FLUID POWER FORMULAS

BASIC FORMULAS

FORMULA FOR:	WORD FORMULA:	LETTER FORMULA:
FLUID PRESSURE *In Pounds/Square Inch*	PRESSURE = $\frac{\text{FORCE (pounds)}}{\text{UNIT AREA (Square Inches)}}$	$P = \frac{F}{A}$ or psi = $\frac{F}{A}$
FLUID FLOW RATE *In Gallons/Minute*	FLOW RATE = $\frac{\text{VOLUME (Gallons)}}{\text{UNIT TIME (Minute)}}$	$Q = \frac{V}{T}$
FLUID POWER IN HORSEPOWER	HORSEPOWER = $\frac{\text{PRESSURE (PSI)} \times \text{FLOW (GPM)}}{1714}$	$HP = \frac{PQ}{1714}$

FLUID FORMULAS

VELOCITY THROUGH PIPING *In Feet/Second Velocity*	VELOCITY = $\frac{.3208 \times \text{FLOW RATE THROUGH I.D. (GPM)}}{\text{INTERNAL AREA (Square Inches)}}$	$V = \frac{.3208Q}{A}$
COMPRESSIBILITY OF OIL *In Additional Required Oil To Reach Pressure*	ADDITIONAL VOLUME = $\frac{\text{PRESSURE (psi)} \times \text{VOLUME OF OIL UNDER PRESSURE}}{250{,}000\ \text{(approx.)}}$	$V_A = \frac{PV}{250{,}000\ \text{(approx.)}}$ *Approximately ½% Per 1000 psi
COMPRESSIBILITY OF A FLUID	COMPRESSIBILITY = $\frac{1}{\text{BULK MODULUS OF THE FLUID}}$	$C(\beta) = \frac{1}{BM}$
SPECIFIC GRAVITY OF A FLUID	SPECIFIC GRAVITY = $\frac{\text{WEIGHT OF ONE CUBIC FOOT OF FLUID}}{\text{WEIGHT OF ONE CUBIC FOOT OF WATER}}$	$SG = \frac{W}{62.4283}$
VALVE (C_v) FLOW FACTOR	VALVE FACTOR (C_v) = $\frac{\text{FLOW RATE (GPM)} \times \sqrt{\text{SPECIFIC GRAVITY}}}{\sqrt{\text{PRESSURE DROP (PSI)}}}$	$C_v = \frac{Q\sqrt{SG}}{\sqrt{\Delta P}}$
VISCOSITY IN CENTISTOKES	FOR VISCOSITIES OF 32 TO 100 SAYBOLT UNIVERSAL SECONDS: CENTISTOKES = $.2253 \times SUS - \frac{194.4}{SUS}$	$CS = .2253\ SUS - \frac{194.4}{SUS}$
VISCOSITY IN CENTISTOKES	FOR VISCOSITIES OF 100 TO 240 SAYBOLT UNIVERSAL SECONDS: CENTISTOKES = $.2193 \times SUS - \frac{134.6}{SUS}$	$CS = .2193\ SUS - \frac{134.6}{SUS}$
VISCOSITY IN CENTISTOKES	FOR VISCOSITIES GREATER THAN 240 SAYBOLT UNIVERSAL SECONDS: CENTISTOKES = $\frac{SUS}{4.635}$	$CS = \frac{SUS}{4.635}$

NOTE: SAYBOLT UNIVERSAL SECONDS IS OFTEN ABBREVIATED AS SSU. SEE PAGE 120 FOR ADDITIONAL VISCOSITY INFORMATION.

