

**Spiral rope anchor and FLEX Head**

**FLEXIBLE AND RELIABLE  
ANCHORING**

# THE SMARTER ANCHOR FLEXES.

The flexibility of the whole system is crucial for both rockfall barriers and other protection systems. Why? The drilling axis and the angle of the anchor ropes are rarely the same, and during rockfall or debris flow events, the direction of loading can change. In both cases, a flexible anchor connection enables an optimal load transfer.

Flexible spiral rope anchors or FLEX Heads are not sensitive to impact and retain complete load-bearing capacity, even if the active forces are not aligned with the drilling axis. This is in contrast with rigid bar anchors, where the transmitted bending moments from non-linear loading can significantly reduce the capacity.

# FLEXIBLE ANCHORS - BECAUSE NATURAL HAZARDS ARE UNPREDICTABLE.

**When anchoring systems for protection against natural hazards, our spiral rope anchors and FLEX Heads are the first choice:**

- ▶ The rope on the region of the head remains intact thanks to its special protection against impacts and bending
- ▶ Full load-bearing capacity is retained even if the tensile direction is  $\pm 30^\circ$  to the drilling axis
- ▶ Long operating life due to double corrosion protection
- ▶ The rope can be directly fixed to the anchor head without weakening the rope loop



# ALWAYS PERFECTLY ANCHORED.



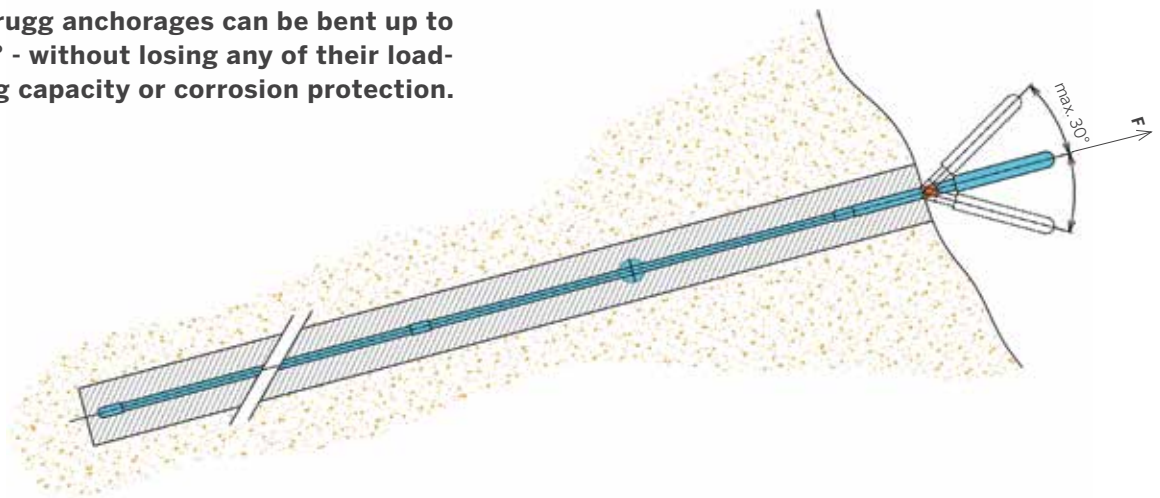
## Geobruigg spiral rope anchor

Our standard spiral rope anchor **1** can be adapted for every composition of the ground. We recommend using spacers **2** when installing in rock or unconsolidated soil for centering the anchor in the borehole during mortar grouting. This ensures load transfer between the rope and the subsoil as well as optimal corrosion protection.

## Geobruigg FLEX Head

If the drill holes are unstable, the use of self-drilling anchors together with our **FLEX Head 3** is the best solution. It can be screwed onto commercially available bar anchors or self-drilling anchors. The FLEX Head coupled with the bar absorbs the tangential bending forces and transfers the load to the bar anchor according to the same principles as the Geobruigg spiral rope anchors. The FLEX Head consists of a typical spiral rope loop with all the advantages of flexibility. There are also heavy-duty versions **4** available for larger anchor diameters.

**Geobruigg anchorages can be bent up to 30° - without losing any of their load-bearing capacity or corrosion protection.**



# INTERNATIONAL EXPERTS RECOMMEND GEOBRUGG ANCHORAGES.

Our anchorages have been tried and tested thousands of times - just like our protection systems against natural hazards. There are good reasons for institutes including the Technical University (TU) Munich /Germany, the Federal Institute for Snow and Avalanche Research (SLF) Davos /Switzerland and the Japanese Railway Research Institute (JR), Tokyo/Japan recommending the use of Geobrugg spiral rope anchors.



## Resistant against impacts

Our anchor heads are resistant against impact stress by their flexibility.



## Simple installation

In the case of loose subsoil, self-drilling anchors are particularly advantageous. The FLEX Head is simply screwed onto the anchor, then the concrete foundation can be prepared around the anchor.



## Easy to transport

Our flexible spiral rope anchors of length 1 m to 20 m are easy to transport and store. The FLEX Head itself is extremely compact and requires little space when transporting and storing.

