



## **ToughShield™ Plus**

Zinc-Nickel Plating for Steel Tube Fittings and Adapters



ENGINEERING YOUR SUCCESS.

# Parker's innovative ToughShield™ Plus plating technology

The new **standard** zinc-nickel (Zn-Ni) plating for Parker steel tube fittings and adapters worldwide offers **premium** corrosion resistance, protecting your equipment significantly longer than other commercially available plating technologies.

## ToughShield™ Plus

Parker engineers and metal scientists used state-of-the-art tools and analysis methods to study corrosion and how to minimize it. This led to the development of our patent-pending advanced plating which provides superior corrosion and assembly performance, even on products subjected to after plating deformation such as swivel nuts and other fluid power components.

### Ensure more uptime with ToughShield Plus

No matter your industry, ToughShield Plus delivers.

- ✓ Extended fitting service life
- ✓ Less frequent and easier maintenance
- ✓ Reduced downtime
- ✓ Decreased corrosion migration to adjacent components
- ✓ Reduced warranty claims for manufacturers
- ✓ Decreased aesthetic quality concerns

### Premium performance validation

The superior corrosion resistance of Parker's latest plating technology is validated through ASTM B117 / ISO 9227 neutral Salt Spray Testing (SST), as well as two Cyclical Corrosion Tests (CCT) - ISO 16701 and SAE J2334. CCT is widely considered to provide a closer correlation to field corrosion conditions. ToughShield Plus is the first standard plating system in the fluid power industry proven to offer this exceptional level of resistance to red rust. Download our whitepaper on [www.toughshield.com](http://www.toughshield.com) to learn more.



ToughShield Plus (left) and Zinc-primed (right) swivel adapters after 3,000 hours SST

ToughShield Plus fights red corrosion up to:

**3,000**  
hours

ASTM B117/ISO 9227  
Neutral Salt Spray Test  
(SST)

**12**  
weeks

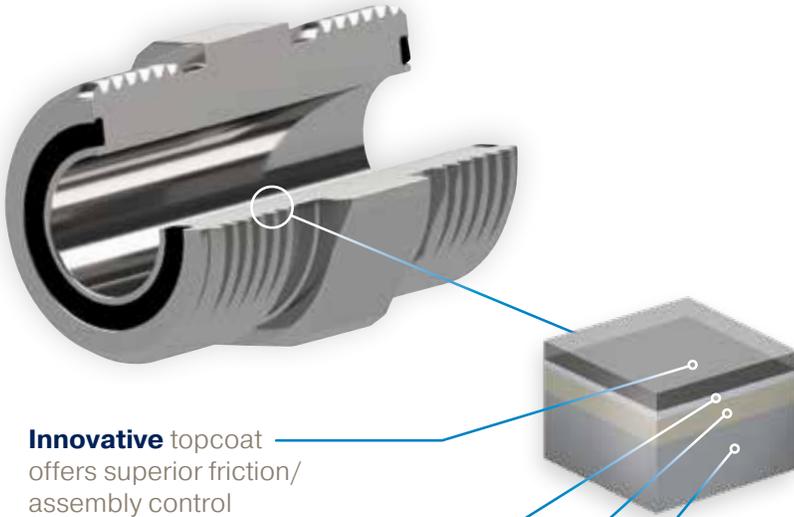
ISO 16701 Cyclical  
Corrosion Test  
(CCT)

**60**  
days

SAE J2334 Cyclical  
Corrosion Test  
(CCT)

## The Parker zinc-nickel difference

Parker ToughShield Plus delivers more than superior corrosion protection. This upgrade is drop-in compatible with no changes to assembly procedures or performance, including when used with zinc plated components.



**Innovative** topcoat offers superior friction/assembly control

Hexavalent chromium-free passivation layer

**Proprietary** patent-pending ToughShield Plus zinc-nickel alloy plating technology

Steel base material (Substrate)



## Corrosion spreads fast

Chemicals, fertilizers, mud, high humidity and temperatures, salts, and air pollution are all factors that cause corrosion.

Once it starts, it can quickly spread from fittings/ adapters to other system components. For example, it can migrate to cylinders or hydraulic hoses requiring costly replacement or repair.



Red rust component migration.

## Cost of Corrosion

The true cost of corrosion extends beyond the replacement costs of connectors. It includes the associated downtime when equipment and personnel are idle.

Even new equipment exposed to corrosive elements during long ocean freight journeys can require expensive OEM warranty claims. This makes it essential to avoid the risk of corrosion from the onset.

Visit [www.toughshield.com](http://www.toughshield.com) to learn more.

Parker's ToughShield Plus meets and exceeds industry standards and environmental compliance directives.



# Parker Fluid Connectors Group

## North American Divisions & Distribution Service Centers

**Your complete source** for quality tube fittings, hose & hose fittings, brass & composite fittings, quick-disconnect couplings, valves and assembly tools, locally available from a worldwide network of authorized distributors.

### **Fittings:**

Available in inch and metric sizes covering SAE, BSP, DIN, GAZ, JIS and ISO thread configurations, manufactured from steel, stainless steel, brass, aluminum, nylon and thermoplastic.

### **Hose, Tubing and Bundles:**

Available in a wide variety of sizes and materials including rubber, wire-reinforced, thermoplastic, hybrid and custom compounds.

### **Worldwide Availability:**

Parker operates Fluid Connectors manufacturing locations and sales offices throughout North America, South America, Europe and Asia-Pacific.

**For information**, call toll free...

**1-800-C-PARKER**  
**(1-800-272-7537)**

## **North American Divisions**

### **Fluid System Connectors Division**

Otsego, MI  
phone 269 694 9411  
fax 269 694 4614

### **Hose Products Division**

Wickliffe, OH  
phone 440 943 5700  
fax 440 943 3129

### **Parflex Division**

Ravenna, OH  
phone 330 296 2871  
fax 330 296 8433

### **Quick Coupling Division**

Minneapolis, MN  
phone 763 544 7781  
fax 763 544 3418

### **Tube Fittings Division**

Columbus, OH  
phone 614 279 7070  
fax 614 279 7685

## **Distribution Service Centers**

### **Buena Park, CA**

phone 714 522 8840  
fax 714 994 1183

### **Louisville, KY**

phone 502 937 1322  
fax 502 937 4180

### **Portland, OR**

phone 503 283 1020  
fax 503 283 2201

### **Toledo, OH**

phone 419 878 7000  
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fax 419 878 7420  
(FCG Kit Operations)

### **Canada**

#### **Milton, ONT**

phone 905 693 3000  
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