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THE UNITED KINGDOM VEHICLE APPROVAL AUTHORITY

Rev 1/03



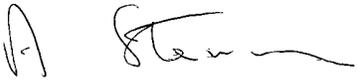
COMMUNICATION CONCERNING THE APPROVAL GRANTED OF  
A REPLACEMENT BRAKE LINING ASSEMBLY OR REPLACEMENT  
DRUM LINING PURSUANT TO ECE REGULATION NO: 90.01

Approval No: 90R – 01184 / 3622

1. Applicant's name and address:  
Juratek Ltd. Unit 16, Carcroft Enterprise Park, Station Road, Doncaster DN6 8DD
2. Manufacturer's name and address:
3. Make and type of brake lining assembly: DP11453.
4. Make and type of brake lining: LE TD3 GG
5. Vehicles/axles/brakes for which the brake lining assembly/drum brake lining type qualifies as original brake lining assembly: Not applicable
6. Vehicles for which the brake lining assembly qualifies as replacement brake lining assembly. See manufacturers documents :-

An executive agency of the Department for Transport



7. Submitted for approval on: 22nd March 2007
8. Technical Service responsible for approval tests: Vehicle Certification Agency
- 8.1 Date of test report: 13/08/06, 20/08/06, 15/08/06.
- 8.2 Number of test report: VSG 076369, VSG078081, VSG078079.
9. Approval GRANTED
10. Place: BRISTOL
11. Date: 2 APRIL 2007
12. Signature:  A. W. STENNING  
Head of Product Certification
13. Annexed to this communication is a list of documents in the approval file deposited at the administrative services having delivered the approval and which can be obtained upon request.

VSG177007



22/03/07	<b>VCA Job No</b>	VSG177007
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Dear Claire,

Please find enclosed the necessary documentation for you to submit applications for approval for various brake lining assemblies DP11453 in LE TD3 GG material pursuant to ECE Regulation No. 90/1. This application is on behalf of Juratek Ltd and cross-references to our DP LE TD3 GG application details. We would like the application made to the VCA; I have addressed the formal letter of application accordingly.

The documents contained are: -

1. Formal letter of application
2. Manufacturers declarations
3. Lab test results :-
  - Friction test results
  - Shear test results
  - Compressibility test results
4. Vehicle fitment details
5. Disc pad assembly drawings
6. General disc pad marking drawing

**Please note: Allocated with E11 90R-01184/3622 as a provisional number.  
This approval is based on VSG076369, VSG078081, VSG078082 and VSG078079  
plus additional OE Materials testing on VSG076364 and VSG078099**

Yours sincerely,



Susan Owens  
Q.B.T.





22/03/07	<b>VCA Job No</b>	VSG177007
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For vehicles / axles / brakes for which the lining assembly qualifies as replacement brake lining assembly, see following application list.

Assembly Number	Equivalent to	Also supplied as Assembly Number
DP11453 LE TD3 GG	Equivalent to	
	Equivalent to	

Yours faithfully



Susan Owens  
Q.B.T.



22/03/07

VCA Job No

VSG177007

## Manufacturer's Declaration

for granting of Approval for replacement brake lining according to ECE Regulation No. 90/1.

We, the company

declare herewith that

Replacement pad assemblies DP11453 LE TD3 GG

are produced in our factory

We certify that no application has been made regarding this permission/approval by us or by companies appointed by us in countries which as contract parties would also be entitled to grant permission/approval.

We are aware of the following: -

A type marking of vehicles/vehicle components of the above mentioned type with the officially assigned approval mark can only be granted if the products have been manufactured in the above mentioned factory or at one of our listed and approved manufacturing sites, and if they comply with the official approval documents.

Companies manufacturing products for our company or under license may not use the officially assigned approval mark for vehicles/vehicle components produced at their factories unless they are listed as an approved manufacturing site, and fully comply with our quality procedures.

A marking of vehicles/vehicle components of the above mentioned type with different factory or trade marks but the same approval mark is only permissible if written consent has been obtained from the Vehicle Certification Agency.



Susan Owens  
Q.B.T.



