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- Belt Grinders & Finishing Machine
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Dickies
Dixie Diamond
Dixon Valve & Coupling
Dotco

Drillco
Ecco
Eklind Tool
Elephant Lifting Products
Empire Level
Enerpac
Engineered Lifting Technologies
EREM
Ergodyne
Ericson
ESMET Inc.
Estwing
Falltech
Fein Power Tools
Flexovit
Fluke
Gear Wrench
General Clamp
General Tools
Gorilla Glue
Green Bull
Green Umbrella
Greenlee
Grinding Wheels
Griphoist
G-Strut
Guardian
Gunnebo Johnson
H.K. Porter
Harrington
Hevi-Haul
Hilman Roller
Hitachi
Honda
Honeywell
Hougen
Howard Leight
Huskie
Igloo Products
Ingersoll Rand
Irwin Industrial Tools
iTOOLco
Jackson Prof. Tools
Jackson Safety
Jacobs
Jameson
Jeamar Winches
Jet
Jobox
Justrite Mfg.
K & F
Ken Forging
Keson
Kett Tool
Kimberly-Clark
Kinco Gloves
Klein Tools
Knaack
Kroil
Lenox
Liquid Wrench
Little Giant Pump

Loctite
Lode Rail
Louisville
Lubrimatic
Lufkin
Lug-All
Lyon Metal
M.K. Diamond
M.K. Morse
Makita
Markal/La-Co
Marshalltown
Master Heater
Master Lock
Master Power
Mayhew Steel
Mayle
MCR Safety
Mechanix Wear
Meltblown Tech.
Metabo
MG Krete/IMCO
Milwaukee
Milwaukee Brush/Pferd
Mi-T-M Corp.
Moldex
Morse Cutting Tools
Morse Mfg
Morse-Starrett
Motorola
Mr. Heater
My-Te
Nicholson
North Safety
OccuNomix
Oldham Saw
Partner/Husqvarna
PB Blaster
Pelican Rope
Petzl
Pewag
PIP
PLS Laser
Poly-America Inc.
Por-Rock
Powers Fastening
Powerteam
Precision Brand Prods.
Protective Gear
Proto
Pyramex
Qualtool
Radians Eyewear
Ramset
Rayovac
Razor-Back
Red Devil
Red Head (ITW)
Reelcraft
Relton Rapid Tap
Renfroe
Ridgid

Rubbermaid
Rust-Oleum
Safehouse Sign
Safe-T-Cart
Safety Clamps
Saint-Gobain Abrasives
Sammy Screw
Samson Rope Technologies
Sherwin Williams
Simple Green
Simpson Strong-Tie
Sioux Tools Inc.
Sipco
Skookum
Slingmax
SnapOn
Southwire
Spanco
Spray Nine
Spray On
Stanley/Black & Decker
Steiner
STI Firestop
Stihl
Stout Tool
Streamlight
Sumner
Suncor Stainless
Tamco Tools
Tanner Gas
Thern
TPI Corp
Tractel
Triumph Twist Drill
Tsurumi Pump
Tuff Bucket
Union Tools
United Abrasives SAIT
Uniweld
Uvex
Versabar Corp.
Vise Grip
VSM Abrasives
Wallace Forge
Walter Abrasives
WD-40
Weather Guard
Weiler Brush
Weller
Werner
Westchester
Wilton Tool
Wire Rope Corp
Wiss
Workhorse
Wright Tool
Wyeth-Scott
WypAll
Xcelite
Yamaha Motor Corp.
ZRC Products

