milwaukee Cylinder

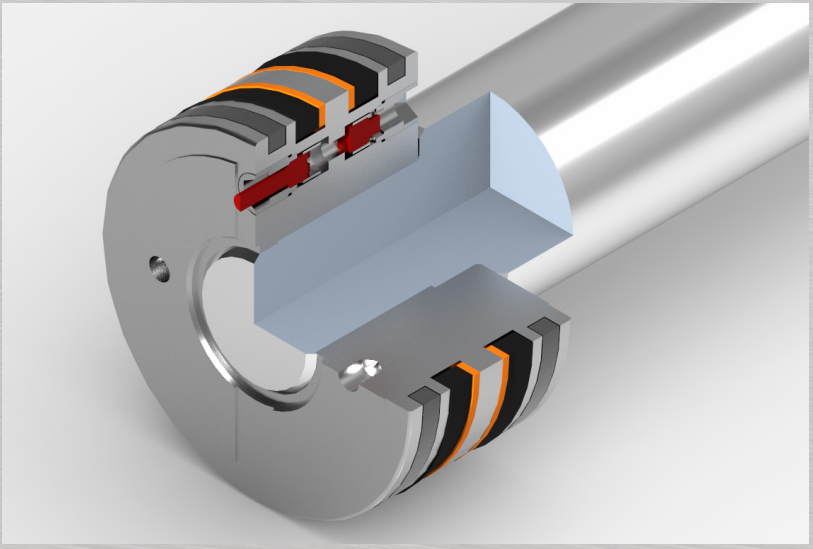
Specials Are Our Standard

ISO 9001 REGISTERED

ARC™ TECHNOLOGY

Automatic Recirculating Cylinder

PATENT PENDING



- Helps extend cylinder life
- Automatic operation at end-of-stroke
- Provides cool, filtered oil to cylinders in high temperature applications
- Available as an option for many cylinder sizes
- Available in extend or retract
- Multiple flow rates available

Flush your cylinder with clean, cool oil, every time your cylinder reaches end-of-stroke with ARC™ Technology

Proprietary technology designed to increase cylinder life by a minimum of 25%

Issue Description

- Depending upon hose length, oil from the power unit never makes it to the cylinder
- Oil in the cylinder becomes stagnant, because it never gets flushed out
- Stagnant oil breaks down, decreasing the life of the cylinder

See our ARC™ video on our website or YouTube channel

See our ARC™ Design Guide available on our website

Solution

- ARC™ Technology is a proprietary opposing poppet valve cartridge built into the piston
- When the piston reaches 3/16" from the end-of-stroke, ARC™ opens and oil is allowed to bypass the piston, flushing the cylinder with new clean, cool oil
- When not at the end-of-stroke, ARC™ closes, allowing the cylinder to obtain full force and speed
- Available on our H-Series family of cylinders, on the rod end or blind end, in two different flow options

