



VCA Headquarters

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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-01183/3379

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: DP7797, DP9942.

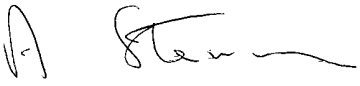
4. Make and type of brake lining: LE M10B FF

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: 6 December 2006
8. Technical Service responsible for approval tests: Vehicle Certification Agency
- 8.1 Date of test report: 14/08/06, 4/10/06, 20/11/06.
- 8.2 Number of test report: VSG 076368, VSG 078083, VSG 078084.
9. Approval GRANTED
10. Place: BRISTOL
11. Date: 27 MARCH 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.

VSG173050



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| 06/12/06 | VCA Job No | VSG173050 |
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Dear Ted,

Please find enclosed the necessary documentation for you to submit applications for approval for various brake lining assemblies DP7797, DP9942 in LE M10B FF material pursuant to ECE Regulation No. 90/1. This application is on behalf of Juratek Ltd and cross-references to our DP LE M10B FF 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-01183/3379 as a provisional number. This approval is based on VSG076368, VSG078083 and VSG078084 plus additional OE Materials testing on VSG075132.

Yours sincerely,



Susan Owens
Q.B.T.



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| 06/12/06 | VCA Job No | VSG173050 |
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Vehicle Certification Agency
1 Eastgate Office Centre
Eastgate Road
Bristol
BS5 6XX

Letter of application for an approval pursuant to ECE Regulation No. 90/1

Dear Sirs,

Herewith we apply for an approval for our brake lining assembly pursuant to ECE Regulation No. 90/1.

Applicants name and address:

Juratek Ltd. Unit 16, Carcroft Enterprise Park, Station Road, Doncaster DN6 8DD

Manufacturers name and address:

| | |
|--|-----------------|
| Make and type of brake lining | LE M10B FF |
| Make and type of brake lining assembly | as listed below |

| Assembly Number | Assembly Contains...(see enclosed drawings) | Material Code |
|-----------------|--|---------------|
| DP7797 | 2 pads with spring wear indicators , 2 pads with spring wear indicators (handed) | LE M10B FF |
| DP9942 | 2 plain pads, 2 pads with spring wear indicators | LE M10B FF |
| | | |
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| 06/12/06 | VCA Job No | VSG173050 |
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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 |
|-------------------|---------------|----------------------------------|
| DP7797 LE M10B FF | Equivalent to | SLB175 leca- M10B FF |
| DP9942 LE M10B FF | Equivalent to | SLB370 leca- M10B FF |
| | Equivalent to | |

Yours faithfully



Susan Owens
Q.B.T.



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| 06/12/06 | VCA Job No | VSG173050 |
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Manufacturer's Declaration

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

We, the company Juratek Ltd.

declare herewith that

Replacement pad assemblies DP7797 LE M10B FF, DP9942 LE M10B FF,

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.



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| 06/12/06 | VCA Job No | VSG173050 |
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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 DP11011 in material 1019B
(Previously agreed single test reference)

| | |
|---------------|---------------------------------|
| Type of test: | Constant torque (para. 2.2.2.2) |
| $\mu_{op: 1}$ | 0.311 |
| $\mu_{op: 2}$ | 0.332 |
| $\mu_{min:}$ | 0.208 |
| $\mu_{max:}$ | 0.431 |

Test dates: 08/06/2006



Susan Owens
Q.B.T.



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| 06/12/06 | VCA Job No | VSG173050 |
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Bench tests

| | | | |
|----------------------------|--------------------|------|-----|
| Manufacturer: | | | |
| Type of brake lining assy: | DP11011 LE M10B FF | Page | 1/2 |

1. Shear strength test¹
(5.3.2.1 of ECE Regulation No. 90 Rev 1)

- Sample

Type of assembly: DP11011 LE M10B FF
Shear area [cm²]: 43.24

- Shear strength measured

Mean value [N/cm²]: 634.6
Required [N/cm²]: 250

Test date: 08/06/2006

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



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|----------------------------|--------------------|------|-----|
| Manufacturer: | | | |
| Type of brake lining assy: | DP11011 LE M10B FF | Page | 2/2 |

2. Compressibility test²
(5.3.2.2 of ECE Regulation No. 90 Rev 1)

- Sample

Type: III
 Type of assembly: DP11011 LE M10B FF
 Thickness, d_0 (nominal value) [mm]: 12.9
 Pad area [cm²]: 43.24
 Ram dia (corresponding to caliper piston dia) [mm]: 51.48

