

TORQUE GUIDELINES OF GROWER TWIN-LOCK® STANDARD SERIES DELTA PROTEKT® KL100+VH301GZ

Washer dimensions dxD [mm]	Screw size		Bolt 8.8 ^a Oiled		Bolt 8.8 ^a Dry		Bolt 10.9 ^b Oiled		Bolt 10.9 ^b Dry		Bolt 12.9 ^c Oiled		Bolt 12.9 ^c Dry	
			Torque [Nm]	Load ^d [kN]	Torque [Nm]	Load ^d [kN]	Torque [Nm]	Load ^d [kN]	Torque [Nm]	Load ^d [kN]	Torque [Nm]	Load ^d [kN]	Torque [Nm]	Load ^d [kN]
6.5x10.8	M 6		12.2	9.7	12.5	9.7	17.2	13.6	19	13.6	18	16.3	19.5	16.3
8.7x13.5	M 8	5/16"	30	18	31	18	36	25	38	25	45	30	48	30
10.7x16.6	M 10		62	28	65	28	77	39	82	39	86	47	88	47
13.0x19.5	M 12		100	40	103	40	120	57	125	57	133	68	139	68
15.2x23.0	M 14	9/16"	146	55	150	55	198	78	210	78	217	94	221	94
17.0x25.4	M 16	5/8"	260	75	267	75	322	106	330	106	339	127	347	127
19.5x29.0	M 18		310	92	336	92	430	130	438	130	445	156	452	156
21.4x30.7	M 20		486	118	499	118	540	165	552	165	593	198	604	198

Remarks:

Test conditions according to ISO 16047, bearing surface hardness 200-250 Hv, roughness R_a 0.6 uncoated and degreased

^a Screw class 8.8 DIN 931 / DIN 933 uncoated + Nut DIN 934 uncoated, coarse pitch thread

^b Screw class 10.9 DIN 931 / DIN 933 uncoated + Nut DIN 934 uncoated, coarse pitch thread

^c Screw class 12.9 DIN 912 uncoated + Nut DIN 934 uncoated, coarse pitch thread

^d 75% of nominal yield point (stress at 0.2% non-proportional elongation R_{p0,2}) according to ISO 898-1

TORQUE GUIDELINES OF GROWER TWIN-LOCK® STANDARD SERIES IN STAINLESS STEEL

Washer dimensions dxD [mm]	Screw size		AISI 316L			
			Bolt A4-70 ^a Lubricated ^d		Bolt A4-80 ^b Lubricated ^d	
			Torque [Nm]	Load ^c [kN]	Torque [Nm]	Load ^c [kN]
6.5x10.8	M 6		6.5	5,9	7.5	7,8
8.7x13.5	M 8	5/16"	17	11	20	14
10.7x16.6	M 10		32	17	40	23
13.0x19.5	M 12		48	25	65	33
15.2x23.0	M 14	9/16"	92	34	120	45
17.0x25.4	M 16	5/8"	130	46	190	61
19.5x29.0	M 18		179	56	248	75
21.4x30.7	M 20		260	72	340	95

Remarks:

Test conditions according to ISO 16047, bearing surface hardness 200-250 Hv, roughness R_a 0.6 uncoated and degreased

^a Screw class A4-70 DIN 931 / DIN 933 + Nut DIN 934 coarse pitch thread

^b Screw class A4-80 DIN 931 / DIN 933 + Nut DIN 934 coarse pitch thread

^c 65% of nominal yield point (stress at 0.2% non-proportional elongation $R_{p0,2}$) according to ISO 898-1

^d Lubricated with molybdenum disulfide paste