RTR

Ripple Threaded Rods

Steel Threaded Rods for Chemical Anchoring System

Quality Solutions For Anchoring Applications

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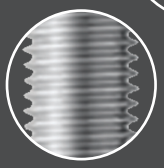
RTR
Steel Threaded Rods for Chemical Anchoring System

Applications for use with Chemical Anchoring System

- Heavy Duty Fixings
- Steel & wooden structural Beams & columns
- Cantilevers, Pipe supports
- Pumps, Machines
- Guard rails, Gates
- Heavy duty ladders
- Mechanical Equipments
- Insert plates

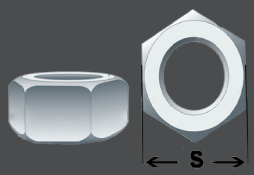
STUD VERSION
Cone head & with or without chisel tipping at the bottom



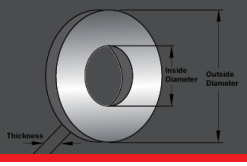
MAJOR AND MINOR DIA
Consistent pitch Diameter

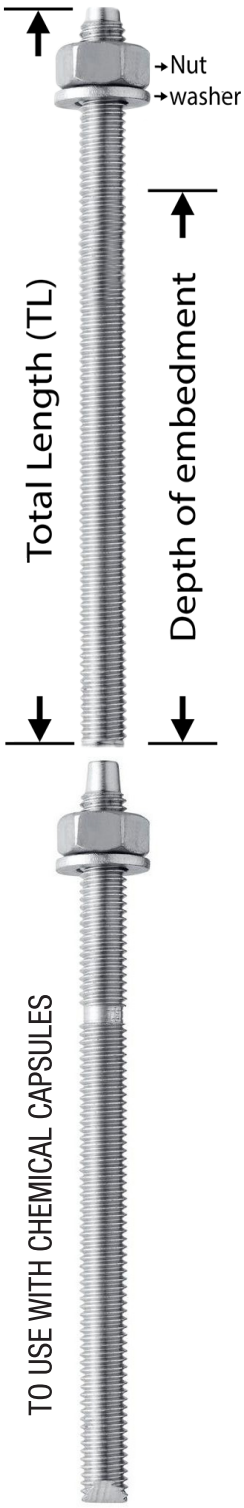
COMPATABLE NUT & WASHER AVAILABE IN VARIOUS GRADES
Grade 5.8 & 8.8
Stainless steel A2 & A4

Nut



Washer





Metric Threaded Rod Grades and Specifications

The International Organization for Standards (ISO) classification R898 includes low to medium carbon steel quenched and tempered class 4.6 and class 5.8, threaded rod similar to U.S. Grades 2 & 5. Class 8.8 & 10.9 are classified as alloy steel quenched and tempered are similar to U.S. Grades 8 and B7. Stainless steel threaded rod is also available in A2 and A4 stainless steel, which are the same as U.S. 304 and 316 SS steel respectively. Grades 5.8 or 8.8 threaded bars can be manufactured from any material whose mechanical properties meet or exceed the requirements set forth in the relevant harmonized standards. The two-digit nomenclature is not used to describe individual steel grades and only applies to metric fasteners defined under ISO 965 (as well as derived standards)

The designation system is based on two numbers e.g 8.8

- The first number is the **tensile strength** of the bolt material (N/mm^2)/100.
- The second number is = 1/100 the ratio of the Proof (or Yield) stress

Tensile strength expressed as a percentage = 100[Yield (Proof stress) /Tensile strength] /100 meaning that a grade 8.8 bolt has a nominal ultimate tensile strength (UTS) of $800N/mm^2$ (or Mpa) and a nominal yield strength of $640N/mm^2$ (or Mpa). These values are not expressed in Kg/mm^2 or PSI as the first is an expression of mass by surface-area, the second is an expression of weight by surface-area and neither are true units under the SI system Lastly, the actual steel grade used by manufacturers may vary but in most cases, a grade 8.8 fastener (self-colour, black-oxide or zinc plated) will be manufactured from a medium-alloy medium carbon steel, typically with 0.30 - 0.50 % Carbon and alloyed with other elements such as Molybdenum, Vanadium, Manganese and sometimes Boron or Cobalt in small quantities. These alloying elements provide the required mechanical properties to reach the minimum strength set forth by the harmonized standards “High-tensile bolts" which are typically grade 8.8 or superior under the metric fastener system Grade 8.8 refers to the tensile yield strength of 640 MPa (UTS: 800 MPa) and standard torque figure calculations apply based on bolt diameter (root diameter of thread), grade (8.8 in this case), 90% Yield strength Grade 4.6 bolts are typically referred to as "low tensile" and are often used in the construction industry as these bolts offer higher ductility and resilience compared to "high-tensile" bolts

