

Customer details: Zoontjens Beton BV
Centaurusweg 19-25
PO Box 61
5000 AB TILBURG
Netherlands

SATRA reference: SPC0255143 /1710

Your reference:

Date of report: 31 March 2017

Samples received: 20 March 2017

For the attention of: Leon Gosens

Date(s) work carried out: 21 March 2017

TECHNICAL REPORT

Subject: Testing of anchor device described as "BIBO" in stalled on a variety of surfaces in accordance with the test methods of EN 795: 2012 & CEN/TS 16415: 2013#

Conditions of Issue:

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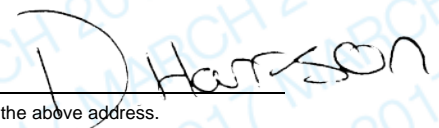
Results given in this report refer only to the samples submitted for analysis and tested by SATRA. Comments are for guidance only.

Tests marked ≠ fall outside the UKAS Accreditation Schedule for SATRA. All interpretations of results of such tests and the comments based upon them are outside the scope of UKAS accreditation and are based on current SATRA knowledge.

A satisfactory test report in no way implies that the product tested is approved by SATRA and no warranty is given as to the performance of the product tested. SATRA shall not be liable for any subsequent loss or damage incurred by the client as a result of information supplied in the report.

The uncertainty of the results (UoM) in this report is based on a standard uncertainty multiplied by a coverage factor $k=2$, which provides for a confidence level of approximately 95%.

Report signed by: Daniel Harrison
Position: PPE Technologist
Department: Safety Product Testing



WORK REQUESTED

Samples of anchor device, described as "BIBO" in stalled on a variety of surfaces, were received by SATRA on 20th March 2017, for testing in accordance with the test methods of EN 795: 2012 & CEN/TS 16415: 2013#

CONCLUSIONS

| SAMPLE REFERENCE | STANDARD | CLAUSE / PROPERTY | PASS / FAIL |
|--|---------------------|---|-------------|
| BIBO (installed on bitumen by heating pads of sample and pressing into roof surface) | EN 795: 2012 | 4.4.1.2 Specific requirements – Type A anchor dynamic strength & integrity test | PASS |
| | | 4.4.1.3 Specific requirements – Type A anchor static strength test | PASS |
| | CEN/TS 16415: 2013# | 4.2.1.1 Specific requirements – Type A anchor dynamic strength & integrity test | PASS |
| | | 4.2.1.2 Specific requirements – Type A anchor static strength test | PASS |
| BIBO (installed on PVC using adhesive) | EN 795: 2012 | 4.4.1.2 Specific requirements – Type A anchor dynamic strength & integrity test | PASS |
| | | 4.4.1.3 Specific requirements – Type A anchor static strength test | PASS |
| | CEN/TS 16415: 2013# | 4.2.1.1 Specific requirements – Type A anchor dynamic strength & integrity test | PASS |
| | | 4.2.1.2 Specific requirements – Type A anchor static strength test | PASS |
| BIBO (installed on 1 AU using adhesive) | EN 795: 2012 | 4.4.1.2 Specific requirements – Type A anchor dynamic strength & integrity test | PASS |
| | | 4.4.1.3 Specific requirements – Type A anchor static strength test | PASS |
| | CEN/TS 16415: 2013# | 4.2.1.1 Specific requirements – Type A anchor dynamic strength & integrity test | PASS |
| | | 4.2.1.2 Specific requirements – Type A anchor static strength test | PASS |
| BIBO (installed on 2 BE using adhesive) | EN 795: 2012 | 4.4.1.2 Specific requirements – Type A anchor dynamic strength & integrity test | PASS |
| | | 4.4.1.3 Specific requirements – Type A anchor static strength test | PASS |
| | CEN/TS 16415: 2013# | 4.2.1.1 Specific requirements – Type A anchor dynamic strength & integrity test | PASS |
| | | 4.2.1.2 Specific requirements – Type A anchor static strength test | PASS |

Note 4 – Whilst the anchor devices listed above meet the requirements of EN 795: 2012 type A clauses 4.4.1.2, 4.4.1.3 & CEN/TS 16415: 2013 type A clauses 4.2.1.1 & 4.2.1.2, the anchor device does not fall within the scope of the standards and therefore cannot be marked as meeting these standards

TESTING

Testing was carried out in accordance with EN 795: 2012 & CEN/TS 16415: 2013# on the 21st March 2017 in the presence of Leon Gosens and Ton Berlee of Zoontjens Beton BV

The anchor device allows up to a maximum of 3 users to be attached simultaneously

For the purposes of testing the roofing material was installed onto a wooden board and then fixed to the test bed using 4 x M12 fixings. The BIBO blocks were then installed onto the roofing surface as per manufactures instructions. Samples arrived at SATRA already installed on wooden board

Samples were tested as received, and were not subject to any pre-conditioning processes other than those stated in individual test clauses



Figure 1 – Anchor device described as “BIBO” (installed on bitumen by heating pads of sample and pressing into roof surface)



Figure 2 – Anchor device described as “BIBO” (installed on PVC using adhesive)



Figure 3 – Anchor device described as “BIBO” (installed on 1 AU using adhesive)



Figure 4 – Anchor device described as “BIBO” (installed on 2 BE using adhesive)