22/03/07	VCA Job No	VSG177007
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### Friction test results

Conducted in accordance with Annex 8, of ECE Regulation No. 90 Rev1 including supplement 2 to the 01 series of amendments. (TRANS/SC1/WP29/GRRF/R90 Rev 1).

Type of assembly: Part Number DP11094 in material LE TD3 GG  
(Previously agreed single test reference)

Type of test:	Constant torque (para. 2.2.2.2)
$\mu_{op: 1}$	0.354
$\mu_{op: 2}$	0.361
$\mu_{min:}$	0.278
$\mu_{max:}$	0.422

Test dates: 02/06/2006



Susan Owens  
Q.B.T.



22/03/07	VCA Job No	VSG177007
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### Bench tests

Manufacturer:			
Type of brake lining assy:	DP11094 LE TD3 GG	Page	1/2

1. Shear strength test<sup>1</sup>  
(5.3.2.1 of ECE Regulation No. 90 Rev 1)

- Sample

Type of assembly: DP11094 LE TD3  
GG

Shear area [cm<sup>2</sup>]: 43.46

- Shear strength measured

Mean value [N/cm<sup>2</sup>]: 630

Required [N/cm<sup>2</sup>]: 250

Test date: 03/06/2006

1) Test procedure according to ISO Standard 6312 (2001)



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22/03/07	VCA Job No	VSG177007
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Manufacturer:			
Type of brake lining assy:	DP11094 LE TD3 GG	Page	2/2

2. Compressibility test<sup>2</sup>  
(5.3.2.2 of ECE Regulation No. 90 Rev 1)

- Sample

Type: III  
 Type of assembly: DP11094 LE TD3  
 GG  
 Thickness,  $d_0$  (nominal value) [mm]: 18.5  
 Pad area [cm<sup>2</sup>]: 43.464  
 Ram dia (corresponding to caliper piston dia) [mm]: 54

- Compressibility at specific surface pressure of 8000 kPa

Measured at ambient temperature

Mean value:  $\frac{d_4 - d'_3}{d_0} = 0.16 \%$

Required:  $\leq 2\%$

Measured at 400°C

Mean value:  $\frac{d_4 - d'_3}{d_0} = 0.65\%$

Required:  $\leq 5\%$

Test dates: 03/06/2006

2) Test procedure according to ISO Standard 6310 (2001)



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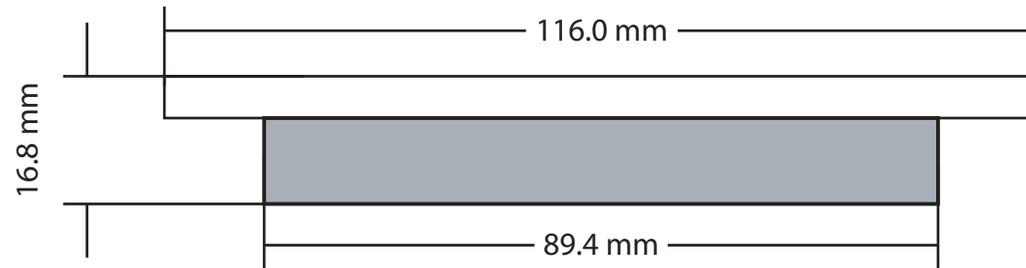
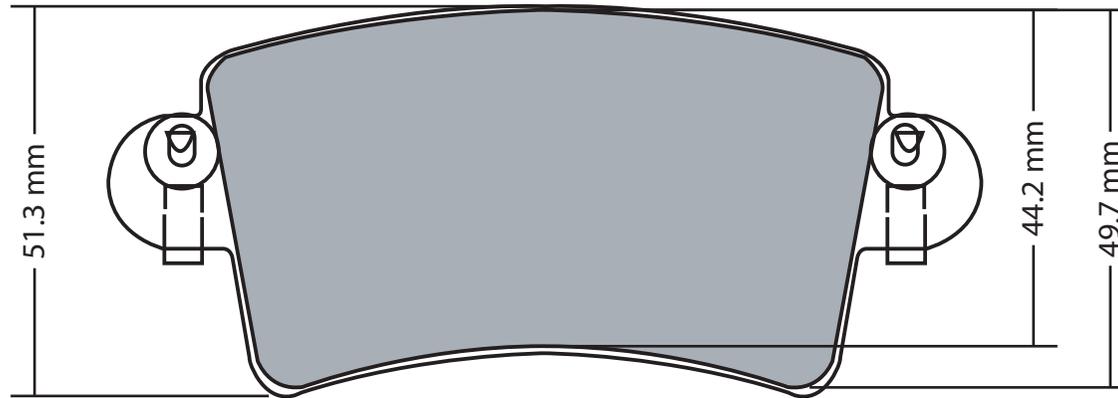


