STANDARDS - MODIFIED STANDARDS - CUSTOMS - PROTOTYPES

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## Precision Gears & Drive Components

## AIR-TORQUE™ – PISTON AIR MOTOR

*QUALITY*
*SERVICE & RELIABILITY*

*www.ondrives.us*

ISO 9001:2015 - ITAR REGISTERED

# UNIQUE AIR-TORQUE™ MOTOR FEATURES

**ALUMINUM OR ACETAL HOUSING –** Base Mount, Body Mount or Flange Mount

### Controllable Speed & Torque
Speed control can be adjusted to very precise limits by the use of flow restrictors on the exhaust ports. The speed can be instantly changed to a higher or lower speed due to fast response times.

### Instant Stop-Start
Air-Torque™ Motors can stop-start and drive under load with characteristics similar to a Stepping Motor.

## ENVIRONMENTAL BENEFITS

### Energy Saving
Air consumption of a piston motor is optimized as leakage is negligible, providing maximum torque with minimum air consumption.

### Quiet Operation
Air-Torque™ Motors have very low noise levels when compared with standard air motors. They can operate in harsh environmental conditions and are unaffected by airline condensate.

### Clean Environment
Air-Torque™ Motors can be supplied for a non-lubricated gas supply in clean areas, eliminating contamination in a clean environment.


www.ondrives.us

Customer Service
Toll Free: 1.888.260.7466
Local: 516.771.6777
Fax: 516.771.6444
sales@ondrives.us

Ondrives.US Corp.
216 North Main Street
Freeport, New York 11520


# THE CASE FOR PISTON AIR MOTORS

Heavyweight motors drive ships, while one of the smallest electric motors ever produced operates by shuttling atoms between two metal droplets, one large and other small, residing on the back of a carbon nanotube through which an electric current is transmitted.

AC/DC, brush, brushless, servo, stepper, the list of different motor types goes on... And then there's how they are powered – from the mains, the sun, battery, clockwork or via generator. With all these options why do we need any other type of motor? There is another motor that has found its niche and continues to grow in popularity. It's the Air-Torque™ Piston Driven Air Motor!

For applications such as paint-stirring the air motor has become an industry standard and when you consider its credentials it's easy to understand why. Other markets also understand the benefits of air motors, so under what circumstances would you choose air over electric?

An obvious answer is when other power sources are not suitable for the application. Flammable environments are clearly prime sites for air motors as there is no danger of sparks. Of course there are ATEX-compliant electric motors available to meet this need but the shielding required makes them expensive.

The benefits of air motors certainly become apparent where harsh duty cycles are involved. Hold a powered AC or DC motor shaft with a brake and it will soon burn out. Air-Torque™ Motors on the other hand will just stop, and then continue when the brake is released. There is no component to damage, it just stops and starts again without any negative effect.

Stepper motors are ideal for stop/start applications under load, but not in the hazardous or sensitive environments involved in food processing, hydrocarbon engineering, paper converting, and wood working. These are some of the sectors that are increasingly turning to the air motor as a viable alternative to an electrical, variable speed drive.

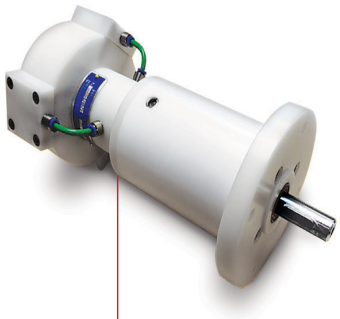
Air-Torque™ Motors are also ideal where magnetic fields and electro-magnetic interference are design issues, such as in MRI scanners or for use underwater and in stealth applications where a stray signal could give away your position. However, not all air motors provide the same performance and here again the designer needs to consider all the options.

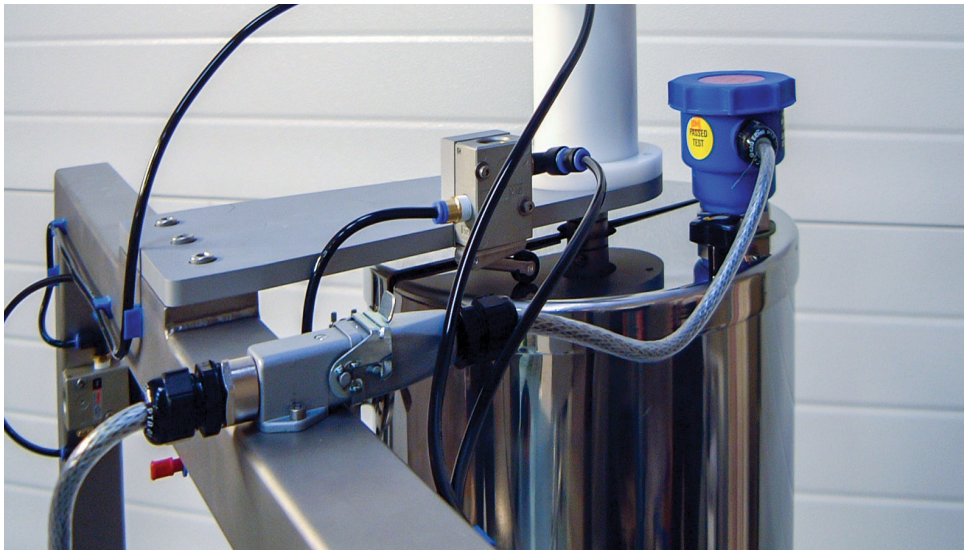
Some air motors don't have a good reputation for efficiency but this criticism is only an issue with vane type motors. The vane air motor has a cylinder containing a rotor with vanes that spin like a windmill. There must be a gap between where the vane and the casing meet to allow free movement, and this aspect makes the vane motor very difficult to seal. As result a lot of air is wasted.