TEST RESULTS

Table 1 – Testing of anchor device described as “BIBO” (installed on bitumen by heating pads of sample and pressing into roof surface) in accordance with EN 795: 2012 as a type A device

| EN 795: 2012 CLAUSE / TEST | EN 795: 2012 REQUIREMENT | RESULT / COMMENT | UoM (See note 1) | PASS / FAIL |
|---|---|---|-----------------------|----------------|
| 4.4.1.2 Specific requirements – Type A anchor dynamic strength & integrity test | When tested dynamically with a rigid steel mass of 100 kg, the test mass shall be arrested. The anchor must then hold an increased mass of 300kg for 3 minutes | 100kg mass held following 3.6m free fall using 2m EN 892 reference lanyard Peak arrest force: 8.9kN (see figure 5) Attachment point deformed slightly Residual strength: 300kg sustained for 3 minutes without failure | ± 40 mm See note 2 | PASS |
| 4.4.1.3 Specific requirements – Type A anchor static strength test | Metallic elements shall sustain a force of at least 12 kN for 3 minutes without release, and non-metallic elements shall sustain a force of at least 18kN for 3 minutes without release | 12kN sustained for 3 minutes without failure Force then increased to 15kN without failure See note 3 | ± 50 N See note 2 | PASS |

Table 2 – Testing of anchor device described as “BIBO” (installed on bitumen by heating pads of sample and pressing into roof surface) in accordance with CEN/TS 16415: 2013 \neq as a type A device

| CEN/TS 16415: 2013 \neq CLAUSE / TEST | CEN/TS 16415: 2013 \neq REQUIREMENT | RESULT / COMMENT | UoM (See note 1) | PASS / FAIL |
|---|---|--|---------------------------|-------------|
| 4.2.1.1 Specific requirements – Type A anchor dynamic strength & integrity test | When tested dynamically with a rigid steel mass of 200 kg (2 users), the test mass shall be arrested. A further dynamic test shall be carried out on the same system in accordance with EN 795: 2012, for each additional user claimed. The tests masses, or an equivalent force shall be applied to the line to simulate the number of users already fallen. The anchor must then hold an increased mass of 600kg (2 users) + 150kg for each additional user for 3 minutes | <p>200kg mass held following 1.6m free fall using 2m EN 892 reference lanyard</p> <p>Peak arrest force: 11.0kN (see figure 6) Attachment point deformed slightly</p> <p>Test mass removed from anchor and replaced with static load of 200kg to simulate 2 users still hanging on device. Further drop carried out for 3rd user falling</p> <p>100kg mass held following 3.6m free fall using 2m EN 892 reference lanyard</p> <p>Peak arrest force: 9.3kN (see figure 7) Attachment point deformed slightly</p> <p>Residual strength: 750kg sustained for 3 minutes without failure</p> | \pm 40 mm See note 2 | PASS |
| 4.2.1.2 Specific requirements – Type A anchor static strength test | Metallic elements shall sustain a force of at least 12 kN + 1kN for each additional user claimed, for 3 minutes without release, and non-metallic elements shall sustain a force of at least 18kN + 1kN for each additional user claimed, for 3 minutes without release | <p>12kN sustained for 3 minutes without failure</p> <p>Force then increased to 15kN without failure</p> <p>See note 3</p> | \pm 50 N See note 2 | PASS |

Table 3 – Testing of anchor device described as “BIBO” (installed on PVC using adhesive) in accordance with EN 795: 2012 as a type A device

| EN 795: 2012 CLAUSE / TEST | EN 795: 2012 REQUIREMENT | RESULT / COMMENT | UoM (See note 1) | PASS / FAIL |
|---|---|---|-----------------------|----------------|
| 4.4.1.2 Specific requirements – Type A anchor dynamic strength & integrity test | When tested dynamically with a rigid steel mass of 100 kg, the test mass shall be arrested. The anchor must then hold an increased mass of 300kg for 3 minutes | 100kg mass held following 3.6m free fall using 2m EN 892 reference lanyard Peak arrest force: 8.6kN (see figure 8) Attachment point deformed slightly Residual strength: 300kg sustained for 3 minutes without failure | ± 40 mm See note 2 | PASS |
| 4.4.1.3 Specific requirements – Type A anchor static strength test | Metallic elements shall sustain a force of at least 12 kN for 3 minutes without release, and non-metallic elements shall sustain a force of at least 18kN for 3 minutes without release | 12kN sustained for 3 minutes without failure Force then increased to 15kN without failure See note 3 | ± 50 N See note 2 | PASS |

Table 4 – Testing of anchor device described as “BIBO” (installed on bitumen by heating pads of sample and pressing into roof surface) in accordance with CEN/TS 16415: 2013# as a type A device

| CEN/TS 16415: 2013# CLAUSE / TEST | CEN/TS 16415: 2013# REQUIREMENT | RESULT / COMMENT | UoM (See note 1) | PASS / FAIL |
|---|---|---|-----------------------|----------------|
| 4.2.1.1 Specific requirements – Type A anchor dynamic strength & integrity test | When tested dynamically with a rigid steel mass of 200 kg (2 users), the test mass shall be arrested. A further dynamic test shall be carried out on the same system in accordance with EN 795: 2012, for each additional user claimed. The tests masses, or an equivalent force shall be applied to the line to simulate the number of users already fallen. The anchor must then hold an increased mass of 600kg (2 users) + 150kg for each additional user for 3 minutes | 200kg mass held following 1.6m free fall using 2m EN 892 reference lanyard Peak arrest force: 11.0kN (see figure 9) Attachment point deformed slightly Test mass removed from anchor and replaced with static load of 200kg to simulate 2 users still hanging on device. Further drop carried out for 3 rd user falling 100kg mass held following 3.6m free fall using 2m EN 892 reference lanyard Peak arrest force: 8.6kN (see figure 10) Attachment point deformed slightly Residual strength: 750kg sustained for 3 minutes without failure | ± 40 mm See note 2 | PASS |

