on Seat Cushion Pan.
Whole Seat	No obvious deformation or damage..
Seat Belt system	Seat Belt is good to use after whole test mileage;
	No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected on the new designed retractor position.
Base Plate	No break of spot-welding.
	No break of looseness on the screw fixing seat and base plate.
Seat Suspension Frame	No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected; No air breakage of valve system or air bag; No function failure of suspension use.
Seat Frame Beams	No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected;
Tilt System	No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected; The new designed tilt structure showed a good performance during whole test mileage, no teeth slip occurred and the position could be maintained perfectly.
Sliding Rail	No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected; The sliding rail could be locked, unlocked or adjusted smoothly after whole test mileage.
Seat Back Frame	No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected; Especially no structure failure of curving and welding position detected.
Seat Riser	No crack, structure tearing, severe deformation or weld off detected on seat riser.
	The screw connection between rail and seat riser maintained well.



### 3 Test Result

#### 3.1 Test Log:

Date	Test-cycles (%)	Test result / remarks / particularities / failures Failures: Pos.Nr. / Part description / Part runtime / Failure description	Picture No.
3-8-22	0	Check OK.	
4-8-22	6	Check OK.	
5-8-22	18	Check OK.	
6-8-22	29	Check OK.	
7-8-22	40	Check OK.	
8-8-22	50	Check OK.	
9-8-22	59	Check OK. Sensor malfunction, test stopped.	
11-8-22	59	Goldrare engineer visit and sample full insection Check OK.	
12-8-22	65	Check OK.	
15-8-22	75	Check OK.	
17-8-22	84	Dummy has small displacement	
18-8-22	92	Check OK.	
19-8-22	100	The rivet head (left side) was abraded-off during 92% to 100% mileage.	See picture 40-42

#### 3.2 The waving value of longitudinal and latitudinous shaking by 350N loading:

		350N_X+	350N_X -	350N_Y+	350N_Y -
Day1(08/03)	Displacement	10.727mm	- 8.103mm	32.530mm	- 27.968mm
	Force	346.4N	354.9N	349.8N	355.4N
Day2(08/05)	Displacement	11.041mm	- 10.117mm	33.464mm	- 31.869mm
	Force	352.6N	350.5N	351.5N	352.7N
Day3(08/06)	Displacement	11.828mm	- 8.824mm	31.505mm	- 32.742mm
	Force	353.2N	354.1N	350.3N	354.7N
Day4(08/07)	Displacement	12.713mm	- 9.362mm	33.269mm	- 32.319mm
	Force	352.2N	351.6N	353.9N	353.3N
Day5(08/08)	Displacement	12.902mm	- 9.861mm	31.223mm	- 31.935mm
	Force	351.3N	353.2N	353.0N	350.9N



Day6(08/09)	Displacement	10.268mm	- 10.052mm	34.705mm	- 32.764mm
	Force	349.1N	349.8N	351.2N	349.5N
Day7(08/10)	Displacement	10.964mm	- 10.942mm	32.594mm	- 32.997mm
	Force	353.3N	352.4N	350.2N	352.9N
Day8(08/13)	Displacement	11.117mm	- 10.458mm	33.097mm	- 32.016mm
	Force	352.6N	351.7N	351.3N	351.1N
Day9(08/15)	Displacement	10.978mm	- 11.600mm	33.106mm	- 33.077mm
	Force	350.2N	353.5N	352.4N	351.1N
Day10(08/17)	Displacement	11.480mm	- 12.258mm	33.180mm	- 32.745mm
	Force	350.0N	350.1N	350.9N	350.6N
Day11(08/18)	Displacement	12.871mm	- 12.774mm	32.369mm	- 33.003mm
	Force	351.3N	350.9N	351.1N	351.7N
Day12(08/19)	Displacement	12.930mm	- 12.861mm	32.670mm	- 33.354mm
	Force	350.9N	351.6N	352.7N	352.5N

### 3.3 The waving value of longitudinal and latitudinous shaking by 70N loading:

		70N_X+	70N_X -	70N_Y+	70N_Y -
Day1(08/03)	Displacement	3.031mm	- 3.153mm	6.985mm	- 7.567mm
	Force	71.3N	70.6N	71.6N	71.0N
Day2(08/05)	Displacement	2.781mm	- 3.507mm	5.895mm	- 6.706mm
	Force	71.6N	70.4N	71.7N	70.5N
Day3(08/06)	Displacement	3.926mm	- 2.289mm	7.514mm	- 7.092mm
	Force	71.1N	70.3N	71.9N	71.7N
Day4(08/07)	Displacement	4.280mm	- 2.072mm	6.653mm	- 8.387mm
	Force	70.3N	70.4N	70.8N	70.1N



