

WEAR RESISTANT SERIES

As chain operates, the pins constantly rub against the bushings and are gradually worn down. Therefore, the chain elongates as it runs. In a harsh environment, chain stretches even faster and this shortens the working life. Downtime can be expensive, so to avoid costly machine downtime TYC provides several different solutions to improve chain life. Depending on the application requirements, wear resistance can be improved through specially formulated processes or coatings. Introduced below are TYC O-ring chains, TYC NOVA chains and TYC CRP chains.

TYC NOVA Chain

TYC developed a unique process that allows a metallic element to grow on the pin surface and form a hard layer. This enables the surface hardness of the pin to reach at least 1300 Vickers. In comparison, the surface hardness of conventional case hardened pins is about 700 Vickers. The metallic element forms metallic carbides on the surface of the steel, and that results in excellent peeling resistance on the surface of the pin. The carbide surface has the following properties:

- Oxidation resistance
- Corrosion resistance
- Abrasion resistance

NOVA process is most effective on chains of small pitch, such as chain size 60 and below, that are used in high speed application. NOVA treated pins combined with TYC Optimum coating serves as an excellent choice to achieve outstanding wear life in hostile environments.



Cross-section of a NOVA pin under the microscope. The metallic layer is a thin layer on the pin surface.

TYC O-Ring Chain

Chain wear is a result of friction in the bearing area between pins and bushings. Proper lubrication is crucial for chain operation, as the lubricant helps reduce metal to metal contact and interference at the bearing surfaces in the chain joints. When continuous or frequent re-lubrication is difficult or not possible, or when the environment is dirty, O-ring chain can be an excellent choice. TYC O-ring chains have special synthetic rubber o-rings as barriers that seal the factory-applied lubricant inside the bearing area and keep dirt and other contaminants out. Therefore, TYC O-ring chains are maintenance-free and highly wear resistant. TYC O-ring chains are available in sizes 40 through 120. Various selections of O-ring materials are available.

TYC CRP Chain

TYC CRP chains incorporate Chrome plated pins. Hard Chrome plating is an effective way of improving chain wear for chains of large pitch. Chrome plated pins are often used in agriculture chains that operate in abrasive or challenging environments. By applying a hardened layer to the pins, wear is significantly reduced, thereby extending chain life. The surface hardness of chrome plated pins could reach 1100 Vickers. Advantages of using chrome plated pins include:

- Outstanding wear life - increase wear life by at least two times that of standard roller chains
- Reduced elongation
- Directly interchangeable with standard ANSI chain sizes
- No reduction in working loads

Comparison of Properties

	Carburizing	Nitriding	Hard-Cr Plating	NOVA
Contents of surface layer	High carbon	Iron nitride	Chrome	Metallic carbide
Surface hardness (Hv)	750-850	750-1100	900-1100	1300-1500
Peeling resistance	Excellent	Excellent	Fair	Excellent
Wear resistance	Fair	Excellent	Excellent	Excellent