| CEN/TS 16415: 2013# CLAUSE / TEST | CEN/TS 16415: 2013# REQUIREMENT | RESULT / COMMENT | UoM (See note 1) | PASS / FAIL |
|--|---|--|----------------------|-------------|
| 4.2.1.2 Specific requirements – Type A anchor static strength test | Metallic elements shall sustain a force of at least 12 kN + 1kN for each additional user claimed, for 3 minutes without release, and non-metallic elements shall sustain a force of at least 18kN + 1kN for each additional user claimed, for 3 minutes without release | 12kN sustained for 3 minutes without failure Force then increased to 15kN without failure See note 3 | ± 50 N See note 2 | PASS |

Table 5 – Testing of anchor device described as “BIBO” (installed on 1 AU using adhesive) in accordance with EN 795: 2012 as a type A device

| EN 795: 2012 CLAUSE / TEST | EN 795: 2012 REQUIREMENT | RESULT / COMMENT | UoM (See note 1) | PASS / FAIL |
|---|---|--|-----------------------|-------------|
| 4.4.1.2 Specific requirements – Type A anchor dynamic strength & integrity test | When tested dynamically with a rigid steel mass of 100 kg, the test mass shall be arrested. The anchor must then hold an increased mass of 300kg for 3 minutes | 100kg mass held following 3.6m free fall using 2m EN 892 reference lanyard Peak arrest force: 8.7kN (see figure 11) Attachment point deformed slightly Residual strength: 300kg sustained for 3 minutes without failure | ± 40 mm See note 2 | PASS |
| 4.4.1.3 Specific requirements – Type A anchor static strength test | Metallic elements shall sustain a force of at least 12 kN for 3 minutes without release, and non-metallic elements shall sustain a force of at least 18kN for 3 minutes without release | 12kN sustained for 3 minutes without failure Force then increased to 15kN without failure See note 3 | ± 50 N See note 2 | PASS |

Table 6 – Testing of anchor device described as “BIBO” (installed on 1 AU using adhesive) in accordance with CEN/TS 16415: 2013[≠] as a type A device

| CEN/TS 16415: 2013 [≠] CLAUSE / TEST | CEN/TS 16415: 2013 [≠] REQUIREMENT | RESULT / COMMENT | UoM (See note 1) | PASS / FAIL |
|---|---|--|-----------------------|-------------|
| 4.2.1.1 Specific requirements – Type A anchor dynamic strength & integrity test | When tested dynamically with a rigid steel mass of 200 kg (2 users), the test mass shall be arrested. A further dynamic test shall be carried out on the same system in accordance with EN 795: 2012, for each additional user claimed. The tests masses, or an equivalent force shall be applied to the line to simulate the number of users already fallen. The anchor must then hold an increased mass of 600kg (2 users) + 150kg for each additional user for 3 minutes | <p>200kg mass held following 1.6m free fall using 2m EN 892 reference lanyard</p> <p>Peak arrest force: 11.5kN (see figure 12) Attachment point deformed slightly</p> <p>Test mass removed from anchor and replaced with static load of 200kg to simulate 2 users still hanging on device. Further drop carried out for 3rd user falling</p> <p>100kg mass held following 3.6m free fall using 2m EN 892 reference lanyard</p> <p>Peak arrest force: 8.3kN (see figure 13) Attachment point deformed slightly</p> <p>Residual strength: 750kg sustained for 3 minutes without failure</p> | ± 40 mm See note 2 | PASS |
| 4.2.1.2 Specific requirements – Type A anchor static strength test | Metallic elements shall sustain a force of at least 12 kN + 1kN for each additional user claimed, for 3 minutes without release, and non-metallic elements shall sustain a force of at least 18kN + 1kN for each additional user claimed, for 3 minutes without release | <p>12kN sustained for 3 minutes without failure</p> <p>Force then increased to 15kN without failure</p> <p>See note 3</p> | ± 50 N See note 2 | PASS |

Table 7 – Testing of anchor device described as “BIBO” (installed on 2 BE using adhesive) in accordance with EN 795: 2012 as a type A device

| EN 795: 2012 CLAUSE / TEST | EN 795: 2012 REQUIREMENT | RESULT / COMMENT | UoM (See note 1) | PASS / FAIL |
|---|---|--|-----------------------|----------------|
| 4.4.1.2 Specific requirements – Type A anchor dynamic strength & integrity test | When tested dynamically with a rigid steel mass of 100 kg, the test mass shall be arrested. The anchor must then hold an increased mass of 300kg for 3 minutes | 100kg mass held following 3.6m free fall using 2m EN 892 reference lanyard Peak arrest force: 8.7kN (see figure 14) Attachment point deformed slightly Residual strength: 300kg sustained for 3 minutes without failure | ± 40 mm See note 2 | PASS |
| 4.4.1.3 Specific requirements – Type A anchor static strength test | Metallic elements shall sustain a force of at least 12 kN for 3 minutes without release, and non-metallic elements shall sustain a force of at least 18kN for 3 minutes without release | 12kN sustained for 3 minutes without failure Force then increased to 15kN without failure See note 3 | ± 50 N See note 2 | PASS |

