

TEST REPORT

No. 066/09

Client	ROLEC Gehäuse-Systeme GmbH Mr. Volker Borchering Kreuzbreite 2 D – 31737 Rinteln
Date of order	2009-03-02
Date of receiving the specimens	2009-03-04
Period of testing	2009-03-04 to 2009-03-26

1 TEST OBJECT

1.1 Designation / Number of pieces

Enclosure of series aluCLIC

mounted with holder "clit" on a mounting plate by the client

- | | | |
|-------|--|-----------|
| 1.1.1 | Type ACL 092
with a suction port | / 1 piece |
| 1.1.2 | Type ACL 092
equipped with model mass 330 g | / 1 piece |
| 1.1.3 | Type ACL 132
with a suction port | / 1 piece |
| 1.1.4 | Type ACL 132
equipped with model mass 710 g | / 1 piece |

1.2 Producer see Client

2 TASK

- 2.1 Testing to determine the resistance against Rapid Changes of Temperature with prescribed time of transfer 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
- specimens in accordance with sub clause 1.1.1 and 1.1.3:
load in the given order in accordance with sub clause 2.1 to 2.3
 - specimens in accordance with sub clause 1.1.2 and 1.1.4:
load in the given order in accordance with sub clause 2.1, 2.2 and 2.4

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 with prescribed time of transfer 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 and attached replacement gaskets

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
Transition time t_2	≤ 10 s
Number of cycles	25

- Recovery by storage under standard atmospheric conditions for measurements and tests in 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

- loading in 2 passes with 2 specimens
- 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	enclosure horizontal, cover on top
axis 2	enclosure perpendicular, wide side down/up
axis 3	enclosure perpendicular, 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 and 1.1.3

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 and 1.1.3 with sealed suction port

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 and 1.1.3 with sealed suction port

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 and 1.1.4

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 and 1.1.4

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 visible inside the enclosures.

4.5 IP Code X6

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

4.6 IP Code X7

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

4.7 IP Code 6KX

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

4.8 IP Code X9K

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

5 EVALUATION

The specimens in accordance with sub-clause 1.1.1 and 1.1.3 have 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 specimens in accordance with sub-clause 1.1.2 and 1.1.4 have passed the tests to determine the degree of protection IP Code 6K9K in accordance with DIN 40050-9 : 1993-05.

