

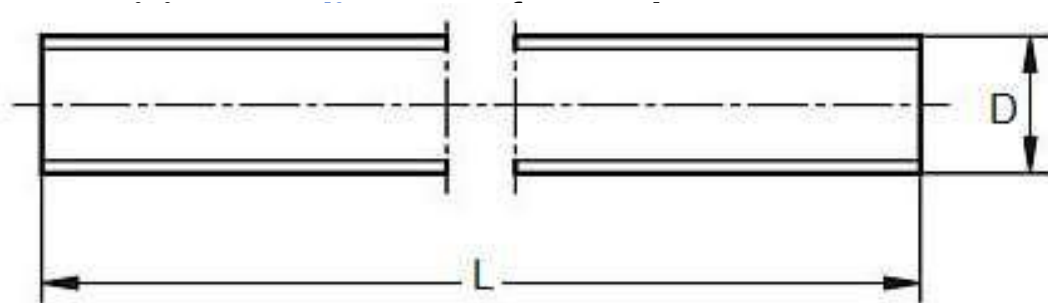


Fasteners fasten you and me.

Product Dimensions, Standards and Weights

DIN 976 (preplaces DIN 975) Technical Specifications

Metric DIN 976 Fully Threaded Stud Bolts



Dimensions of Metric DIN 976 Studs

d	Pitch	L (mm)	Weight kg/1000pc s
M2	0.4	1000	18.7
M2,5	0.45	1000	30
M3	0.5	1000	44
M3,5	0.6	1000	60
M4	0.7	1000	78
M5	0.8	1000	124
M6	1	1000	177
M8	1 / 1.25	1000	319
M10	1 / 1.25 / 1.75	1000	500
M12	1.5 / 2	1000	725
M14	1.5 / 2	1000	970
M16	1.5 / 2	1000	1330
M18	1.5 / 2.5	1000	1650
M20	1.5 / 2.5	1000	2080
M22	1.5 / 2.5	1000	2540
M24	2.0 / 3	1000	3000



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d	P	L (mm)	Weight kg/1000pc s
M27	2.0 / 3	1000	3850
M30	2 / 3,5	1000	4750
M33	2 / 3,5	1000	5900
M36	3.0 / 4	1000	6900
M39	3.0 / 4	1000	8200
M42	3 / 4,5	1000	9400
M45	3 / 4,5	1000	11000
M48	3.0 / 5	1000	12400
M52	3.0 / 5	1000	14700

Metric DIN 976 Fully Threaded Stud Bolts are headless bolts threaded all the way from one end to the other (full / all thread). They are designed for a nut to be applied on both ends and are often used for electrical, construction and plumbing for hanging purposes.

DIN (**D**eutsches **I**nstitut für **N**ormung - German Institute for Standardization) standards are issued for a variety of components including industrial fasteners as Metric DIN 939 double end studs. The DIN standards remain common in Germany, Europe and globally even though the transition to ISO standards is taking place. DIN standards continue to be used for parts which do not have ISO equivalents or for which there is no need for standardization.

1) Mechanical properties of stainless steel for metric DIN 976 Fully Threaded Stud Bolts

Stainless steels can be divided into three groups of steel - austenitic, ferritic and martensitic. Austenitic steel is by far the most common type (>90% of commercial fasteners). The steel groups and strength classes are designated by a four-digit sequence of letters and numbers (eg A2-70) as shown in the following table. DIN EN ISO 3506 governs screws and nuts made from stainless steel.



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Steel group	Steel grade	Strength class	Screws, Nuts and Bolts			
			Tensile strength N/mm ²	Tensile strength PSI	Dia range	Nut Load N/mm ²
Austenitic	A2 and A4	50	500	70,000	<=M39	500
		70	700	100,000	<=M20	700
		80	800	118,000	<=M20	800

The tensile stress is calculated with reference to the tensile stress area (see DIN EN ISO 3506-1979). Nuts to be paired with same grade of stainless steel screws

Steel group	Property Strength class	Made From	Characteristics
Austenitic	50	A1, A2	Soft; cold worked, turned and soft pressed fasteners
	70	A2, A4	Cold worked, normal strength formed fasteners
	80	A2, A4	Extreme cold worked, high strength, special applications

2) Chemical composition of stainless steel metric DIN 976 Fully Threaded Stud Bolts

Grade	USA Grade	Material designation	Material no.	C %	Si ≤ %	Mn ≤ %	Cr %	Mo %	Ni %
A 2	304	X 5Cr Ni 1810	1.4301	≤ 0.07	1.0	2.0	17.5 to 19.5	-	8.0 to 10.5
		X 2 Cr Ni 1811	1.4306	≤ 0.03	1.0	2.0	18.0 to 20.0	-	10 to 12.0
		X 8 Cr Ni 19/10	1.4303	≤ 0.07	1.0	2.0	17.0 to 19.0	-	11.0 to 13.0
A 4	316	X 5 Cr Ni Mo 1712	1.4401	≤ 0.07	1.0	2.0	16.5 to 18.5	2.0 to 2.5	10.0 to 13.0
		X 2 Cr Ni Mo 1712	1.4404	≤ 0.03	1.0	2.0	16.5 to 18.5	2.0 to 2.5	10 to 13



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3) Chemical composition of steel metric DIN 976 Fully Threaded Stud Bolts

PROPERTY CLASS	MATERIAL AND TREATMENT	CHEMICAL COMPOSITION LIMITS %				TEMPERING TEMP °C MIN.
		C		P	S	
		min.	max.	max.	max.	
4.6, 4.8, 5.8, 6.8	Low or medium carbon steel	-	0.55	0.05	0.06	-
8.8	Medium carbon steel quenched, tempered	0.25	0.55	0.04	0.05	425
9.8	Medium carbon steel quenched, tempered	0.25	0.55	0.04	0.05	425
10.9	Medium carbon steel additives e.g. boron, Mn, Cr or Alloy steel - quenched, tempered	0.20	0.55	0.04	0.05	425
12.9	Alloy steel - quenched, tempered	0.20	0.50	0.035	0.035	380

4) Mechanical properties of steel for metric DIN 976 Fully Threaded Stud Bolts

MECHANICAL PROPERTY		PROPERTY CLASS								
		4.8	5.6	5.8	6.8	8.8		9.8	10.9	12.9
						Up to M 16	Over M 16			
Tensile Strength (Rm, N/mm ²)	nom.	400	500		600	800		900	1000	1200
	min.	420	500	520	600	800	830	900	1040	1220
Vickers Hardness	min.	130	155	160	190	250	255	290	320	385
	max.	250				320	336	360	380	435
Brinell Hardness	min.	124	147	152	181	319	242	266	295	353
	max.	238				385	319	342	363	412
Rockwell Hardness	min. HR	71	79	82	89	-				
	HRC	-	-	-	-	20	23	28	32	39
	HR	95				99	-			
	max. HRC	-	-	-	-	32	34	37	39	44
Yield Stress ReL. N/mm ²	nom.	320	300	400	480	-				
	min.	340	300	420	480	-				
Stress at permanent set limit N/mm ²	nom.	-				640		720	900	1080
	min.	-				640	660	720	940	1100

Disclaimer

Dimensional data and technical information for Metric DIN 976 Fully Threaded Stud Bolts was obtained from publicly available sources and not acquired through standards agencies. It has been completed and compiled for reference purposes only; where discrepancies are found they are subject to change without notice.