Table 8 – Testing of anchor device described as “BIBO” (installed on 2 BE using adhesive) in accordance with CEN/TS 16415: 2013[≠] as a type A device

| CEN/TS 16415: 2013 [≠] CLAUSE / TEST | CEN/TS 16415: 2013 [≠] REQUIREMENT | RESULT / COMMENT | UoM (See note 1) | PASS / FAIL |
|---|---|--|-----------------------|----------------|
| 4.2.1.1 Specific requirements – Type A anchor dynamic strength & integrity test | When tested dynamically with a rigid steel mass of 200 kg (2 users), the test mass shall be arrested. A further dynamic test shall be carried out on the same system in accordance with EN 795: 2012, for each additional user claimed. The tests masses, or an equivalent force shall be applied to the line to simulate the number of users already fallen. The anchor must then hold an increased mass of 600kg (2 users) + 150kg for each additional user for 3 minutes | 200kg mass held following 1.6m free fall using 2m EN 892 reference lanyard Peak arrest force: 11.4kN (see figure 15) Attachment point deformed slightly Test mass removed from anchor and replaced with static load of 200kg to simulate 2 users still hanging on device. Further drop carried out for 3 rd user falling 100kg mass held following 3.6m free fall using 2m EN 892 reference lanyard Peak arrest force: 7.8kN (see figure 16) Attachment point deformed slightly Residual strength: 750kg sustained for 3 minutes without failure | ± 40 mm See note 2 | PASS |

| CEN/TS 16415: 2013# CLAUSE / TEST | CEN/TS 16415: 2013# REQUIREMENT | RESULT / COMMENT | UoM (See note 1) | PASS / FAIL |
|--|---|--|----------------------|-------------|
| 4.2.1.2 Specific requirements – Type A anchor static strength test | Metallic elements shall sustain a force of at least 12 kN + 1kN for each additional user claimed, for 3 minutes without release, and non-metallic elements shall sustain a force of at least 18kN + 1kN for each additional user claimed, for 3 minutes without release | 12kN sustained for 3 minutes without failure Force then increased to 15kN without failure See note 3 | ± 50 N See note 2 | PASS |

