

NORD-LOCK STEEL WASHERS WITH ELECTRO ZINC PLATED BOLT GRADE 8.8

BOLT SIZE	WASHER SIZE	PITCH [MM]	Oil, G _F = 75% μ _{th} = 0,15, μ _h = 0,19		Cu/C paste, G _F = 75% μ _{th} = 0,13, μ _h = 0,18		Dry, G _F = 62% μ _{th} = 0,18, μ _h = 0,2	
			TORQUE [Nm]	CLAMP LOAD [kN]	TORQUE [Nm]	CLAMP LOAD [kN]	TORQUE [Nm]	CLAMP LOAD [kN]
M3	NL3	0,5	1,7	2,4	1,5	2,4	1,5	2,0
M4	NL4	0,7	3,8	4,2	3,6	4,2	3,5	3,5
M5	NL5	0,8	7,5	6,8	6,9	6,8	6,8	5,6
M6	NL6	1,0	13	9,7	12,1	9,7	12	8,0
M8	NL8	1,25	32	18	29	18	29	15
M10	NL10	1,5	62	28	57	28	56	23
M12	NL12	1,75	107	40	99	40	97	33
M14	NL14	2,0	170	55	157	55	155	46
M16	NL16	2,0	260	75	240	75	237	62
M18	NL18	2,5	364	92	336	92	331	76
M20	NL20	2,5	510	118	470	118	464	97
M22	NL22	2,5	696	146	642	146	634	120
M24	NL24	3,0	878	169	809	169	800	140
M27	NL27	3,0	1284	221	1183	221	1172	182
M30	NL30	3,5	1750	269	1613	269	1596	222
M33	NL33	3,5	2360	333	2173	333	2155	275
M36	NL36	4,0	3043	392	2803	392	2776	324
M39	NL39	4,0	3931	468	3619	468	3589	387
M42	NL42	4,5	4860	538	4476	538	4436	445

Cu/C paste = copper/graphite paste (Molykote® 1000)

Oil = WD40 has been used.

G_F = Ratio of yield point. When tightening according to guidelines and with no deviation, this is the pre-stress achieved expressed as % of yield point.

μ_{th} = thread friction coefficient

μ_h = under head friction coefficient

Thread friction coefficients have theoretical values but are verified through testing. Under head friction coefficients have been established by tests.

Torque guidelines for other bolt grades are available through your local Nord-Lock representative.

NORD-LOCK STEEL WASHERS WITH NON-PLATED BOLT GRADE 10.9

BOLT SIZE	WASHER SIZE	PITCH [MM]	Oil, G _F = 71% μ _{th} = 0,15, μ _h = 0,15		Cu/C paste, G _F = 75% μ _{th} = 0,13, μ _h = 0,15	
			TORQUE [Nm]	CLAMP LOAD [kN]	TORQUE [Nm]	CLAMP LOAD [kN]
M3	NL3	0,5	2,0	3,2	2,0	3,4
M4	NL4	0,7	4,5	5,6	4,5	5,9
M5	NL5	0,8	8,9	9,1	8,9	9,6
M6	NL6	1,0	15,5	12,9	15,5	13,6
M8	NL8	1,25	37	23	37	25
M10	NL10	1,5	73	37	73	39
M12	NL12	1,75	126	54	126	57
M14	NL14	2,0	201	74	201	78
M16	NL16	2,0	307	100	306	106
M18	NL18	2,5	430	123	429	130
M20	NL20	2,5	602	156	600	165
M22	NL22	2,5	821	194	818	205
M24	NL24	3,0	1036	225	1034	238
M27	NL27	3,0	1514	294	1509	310
M30	NL30	3,5	2064	358	2058	378
M33	NL33	3,5	2782	443	2772	468
M36	NL36	4,0	3589	522	3576	551
M39	NL39	4,0	4632	624	4613	659
M42	NL42	4,5	5731	716	5709	757

NORD-LOCK STEEL WASHERS WITH NON-PLATED BOLT GRADE 12.9

BOLT SIZE	WASHER SIZE	PITCH [MM]	Oil, G _F = 71% μ _{th} = 0,15, μ _h = 0,13		Cu/C paste, G _F = 75% μ _{th} = 0,13, μ _h = 0,14	
			TORQUE [Nm]	CLAMP LOAD [kN]	TORQUE [Nm]	CLAMP LOAD [kN]
M3	NL3	0,5	2,2	3,9	2,3	4,1
M4	NL4	0,7	5,1	6,7	5,3	7,1
M5	NL5	0,8	10,0	10,9	10,3	11,5
M6	NL6	1,0	17,4	15,4	18	16,3
M8	NL8	1,25	42	28	43	30
M10	NL10	1,5	82	44	85	47
M12	NL12	1,75	142	65	146	68
M14	NL14	2,0	226	89	233	94
M16	NL16	2,0	345	120	355	127
M18	NL18	2,5	483	148	498	156
M20	NL20	2,5	676	188	696	198
M22	NL22	2,5	921	233	948	246
M24	NL24	3,0	1165	270	1199	286
M27	NL27	3,0	1700	352	1749	372
M30	NL30	3,5	2316	430	2386	454
M33	NL33	3,5	3124	532	3213	562
M36	NL36	4,0	4029	626	4145	662
M39	NL39	4,0	5199	748	5346	790
M42	NL42	4,5	6434	860	6617	908

■ Torque guide (Kellermann&Klein or VDI2230):
torquelator.nord-lock.com

■ 2D / 3D CAD models:
www.nord-lock.com/cad

1 N = 0,225 lb
1 Nm = 0,738 ft-lb