Leipzig, 2009-03-30

**Laboratory for Environmental
Testing and Testing Materials**

Annex Sheet 1 to 18

Dr.-Ing. Frank Eler
Laboratory Manager



Figure 1 Loading by Rapid Changes of Temperature

Loading by Vibration sinusoidal with superimposed temperature



Figure 2 Axis 1 pass 1

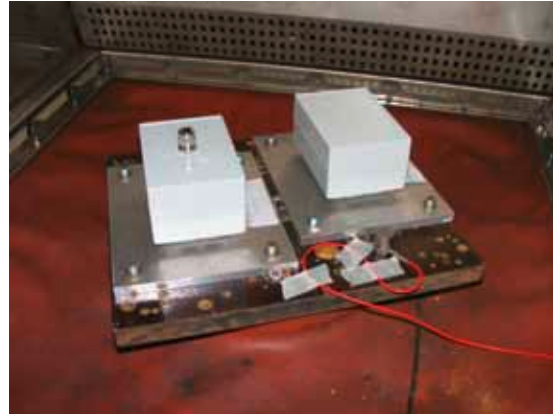


Figure 3 Axis 1 pass 2

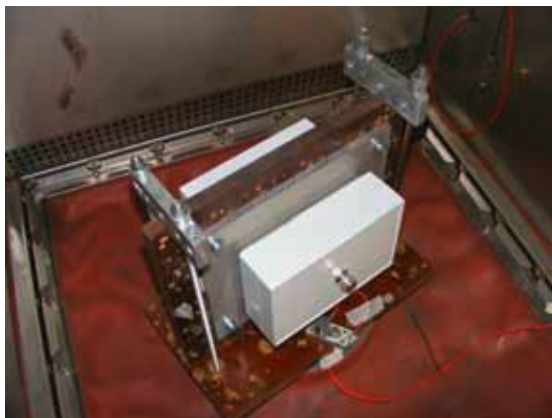


Figure 4 Axis 2 pass 1



Figure 5 Axis 2 pass 2



Figure 6 Axis 3 pass 1



Figure 7 Axis 3 pass 2



Figure 8 Loading by dust IP 6X



Figure 9 Loading by water IP X6, exemplarily



Figure 10 Exposition IP X7, exemplarily

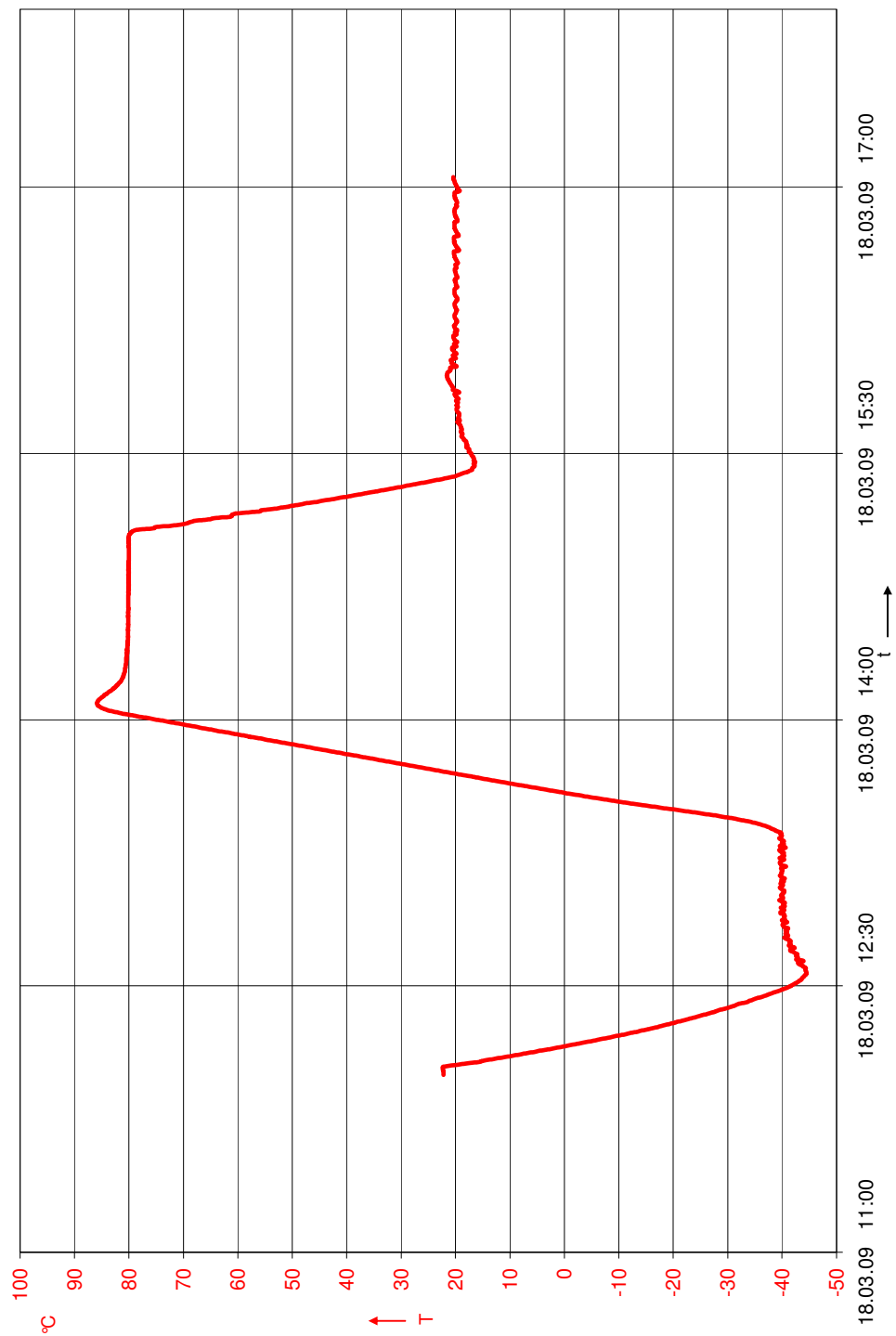