The unique free-floating piston in an Air-Torque™ motor is much easier to seal. It is therefore far more cost efficient since most of the energy stored up in the compressed air is converted into motion. The free-floating piston design consumes up to 80% less air than a vane motor, providing significant cost savings even at maximum torque.

Aside from energy costs, vane motors remain a good choice if the speed requirement is above 800 rpm and the application calls for a steady duty cycle. However if the application involves fast acceleration, stop/start and reverse at lower speeds then an Air-Torque™ Piston Motor is the answer. Its free-floating pistons transmit maximum torque on start-up that can be adjusted via a pressure regulator. Speed is adjusted to highly accurate and consistent flow rates using restrictors on the exhaust port. Pulse counters can also be specified to program direction of rotation, speed and number of revolutions.

For flexibility, reliability, and cost efficiency the case for the piston air motor is proven.





**Product**

# Acetal Air Motor/Speed Reducer

**Application**

# Pouch Filling Machine

**Highlights**

- Speed range: 0.62-162 rpm
- 354 in.lb. (40 Nm) Max. continuous torque
- Unique free-floating piston design provides precise control
- Uses 80% less air than vane motors
- Washdown-resistant housing

A major manufacturer of precision filling equipment needed a reliable air motor/speed reducer for use on a new machine. The filling machine features a series of rotary valve pumps that control the flow of stir fry and other sauces during the pouch filling operation. The machine delivers precision-metered quantities, over millions of cycles, in a harsh washdown environment.

Our combination air motor/speed reducer was mounted over the top of the sauce feeding hopper and drives a stirring shaft which extends into the hopper. A controlled shaft speed is required to ensure proper sauce consistency as it moves through the valve pumps and into the pouch packages.

To meet the OEM's requirements, we provided them with an Acetal Air-Torque™ Planetary 1 combination air motor and speed reducer. The efficient piston air motor uses a reduced amount of compressed air which provides savings to the end user. Ideal for use in food processing and packaging applications, the Planetary 1 features Acetal construction to withstand washdown solvents and it also utilizes food grade synthetic grease.

# FEATURES AND BENEFITS

## Agriculture

- Portable Conveyor Drive
- Cattle Gate Drive

## Aerospace

- Work Platform Positioning Units
- Scissor Lifts
- Portable equipment
- Antenna Drive Systems
- Mechanical Handling
- Sand / Shot Blasting Table Drivers

## Automotive

- Paint Stirring
- Assembly Line
- Trolley Drive
- Life Testing Components
- Tyre Carousels Drive
- Lube Pump Drive

## Chemical Industry

- Stirring
- Agitation
- Valve Modulation
- Dispensing Machines
- Volumetric Filling
- Conveyor Drive
- Indexing
- Process Plant
- Peristaltic Pump Drive
- Dosing Plant Drive

## Food

- Small Conveyors
- Agitative
- Mixing
- Rotating Tables
- Labelling Machines
- Brushing
- Peristaltic Pump Drive
- Modulating Valve
- Control Drive
- Carton Filling Machines
- Bucket Elevators
- Cap Applications
- Slow Feed - Fast Return Wrapping

## General Engineering

- High Pressure Water Jet
- Life Testing Equipment
- Conveyor Belt and Roller
- Stirrers
- Winding, Unwinding
- Constant Reversal Applications

## Machine Tool

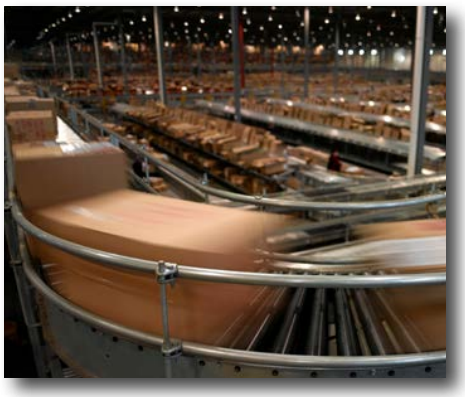
- Clamping
- Capstan Drive
- Bar Feed Drive
- Lead Screw Drive
- Slow Speed Positional Drive
- Sheet Steel Press Feeding & Tensioning System

