

# ARO®

## PISTON PUMPS

EVERYTHING YOU NEED, NOTHING YOU DON'T



# At the heart of your process

## ▀ In Many Markets



Printing



Marine



Paint



Automotive



Door &  
Window



Wind  
Power



Aeronautics



Machine  
Builders



Textile

## ▀ In Many Applications



Transfer



Lubrication



Spray &  
Coating



Extrusion



Dispense



Flexoprinting



Offset Printing

## ▀ With Different Products

- Adhesives
- Grease
- Heavy ink
- Liquik ink
- Paint
- Water
- Sealants
- Oil
- Resins

# Why Choose an ARO® Piston Pump



**Reliability.** Robust, field proven carbon steel and stainless steel construction, designed for heavy-duty environment, long stroke allows pump to provide high flow at lower cycle rate.



**Productivity.** Double effect, continuous flow and ready to use (no special electric connections required), can be provided with integrated air control.



**ATEX.** ARO® pumps are suitable for use in gas and dust environments, including ATEX Group II 2GD applications. This pump is ideal to pump potentially flammable products in hazardous environment.



**Viscous Fluids.** According to the model ARO® Piston Pumps are designed to transfer and dispense medium to high viscous fluids.



**AFX Motors.** It integrates the field proven EXP pneumatic air motor technologies. The simple design makes the maintenance quick and simple. In addition, our **unique repair kit** contains all parts needed for a regular maintenance of all motor sizes.



**A Worldwide Leader Brand.** ARO® a leader brand in pneumatic pumps can rely on a worldwide network of expert and loyal distributors.



**Fluid Package and Accessories.** ARO® can either provide a full package or single component to meet all vertical and application needs.

# Pumping Technologies



## 2-Ball Piston Pumps

- Low to high viscosity



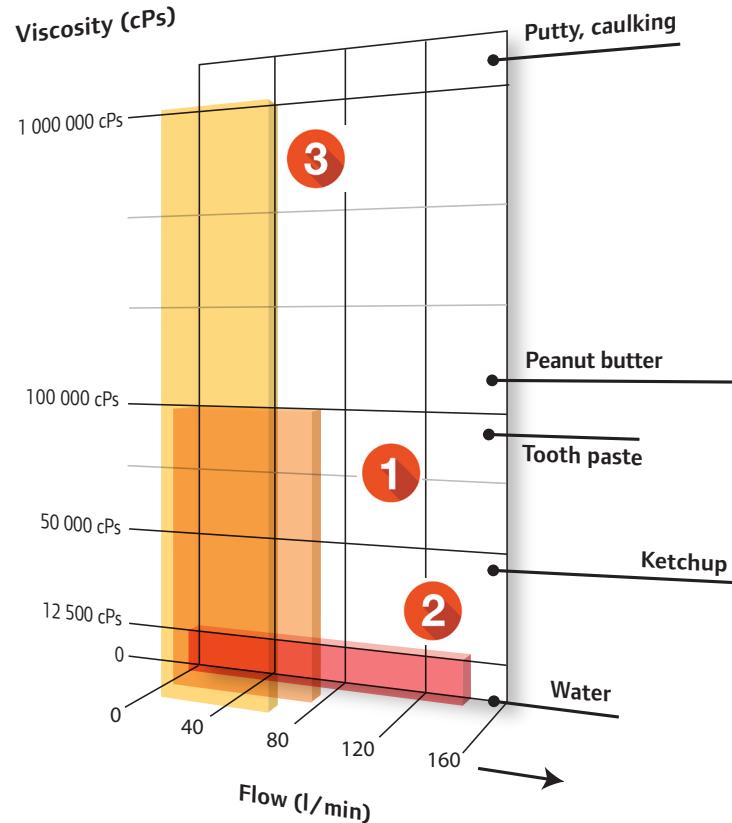
## 4-Ball Piston Pumps

- High flow rate
- Low to medium viscosity



## Chop Check Piston Pumps

- Medium to very high viscosity



# Construction Technologies

## Divorced Pump

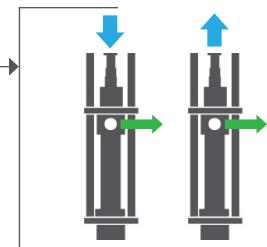
Motor and lower end can be combined in different ways.

