

TEST REPORT

No. 297/08

Client ROLEC Gehäuse-Systeme GmbH
Management QM/QS
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Date of order 2008-08-29

Date of receiving the specimens 2008-09-01

Period of testing 2008-09-02 to 2008-09-16

1 TEST OBJECT

1.1 Designation / Number of pieces

Enclosure of series aluCLICK
mounted with holder “click” on a mounting plate by the client

1.1.1 Type ACL 112 / 1 piece
with model mass 390 g and equipped with a suction port for the test to determine
the degree of protection IP Code 6X “dust-proof”

1.1.2 Type ACL 112 / 1 piece
equipped with model mass 380 g

1.1.3 Cover type ACL 112 with sealing / 1 piece

1.1.4 Sealing type ACL 112 / 3 pieces

1.2 Producer see Client

2 TASK

2.1 Testing to determine the resistance against Rapid Changes of Temperature in accordance
with DIN EN 60068-2-14: 2000-08, Test Na

2.2 Testing to determine the resistance against vibration sinusoidal in accordance with
DIN EN 60068-2-6: 1996-05, Test Fc with superimposed temperature cycles in accordance
with DIN EN 60068-2-14 : 2000-08, Test Nb

- 2.3 Tests to determine the degrees of protection IP Code 66 and 67 in accordance with DIN EN 60529 : 2000–09 (VDE 0470–1)
- 2.4 Tests to determine the degree of protection IP Code 6K9K in accordance with DIN 40050–9 : 1993–05
- load in the given order in accordance with sub clause 2.1 to 2.3 for the specimen in accordance with sub clause 1.1.1
 - load in the order in accordance with sub clause 2.1, 2.2 and 2.4 for the specimen in accordance with sub clause 1.1.2

3 TEST PROGRAMME

3.1 Initial examinations

3.1.1 Visual inspection

3.1.2 Function

- test of function of holder in accordance with instructions of the client (function “click”)

3.2 Loading by Rapid Changes of Temperature in accordance with DIN EN 60068–2–14, Test Na

Testing facility Temperature shock chamber TSR – 63 st – A TABAI ESPEC CORP.

- all specimens in accordance with sub clause 1.1

Lower temperature T_A $(-40 \pm 3) \text{ }^\circ\text{C}$

Upper temperature T_B $(80 \pm 2) \text{ }^\circ\text{C}$

Dwell time t_1 at T_A 60 min

T_B 60 min

Transition time t_2 $\leq 10 \text{ s}$

Number of cycles 25

- Recovery by storage under standard atmospheric conditions for measurements and tests accordance with DIN EN 60068–1 : 1995–03 at 15 to 35 °C and 25 to 75 % R.H., duration 1 h
- examinations in accordance with sub clause 3.1

3.3 Vibration sinusoidal with superimposed temperature

3.3.1 Loading by Vibration sinusoidal in accordance with DIN EN 60068–2–6, Test Fc

Testing facility Digital vibration control SD 2532 B Spectral Dynamics
Vibration facility TV 56263 TIRA GmbH
with Temperature test chamber Type 3616 / 30 FEUTRON GmbH

- specimens in accordance with sub clause 1.1.1 and 1.1.2
- severity level in accordance with “Germanischer Lloyd” GL 2003, VI – part 7, sub clause 3, table 3.16

| | | |
|---------------------------------|---|--------------|
| Range of frequency | 5 to 100 Hz | |
| displacement amplitude | 1,6 mm | 5 to 25 Hz |
| acceleration amplitude | 4 g _n | 25 to 100 Hz |
| Change of frequency | 1 octave / minute | |
| Vibration axes | 3 mutually perpendicular directions as follows | |
| axis 1 | mounting plate horizontal | |
| axis 2 | mounting plate perpendicular, wide side down/up | |
| axis 3 | mounting plate, small side down/up | |
| Mounting on the vibration table | direct and motionless by a laminated fabric plate | |
| Duration | 5 h each axis | |

- examinations in accordance with sub clause 3.1 after load in each of the 3 axes

3.3.2 Temperature superimposing in accordance with DIN EN 60068–2–14, Test Nb

| | | |
|----------------------------------|----------------|--------|
| Lower temperature T _A | (-40 ± 3) °C | |
| Upper temperature T _B | (80 ± 2) °C | |
| Dwell time t ₁ at | T _A | 60 min |
| | T _B | 60 min |
| Rate of change | 3 K/min | |
| Duration of the cycle | 200 min | |
| Number of cycles of each axis | 1 | |

Continuation of load by Vibration sinusoidal at
Temperature (23 ± 2) °C
Duration 100 min

3.4 Testing to determine the degree of protection IP Code 6X in accordance with DIN EN 60529

- specimen in accordance with sub clause 1.1.1 (with suction port)

3.4.1 Protection against touching dangerous parts

Test is cancelled because no relevant openings are existing.