Specifications	US Standards	European Norms	Remarks
Steel	ASTM A307 Grade **2**	Class **4.6**	Low Carbon Steel
Cold worked Steel	ASTM A449 Grade **5**	Class **5.8**	Medium Carbon Steel
Quenched & Tempered	ASTM A354 Grade **8**	Class **8.8**	Alloy Steel
Quenched & Tempered	ASTM A193 Grade **B7 - AISI 4140/4142**	Class **10.9**	Alloy Steel

American Iron and Steel Institute (AISI)
International Organization for Standards (ISO)
American Society for Testing and Materials International (ASTM)

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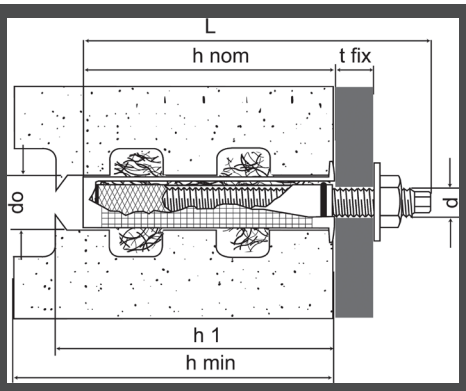
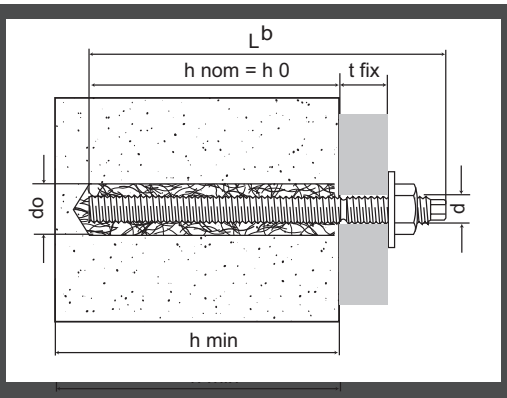


Hollow Block

d	=	threaded bar diameter
d_0	=	hole diameter
h_{nom}	=	nominal embedment depth
L_b	=	threaded bar length
t_{fix}	=	fixture thickness
T_{max}	=	torque
h_0	=	minimum hole depth
h_{min}	=	minimum support thicknes