PUMP FORMULAS

PUMP OUTLET FLOW *In Gallons/Minute*	FLOW = $\frac{\text{RPM} \times \text{PUMP DISPLACEMENT (Cu. In./Rev.)}}{231}$	$Q = \frac{nd}{231}$
PUMP INPUT POWER *In Horsepower Required*	HORSEPOWER INPUT = $\frac{\text{FLOW RATE OUTPUT (GPM)} \times \text{PRESSURE (psi)}}{1714 \times \text{EFFICIENCY (Overall)}}$	$HP_{IN} = \frac{QP}{1714\ Eff}$ or $\frac{GPM \times psi}{1714\ Eff}$
PUMP EFFICIENCY OVERALL IN PERCENT	OVERALL EFFICIENCY = $\frac{\text{OUTPUT HORSEPOWER}}{\text{INPUT HORSEPOWER}} \times 100$	$Eff_{OV.} = \frac{HP_{OUT.}}{HP_{IN}} \times 100$
	OVERALL EFFICIENCY = VOLUMETRIC Eff. × MECHANICAL Eff	$Eff_{OV.} = Eff_{VOL.} \times Eff_{MECH.}$
PUMP EFFICIENCY VOLUMETRIC IN PERCENT	VOLUMETRIC EFFICIENCY = $\frac{\text{ACTUAL FLOW RATE OUTPUT (GPM)}}{\text{THEORETICAL FLOW RATE OUTPUT (GPM)}} \times 100$	$Eff_{VOL} = \frac{Q_{ACT.}}{Q_{THEO.}} \times 100$
PUMP EFFICIENCY MECHANICAL IN PERCENT	MECHANICAL EFFICIENCY = $\frac{\text{THEORETICAL TORQUE TO DRIVE}}{\text{ACTUAL TORQUE TO DRIVE}} \times 100$	$Eff_{MECH.} = \frac{T_{THEO.}}{T_{ACT.}} \times 100$
PUMP LIFE B_{10} BEARING LIFE	B_{10} HOURS OF BEARING LIFE = RATED LIFE HOURS $\times \frac{\text{RATED SPEED (RPM)}}{\text{NEW SPEED (RPM)}} \times \left(\frac{\text{RATED PRESSURE (PSI)}}{\text{NEW PRESSURE (PSI)}}\right)^3$	$B_{10} = \text{RATED HRS.} \times \frac{RPM_R}{RPM_N} \times \left(\frac{P_R}{P_N}\right)^3$

ACTUATOR FORMULAS

FORMULA FOR:	WORD FORMULA	LETTER FORMULA
CYLINDER AREA *In Square Inches*	AREA = $\pi \times \text{RADIUS}^2$ *(Inches)*	$A = \pi r^2$
	AREA = $\frac{\pi}{4} \times \text{DIAMETER}^2$ *(Inches)*	$A = \frac{\pi D^2}{4}$ or $A = .785D^2$
CYLINDER FORCE *In Pounds, Push or Pull*	FORCE = PRESSURE (psi) × NET AREA *(Square Inches)*	$F = psi \times A$ or $F = PA$

FLUID POWER FORMULAS

ACTUATOR FORMULAS — CONTINUED

FORMULA FOR:	WORD FORMULA		LETTER FORMULA
CYLINDER VELOCITY or SPEED *In Feet/Second*	VELOCITY	$= \frac{231 \times \text{FLOW RATE (GPM)}}{12 \times 60 \times \text{NET AREA (Square Inches)}}$	$v = \frac{231Q}{720A}$ or $v = \frac{.3208Q}{A}$
CYLINDER VOLUME CAPACITY *In Gallons of Fluid*	VOLUME	$= \frac{\pi \times \text{RADIUS}^2 \text{ (Inches)} \times \text{STROKE (Inches)}}{231}$	$V = \frac{\pi r^2 l}{231}$
		$= \frac{\text{NET AREA (Square Inches)} \times \text{STROKE (Inches)}}{231}$	$V = \frac{Al}{231}$ l = Length of Stroke
CYLINDER FLOW RATE *In Gallons Per Minute*	FLOW RATE	$= \frac{12 \times 60 \times \text{VELOCITY (Feet/Sec)} \times \text{NET AREA (Square Inches)}}{231}$	$Q = \frac{720vA}{231}$ or $Q = 3.117vA$
FLUID MOTOR TORQUE *In Inch Pounds*	TORQUE	$= \frac{\text{PRESSURE (psi)} \times \text{F.M. DISPLACEMENT (Cu. In./Rev.)}}{2\pi}$	$T = \frac{psi\ d}{2\pi}$ or $T = \frac{Pd}{2\pi}$
		$= \frac{\text{HORSEPOWER} \times 63025}{\text{RPM}}$	$T = \frac{63025\ HP}{n}$
		$= \frac{\text{FLOW RATE (GPM)} \times \text{PRESSURE (psi)} \times 36.77}{\text{RPM}}$	$T = \frac{36.77QP}{n}$ or $T = \frac{36.77Qpsi}{n}$
FLUID MOTOR TORQUE/100 psi *In Inch Pounds*	TORQUE/100 psi	$= \frac{\text{F.M. DISPLACEMENT (Cu. Inches/Revolution)}}{.0628}$	$T_{100psi} = \frac{d}{.0628}$
FLUID MOTOR SPEED *In Revolutions/Minute*	SPEED	$= \frac{231 \text{ FLOW RATE (GPM)}}{\text{F.M. DISPLACEMENT (Cu. Inches/Revolution)}}$	$n = \frac{231Q}{d}$
FLUID MOTOR POWER *In Horsepower Output*	HORSEPOWER	$= \frac{\text{TORQUE OUTPUT (Inch Pounds)} \times \text{RPM}}{63025}$	$HP = \frac{Tn}{63025}$

