Abstract of test report no. 0603

System TS-300-oA
Test V1503 / Eisenerz / 11.11.2003

General information

Energy class:	300kJ
Manufacturer:	Trumer Schutzbauten GmbH Maria-Bühel Straße 7 5110 Oberndorf bei Salzburg Austria
Product name:	TS-300-oA
Test report number:	0603
Test report creation date:	25.11.2003

Specification of rock-fall protection kit TS-300-oA

The tested rock-fall protection kit TS-300-oA of TRUMER SCHUTZBAUTEN GMBH is a flexible rock-fall protection system for energy impacts up to 300kJ.
The rock-fall protection kit TS-300-oA is characterised by a support structure which is fixed to the underground by anchored ground plates. Because of a welded connection between post and ground plate uphill retaining cables are not necessary.
The interception structure of the tested rock-fall protection kit consists of an OMEGA-Net and an additional layer in the middle functional module. The structure is supported by two integrated longitudinal ropes, which are connected to the side foundations using energy dissipating devices.
The upper and lower longitudinal bearing rope are arranged as single ropes and also connected to the side foundations using energy dissipating devices.

Main components of rock-fall protection kit TS-300-oA

INTERCEPTION STRUCTURE

PRIMARY NET	Type	OMEGA-Net
	Rope diameter	6.0mm
	Mesh-size	130.0mm
	Dimensions	5.00m x 3.15m
	Connection to bearing ropes	threaded
	Connection to side posts	steel cable (Ø 10.0mm)
	Net to net connection	3/8' shackles
ADDITIONAL LAYER	Type	rectangular netting
	Wire diameter	3.1mm
	Mesh-size	60mm x 60mm
	Tensile strength of wires	400 to 500 N/mm²
	Dimensions	2.00m x 3.15m

SUPPORT STRUCTURE

POST	Type	HEB-160 (IPB-160)
	Material	S 235 JR
	Length	3.15m
GROUND PLATE	Dimensions	790mm x 300mm x 20mm
	Material	S 235 JR
	Connection to post	welded
	Connection to underground	fixed by two anchors
GUIDANCE OF ROPES	Bearing ropes	rounded guiding devices
	Integrated supporting ropes	3/4' shackles

CONNECTING COMPONENTS

UPPER AND LOWER LONGITUDINAL BEARING ROPES (cp. DIN 3060, ISO 2408 and EN 12385-4)
Rope 16 / 6x19 Standard / DIN 3060 / steel core / galvanised / 1770N/mm²

Nominal rope diameter	16mm
Calculated breaking load	188kN

INTEGRATED LONGITUDINAL SUPPORTING ROPES (cp. DIN 3060, ISO 2408 and EN 12385-4)
Rope 16 / 6x19 Standard / DIN 3060 / steel core / galvanised / 1770N/mm²

Nominal rope diameter	16mm
Calculated breaking load	188kN

SIDE CABLES (cp. DIN 3060, ISO 2408 and EN 12385-4)
Rope 16 / 6x19 Standard / DIN 3060 / steel core / galvanised / 1770N/mm²

Nominal rope diameter	16mm
Calculated breaking load	188kN

ENERGY DISSIPATING DEVICES

ENERGY DISSIPATING DEVICES IN LONGITUDINAL BEARING ROPES

Type	AVT-phx	Position	left and right rope foundation
	FLA 60x25mm	Connection to rope	3/4' shackle
	2.5 windings	Connection to anchor	3/4' shackle

ENERGY DISSIPATING DEVICES IN INTEGRATED LONGITUDINAL SUPPORTING ROPES

Type	AVT-phx	Position	left and right rope foundation
	FLA 60x20mm	Connection to rope	3/4' shackle
	4.5 windings	Connection to anchor	3/4' shackle

Summary of test results

The tested rock-fall protection kit TS-300-oA of TRUMER SCHUTZBAUTEN GMBH was hit by a block of reinforced concrete with a mass of 1046kg and a velocity of 25.80m/s. The impact was placed in a height of 1.81m. The angle of block trajectory was determined with 31.10°. The impact energy was determined with 348kJ. The maximum horizontal system elongation was 3.75m.
The block was stopped and caught by the rock-fall protection kit and did not touch the ground during the test until the system reached the maximum elongation. The whole impact energy was absorbed by the tested rock-fall protection kit.
There were no visible damages in connecting components and the support structure. In the place of impact the primary net was deformed irreversibly and the additional layer was destroyed.
The energy dissipating devices in the longitudinal bearing and supporting ropes were stretched, but still showed plenty of remaining deformation capacity after the test.
As a consequence of the impact the average vertical height of the middle functional module of the rock-fall protection kit was reduced to 2.30m.

