



# F1 hydraulic cylinders

Type approved by:



## Technical specifications

### Application:

Offshore- and marine hydraulics, cylinder diameter from  $\varnothing 25$  to  $\varnothing 300$  mm both included.

### Material certificates:

Can be delivered with traceability at all steel parts according to the demands from DNVGL, Class Guideline for Hydraulic cylinders, DNVGL-CG-0194.

### Third party certificate:

Can for extra charge be delivered with product certificate from e.g. DNVGL, ABS, Lloyd's or Bureau Veritas (PS: DNVGL type-approved with spherical bearings and composite bearings)

**Working pressure:** Max 250 bar.

**Test pressure:** Max 375 bar.

### Cleanliness:

Flushed to cleanliness 19/17/14 according to ISO4406 corresponding class 8 in NAS 1638. Other cleanliness classes are available on request.

### Speed:

Max piston speed 0,5 m/sec. If the piston speed in top or bottom exceeds 0,1 m/sec, build-in damping in the cylinder is recommended.

### Cylinder tube:

Honed or skived and roller burnished tube, material quality E355+SR or S355J2. Special material qualities can be delivered on request.

### Piston rod:

Quality 20MnV6 corresponding to SS2142, Hard chrome  $25\mu\text{m}$  +/-  $5\mu\text{m}$ , Hardness min. 850 HV, Ra max.  $0.2\mu\text{m}$ , external tolerance ISO f7

### Alternative materials

SS2387 corresponding to EN 1.4418

AISI 630 corresponding to EN 1.4542

SS2324 corresponding to EN 1.4460

SS2377 corresponding to EN 1.4462

All qualities are delivered with hard chrome  $25\mu\text{m}$  +/-  $5\mu\text{m}$ , Hardness min. 850 HV, Ra max.  $0.2\mu\text{m}$ , external tolerance ISO f7.

Special material qualities and surface protection (e.g. ceramic surface, double chrome layer) can be delivered on request.

### Spherical bearing:

Many different qualities, e.g. in Carbon steel, stainless steel, bronze and composite. Special material and dimensions can be delivered on request.

### Gaskets:

Piston seal: Polyurethane wiper ring with nitrile O-ring

Rod seal: Lip seal of polyurethane.

Wiper: Polyurethane with steel housing

Guide rings: Composite material

O-rings: Nitrile

### Alternative materials

Piston seal, rod seal and wiper:

In PTFE with O-rings of nitrile. Recommended for intensive use plus applications, where low friction in the cylinder is desirable.

In PTFE with O-rings of viton. Recommended for applications, where the seals can be exposed to temperatures above  $80-100^{\circ}\text{C}$ .

Special seals can be delivered on request.

### Integrated valve:

Can be delivered with built-in hose valves or load holding valves.

### Damping:

Can be delivered with damping

### Positioning:

Can be delivered with different types of electronic positioning, e.g. from REGAL, MTS-Temposonics or BALLUFF.

### Temperature:

Working temperature  $+20^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$ . Cylinders for working temperatures outside this area can be delivered on request.

### Pressure medium:

Mineral hydraulic oil. Other media, ask FJERO.

### Surface treatment:

Different surface treatment is possible. Standard Black primer, but also shot blasted / sand blasted and painted to corrosion class C2 - C3 or C5.

Surface treatment according to international standards as e.g. ISO 12944-2 or NORSOK M-501 can also be delivered.

### Special requests:

Please contact FJERO A/S