

# TECHNICAL DATA SECTION

## Reference Section

### TERMINOLOGY

<b>ACF</b> =	Actual Cubic Feet
<b>A/D</b> =	Analog to Digital
<b>ATM</b> =	Atmospheres
<b>BTU</b> =	British Thermal Units
<b>cc/min</b> =	Cubic Centimeters per Minute
<b>CFH</b> =	Standard Cubic Feet per Hour (SCFH)
<b>C<sub>p</sub></b> =	Specific Heat
<b>C.S.</b> =	Carbon Steel
<b>D</b> =	Diameter
<b>Dia.</b> =	Diameter
<b>Diam.</b> =	Diameter
<b>D/A</b> =	Digital to Analog
<b>EMI</b> =	Electromagnetic Interference
<b>EPR</b> =	Ethylene Propylene Rubber
<b>FDA</b> =	Food and Drug Administration
<b>FNPT</b> =	Female National Pipe Thread
<b>FPM</b> =	Feet Per Minute
<b>FPS</b> =	Feet Per Second
<b>F.S.</b> =	Full Scale
<b>FT</b> =	Feet
<b>gals</b> =	Gallons
<b>gpm</b> =	Gallons Per Minute
<b>gph</b> =	Gallons Per Hour
<b>H<sub>f</sub></b> =	Latent Heat of Fusion
<b>H/L</b> =	High-Low
<b>H<sub>v</sub></b> =	Latent Heat of Vaporization
<b>I.D.</b> =	Inside Diameter
<b>I/O</b> =	Input/Output
<b>k</b> =	Thermal Conductivity
<b>lbs</b> =	Pounds
<b>lbs/in<sup>2</sup></b> =	Pounds Per Square Inch
<b>lpm</b> =	Liters Per Minute
<b>L/min</b> =	Liters Per Minute
<b>mL/min</b> =	Milliliters Per Minute
<b>MNPT</b> =	Male National Pipe Thread
<b>ms</b> =	Milliseconds
<b>m/s</b> =	Meters Per Second
<b>MSEC</b> =	Milliseconds
<b>NiCad</b> =	Nickel Cadmium
<b>NO/NC</b> =	Normally Open/ Normally Closed
<b>NPT</b> =	National Pipe Thread
<b>O.D.</b> =	Outside Diameter
<b>P-P</b> =	Peak to Peak
<b>PSIA</b> =	Pounds Per Square Inch Absolute
<b>PSID</b> =	Pounds Per Square Inch Differential
<b>PSIG</b> =	Pounds Per Square Inch Gage
<b>PVC</b> =	Polyvinyl Chloride
<b>PVDF</b> =	Polyvinylidene Fluoride (Kynaol)
<b>RF</b> =	Raised Face
<b>RFI</b> =	Radio Frequency Interference
<b>RMS</b> =	Root Mean Square
<b>SCCM</b> =	Standard Cubic Centimeters per Minute
<b>SCHED. NO.</b> =	Schedule Number
<b>SCFH</b> =	Standard Cubic Feet per Hour
<b>SCFM</b> =	Standard Cubic Feet per Minute
<b>SLM</b> =	Standard Liters per Minute
<b>SLPM</b> =	Standard Liters per Minute
<b>sq.ft.</b> =	Square Feet
<b>SSU</b> =	Saybolt Seconds Universal
<b>ΔT</b> =	Temperature Rise
<b>TTL</b> =	Transistor-Transistor Logic
<b>W</b> =	Watts
<b>W-hr</b> =	Watt-Hours
<b>W/in<sup>2</sup></b> =	2 Watt Density
<b>W T</b> =	Weight of Material