Day5(08/08)	Displacement	4.236mm	- 2.148mm	6.670mm	- 7.202mm
	Force	70.7N	70.1N	70.9N	70.3N
Day6(08/09)	Displacement	5.341mm	- 2.152mm	6.414mm	- 7.887mm
	Force	70.7N	70.7N	70.5N	70.8N
Day7(08/10)	Displacement	4.891mm	- 4.103mm	7.591mm	- 7.758mm
	Force	70.4N	71.3N	70.5N	70.6N
Day8(08/13)	Displacement	4.972mm	- 3.686mm	7.169mm	- 7.323mm
	Force	70.3N	71.1N	70.4N	70.7N
Day9(08/15)	Displacement	4.124mm	- 4.330mm	6.620mm	- 8.962mm
	Force	70.6N	70.8N	70.5N	70.4N
Day10(08/17)	Displacement	4.352mm	- 4.188mm	7.100mm	- 9.046mm
	Force	70.1N	70.9N	70.4N	70.6N
Day11(08/18)	Displacement	4.561mm	- 4.355mm	7.471mm	- 9.106mm
	Force	70.8N	70.3N	71.0N	70.8N
Day12(08/19)	Displacement	4.312mm	- 4.796mm	7.137mm	- 8.488mm
	Force	70.5N	70.3N	70.9N	70.7N



**3.4 The operating force of the recliner handle should be recorded before, in the middle of, and after the test:**

		1st	2nd	3rd
0%(Day08/03)	Backrest angle	73.1N	78.9N	68.9N
	Seat angle	56.4N	44.7N	39.3N
	Seat up	17.1N	19.0N	/
	Seat down	32.2N	29.4N	/
	Air Release	37.8N	32.2N	/
50%(Day08/09)	Backrest angle	64.9N	59.2N	64.1N
	Seat angle	47.2N	51.3N	49.7N
	Seat up	28.4N	32.0N	31.1N
	Seat down	47.2N	51.4N	51.0N
	Air Release	42.5N	42.3N	39.0N
100%(Day08/19)	Backrest angle	52.1N	51.7N	51.5N
	Seat angle	44.6N	42.0N	44.1N
	Seat up	25.1N	24.2N	22.8N
	Seat down	58.8N	50.0N	55.3N
	Air Release	34.3N	30.8N	29.4N

**4 Photos of failures during test**

No failure has been found during the test.

**5 Crack history**

Crack length in mm									
Crack-No.:									
Photo No.:									
Positions:									
Run time (%)									

NO Crack has been found during test.



## 6 Results of final check

6.1 Following are pictures of specimen after test:

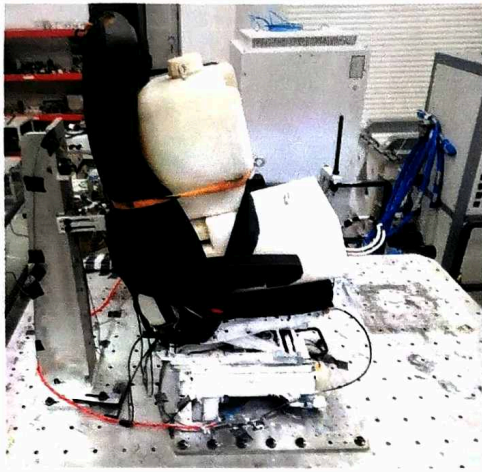


Image 25 After Test



Image 26 After Test



Image 27 After Test

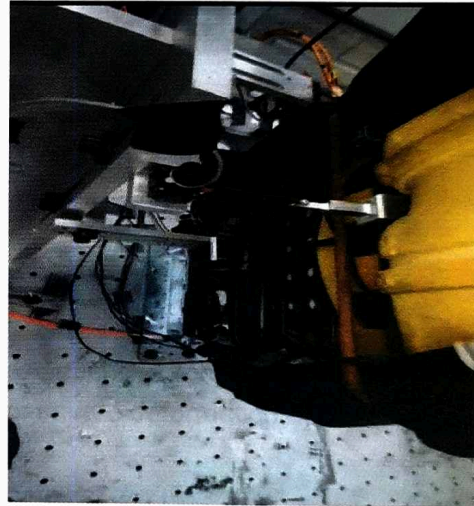


Image 28 After Test



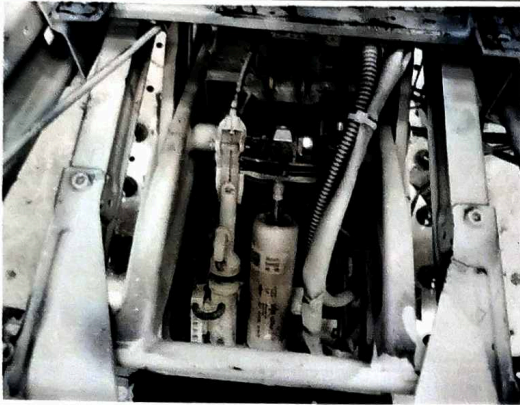
Image 29 After Test



Image 30 After Test



## 6.2 Result Summary:



No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected;  
No air breakage of valve system or air bag;  
No function failure of suspension use.