3.4.2 Protection against the ingress of solid foreign bodies (“dust-proof”)

| | |
|-----------------|--|
| Dust chamber | in accordance with figure 2 of DIN EN 60529 |
| Test conditions | in accordance with DIN EN 60529, sub-clause 13.4 |
| Test dust | in accordance with DIN EN 60529, sub-clause 13.4 (talcum powder) |

- examinations in accordance with sub clause 3.1
- visual inspection with regard to entered dust

Test criteria The function “click” of holder shall be given.
 No dust shall be visible in the enclosure.

3.5 Testing to determine the degree of protection against strong jet of water – IP Code X6 – in accordance with DIN EN 60529 , Chapter 14.2.6 and table 8

- specimen in accordance with sub clause 1.1.1 (with suction port, sealed by rubber plug)

| | | |
|-------------------------|-----------|--|
| Jet nozzle | 12,5 mm Ø | in accordance with figure 6 of DIN EN 60529 |
| Exposition of specimens | | distance jet nozzle / surface of enclosure 2.5 to 3 m; horizontal on turntable, jet affects on the surface of enclosure from all possible directions |
| Flow rate of water | | 100 l / min ± 5 % |
| Water pressure | | ≈ 100 kPa |
| Test duration | | 1 min per m ² of splattered surface overall test duration 3 min |

- examinations in accordance with sub clause 3.1
- visual inspection with regard to entered water

Test criteria The function “click” of holder shall be given.
No water shall be visible in the enclosure.

3.6 Testing to determine the degree of protection – IP Code X7 – against temporary dipping in accordance with DIN EN 60529 , Chapter 14.2.7 and table 8

- specimen in accordance with sub clause 1.1.1 (with suction port, sealed by rubber plug)

| | | |
|---------------------------|----------------------------------|---------------------|
| Dipping basin | water level over the enclosure | 1 m from lower edge |
| Exposition of test object | immersed | |
| Water temperature | difference of sample temperature | no more than 5 K |
| Test duration | 30 min | |

- examinations in accordance with sub clause 3.1
- visual inspection with regard to entered water

Test criteria The function “click” of holder shall be given.
No water shall be visible in the enclosure.

3.7 Testing to determine the degree of protection – IP Code 6KX in accordance with DIN 40050–9

- specimen in accordance with sub clause 1.1.2

3.7.1 Protection against touching dangerous parts

Test is cancelled because no relevant openings are existing.

3.7.2 Protection against ingress of solid foreign bodies (“dust-proof”)

| | |
|-----------------|--|
| Dust chamber | in accordance with DIN 40050–9, figure 1 |
| Test conditions | in accordance with DIN 40050–9, clause 7.3.3.2 |
| Test dust | Arizona fine in accordance with ISO 12103–1 : 1997–12, Type A2 |

Test duration 20 cycles

- examinations in accordance with sub clause 3.1
- visual inspection with regard to entered dust

Test criteria The function "click" of holder shall be given.
No dust shall be visible in the enclosure.

3.8 Testing to determine the degree of protection – IP Code X9K – against ingress of water under high pressure steam jet cleaning in accordance with DIN 40050–9

- specimen in accordance with sub clause 1.1.2

Flat jet nozzle and jet discharge in accordance with figure 7 of DIN 40050–9,
in connection with high pressure steam jet cleaner
Kärcher Typ HDS 995

Exposition of specimen on a rotating table in accordance with figure 8 of DIN 40050–9
table rotation speed (5 ± 1) rpm

Jet angles 0°, 30°, 60°, 90°

Volume of water flow 14 to 16 l / min

Water temperature and pressure (80 ± 5) °C // 8000 to 10000 kPa

Test duration 30 s in each jet angle

- examinations in accordance with sub clause 3.1
- visual inspection with regard to entered water

Test criteria The function "click" of holder shall be given.
No water shall be visible in the enclosure.

4 RESULTS

4.1 Initial examinations

4.1.1 Visual inspection

Damages or defects are not visible.

4.1.2 Function

The function "click" is given.

4.2 Rapid Changes of Temperature

No changes are visible.

The function "click" is given.

4.3 Vibration sinusoidal with superimposed temperature

Axis 1 to 3 No changes are visible.
The function "click" is given.

4.4 IP Code 6X

No changes are visible. The function "click" is given.
No dust is entered inside the enclosure.

4.5 IP Code X6

No changes are visible. The function "click" is given.
No water is entered inside the enclosure.

4.6 IP Code X7

No changes are visible. The function "click" is given.
No water is entered inside the enclosure.

4.7 IP Code 6KX

No changes are visible. The function "click" is given.
No dust is entered inside the enclosure.

4.8 IP Code X9K

No changes are visible. The function "click" is given.
No water is entered inside the enclosure.

5 EVALUATION

The specimen in accordance with sub-clause 1.1.1 has passed the tests to determine the degrees of protection IP Code 66 and 67 in accordance with DIN EN 60529 : 2000-09 (VDE 0470-1).

The specimen in accordance with sub-clause 1.1.2 has passed the tests to determine the degree of protection IP Code 6K9K in accordance with DIN 40050-9 : 1993-05.

Leipzig, 2008-09-18

**Laboratory for Environmental
Testing and Testing Materials**

Annex Sheet 1 to 13

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