

SI units

From 1 January 1978, a law has been in force that stipulates that only officially recognized units will be used by member countries of the EEC. These units mainly belong to the "International System of Units", abbreviated SI (Système International d'Unité's). The object of the SI is that it will replace all other systems of units that were developed in the past (including the Anglo-Saxon systems based on feet and pounds) and shall be employed in all professional fields over the entire world. The SI offers the possibility of achieving international uniformity using as few units as possible. The introduction of the SI will mean that (with the exception of some "old" units that will still be accepted for the time being, including the minute, hour, day, degree Celsius, the designations of the angle: degree, minute and second, the litre, ton, bar (for liquid and gas pressure) the are, the nautical mile, knot and register ton) a number of familiar units will disappear, including kilogram force (kgf), horsepower (hp), atmospheric pressure (at, also designated by kg/cm^2 or kgf/cm^2), calorie (cal. or kilocalorie) and also all of the Anglo-Saxon units. In the following tables a selection is given of those units and conversion factors that are commonly used in fastening engineering.

Name	Symbol	Unit of	Replaces	Mutual conversion (rounded off)	
newton	N	force	kgf, kp	$1\text{N} \approx 0,1 \text{ kgf} \approx \text{kp}$	$1 \text{ kgf} \approx 1 \text{ kp} \approx 10\text{N}$
joule	J	energy, work, heat	kcal, cal, kgf.m or kgm Btu (British thermal unit)	$1\text{J} \approx 1\text{Nm} \approx 0,1 \text{ kgf.m}$ $1\text{J} = 0,739 \text{ cal}$	$1 \text{ kgf.m} \approx 10\text{J} \approx 10\text{Nm}$ $1 \text{ cal} = 4,187\text{J}$
bar	bar	pressure of liquids and gases	at, kgf/cm^2 of kg/cm^2	$1 \text{ bar} \approx 1 \text{ at} \approx 1\text{kgf/cm}^2 \approx \text{kg/cm}^2$	$1 \text{ at} = 1 \text{ bar}$
kelvin	K	temperature	partly the °C	$\text{Tk}-273,15+\text{T} \text{ °C}$	$\text{T} \text{ °C}=\text{Tk}-273,15$
metre	m	length	-		
second	s	time	-		
kilogram	kg	mass (quantity)	unit of weight (weight is force)	$1 \text{ kg (mass)} = 10 \text{ N (weight) on earth}$	
volt	V	electrical voltage	-		
ampère	A	electrical current	-		
watt	W	power (not only electrical)	pk, hp and kcal/h	$1 \text{ kW} = 1.359 \text{ pk}$ $1 \text{ kW} = 1.341 \text{ hp}$ $1 \text{ kW} = 959.845 \text{ kcal/h}$	$1 \text{ pk} = 0.7355 \text{ kW}$ $1 \text{ hp} = 0.7457 \text{ kW}$ $1 \text{ kcal/h}=0.001163 \text{ kW}$
-	N/mm^2	areal force (tension)	kgf/mm^2	1 N/mm^2	$1 \text{ kgf/mm}^2 = 10 \text{ N/mm}^2$
-	Nm	moment of a force	kgfm	$1 \text{ Nm} = 0.1 \text{ kgfm}$	$1\text{kgfm} = 10 \text{ Nm}$