This gives two main advantages:

- **Flexibility**, same lower end can fit different motors and vice versa
- **Ease of maintenance**, the two parts can be serviced separately

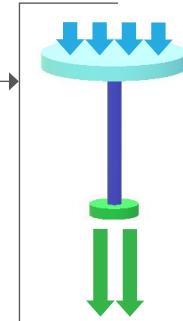
## Double Effect

Pump is delivering product both in downstroke end in upstroke.



## Pressure Ratio

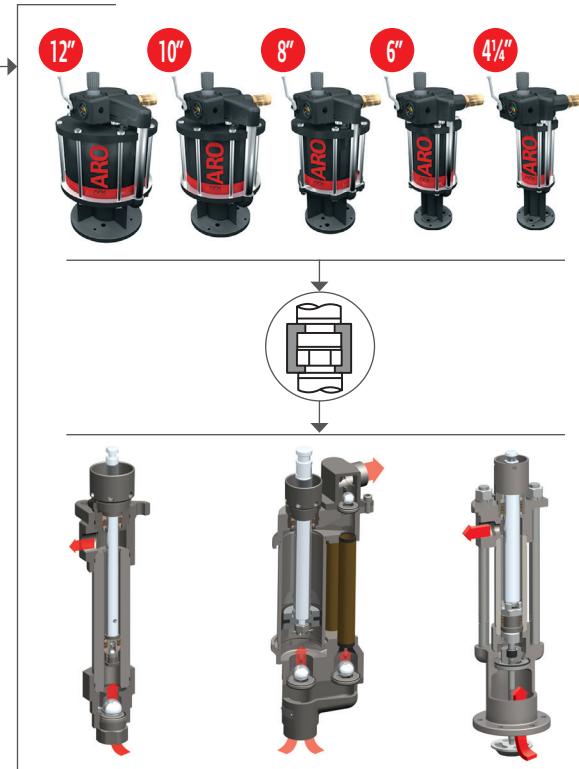
Different combinations of air motor and lower cylinder sizes create a geometrical ratio, therefore a pressure ratio.



## 4:1 Ratio Example

Air Motor side  
- Big Surface: 4  
- Air pressure: 2 bar

Lower End Fluid Side  
- Small Surface: 1  
- Fluid pressure: 8 bar



# 2 Ball Piston Pumps

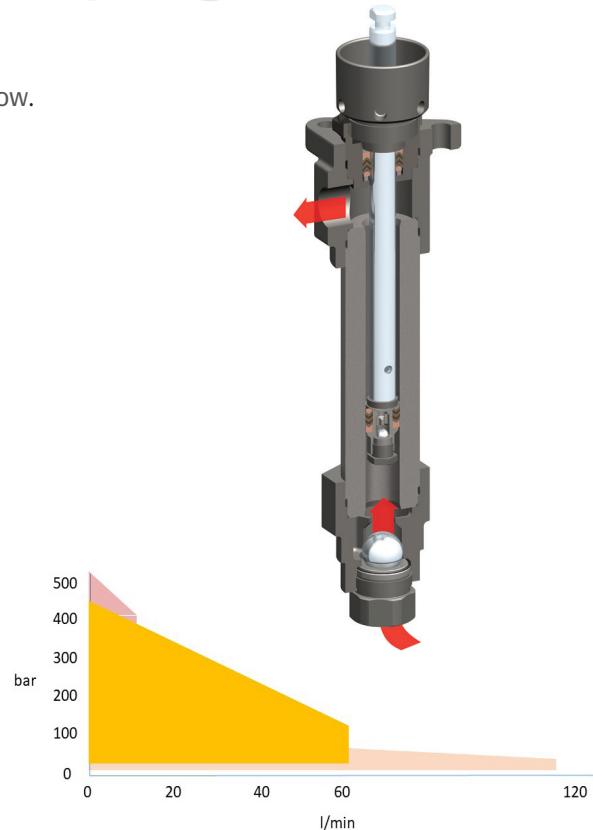
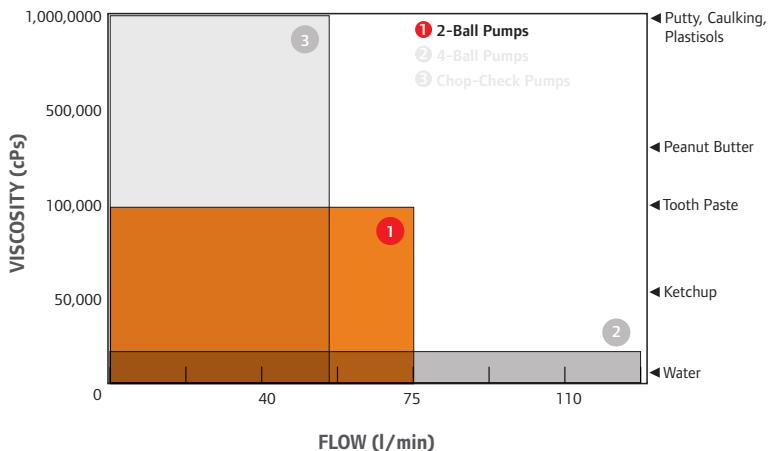


