

CONVERSION CHART

CONVERSION FACTORS

MULTIPLY	BY	TO OBTAIN
Atmospheres (68F)		
760 MM of Mercury at 32°F	14.696	Lbs./sq. inch
Atmospheres	76.0	Cms. of mercury
Atmospheres	29.92	In. of mercury
Atmospheres	33.90	Feet of water
Atmospheres	1.0333	Kgs./sq. cm.
Atmospheres	14.70	Lbs./sq. inch
Atmospheres	1.058	Tons/sq. ft.
Brit. Therm. Units	0.2520	Kilogram-calories
Brit. Therm. Units	777.5	Foot-lbs.
Brit. Therm. Units	0.000393	Horse-power-hrs.
Brit. Therm. Units	0.293	Watt-hrs.
BTU/min.	12.96	Foot-lbs./sec.
BTU/min.	0.02355	Horse-power
BTU/min.	0.01757	Kilowatts
BTU/min.	17.57	Watts
Calorie	0.003968	BTU
Centimeters	0.3937	Inches
Centimeters	0.03280	Feet
Centimeters	0.01	Meters
Centimeters	10	Millimeters
Centims. of Merc.	0.01316	Atmospheres
Centims. of merc.	0.4461	Feet of water
Centims. of merc.	135.0	Kgs./sq. meter
Centims. of merc.	27.85	Lbs./sq. ft.
Centims. of merc.	0.1934	Lbs./sq. inch
Cubic feet	2.832x10 <sup>4</sup>	Cubic cms.
Cubic feet	1728	Cubic inches
Cubic feet	0.02832	Cubic meters
Cubic feet	0.03704	Cubic yards
Cubic feet	7.48052	Gallons U.S.
Cubic feet/minute	472.0	Cubic cms./min.
Cubic feet/minute	0.1247	Gallons/sec.
Cubic feet water	62.4	Pounds @ 60°F.
Foot	30.48	Centimeters
Foot	12	Inches
Foot	0.3048	Meters
Foot	1/3	Yards

MULTIPLY	BY	TO OBTAIN
Foot of water	0.02950	Atmospheres
Foot of water	0.8826	Inches of mercury
Foot of water	0.03048	Kgs./sq. cm.
Foot of water	62.43	Lbs./sq. ft.
Foot of water	0.4333	Lbs./sq. inch
Foot/min.	0.5080	Centimeters/sec.
Foot/min.	0.01667	Feet/sec.
Foot/min.	0.01829	Meters/hr.
Foot/min.	0.3048	Meters/min.
Foot/min.	0.01196	Miles/hr.
Foot-pounds	0.001285	BTU
Gallons	3785	Cu. centimeters
Gallons	0.1337	Cubic feet
Gallons	231	Cubic inches
Gallons	128	Fluid ounces
Gallons	3.785	Liters
Gallons water	8.35	Lbs. water @ 60°F.
Horse-power	42.44	BTU/min.
Horse-power	33,000	Foot-lbs./min.
Horse-power	550	Foot-lbs./sec.
Horse-power	0.7457	Kilowatts
Horse-power	745.7	Watts
Horse-power (boiler)	23,479	BTU/hr.
Horse-power (boiler)	9,803	Kilowatts
Horse-power-hours	2547	BTU
Horse-power-hours	0.7457	Kilowatt-hours
Inches	2.540	Centimeters
Inches	25.4	Millimeters
Inches	0.0254	Meters
Inches	0.0833	Foot
Inches of mercury	0.03342	Atmospheres
Inches of mercury	1.133	Feet of water
Inches of mercury	13.57	Inches of water
Inches of mercury	70.73	Lbs./sq. ft.
Inches of mercury	0.4912	Lbs./sq. inch
Inches of water	0.02458	Atmospheres
Inches of water	0.07355	In. of mercury
Inches of water	0.5781	Ounces/sq. inch
Inches of water	5.202	Lbs./sq. foot
Inches of water	0.03613	Lbs./sq. inch
Kilowatts	56.92	BTU/min.
Kilowatts	1.341	Horse-power
Kilowatts	1000	Watts
Kilowatt-hours	3415	BTU

