

## NORD-LOCK STEEL WASHERS WITH ELECTRO ZINC PLATED BOLT (GRADE 5)

Bolt size	Washer size	Pitch [TPI]	Oil, $G_F=75\%$ $\mu_{th}=0,08, \mu_h=0,18$		Cu/C paste, $G_F=75\%$ $\mu_{th}=0,08, \mu_h=0,19$		Dry, $G_F=55\%$ $\mu_{th}=0,19, \mu_h=0,2$	
			Torque [ftlb]	Clamp load [lb]	Torque [ftlb]	Clamp load [lb]	Torque [ftlb]	Clamp load [lb]
#5	NL3	40	1.1	559	1.1	559	1.1	410
#6	NL3.5	32	1.4	640	1.5	640	1.4	469
#8	NL4	32	2.5	983	2.6	983	2.5	721
#10	NL5	24	3.7	1,234	3.9	1,234	3.7	905
1/4	NL1/4"	20	8.8	2,235	9.1	2,235	8.8	1,639
5/16	NL8	18	18	3,674	18	3,674	18	2,694
3/8	NL3/8"	16	31	5,424	32	5,424	31	3,978
7/16	NL11	14	49	7,439	50	7,439	50	5,455
1/2	NL1/2"	13	75	9,920	77	9,920	76	7,271
9/16	NL14	12	107	12,712	111	12,712	109	9,322
5/8	NL16	11	148	15,786	153	15,786	151	11,576
3/4	NL3/4"	10	258	23,335	267	23,335	266	17,112
7/8	NL22	9	414	32,195	429	32,195	427	23,609
1	NL1"	8	627	42,228	650	42,228	645	30,967
1 1/8	NL30	7	784	46,860	812	46,860	806	34,364
1 1/4	NL33	7	1091	59,427	1130	59,427	1127	43,580
1 3/8	NL36	6	1433	70,864	1485	70,864	1478	51,967
1 1/2	NL39	6	1880	86,147	1949	86,147	1949	63,174

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.

$\mu_{th}$  = thread friction coefficient

$\mu_h$  = 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 8)

Bolt size	Washer size	Pitch [TPI]	Oil, $G_F=71\%$ $\mu_{th}=0,08, \mu_h=0,14$		Cu/C paste, $G_F=75\%$ $\mu_{th}=0,07, \mu_h=0,15$	
			Torque [ftlb]	Clamp load [lb]	Torque [ftlb]	Clamp load [lb]
#5	NL3	40	1.3	748	1.3	790
#6	NL3.5	32	1.6	856	1.7	905
#8	NL4	32	2.9	1,315	3.0	1,389
#10	NL5	24	4.3	1,651	4.6	1,744
1/4	NL1/4"	20	10	2,990	11	3,159
5/16	NL8	18	20	4,915	22	5,192
3/8	NL3/8"	16	36	7,256	38	7,665
7/16	NL11	14	56	9,951	60	10,511
1/2	NL1/2"	13	86	13,270	91	14,017
9/16	NL14	12	123	16,771	131	17,963
5/8	NL16	11	170	21,117	180	22,307
3/4	NL3/4"	10	296	31,214	315	32,973
7/8	NL22	9	475	43,067	505	45,493
1	NL1"	8	718	56,488	764	59,671
1 1/8	NL30	7	1020	71,192	1085	75,203
1 1/4	NL33	7	1417	90,284	1506	95,370
1 3/8	NL36	6	1864	107,660	1982	113,725
1 1/2	NL39	6	2445	130,878	2598	138,251

## NORD-LOCK STEEL WASHERS WITH NON-PLATED BOLT (GRADE 9)

Bolt size	Washer size	Pitch [TPI]	Oil, $G_F=65\%$ $\mu_{th}=0,06, \mu_h=0,1$		Cu/C paste, $G_F=70\%$ $\mu_{th}=0,07, \mu_h=0,09$	
			Torque [ftlb]	Clamp load [lb]	Torque [ftlb]	Clamp load [lb]
#5	NL3	40	1.2	840	1.2	905
#6	NL3.5	32	1.4	962	1.5	1,036
#8	NL4	32	2.5	1,478	2.7	1,591
#10	NL5	24	3.8	1,855	4.1	1,998
1/4	NL1/4"	20	8.9	3,360	9.5	3,618
5/16	NL8	18	18	5,522	19	5,947
3/8	NL3/8"	16	31	8,152	33	8,779
7/16	NL11	14	49	11,180	52	12,040
1/2	NL1/2"	13	74	14,909	79	16,056
9/16	NL14	12	106	19,106	113	20,575
5/8	NL16	11	146	23,726	156	25,551
3/4	NL3/4"	10	254	35,071	272	37,769
7/8	NL22	9	407	48,388	435	52,110
1	NL1"	8	614	63,468	656	68,350
1 1/8	NL30	7	873	79,988	932	86,141
1 1/4	NL33	7	1208	101,439	1290	109,242
1 3/8	NL36	6	1594	120,691	1702	130,266
1 1/2	NL39	6	2083	147,048	2225	158,360

- Torque guide  
[torquelator.nord-lock.com](http://torquelator.nord-lock.com)

- 2D/3D CAD models  
and current dimensions  
[nord-lock.com/cad](http://nord-lock.com/cad)

1 lbf = 4.448 N  
1 ft-lb = 1.356 Nm