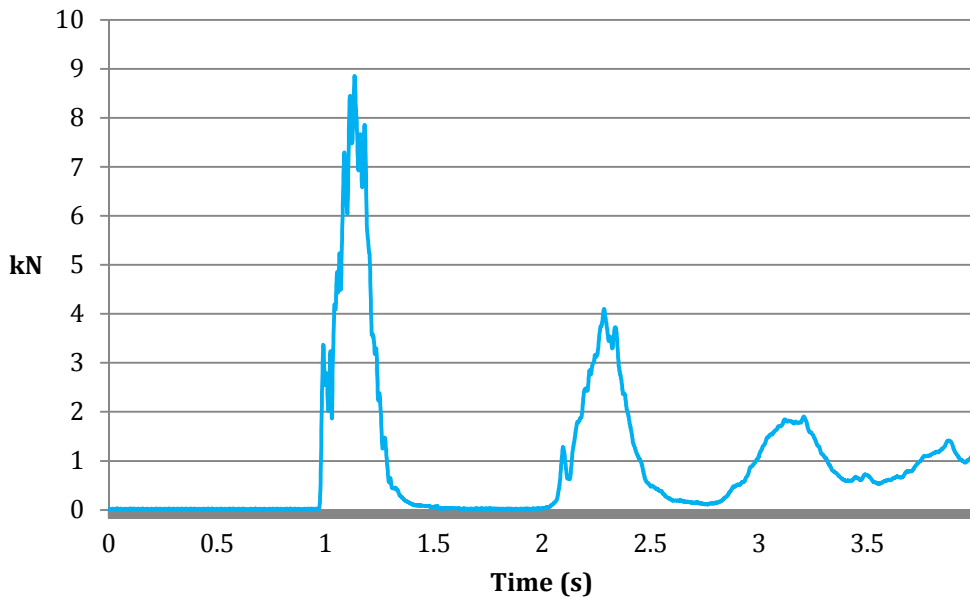


Figure 5 – Dynamic performance test: Graph of force vs. time

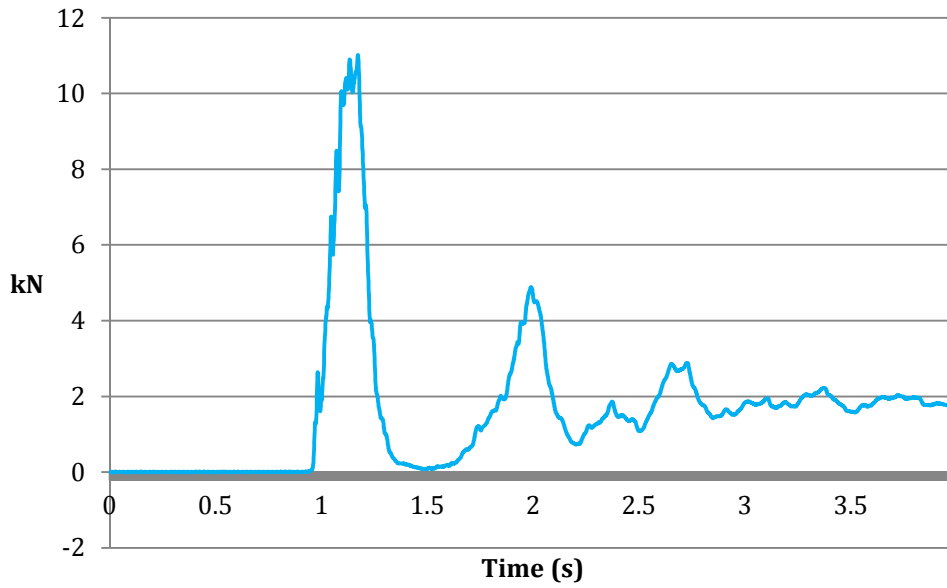


Figure 6 – Dynamic performance test: Graph of force vs. time

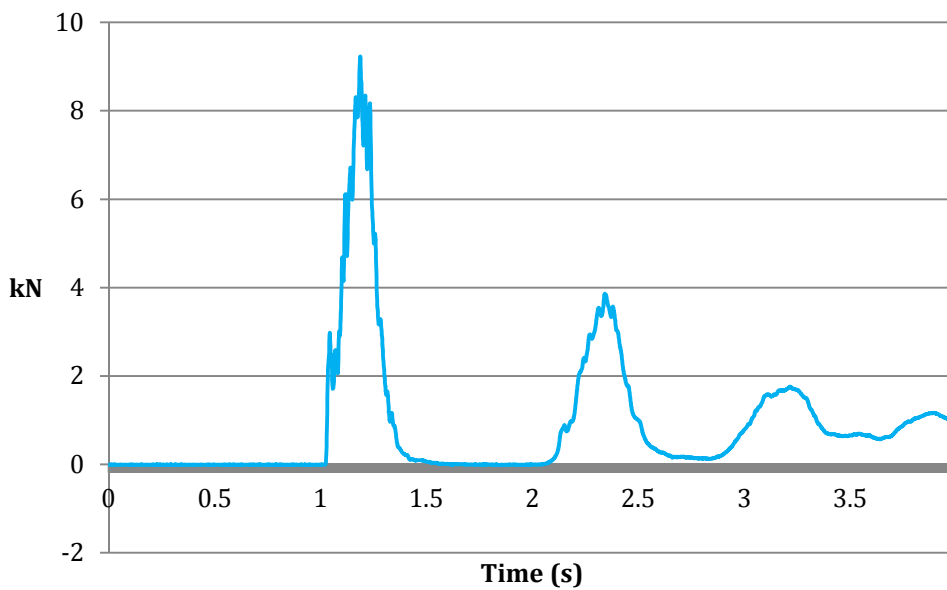


Figure 7 – Dynamic performance test: Graph of force vs. time

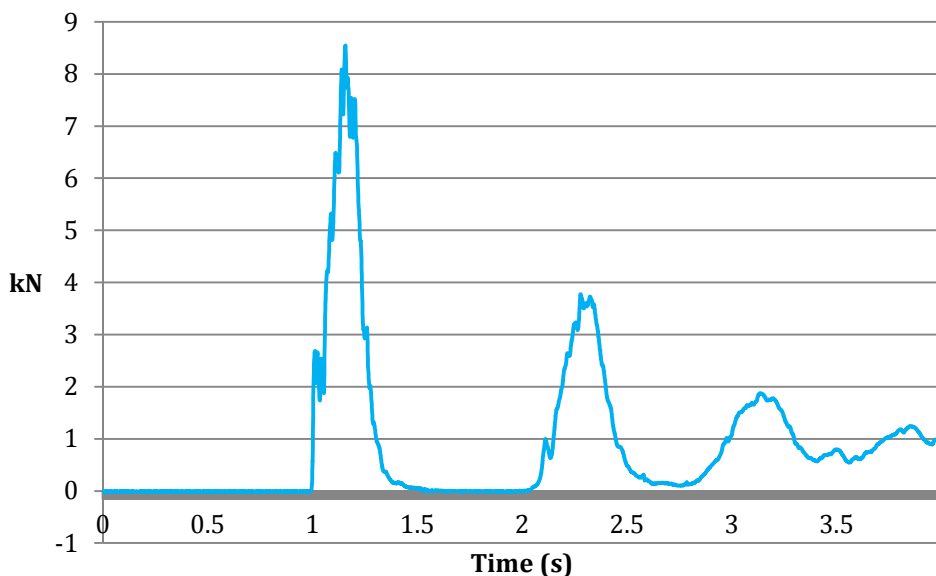


Figure 8 – Dynamic performance test: Graph of force vs. time

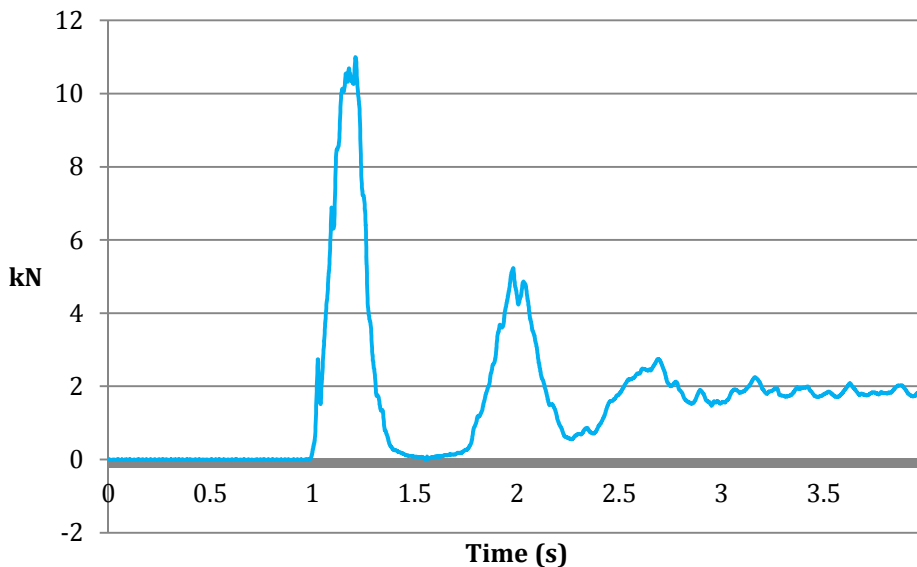


Figure 9 – Dynamic performance test: Graph of force vs. time

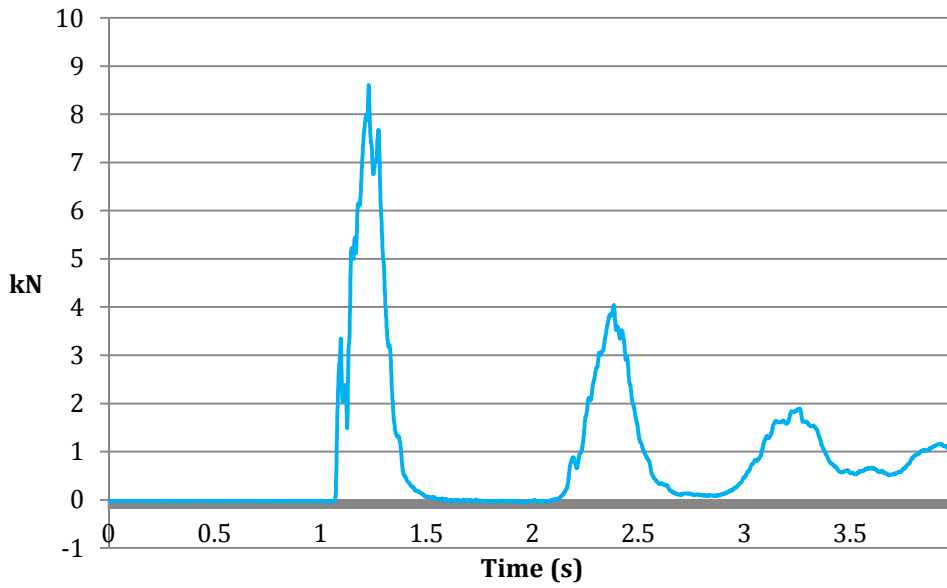


Figure 10 – Dynamic performance test: Graph of force vs. time

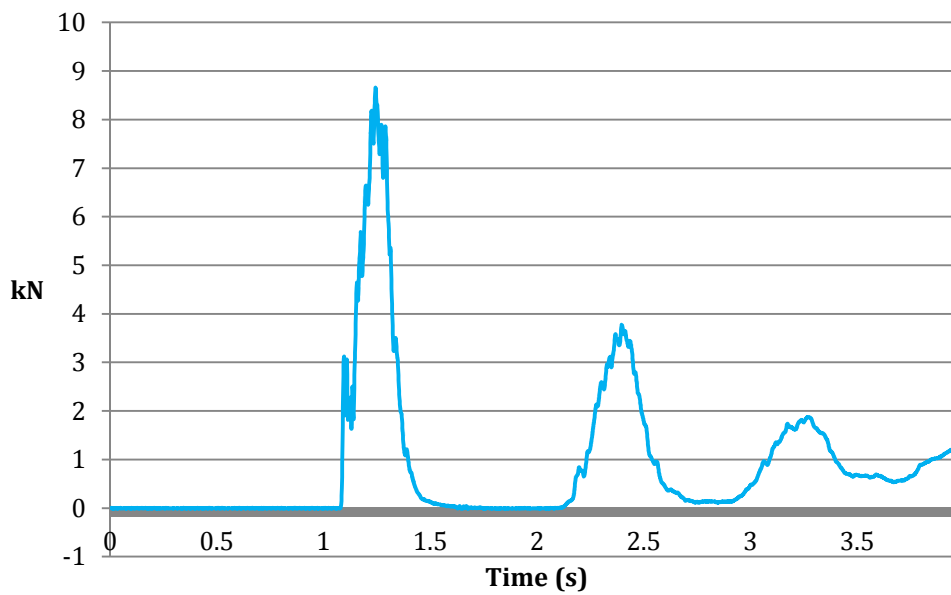


Figure 11 – Dynamic performance test: Graph of force vs. time

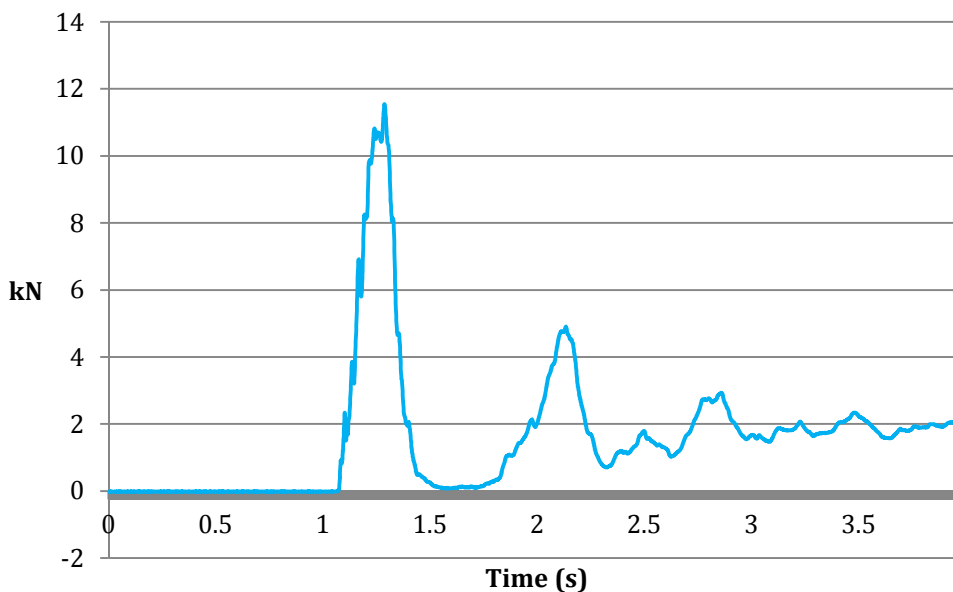


Figure 12 – Dynamic performance test: Graph of force vs. time

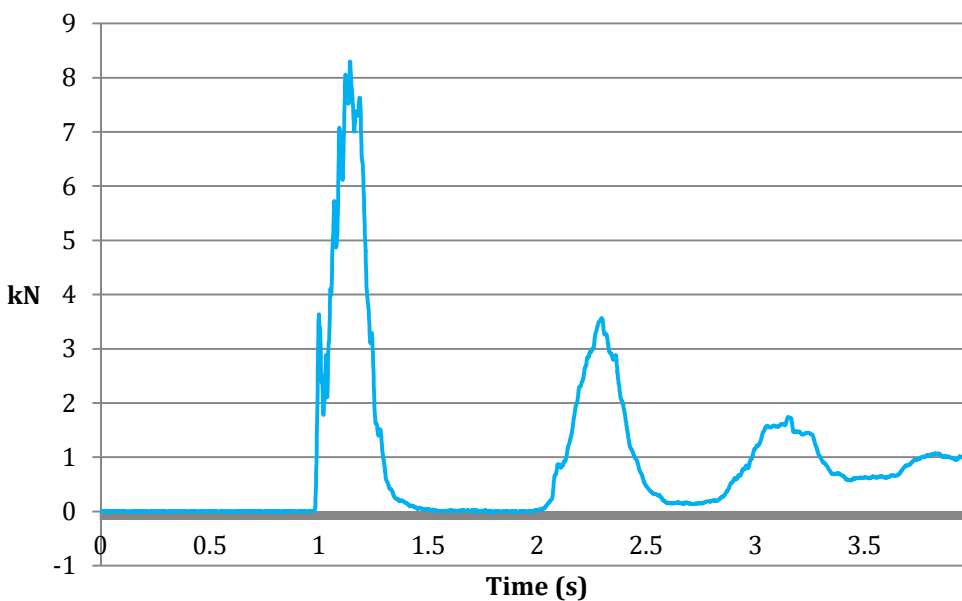


Figure 13 – Dynamic performance test: Graph of force vs. time

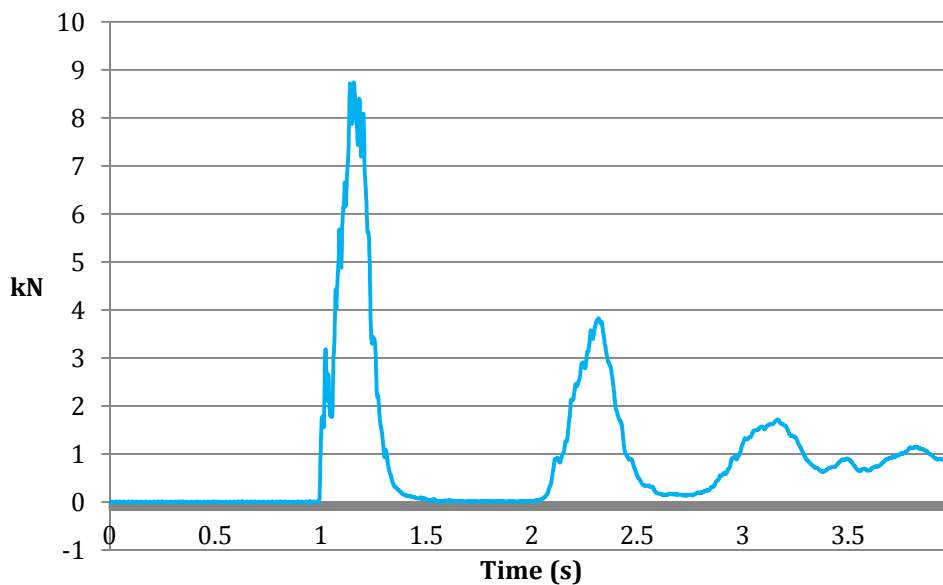


Figure 14 – Dynamic performance test: Graph of force vs. time

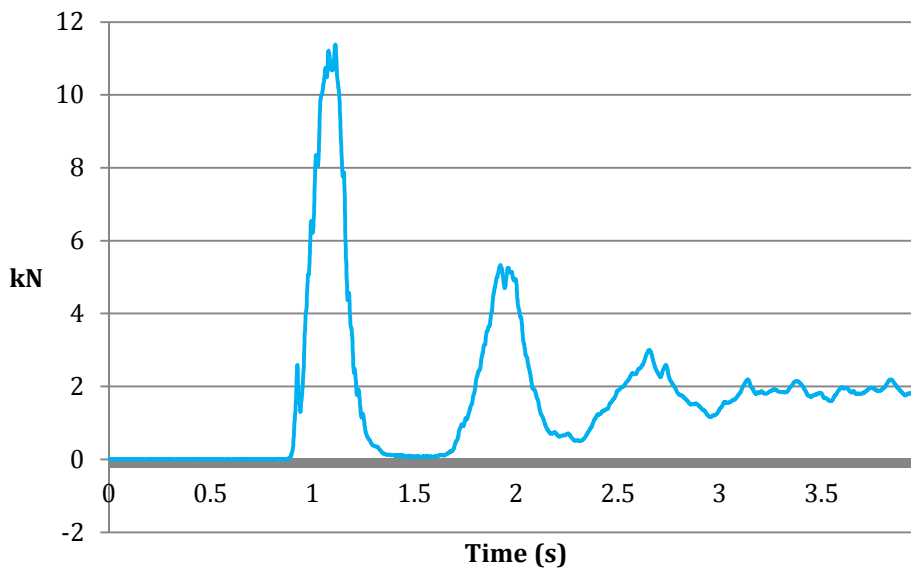


Figure 15 – Dynamic performance test: Graph of force vs. time

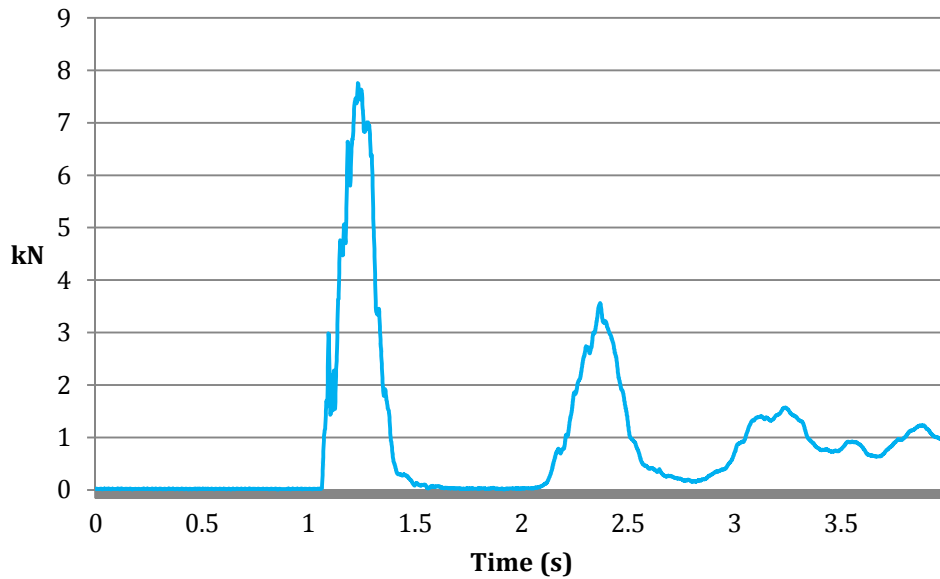


Figure 16 – Dynamic performance test: Graph of force vs. time

