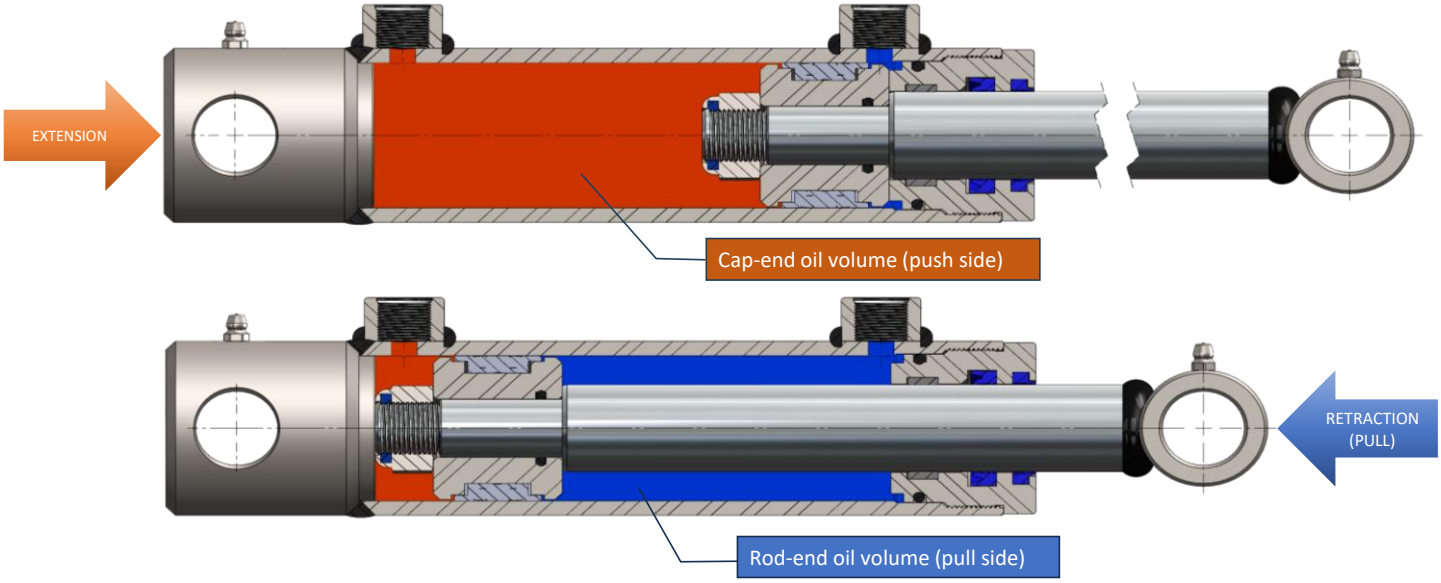
SPARE PARTS HOLLAND

# *Technical Specifications*
## *Hydraulic Cylinder Double Acting*
## *Hole **60/30-Stroke***



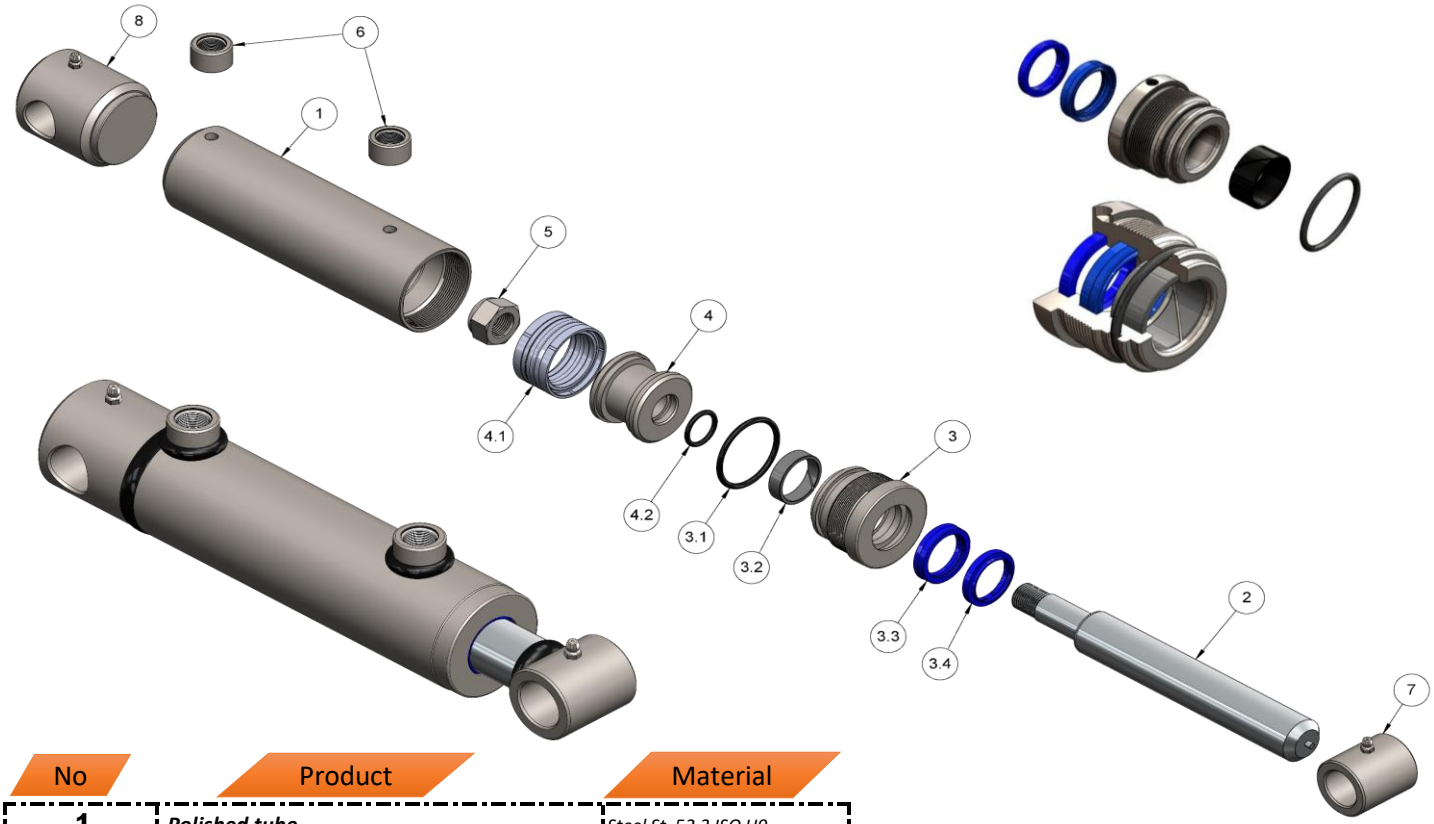

- ***Standard working pressure: 180 bar***
- ***Test pressure: 1.5 × working pressure***
- ***Standard flow for speed data: 5 L/min***
- ***Maximum radial load: 10% of the axial force***
- ***Maximum operating pressure depends on the buckling load***
- ***Safety factor against buckling: 3:1***
- ***All data refer to mineral oil at 40°C – viscosity 46 cSt***
- ***Oil type: Mineral oil-based hydraulic oil (HL/HLP, DIN 51524)***
- ***Filtration requirement: ISO 4406 ≤ 20/18/15***
- ***Permissible ambient temperature: -40°C to +50°C***
- ***Permissible oil temperature: -15°C to +80°C***

| *(Force vs Pressure)*<br>*Theoretical forces at different working pressures* | | |
|---|---|---|
| **Pressure [bar]** | **Push Force [kgf]** | **Pull Force [kgf]** |
| 50 | 1414 | 1060 |
| 100 | 2827 | 2121 |
| 150 | 4241 | 3181 |
| 180 | 5089 | 3817 |
| 200 | 5655 | 4241 |
| 250 | 7069 | 5301 |

