

*Air motors are versatile power sources which can be used to power many kinds of operations requiring a rotational drive. They have many advantages over electric motors, and often become the only feasible method of operation.*



# Advantages

Desoutter offers a wide range of rotating vane type air motors within a power range of 0.35 hp to 0.85 hp. Most motors can be supplied as single rotation or reversible. Reversible motors have keyed shafts, while single direction motors can be supplied with threaded shafts or alternatives.

1. Compact, with high power to weight ratio. An air motor will often be one third or less than the size of a comparable electric motor. An air motor can be used in a portable application where the weight and/or physical size of the electric motor would preclude portable operations. For example, a 0.85 hp air motor running at 2000 rpm weighs 3 lbs and is approximately 8" long and just over 2" in diameter.
2. The output speed and torque can be simply controlled by regulating either the air pressure or air flow. No expensive control equipment is required.
3. If a motor is loaded to a stalled condition, and held there for any length of time, no damage is caused to the motor. In certain applications, such as tightening fasteners, one acceptable method of control is to regulate the air pressure so that the motor stalls at the required torque.
4. When the load is released, the air motor will reach free running speed usually within one third to one half of a revolution.
5. No risk of overheating either when continuously run or frequent stop/starts or reversing. Note that this condition assumes the use of an inline lubrication system.
6. Reversing motors require simple control of air pressure into ports in the control top of the motor to determine direction of rotation. To reverse the direction of rotation takes milliseconds to complete.
7. Resists moisture, dust, heat. Is generally explosion proof and can be used safely in most hazardous situations.

# Terms

The following terminology is used in this publication:

**No load speed** – maximum speed attained at a given air pressure under a no-load condition.

**Maximum power** – with a vane type air motor, the maximum power output is achieved at nearly one half of the no load speed. This is the point at which the motor will run most efficiently.

**Dynamic torque** – the output torque of the motor at any stage during the operating cycle. The dynamic torque increases virtually in a straight line from zero at no load to a maximum at the stalled condition.

**Stall torque** – output torque achieved when the load applied causes the motor to stall.

**Starting torque** – to obtain the proper sealing of the rotor blades against the cylinder walls for maximum efficiency, and to

overcome inertia, it takes more torque to start an air motor than when it is running. Starting torque is approximately 75% of stall torque.

**Air consumption** – measured in the no-load condition. Air consumption is maximum at no load, and is approximately three quarters of this figure at maximum power. Air consumption reduces as the working air pressure is reduced. For example at 50 p.s.i. the air consumption is almost one half that at 90 p.s.i.

**Performance specifications** – are normally shown with an air inlet pressure of 6.3 bar at the air motor, unless otherwise stated. Note that there is approximately a 14% drop in power for every 10% reduction in air inlet pressure.

**Rotation** – non-reversible motors rotate in a clockwise direction if the motor is viewed from the air inlet end with the spindle pointing away from you.