Benefit

- **Long Life** – 25% or more increase in cylinder life is possible

  ARC™ recirculates clean oil replacing stagnant oil

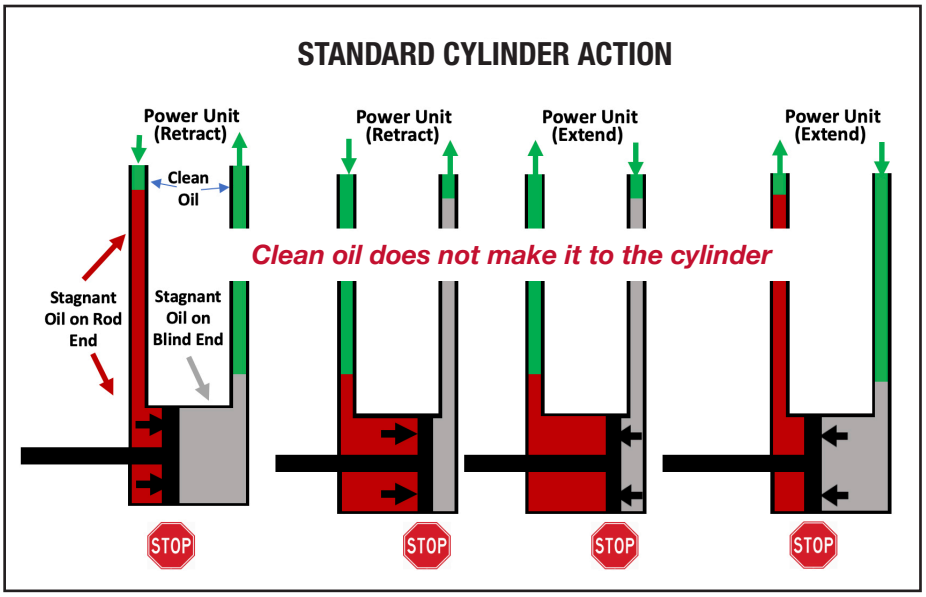
- **Cylinder Cooling**

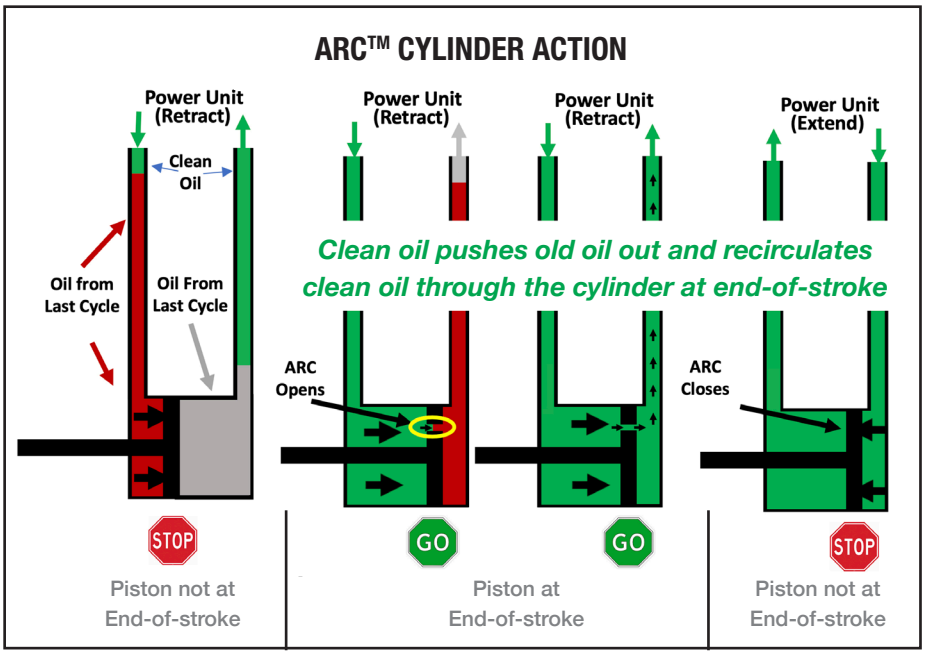
  *ARC™ recirculates cool oil from the power unit, replacing hot oil in the cylinder**

- **Improved Hydraulic Response**

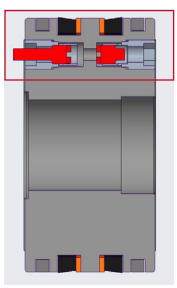
  Air in hydraulic oil causes performance problems, ARC™ automatically bleeds/ deaerates the cylinder, removing trapped air

** Note: Some temperature rise will occur as oil flows through the ARC™ Cartridge. This rise is typically less than the cooling affect of cool oil recirculating into the cylinder. See our ARC™ Design Guide for design suggestions.*



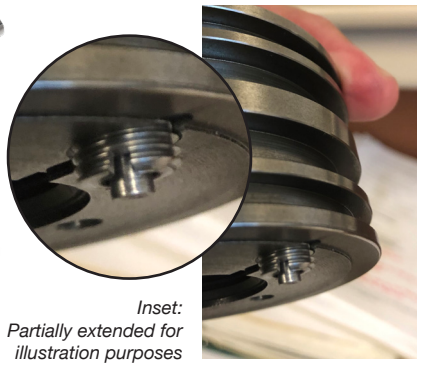


ARC™ CARTRIDGE



Cut-away view showing valve pair in ARC™ Cartridge

Exploded view



Inset: Partially extended for illustration purposes

One side of an ARC™ Cartridge

Product Availability Table H-Series Cylinders

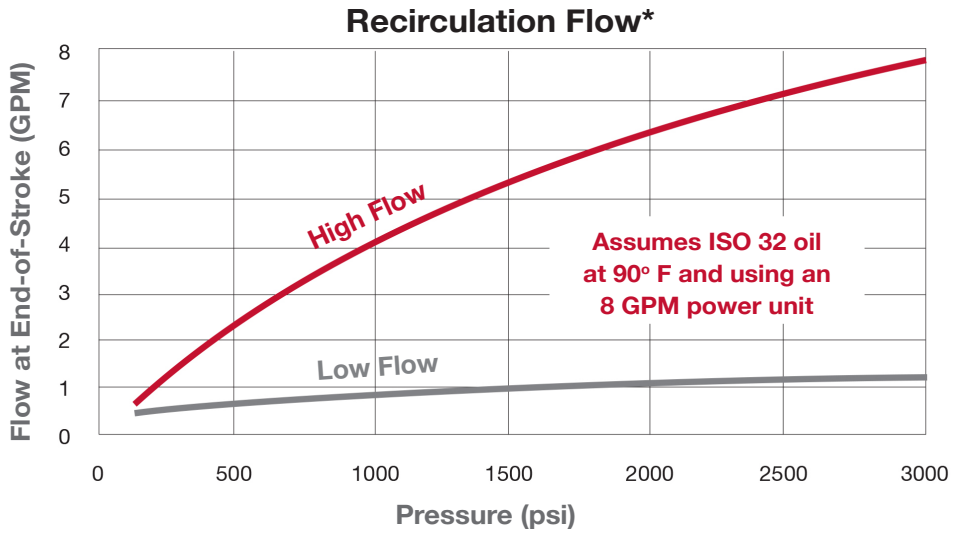
ARC™ is available in the following bore/rod configurations:

Bore ø (inches)	Rod ø (inches)	Bore ø (inches)	Rod ø (inches)	Bore ø (inches)	Rod ø (inches)
3.25	1.375	6	3.5	8	4.5
3.25	1.75	6	4	8	5
4	1.75	7	3	8	5.5
4	2	7	3.5	10	4.5
5	2	7	4	10	5
5	2.5	7	4.5	10	5.5
5	3	7	5	12	5.5
6	2.5	8	3.5	12	7
6	3	8	4		

Note: For larger bores or other cylinder series, please contact a Milwaukee Cylinder sales representative.

Representative Recirculation Flow* vs. Pressure Chart

ARC™ Technology is offered in a high flow or low flow option. The chart below represents expected recirculation flow for each option based on operating pressure. Actual flow performance may vary, depending on application specific parameters (return line back pressure, fluid viscosity, temperature, power unit capacity, etc.)



** This chart is based on non-cushion cylinders. Cushioned cylinders will have a reduced flow based on the cushion setting. Contact Milwaukee Cylinder for cushion flow information.*

Example - How fast will my cylinder recirculate?

Assume: 4" bore 8" cylinder, 2500 PSI, High Flow ARC

Using the chart above, the recirculation flow rate is approximately 7.1 GPM.

Max Cylinder Volume = 0.7854 (4 in)² (8 in) = 101 in³ = .44 gal

$$\frac{.44 \text{ gal}}{7.1 \text{ GPM}} = .062 \text{ min} \qquad \frac{60 \text{ sec}}{1 \text{ min}} = 3.7 \text{ sec}$$

The cylinder will completely recirculate after 3.7 seconds at end-of-stroke

How to Order

ARC™ Technology can be used as an option on any H-Series cylinder with the bore and rod size specified in the *Product Availability Table.*

ARC™ Technology is available in the extend or retract directions, and with high flow or low flow options. Other custom flow rates are available upon request.

When adding ARC™ Technology to a configured cylinder, include "S" for "special" in the configured cylinder model number (see page 32 of our catalog) and include the relevant "ARC-#-#" note in your inquiry.

Nomenclature

ARC - [Side] – [Flow Size]

Side: 1 = Blind End
2 = Rod End

Flow Size: H = High Flow
L = Low Flow

ARC	2	L
	Side	Flow Size

This Example:

Low Flow ARC™ Cartridge with recirculation on the rod end

Note: ARC™ Technology is nearly leak proof when mid-stroke. The expected mid-stroke leakage is 0.0009 GPM which equates to .016 in/min drift for a 4" bore cylinder.

Note: Oil cleanliness of ISO 4406 16/18/10 is recommended.

WEB milwaukeecylinder.com • **EMAIL** sales@milwaukeecylinder.com
PHONE 414.769.9700 • **FAX** 414.769.0157

milwaukee Cylinder

5877 S Pennsylvania Avenue
Cudahy, Wisconsin 53110-2456 USA

ISO 9001 REGISTERED

MILWAUKEE CYLINDER offers:

- Specials / Custom Products
- Hydraulic Cylinders
- Low Pressure Hydraulic Cylinders
- Pneumatic Cylinders
- Aluminum Cylinders
- Hydraulic Pneumatic Devices
  - Pressure Boosters
  - Air Oil Tanks
  - Accumulators
- Cylinder Accessories
  - Linear Alignment Tools
  - Amlok® Rod Clamp
  - Spherical Rod Accessories
- Industrial Manipulators
- Power Units And Valves
- Test Stands

Contact Milwaukee Cylinder for your application needs.

Your Milwaukee Cylinder Distributor

WEB milwaukeecylinder.com • **EMAIL** sales@milwaukeecylinder.com
PHONE 414.769.9700 • **FAX** 414.769.0157

Specials

are

Our

Standard

2021-0430_ARC