From 1:1 to 65:1 and from 0 to 60 l/min

Like in a double effect syringe, ball-check valves are preventing back flow.

## Applications

- Spray (Paint and coating)
- High Pressure cleaning
- Test (put pressure vessels under pressure for test)
- Transfer (low to very high pressure)
- Liquid ink (heliography, flexography)
- Lubrication (oil)



# 4 Ball Piston Pumps



## From 2:1 to 7:1 and from 0 to 110 l/min

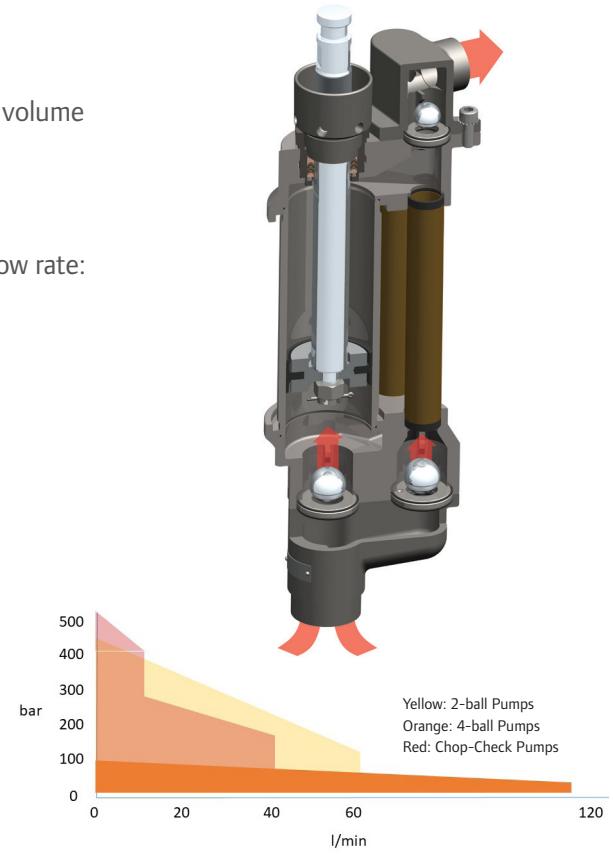
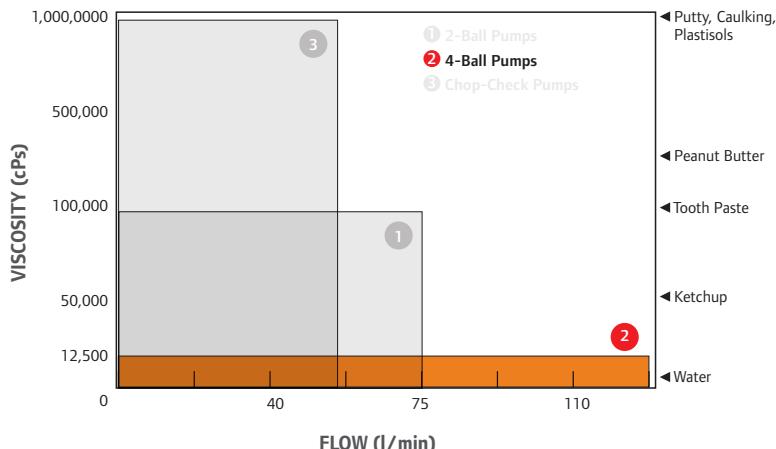
The advantage of four balls is that pump can dispense a full cylinder's volume at each stroke allowing much higher flow rate.

