



HIGH TENSILE : METRIC VS. IMPERIAL CLASS VS. GRADE

	<u>METRIC</u>	<u>IMPERIAL</u>
LOW TENSILE	CLASS 4.6	GRADE 2
HIGH TENSILE	CLASS 8.8	GRADE 5
HIGH TENSILE	CLASS 10.9	GRADE 8




WHAT DOES 8.8 MEAN ?







8 = BREAKING STRENGTH 800 MPa

.8 = YIELD STRENGTH

(WHEN THE BOLT BECOMES PERMANENTLY STRETCHED)

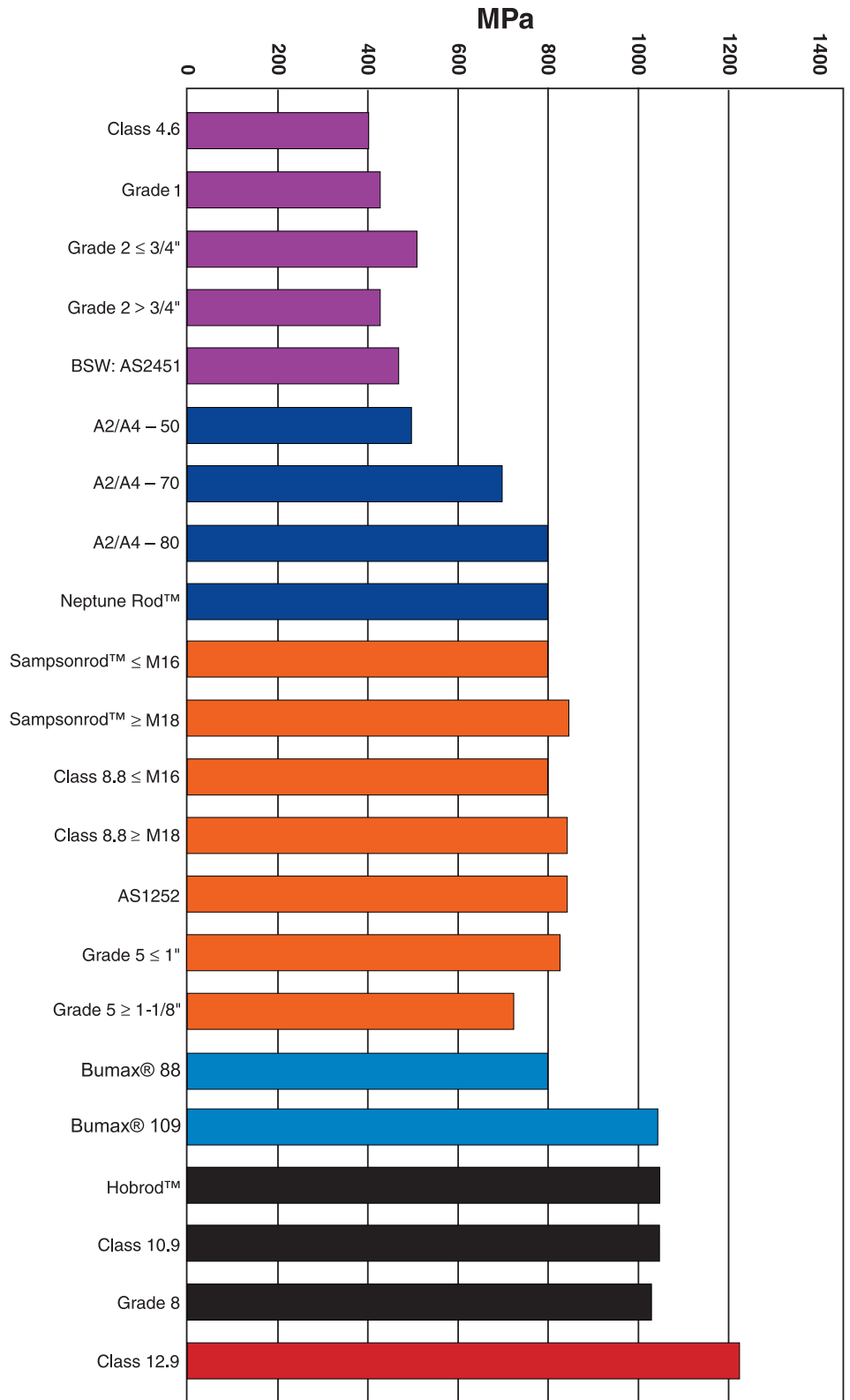
High-Tensile and Stainless Steel Head Markings

Imperial					
Head Marking	Grade and Material	Nominal Size Range (inches)	Mechanical Properties		
			Proof Load (psi)	Min. Yield Strength (psi)	Min. Tensile Strength (psi)
No markings 	Grade 2 Low or medium Carbon Steel	1/4 through 3/4	55,000	57,000	74,000
		Over 3/4 through 1-1/2	33,000	36,000	60,000
3 radial lines 	Grade 5 Medium Carbon Steel, quenched and tempered	1/4 through 1	85,000	92,000	120,000
		Over 1 through 1-1/2	74,000	81,000	105,000
6 radial lines 	Grade 8 Medium Carbon Alloy quenched and tempered	1/4 through 1-1/2	120,000	130,000	150,000