THE ROCK-FALL PROTECTION KIT **TS-300-oA** OF TRUMER SCHUTZBAUTEN GMBH WAS TESTED SUCCESSFULLY.

Affirmation of test report no. 0603 by the University of Leoben

The department of Mining & Tunnelling of the University of Leoben approves that test report no. 0603 created by Christian Heiss is correct in respect of content and matter of fact.

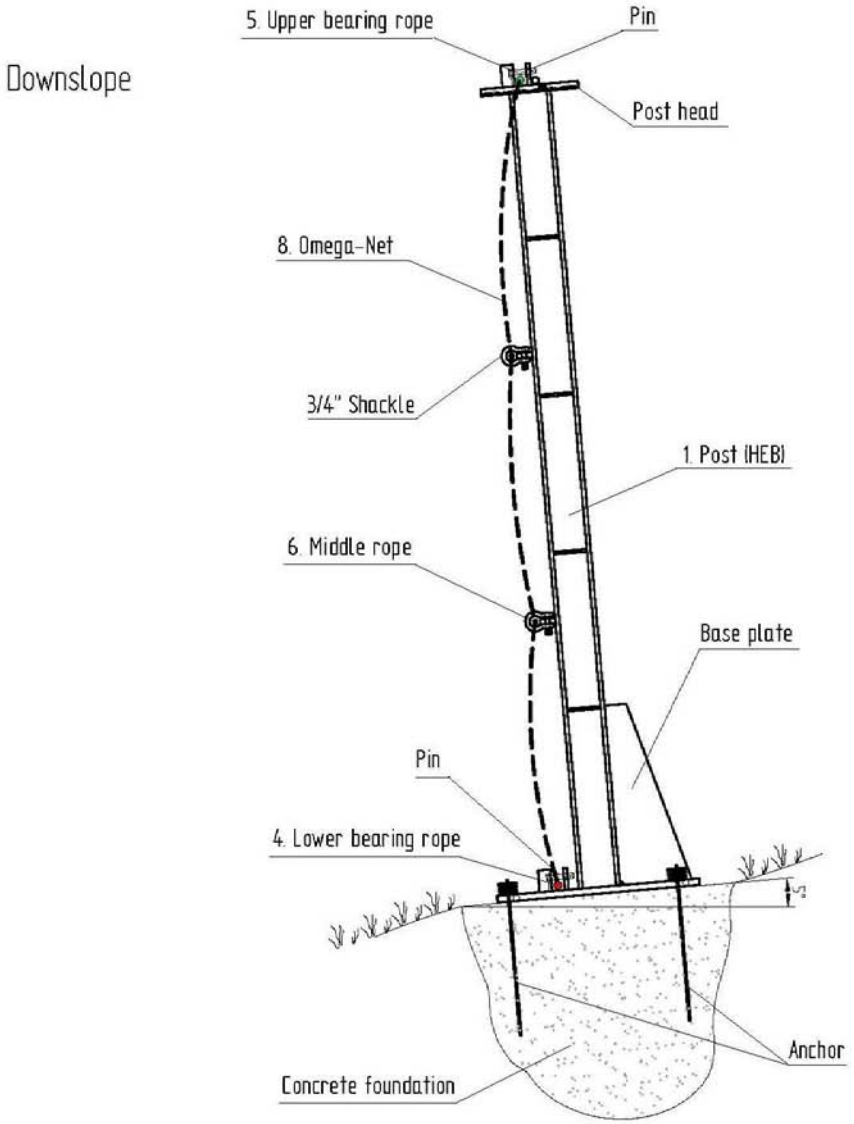
Leoben, 25.07.2005

MONTANUNIVERSITÄT LEOBEN
LEHRSTUHL FÜR BERGBAUKUNDE

(a.o.Uni.Prof.Dipl.-Ing.Dr.mont. Peter Moser)

(Dipl.-Ing. Hannes Blaha)

Rockfall Protection System TS-300-oA · Lateral View



- Tested with 348 kJ
- Rigid base plate
- No upslope retaining ropes
- Bearing and middle ropes
- Brake elements on bearing and middle ropes
- Omega-Net

TRUMER Schutzbauten GmbH

SAFETY BY COMPETENCE

Rockfall Protection System TS-300-oA · Frontal View