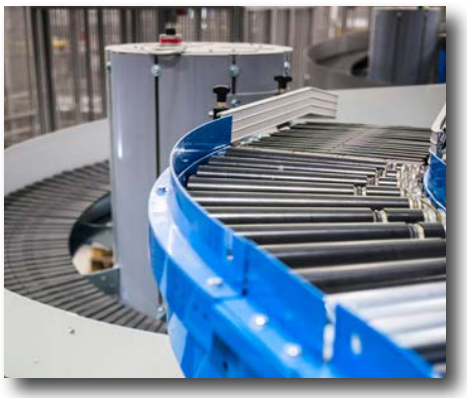
## Marine

- Submerged Propeller Drive
- Bow / Stern Servo Control Drive
- Diesel Engine Speed Control (remote)
- Boarding Ladder Control Drive
- Windscreen Wiper Drive

## Mechanical Handling

- Conveyor Drive
- Indexing Tables
- Clamping
- Scissor Lifts
- Lead Screw Drive
- Heavy Vehicle Drive
- Chute Positioning
- Stacking Machines
- Un-stacking Machines
- Nip Roller Drive
- Heavy Trolley Drives (up to 30 tons)





## Medical

- Auxiliary Drive running on Nitrogen
- Scanning Machine Drive
- Peristaltic Pump Gear Pump

## Oil Industry

- Back Flush Filter Drive
- Valve Modulation
- Cable Winding / Unwinding
- Pipe Launching
- Pipe Welding Drive Systems

## Packaging and Labelling

- Labelling Machine Conveyors
- Wind Up of Label Backing Strips
- Conveyor Drive
- Back Tensioning on Label Reels
- Clamping
- Staple Gun Positioning
- Filling Machines
- Carousel Drive
- Volume Adjustment
- Conveyors
- Cap Tightening
- Slow Feed - Fast Return Bagging

## Paper and Printing Industry

- Solvent Pump Drive
- Ink Pump Drive
- Paper Mill Belt Cleaning in High Temperature
- Oscillating Drive
- Paper Reel Drive Roller
- Conveyor (Stop / Start)

## Steel Industry

- Nip Roller Drive
- Modulating Drive for Steel Casting
- Spray Nozzle Drive
- Slow Rotation of Large Ingots
- Clamping / Positioning Large Ingots
- Ladle Pouring Controller Drive
- Conveyor Drives
- Heavy Trolley Drive

## Textile

- Carpet Winding on Drums
- Dying Process Plant for Winding Off Stenter Machines
- Webb Tracking Drives with Modulating Control
- Handling Equipment Drives

# Unique Features of Air-Torque™ Motors

## Controllable Speed & Torque

Speed control can be adjusted to fine limits by the use of restrictors on the exhaust ports. The speed can be instantly changed to a higher or lower speed due to fast response times.

## Instant Stop-Start

Air-Torque™ motors can stop-start and drive under load with characteristics similar to a Stepping Motor.

# Environmental Benefits

## Energy Saving

Air consumption of piston motor is positive as leakage is negligible giving maximum torque at minimum air consumption.

## Quiet Operation

Air-Torque™ motors have very low noise levels when compared with standard air motors. They can operate in harsh environmental conditions and are unaffected by airline condensate.

## Clean Environment

Air-Torque™ Motors can be supplied for a non-lubricated gas supply in clean areas so eliminating contamination in a clean environment.

## Max Torque at Start

Floating pistons transmit the maximum torque at start which can be adjusted by the use of a pressure regulator.

## Reversing

The reversing of the Air-Torque™ Motors is achieved by using 5 port control valves, giving near instant response even under load.

## Programmed Control

Air-Torque™ Motors can be fitted with sensors to enable programmed control by pulse counters to control rotation direction, speed and number of revolutions.

## High Torque Output

Torques up to 550Nm achievable using reduction gearboxes.

## ATEX-Compliant Available

Safe for use in hazardous areas

## Corrosion Resistant

Ideal for the food and pharmaceutical industry. Can even be used fully submerged.

LEADING MANUFACTURER OF POWER TRANSMISSION COMPONENTS

# *Standardized Precision Mechanical Components*

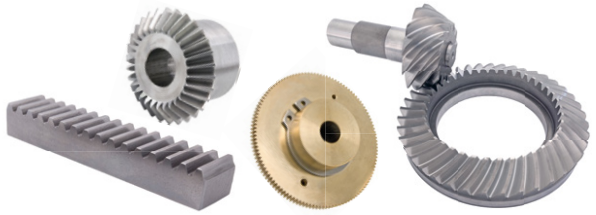
PRECISION MECHANICAL COMPONENTS

SHAFTS & DOWEL PINS

PRECISION FASTENERS

FLEXIBLE COUPLINGS & CLUTCHES

TIMING PULLEYS & BELTS



PRECISION GEARS & GEAR RACKS

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www.ondrives.us

Customer Service
Toll Free: 1.888.260.7466
Local: 516.771.6777
Fax: 516.771.6444
sales@ondrives.us

Ondrives.US Corp.
216 North Main Street
Freeport, New York 11520