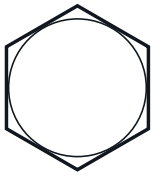
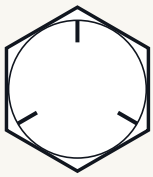
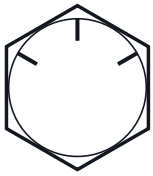
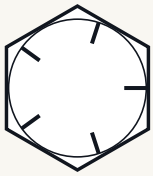
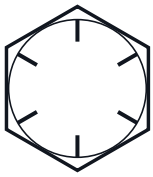
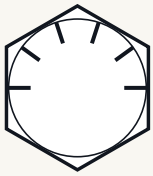
BOLT HEAD MARKING

The strength and type of steel used in a bolt is supposed to be indicated by a raised mark on the head of the bolt. The type of mark depends on the standard to which the bolt was manufactured. Most often, bolts used in machinery are made to SAE standard J429, and bolts used in structures are made to various ASTM standards. The tables below give the head markings and some of the most commonly needed information about the bolts. For further information, see the appropriate standard.

SAE J429

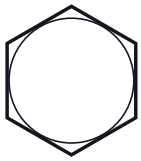
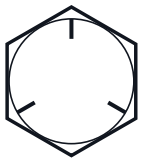
SAE BOLT DESIGNATIONS

SAE grade No.	Size range (in)	Tensile strength, ksi	Material	Head marking
1 2	1/4 thru 1-1/2 1/4 thru 3/4 7/8 thru 1-1/2	60 74 60	Low or medium carbon steel	
5	1/4 thru 1 1-1/8 thru 1-1/2	120 105	Medium carbon steel, quenched & tempered	
5.2	1/4 thru 1	120	Low carbon martensite steel, quenched & tempered	
7	1/4 thru 1-1/2	133	Medium carbon alloy steel, quenched & tempered	
8	1/4 thru 1-1/2	150	Medium carbon alloy steel, quenched & tempered	
8.2	1/4 thru 1	150	Low carbon martensite steel, quenched & tempered	

For guidance only. Always check against the relevant standard.

ASTM STANDARDS

ASTM BOLT DESIGNATIONS

ASTM standard	Size range (in)	Tensile strength, ksi	Material	Head marking
A307	1/4 thru 4	60	Low carbon steel	
A325 Type 1	1/2 thru 1 1-1/8 thru 1-1/2	120 105	Medium carbon steel, quenched & tempered	
A325 Type 2	1/2 thru 1 1-1/8 thru 1-1/2	120 105	Low carbon martensite steel, quenched & tempered	
A325 Type 3	1/2 thru 1 1-1/8 thru 1-1/2	120 105	Weathering steel, quenched & tempered	
A449	1/4 thru 1 1-1/8 thru 1-1/2 1-3/4 thru 3	120 105 90	Medium carbon steel, quenched & tempered	
A490 Type 1	1/4 thru 1-1/2	150	Alloy steel, quenched & tempered	
A490 Type 3	1/4 thru 1-1/2	150	Weathering steel, quenched & tempered	

Often you will find "extra" marks on a bolt head, in addition to those shown above. Usually these marks indicate the bolt's manufacturer.

ASTM A325 Type 2 bolts have been discontinued, but are included above because they can be found in existing structures. Their properties can be important in failure investigations. While the bolts shown above are among the most common in the U.S., the list is far from exhaustive. In addition to the other bolts covered by the SAE and ASTM standards, there are a host of international standards, of which ISO is perhaps the most well known.