Figure 11 Exposition IP 6KX

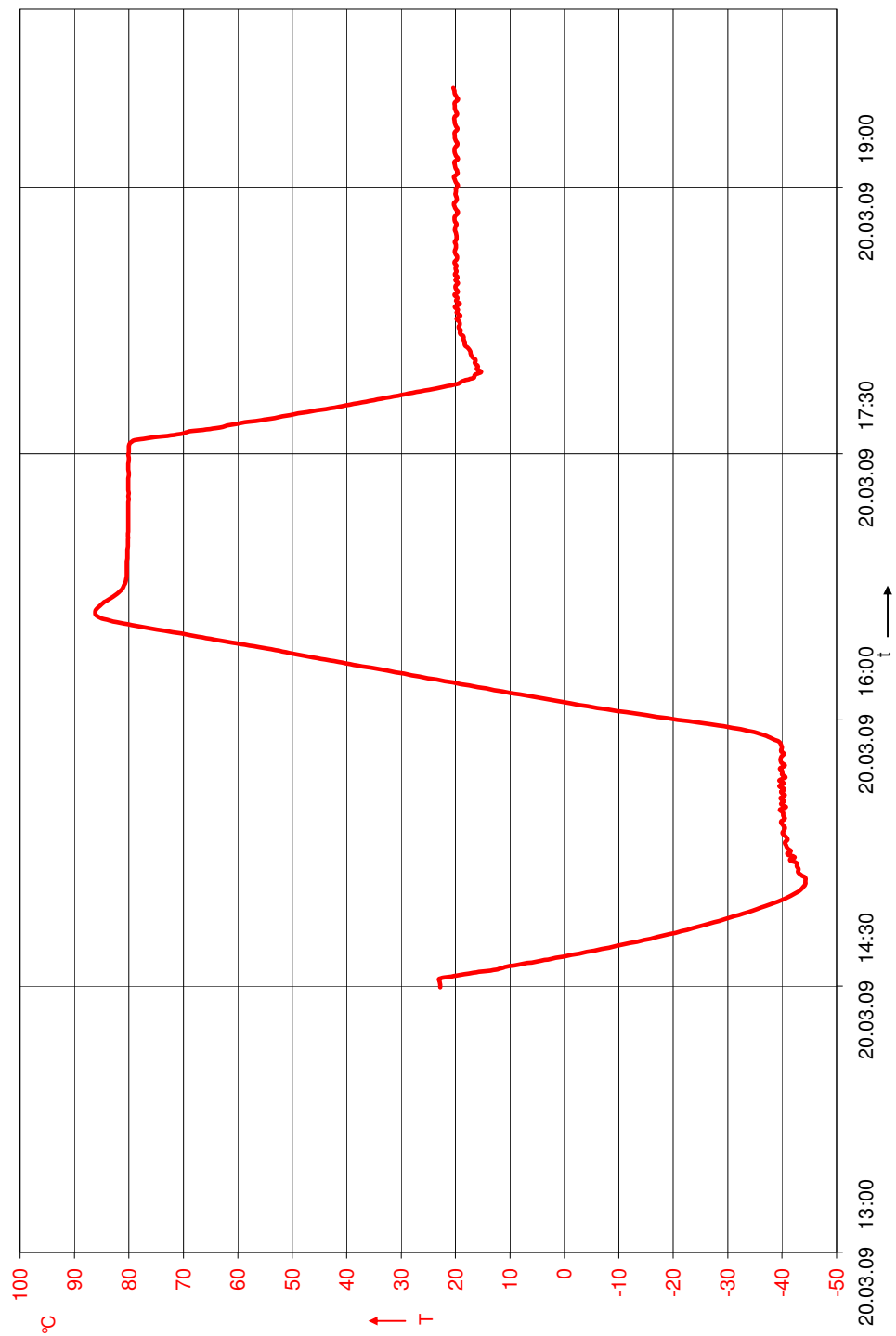


Figure 12 Exposition IP X9K, 30°, exemplarily

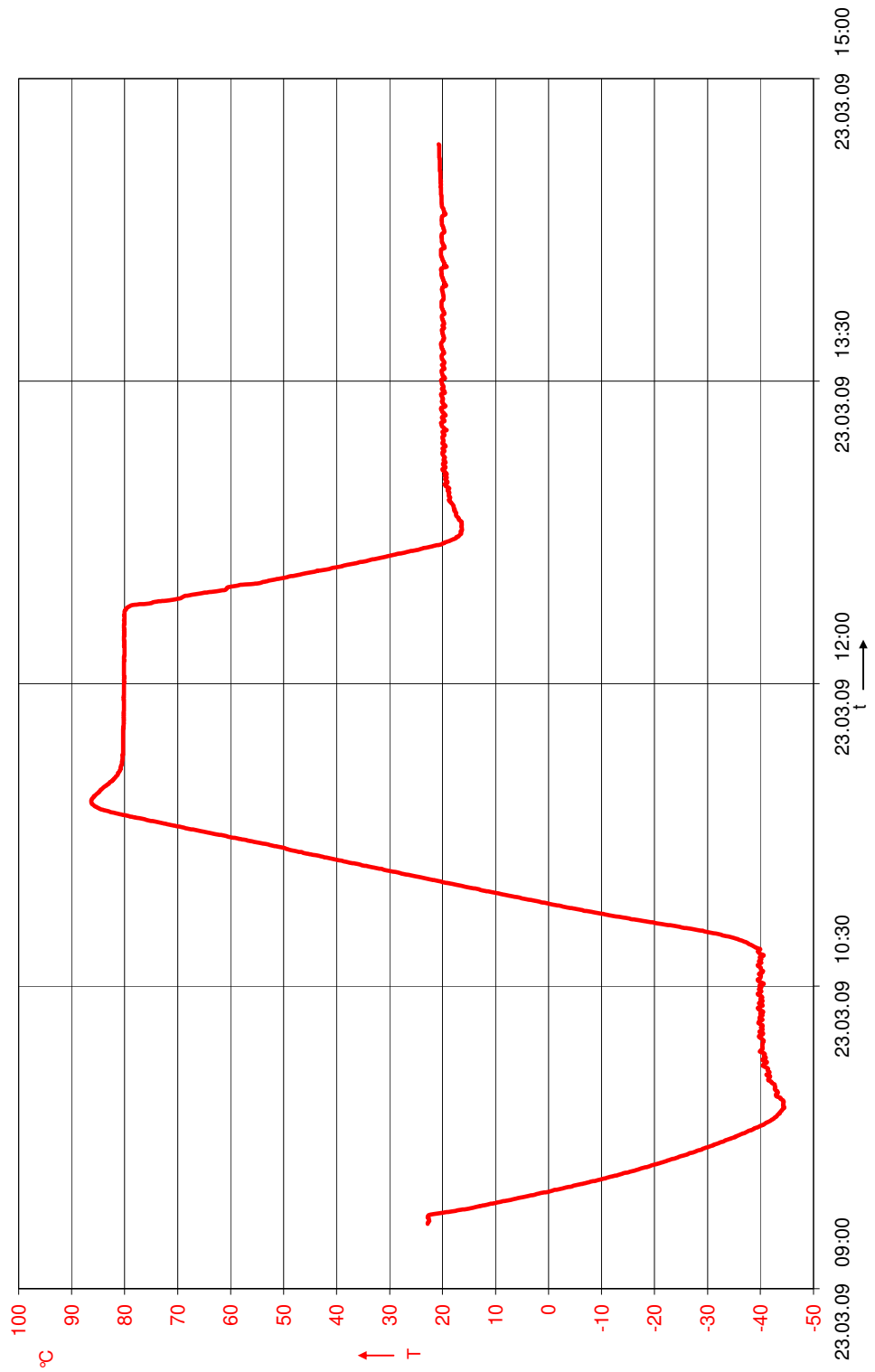
Temperature superimposing in accordance with DIN EN 60068-2-14, Test Nb
ACL 132 Axis 1



Temperature superimposing in accordance with DIN EN 60068-2-14, Test Nb
ACL 132 Axis 2



