



aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



Nano Shield Technology by Parker

NG Series Pack Cylinders for the Waste Industry



ENGINEERING YOUR SUCCESS.

NG Series - Pack Cylinders

Nano Shield Technology by Parker



- **2x** Longer Service Life
- **Up to 7x** More Corrosion Resistant versus Nitride or Chrome
- **4x** Harder than 1026 Steel Coated with Chrome
- **2x** Harder than 1026 Steel Coated with Nitride
- **2x** Smoother Cylinder Stroke
- **Superior Parker Sealing System** offers unequalled capability in high-temperature, high-shock load environments
- **Corrosion Resistant Custom Engineered Scraper**
- **4 Year Warranty** (5+ years expected service life)

Innovation Developed to Lower Your Total Cost

Pack eject cylinders are the most expensive and hardest to replace hydraulic components on the refuse truck. Damaged, corroded and leaking cylinders are the leading cause for downtime, and the single largest line item on the maintenance manager's hydraulic budget. Cylinders made prior to the NG Series have proven to not hold up in the field. Understanding the demands of the application, Parker's Mobile Cylinder Division has developed innovative technology that addresses the most common failure modes including corrosion, spill over, side load and seal wear.

Incorporating a combination of technologies, Mobile Cylinder Division has developed a **Next Generation Pack Cylinder** (backed with a 4 Year Warranty) to reduce the total cost of ownership over the 10 to 12 year life expectancy of the vehicle. This translates into savings of \$7,932 per vehicle. This savings is conservative, based solely on acquisition cost and R&R (remove and replace) and does not include additional savings related to customer service interruptions, unscheduled downtime, loss of oil, EPA Fines, etc.



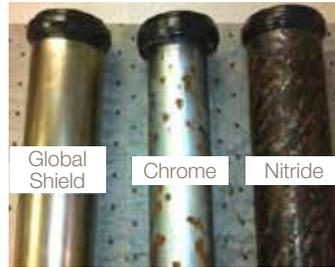
NG Series Cylinders Address Leading Failure Modes:

- Parker Global Shield™ coating prevents corrosion
- High strength tubing minimizes external impact damage
- Engineered scraper reduces ingress
- Parker sealing technology protects against seal leaks

A combination of technologies designed to provide extended service life in the toughest of environments.



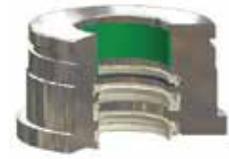
**High Strength
Micro-Alloy Steel**



**Parker Global
Shield Coating***



**Custom Engineered
Metallic Scraper**



**Parker Sealing
Technology**

* Results from 1000 hour exposure to Calcium Chloride

Parker Global Shield Coating Technology

The new standard for corrosion resistance

At the core of the NG Series Pack Cylinders is a breakthrough high performance coating technology. Global Shield coating is a vertically integrated Parker-owned technology and can be applied to all of your single and multi-stage cylinders to extend service life.

Proven Strength & Durability

Parker has impact-tested the coating, showing it improves the life of the cylinder up to 5x longer than competitors' products. Horizontal and vertical seal wear tests ran 800,000 combined leak-free cycles and showed superior performance in environmental chamber tests. Corrosion testing against the harsh "Juice" associated with Refuse Industry resulted in the cylinders withstanding 1500 hours in the ASTM B117 Salt Spray and 200 hours with no failure in the ASTM B368 CASS (Copper Accelerated Acetic Acid Salt Spray).

Your Defense Against Corrosion

Parker's Global Shield coating technology offers a dramatically different approach to resisting corrosion. The hybrid, sub-micron structure of the coating protects against abrasive wear and offers a superior coefficient of friction and sliding wear performance compared to hard chrome and nitride. The fully dense coating with improved adhesion and ductility extends the life of the rod sealing surface and seal components.

The high strength tubing and rod material is 20% stronger and 4x harder than standard 1026 DOM. Parker testing revealed no damage from an equivalent impact force of 4,000 lbs (typical force generated by a shovel strike is 2,200 lb).



Product Tested In

- Sand and Gravel
- Nuts and Bolts
- Hardened Steel Blades



No harmful Chromium used for construction

- Reduced power consumption up to 20 times
- 90% plating efficiency vs. Chrome at 20%
- Reduced carbon footprint

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Customer Benefits

- **Extended service life**
- **Reduced downtime**
- **Reduced risk of EPA fines**
- **Lower Total Cost of Ownership**

About Mobile Cylinder Division

Parker Hannifin's Mobile Cylinder Division has been manufacturing multi-stage telescopic and single stage (rod) cylinders for mobile and industrial markets requiring custom engineered designs for over 80 years. Recognized as one of the largest independent manufacturers of hydraulic cylinders for mobile equipment, the Division offers a wide-range of standardized cylinder designs for a variety of industries including oilfield, mining, military, truck, refuse and material handling. Parker's Mobile Cylinder Division products include double- and single-acting telescopic cylinders, rod cylinders, "smart cylinders" with internal electronic controls, and quality custom-built cylinders.

About Parker Hannifin

With annual sales of \$13 billion in fiscal year 2013, Parker Hannifin is the world's leading diversified manufacturer of motion and control technologies and systems, providing precision-engineered solutions for a wide variety of mobile, industrial and aerospace markets. The company employs approximately 58,000 people in 49 countries around the world. Parker has increased its annual dividends paid to shareholders for 57 consecutive fiscal years, among the top five longest-running dividend-increase records in the S&P 500 index. For more information, visit the company's website at www.parker.com, or its investor information website at www.phstock.com.

