

Certificate of Conformance Report

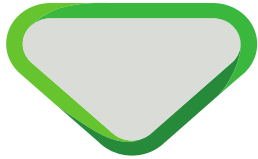
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|---|------------------------------------|
| Report supporting to Certificate of Conformance no. | : NA19-0842-1004-008-12 |
| Date of issue of original certificate | : March 4 th , 2019 |
| No. and date of revision | : 1, March 03 th , 2022 |
| Certificate applies to | : Component |
| Requirements | : A17.7-2007/CSA B44.7-07 |
| Project no. | : P220019 |

1. General Specifications

| | |
|--------------------------------------|--|
| Description of the product | : Energy accumulation type buffers with non-linear characteristics |
| Trademark | : ACLA |
| Type | : ACLA, AUTAN HE, 300401Gx, ø100 mm x 80 mm |
| Name and address of the manufacturer | : ACLA-WERKE GMBH Frankfurter Str. 142-190 D-51065 Köln, Germany |
| Laboratory | : - |
| Ratings | : - |
| Data of examination | : March 2022 |
| Examination performed by | : E. Verkaik |

2. Component Description

For elevator application in Europe the use of polyurethane buffers for elevators with a speed up to 1.0 m/s or 200 fpm is common. Under the A17.1-2013 / CSA B44-13 the design criteria of this type buffer was not described. With the introduction of the A17.7-2007 / CSA B44.7-07 it is possible to deviate from the A17.1 / CSA B44 provided that an equal safety level is



proven. In the ASME A17.1-2016 / CSA B44-16 polyurethane buffers were introduced. The performance required were based on EN 81-20, but not taking into account the fact that EN 81-20 only considers a fully loaded car and ASME A17.1 an empty car with only one person inside the car as well. For the North American market the ACLA-Werke in Germany has designed a buffer with the following characteristics:

| | | |
|------------------------|--------------------|---------------------|
| Type number | 300401Gx | |
| Diameter | 100 mm (3.94") | |
| Buffer height | 80 mm (3.15") | |
| Max. compression (90%) | 72 mm / (2.84") | |
| Max nominal speed | 1.0 m/s / 200 fpm | 0.63 m/s / 125 fpm |
| Min. load | 200 kg / (441 lb) | 150 kg / (331 lb) |
| Max load | 850 kg / (1874 lb) | 1954 kg / (4308 lb) |

The buffer is manufactured with five sub types. The differences are solely the mounting possibility. The buffer 300401G1 has a round steel plate which is glued to the polyurethane buffer. The buffer 300401G3 has a square steel plate. The buffer 300401G4 has an integrated steel plate which is foamed in during the production. The buffer 300401G5 is a combination of 300401G4 with an additional round steel plate glued to buffer. The buffer 300401G6 is a combination of 300401G4 with an additional square steel plate glued to buffer.

See Annex 1 for a general overview of the product

3. Examinations and Tests

To prove an equal safety level the A17.7-2007/CSA B44.7-07 appendix I-3 has to be followed.

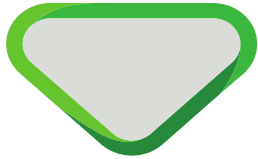
For testing a polyurethane buffer according the A17.1-2007/CSA B44-07 no readily available tests are described. The requirements and tests which are described are for spring and hydraulic buffers can be adapted to fit the requirements for the polyurethane buffer.

The following sequence of tests, in analogy with hydraulic buffers, are performed and witnessed for the buffer:

1. 3 tests with maximum load at 115% of the nominal speed.
2. 3 tests with minimum load at 115% of the nominal speed.

The tests outcome is within the requirements of:

- Average retardation maximum 1g for test series 1 and 2.
- Retardation above 2.5g limited to 0.04 s for test series 1 and 2.



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- A maximum retardation of 10g for test series 1 and 2.
- The results are filtered with a 40 Hz low pass filter.

The tests reports showed all the tests are accepted.

Additional test have been made to verify there is no difference between the different mounting possibilities and the characteristics of the buffer itself.

ACLA-Werke has provided a Code Compliance Documentation (CCD), a risk assessment, a User Manual (part of the MCP), approval criteria and test results.

The following Global Essential Safety Requirements (GESR's) are considered:

- 3.1.1 Supports for elevator equipment
- 3.1.2 Elevator Maintenance
- 3.1.13 Hazardous Materials
- 3.1.14 Environmental influences
- 3.4.9 Changes of Speed or Acceleration
- 3.5.1 Working space

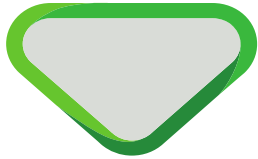
Based on the GESR's a risk assessment in compliance with ISO 14198 is made.