- Compressibility at specific surface pressure of 8000 kPa

Measured at ambient temperature

$$\text{Mean value: } \frac{d_4 - d'_3}{d_0} = 0.23 \%$$

Required: $\leq 2\%$

Measured at 400°C

$$\text{Mean value: } \frac{d_4 - d'_3}{d_0} = 0.838\%$$

Required: $\leq 5\%$

Test dates: 085/062/2006

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



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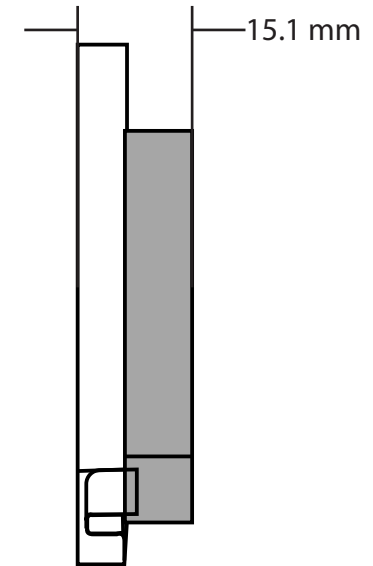
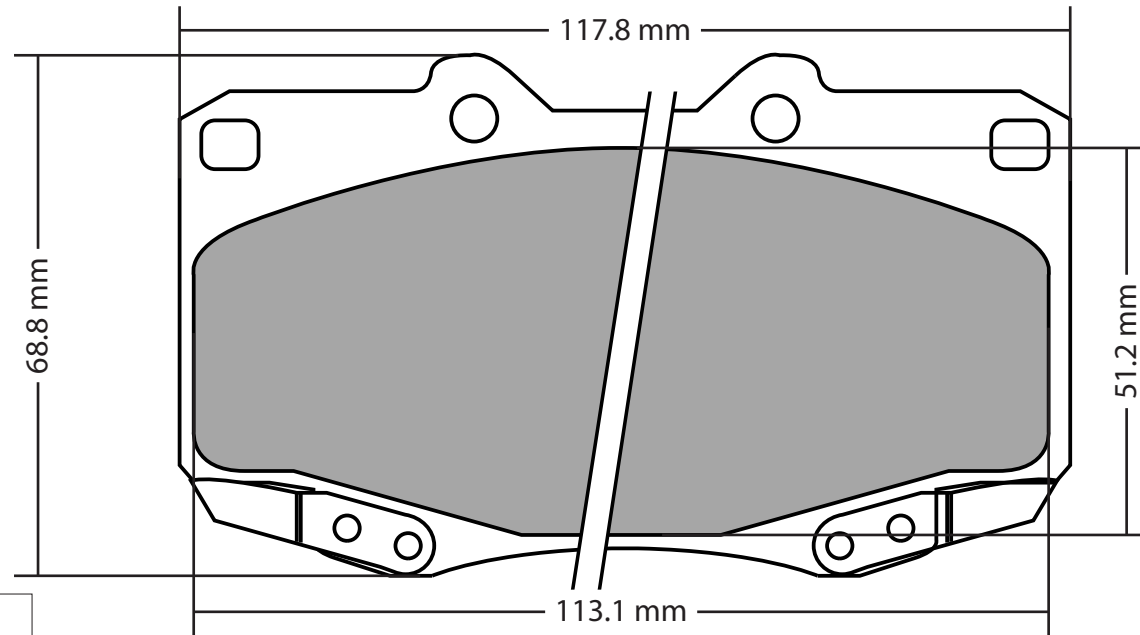
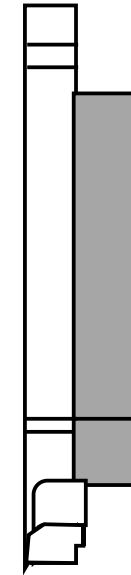
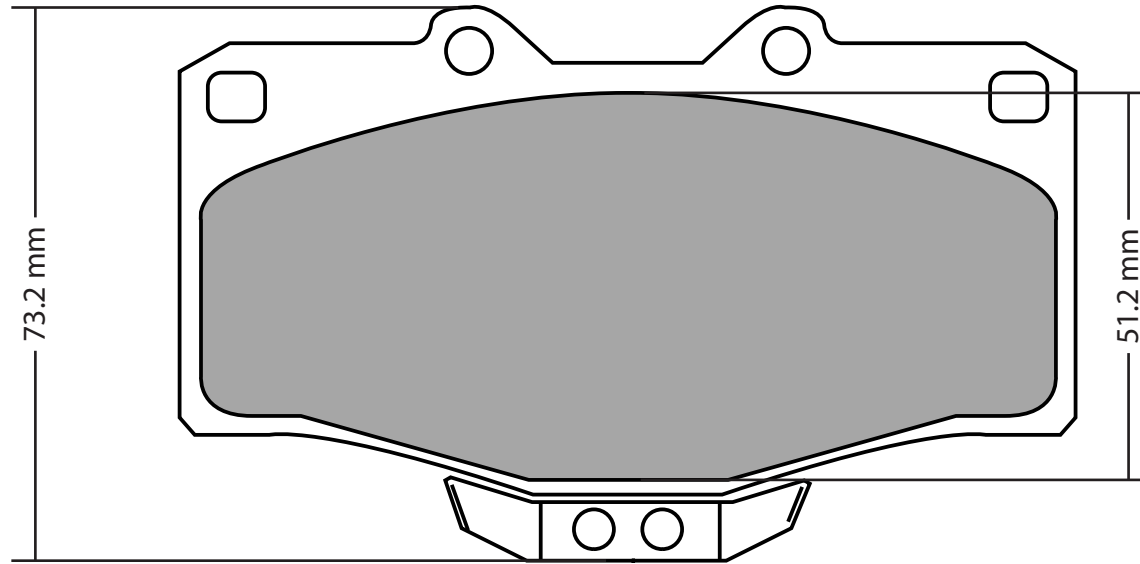



