

# Parker Cr(VI)-free

An innovative combination of fittings and other components



## Three high-quality fittings systems

Parker Hannifin is proud to present a unique Cr(VI)-free product range including EO-Plus for metallically-sealed connections, EO2-Plus for elastomerically sealing systems and also EO2-Form for elastomerically sealing, positively-locking high-pressure tube fittings without cutting rings.

## A powerful system

Valves, diagnostic connectors, flanges and tubes are also available to complete the Cr(VI)-free system concept and maintain excellent quality throughout. SAE and hose fittings are also available besides DIN fittings. All of them are of course Cr(VI)-free. All of the DIN/ISO requirements are more than fulfilled whether individually or when sensibly combined one with another.

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# Chromium-6 Free



## Advantages for the user:

Apart from their environment-friendly properties, they offer users excellent corrosion resistance and also many other advantages. These Cr(VI)-free high-pressure fittings allow significantly higher nominal pressures for a given series, so that the heavier S-series can be frequently dispensed with. This of course saves weight and creates more space.

Thanks to corrosion protection which is increased by 400 % on average when compared with conventional A3C surfaces, Cr(VI)-free connector components provide better vehicle, machinery and equipment quality and also reduce maintenance costs.



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# Parker Cr(VI)-free surfaces in comparison with zinc-nickel:



## The environmental situation

The Parker Cr(VI)-free surface is GADSL-compliant and does not harm the environment.

*The situation with zinc-nickel surfaces is quite different – nickel uses up precious resources. There is an obligation to make a declaration in accordance with the GADSL (Global Automotive Declarable Substance List). The effluent contains cyanogen and must undergo expensive treatment.*

## Manufacture

A zinc layer is galvanically deposited onto the base metal. Thick layer passivation then follows. Finally there is the organic mineral Top Coat layer. This produces a homogeneous, silvery surface and provides a high-quality appearance. Parker Hannifin developed this surface standard in cooperation with well-known suppliers many years ago and can therefore guarantee a high degree of process safety.

*With zinc-nickel the coating quality is subject to a high level of scatter. Depth scatter in bores and brittle layer build-up make surfaces more vulnerable. A dull grey film forms on contact with water.*

## Corrosion

The corrosion resistance of Parker's Cr(VI)-free surfaces is increased by about 400% compared with conventional zinc-coated surfaces. In a salt-spray test in accordance with DIN 50021/ISO 9227, white rust resistance amounts to 500 hours. Here, too, Parker Cr(VI)-free surfaces are way over the standard.

*Zinc-nickel surfaces have a slightly higher red rust resistance, but this is over-engineered for most applications and has manufacturing and installation costs which are no longer proportionate.*

## Assembly

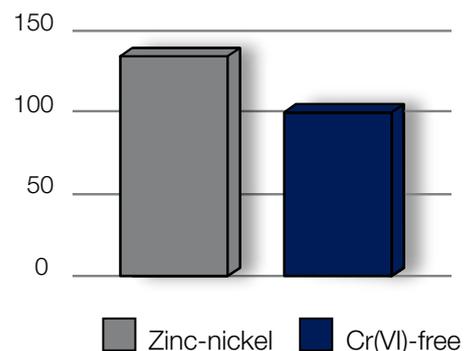
The homogeneous layer thicknesses on the outer contours provide easy, safe screwing for threads. The Cr(VI)-free surfaces ensure low tightening torques and safe assembly.

*Zinc-nickel surfaces have about 40%\* higher tightening torques. They require greater power and frequently cause assembly errors, which lead in turn to leakage.*

## System

A chain is only as strong as its weakest link. Accordingly, Parker Hannifin has a complete Cr(VI)-free system, ranging from DIN and SAE fittings to valves, diagnostic couplings and flanges through to tubes and hose fittings. It is available throughout the world with the same level of quality. *The zinc-nickel surface product range is limited, which of course means that components made from other materials and having other surfaces must be employed. Corrosion due to potential voltage difference can occur prematurely if surface finishes are mixed.*

### Tightening torque\*



\*The source is our own series of tests carried out in August 2008.