Based on the risk assessment the following steps are taken to mitigate the risks involved:

- To check environmental influences additional test were made:
 - Salt test according EN ISO 9227 SS.
 - Humidity test at 98% non-condensing
 - Temperature tests -31°C – +78°C.
 - UV light.
 - Static pressure influences.

4. Results

After the examination of the CCD, the risk assessment, test reports etc., the technical documentation was found in accordance with the requirements.



5. Conditions

Additional to the applicable demands in the considered requirements / standards (see certificate and/or page 1 of this report), the following conditions shall be taken into account:

- The user manual for the polyurethane buffer shall be present with the elevator or be a part of the MCP. The buffer shall be inspected during every scheduled pit maintenance (minimum once per year). If the buffer is externally damaged or has been in contact with chemicals the buffer shall be replaced.
- The load range is as follows:

| | | |
|-------------------|--------------------|---------------------|
| Max nominal speed | 1.0 m/s / 200 fpm | 0.63 m/s / 125 fpm |
| Min. load | 200 kg / (441 lb) | 150 kg / (331 lb) |
| Max load | 850 kg / (1874 lb) | 1954 kg / (4308 lb) |

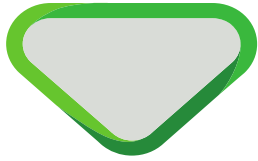
- The application of the load range shall take into account the values of a fully loaded car and an empty car with one person inside (70 kg / 154 lbs).
- Maximum temperature range -15° – 60° C (5° – 140° F).
- Maximum relative humidity 98% non-condensing at room temperature.

6. Conclusions

Based upon the results of the conformance examination Liftinstituut B.V. issues a Certificate of Conformance.

The Certificate of Conformance is only valid for products which are in conformity with the same specifications as the type certified product. Products deviating of these specifications need additional examination by Liftinstituut in order to determine whether a new Certificate of Conformance is necessary. Additional examination shall be requested by the certificate owner.

The Certificate of Conformance is issued based on the requirements that are valid at the date of issue. Liftinstituut reserves all rights regarding the validity of the certificate with respect to changes in the requirements or changes in the state of the art of the product.



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7. Marking and surveillance

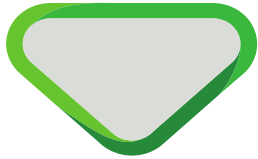
Components to which this certificate of conformance applies shall be labelled, marked or tagged with the following data:

- (a) the name or trademark of the manufacturer, or AECO Certificate of Conformance identification by which the organization that manufactured the device can be identified;
- (b) the AECO mark, name, or identifying symbol which can be found on our website www.liftinstituut.com;
- (c) the AECO Certificate of Conformance identification;
- (d) statement of compliance with ASME A17.7/CSA B44.7;
- (e) a distinctive type, model, or style letter or number; and any conditions of validity of the certificate and any particulars necessary to identify the type of Component certified, as determined by the AECO.

Prepared by:

E. Verkaik
Product specialist Certification

Certification decision by:



Annex 2. Documents which were subject of the examination

| title | document number | date |
|--|-----------------|------------|
| Review report of the registered Professional Engineer | | |
| Risikoanalyse für ACLA®-Aufsetzpuffer Serie 300xxx(F/G)xx nach ASME A17.7-2007/CSA B44.7-07 Part 3 | TB 281.7 | 07/2018 |
| Betriebsanleitung Puffer 300xxx FG xxx English | TB 282.07 | 09/2018 |
| First statical curve for 300401Gxxx | TB 337.24 | 11/2017 |
| Drawing overview buffers 300xxx FG xxx | 1-V16633 a | 01/03/2019 |
| Identification drawing | Z40002"b" | 01.03.2022 |

Annex 3. Reviewed deviations from the standards

ASME A17.1:2013

| Clause | Requirement | Accepted design |
|--------|---------------------------------|-----------------|
| 2.22.1 | spring, oil, or equivalent type | AUTAN HE |

Annex 4. Revision of the certificate and its report

| Rev.: | Date | Summary of revision |
|-------|-------------------------------|------------------------------|
| - | March 4 th , 2019 | Original |
| 1 | March 03 th , 2022 | Renewal, Annex 1 & 2 changed |
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