Conversion Charts

Metric – Fraction Conversion Chart

Conversion Chart Showing Millimeter Sizes, Fractional and Decimal Inch Sizes

Milli-Meter	Dec. Equiv.	Fractional	Milli-Meter	Dec. Equiv.	Fractional	Milli-Meter	Dec. Equiv.	Fractional	Milli-Meter	Dec. Equiv.	Fractional	Milli-Meter	Dec. Equiv.	Fractional
.1	.0039		1.8	.0709		4.1	.1614		—	.2770		12.0	.4724	
.15	.0059		1.85	.0728		4.2	.1654		7.1	.2795		12.30	.4843	31/64
.2	.0079		—	.0730		—	.1660		—	.2811		12.5	.4921	
.25	.0098		1.9	.0748		4.25	.1673		7.14	.2812	9/32	12.7	.5000	1/2
.3	.0118		—	.0760		4.3	.1693		7.2	.2835		13.0	.5118	
—	.0135		1.95	.0767		—	.1695		7.25	.2854		13.10	.5156	33/64
.35	.0138		1.98	.0781	5/64	4.37	.1719	11/64	7.3	.2874		13.49	.5312	17/32
—	.0145		—	.0785		—	.1730		—	.2900		13.5	.5315	
.39	.0156	1/64	2.0	.0787		4.4	.1732		7.4	.2913		13.89	.5469	35/64
.4	.0157		2.05	.0807		—	.1770		—	.2950		14.0	.5512	
—	.0160		—	.0810		4.5	.1771		7.5	.2953		14.29	.5625	9/16
.45	.0177		—	.0820		—	.1800		7.54	.2968	19/64	14.5	.5709	
—	.0180		2.1	.0827		4.6	.1811		7.6	.2992		14.68	.5781	37/64
.5	.0197		2.15	.0846		—	.1820		—	.3020		15.0	.5906	
—	.0200		—	.0860		4.7	.1850		7.7	.3031		15.08	.5937	19/32
—	.0210		2.2	.0866		4.75	.1870		7.75	.3051		15.48	.6094	39/64
.55	.0217		2.25	.0885		4.76	.1875	3/16	7.8	.3071		15.5	.6102	
—	.0225		—	.0890		4.8	.1890		7.9	.3110		15.88	.6250	5/8
.6	.0236		2.3	.0905		—	.1910		7.94	.3125	5/16	16.0	.6299	
—	.0240		2.35	.0925		4.9	.1929		8.0	.3150		16.27	.6406	41/64
—	.0250		—	.0935		—	.1935		—	.3160		16.5	.6496	
.65	.0256		2.38	.0937	3/32	—	.1960		8.1	.3189		16.67	.6562	21/32
—	.0260		2.4	.0945		5.0	.1968		8.2	.3228		17.0	.6693	
—	.0280		—	.0960		—	.1990		—	.3230		16.06	.6719	43/64
.7	.0276		2.45	.0964		5.1	.2008		8.25	.3248		16.46	.6875	11/16
—	.0292		—	.0980		—	.2010		8.3	.3268		17.5	.6890	
.75	.0295		2.5	.0984		5.16	.2031	13/64	8.33	.3281	21/64	17.86	.7031	45/64
—	.0310		—	.0995		—	.2040		8.4	.3307		18.0	.7087	
.79	.0312	1/32	—	.1015		5.1	.2047		—	.3320		18.26	.7187	23/32
.8	.0315		2.6	.1024		—	.2055		8.5	.3346		18.5	.7283	
—	.0320		—	.1040		5.25	.2067		8.6	.3386		18.65	.7344	47/64
—	.0330		2.7	.1063		5.3	.2086		—	.3390		19.0	.7480	