### Applications

50,000

Transfer of medium viscosity products - medium pressure - high flow rate:

- Resin
- Glue
- Paint



# Extrusion Piston Pumps



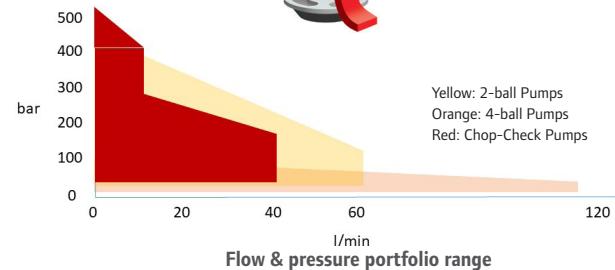
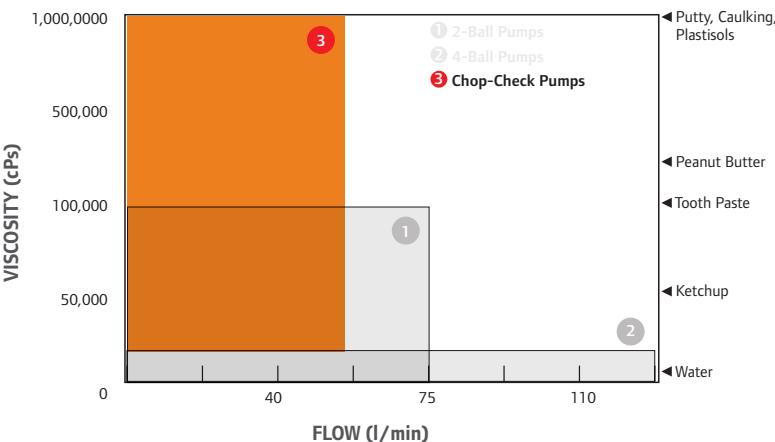
## From 12:1 to 65:1 and from 0 to 40 l/min

The lower part of the pump is working like a spoon. The chop check valve is pushing product into the pump body instead of siphoning it like 2 or 4 balls pump.



## Applications

- Pasty product (mastic, silicone, adhesives...)
  - Bonding • Sealing • Coating
- Heavy Ink (offset printing, serigraphy)
- Lubrication (grease)



# Material and Compatibility

Parts	Image	Material	Chemical Resistance	Abrasion Resistance	Durability
Motor		Aluminum Fiberglass	N/A	N/A	N/A
Packings		UHMW-PE	●●●●	●●●●●	●●●●
		Filled PTFE	●●●●●	●●●●●	●●●●
		Virgin PTFE	●●●●●	●●●●	●●●●
		Leather	●●	●●●●	●●●●●
Lower End		Carbon Steel	●●●	●●●●	N/A
		Stainless Steel	●●●●●	●●●●	N/A

# Package and Recommended Accessories for 2 Ball Pumps



## Mounting Accessories

- ▶ Cart
- ▶ Wall Mount
- ▶ Floor Mount
- ▶ Drum Cover
- ▶ Lift and Ram



## Air Accessories

- ▶ Air filter, regulator and lubricator
- ▶ Over-run control - ARO®-stop

## Fluid Accessories

- ▶ Material Filter
- ▶ Fluid pressure regulator
- ▶ Product heater
- ▶ Suction hose and rod
- ▶ Manual and automatic spray guns