THERMAL FORMULAS

NOTE: ONE BRITISH THERMAL UNIT (BTU) IS THE AMOUNT OF HEAT REQUIRED TO RAISE THE TEMPERATURE OF ONE POUND OF WATER ONE DEGREE FAHRENHEIT. ONE HORSEPOWER = 2545 BTU/HR.

RESERVOIR COOLING CAPACITY BASED ON ADEQUATE AIR CIRCULATION	HEAT (BTU/HR)	= 2 × TEMPERATURE DIFFERENCE BETWEEN RESERVOIR WALLS AND AIR (°F) × AREA OF RESERVOIR (SQ. FT.)	$BTU/HR = 2.0 \times \Delta T \times A$
HEAT IN HYDRAULIC OIL (approx.) DUE TO SYSTEM INEFFICIENCY (SG = .89 – .92)	HEAT (BTU/HR)	= FLOW RATE (GPM) × 210 × TEMPERATURE DIFFERENCE (°F)	$BTU/HR = Q \times 210 \times \Delta T$
HEAT IN FRESH WATER (approx.)	HEAT (BTU/HR)	= FLOW RATE (GPM) × 500 × TEMPERATURE DIFFERENCE (°F)	$BTU/HR = Q \times 500 \times \Delta T$

PRESSURE DROP FORMULAS

NOTE: SEE PAGES 79 THROUGH 84 FOR INFORMATION

ACCUMULATOR FORMULAS

NOTE: SEE PAGES 130 AND 131 FOR ADDITIONAL INFORMATION

Where "P" = psia *(ABSOLUTE)* = psig *(GAUGE PRESSURE)* + 14.7 psi

FORMULA FOR:	WORD FORMULA:	LETTER FORMULA:
PRESSURE OR VOLUME *w/Constant "T" (Temperature)*	ORIGINAL PRESSURE × ORIGINAL VOLUME = FINAL PRESSURE × FINAL VOLUME	$P_1 V_1 = P_2 V_2$ Isothermic
PRESSURE OR TEMPERATURE *w/ Constant "V" (Volume)*	ORIGINAL PRESSURE × FINAL TEMPERATURE = FINAL PRESSURE × ORIG. TEMPERATURE	$P_1 T_2 = P_2 T_1$ Isochoric
VOLUME OR TEMPERATURE *w/Constant "P" (Pressure)*	ORIGINAL VOLUME × FINAL TEMPERATURE = FINAL VOLUME × ORIGINAL TEMPERATURE	$V_1 T_2 = V_2 T_1$ Isobaric
PRESSURE OR VOLUME *w/Temperature Change Due* To Heat of Compression	ORIGINAL PRESSURE × ORIGINAL VOLUME^n = FINAL PRESSURE × FINAL VOLUME^n	$P_1 V_1^{\ n} = P_2 V_2^{\ n}$
	$\frac{\text{FINAL TEMP.}}{\text{ORIG. TEMP.}} = \left(\frac{\text{ORIG. VOLUME}}{\text{FINAL VOLUME}}\right)^{n-1} = \left(\frac{\text{FINAL PRESSURE}}{\text{ORIG. PRESSURE}}\right)^{n-1/n}$	$\frac{T_2}{T_1} = \left(\frac{V_1}{V_2}\right)^{n-1} = \left(\frac{P_2}{P_1}\right)^{n-1/n}$

VOLUME & CAPACITY EQUIVALENTS

	Cubic Inches	Cubic Feet	Cubic Yards	Liters	U.S. Gallons	Imperial Gallons	Water at Max. Density 39.2° F 4° C	
							Pounds of Water	Kilograms of Water
Cu Inches	1	.0005787	.00002143	.016384	.004329	.0036065	.0361275	.0163872
Cu Feet	1728	1	.037037	28.317	7.48052	6.23210	62.4283	28.3170
Cu Yards	46,656	27	1	764.56	201.974	168.266	1685.56	764.559
Liters	61.0234	.0353145	.001308	1	.264170	.220083	2.20462	1
U.S. Gallons	231	.133681	.004951	3.78543	1	.833111	8.34545	3.78543
Imp Gallons	277.274	.160459	.0059429	4.54374	1.20032	1	10.0172	4.54373
Lbs Water	27.6798	.0160184	.0005929	.453592	.119825	.0998281	1	.453593