.85	.0335		—	.1065		—	.2090		8.7	.3425		19.05	.7500	3/4
—	.0350		2.75	.1082		5.4	.2126		8.73	.3437	11/32	19.45	.7656	49/64
.9	.0354		2.78	.1094	7/64	—	.2130		8.75	.3445		19.5	.7677	
—	.0360		—	.1100		5.5	.2165		8.8	.3465		19.84	.7812	25/32
—	.0370		2.8	.1102		5.56	.2187	7/32	—	.3480		20.0	.7874	
.95	.0374		—	.1110		5.6	.2205		8.9	.3504		20.24	.7969	51/64
—	.0380		—	.1130		—	.2210		9.0	.3543		20.5	.8071	
—	.0390		2.9	.1141		5.7	.2244		—	.3580		20.64	.8125	13/16
1.0	.0394		—	.1160		5.75	.2263		9.1	.3583		21.0	.8268	
—	.0400		3.0	.1181		—	.2280		9.13	.3594	23/64	21.03	.8281	53/64
—	.0410		—	.1200		5.8	.2283		9.2	.3622		21.43	.8437	27/32
1.05	.0413		3.1	.1220		5.9	.2323		9.25	.3641		21.5	.8465	
—	.0420		3.18	.1250	1/8	—	.2340		9.3	.3661		21.83	.8594	55/64
—	.0430		3.2	.1260		5.95	.2344	15/64	—	.3680		22.0	.8661	
1.1	.0433		3.25	.1279		6.0	.2362		9.4	.3701		22.23	.8750	7/8
1.15	.0452		—	.1285		—	.2380		9.5	.3740		22.5	.8858	
—	.0465		3.3	.1299		6.1	.2401		9.53	.3750	3/8	22.62	.8906	57/64
1.19	.0469	3/64	3.4	.1338		—	.2420		—	.3770		23.0	.9055	
1.2	.0472		—	.1360		6.2	.2441		9.6	.3780		23.02	.9062	29/32
1.25	.0492		3.5	.1378		6.25	.2460		9.7	.3819		23.42	.9219	59/64
1.3	.0512		—	.1405		6.3	.2480		9.75	.3838		23.5	.9252	
—	.0520		3.57	.1406	9/64	6.35	.2500	1/4	9.8	.3858		23.81	.9375	15/16
1.35	.0531		3.6	.1417		6.4	.2520		—	.3860		24.0	.9449	
—	.0550		—	.1440		6.5	.2559		9.9	.3898		24.21	.9531	61/64
1.4	.0551		3.7	.1457		—	.2570		9.92	.3906	25/64	24.5	.9646	
1.45	.0570		—	.1470		6.6	.2598		10.0	.3937		24.61	.9687	31/32
1.5	.0591		3.75	.1476		—	.2570		—	.3970		25.0	.9843	
—	.0595		—	.1495		6.6	.2598		—	.4040		25.03	.9844	63/64
1.55	.0610		3.8	.1496		—	.2610		10.32	.4062	13/32	25.4	1.000	1
1.59	.0625	1/16	—	.1520		6.7	.2638		—	.4130		—	—	—
1.6	.0629		3.9	.1535		6.75	.2656	17/64	10.5	.4134		—	—	—
—	.0635		—	.1540		6.75	.2657		10.72	.4219	27/64	—	—	—
1.65	.0649		3.97	.1562	5/32	—	.2660		11.0	.4330		—	—	—
1.7	.0669		—	.1570		6.8	.2677		11.11	.4375	7/16	—	—	—
—	.0670		4.0	.1575		6.9	.2716		11.5	.4528		—	—	—
1.75	.0689		—	.1590		—	.2720		11.51	.4531	29/64	—	—	—
—	.0700		—	.1610		7.0	.2756		11.91	.4687	15/32	—	—	—