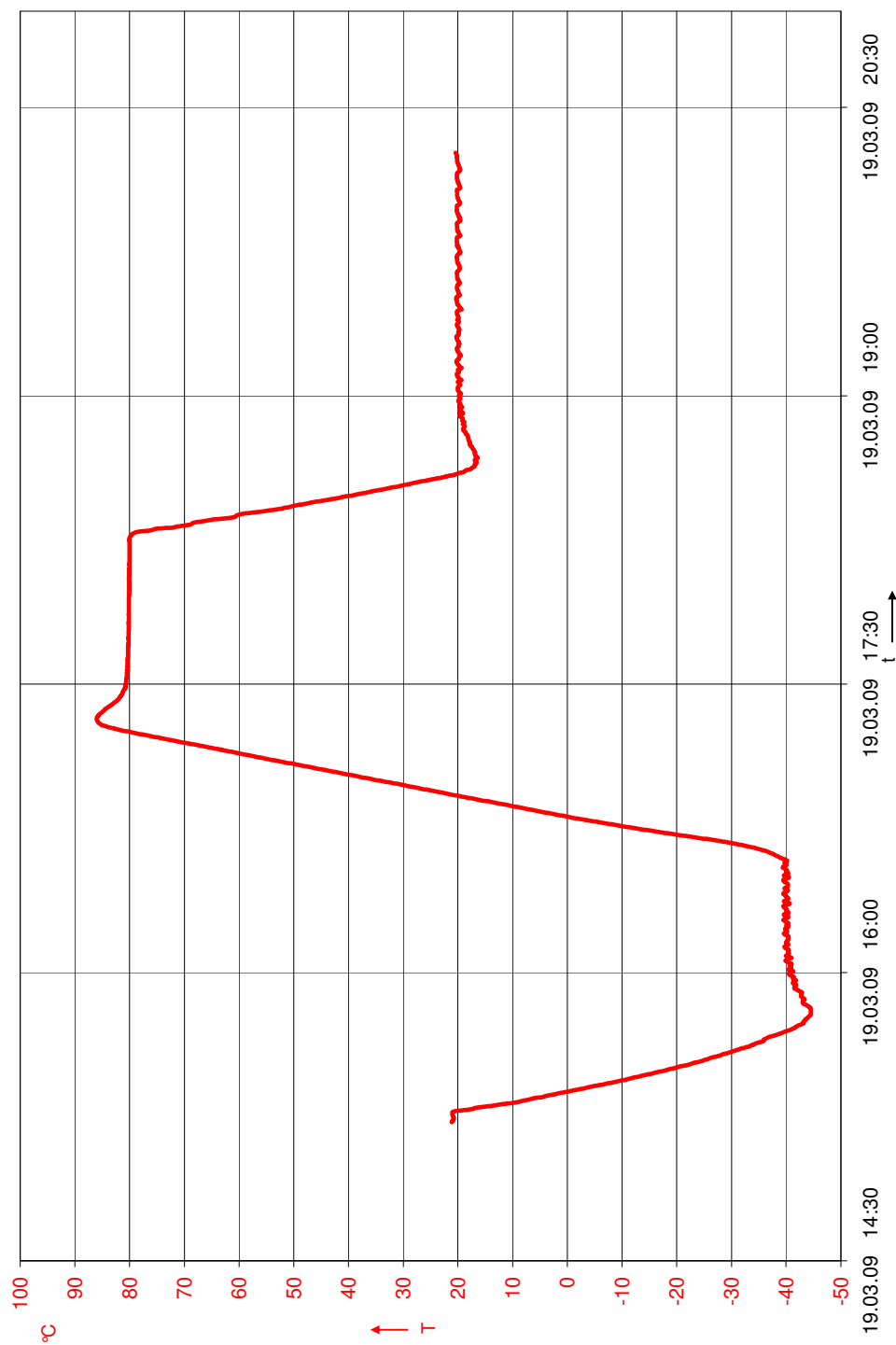
Temperature superimposing in accordance with DIN EN 60068-2-14, Test Nb
ACL 132 Axis 3



Temperature superimposing in accordance with DIN EN 60068-2-14, Test Nb
ACL 092 Axis 1



Temperature superimposing in accordance with DIN EN 60068-2-14, Test Nb
ACL 092 Axis 2



Temperature superimposing in accordance with DIN EN 60068-2-14, Test Nb
ACL 092 Axis 3