To Convert	Into...	Multiply by...
Barrel (U.S. liquid)	Gallons	31.5
Bars	Kgs/sq meter	10,200
Bars	Pounds/sq in	14.50
Centigrade	Fahrenheit	(C° x 9.5) +32
Cubic centimeters	Cu feet	.00003521
Cubic centimeters	Cu inches	0.06102
Cubic centimeters	Cu meters	.000001
Cubic centimeters	Gallons (U.S. liquid)	.0002642
Cubic centimeters	Liters	0.001
Cubic feet	Cu cms	28,320
Cubic feet	Cu inches	1,728
Cubic feet	Cu meters	0.02832
Cubic feet	Gallons (U.S. liquid)	7.48052
Cubic feet	Imperial gallons	6.23210
Cubic feet	Liters	28.317
Cubic feet/min	Cu cms/min	28,317
Cubic feet/min	Gallons/min	7.481
Cubic feet/min	Liters/min	28.32
Cubic feet/sec	Gallons/min	448.83
Cubic inches	Cu cms	16.39
Cubic inches	Cu feet	.0005787
Cubic inches	Cu meters	.00001639
Cubic inches	Gallons (U.S. liquid)	.004329
Cubic inches	Imperial gallons	.0036065
Cubic inches	Liters	0.01639
Cubic meters	Cu cms	1,000,000
Cubic meters	Cu feet	35.31
Cubic meters	Cu inches	61,023
Cubic meters	Gallons (U.S. liquid)	264.2
Cubic meters	Liters	1,000
Degree Fahrenheit	Degree Celsius	t °C = (t °F – 32)/1.8
Feet/min	Cms/sec	0.5080

To Convert	Into...	Multiply by...
Feet/min	Meters/min	0.3048
Gallons/min	Cu cms/min	3,785.412
Gallons/min	Cu feet/min	.1337
Gallons/min	Liters/min	3.785
Imperial gallons	Cu feet	.160459
Imperial gallons	Cu inches	277.274
Imperial gallons	Liters	4.54374
Imperial gallons	U.S. gallons	1.20032
Kilograms/sq cm	Pounds/sq ft	2,048
Kilograms/sq cm	Pounds/sq in	14.22
Kilograms/sq meter	Bars	.00009807
Kilograms/sq meter	Pounds/sq in	.001422
Liters	Cu cm	1,000
Liters	Cu feet	0.0353145
Liters	Cu inches	61.0234
Liters	Cu meters	0.001
Liters	Gallons (U.S. liquid)	0.264170
Liters	Imperial gallons	.220083
Liters/min	Cu cms/min	1000
Liters/min	Cu feet/min	.035
Liters/min	Gallons/min	.264
Pascal (Pa)	Bar	.00001
Pascal (Pa)	Pounds/sq in	.000145
Pounds/sq inch	Kgs/sq meter	703.1
Pounds/sq inch	Pascal (Pa)	6,895
Pounds/sq inch	Bar	.069
U.S. gallons	Imperial gallons	.83267
U.S. gallons	Cu cms	3785
U.S. gallons	Cu feet	.133681
U.S. gallons	Cu inches	231
U.S. gallons	Cu meters	.3785
U.S. gallons	Liters	3.785

TABLE 6-E. CONVERSION BETWEEN ENGLISH UNITS AND SI UNITS

The "SI" (International Standards) units shown below are adopted for use by the International Fluid Power Community, and should be used on documents prepared for international circulation.

