

MET

Threaded rods, nuts and washers

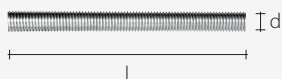
MGS 1000

Threaded rod

Strength grade 4.8 - Hot dip

Galvanized carbon steel

DIN 975



code	rod	L [mm]	pcs/box
MGS10008	M8	1000	10
MGS100010	M10	1000	10
MGS100012	M12	1000	10
MGS100014	M14	1000	10
MGS100016	M16	1000	10
MGS100018	M18	1000	10
MGS100020	M20	1000	10
MGS100022	M22	1000	10
MGS100024	M24	1000	10
MGS100027	M27	1000	10
MGS100030	M30	1000	10

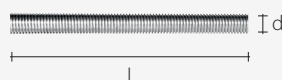
MGS 1000

Threaded rod

Strength grade 8.8 - Hot dip

Galvanized carbon steel

DIN 975



code	rod	L [mm]	pcs/box
MGS10888	M8	1000	1
MGS11088	M10	1000	1
MGS11288	M12	1000	1
MGS11488	M14	1000	1
MGS11688	M16	1000	1
MGS11888	M18	1000	1
MGS12088	M20	1000	1
MGS12488	M24	1000	1
MGS12788	M27	1000	1

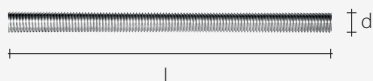
MGS 2200

Threaded rod

Strength grade 4.8 - Hot dip

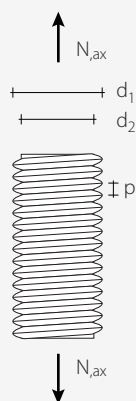
Galvanized carbon steel

DIN 975



code	rod	L [mm]	pcs/box
MGS220012	M12	2200	1
MGS220016	M16	2200	1
MGS220020	M20	2200	1

STATIC VALUES - TENSILE STRENGTH



					CHARACTERISTIC VALUES		ADMISSIBLE VALUES	
					strength grade		strength grade	
					4.8	8.8	4.8	8.8
rod	d ₁ [mm]	d ₂ [mm]	p [mm]	A _{resist} [mm ²]	N _{ax,k} [kN]	N _{ax,k} [kN]	N _{adm} [kg]	N _{adm} [kg]
M8	8,0	6,47	1,25	36,6	13,2	26,4	586	1365
M10	10,0	8,16	1,50	58,0	20,9	41,8	928	2163
M12	12,0	9,85	1,75	84,3	30,3	60,7	1349	3144
M14	14,0	11,55	2,00	115,0	41,4	82,8	1840	4290
M16	16,0	13,55	2,00	157,0	56,5	113,0	2512	5856
M18	18,0	14,93	2,50	192,0	69,1	138,2	3072	7162
M20	20,0	16,93	2,50	245,0	88,2	176,4	3920	9139
M22	22,0	18,93	2,50	303,0	109,1	218,2	4848	11302
M24	24,0	20,32	3,00	353,0	127,1	254,2	5648	13167
M27	27,0	23,32	3,00	459,0	165,2	330,5	7344	17121
M30	30,0	25,71	3,50	561,0	202,0	403,9	8976	20925

- Characteristic values according to EN 1993.
- Design values can be obtained from characteristic values as follows: $N_{ax,d} = N_{ax,k} / \gamma_{m2}$

DADO SIMPLEX

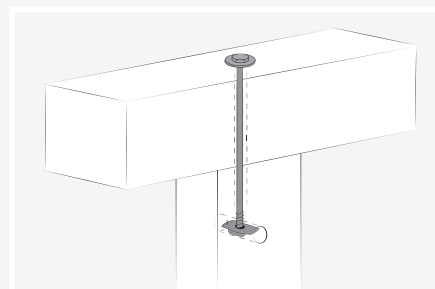
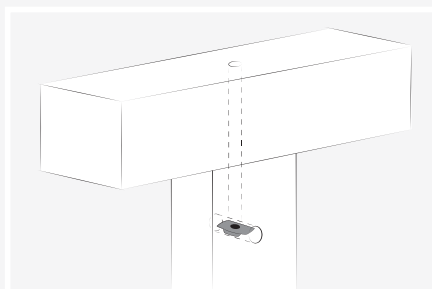
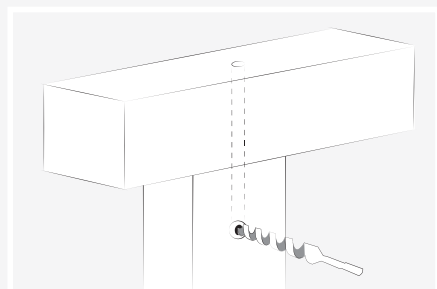
Cast iron