## Conversion Factors

TO OBTAIN	MULTIPLY	BY
Atmospheres	In HG@32°F	0.033421
BTU	Watt-hours	3.412
BTU	KWh	3412
Centimeters	Inches	2.540
Cm of Hg @ 0 deg C	Atmospheres	76.0
Cm of Hg @ 0 deg C	Grams/sq. cm	0.07356
Cm of Hg @ 0 deg C	Lb/sq in.	5.1715
Cm of Hg @ 0 deg C	Lb/sq ft	0.035913
Cm/(sec)(sec)	Gravity	980.665
Centipoises	Centistokes	Density
Centistokes	Centipoises	1/density
Cu cm	Cu ft	28,317
Cu cm	Cu in.	16-387
Cu cm	Gal (USA, liq.)	3785.43
Cu cm	Liters	1000.03
Cu cm	Quarts (USA, liq.)	946.358
Cu cm/sec	Cu ft/min	472.0
Cu ft	Cu meters	35.314
Cu ft	Gal (USA, liq.)	0.13368
Cu ft	Liters	0.03532
Cu ft/min	Cu meters/sec	2118.9
Cu ft/min	Gal (USA, liq.)/sec	8.0192
Cu ft/sec	Gal (USA, liq.)/min	0.0022280
Cu ft/sec	Liters/min	0.0005886
Cu in.	Cu centimeters	0.061023
Cu in.	Gal (USA, liq.)	231.0
Cu in.	Liters	61.03
Cu meters	Gal (USA, liq.)	0.0037854
Cu meters	Liters	0.001000028
Cu meters/hr	Gal/min	0.22712
Cu meters/kg	Cu ft/lb	0.062428
Cu meters/min	Cu ft/min	0.02832
Cu meters/sec	Gal/min	0.000063088
Feet	Meters	3.281
Ft/min	Cm/sec	1.9685
Ft/sec	Meters/sec	3.2808
Ft/(sec)(sec)	Gravity (sea level)	32.174
Ft/(sec)(sec)	Meters/(sec)(sec)	3.2808
Gal (Imperial, liq.)	Gal (USA, liq.)	0.83268
Gal (USA, liq.)	Barrels (Petroleum, USA)	42
Gal (USA, liq.)	Cu ft	7.4805
Gal (USA, liq.)	Cu meters	264.173
Gal (USA, liq.)	Cu yards	202.2
Gal (USA, liq.)	Gal (Imperial, liq.)	1.2010
Gal (USA, liq.)	Liters	0.2642
Gal (USA, liq.)/min	Cu ft/sec	448.83
Gal (USA, liq.)/min	Cu meters/hr	4.4029
Gal (USA, liq.)/sec	Liters/min	0.0044028
Grams	Pounds (avoir.)	453.5924

# Conversion Factors

TO OBTAIN	MULTIPLY	BY
Grams/(cm)(sec)	Centipoises	0.01
Grams/cu cm	Lb/cu ft	0.016018
Grams/cu cm	Lb/cu in.	27.680
Grams/cu cm	Lb/gal	0.119826
Inches	Centimeters	0.3937
Inches of Hg @ 32° F	Atmospheres	29.921
Inches of Hg @ 32° F	Lb/sq in.	2.0360
Inches of Hg @ 32° F	In. of H <sub>2</sub> O @ 4°C	0.07355
Inches/deg F	Cm/deg C	0.21872
Kg	Pounds (avoir.)	0.45359
Kg-cal/sq meter	BTU/sq ft	2.712
Kg/cu meter	Lb/cu ft	16.018
Kg/(hr)(meter)	Centipoises	3.60
Kg/liter	Lb/gal (USA, liq.)	0.11983
Kg/meter	Lb/ft	1.488
Kg/sq cm	Lb/sq in.	0.0703
Kg/sq meter	Lb/sq ft	4.8824
KWh	BTU	.0002930
KWh	watt-hours	.001
Liters	Cu ft	28.316
Liters	Cu in.	0.01639
Liters	Cu meters	999.973
Liters	Gal (Imperial, liq.)	4.546
Liters	Gal (USA, liq.)	3.785306
Liters/kg	Cu ft/lb	62.42621
Liters/min	Cu ft/sec	1698.963
Liters/min	Gal (USA, liq.)/min	3.785
Liters/sec	Cu ft/min	0.47193
Liters/sec	Gal/min	0.063088
Meters	Feet	0.3048
Meters/sec	Ft/sec	0.3048
Meters/sec)(sec)	Ft/(sec)(sec)	0.3048
Ounces	Grams	0.035274
Pounds (avoir.)	Kg	2.2046
Pounds/cu ft	Grams/cu cm	62.428
Pounds/cu ft	Pounds/gal	7.48
Pounds/cu in.	Grams/cu cm	0.036127
Pounds/(hr)(ft)	Centipoises	2.42
Pounds/inch	Grams/cm	0.0056
Pounds/(sec)(ft)	Centipoises	0.000672
Pounds/gal. (USA, liq.)	Kg/liter	8.3452
Pounds/gal. (USA, liq.)	Pounds/cu ft	0.1337
Pounds/gal. (USA, liq.)	Pounds/cu in.	231
Sq centimeters	Sq ft	929.0
Sq centimeters	Sq in.	6.4516
Sq ft	Sq meters	10.764
Sq in.	Sq centimeters	0.155
Sq meters	Sq ft	0.0929
W-hr	BTU	.2390
W-hr	KWh	1000