2-Ball  
Piston  
Pumps  
▶



# Package and Recommended Accessories for 4 Ball Pumps



## Mounting Accessories

- ▶ Cart
- ▶ Wall Mount
- ▶ Floor Mount

## Air Accessories

- ▶ Air filter, regulator and lubricator
- ▶ Over-run control - ARO-stop

## Fluid Accessories

- ▶ Material filter
- ▶ Product heater
- ▶ Fluid pressure regulator



Wall mount bracket



Mounting post



# Package and Recommended Accessories for Chop-Check Pumps



## Mounting Accessories

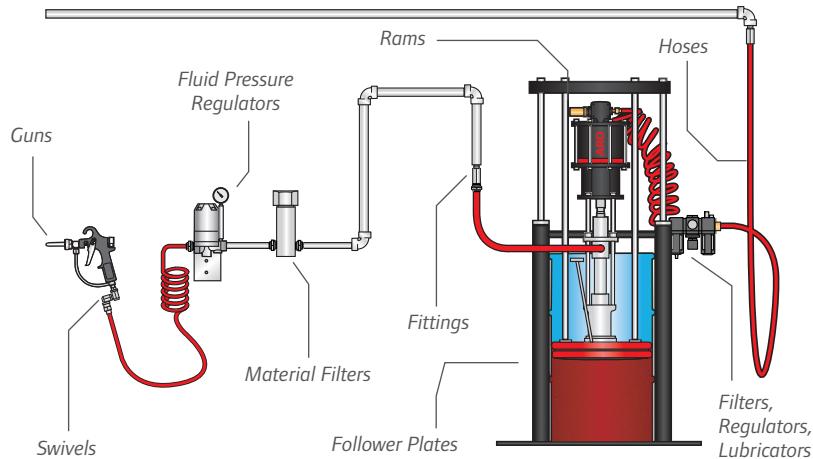
- ▶ Cart
- ▶ Wall Mount
- ▶ Floor Mount
- ▶ Drum Mover
- ▶ Lift and Ram

## Air Accessories

- ▶ Air filter, regulator and lubricator
- ▶ Over-run control - ARO®-stop

## Fluid Accessories

- ▶ Fluid pressure regulator
- ▶ Product heater
- ▶ Suction hose and rod
- ▶ Manual and automatic guns



28:1 ratio pump package



Floor mount

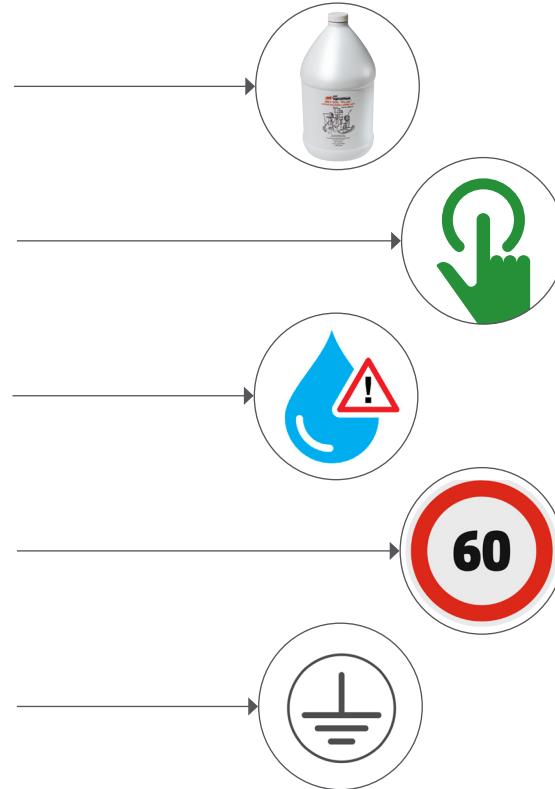


Cart lift

# Operations: Good Practices

## Wet-Sol

Lower pump packing lubricant is necessary. Always check and fill solvent cup with Wet-Sol or equivalent tricresyl phosphate or other known rubber plasticizer.



## Soft Start-Up

Always start pump gently in order to allow it to prime.

## Avoid Dry Running

Pump could be damaged running dry for more than a few seconds.

## 60 Cycle/Min.

To improve reliability and reduce maintenance,  
Do not exceed speed of max 60 cycle/min.

## ATEX

Connect to ground for ATEX applications.

# Other ARO® Products

ARO® has the right product to meet your specific needs. We offer air-operated diaphragm pumps, piston pumps and packages, filters, regulators, and lubricators (FRLs), lubrication equipment, pneumatic valves and cylinders.

- ▶ Air Operated Diaphragm Pumps (EXP and PRO Series)
- ▶ Filters/Regulators/Lubricators
- ▶ Lubrication Equipment
- ▶ Fluid Power (Valve and Cylinders)
- ▶ Controller
- ▶ Pulsation Dampeners
- ▶ Agitators and Mixers
- ▶ Spare Parts



## Notes



ARO® is a brand of Ingersoll Rand. Ingersoll Rand (NYSE:IR) advances the quality of life by creating comfortable, sustainable and efficient environments. Our people and our family of brands—including Club Car®, Ingersoll Rand®, Thermo King® and Trane®—work together to enhance the quality and comfort of air in homes and buildings; transport and protect food and perishables; and increase industrial productivity and efficiency. We are a \$14 billion global business committed to a world of sustainable progress and enduring results. For more information, visit [www.ingersollrand.com](http://www.ingersollrand.com).

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