Technical Data Sheet for MGS and MGSr

MGS Threaded Rod, zinc plated, steel quality 4.6 or 8.8 and MGSr Threaded Rod, stainless steel A4-70/316 for Mungo chemical fixing products

1 DESCRIPTION

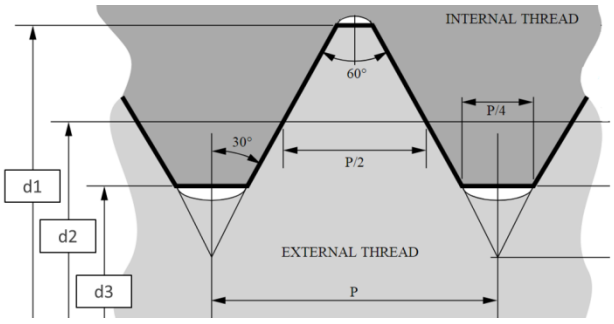
Mungo post-installed anchoring applications MGS and MGSr are designed for a reliable performance in a wide range of chemical anchoring applications. Threaded Rods MGS and MGSr can be used with all Mungo chemical fixing products. Threaded Rods are suitable for individual use with different setting depths in steel grades 4.6 or 8.8 (MIT-S) and A4-70 (MGSr) and A4-50 for MGSr size M30.
For separate design with MGS or MGSr and corresponding Mungo chemical application, please see the relevant ETA or Mungo Design software.

MGS: Reliable Mungo quality to fulfil the basic needs in steel quality 4.6 or high-strength steel quality 8.8 for post-installed chemical anchoring applications.
MGSr: Increased performances including high-strength and stainless steel combination. Reliable usability for the most demand areas with chemical applications.

2 DESIGNATION OF ANCHOR PARTS AND DIMENSIONS

Futures:

Anchor Rod dimensions	Basic Diameter	Pitch	Stress Diameter	Major Diameter		Pitch Diameter		Minor Diameter	
	[mm]	[mm]	[mm^2]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
M	D	p	As	dmax	dmin	d2max	d2min	d3max	d3min
M5	5	0.80	14.18	4.98	4.83	4.46	4.36	4.10	3.87
M6	6	1.00	20.12	5.97	5.79	5.32	5.21	4.88	4.60
M8	8	1.25	36.61	7.97	7.76	7.16	7.04	6.59	6.27
M10	10	1.50	57.99	9.97	9.73	8.99	8.86	8.31	7.94
M12	12	1.75	84.27	11.97	11.70	10.83	10.68	10.03	9.60
M16	16	2.00	156.67	15.96	15.68	14.66	14.50	13.74	13.27
M20	20	2.50	244.79	19.96	19.62	18.33	18.16	17.17	16.62
M24	24	3.00	352.50	23.95	23.58	22.00	21.80	20.60	19.96
M30	30	3.50	560.59	29.95	29.52	27.67	27.46	26.03	25.31



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3 PRODUCT INFORMATION

MGS Threaded Rod, steel quality 4.6 or 8.8,
MGSr Threaded Rod, stainless steel A4-70/316

Article code MGS 4.6 zinc plated	Article code MGS 8.8 zinc plated	Article code MGSr A4-70 stainless steel	Dimensions	Length [mm] L
7460510*	7880510*	7040510*	M5 x 1000	1000
7460610*	7880610*	7040610*	M6 x 1000	1000
7460810	7880810	7040810	M8 x 1000	1000
7461010	7881010	7041010	M10 x 1000	1000
7461210	7881210	7041210	M12 x 1000	1000
7461610	7881610	7041610	M16 x 1000	1000
—	7882010	7042010	M20 x 1000	1000
—	7882410	7042410	M24 x 1000	1000
—	7883010	7043010**	M30 x 1000	1000

*Not part of the approval
**Stainless steel A4-50 (Tensile strength 500 N/mm2)

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4 VALUES FOR STEEL TENSION RESISTANCE AND STEEL SHEAR RESISTANCE

4.1 Recommended values for steel tension resistance and steel shear resistance:

$N_{rec,s} = N_{Rk,s} / \gamma_{Ms,N} / \gamma_F$; $V_{rec,s} = V_{Rk,s} / \gamma_{Ms,V} / \gamma_F$; $M_{rec,s} = M_{Rk,s} / \gamma_{Ms,V} / \gamma_F$

Threaded Rod size			M5	M6	M8	M10	M12	M16	M20	M24	M30
Recommended tension resistance											
MGS, steel proprerty class 4.6	$N_{rec,s}$	[kN]	2.03	2.87	5.23	8.29	12.04	22.43	35.00	50.43	80.14
MGS, steel proprerty class 8.8	$N_{rec,s}$	[kN]	5.40	7.66	13.94	22.10	32.11	59.81	93.33	134.48	213.71
MGS, stainless steel A4, property class 70	$N_{rec,s}$	[kN]	3.79	5.37	9.79	15.51	22.54	41.98	65.51	94.39	70.05
Recommended shear resistance											
MGS, steel proprerty class 4.6	$V_{rec,s}$	[kN]	1.21	1.72	3.13	4.96	7.21	13.43	20.96	30.20	47.99
MGS, steel proprerty class 8.8	$V_{rec,s}$	[kN]	3.24	4.59	8.37	13.26	19.27	35.89	56.00	80.69	128.23
MGS, stainless steel A4, property class 70	$V_{rec,s}$	[kN]	2.27	3.22	5.87	9.29	13.51	25.16	39.26	56.57	42.09
Recommended bending moment resistance											
MGS, steel proprerty class 4.6	$M_{rec,s}$	[Nm]	1.5	2.6	6.4	12.8	22.4	57.0	111.0	192.1	384.8
MGS, steel proprerty class 8.8	$M_{rec,s}$	[Nm]	4.1	7.0	17.1	34.2	59.9	152.2	296.7	513.2	1028.1
MGS, stainless steel A4, property class 70	$M_{rec,s}$	[Nm]	2.9	4.9	12.0	24.0	42.0	106.7	208.0	359.8	337.5

The partial safety factors of the resistances γ_{Ms} (EOTA, TR 029) as well as a partial safety factor of the load $\gamma_F = 1.4$ are considered.