Quantity	SI Unit for Fluid Power	"Customary" U.S. Unit	Conversion Factor
Length	millimeter (mm)	inch (in)	1 in = 25.4 mm
Pressure*	bar (bar, g or bar, a)	lbs/sq in (psig or psia)	1 bar = 14.5 psi
Pressure**	mm of mercury (mm Hg)	inches of mercury (in Hg)	1 in Hg = 25.4 mm Hg
Flow***	liters per minute (l/min)	U.S. gallons per minute (U.S. GPM)	1 U.S. GPM = 3.79 l/min
Flow†	cubic decimeters/sec (dm^3/sec)	cubic feet per minute (cfm)	1 dm^3/sec = 2.12 cfm
Force	Newton (N)	pound(f) or lb(f) (force)	1 lb(f) - 4.44N
Mass	kilogram (Kg)	pound(m) or lb(m) (mass)	1 Kg = 2.20 lb(m)
Time	second (sec)	second (sec)	------
Volume***	liter (l)	gallon (U.S. gal)	1 U.S. gal = 3.79 l
Temperature	degrees Celcius (°C)	degrees Fahrenheit (°F)	°C = 5/9 (°F - 32)
Torque	Newton-meters (Nm)	pounds(f)-inches lbs(f)-in	1 Nm = 8.88 lb(f)-in
Power	kilowat (kw)	horsepower (HP)	1 kw = 1.34 HP
Shaft Speed	revolutions per minute (rpm)	revolutions per minute (rpm)	------
Frequency	Hertz (Hz)	cycles per second (cps)	1 Hz = 1 cps
Displacement	millileters/revolution (ml/rev)	cubic inches per revolution (cipr)	1ml/rev = 0.061 cipr
Kinematic viscosity	centistokes (cSt)	Saybolt Universal Seconds (SUS)	cSt = (4.635)(SUS)††
Velocity	meter per second (m/s)	feet per second (fps)	1 m/s = 3.28 fps

NOTES: *Pressure above atmospheric **Pressure below atmospheric ***Liquid †Gas
††@38°C; Factor is 4.667 @ 99°C

EQUIVALENT MEASUREMENTS

1 U.S. Gallon = 231 Cubic Inches
= 4 Quarts; or 8 Pints
= 8.3356 Pounds
= 3.785 Liters

1 Imperial Gallon = 1.2 U.S. Gallons

1 Liter = 0.2642 U.S. Gallons

1 Cubic Foot = 7.48 Gallons
= 1728 Cubic Inches

1 Cubic Foot of Water Weighs 62.4 Pounds

1 Bar at Sea Level = 14.5 PSI (Approx. 1 Atmos.)
= 33.8 Foot Water Column
= 42 Foot Oil Column
= 29.92 "Hg.

Approx. ½PSI Decrease Each 1000 Ft. Altitude

1 Horsepower = 33,000 Ft. Lbs. per Minute
= 550 Ft. Lbs. per Second
= 42.4 BTU per Minute
= 2545 BTU per Hour
= 746 Watts, or 0.746 Kilowatts

1 PSI = 2.0416 "Hg
= 27.71 "Water

1 Foot Column of Water = 0.433 PSI

1 Foot Column of Oil = 0.390 PSI

1 "Hg = 0.491 PSI
= 1.132 Ft. Water

1 Barrel Oil = 42 Gallons

1 Micro-meter = 1 Millionth of a Meter (Micron)
= 1 Thousandth of a Meter
= 0.00004 Inch

25 Micro-meters = 0.001 Inch

APPROXIMATE MEASUREMENTS

1 Pint = 2 cups = 16 fluid ounces = 1 pound
1 Pint = 96 teaspoons = 32 tablespoons = 16 fluid ounces
1 Quart = 4 cups = 2 pints = 32 fluid ounces = 2 pounds
1 Quart = 192 teaspoons = 64 tablespoons = 32 fl. oz.
1 Gallon = 16 cups = 4 quarts = 8 pints
1 Gallon = 768 teaspoons = 256 tablespoons = 128 oz.

1 Gallon = 231 cubic inches = 76,800 drops
1 Cup = 16 tablespoons = 48 teaspoons
1 Tablespoon = 3 teaspoons
2 Tablespoons = 1 fluid ounce
1 Fluid ounce (volume) = 600 drops (hydraulic oil)
1 Cubic inch = 330 drops

TABLE 6-F. EQUIVALENT VALUES

To convert units appearing in Column 1 into equivalent values of units in Column 2, multiply by factor in Column 3, Example: To convert 7 gallons into cubic inches, multiply 7 x 231 = 1617 cubic inches.

To convert units appearing in Column 2 into equivalent values of units in Column 1, divide by factor in Column 3. Example: To convert 25 horsepower into BTU per minute, divide 25 by 0.02356 = 1061 BTU per minute.