MAKE	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5	F/R	D	A	T	E	OE Caliper Manufacturer	S/V Dr	Disc / Drum / Dia	Max Th Disc / Shoe Width
DP11453	NISSAN (includes MOTOR IBERICA)	Interstar	LH35	3.5T		R	10	01			Bosch	S	305	12
DP11453	NISSAN (includes MOTOR IBERICA)	Interstar	LM35	3.5T		R	10	01			Bosch	S	305	12
DP11453	NISSAN (includes MOTOR IBERICA)	Interstar	MH35	3.5T		R	10	01			Bosch	S	305	12
DP11453	NISSAN (includes MOTOR IBERICA)	Interstar	MM33	3.3T		R	10	01			Bosch	S	305	12
DP11453	NISSAN (includes MOTOR IBERICA)	Interstar	MM35	3.5T		R	10	01			Bosch	S	305	12
DP11453	NISSAN (includes MOTOR IBERICA)	Interstar	SL28	2.8T		R	10	01			Bosch	S	305	12
DP11453	NISSAN (includes MOTOR IBERICA)	Interstar	SL33	3.3T		R	10	01			Bosch	S	305	12
DP11453	NISSAN (includes MOTOR IBERICA)	Interstar	SM33, 35	3.5T		R	10	01			Bosch	S	305	12
DP11453	OPEL	Movano	2.5 Diesel			R	10	00			Bosch	S	305	12
DP11453	OPEL	Movano	2.8 Turbo Diesel			R	10	00			Bosch	S	305	12
DP11453	RENAULT	Master 98-->	T28, T33, T35			R	10	00			Bosch	S	305	12
DP11453	RENAULT	Master 98-->	T28, T33, T35			R	10	00			Bosch	S	305	12
DP11453	VAUXHALL	Movano	2.5 Diesel			R	10	00			Bosch	S	305	12
DP11453	VAUXHALL	Movano	2.8 Turbo Diesel			R	10	00			Bosch	S	305	12