Metric Bolts					
Head Marking	Class and Material	Nominal Size Range	Mechanical Properties		
			Proof Load (MPa)	Min. Yield Strength (MPa)	Min. Tensile Strength (MPa)
	Class 8.8 Medium Carbon Steel, quenched and tempered	All sizes below M16	580	640	800
		M16 - M72	600	660	830
	Class 10.9 Alloy Steel, quenched and tempered	M6 - M48	830	940	1040
	Class 12.9 Alloy Steel, quenched and tempered	M6 - M48	970	1100	1220
	Class 50 Austenitic Steel with 16-18.5% Chromium and 10-15% Nickel	M20 - M48	–	210	500
	Class 70 Austenitic Steel with 16-18.5% Chromium and 10-15% Nickel	M6 - M20	–	450	700
	Class 80 Austenitic Steel with 16-18.5% Chromium and 10-15% Nickel	M6 - M36	–	600	800



Breaking Strength



FASTENER ACRONYMS - HOBSON

ACRONYM	MEANING
2H Nut	Nut strength level designation (ASTM A194 Grade 2H Heavy Hex Nut)
6g	Class of thread fit for metric screws
6H	Class of thread fit for metric nuts
8.8TB	Bearing joint as per AS4100 - bolting to be fully tensioned
8.8S	Snug Tight as per AS4100 (Non Bearing / Friction Joint)
8.8TF	Friction joint as per AS4100 - bolting to be fully tensioned
A4-50	A=Austenitic steel (300 series) / 4=Cold formed stainless 316 / 50=500 Mpa Tensile Strength
A4-70	A=Austenitic steel (300 series) / 4=Cold formed stainless 316 / 70=700 Mpa Tensile Strength
A4-80	A=Austenitic steel (300 series) / 4=Cold formed stainless 316 / 80=800 Mpa Tensile Strength
AF	Width Across Flats - Spanner Size
AISI	American Iron and Steel Institute, specifies chemical composition of steels
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AT	All thread - fully threaded rod
B16	Sud bolt grade - Petrochemical Stud bolts for flanges Re ASTM-A193
B7	Sud bolt grade - Petrochemical Stud bolts for flanges Re ASTM-A193
B8	Sud bolt grade AISI Type 304 - Petrochemical Stud bolts for flanges Re ASTM-A193
B8M	Sud bolt grade AISI Type 316 - Petrochemical Stud bolts for flanges Re ASTM-A193
BA	British Association
BHCS	Button Head Cap Screw
BHN	Hardness measured with a Brinell Hardness Tester
BS	British Standard
BSF	British Standard Fine
BSW	British Thread Standard Whitworth
C1018	C1018 low carbon steel with a medium range manganese content
Cad	Cadmium Plating
CL3	Class 3 Coating for Self drilling Screws as per AS3566.2
CL4	Class 4 Coating for Self drilling Screws as per AS3566.2
CSK	Countersunk Head
D/E	Double Ended Stud
DIN	German Standards Organization
DTI	Direct Tension Indicator - Squirter Washer
F436	Hardened flat washer with dimensions per ASTM F436
FHCS	Flat Head (Countersunk) Cap Screw
FW	Flat Washer
Gr	Imperial Grade-strength level of screw or nut (ex: Grade 2, Grade 5 or Grade 8)
HDG	Hot Dip Galvanized
HRB	Hardness measured on the Rockwell B Scale
HRC	Hardness measured on the Rockwell C Scale
HSFG	High Strength Friction Grip - Structural Bolting
HWH	Hex Washer Head

FASTENER ACRONYMS - HOBSON

ACRONYM	MEANING
ID	Inside diameter-washer
IFI	Industrial Fastener Institute
ISO	International Standards Organization
ksi	Thousand of pounds per square inch
LW	Lock Washer
L7	Sud bolt grade - Petrochemical Stud bolts for flanges Re ASTM-A320
lb (lbs)	Pounds
LH	Left Hand Thread
LHCS	Low Head Socket Head Cap Screw
LT	Low Tensile Carbon Steel Class 4.6
mm	Millimeter
MPa	Mega Pascal
MTR	Material Test Report
MTS	Metal Thread Screw
NATA	National Association Of Testing Authorities
NPT	National Tapered Pipe Thread
OD	Outside diameter-washer
Ph Dr	Phillips Drive (cross recess)
psi	Pounds per square inch
PTFE	Polytetrafluoroethylene (best known brand name Teflon)
PZ	Pozi-Drive style of cross recess
ROHS	Ristriction of Hazardous Substances
SAE	Society of Automotive Engineers
Sems	Screw with permanantly attached washer
Serrated	Locking serrations on bearing face of bolt or nut
SHCS	Socket Head Cap Screw
SS or S/S	Stainless Steel
SS304	Stainless Steel Grade 304
SS316	Stainless Steel Grade 316
T17	Drill point for timber self drilling screw (will drill through thin metal into timber)
Taptite	Triangular thread forming screw
Torx	6 Lobe Drive -Torx Drive
TPI	Threads per Inch
UN8	Unified National - 8 threads per inch (applies to petro studs 1" and above)
UNC	Unified National Coarse Thread
UNF	Unified National Fine Thread
UTS	Ultimate Tensile Strength
Y	Yellow Chromate
YS	Yield Strength
ZP	Zinc, usually referencing zinc plating (zinc with clear chromate)
ZY	Zinc Plating with Yellow Chromate topcoat