Conversion Charts

Bolt Sizing Chart Nominal Opening Sizes of Wrenches or Sockets in Inches to Fit Standard Bolt Heads, Nuts and Screw Heads

Locate thread diameter of bolt, nut or screw in extreme left or right column. Then move across to box which has proper identification of bolt, nut or screw at top of vertical column. The size in this particular box is the nominal opening size in inches of the wrenches and sockets that will fit.

NUTS					BOLTS AND SCREWS				
Thread Dia. of Nut	Finished Series and Finished Thick Nuts	Reg. Series Hex and Square Nuts	Heavy Series Hex and Square Nuts	Machine Screw Nuts and Stove Bolt Nuts	Regular and Finished Series Hex and Square Head Bolts	Heavy Series Hex and Square Head Bolts	Lag Screws	Square Head Set Screws	Thread Dia. of Bolt or Screw
Use wrench or socket size shown below					Use wrench or socket size shown below				
#0 & 1				5/32					#0 & 1
#2 & 3				3/16					#2 & 3
#4				1/4					#4
#5 & 6				5/16					#5 & 6
#8				11/32					#8
#10				3/8			5/16	3/16	#10
#12				7/16				7/32	#12
1/4	7/16	7/16	1/2	7/16	3/8-7/16		3/8	1/4	1/4
5/16	1/2	9/16	9/16	9/16	1/2		1/2	5/16	5/16
3/8	9/16	5/8	11/16	5/8	9/16		9/16	3/8	3/8
7/16	11/16	3/4	3/4		5/8		5/8	7/16	7/16
1/2	3/4	13/16	7/8		3/4	7/8	3/4	1/2	1/2
9/16	7/8	7/8	15/16		13/16			9/16	9/16
5/8	15/16	1	1-1/16		15/16	1-1/16	15/16	5/8	5/8
3/4	1-1/8	1-1/8	1-1/4		1-1/8	1-1/4	1-1/8	3/4	3/4
7/8	1-5/16	1-5/16	1-7/16		1-15/16	1-7/16	1-5/16	7/8	7/8
1	1-1/2	1-1/2	1-5/8		1-1/2	1-5/8	1-1/2	1	1
1-1/8	1-11/16	1-11/16	1-13/16		1-11/16	1-13/16	1-11/16	1-1/8	1-1/8
1-1/4	1-7/8	1-7/8	2		1-7/8	2	1-7/8	1-1/4	1-1/4
1-3/8	2-1/16	2-1/16	2-3/16		2-1/16	2-3/16	2-1/16	1-3/8	1-3/8
1-1/2	2-1/4	2-1/4	2-3/8		2-1/4	2-3/8	2-1/4	1-1/2	1-1/2
1-5/8	2-7/16	2-7/16	2-9/16		2-7/16	2-9/16	2-7/16	1-5/8	1-5/8
1-3/4	2-5/8	2-5/8	2-3/4		2-5/8	2-3/4	2-5/8	1-3/4	1-3/4
1-7/8	2-13/16	2-13/16	2-15/16		2-13/16	2-15/16	2-13/16	1-7/8	1-7/8
2	3	3	3-1/8			3	3-1/8	2	2
2-1/4	3-3/8	3-3/8	3-1/2		3-3/8	3-1/2	3-3/8	2-1/4	2-1/4
2-1/2	3-3/4	3-3/4	3-7/8		3-3/4	3-7/8	3-3/4	2-1/2	2-1/2
2-3/4	4-1/8	4-1/8	4-1/4		4-1/8	4-1/4	4-1/8	2-3/4	2-3/4
3	4-1/2	4-1/2	4-5/8		4-1/2	4-5/8	4-1/2	3	3
3-1/4			5		4-7/8		4-7/8	3-1/4	3-1/4
3-1/2			5-3/8		5-1/4		5-1/4	3-1/2	3-1/2
3-3/4			5-3/4		5-5/8		5-5/8	3-3/4	3-3/4
4			6-1/8		6		6	4	4

* Regular Square Bolts Only

Table of Multiples

- Circumference of Circle = Diameter x 3.1416
- Area of Circle = $\begin{cases} \text{Square of Diameter} \times 0.7854, \text{ or} \\ \text{Square of Radius} \times 3.1416, \text{ or} \\ \text{Square of Circumference} \times 0.07958 \end{cases}$
- Area of Triangle = Base x one-half altitude
- Surface of Sphere = $\begin{cases} \text{Circumference} \times \text{diameter, or} \\ \text{Square of Diameter} \times 3.1416 \end{cases}$
- Volume of Sphere = $\begin{cases} \text{Surface} \times \text{one-sixth diameter, or} \\ \text{Cube of Diameter} \times 0.5236 \end{cases}$
- Area of Hexagon = Square of Diameter of Inscribed Circle x 0.866
- Area of Octagon = Square of Diameter of Inscribed Circle x 0.828

