

Test Report No. 126KP0142-01

Vehicle Type / Type : ZN & GC/GF

Manufacturer : Toyota Motorsport GmbH

Test Report

With regard to uniform provisions concerning the approval of passenger cars with regard to braking

ECE-R 13H**including Supplement 6****Category of vehicle**

- M₁ M₁G
 N₁ N₁G

approval status	
<input type="checkbox"/>	New test report
<input checked="" type="checkbox"/>	Extension of previous test report no. 126KP0142-00
<input type="checkbox"/>	Granting of a type approval
<input type="checkbox"/>	Extension to type approval no. ...
<input type="checkbox"/>	Correction to type approval no. ...

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Manufacturer : **Toyota Motorsport GmbH**

0 General

- 0.1 Make (trade name of manufacturer) : TOYOTA
- 0.2 Type : ZN & GC/GF
- 0.2.1 Commercial description : Toyota GT86
- 0.4 Category of vehicle : M1
- 0.5 Manufacturer's name and address : Toyota Motorsport GmbH
Toyota-Allee 7
D-50858 Köln
- 0.5.1 Name and address of representative : N/A
- 0.6 Information folder :
- No. : ---
- Date of issue : ---
- Date of last change : ---
- 0.9 Location of the ECE Approval Mark : N/A

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1 Test vehicle(s)/-object(s):

- 1.1 Description : Representative vehicle
- Type : ZN & GC/GF
- Approval of base vehicle : ZN:
 E13*13HR00*13HR00*6046*00 or
 E13*13HR00*13HR00*6048*00
 GC/GF:
 E13*13HR00*13HR00*6049*00 or
 E13*13HR00*13HR00*6047*00
- Variant : ZN6
- VIN : JF1ZN6L81DG002914
- Engine type : FA20
- Braking system : TRD/BREMBO type MS220-18001
 Original brake system except the components mentioned below:
- Axle 1:
 6 piston fixed calliper ventilated disc brake
 Piston diameter 2x26 mm, 2x34 mm, 2x28 mm
 Outer disc diameter 355 mm
 Disc thickness 32 mm
 Brake pads BREMBO/FERODO FM1000
 Brake hoses BREMBO 47031-ZN600
- Axle 2:
 4 piston fixed calliper ventilated disc brake
 Piston diameter 2x30 mm, 2x28 mm
 Outer disc diameter 345 mm
 Disc thickness 28 mm
 Brake pads BREMBO/FERODO FM1000
 Brake hoses BREMBO 47031-ZN600
 incl. drum for parking brake in OE dimensions
- Tyres : 225/40R18 92Y (front & rear)
- Maximum speed : 226 km/h
- 1.2 Remarks : The test results are valid for all versions of the above mentioned vehicle variant.

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2 Test record

2.1 Place of test : ATP Papenburg

2.1.1 Period in which the tests were carried out : 2012-08-21

2.2 Parameter of the test area : Air temperatur 25°C,
Road surface dry,
Wind speed < 2,5 m/s

2.2.1 Equipment for measuring and testing : The test facilities and measuring equipment used were in compliance with the test requirements.

2.3 Test results

Vehicle mass at time of testing :

	unladen [kg]	laden [kg]
Axle 1	864	795
Axle 2	971	692
Total	1835	1487

2.3.1 Type 0 test

Engine disconnected

unladen

Dimension	Test speed	measured Brake efficiency *	measured operating force
	v (km/h)	(m/s ²)	(N)
Test Conditions			
BBA / Service brake	100	8,14	110
Kreis / Circuit I (diagonal splitted)	100	3,15	80
Ausfall / Failure EBS	100	8,14	110

laden

Dimension	Test speed	measured Brake efficiency	measured operating force
	v (km/h)	(m/s ²)	(N)
Test Conditions			
BBA / Service brake	100	6,91	110
Kreis / Circuit I (diagonal splitted)	100	2,46	65
Ausfall / Failure EBS	100	8,84	170

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2.3.2 Type 0 test

Dimension	Test speed	measured Brake efficiency	measured operating force
	v (km/h)	(m/s ²)	(N)
Test Conditions			
Service brake, Unladen, Engine connected	160	7,61	110
Service brake, Laden, Engine connected	160	9,38	170

