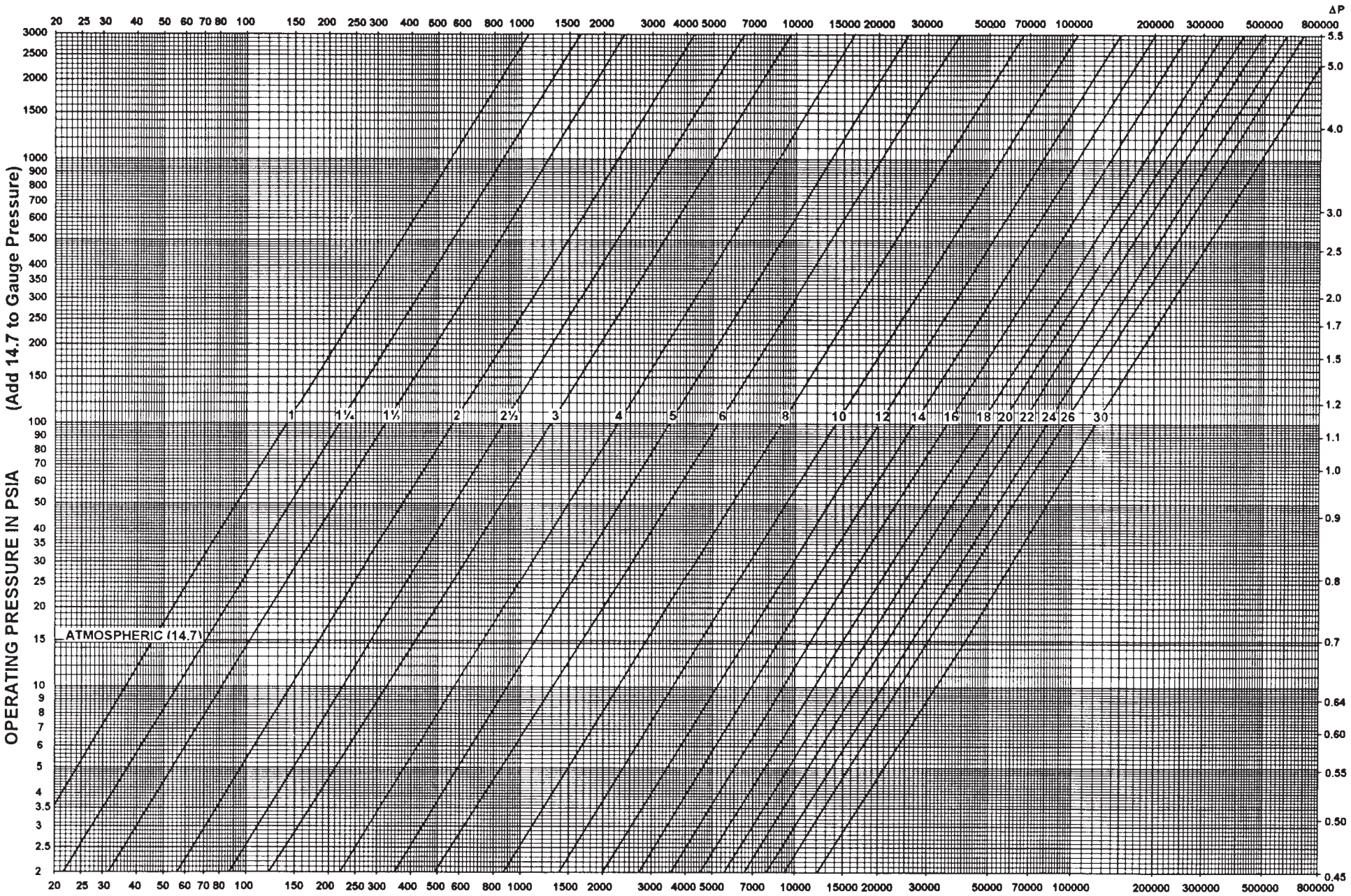
CIRCLE S PRODUCTS AIR FLOW CHART



$$\text{Actual Pressure Drop} = \left[\frac{\text{Application's Equivalent Air Flow SCFM (Qc)}}{\text{Separator's Maximum Rated Air Flow SCFM}}\right]^2 \text{ x Rated Pressure Drop (obtain from scale on right side)}$$

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The Circle S Products air flow chart on the reverse side is based on SCFM (cubic feet per minute of air measured at standard conditions of 14.7 psia and 60°F). If any of the operating conditions are varied from the above, then correction factors must be applied.