Column 1	Column 2	Column 3
Please read instructions above		
Atmospheres*	Feet of Water	33.9
Atmospheres*	Inches of Mercury ("Hg)	29.92
Atmospheres*	PSI (Lbs.per Sq. In)	14.7
BTU	Foot Lbs.	778.3
BTU per Hour	Watts	0.2931
BTU per Minute	Horsepower	0.02356
Centigrade	Fahrenheit	°C x 1.8+32
Centimeters	Inches	0.3937
Cubic Centimeters	U.S.Gallons	0.0002642
Cubic Centimeters	Liters	0.001
Cubic Feet	Cubic Inches	1728
Cubic Feet	U.S.Gallons liquid	7.48052
Cubic Inches	Cubic Feet	0.0005787
Cubic Inches	U.S.Gallons Liquid	0.004329
Days	Seconds	86,400
Degrees (Angle)	Radians	0.01745
Feet	Meters	0.3048
Feet	Miles	0.0001894
Feet of Water	Atmospheres (Bars)*	0.0295
Feet of Water	Inches of Mercury ("Hg)	0.8826
Feet of Water	PSI (Lbs. per Sq. In)	0.4335
Feet per Minute	Miles per Hour	0.01136
Feet per Second	Miles per Hour	0.6818
Foot Lbs.	BTU	0.001286
Foot Lbs. per Minute	Horsepower	0.0000303
Foot Lbs. per Second	Horsepower	0.001818
Gallons (U.S.Liquid)	Cubic Feet	0.1337
Gallons (U.S.Liquid)	Cubic Inches	231
Gallons of Water	Pounds of Water	8.3453
Horsepower	BTU per Minute	42.44

Column 1	Column 2	Column 3
Please read instructions above		
Horsepower	Foot Lbs. per Minute	33,000
Horsepower	Foot Lbs. per Second	550
Horsepower	Watts	745.7
Hours	Days	0.04167
Hours	Weeks	0.005952
Inches	Centimeters	2.54
Inches of Mercury ("Hg)	Atmospheres (Bars)*	0.03342
Inches of Mercury ("Hg)	Feet of Water	1.133
Inches of Mercury ("Hg)	PSI (Lbs. per Sq. In.)	0.4912
Inches of Water	PSI (Lbs. per Sq. In.)	0.03613
Liters	Cubic Centimeters	1000
Liters	Gallons (U.S.Liquid)	0.2642
Micro-meter (Micron)	Inches	0.00004
Miles (Statute)	Feet	5280
Miles per Hour (MPH)	Feet per Minute	88
Miles per Hour (MPH)	Feet per Second	1.467
Ounces (Weight)	Pounds	0.0625
Ounces (Fluid)	Cubic Inches	1.805
Pints	Quarts	0.5
Pounds	Grains	7000
Pounds	Grams	453.5924
Pounds	Ounces	16
PSI (Lbs. per Sq. In)	Atmospheres (Bars)*	0.06804
PSI (Lbs. per Sq. In)	Feet of Water	2.307
PSI (Lbs. per Sq. in)	Inches of Mercury	2.036
Quarts	Gallons	0.25
Square Feet	Square Inches	144
Temperature (°F) - 32	Temperature (°C)	0.5555
Tons (U.S.)	Pounds	2000
Watts	Horsepower	0.001341

*1 Bar equals approximately 1 atmosphere. See Pages 17 and 236.

TABLE 6-G. PSI GAUGE PRESSURE CONVERTED TO METRIC PRESSURE UNITS

This table is calculated on the basis of 1 bar = 14.5 PSI, or, 1 PSI = .069 bar

PSI ⟶	10	50	100	250	500	750	1000	1500	2000	2500	3000	5000
Bars ⟶	0.69	3.45	6.90	17.2	34.5	51.7	69.0	103.4	137.9	172.4	206.9	344.8

TABLE 6-H. GPM OIL FLOW CONVERTED TO METRIC UNITS

This table is calculated on the basis of 1 U.S. GPM = 3.79 liters per min. (liquid) or, 1 liter per min. = 0.2638 GPM.

GPM ⟶	5	8	12	15	20	25	30	35	40	50	75	100
Liters/min. ⟶	18.95	30.32	45.48	56.85	75.80	94.75	113.7	132.7	151.6	189.5	284.3	379.0

TABLE 6-I. SCFM AIR FLOW CONVERTED TO METRIC UNITS

This table is calculated on the basis of 1 SCFM = 0.4716 cubic decimeters per second, or 1 dm^3/sec. = 2.12 SCFM.

SCFM ⟶	5	10	15	25	50	75	100	150	200	250	300	350
Dm^3/sec. ⟶	2.358	4.716	7.074	11.79	23.58	35.37	47.16	70.74	94.32	117.9	141.5	165.1