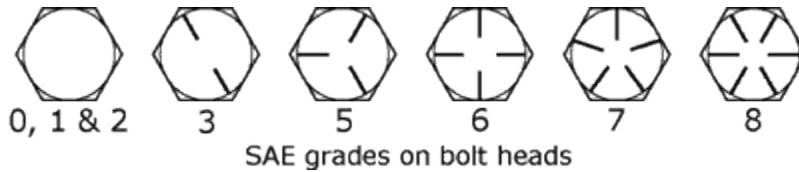


SAE Standards For Bolts



The SAE has established a sequence of grades from 0 to 8 for steel bolts, on the basis of the metal from which the bolt is made and the manner of manufacture. Available grades run from 2 to 8, with 8 the strongest. Higher grade numbers almost always mean increased strength (an exception is that some grade 6 bolts are stronger than grade 7). The heads of steel bolts are marked to identify their grade. Allen bolts usually exceed strength capacity of hexagonal bolts.

In the 1980s, large numbers of counterfeit bolts appeared in the United States, almost all imports. For this reason, the SAE grade markings can no longer be trusted unless one knows exactly who made and graded the bolt. Aerospace-grade bolts are also being counterfeited (even NASA has been duped, to the tune of one million dollars to disassemble the Astro 1 space lab to remove counterfeit and defective fasteners).

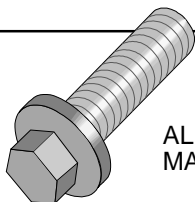
As a rule, when a bolt is installed the nut (over a washer) should be turned and not the bolt's head. Unless a torque wrench is used the tendency is to undertighten large bolts and overtighten small ones. Suggested torques are given below for the two common grades used with mold clamps. These suggestions do not apply if the bolt or nut has been specially lubricated.

This article is taken from the website [Sizes Inc.](http://www.sizes.com/tools/bolts_SAEtork.htm) http://www.sizes.com/tools/bolts_SAEtork.htm

Suggested Torque Settings in foot pounds			
Bolt diameter	grade 2	grade 5	grade 8
¼ inch	5	7	10
5/16 inch	9	14	22
3/8 inch	15	25	37
7/16 inch	24	40	60
1/2 inch	37	60	92
9/16 inch	53	88	132
5/8 inch	74	120	180
3/4 inch	120	200	296
7/8 inch	190	302	473
1 inch	282	466	714

SUSPECT/COUNTERFEIT PART

HEADMARK LIST



ALL GRADE 5 AND GRADE 8 FASTENERS OF FOREIGN ORIGIN WHICH DO NOT BEAR ANY MANUFACTURERS' HEADMARKS



Grade 5



Grade 8

GRADE 5 FASTENERS WITH THE FOLLOWING MANUFACTURERS' HEADMARKS:



MARK	MANUFACTURER
J	Jinn Her (TW)



MARK	MANUFACTURER
KS	Kosaka Kogyo (JP)

GRADE 8 FASTENERS WITH THE FOLLOWING MANUFACTURERS' HEADMARKS:



MARK	MANUFACTURER
A	Asahi Mfg. (JP)



MARK	MANUFACTURER
KS	Kosaka Kogyo (JP)



MARK	MANUFACTURER
NF	Nippon Fasteners (JP)



MARK	MANUFACTURER
RT	Takai Ltd (JP)



MARK	MANUFACTURER
H	Hinomoto Metal (JP)



MARK	MANUFACTURER
FM	Fastener Co of Japan (JP)



MARK	MANUFACTURER
M	Minamida Sieybo (JP)



MARK	MANUFACTURER
KY	Kyoei Mfg (JP)



MARK	MANUFACTURER
MS	Minato Kogyo (JP)



MARK	MANUFACTURER
J	Jinn Her (TW)



MARK	MANUFACTURER
Hollow Triangle	Infasco (CA TW JP YU) (Greater than 1/2 inch dia)



MARK	MANUFACTURER
E	Daiei (JP)



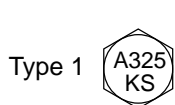
MARK	MANUFACTURER
UNY	Unytite (JP)

GRADE 8.2 FASTENERS WITH THE FOLLOWING HEADMARKS:

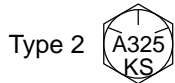


MARK	MANUFACTURER
KS	Kosaka Kogyo (JP)

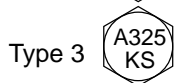
GRADE A325 FASTENERS (BENNETT DENVER TARGET ONLY) WITH THE FOLLOWING HEADMARKS:



MARK	MANUFACTURER
Type 1 A325 KS	A325 KS Kosaka Kogyo (JP)



MARK	MANUFACTURER
Type 2 A325 KS	



MARK	MANUFACTURER
Type 3 A325 KS	

Headmarkings are usually raised – sometimes indented.

KEY: CA-Canada, JP-Japan, TW-Taiwan, YU-Yugoslavia



ANY BOLT ON THIS LIST SHOULD BE TREATED AS DEFECTIVE WITHOUT FURTHER TESTING.

OR, IF YOU SEE ANY INDICATION THAT A CIRCUIT BREAKER MAY BE USED OR REFURBISHED (SEE BULLETIN, NO. DOE/EH-0266)