Image 31 Seat Suspension Frame



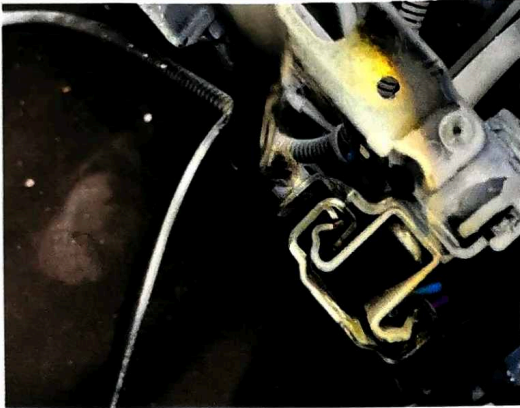
No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected;  
The new designed tilt structure showed a good performance during whole test mileage, no teeth slip occurred, and the position could be maintained perfectly.

Image 32 Tilt System



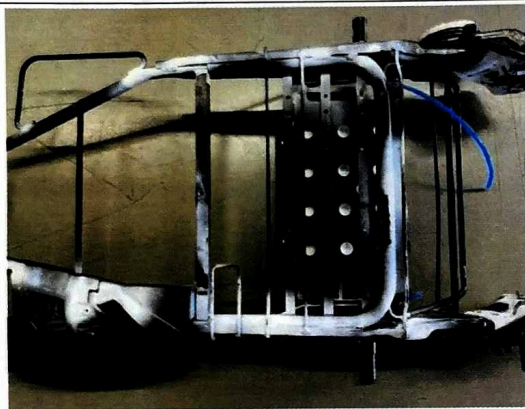
No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected;

Image 33 Seat Frame Beams



No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected;  
The sliding rail could be locked, unlocked or adjusted smoothly after whole test mileage.

Image 34 Rails



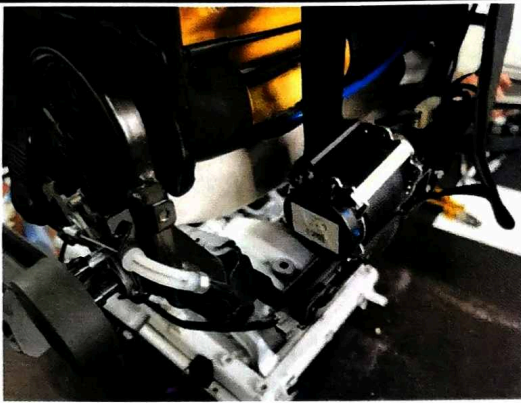
No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected;  
Especially no structure failure of curving and welding position detected.

Image 35 Seat Back Frame



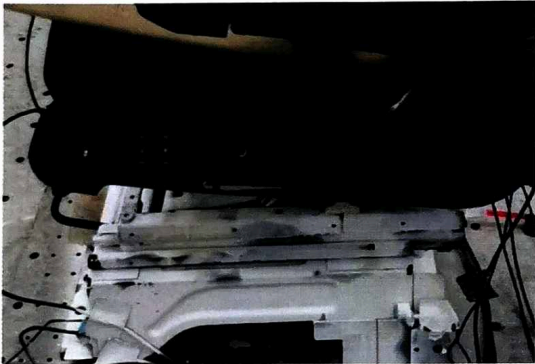
No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected;  
Damper and pneumatic functions are good to use.

Image 36 Damper and Valve System



Seat Belt is good to use after whole test mileage;  
No crack, structure broken, weld off, screw loosen or fall off, or severe deformation detected on the new designed retractor position.

Image 37 Seat Belt



No crack, structure tearing, severe deformation or weld off detected on seat riser.  
The screw connection between rail and seat riser maintained well.

Image 38 Seat Riser

### 6.3 Issue Report:



Image 39 PLAN A SHAFT



Image 41



Image 40



Image 42

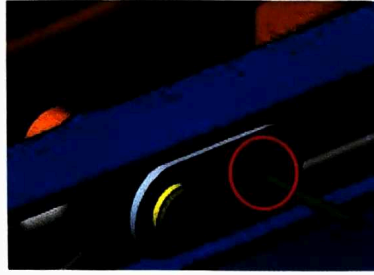


Image 43

The rivet head (left side) was abraded-off during 92% to 100%.

## 7 Conclusion / Recommendations

According to the full running mileage inspection result, the testing target had a good performance on structure strength and function maintaining. No frame structure, appearance or function failure detected. The only failure is The rivet head of Suspension shaft fell off during 92% - 100% due to the abrasion between scissors frame and the head. Space left for movement parts is not enough to guarantee the shaft well working in whole test mileage.

## 8 Plan

TIME	SAMPLE	JOB CONTENT