| MAKE | MODEL 1 | MODEL 2 | MODEL 3 | MODEL 4 | MODEL 5 | F/R | D | A | T | E | OE Caliper Manufacturer | S/V Dr | Disc / Drum / Dia | Max Th Disc / Shoe Width |
|--------|------------|-------------------|---------------------------------------|------------|---------|-----|----|----|----|----|----------------------------|-----------|-------------------------|-----------------------------------|
| | | | | | | | | | | | | | | |
| DP7797 | TOYOTA | 4 Runner (-->96) | 2.4 (22RE) | | | F | 08 | 88 | 01 | 93 | Sumitomo | V | 289 | 20 |
| DP7797 | TOYOTA | Landcruiser -->96 | 3.0, 3.4, 4.0, 4.2, 4.5 | ABS | | F | 01 | 90 | 08 | 92 | Sumitomo | V | 285 | 25 |
| DP7797 | TOYOTA | Landcruiser -->96 | 3.0, 3.4, 4.0, 4.2, 4.5 | ABS | | F | 08 | 92 | 04 | 96 | Sumitomo | V | 312 | 32 |
| DP7797 | TOYOTA | Hi-Lux (88-94) | 2.0, 2.2 (RN, YN106, RN, YN110 - 4x4) | | | F | 08 | 88 | 09 | 94 | Sumitomo | V | | |
| DP7797 | TOYOTA | Hi-Lux (88-94) | 2.4 (LN105, RN106 - 4x4) | | | F | 08 | 88 | 09 | 94 | Sumitomo | V | | |
| DP7797 | TOYOTA | Hi-Lux (94-->) | 2.2 (RN106, RN110) | | | F | 09 | 94 | | | Sumitomo | V | | |
| DP7797 | TOYOTA | Hi-Lux (94-->) | 2.4 (LN85, LN90, LN108, LN110) | 4x4 | | F | 09 | 94 | | | Sumitomo | V | | |
| DP7797 | VOLKSWAGEN | Taro | 1.8, 2.5 Diesel | 4x4 | | F | 01 | 89 | 07 | 96 | Sumitomo | V | 257 | 25 |
| DP9942 | TOYOTA | Hi-Lux (88-94) | 1.8 (YN85 - RWD) | | | F | 08 | 88 | 09 | 94 | Sumitomo | V | 257 | 25 |
| DP9942 | TOYOTA | Hi-Lux (94-->) | 2.4 (LN85, LN90, LN108, LN110) | except 4x4 | | F | 09 | 94 | | | Sumitomo | V | | |



