

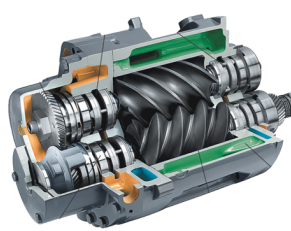
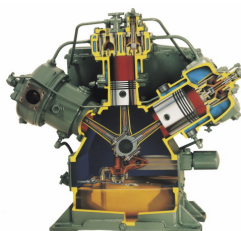
Rules of Thumb

- Lowering compressor pressure settings by **2 PSIG** results in a **1% savings**
- Lowering compressor inlet air temperature by **10°F** results in a **2% savings**
- 80% of the electric** energy going into compressors is lost as **heat**

Efficiency Index – kW/CFM

- Compressor data sheet (CAGI)** provides kW/CFM at the rated capacity and the full load pressure
- Logging the energy consumption** by the compressor

Major Types



| Positive displacement | Positive displacement | Dynamic compression |
|--|---|-------------------------------------|
| Suited for high pressure operations | Better turn down characteristics | Good for full load operations |
| Typically used in smaller applications | Small – midsize applications <500 HP | Large applications >500 HP |
| Typical Controls – On/Off | Typical Controls – Load/Unload, Modulating, VSD | Butterfly Valves, Inlet Guide Vanes |

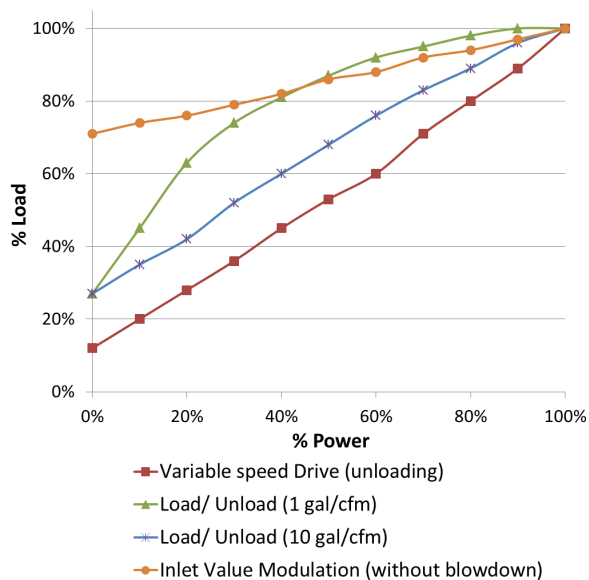
Air Leaks (CFM)

| Pressure (psig) | Orifice Diameter (inches) | | | | | |
|-----------------|---------------------------|------|------|-------|-------|-------|
| | 1/64 | 1/32 | 1/16 | 1/8 | 1/4 | 3/8 |
| 70 | 0.29 | 1.16 | 4.66 | 18.62 | 74.4 | 167.8 |
| 80 | 0.32 | 1.26 | 5.24 | 20.76 | 83.1 | 187.2 |
| 90 | 0.36 | 1.46 | 5.72 | 23.1 | 92 | 206.6 |
| 100 | 0.40 | 1.55 | 6.31 | 25.22 | 100.9 | 227 |
| 125 | 0.48 | 1.94 | 7.66 | 30.65 | 122.2 | 275.5 |

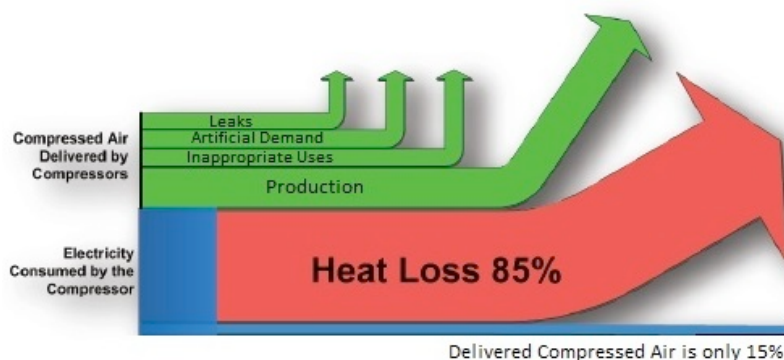
*For well-rounded orifices, values should be multiplied by **0.97** and by **0.61** for sharp ones

**Cost savings = # of leaks × leakage rate (cfm) × kW/cfm × # of hours × \$/kWh

Power drawn @ Part Load



Typical Losses



| Inappropriate Uses | Alternatives |
|-----------------------------------|--|
| Clean up, drying, Process cooling | Low pressure blowers, electric fans brooms |
| Sparging | Blowers and mixers |
| Aspirating, atomizing | Low pressure blower |
| Vacuum generator | Dedicated Vacuum pump |
| Air operated diagram pumps | Electric pump with proper regulator |
| Air motor | Electric motor |
| Idle equipment | Air stop valve at the inlet |
| Abandoned equipment | Disconnect air supply |