## METRIC PREFIXES

MEGA =	1,000,000
KILO =	1,000
HECTO =	100
DECA =	10
DECI =	.1
CENTI =	.01
MILLI =	.001
MICRO =	.000,001

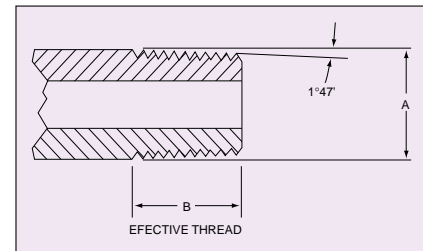
## TEMPERATURE CONVERSION FORMULAS:

$$^{\circ}\text{F} = (9/5 ^{\circ}\text{C}) + 32$$

$$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times 5/9$$

## National Pipe Taper Thread Dimensions

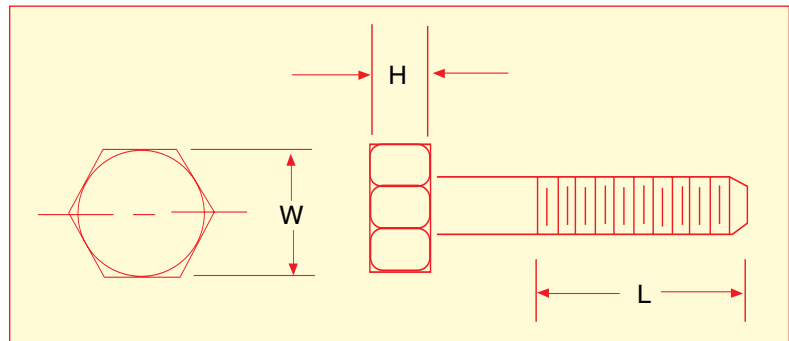
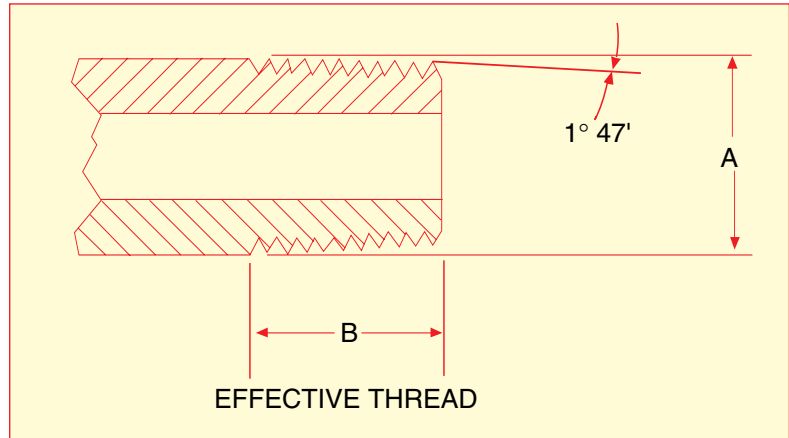
NPT SIZE	THREADS PER INCH	DIM "A" (IN)	DIM "B" (IN)
1/6	27	.312	.261
1/8	27	.405	.264
1/4	18	.540	.402
3/8	18	.675	.408
1/2	14	.840	.534
3/4	14	1.050	.546
1	11 1/2	1.315	.683
1 1/4	11 1/2	1.660	.707



# National Pipe Taper and Straight Thread Dimensions

## NPT Dimensions

NPT SIZE	THREADS PER INCH	DIM "A" (INCH)	DIM "B" (INCH)
1/16	27	0.312	0.261
1/8	27	0.405	0.264
1/4	18	0.540	0.402
3/8	18	0.675	0.408
1/2	14	0.840	0.534
3/4	14	1.050	0.546
1	11 1/2	1.315	0.683
1 1/4	11 1/2	1.660	0.707



## Straight Thread Dimensions

NOMINAL THREAD SIZE	THREADS PER INCH		MAJOR DIA.	W	H	L
	COARSE (UNC)	FINE (UNF)				
0	—	80	0.0600			
1	64	72	0.0730			
2	56	64	0.0860			
3	48	56	0.0990			
4	40	48	0.1120			
5	40	44	0.1250			
6	32	40	0.1380			
8	32	36	0.1640			
10	24	32	0.1900			
12	24	28	0.2160			
1/4	20	28	0.2500	7/16	11/64	0.750
5/16	18	24	0.3125	1/2	7/32	0.875
3/8	16	24	0.3750	9/16	1/4	1.000
7/16	14	20	0.4375	5/8	19/64	1.125
1/2	13	20	0.5000	3/4	11/32	1.250
9/16	12	18	0.5625	13/16	3/8	1.375
5/8	11	18	0.6250	15/16	27/64	1500
3/4	10	16	0.7500	1 1/8	1/2	1.750
7/8	9	14	0.8750	1 1/16	37/64	2.000
1	8	12	1.0000	1 1/2	43/64	2.250
1 1/8	7	12	1.1250	1 11/16	3/4	2.500
1 1/4	7	12	1.2500	1 7/8	27/32	2.750
1 3/8	6	12	1.3750	2 1/16	29/32	3.000
1 1/2	6	12	1.5000	2 1/4	1	3.250

(new Z-262)



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