



Type approval of safety nets for protection against rockfall

Test Certificate No. S 01-1

System description

- **System designation**

RX-300 Dimo

- **Address of designer**

GEOBRUGG Fatzer AG Schutzsysteme, Hofstrasse 55,
8590 Romanshorn

- **System description**

– Energy class 3000 kJ

– Posts: profile HEB 200

length a_l 5.26 m

interval a_s 10 m

– Support ropes: type DIN 3064

diameter 22 mm

– Net: type ROCCO 16-winding

diameter Ring diameter 300 mm, wire diameter 3 mm

mesh -

height h_v 4.79 m

– System drawings

Description	No.	Date
Rockfall construction system RX-300	GS-1027 d	07.09.01
Post RX-300 HEB 200	GN-6003	29.04.01
Ground plate RX-300	GN-7001	30.04.01
Material specification RX-300	-	11.09.01
RX-300 guide for support ropes above / below with measurement boxes	GN-1005.01	11.09.01
RX-300 guide for support ropes above / below without m.b.	-	11.09.01
Guy cables + retaining rope with measurement boxes	GN-1005.03	11.09.01
Guy cables + retaining rope with measurement boxes	GN-1005-04	11.09.01
GS-8002 (force-path diagram for braking ring)	-	-
GN-9017 (force-path diagram for braking ring)	-	-
GN-9055 (force-path diagram for braking ring)	-	-

Basic documentation

- **Field test**

WSL test report

Date 16 April 2002

Report no. 01-1

- **Overall assessment**

Overall assessment of the
EKLS (FECAR)

Date 16 April 2002

Report no. S 01-1



Test results

• Preliminary test of outer part

- Penetration of test body yes / no
- Additional observations none

• Preliminary energy test (50%)

- Penetration of test body 1500 kJ
yes / no
- Braking time t_s 0.32 s
- Braking distance b_s 5.0 m
- Sum of the tensile forces in the 2 upper cables 410 kN
- Sum of the tensile forces in the 2 lower cables 400 kN
- Maximum of the tensile forces in a stay cable 230 kN

– List of damaged elements

No damage to load-bearing parts of the structure. 35 out of 84 braking components were deformed and 21 were replaced for the main test.

– Assessment of repairs

The repairs necessary after the test were assessed as normal in view of the size of the whole system. These repairs took 75 man-hours.

• Main energy test (100%)

- Penetration of test body 3000 kJ
yes / no
- Braking time t_s 0.44 s
- *Maximum permissible braking distance b_s* 12 m
- Measured braking distance b_s 6.60 m
- *Minimum permissible residual braking height h_n* 2.5 m
- Measured residual braking height h_n 2.65 m
- Sum of the tensile forces in the 2 upper cables 520 kN
- Sum of the tensile forces in the 2 lower cables 510 kN
- Maximum of the tensile forces in a stay cable 330 kN

– List of damaged elements

No damage to load-bearing parts of the structure. 61 out of 84 braking components were deformed. Two of the 24 braking components (DIMO components) that are intended as breaking points were torn off the post heads.

• Assessment of special criteria

– Comments on assembly and on the assembly instructions

Assembly is time-consuming, but in line with the size of the system.

– Comments on adaptability to the terrain

Adaptability to the terrain is somewhat restricted, but in line with the size of the system.



– **Comments on design complexity**

For the 3000 kJ energy class, the design is more complex than any existing system with lesser energy absorption capacity.

– **Comments on anticipated life cycle**

The manufacturer offers a choice of normal corrosion protection (galvanized according to DIN 2078) or special corrosion protection (zinc/aluminium coating). The expected service life of both is assessed as adequate.

Overall assessment

Test passed

Test passed with reservations

Examined based on the following guidelines: GERBER, W. 2001: Guideline for the approval of rockfall protection kits. Environment in practice. Swiss Agency for the Environment, Forests and Landscape (SAEFL), Swiss Federal Research Institute WSL. Berne, 39 pages. Revised June 2006.

RESERVATION: Should deficiencies arise following certification of the safety net, FOEN may revoke product release and delete it from the type approval list.

Date

19.05.2006

Name, position

Andreas Götz, Vice Director

Signatures

Replaces the Certificate No. S 01-1 of 14 October 2002

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