ADDITIONAL INFORMATION / NOTES

Note 1 – ‘UoM’ denotes estimated Uncertainty of Measurement for stated test results. This uncertainty value is based on a standard uncertainty multiplied by a coverage factor $k = 2$, which provides for a confidence level of approximately 95%

Note 2 – Estimated uncertainty of measurement applied at point of test (e.g. to applied force or to tolerance limits) to ensure product meets requirements of the standard

Note 3 – Static strength testing carried out by manually increasing loading, therefore rate of stressing / crosshead velocity as per EN 364: 1992 Clauses 4.1.2.1 & 4.1.2.2 cannot be accurately determined (see VG11 recommendation for use sheet CNB/P/11.023 dated 25.10.2007)

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Work done or services undertaken are subject to the terms and conditions detailed below and all other conditions, warranties and representations, expressed or implied are hereby excluded.
2. **PRICES**
Prices are based on current material and production costs, exchange rates, duty and freight and are subject to change without notice.
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Delivery estimates are made in good faith and date from receipt of a written order and full information to enable us to proceed. While SATRA or its subsidiaries (hereafter referred to as "SATRA") make every effort to fulfil them, such estimates are subject to unforeseen events and if not maintained, cannot give rise to any claim. Offers "ex stock" are subject to prior sale.
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All goods manufactured by SATRA are guaranteed both as regards material and workmanship. Any part returned carriage paid, within twelve months from date of supply and found defective, will be repaired or replaced at SATRA's option free of charge. SATRA admits no liability for loss, damage or delay consequent on any defect in any goods supplied by SATRA.
9. **TEST REPORTS**
Results given in test reports refer only to samples submitted for analysis and tested by SATRA. A satisfactory test report in no way implies that the product tested is approved by SATRA and no warranty is given as to the performance of the product tested. SATRA shall not be liable for any subsequent loss or damage incurred by the Customer as a result of information supplied in a test report.
10. **TEST SAMPLES**
Unless otherwise agreed in advance, test samples will be disposed of 6 weeks after the date of the final report. If required, samples can be returned at the Customer's expense.
11. **RESPONSIBILITY**
Every effort is made to ensure accuracy in description, drawings and other information in correspondence, catalogues, etc but no warranty is given in this respect and SATRA shall not be liable for any error therein. SATRA carries out all tests and/or advises only on the basis that the same are carried out, made or given without any responsibility whether for negligence or otherwise. SATRA and its servants or agents will not be liable for any damage or loss direct or indirect of whatsoever kind, whether or not the same results directly or indirectly from negligence on the part of SATRA or its servants or agents.
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 - iii. The above items are submitted to the Customer as confidential documents. Confidentiality shall continue to apply after completion of the business, but shall cease to apply to information or knowledge which may come into the public domain.
13. **CONSTRUCTION AND ARBITRATION**
The laws of England shall govern all contracts and the parties submit to exclusive jurisdiction of the courts of England, unless otherwise agreed.

Issue Date: 1st October 2009