4.2 Design values for steel tension resistance and steel shear resistance:

$N_{Rd,s} = N_{Rk,s} / \gamma_{Ms,N}$; $V_{Rd,s} = V_{Rk,s} / \gamma_{Ms,V}$; $M_{Rd,s} = M_{Rk,s} / \gamma_{Ms,V}$

Threaded Rod size			M5	M6	M8	M10	M12	M16	M20	M24	M30
Design tension resistance											
MGS, steel proprerty class 4.6	$N_{Rd,s}$	[kN]	2.84	4.02	7.32	11.60	16.86	31.40	49.00	70.60	112.20
MGS, steel proprerty class 8.8	$N_{Rd,s}$	[kN]	7.56	10.72	19.52	30.93	44.96	83.73	130.67	188.27	299.20
MGS, stainless steel A4, property class 70	$N_{Rd,s}$	[kN]	5.31	7.52	13.70	21.71	31.56	58.77	91.71	132.14	98.08
Design shear resistance											
MGS, steel proprerty class 4.6	$V_{Rd,s}$	[kN]	1.70	2.41	4.38	6.95	10.10	18.80	29.34	42.28	67.19
MGS, steel proprerty class 8.8	$V_{Rd,s}$	[kN]	4.54	6.43	11.71	18.56	26.98	50.24	78.40	112.96	179.52
MGS, stainless steel A4, property class 70	$V_{Rd,s}$	[kN]	3.18	4.51	8.21	13.01	18.91	35.22	54.97	79.20	58.93
Design bending moment resistance											
MGS, steel proprerty class 4.6	$M_{Rd,s}$	[Nm]	2.2	3.7	9.0	17.9	31.4	79.8	155.5	268.9	538.7
MGS, steel proprerty class 8.8	$M_{Rd,s}$	[Nm]	5.8	9.8	24.0	47.8	83.8	213.1	415.4	718.4	1439.4
MGS, stainless steel A4, property class 70	$M_{Rd,s}$	[Nm]	4.1	6.8	16.8	33.5	58.8	149.4	291.3	503.7	472.5

The partial safety factors of the resistances γ_{Ms} (EOTA, TR 029) is considered.

4.3 Characteristic values for steel tension resistance and steel shear resistance:

Threaded Rod size			M5	M6	M8	M10	M12	M16	M20	M24	M30
Characteristic tension resistance											
MGS, steel proprerty class 4.6	$N_{Rk,s}$	[kN]	5.67	8.04	14.64	23.20	33.72	62.80	98.00	141.20	224.40
MGS, steel proprerty class 8.8	$N_{Rk,s}$	[kN]	11.34	16.08	29.28	46.40	67.44	125.60	196.00	282.40	448.80
MGS, stainless steel A4, property class 70	$N_{Rk,s}$	[kN]	9.93	14.07	25.62	40.60	59.01	109.90	171.50	247.10	280.50
Characteristic shear resistance											
MGS, steel proprerty class 4.6	$V_{Rk,s}$	[kN]	2.84	4.02	7.32	11.60	16.86	31.40	49.00	70.60	112.20
MGS, steel proprerty class 8.8	$V_{Rk,s}$	[kN]	5.67	8.04	14.64	23.20	33.72	62.80	98.00	141.20	224.40
MGS, stainless steel A4, property class 70	$V_{Rk,s}$	[kN]	4.96	7.04	12.81	20.30	29.51	54.95	85.75	123.55	140.25
Characteristic bending moment resistance											
MGS, steel proprerty class 4.6	$M_{Rk,s}$	[Nm]	3.6	6.1	15.0	29.9	52.4	133.2	259.6	449.0	899.6
MGS, steel proprerty class 8.8	$M_{Rk,s}$	[Nm]	7.2	12.2	30.0	59.8	104.8	266.4	519.3	898.0	1799.2
MGS, stainless steel A4, property class 70	$M_{Rk,s}$	[Nm]	6.3	10.7	26.2	52.3	91.7	233.1	454.4	785.8	1124.5

Partial safety factors for γ_{Ms} are determined as a function of the type of loading following EOTA, TR 029, Design of Bonded Anchors;

- MGS steel property class 4.6; $\gamma_{Ms,N} = 2.0$ and $\gamma_{Ms,V} = 1.67$
- MGS steel property class 8.8; $\gamma_{Ms,N} = 1.5$ and $\gamma_{Ms,V} = 1.25$
- MGSr stainless steel A4-70; $\gamma_{Ms,N} = 1.87$ and $\gamma_{Ms,V} = 1.56$ (MGSr M30 A4-50; $\gamma_{Ms,N} = 2.86$ and $\gamma_{Ms,V} = 2.38$)

Partial safety factors are in absence of national regulation.

5 ATTENTION

The data input must be checked by the user under the responsibility of an engineer experienced in anchorage. This is to ensure there are no errors and all data is complete and accurate and complies with all rules and regulations for the actual conditions and application. The data contained in the technical data sheet is based on principles, formulas and safety regulations according to the existing guidelines for anchorages.

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