To use the air flow chart for applications involving other gases or other than standard conditions the following equation must be solved for Q_c:

$$Q_c = C_{sg} \times F_g \times F_t$$

In the event that Q_{sg} is not provided in the proper form, any of the following equations my be used to arrive at the correct flow rate to insert in the above equation.

$$Q_{sg} = \frac{6.3 \times W}{MW}$$

$$Q_{sg} = \frac{35.37 \times Qa \times PA}{460 + T_a}$$

$$Q_{sg} \text{ (air only)} = .218 \times W$$

$$Q_{sg} = \frac{MMSCFD}{1440.}$$

W = (Pound mols/hour) x MW

EXPLANATION OF SYMBOLS

F_g = Correction factor for specific gravity (see table at right)

F_t = Correction factor for temperature (see table at far right)

G = Specific gravity

MMSCFD = Million standard cubic feet per day

MW = Molecular weight

P_a = Pressure (psia) at which volume is measured

Q_a = Rate of flow-measured cubic feet per minute (ACFM)

Q_c = Rate of flow-standard cubic feet per minute of equivalent air

Q_{sg} = Rate of flow-standard cubic feet per minute

T = Operating temperature (°F)

T_a = Temperature (°F) at which volume is measured

W = Rate of flow-pounds per hour

SPECIFIC GRAVITY CORRECTION FACTORS

GAS		M.W.	G	FG
Hydrogen	H_2	2.0	0.069	0.344
Helium	He	4.0	0.138	0.452
Synthesis	75%H_2 25%N_2	8.5	0.295	0.611
Coke Oven		11.0	0.379	0.679
*Methane	CH_4	16.0	0.551	0.788
Ammonia	NH_3	17.0	0.586	0.808
Steam (Water Vapor)	H_2O	18.0	0.621	0.826
*Natural Gas	75%CH_4 25%N_2	19.0	0.655	0.844
Acetylene	C_2H_2	26.0	0.897	0.957
Nitrogen	N_2	28.0	0.95	0.986
Carbon Monoxide	C_O	28.0	0.95	0.986
Air		29.0	1.00	1.000
Flue Gas	81%N_2 19%CO_2	31.0	1.08	1.027
Oxygen	O_2	32.0	1.10	1.039
Argon	A	39.9	1.38	1.136
Propane	$C_2 H_8$	44.1	1.52	1.182
*Carbon Dioxide	CO_2	44.0	1.52	1.181
Nitrous Oxide	N_2O	44.0	1.52	1.181
Butadiene	$C_4 H_6$	54.1	1.86	1.284
Sulphur Dioxide	SO_2	64.1	2.21	1.374
Chlorine	$C1_2$	70.9	2.45	1.431
Freon 12	CC_2F_2	120.9	4.17	1.770

1 psi = 2.036" H_g

1" H_g = .4912 psi

1 psi = 27.71" H_2O

1" H_2O = .03613 psi

NOTE

* For applications involving gases (above 500 PSI & 200°F) so marked, contact the home office to determine whether there is an additional correction factor for compressibility.

TEMPERATURE CORRECTION FACTORS

T	FT
- 20°F	0.904
- 10	0.917
0	0.929
10	0.941
20	0.953
30	0.965
40	0.977
50	0.989
60	1.000
70	1.012
80	1.023
90	1.034
95	1.040
100	1.046
105	1.051
110	1.057
120	1.068
130	1.079
140	1.090
150	1.101
160	1.112
170	1.121
180	1.133
190	1.143
200	1.154
250	1.206
300	1.256
400	1.353
500	1.445
550	1.490
600	1.533
700	1.618
800	1.701
900	1.780
1000	1.858

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