BEST-AIRE™ Compressor Services

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- Gardner Denver
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MECHANICAL REPAIRS

Compressors
- Reciprocating
- Centrifugal
- Rotary Screw
- Rotary Sliding Vanes
- Axial

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- Reciprocating
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Vacuum / Blower
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- Centrifugal
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- Intercoolers & After coolers
- Oil Coolers & U-Tubes
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- Piston Assemblies
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- Rotary Screw Air-Ends

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- Re-Babbitting of Bearings
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- Cylinder Repair

ADDITIONAL SERVICES

- Complete Overhauls
- Troubleshooting of Controls
- Field Supervision
- PLC Control Systems
- Portable Equipment
- Cylinder Boring & Honing
- New PLC Control Systems
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SPECIAL SERVICES

Air System Engineering & Consulting – Air System Study & Leak Audit – Chiller / Dryer Services
In-Field Machining – Cooling Systems: Closed Loop, Evaporative Tower & Open Towers
Magnetic Particle & Dye Penetrate Inspections – Foundation Repairs—Trans-Air Piping

Service on All Makes and Models

24-Hour Emergency Service

ENGINEERING DATA

Basic Compressor Terms and Definitions

Absolute Pressure— The existing guage pressure plus atmospheric pressure measured from absolute zero.

Aftercooler— Device that dissipates heat caused by compression after compression is complete. This allows for effective removal of moisture from the compressed air or gas.

Air Receiver— Tank into which compressed air is delivered and stored. Proper tank size depends on mode of operation. Tank should be sized as recommended by manufacturer. Consult your Best– Aire Sales Engineer for assistance.

Atmosphere Pressure— Pressure at a specific altitude. At sea level, atmospheric pressure is 14.7 PSI

Brake Horsepower— The total power input required to compress and deliver a given quantity of air, including losses due to slip and friction as well as mechanical losses.

Compression Efficiency— Ratio of the theoretical to the actual work required to compress air. Takes into account slip leakage and frictional losses.

Compression Ratio— the ratio of the Absolute Discharge Pressure to the Absolute Inlet Pressure.

Compressor— A machine designed for compressing air or gas from an initial pressure to a higher discharge pressure.

ACFM vs SCFM vs ICFM
When comparing compressor performance, be certain the volume of air is expressed in similar terms. The volume of air a compressor delivers depends upon the actual temperature and pressur of the inlet air. When comparing the air delivery of compressors, know the temperature and pressure of the inlet air.

Actual CFM (ACFM) or inlet CFM (ICFM)
Air delivery measured at the actual temperature and pressure conditions of the inlet air. The pressure and temperature readings are usually taken just outside the inlet air filter.

Standard CFM (SCFM)
Air delivery at standard conditions. In the compressed air industry the conditions are usually 14.7 PSIA and 68° F

$$\textbf{ICFM} = \text{SCFM} \times 14.7 \times \frac{(460+T)}{P \quad 528}$$

Where:
SCFM = Volume of air at 68°F & 14.7 PSIA
ICFM = Air inlet entering compressor at inlet conditions
P = Inlet air pressure
T = Inlet temperature

Design Pressure—Maximum continuous operating pressure as designed by the manufacturer. Also referred to as Maximum Working Pressure.

Design Speed— Maximum continuous operating speed of the compressor as designed by the manufacturer.

Discharge Pressure— Total pressure at the discharge flange of the compressor.

Discharge Temperature— The temperature at the discharge flange of the compressor.

Free Air— Air at atmospheric conditions. Be careful with this term because altitude, barometric pressure and temperature will vary. This term may not mean air at identical conditions.

Inlet Temperature— Temperature at the inlet flange of the compressor or inlet filter.

Inlet Pressure— Total pressure at the inlet flange of the compressor or inlet filter.

Load Factor— The ratio of the average actual compressor output to the maximum rated output of the compressor for a defined period of time.

Moisture Separator— A device designed to collect and remove moisture from the air during the cooling process.

Pressure— Force per unit of area. Generally expressed in terms of:
PSIG— Pounds per square inch gauge. Gauge pressure is the pressure above local atmospheric pressure.
PSIA— Pounds per square inch absolute. Equal to gauge pressure plus atmospheric pressure.

Pressure Drop— Loss of pressure commonly due to friction in the piping, fittings, coolers and filters.

Rated Discharge Pressure— The highest continuous operating pressure to meet the conditions stated by the purchaser. It is always lower that design pressure by 10%.

Slip— The internal leakage due to clearance within air end. The air that cannot be totally compressed is considered in the performance calculations.

Speed— Of compressor is the number of revolutions per minute of the compressor shaft.

Unloaded Horsepower— The power that is consumed to overcome the frictional losses when operating in an unloaded condition.

Vacuum— Pressure below atmospheric. It is measured by a differential gauge which shows the difference between the pressure and atmosphere.

Volumetric Efficiency— The ratio of the actual quality of air delivered to actual capacity of the compressor.

General Conversions

Multiply	By	To Obtain
Atmospheres	14.696	Pounds/Sq. Inch
Barrels, US Liquid	31.5	Gallons
Bars	14.5	Pounds/Sq. Inch
BTU	778	Foot-pound
BTU/minute	0.02356	Horsepower
BTU/minute	0.01757	Kilowatts
Calories	0.0039685	BTU
Centimeters	0.3937	Inches
Cubic feet	7.481	Gallons
Cubic ft. of water (60°)	62.37	Pounds
Cubic feet/minute	7.480	Gallons/minute
Feet	30.48	Centimeters
Gallons	0.1337	Cubic feet
Gallons	3.785	Liters
Grams	0.3527	Ounces
Horsepower	0.7457	Kilowatts
Inches	2.54	Centimeters
Inches of Mercury	0.4912	Pounds/Sq. Inch
Inches of water	0.03613	Pounds/Sq. Inch
Kilograms	2.2046	Pounds
Kilowatts	1.341	Horsepower
Kilowatts-hours	3415	BTU
Liters	0.2642	Gallons
Meters	39.37	Inches
Pounds	453.6	Grams
Pounds/square inch	27.686	Inches of Water
Pounds/square inch	2.036	Inches of Mercury
Pounds/square inch	0.06804	Atmospheres
Temp (°C) + 273	1	Absolute Temp (°C)
Temp (°C) + 17.8	1.8	Temp (°F)
Temp (°F) + 460	1	Absolute Temp (°F)
Temp (°F) - 32	0.5555	Temp (°C)
Watts	0.001341	Horsepower

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