

0100 _ Metric Units and Conversion Factors

	I-P Units	SI Units [1]	Conversion Factor [2]
Volume Flow	cfm	cubic meter per second m ³ /s	0.00047195
		L/s	0.47195
Pressure	in. wg	pascal Pa or N/m ²	249.089 [5]
Power	hp	watt W or J/s	745.7
Torque	lbf-in.	newton meter N•m	0.11298
Density	lbm/ft ³	kilogram per cubic meter kg/m ³	16.018
Rotational speed [3]	rpm	revolutions per second rps	1/60
Speed	fpm	meter per second m/s	0.00508 [6]
Dimensions	in.	millimeter mm	25.4 [6]
Moment of Inertia	lbm-ft ²	kilogram meters squared kg•m ²	0.04214
Stress	lbf/in ²	pascal Pa or N/m ²	6894.8
Temperature [4]	°F	kelvin K	(°F + 459.67)/1.8
	°F	°Celsius °C	(°F - 32)/1.8
	difference in °F	kelvin K	0.55556
	difference in °F	°Celsius °C	0.55556

Notes:

1. The choice of the appropriate multiple or sub multiple of an SI unit is governed by convenience. The multiple chosen for a particular application should be the one which will lead to numerical values within a practical range (i.e. kilopascal for pressure, kilowatts for power, megapascal for stress, and liters/second for volume flow.)
2. Multiply the I-P unit by this factor to obtain the SI unit, excluding kelvin and Celsius temperatures.
3. The second is the SI base unit of time. Although outside SI, the minute has been recognized by CIPM as necessary to retain for use because of its practical importance.
4. The kelvin is the SI base unit of thermodynamic temperature and is preferred for most scientific and technological purposes. The degree Celsius ($^{\circ}\text{C}$) is acceptable for practical applications.
5. The actual pressure corresponding to the height of a vertical column of fluid depends upon the gravitational acceleration and the density of the fluid, which in turn depends upon the temperature. The conversion factor given here is a reference value adopted by ISO. A gravitational acceleration of $g_n=9.80665 \text{ m/s}^2$, a density of water of 1000 kg/m^3 , and a density of mercury of 13595.1 kg/m^3 is assumed (Referenced from IEEE/ASTM SI 10-2002, Table A.1, Note 2).
6. Exact value.