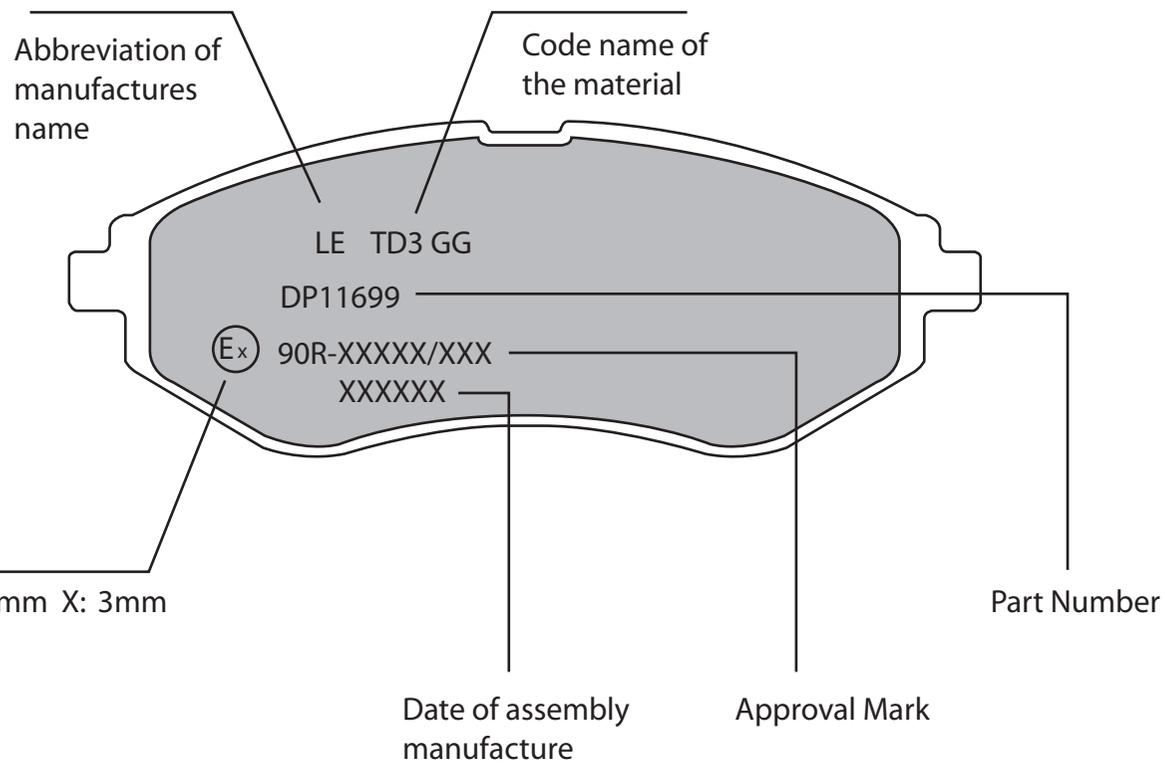


CALIPER ACTUATION	BRAKING SPLIT F/R, DIAG or H / I	CALIPER PAD		HERST NUMBER	TYP / SCHL NUMBER	MAX SPEED Km/h	80% V MAX Km/h	VEHICLE /		ENERGY FACTOR .5 MV 2	MAXIMUM ROLLING RADIUS	INERTIA UNLADEN	VEHICLE INERTIA LADEN
		PISTON DIA	FRICTION AREA mm^2					AXLE WEIGHT UN-LADEN	VEHICLE WEIGHT LADEN				
Hyd	H / I	1x 42	3698	3004		150	120	3500	25200000	0.33	0	60.984	
Hyd	H / I	1x 42	3698	3004		150	120	3500	25200000	0.33	0	60.984	
Hyd	H / I	1x 42	3698	3004		150	120	3500	25200000	0.33	0	60.984	
Hyd	H / I	1x 42	3698	3004		150	120	3500	25200000	0.33	0	60.984	
Hyd	H / I	1x 42	3698	3004		150	120	3500	25200000	0.33	0	60.984	
Hyd	H / I	1x 42	3698	3004		150	120	2800	20160000	0.33	0	48.7872	
Hyd	H / I	1x 42	3698	3004		150	120	3300	23760000	0.33	0	57.4992	
Hyd	H / I	1x 42	3698	3004		150	120	3500	25200000	0.33	0	60.984	
Hyd	H / I	1x 42	3698	3004		150	120	3500	25200000	0.33	0	60.984	
Hyd	H / I	1x 42	3698	3004		150	120	3500	25200000	0.33	0	60.984	
Hyd	Diag	1x 42	3698	3004		150	120	3500	25200000	0.33	0	60.984	
Hyd	Diag	1x 42	3698	3004		150	120	3500	25200000	0.33	0	60.984	
Hyd	H / I	1x 42	3698	3004		150	120	3500	25200000	0.33	0	60.984	
Hyd	H / I	1x 42	3698	3004		150	120	3500	25200000	0.33	0	60.984	





Material Area			Drawn By	Description	Issue No.	Part No.	 <b>DP11453</b>
3698.7 mm				<b>Disc Pad Assembly</b>	<b>1</b>		
Modification	Initial Date	Date		General Tolerance	<b>± 0.25mm</b>		Not To Scale



E: 4.5mm X: 3mm

Material Area			Drawn By	Description <b>Disc Pad Assembly</b>	Issue No. <b>1</b>	Part No.
Modification	Initial Date	Date	General Tolerance		<b>± 0.25mm</b>	