## Our spiral rope anchors and FLEX Heads provide the following features:



### Flexible

The anchor heads are resistant against impacts and retain their load-bearing capacity even for tensile directions that are oblique to the drilling axis. Their flexibility also simplifies transportation.



### High-tensile

The spiral ropes are made from high-tensile steel wire with a tensile strength of 1770 N/mm<sup>2</sup> and enable high load capacities to be achieved in spiral rope anchors with low rope diameters.



### Protected bar anchor

Bar anchors are subjected to less loading in the head region with a FLEX Head than with rigid solutions, which significantly increases the operating life of the anchor bar.



### First-class corrosion protection

The rope loop is doubly protected by an internally and externally hot-dip galvanized pipe. Critical places are protected against corrosion by the pipe and the mortar in the ground.



### Easy to assemble

The FLEX Head enables the use of bar anchors or self-drilling anchors. These can be adapted to heterogeneous ground conditions and allow great flexibility.

# TECHNICAL DATA

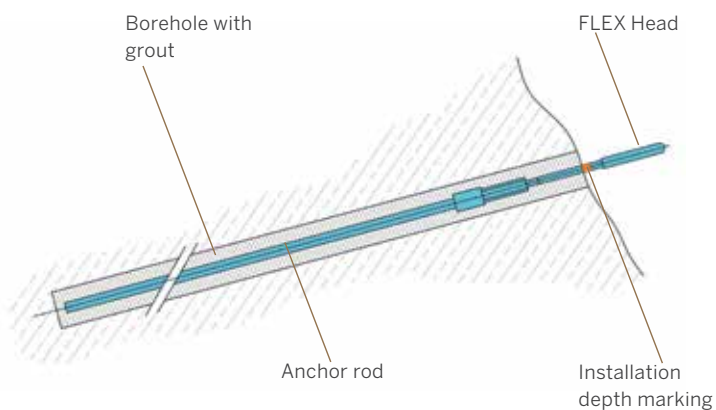


SPIRAL ROPE ANCHOR				
Ø Rope [mm]	10,5	14,5	18,5	22,5
Working load [kN]	100	195	315	470
Breaking load [kN]	210	350	525	765
Recommended borehole diameter min. [mm]	55	70	90	90
Weight [kg], L = 1 m	1.8	3.8	6.6	10.5
Weight [kg] / meter additional length	1.0	2.0	3.3	4.8
A [mm]	83	104	138	180
B [mm]	40	50	70	95
Shackle size for connection min.	5/8"	3/4"	7/8"	1"

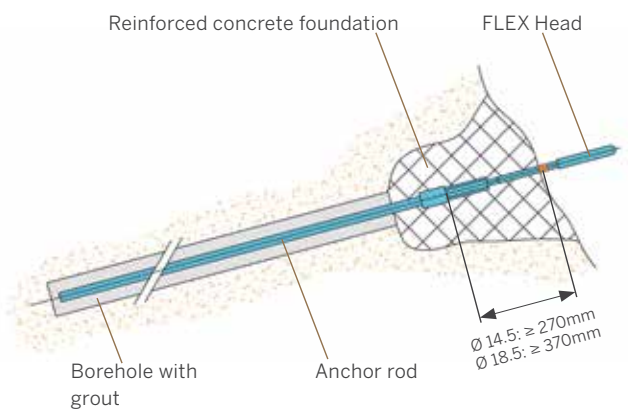
FLEX HEAD* + BAR ANCHOR TITAN	TITAN 30/11	TITAN 40/16	TITAN 40/16	TITAN 52/26
Ø Rope [mm]	14,5	18,5	22,5	22,5
Working load [kN]	170	315	345	470
FLEX HEAD* + BAR ANCHOR IBO	IBO R32N	IBO R32S	IBO R38N	IBO R51N
Ø Rope [mm]	14,5	18,5	22,5	22,5
Working load [kN]	150	185	265	425
FLEX HEAD* + BAR ANCHOR GEWI	GEWI 28	GEWI 32	GEWI 40	
Ø Rope [mm]	14,5	18,5	22,5	
Working load [kN]	195	270	420	

\*Safety factor min. 1.5 depending on the connection part

## FLEX Head standard design in rock



## FLEX Head standard design in soil



# OUR ANCHORS AND FLEX HEADS PROVE THEMSELVES IN ALL PROTECTION SYSTEMS.



**Rockfall Protection Systems**



**Avalanche Prevention with Spiral Rope Nets**



**Shallow Landslide Barriers**



**Rockfall Drapes (Anchorage of Support Rope)**



**Debris Flow Barriers**



**TECCO®-Slope Stabilisation  
(Anchorage of Border Rope)**



More information and projects on our website:  
[www.geobruigg.com/projects](http://www.geobruigg.com/projects)



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**GeobruGG AG**  
Aachstrasse 11 | 8590 Romanshorn | Switzerland  
[www.geobruGG.com](http://www.geobruGG.com)

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