

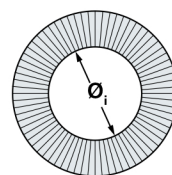
Nord-Lock steel washers

EN 1.7182 or equivalent, zinc flake coating (Delta Protekt®), through hardened

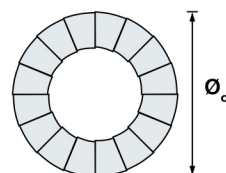
Dimension chart

Washer size	Bolt size		ϕ_i [inch]	ϕ_o [inch]	Thickness T [inch]	Min. package [pairs]	Approx. weight lbs / 100 pairs
	UNC	Metric					
NL3	#5	M3	0.13	0.28	0.07	200	0.07
NL3.5	#6	M3.5	0.15	0.30	0.07	200	0.09
NL3.5sp	#6	M3.5	0.15	0.35	0.07	200	0.13
NL4	#8	M4	0.17	0.30	0.07	200	0.09
NL4sp	#8	M4	0.17	0.35	0.07	200	0.13
NL5	#10	M5	0.21	0.35	0.07	200	0.11
NL5sp	#10	M5	0.21	0.43	0.07	200	0.24
NL6		M6	0.26	0.43	0.07	200	0.15
NL6sp		M6	0.26	0.53	0.10	200	0.44
NL1/4"	1/4"		0.28	0.45	0.10	200	0.18
NL1/4"sp	1/4"		0.28	0.53	0.10	200	0.40
NL8	5/16"	M8	0.34	0.53	0.10	200	0.33
NL8sp	5/16"	M8	0.34	0.65	0.10	200	0.62
NL3/8"	3/8"		0.41	0.65	0.10	200	0.51
NL3/8"sp	3/8"		0.41	0.83	0.10	200	1.06
NL10		M10	0.42	0.65	0.10	200	0.49
NL10sp		M10	0.42	0.83	0.10	200	1.04
NL11	7/16"	M11	0.45	0.73	0.10	200	0.64
NL12		M12	0.51	0.77	0.10	200	0.64
NL12sp		M12	0.51	1.00	0.13	100	2.05
NL1/2"	1/2"		0.53	0.77	0.10	200	0.60
NL1/2"sp	1/2"		0.53	1.00	0.13	100	1.98
NL14	9/16"	M14	0.60	0.91	0.13	100	1.23
NL14sp	9/16"	M14	0.60	1.21	0.13	100	3.11
NL16	5/8"	M16	0.67	1.00	0.13	100	1.48
NL16sp	5/8"	M16	0.67	1.21	0.13	100	2.82
NL18		M18	0.77	1.14	0.13	100	1.96
NL18sp		M18	0.77	1.36	0.13	100	3.48
NL3/4"	3/4"		0.79	1.21	0.13	100	2.31
NL3/4"sp	3/4"		0.79	1.54	0.13	100	4.85
NL20		M20	0.84	1.21	0.13	100	2.05
NL20sp		M20	0.84	1.54	0.13	100	4.61
NL22	7/8"	M22	0.92	1.36	0.13	100	2.76
NL22sp	7/8"	M22	0.92	1.65	0.18	50	7.03
NL24		M24	1.00	1.54	0.13	100	3.83
NL24sp		M24	1.00	1.91	0.18	50	9.94
NL1"	1"		1.10	1.54	0.13	100	3.37
NL1"sp	1"		1.10	1.91	0.18	50	9.26
NL27		M27	1.12	1.65	0.23	50	6.92
NL27sp		M27	1.12	1.91	0.23	25	11.62
NL30	1 1/8"	M30	1.24	1.85	0.23	50	9.04
NL30sp	1 1/8"	M30	1.24	2.30	0.26	25	18.91
NL33	1 1/4"	M33	1.35	1.91	0.23	25	8.58
NL33sp	1 1/4"	M33	1.35	2.30	0.26	25	17.63
NL36	1 3/8"	M36	1.47	2.17	0.26	25	12.10
NL36sp	1 3/8"	M36	1.47	2.48	0.26	25	20.17
NL39	1 1/2"	M39	1.59	2.30	0.26	25	12.99
NL42		M42	1.70	2.48	0.26	25	17.57
NL45	1 3/4"	M45	1.82	2.76	0.28	25	22.49
NL48		M48	1.95	2.95	0.28	25	26.46
NL52	2"	M52	2.11	3.15	0.28	25	28.66
NL56	2 1/4"	M56	2.33	3.35	0.28	10	29.76
NL60		M60	2.48	3.54	0.28	10	33.51
NL64	2 1/2"	M64	2.64	3.74	0.28	10	36.82
NL68		M68	2.80	3.94	0.37	1	62.17
NL72		M72	2.96	4.13	0.37	1	67.68
NL76	3"	M76	3.11	4.33	0.37	1	73.41
NL80	3 1/8"	M80	3.27	4.53	0.37	1	79.37
NL85		M85	3.47	4.72	0.37	1	83.33
NL90		M90	3.64	5.12	0.37	1	105.16
NL95		M95	3.83	5.31	0.37	1	109.79
NL100	4"	M100	4.07	5.71	0.37	1	129.85
NL105		M105	4.27	5.91	0.37	1	135.14
NL110		M110	4.46	6.10	0.37	1	139.99
NL115		M115	4.66	6.50	0.37	1	166.01
NL120		M120	4.86	6.69	0.37	1	171.74
NL125		M125	5.06	6.81	0.37	1	168.87
NL130	5"	M130	5.25	7.01	0.37	1	174.60

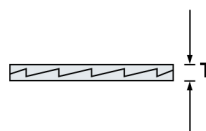
NL3–NL8
 $\phi_i \pm 0.004$ inch
 NL10–NL42
 $\phi_i \pm 0.008$ inch
 NL45–NL130
 $\phi_i + 0.02 / - 0$ inch



NL3–NL24 (NL1")
 $\phi_o \pm 0.008$ inch
 NL27–NL42
 $\phi_o \pm 0.012$ inch
 NL45–NL130
 $\phi_o + 0 / - 0.08$ inch



NL3–NL42
 $T \pm 0.01$ inch
 NL45–NL130
 $T \pm 0.03$ inch



Note that washers with thickness 0.26 inch have a thickness tolerance $+0.0 / -0.02$ inch

- Please consult our website for current dimensions and 2D / 3D CAD models:
www.nord-lock.com/cad

Nord-Lock steel washers of sizes 3-42 and with zinc flake coating are standard stock items, yet subject to prior sale.

Torque guidelines

Nord-Lock steel washers with zinc flake coating (Delta Protekt®)

Nord-Lock steel washers with electro zinc plated **bolt (grade 5)**

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

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

Oil = WD40 has been used.

G_r = 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 8)**

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

Nord-Lock steel washers with non-plated **bolt, (grade 9)**

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

1 lbf = 4.448 N

1 ft-lb = 1.356 Nm