MULTIPLY	BY	TO OBTAIN
Liters	0.2642	Gallons
Liters	2.113	Pints (liq.)
Liters	1.057	Quarts (liq.)
Meters	100	Centimeters
Meters	3.281	Feet
Meters	39.37	Inches
Meters	1000	Millimeters
Meters	1.094	Yards
Ounces (fluid)	1.805	Cubic inches
Ounces (fluid)	0.02957	Liters
Ounces/sq. inch	0.0625	Lbs./sq. inch
Ounces/sq. inch	1.73	Inches of water
Pints	0.4732	Liter
Pounds (avoird.)	16	Ounces
Pounds of water	0.01602	Cubic feet
Pounds of water	27.68	Cubic inches
Pounds of water	0.1198	Gallons
Pounds/sq. foot	0.01602	Feet of water
Pounds/sq. foot	0.006945	Pounds/sq. inch
Pounds/sq. inch	0.06804	Atmospheres
Pounds/sq. inch	2.307	Feet of water
Pounds/sq. inch	2.036	In. of mercury
Pounds/sq. inch	27.68	Inches of water
Temp. (°F) + 273	1	Abs. temp. (°C)
Temp. (°C) + 17.78	1.8	Temp. (°F)
Temp. (°F) + 450	1	Abs. temp. (°F)
Temp. (°F) - 32	5/9	Temp. (°C)
Therm.	100,000	BTU
Tons (long)	2240	Pounds
Ton, Refrigeration	12,000	BTU/hr.
Tons (short)	2000	Pounds
Watts	3.415	BTU
Watts	0.05692	BTU/min.
Watts	44.28	Foot-pounds/min.
Watts	0.7376	Foot-pounds/sec.
Watts	0.001341	Horse-power
Watts	0.001	Kilowatts
Watt-hours	3.415	BTU/hr.
Watt-hours	2655	Foot-pounds
Watt-hours	0.001341	Horse-power hrs.
Watt-hours	0.001	Kilowatt-hours

BTU & ORIFICE SIZE GUIDE													
BTU INPUT	DRILL SIZE						DRILL SIZE						
	NATURAL GAS			LP GAS			NATURAL GAS			LP GAS			
	3"	3.5"	4"	4.5"	5"	6"	8"	8.5"	9"	10"	11"	12"	
10,000	51	52	1/16	53	54	62	85,000	17	19	20	5/32	28	39
12,000	50	50	51	51	53	59	90,000	15	17	19	20	27	38
14,000	48	49	50	50	52	57	95,000	13	16	17	18	25	36
16,000	46	5/64	48	49	51	56	100,000	11	14	16	18	24	35
18,000	45	46	47	48	50	55	105,000	9	3/16	15	16	23	34
20,000	44	44	45	46	49	54	110,000	7	10	13	15	21	33
25,000	3/32	42	43	44	46	53	115,000	6	9	11	14	19	32
30,000	38	40	41	42	44	52	120,000	4	7	9	3/16	18	31
35,000	35	36	38	39	42	50	125,000	3	5	8	10	14	28
40,000	31	33	35	36	41	48	130,000	7/32	4	13/64	9	16	28
45,000	30	1/8	32	33	38	47	140,000	#1	7/32	3	6	14	30
50,000	29	3/16	31	31	36	46	150,000	15/64	#1	7/32	3	3/16	29
55,000	28	29	30	30	34	44	175,000	1/4	C	15/64	#1	6	27
60,000	26	28	29	30	34	44	200,000	H	F	1/4	C	7/32	23
65,000	24	26	28	29	1/8	43	225,000	L	J	17/64	F	A	19
70,000	22	24	26	28	30	42	250,000	N	L	K	I	C	17
75,000	20	5/32	24	26	30	3/32	275,000	O	N	M	9/32	F	14
80,000	18	20	22	24	29	40	300,000	21/64	O	N	19/64	H	10

K Factor .82 Calculation Based on Natural-1050 BTU Gas—0.65 Spec. Gr./LP-2500 BTU Gas—1.55 Spec. Gr. Approximate Sizes based on average data for all orifice types

**ORIFICE LAW EQUATION WHEEL**

This wheel shows the equation for calculating any one of the basic factors of orifice flow—Weight (W), Area (A), Velocity (V) or Orifice (D)—when any two of these factors are known. The constants to be entered are shown on the rim of the wheel. Each quadrant shows three equations for solving the unknown. Select the equation appropriate for the factors values. Example: A 2000 Watt boiler is converted to a 240 Volt circuit. What orifice size does it draw?  
 Solution: Because area and velocity are given, the formula will be based on the 1 (Area) section of the wheel.  
 W = 1 or 2400W = 240V = 10 Amps  
 W = 1 or 240V = 240W = 2400W = 24.0 Amps

**CONVERSION TABLE FOR WATTS - AMPERE - VOLTS**

WATTS	VOLTAGE (E) - Single Phase		
	120	240	277
100	4.8	2.4	3.7
150	6.3	3.2	5.0
200	7.9	4.0	6.3
250	9.6	4.8	7.5
300	11.3	5.6	8.7
350	13.0	6.4	10.0
400	14.7	7.2	11.3