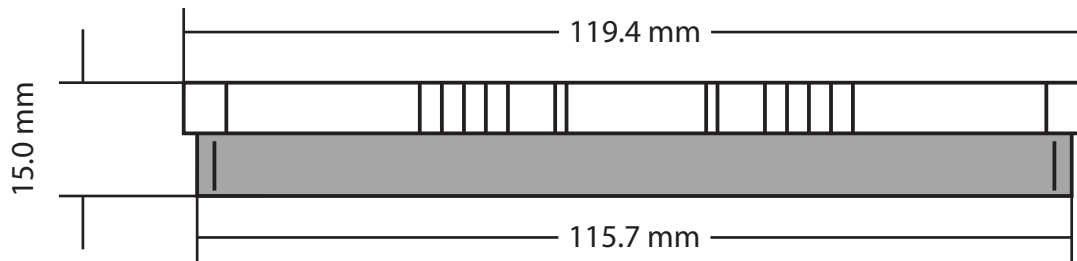
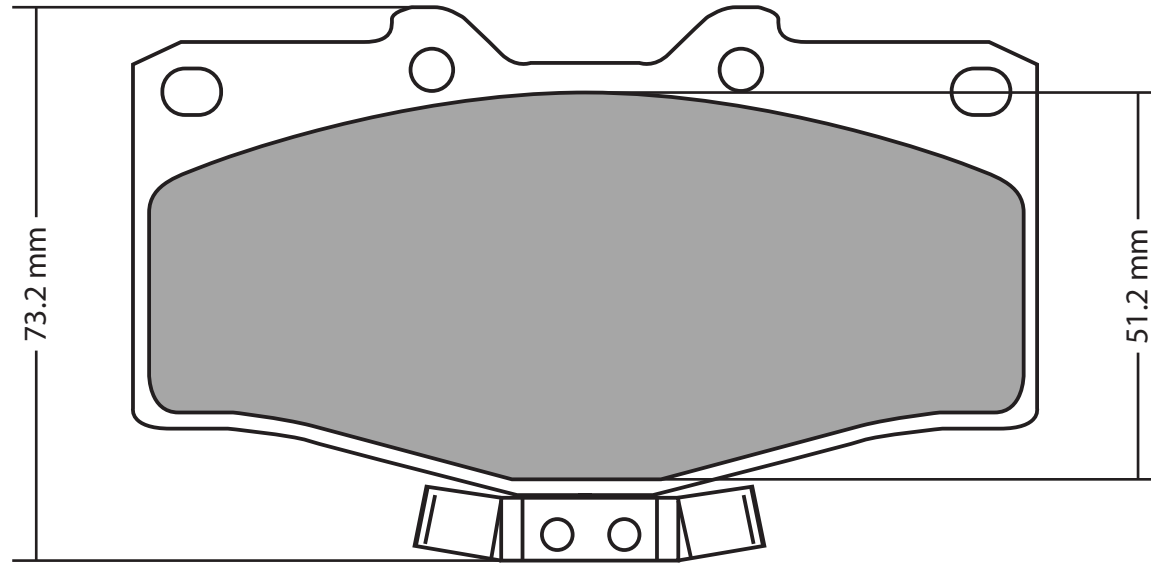
| CALIPER ACTUATION | BRAKING SPLIT F/R, DIAG or H / I | CALIPER PISTON DIA | HERST NUMBER | TYP / SCHL NUMBER | MAX SPEED Km/h | 80% V MAX Km/h | VEHICLE / | | ENERGY FACTOR .5 MV 2 | MAXIMUM ROLLING RADIUS | INERTIA UNLADEN | VEHICLE INERTIA LADEN |
|----------------------|--|--------------------------|-----------------|----------------------|----------------------|----------------------|----------------------------|----------------------------|-----------------------------|------------------------------|--------------------|-----------------------------|
| | | | | | | | AXLE WEIGHT UN-LADEN | VEHICLE WEIGHT LADEN | | | | |
| Hyd | | | 7104 | 217, 264 | 165 | 132 | 1775 | 2510 | 21867120 | 0.33 | 74.4195375 | 105.235515 |
| Hyd | | | 7104 | 369, 370, 396, | 155 | 124 | 1725 | 2800 | 21526400 | 0.33 | 72.3232125 | 117.3942 |
| Hyd | | | 7104 | 369, 370, 396, | 155 | 124 | 1725 | 2800 | 21526400 | 0.33 | 72.3232125 | 117.3942 |
| Hyd | | | 7104 | | 150 | 120 | 1265 | 2460 | 17712000 | 0.33 | 53.0370225 | 103.13919 |
| Hyd | | | 7104 | | 150 | 120 | 1265 | 2460 | 17712000 | 0.33 | 53.0370225 | 103.13919 |
| Hyd | | | 7104 | 521, 525, 520, | 145 | 116 | 1400 | 2515 | 16920920 | 0.33 | 58.6971 | 105.4451475 |
| Hyd | | | 7104 | 521, 525, 520, | 145 | 116 | 1400 | 2515 | 16920920 | 0.33 | 58.6971 | 105.4451475 |
| Hyd | | | | | 150 | 120 | 1265 | 2460 | 17712000 | 0.33 | 53.0370225 | 103.13919 |
| Hyd | | | 7104 | 510, 511, 512 | 150 | 120 | 1265 | 2460 | 17712000 | 0.33 | 53.0370225 | 103.13919 |
| Hyd | | | 7104 | 521, 525, 520, | 145 | 116 | 1400 | 2515 | 16920920 | 0.33 | 58.6971 | 105.4451475 |