Engineering Units

- 1 Horsepower = 33,000 foot pounds per minute
550 foot pounds per second
746 watts
.746 kilowatts
- 1 Horsepower Hour = .746 kilowatt hours
1,980,000 foot pounds
2,545 heat units (B.T.U.)
- 1 Kilowatt = 1,000 watts
1.34 horsepower
737.3 foot pounds per second
44,240 foot pounds per minute
56.9 heat units (B.T.U.) per minute
- 1 Kilowatt Hour = 1,000 watt hours
1.34 horsepower hours
2,654,200 foot pounds
3,412 heat units (B.T.U.)
- 1 British Thermal Unit = 1,055 watt seconds
778 foot pounds
.000293 kilowatt hour
.000393 horsepower hour
- 1 Watt = 1 joule per second
.00134 horsepower
3,412 heat units (B.T.U.) per hour
.7373 foot pounds per second
44.24 foot pounds per second

Conversion Charts

Measurements and Weights

Linear Measure

1000 mils	=	1 inch
12 inches	=	1 foot
3 feet	=	1 yard
2 yards	=	$\begin{cases} 1 \text{ fathom} \\ 6 \text{ feet} \end{cases}$
5-1/2 yards	=	$\begin{cases} 1 \text{ rod} \\ 16-1/2 \text{ feet} \end{cases}$
40 rods	=	$\begin{cases} 1 \text{ furlong} \\ 660 \text{ feet} \end{cases}$
8 furlongs	=	$\begin{cases} 1 \text{ mile} \\ 5280 \text{ feet} \end{cases}$
1.15156 miles	=	$\begin{cases} 1 \text{ nautical mile, or knot} \\ 6080.26 \text{ feet} \end{cases}$
3 nautical miles	=	$\begin{cases} 1 \text{ league} \\ 18,240.78 \text{ feet} \end{cases}$

Square Measure

144 square inches	=	1 square foot
9 square feet	=	1 square yard
30-1/4 square yds	=	$\begin{cases} 1 \text{ square rod} \\ 272-1/4 \text{ square feet} \end{cases}$
160 square rods	=	$\begin{cases} 1 \text{ acre} \\ 43,560 \text{ square feet} \end{cases}$
640 acres	=	$\begin{cases} 1 \text{ square mile} \\ 27,878,400 \text{ square feet} \end{cases}$

A circular mil is the area of a circle 1 mil, or 0.001 inch in diameter.

1 square inch = 1,273,239 circular mils

A circular inch is the area of a circle 1 inch in diameter = 0.7854 square inches.

1 square inch = 1.2732 circular inches

Cubic Measure

1728 cubic inches	=	$\begin{cases} 1 \text{ cubic foot} \\ 7.4805 \text{ gallons} \end{cases}$
27 cubic feet	=	1 cubic yard
128 cubic feet	=	1 cord

Liquid Measure

4 gills	=	1 pint
2 pints	=	1 quart
4 quarts	=	$\begin{cases} 1 \text{ gallon} \\ 231 \text{ cubic inches} \\ 134 \text{ cubic feet} \end{cases}$
31-1/2 gallons	=	1 barrel
2 barrels	=	1 hogshead

Dry Measure

2 pints	=	1 quart
8 quarts	=	1 peck
4 pecks	=	$\begin{cases} 1 \text{ bushel} \\ 2150.42 \text{ cubic inches} \\ 1.2445 \text{ cubic feet} \end{cases}$

Weight—Avoirdupois or Commercial

437.5 grains	=	1 ounce
16 ounces	=	1 pound
112 pounds	=	1 hundredweight
20 hundredweight	=	$\begin{cases} 1 \text{ gross, or long ton} \\ 2240 \text{ pounds} \end{cases}$
2000 pounds	=	1 net, or short ton
2204.6 pounds	=	1 metric ton