Evaluation : No abnormal vibration, vehicle keeps in lane

2.3.3 Type I test

with repeated braking

Conditions during heating

Duration of a braking cycle	t (s):	45		
Number of brake cycles	n:	15		
Initial speed	v ₁ (km/h):	120		
Final speed	v ₂ (km/h):	60		
actuating force for attaining a deceleration of d _m =3 m/s ²	(N):	55		
Dimension	Test speed	measured Brake efficiency	measured operating force	
	v (km/h)	(m/s ²)	(N)	
Test Conditions				
Service brake (heated), laden, Engine disconnected	100	7,4	110	

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Conditions during recovery

Distance	m:	1500		
Number of stops	n:	4		
Initial speed	v ₁ (km/h):	50		
Final speed	v ₂ (km/h):	0		
Test Conditions	Dimension	Test speed	measured Brake efficiency	measured operating force
		v (km/h)	(m/s ²)	(N)
Service brake (recovered), laden, Engine disconnected		100	6,55	110

- 2.3.4 Response time at the brake actuator : Not modified, the approvals of base vehicle are still valid.
- 2.3.5 Distribution of braking among the axles of the vehicle : Not modified, the approvals of base vehicle are still valid.
- 2.3.6 Vehicle equipped to tow a trailer with electrical service brake : No
- 2.3.7 The vehicle is equipped with ALS : Not modified, the approvals of base vehicle are still valid.
- 2.3.8 Parking brake test
- 2.3.8.1 regarding to Annex 3, 2.3. ECE-R 13H
- 2.3.8.1.1 Vehicle (laden) without trailer
- Vehicle mass : 1835 kg
- operating forces
ECE-R 13H: 20 %
- Stop on uphill gradient : < 400 N
 - Stop on downhill gradient : < 400 N
- 2.3.8.1.2 Vehicle (laden) with trailer : N/A

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2.3.9.2 Dynamic performance of parking brake : Type 0 test, disconnected, vehicle laden

Dimension	Test speed	measured Brake efficiency	measured operating force
	v (km/h)	(m/s ²)	(N)
Test Conditions			
Mean fully developed deceleration	30 auf / to 0	2,4	< 400 N
Reached deceleration immediately before the vehicle stops	immediately before the vehicle stops	2,7	< 400 N

2.3.9.3 regarding to 5.2.19., ECE-R 13H : N/A

2.3.9.4 regarding to 5.2.2.4., ECE-R 13H : Not modified, the approvals of base vehicle are still valid.

2.3.10 Alarm devices : Not modified, the approvals of base vehicle are still valid.

2.3.11 Brake characteristics regarding to 5.1.2.1., ECE-R 13H : Satisfied

2.3.12 Results of ALS-test : To demonstrate that the modification of the brake system has no influence to the ALS functionality an exercise to compare OE and TRD/BREMBO brake had been carried out. The friction curves of these brake systems are comparable. Therefore the results in the approvals of base vehicle regarding ALS functionality are still valid.

2.4 Additional requirements

2.4.1 General requests acc. 4., Annex 6, ECE-R 13H : Not modified, the approvals of base vehicle are still valid.

2.4.2 The vehicle is according to Annex 3, ECE-R 64 : No use of temporary-use spare wheel/tire

2.4.3 Requests according : Satisfied

- 5.2.11.1, ECE-R 13H
- 5.2.11.2, ECE-R 13H (including subsections 5.2.11.2.1 and 5.2.11.2.2)

2.4.4 General requests concerning - Annex 8, ECE-R 13H : Not modified, the approvals of base vehicle are still valid.

Test Report No. 126KP0142-01
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2.5 Remarks

2.5.1 Specifications for analogy further equipment : The brake system can not be used in combination with 16 and/or 17 inch wheels incl. T-wheel/tire combination.

3 Appendices

1 : List of modifications

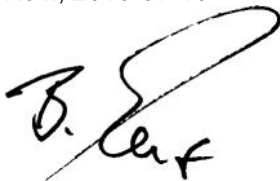
4 Statement of conformity:

The type described above is - i n c o m p l i a n c e - with the Test Specification mentioned above.

This Test Report is - i n c o m p l i a n c e - with revision 01 of the guidelines issued by the Kraftfahrt-Bundesamt for this kind of products subject to approval.

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Köln, 2013-07-16



Dipl.-Ing. Boris Lenz

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List of modifications**Appendix 1**

Correction of : ---

Modification of : ---

Addition of : Vehicle type GC/GF

Deletion of : ---