1. COMP. R.P.M. = $\frac{\text{motor pulley p.d. x motor r.p.m.}}{\text{comp. pulley p.d.}}$

2. MOTOR PULLEY p.d. = $\frac{\text{comp. pulley pd. x comp. r.p.m.}}{\text{motor r.p.m.}}$

3. COMP. PULLEY p.d = $\frac{\text{motor pulley pd. x motor r.p.m.}}{\text{comp. r.p.m.}}$

4. MOTOR R.P.M = $\frac{\text{comp. pulley p.d. x comp r.p.m}}{\text{motor pulley p.d.}}$

5. FREE AIR = piston displacement x volumetric eff. (%)

6. REQUIRED PISTON DISPLACEMENT = $\frac{\text{free air}}{\text{vol. eff.}}$

7. PISTON DISPLACEMENT IN CU per FT. MIN.* = $\frac{\text{Cyl. bore in In. x Cyl. bore x stroke in In. x r.p.m}}{2200}$

Note:It doubles for double acting cylinders

8. CU. FT. COMPRESSED AIR = $\frac{\text{cult. free air x P-baro}}{\text{psig + P-baro}}$

9. CU. FT. FREE AIR = $\frac{\text{cu ft. compressed air x (p.s.i.g.+ P-baro)}}{\text{P-baro}}$

10. CU. FT. FREE AIR REQD. TO RAISE REC. FROM 0 GAGE TO FINAL PRESSURE =

$$\frac{\text{vol. of rec. in. cu. ft. x ps.i.a.}}{\text{(atmospheric pressure) p.s.i.a.}}$$

11. CU. FT. FREE AIR REQ'D. TO RAISE REC. FROM SOME PRESS. GREATER THAN 0 GAGE TO A FINAL HIGHER PRESSURE =

$$\frac{\text{vol. of rec. in. Cu. ft. (final p.s.i.g.—initial p.s.i.g.)}}{\text{(atmospheric pressure) p.s.i.g.}}$$

12. PISTON SPEED IN FT. PER MIN = $\frac{\text{2 x stroke (in inches) x r.p.m.}}{12}$

13. GALLONS = $\frac{\text{cu. ft.}}{.134}$

14. CU. FT. = gallons x .134

15. Total Force in lbs. of Air Cylinder =
Area of he Cylinder Dia. In. sq. inches x PSIG of air press. used

16. C.F.M. of Free Air req'd. to operate Air Cylinder (Single Acting) =
Vol. of Cyl in cu. Ft. x Cycles/Min. x $\frac{\text{(Gage press p.s.i.g. + 14.7}}{(14.7)}$

For Double Acting Cylinders Multiply By 2.

17. PUMP UP TIME (MIN) = $\dfrac{\text{V (tank size in gal.) x (final tank press - initial tank press)}}{\text{7.48 x atmos. press. (p.s.i.a.) x pump delivery (c.f.m.)}}$

** Piston displacement for multi-stage compressors—only the Low pressure cylinders are considered.*