DIN 1052



code	rod	L [mm]	d [mm]	hole [mm]	pcs/box
FE010335	M12	54	22	24	100
FE013340	M16	72	28,5	32	50

ASSEMBLING



ULS 9021

Washer

S235 steel - bright zinc plated

DIN 9021 (ISO 9073*)



code	rod	d _{INT} [mm]	d _{EXT} [mm]	s[mm]	pcs/box
ULS8242	M8	8,4	24	2	200
ULS10302	M10	10,5	30	2,5	200
ULS13373	M12	13	37	3	200
ULS15443	M14	15	44	3	100
ULS17503	M16	17	50	3	100
ULS20564	M18	20	56	4	50
ULS22604	M20	22	60	4	50

* ISO 9073 differs from DIN 9021 with regards to surface toughness

ULS 440

Washer

S235 steel - bright zinc plated

DIN 440 R (ISO 7094*)



code	rod	d _{INT} [mm]	d _{EXT} [mm]	s[mm]	pcs/box
ULS11343	M10	11	34	3	200
ULS13444	M12	13,5	44	4	200
ULS17565	M16	17,5	56	5	50
ULS22726	M20	22	72	6	50
ULS26856	M24	26	85	6	25

* ISO 7094 differs from DIN 440 R with regards to surface toughness

ULS 1052

Washer

S235 steel - bright zinc plated

DIN 1052



code	rod	d _{INT} [mm]	d _{EXT} [mm]	s[mm]	pcs/box
ULS14586	M12	14	58	6	50
ULS18686	M16	18	68	6	50
ULS22808	M20	22	80	8	25
ULS25928	M24	25	92	8	20
ULS271058	M27	27	105	8	20

ULS 125

Washer

S235 steel – bright zinc plated

DIN 125 A (ISO 7089*)

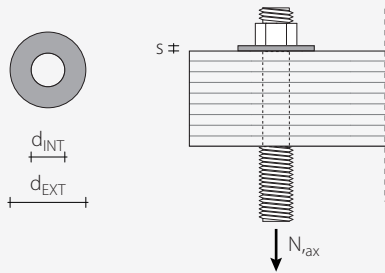


code	rod	d _{INT} [mm]	d _{EXT} [mm]	s[mm]	pcs/box
ULS81616	M8	8,4	16	1,6	1000
ULS10202	M10	10,5	20	2	500
ULS13242	M12	13	24	2,5	500
ULS17303	M16	17	30	3	250
ULS21373	M20	21	37	3	250
ULS25444	M24	25	44	4	200
ULS28504	M27	28	50	4	20
ULS31564	M30	31	56	4	20

* ISO 7089 differs from DIN 125 A with regards to surface toughness

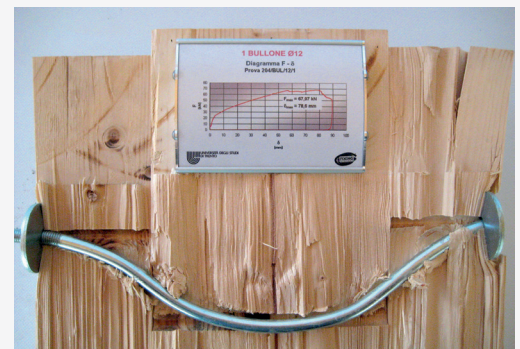
STATIC VALUES - WASHERS

PULL-THROUGH RESISTANCE



					CHARACTERISTIC VALUES	ADMISSIBLE VALUES
rod	standard	d _{INT} [mm]	d _{EXT} [mm]	s [mm]	N _{ax,k} [kN]	N _{adm} [kg]
M10	DIN 125 A	10,5	20,0	2,0	1,84	68
	DIN 9021	10,5	30,0	2,5	5,02	186
	DIN 440 R	11	34,0	3,0	6,58	244
	DIN 1052	-	-	-	-	-
M12	DIN 125 A	13,0	24,0	2,5	2,59	96
	DIN 9021	13,0	37,0	3,0	7,63	283
	DIN 440 R	13,5	44,0	4,0	11,16	413
	DIN 1052	14,0	58,0	6,0	20,15	746
M16	DIN 125 A	17,0	30,0	3,0	3,89	144
	DIN 9021	17,0	50,0	3,0	14,07	521
	DIN 440 R	17,5	56,0	5,0	18,00	667
	DIN 1052	18,0	68,0	6,0	27,36	1013
M20	DIN 125 A	21,0	37,0	3,0	5,90	219
	DIN 9021	22,0	60,0	4,0	19,82	734
	DIN 440 R	22,0	72,0	6,0	29,90	1107
	DIN 1052	22,0	80,0	8,0	37,64	1394
M24	DIN 125 A	25,0	44,0	4,0	8,34	309
	DIN 9021	-	-	-	-	-
	DIN 440 R	26,0	85,0	6,0	41,66	1543
	DIN 1052	25,0	92,0	8,0	49,87	1847

CRITICALITY: WASHER PENETRATION INTO TIMBER



NOTES

- Characteristic values according to EN 1995:2008.
- Design values can be obtained from characteristic values as follows:

$$N_{ax,d} = \frac{N_{ax,k} \cdot k_{mod}}{\gamma_m}$$

Coefficients γ_m and k_{mod} must be taken according to the current Standard adopted for the design.