*1 ton ≈ 1000 kg*
*1 kN ≈ 102 kg*
*1 daN ≈ 1.02 kg*
*Values are theoretical and do not include friction losses or efficiency factors.*

| *Oil volume per stroke*<br>*Cap-end and Rod-end chambers* | | |
|---|---|---|
| **Stroke [mm]** | **Push volume (cap-end) [L]** | **Pull volume (rod-end) [L]** |
| 50 | 0,14 | 0,11 |
| 100 | 0,28 | 0,21 |
| 150 | 0,42 | 0,32 |
| 200 | 0,57 | 0,42 |
| 250 | 0,71 | 0,53 |
| 300 | 0,85 | 0,64 |
| 350 | 0,99 | 0,74 |
| 400 | 1,13 | 0,85 |
| 450 | 1,27 | 0,95 |
| 500 | 1,41 | 1,06 |
| 550 | 1,56 | 1,17 |
| 600 | 1,70 | 1,27 |
| 700 | 1,98 | 1,48 |
| 800 | 2,26 | 1,70 |
| 900 | 2,54 | 1,91 |
| 1000 | 2,83 | 2,12 |

| *Stroke times at 5 L/min* | | |
|---|---|---|
| **Stroke [mm]** | **Extension time [s]** | **Retraction time [s]** |
| 50 | 1,70 | 1,27 |
| 100 | 3,39 | 2,54 |
| 150 | 5,09 | 3,82 |
| 200 | 6,79 | 5,09 |
| 250 | 8,48 | 6,36 |
| 300 | 10,18 | 7,63 |
| 350 | 11,88 | 8,91 |
| 400 | 13,57 | 10,18 |
| 450 | 15,27 | 11,45 |
| 500 | 16,96 | 12,72 |
| 550 | 18,66 | 14,00 |
| 600 | 20,36 | 15,27 |
| 700 | 23,75 | 17,81 |
| 800 | 27,14 | 20,36 |
| 900 | 30,54 | 22,90 |
| 1000 | 33,93 | 25,45 |




| No | Product | Material |
|---|---|---|
| 1 | *Polished tube* | *Steel St. 52.3 ISO H9* |
| 2 | *Chromed rod* | *Steel UNI C45 25 Micron* |
| 3 | *Head bush* | *Steel C43* |
| 3.1 | *O-Ring* | *NBR 70 shore* |
| 3.2 | *Guiding Element* | *POM* |
| 3.3 | *Rod Seal* | *Polyurethane / PU* |
| 3.4 | *Wiper* | *Polyurethane / PU* |
| 4 | *Piston* | *Steel C43* |
| 4.1 | *Compact Piston Seal* | *Nbr / Tpe / Pom* |
| 4.2 | *Piston O-Ring* | *NBR 70 shore* |
| 5 | *Locknut* | *UNI7473-DIN982* |
| 6 | *Threaded Port* | *Steel C43* |
| 7 | *Bush* | *Steel C43* |
| 8 | *End Plug* | *Steel C43* |

## WARNINGS & SAFETY INFORMATION

- **Rated pressure:** Recommended working pressure is 180 bar; maximum allowable pressure is 250 bar.
- **Recommended lubricant:** Hydraulic mineral oil H-LP series (H-LP32, H-LP46, H-LP68).
- **Oil filtration:** Use efficient filtration with periodic replacement; required filtration level is 25 µm.
- **Oil temperature:** Keep oil temperature between 40–50°C during operation. Do not exceed 80°C.

High temperatures reduce viscosity and lubrication quality, decreasing cylinder performance and service life.

- **Rod load:** Never apply radial loads to the rod during operation.
- **Welding:**

– Remove the rod completely before welding accessories on the bottom or rod end.
– Allow welded parts to cool before reassembly.
– Protect the rod from welding sparks to avoid chrome damage.
– Absolutely avoid welding on the external diameter of the cylinder tube.

- **Painting:**

– When oven-drying, do not exceed 80°C.
– When cold-painting a cylinder with rod installed, protect the rod to avoid contamination of the wiper/seal.

- **Safety:**

– Materials are not dangerous, but installation may involve risks.
– Install shut-off valves or additional safety devices according to machine regulations.
– The manufacturer is not responsible for damages caused by non-compliance or improper use.

- **Maintenance:**

– Replace worn seals when required.
– Pay attention to oil cleanliness and prevent contamination.