



1) Conversion Units, SI and Metric

Quantity	Conventional		SI Unit	Conversion Factors	
	Inch Unit	Metric Unit			
Length	Inch Inch	Meter m	Meter m	1 inch = 25.4 mm 1 mm = 0.03937 inch	1 m = 3.2808 ft 1 ft = 0.3048 m
Area	Square Inch Inch ²	Square Centimeter cm ²	Square Meter m ²	1 inch ² = 6.4516 cm ² 1 cm ² = 0.155 inch ²	1 m ² = 10.764 ft ² 1 ft ² = 0.092903 m ²
Mass	Pound Mass lb	Kilogram Mass kg	Kilogram Mass kg	1 lb = 0.45359237 kg 1 kg = 2.2046 lb	
Force	Pound Force lbf	Kilogram Force kgf	Newton N	1 lbf = 0.45359237 kgf 1 lbf = 4.44822 N 1 kgf = 2.2046 lbf	1 kgf = 9.80665 N 1 N = 0.1019716 kgf 1 N = 0.224809 lbf
Stress Pressure	Pounds Per Square Inch lbf / inch ²	Kilograms Per Square Centimeter kgf / cm ²	Pascal N / m ² Pa	1 MPa = 10 ⁶ N / m ² = 1 N / mm ² 1 kPa = 10 ³ N / m ² 1 lbf / inch ² = 0.070307 kgf / cm ² 1 lbf / inch ² = 7.0307 • 10 ⁻⁴ kgf / mm ²	1 lbf / inch ² = 6.8947 • 10 ⁻³ N / mm ² 1 kgf / cm ² = 14.2233 lbf / inch ² 1 kgf / cm ² = 9.80665 • 10 ⁻² N / mm ²
Torque Work	Inch • Pounds lbf • Inch	Kilogram–Meters kgf • m	Newton–Meters N • m	1 lbf • inch = 1.1521 kgf • cm 1 kgf • cm = 0.8679 lbf • inch 1 lbf • inch = 0.1129848 N • m 1 kgf • m = 9.80665 N • m	1 kgf • cm = 9.80665 • 10 ⁻² N • m 1 N • m = 8.85 lbf • inch 1 N • m = 10.19716 kgf • cm
Power	lbf • ft / min	kgf • m/s	N • m / s	1 kW = 1000 N • m / s 1 kW = 60000 N • m / min 1 kW = 44220 lbf • ft / min 1 kW = 1.34 hp	1 hp = 75 kgf • m / s 1 hp = 44741 N • m / min 1 hp = 33000 lbf • ft / min 1 hp = 0.7457 kW
Velocity	Feet Per Second ft / sec	Meters Per Second m / sec	Meters Per Second m / sec	1 ft / sec = 0.3048 m / sec 1 inch / sec = 2.54 cm / sec 1 ft / min = 0.00508 m / sec	1 mile / hr = 0.44704 m / sec 1 km / hr = 0.27777 m / sec 1 mile / hr = 1.609344 km / hr
Acceleration	Feet Per Second Squared ft / sec ²	Meters Per Second Squared m / sec ²	Meters Per Second Squared m / sec ²	1 ft / sec ² = 0.3048 m / sec ²	

TORQUE

Multiply By							To Obtain
dy • cm	g • cm	N • m x 10 ⁻⁴	N • m	oz • in	lb • in	lb • ft	
1	980.7	1000	10 ⁷	7.062 x 10 ⁴	1.130 x 10 ⁸	1.356 x 10 ⁷	dy • cm
1.020 x 10 ⁻³	1	1.020	1.020 x 10 ⁴	72.01	1.152 x 10 ³	1.383 x 10 ⁴	g • cm
10 ⁻³	9.807 x 10 ⁻¹	1	10 ⁴	70.62	1.130 x 10 ³	1.356 x 10 ⁴	N • m x 10 ⁻⁴
10 ⁻⁷	9.807 x 10 ⁻⁵	10 ⁻⁴	1	7.062 x 10 ⁻³	0.1130	1.356	N • m
1.416 x 10 ⁻⁵	1.389 x 10 ⁻²	1.416 x 10 ⁻²	141.6	1	16	192	oz • in
8.850 x 10 ⁻⁷	8.681 x 10 ⁻⁴	8.850 x 10 ⁻⁴	8.850	6.250 x 10 ⁻²	1	12	lb • in
7.375 x 10 ⁻⁸	7.234 x 10 ⁻⁵	7.375 x 10 ⁻⁵	0.7375	5.208 x 10 ⁻³	8.333 x 10 ⁻²	1	lb • ft

POWER

Multiply By			To Obtain
oz • in • rpm	W	hp	
1	1352	1.008 x 10 ⁶	oz • in • rpm
7.345 x 10 ⁻⁴	1	745.7	W
9.917 x 10 ⁻⁷	1.341 x 10 ⁻³	1	hp

INERTIA

Multiply By				To Obtain
g • cm ²	kg • m ²	oz • in • s ²	oz • in ²	
1	10 ⁷	7.062 x 10 ⁴	182.9	g • cm ²
10 ⁻⁷	1	7.062 x 10 ⁻³	1.829 x 10 ⁻⁵	kg • m ²
1.416 x 10 ⁻⁵	141.6	1	2.590 x 10 ⁻³	oz • in • s ²
5.467 x 10 ⁻³	5.467 x 10 ⁴	386.09	1	oz • in ²