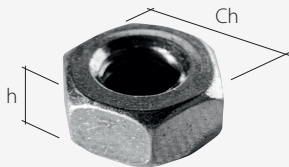
- For the calculation process a timber density $\rho_k = 380 \text{ kg/m}^3$ has been considered.

- The pull-through resistance of a washer is proportional to its contact surface with the timber element.
- Admissible values are obtained according to DIN 1052:1988.

MUT 934

Hexagonal nut

Steel grade 8 - Bright zinc plated
DIN 934 (ISO 4032*)



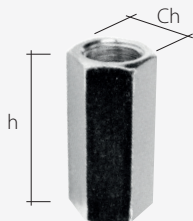
code	rod	h [mm]	Ch [mm]	pcs/box
MUT9348	M8	6,5	13	400
MUT93410	M10	8	17	500
MUT93412	M12	10	19	500
MUT93414	M14	11	22	200
MUT93416	M16	13	24	200
MUT93418	M18	15	27	100
MUT93420	M20	16	30	100
MUT93422	M22	18	32	50
MUT93424	M24	19	36	50
MUT93427	M27	22	41	25
MUT93430	M30	24	46	25

* ISO 4032 differs from DIN 934 with regards to parameters h and Ch for M10, M12, M14 and M22 diameters

MUT 6334

Coupling nut

Steel grade 8 - Bright zinc plated
DIN 6334



code	rod	h [mm]	Ch [mm]	pcs/box
MUT933410	M10	30	17	10
MUT933412	M12	36	19	10
MUT933416	M16	48	24	10
MUT933420	M20	30	30	10

MUT 1587

Dome nut

Steel grade 8 – Bright zinc plated
DIN 1587



One-piece lathe nut

code	rod	h [mm]	Ch [mm]	pcs/box
MUT15878S	M8	15	13	200
MUT158710S	M10	18	17	50
MUT158712S	M12	22	19	50
MUT158714S	M14	25	22	50
MUT158716S	M16	28	24	100
MUT158718S	M18	32	27	50
MUT158720S	M20	34	30	25
MUT158722S	M22	39	32	25
MUT158724S	M24	42	36	25

MUT 985

Self-blocking nut

A2 stainless steel
DIN 985 (ISO 10511*)



code	rod	h [mm]	Ch [mm]	pcs/box
MUT98510	M10	10	17	1
MUT98512	M12	12	19	1
MUT98516	M16	16	24	1

* ISO 10511 differs from DIN 985 with regards to parameters h and Ch for M10 and M12 diameters.

AISI 304

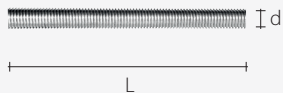
A2

MGS

Threaded rod

A2 stainless steel

DIN 975



AISI 304

A2

code	rod	L [mm]	pcs/box
AI97510	M10	1000	5
AI97512	M12	1000	5
AI97516	M16	1000	5
AI97520	M20	1000	5

AI 934

Hexagonal nut

A2 stainless steel

DIN 934 (ISO 4032*)



AISI 304

A2

code	rod	h [mm]	Ch [mm]	pcs/box
AI9348	M8	6,5	13	500
AI93410	M10	8	16	200
AI93412	M12	10	18	200
AI93416	M16	13	24	100
AI93420	M20	16	30	50

* ISO 4032 differs from DIN 934 with regards to parameters h and Ch for M10 e M12 diameters

AI 1587

Dome nut

A2 stainless steel

DIN 1587



AISI 304

A2

code	rod	h [mm]	Ch [mm]	pcs/box
AI158710	M10	18	17	100
AI158712	M12	22	19	100
AI158716	M16	28	24	50
AI158720	M20	34	30	25

One-piece lathe nut

AI 9021

Washer

A2 stainless steel

DIN 9021 (ISO 9073*)



AISI 304

A2

code	rod	d_INT [mm]	d_EXT [mm]	s[mm]	pcs/box
AI90218	M8	8,4	24	2	500
AI902110	M10	10,5	30	2,5	500
AI902112	M12	13	37	3	200
AI902116	M16	17	50	3	100
AI902120	M20	22	60	4	50

* Standard ISO 9073 differs from DIN 9021 as concerns surface toughness.