Conversion Charts

Metric System of Measures and Weights

Linear Measure

1 millimeter	=	0.03937 inches
1 centimeter	=	0.3937 inches
1 decimeter	=	3.937 inches
1 meter	=	$\begin{cases} 39.37 \text{ inches} \\ 3.28083 \text{ feet} \\ 1.09361 \text{ yards} \end{cases}$
1 kilometer	=	$\begin{cases} 3280.83 \text{ feet} \\ 1093.61 \text{ yards} \\ 0.62137 \text{ miles} \end{cases}$
1 inch	=	25.4 millimeters
1 inch	=	2.54 centimeters
1 inch	=	.254 decimeters
1 inch	=	.0254 meters
1 foot	=	.3048 meters
1 yard	=	.9144 meters
1 mile	=	1.60935 kilometers

Square Measure

1 square millimeter	=	$\begin{cases} 0.00155 \text{ square inches} \\ 1973.5 \text{ circular mils} \end{cases}$
1 square centimeter	=	0.155 square inches
1 square decimeter	=	15.5 square inches
1 square meter	=	$\begin{cases} 1550 \text{ square inches} \\ 10.7639 \text{ square feet} \\ 1.196 \text{ square yards} \end{cases}$
1 square kilometer	=	$\begin{cases} 0.386109 \text{ square miles} \\ 247.11 \text{ acres} \end{cases}$
1 square myriameter	=	38.6109 square miles
1 square inch	=	645.2 square millimeters
1 square inch	=	6.452 square centimeters
1 square inch	=	0.06452 square decimeters
1 square foot	=	0.0929 square meters
1 square yard	=	0.836 meters

Cubic Measure

1 cubic centimeter	=	0.061 cubic inches
1 cubic decimeter	=	$\begin{cases} 61.0234 \text{ cubic inches} \\ 0.035314 \text{ cubic feet} \end{cases}$
1 cubic meter	=	$\begin{cases} 35.314 \text{ cubic feet} \\ 1.308 \text{ cubic yards} \end{cases}$

Weight

1 gram	=	15.432 grains
1 kilogram	=	2.204622 pounds
1 metric ton	=	$\begin{cases} 2204.6 \text{ pounds} \\ 0.9842 \text{ gross tons} \\ 1.1023 \text{ net tons} \end{cases}$
1000 kilograms	=	
1 grain	=	0.0648 gram
1 pound	=	0.4536 kilogram

Capacity

1 Liter	=	$\begin{cases} 61.0234 \text{ cubic inches} \\ 0.03531 \text{ cubic feet} \\ 0.2642 \text{ gallons} \end{cases}$
1 cubic foot	=	28.317 liters
1 gallon	=	3.785 liters

Compound Units

1 gram per square millimeter	=	1.422 pounds per square inch
1 kilogram per square millimeter	=	1422.32 pounds per square inch
1 kilogram per square centimeter	=	14.2232 pounds per square inch
1 kilogram per square meter	=	$\begin{cases} 0.2048 \text{ pounds per square foot} \\ 1.8433 \text{ pounds per square yard} \end{cases}$
1 kilogram meter	=	7.2330 foot pounds
1 kilogram per meter	=	0.6720 pounds per foot
1 pound per square inch	=	0.07031 kilogram per square centimeter
1 pound per square foot	=	0.0004882 kilogram per square centimeter
1 pound per square foot	=	0.006944 pounds per square inch
1 pound per cubic inch	=	27679.7 kilograms per cubic meter
1 pound per cubic foot	=	16.0184 kilograms per cubic meter
1 kilogram per cubic meter	=	0.06243 pounds per cubic foot
1 foot per second	=	0.30480 meters per second
1 meter per second	=	3.28083 feet per second
1 meter per second	=	2.23693 miles per hour



NOTES

Lined area for notes with horizontal lines.