

# MARINE AND OFFSHORE HYDRAULIC CYLINDERS

**Nurmi Hydraulics has delivered seaworthy hydraulic cylinders for the marine environment for over 30 years. We provide global marine sector customers with tailor-made solutions based on our own cylinder design expertise and strong R&D focus.**

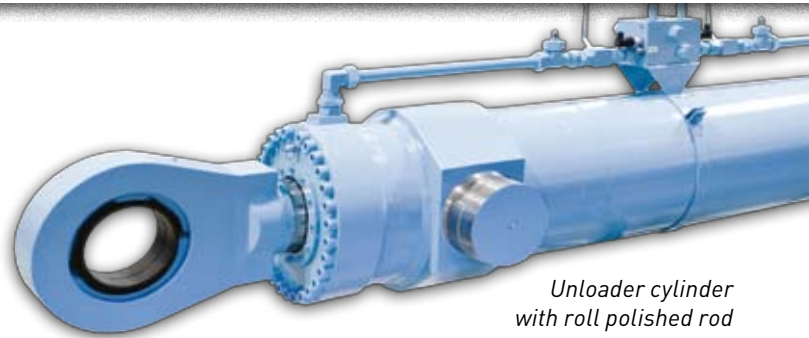
Cylinders from Nurmi Hydraulics can be classified according to any classification society rules. Nurmi marine and offshore cylinders are always made to order and manufactured to the highest standards according to our quality certified process.

Nurmi's cylinders are known for robust and maintenance friendly construction. We also source the best quality piston rod materials available globally and employ the most advanced painting and coating techniques to ensure superior corrosion resistance and cylinder performance in the often unforgiving marine environment.



## The main applications:

- Hydraulic Cylinders for offshore cranes
- Hydraulic Cylinders for various offshore applications
- Hydraulic Cylinders for hatch covers, folding and side rolling
- Hydraulic Cylinders for RORO equipment, such as ramps, car decks, doors etc.
- Hydraulic Cylinders for linkspans and other harbour equipment
- Hydraulic Cylinders for deck cranes
- Hydraulic Cylinders for LARS-systems
- Hydraulic Cylinders for deck machinery
- Hydraulic Cylinders for sluices and bridges
- Hydraulic Cylinders for unloaders



Unloader cylinder with roll polished rod

## You can choose your Marine Cylinder from the following options:

- All types of hydraulic cylinders up to 18 tons own weight
- Piston diameters up to 600 mm, Strokes up to 10000 mm
- All piston rod materials and coatings available
- All cylinder mounting systems
- Linear transducers and other sensors
- Piping and integrated valve systems for cylinders

## Recommended specifications for piston rods (others also available)

Base material	Rod Surface treatment	Rod Weldability	Rod material Strength	Corrosion Resistance	Wear Resistance	Surface Hardness	Price order*   Rod dia <100mm short stroke	Price order**   Rod dia >100-160mm Long or medium stroke	Price order**   Rod dia >160mm Long stroke	Suitable application
Carbon Steel S355J2 + stainless steel sleeve	Hard Chrome 30-80 µm	+++	+	+ (+++)	+++	++	2	1	1	Medium to difficult marine environment, in case Rod always retracted when cylinder is not operated. Otherwise not suitable for marine use.
Carbon Steel S355J2	Nickel/Carbide spray 150-200 µm, replaces galvanic NiCr coating	+++	+	+++	+++	+++	4	4	2	Difficult marine environment
Carbon Steel S355J2	Ceramic coating 300-400 µm	+++	+	+++	+++	+++	5	4	3	Difficult marine environment
Carbon Steel S355J2	HVOF/HVAF Coating 200-400 µm	+++	+	++++	++++	++++	6	5	4	Extreme marine environment
Stainless EN 1.4057	Polishing	-	++	+	+	+	1	2	-	Small cylinder, light marine environment
Stainless EN 1.4418	Hard Chrome 40 µm	++	+++	++	++	++	2	3	5	Medium marine environment
Stainless EN 1.4462	Roll Polishing	+++	++	++++	+	+	3	3	5	Difficult marine environment

Galvanic NiCr coating also available, but not recommended  
Most of above base materials and coatings can be also mixed if needed

\*) 1 = cheapest, 2 = next cheapest etc.

Nurmi Hydraulics Oy is one of the leading global suppliers of industrial, marine and mobile hydraulics. Our operation is based on ISO 9001 and ISO 14001 certified quality and environmental systems. We employ 250 professionals on two continents.