

### NITROTECT TREATED MATERIALS

*Nitrotec* is a patented furnace treatment process, which converts the steel surface into an extremely hard black iron nitride layer. It is superior to chrome plating in that the nitriding is diffused into the steel surface rendering the surface nonporous. *Nitrotec* delivers a superior case hardness of up to 71 Rc, improves corrosion resistance and minimizes friction loss for long seal and gland bushing life.

The *Nitrotec* process gives an extremely hard dent resistant finish to materials. The hardness varies from maximum at the surface to the material condition at a depth of 0.015", a vast improvement compared with a typical 0.0005" to 0.001" thick chrome plate. There is no flaking or lifting as with overlying chrome on a softer material.

#### *Nitrotec* Piston Rod

The piston rod is *Nitrotec* treated C1045 carbon steel. Other rod materials are available including chrome plated 316 stainless steel and chrome plated carbon steel. The piston shoulder diameter has been increased to obtain a higher service factor for this area.

#### *Nitrotec* Barrel

*Nitrotec* treated steel is the standard barrel material. Other materials include Amalgon and Brass.

### IMPROVED CUSHIONS

- Floating Check Seals
- Adjustable Cushions are standard at both ends. The cushions have been redesigned with a new floating check seal that provides quick and reliable breakaway performance while improving cushion effect. Seals are made from long wearing *Hythane*<sup>®</sup> material.
- Longer Effective Cushion
- Our cushion sleeves have been lengthened with a new profile to provide a more effective cushion. A steel sleeve pushes the seal against the head and traps escaping air between the piston and head. Adjusting the needle valve sets the cushion speed. On the return stroke, the cushion seal is forced away from the head by air pressure, allowing the air to flow back into the cylinder at full pressure for a fast break away.
- Normal position for needle valves are at position number 3 (opposite the port in position number 1) except for Foot Mount which is at position 2.

### PISTON STOPS

Standard external or optional internal piston stops are available to reduce side load stress on the piston rod for all cylinder sizes.

### ONE PIECE ALUMINUM PISTON

Piston is a one piece design, aluminum construction, incorporating a wear ring centered on the piston to avoid metal to metal contact, and increase the life of the cylinder. A piston is also available with a magnet for sensing piston position using a Reed Switch. Proximity switches can also be fitted to the R-Series. Contact our factory for more information.

### HYTHANE PISTON SEAL

*Hythane*<sup>®</sup> K-Seals are the standard in the 3" bores and above. This design prevents rolling or extrusion, also providing less friction and longer life.

Optional seals are available upon request, including *Viton*<sup>®</sup> *Flouromite*, etc. Contact our factory for application information.

### ROTO-CAST GLAND BUSHING

Gland bushing is manufactured from Roto-Cast Bronze. The *Hythane*<sup>®</sup> rod seal is a high performance, high temperature seal compound having ultra low friction and long seal life. It's documented temperature range is from -40° to 230°F. The *Hythane*<sup>®</sup> rod wiper, with internal ribs for extra stability and prevention of pressure trapping, cleans the rod on the return stroke. The static external seal is Buna-N material. Spiral Snap Ring retainer allows for easy removal of gland bushing for maintenance without dismantling the cylinder.

Optional gland bushings are also available with a wear ring, avoiding metal to metal contact and contributing to longer life for both the gland bushing and the piston rod. Vee-packing glands are also available. See Nomenclature for other options.

### CAST DUCTILE IRON HEADS

Heads are cast of ductile iron and are accurately machined for perfect alignment of barrel and moving parts. Heads are now common for the different rod sizes, thus allowing the end user to stock a single head for both rod sizes. The common head design also enables customers to increase or decrease rod sizes with little effort or expense.

### NPTF PORTS

NPTF Ports are standard at position 1. Specify if other port positions are required. SAE ports are available for an additional cost. There may be port restrictions on some models. Contact our factory for details.

*Note:* For faster delivery when specifying a non-standard port, try to choose an alternate port location for the port (port position #2 preferred). Contact our factory for confirmation on bore size constraints.

### REDUCED PRESSURE REQUIREMENTS

The combination of seals and materials used within Royal air cylinders reduces internal friction and thus has the ability to reduce air pressure requirements. Reducing air pressure reduces consumption costs. Testimonials from customers have reported a reduction in pressure from 10 to 30%.

### CUSTOM CYLINDERS

If our standard product does not meet your requirements, WCI will manufacture custom cylinders to suit your application or design request. Please contact our factory with your requests.

### SPARE PARTS

Genuine Royal seal kits include all seal components, wear rings and needle valves. Please be sure to specify genuine Royal replacement parts to ensure you will receive all feature benefits.