Reinforced concrete

THREADED ANCHORING RODS (RTR) WITH WASHER AND NUT ZINC GALVANIZED STEEL 5.8 & 8.8 GRADE

Sl. No.	Item Code 5.8 Grade	Item Code 8.8 Grade	Product Description	Anchor Diameter (mm)	Drill Bit Diameter (mm)	Total Anchor Length (mm)	Cone head Height (mm)	Total Thread Length (mm)	Nominal Embedment Depth (mm)	Washer Thickness (mm)	Nut Height (mm)	Fastenable Thickenss (mm)	Width Across Flat (mm)	Tightening Torque on full cure (Nm)	Major Dia (mm)	Minor Dia (mm)	Pitch Dia (mm)	Thread Pitch (mm)
1	6075	6076	RTR M6 x 75	6	8	75	5	70	60	1.8	5.2	5	10	10				
2	6105	6106	RTR M6 x 105	6	8	105	5	100	60	1.8	5.2	25	10	10				
3	8110	8111	RTR M8 x 110	8	10	110	5	105	80	1.8	6.8	14	13	15	7.85	6.6	7.05	1.25
4	8150	8151	RTR M8 x 150	8	10	150	5	145	80	1.8	6.8	50	13	15	7.85	6.6	7.05	1.25
5	10115	10116	RTR M10 x 115	10	12	115	5	110	90	2.2	8.4	5	16	30	9.885	8.4	8.85	1.5
6	10150	10151	RTR M10 x 150	10	12	150	5	145	90	2.2	8.4	40	16	30	9.885	8.4	8.85	1.5
7	10200	10201	RTR M10 x 200	10	12	200	5	195	90	2.2	8.4	85	16	30	9.885	8.4	8.85	1.5
8	12120	12161	RTR M12 x 160	12	14	160	5	155	110	2.7	10.8	25	18	50	11.885	10.1	10.7	1.75
9	12160	12201	RTR M12 x 200	12	14	200	5	195	110	2.7	10.8	65	18	50	11.885	10.1	10.7	1.75
10	12200	12251	RTR M12 x 250	12	14	250	5	245	110	2.7	10.8	115	18	50	11.885	10.1	10.7	1.75
11	12250	12301	RTR M12 x 300	12	14	300	5	295	110	2.7	10.8	165	18	50	11.885	10.1	10.7	1.75
12	12300	16151	RTR M16 x 170	16	18	170	5	145	125	3.3	14.8	18	24	100	15.85	13.1	14.6	2
13	16150	16201	RTR M16 x 200	16	18	200	5	195	125	3.3	14.8	45	24	100	15.85	13.1	14.6	2
14	16200	16251	RTR M16 x 250	16	18	250	5	245	125	3.3	14.8	95	24	100	15.85	13.1	14.6	2
15	12250	16301	RTR M16 x 300	16	18	300	5	295	125	3.3	14.8	145	24	100	15.85	13.1	14.6	2
16	16300	16351	RTR M16 x 350	16	18	350	5	345	125	3.3	14.8	195	24	100	15.85	13.1	14.6	2
17	16350	16501	RTR M16 x 500	16	18	500	10	490	125	3.3	14.8	340	24	100	15.85	13.1	14.6	2
18	16500	20201	RTR M20 x 240	20	24	240	5	195	170	3.3	18	40	30	160	19.85	17.4	18.25	2.5
19	20200	20261	RTR M20 x 260	20	24	260	5	255	170	3.3	18	60	30	160	19.85	17.4	18.25	2.5
20	20260	20351	RTR M20 x 300	20	24	300	5	345	170	3.3	18	100	30	160	19.85	17.4	18.25	2.5
21	20350	20501	RTR M20 x 350	20	24	350	10	490	170	3.3	18	140	30	160	19.85	17.4	18.25	2.5
22	20500	24301	RTR M24 x 300	24	28	300	5	295	210	4.3	21.5	54	36	240	23.85	20.8	21.8	3
23	24300	24451	RTR M24 x 450	24	28	450	10	440	210	4.3	21.5	195	36	240	23.85	20.8	21.8	3
24		27351	RTR M27 x 350	27	30	350	5	345	240	4.3	22	65	41	270	26.8	23.8	24.9	3
25		27501	RTR M27 x 500	27	30	500	10	490	240	4.3	22	210	41	270	26.8	23.8	24.9	3
26		30401	RTR M30 x 400	30	35	400	10	390	270	4.3	25.6	85	46	300	29.8	26.3	27.6	3.5
27		30501	RTR M30 x 500	30	35	500	10	490	270	4.3	25.6	180	46	300	29.8	26.3	27.6	3.5
28		33501	RTR M33 x 500	33	37	500	10	490	300	5.6	26	145	50	340	32.8	29.4	30.6	3.5
29		36501	RTR M36 x 500	36	40	500	10	490	330	5.6	31	115	55	340	35.8	31.95	33.35	4
30		39501	RTR M39 x 500	39	42	500	10	490	360	6	31	80	60	370	38.8	33.55	36.35	4
31		421001	RTR M42 x 1000	42	45	1000	10	990	400	6	34	540	65	400	41.8	37.5	38.85	4.5
32		481001	RTR M48 x 1000	48	52	1000	10	990	440	6.5	38	490	75	450				
33		541001	RTR M54 x 1000	54	60	1000	10	990	500	7.5	45	410	85	500				
34		641001	RTR M64 x 1000	64	72	1000	10	990	600	8	51	300	95	600				

Stainless Steel Threaded Rod Grades and Specifications

ASTM A193 Grade B8 (304 stainless steel) and grade B8M (316 stainless steel) are the two most widely used threaded rod stainless steel grades. Stainless steel threaded rod is used in high-temperature and high-corrosive environments such as chemical plants and refineries. Besides B8 and B8M, there are several ASTM specified stainless steel grades of threaded rod.

Specifications	US Standards	European Norms	Remarks
Class 1 Stainless Steel	ASTM A193 Grade **B8 - AISI 304**	**A2**	Carbide Solution treated
Class 1 Stainless Steel	ASTM A193 Grade **B8 M - AISI 316**	**A4**	Carbide Solution treated

Availability of Stainless Steel Threaded Rod

Stainless steel threaded rods in SS 304 (A2) and SS 316 (A4) are available in all the sizes as outlined in the table for 5.8 & 8.8 grade threaded rods.
Also we can tailor make special sizes as per your design on a special order basis. Please consult your Ripple local technical support team for your special needs.

General Chemical Properties

Element	B7 (AISI 4140)	B8 (AISI 304)	B8M (AISI 316)
Carbon	0.37 - 0.49%	0.08% max	0.08% max
Manganese	0.65 - 1.10%	2.00% max	2.00% max
Phosphorus, max	0.035%	0.045%	0.045%
Sulfur, max	0.040%	0.030%	0.030%
Silicon	0.15 - 0.35%	1.00% max	1.00% max
Chromium	0.75 - 1.20%	18.0 - 20.0%	16.0 - 18.0%
Nickel		8.0 - 11.0%	10.0 - 14.0%
Molybdenum	0.15 - 0.25%		2.00 - 3.00%

Recommended Nuts and Washers

Threaded rod Grade	Grade	Nuts	Washers
B7	10.9	A194 Grade 2H	F436
B8 Class 1	A2	A194 Grade 8	SS304
B8M Class 1	A4	A194 Grade 8M	SS316

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