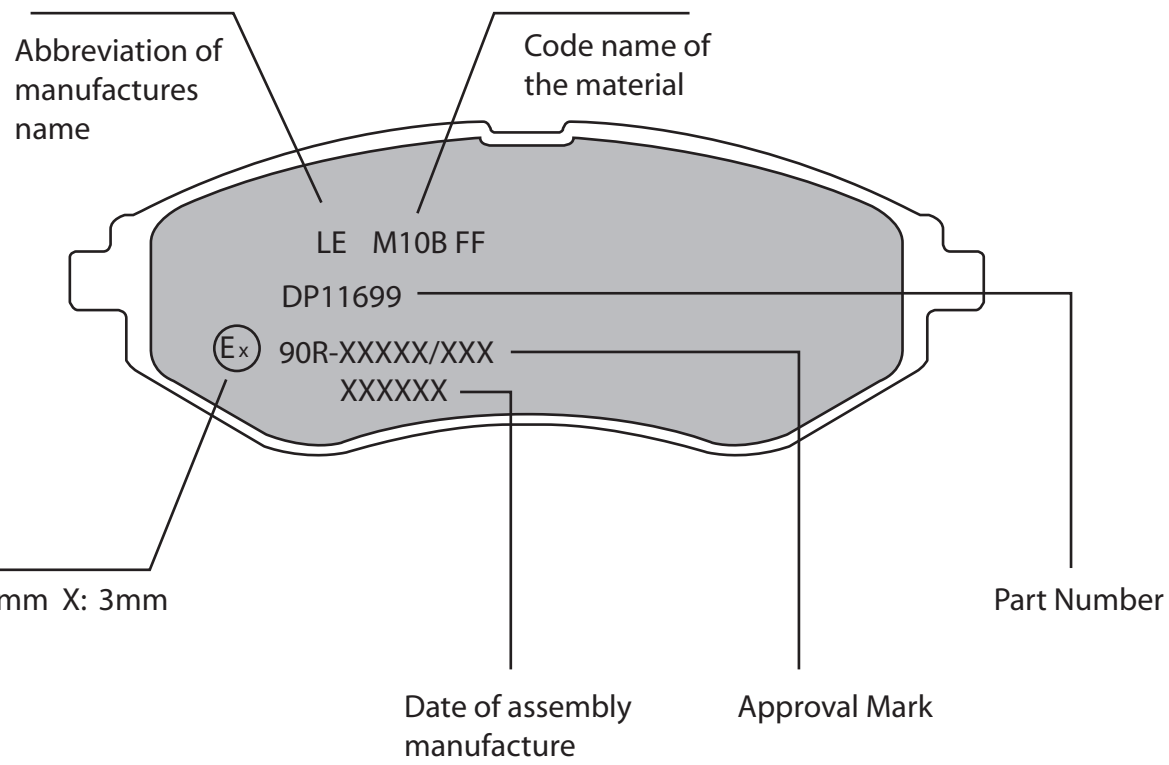


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|---------------|--------------|----------|--------------------------|---------------------|----------|--|
| Material Area | | Drawn By | Description | Issue No. | Part No. |  DP7797 <small>22-MAR-2007</small> |
| 4784.7 mm | | | Disc Pad Assembly | 1 | | |
| Modification | Initial Date | Date | General Tolerance | $\pm 0.25\text{mm}$ | | Not To Scale |





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|---------------|--------------|----------|--------------------------|-----------------|----------|---|
| Material Area | | Drawn By | Description | Issue No. | Part No. |  DP9942 -2007 <small>2007-2007</small> <small>Approval Authority</small> |
| 4848.4 mm | | | Disc Pad Assembly | 1 | | |
| Modification | Initial Date | Date | General Tolerance | ± 0.25mm | | Not To Scale |



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|---------------|--------------|------|----------|--------------------------|-----------------|----------|
| Material Area | | | Drawn By | Description | Issue No. | Part No. |
| | | | | Disc Pad Assembly | 1 | |
| Modification | Initial Date | Date | | General Tolerance | ± 0.25mm | |



Not To Scale