

# TECHNICAL DATA

## TECHNICAL DATA FOR STANDARD HYDRAULIC CYLINDERS

### ► CHARACTERISTICS

- Maximum working pressure: 200 bar
- Maximum testing pressure: 300 bar
- Maximum working speed: 0.5 m/s
- Working temperature: -30 °C to +90 °C.
- Oil: mineral hydraulic.

### ► MATERIALS

- Rod: chrome plated steel F-1140, minimum chrome layer thickness 20 micron, roughness Ra < 0.2, minimum surface hardness 900 HV, corrosion resistance minimum 200 hours in neutral saline fog according to ISO9227 rating 9.
- Tube: steel ST-52-3, DIN 2393, inside diameter tolerance ISO H9, roughness Ra < 0.8 micron.
- Guide-bushing: steel F-1140 nitrided (nitride hardening)
- Piston: steel F-1140.

### ► SEALS

- Guide-bushing:
  - ✓ Dynamic: compact polyurethane rod-seal, double lip. NBR metal wiper seal.
  - ✓ Static: NBR 90 shore o-ring.
- Piston:
  - ✓ Dynamic: compact double-acting polyurethane seal, plus nitrile o-ring as activator. Special polycetal guides reinforced with glass fiber.
  - ✓ Static: polyamide locking sealing guide.

### ► FINISHING:

- Black prime painting.

### ► RECOMMENDATIONS

- Protect the cylinder circuit with a relief valve set at 200 bar.
- Check the oil cleanliness (pollution), and prevent it from having strange objects (place a filter on the cylinder circuit).
- Bleed the circuit by slightly loosening the cylinder fittings before starting-up.
- Do not weld on the cylinder tube.
- Before welding on the rod or on the bottom, please dismount the cylinder.
- In case you need to store the cylinders

for a long period of time, please avoid outdoor storage. If not possible, the rod must be completely retracted or it must be greased instead.

- For high-pressure cleaning or blasting on the cylinder, the rod and the oil-ports must be suitably protected.
- For double-acting cylinders working as single-acting, we recommend to connect the non-used oil-port to tank.
- In case you need to dismount the cylinder, please note that the piston is screwed onto the rod end and fixed with industrial glue, so you must use also industrial glue when mounting again.

## CARACTERÍSTICAS TÉCNICAS CILINDROS HIDRÁULICOS ESTÁNDAR

### ► CARACTERÍSTICAS

- Presión de utilización máxima: 200 bar
- Presión de prueba máxima: 300 bar
- Velocidad de utilización máxima: 0.5 m/s
- Temperatura de utilización: -30 °C a +90 °C.
- Aceite: hidráulico mineral.

### ► MATERIALES

- Vástago: acero F-1140 cromado, recubrimiento mínimo de la capa de cromo 20 micras, rugosidad Ra < 0.2, dureza mínima del recubrimiento 900 HV, resistencia a la corrosión mínima 200 horas niebla salina neutra según ISO9227 rating 9.
- Camisa: acero ST-52-3, DIN 2393, tolerancia sobre el diámetro interior ISO H9, rugosidad Ra < 0.8 micras.
- Cabeza: acero F-1140 nitrurado
- Pistón: acero F-1140.

### ► ESTANQUEIDAD

- Cabeza
  - ✓ Dinámico: Collarín compacto de poliuretano, doble labio. Rascador metálico en NBR.
  - ✓ Estático: junta torica NBR 90 shore.
- Pistón:
  - ✓ Dinámico: Junta compacta de doble efecto en poliuretano, mas junta torica en nitrilo como elemento activador. Guías en poliacetal especial reforzado con fibra de vidrio.
  - ✓ Estático: guía estanca de freno en poliamida

### ► ACABADOS:

- Imprimación en color negro.

### ► RECOMENDACIONES

- Proteger el circuito del cilindro con un limitador de presión a 200 bar.
- Verificar el estado de pureza del fluido, evitar que tenga cuerpos extraños (colocar filtro en el circuito del cilindro).
- Purgar el circuito, desatornillando ligeramente los racores de alimentación del cilindro antes de la puesta en servicio
- No soldar sobre la camisa (tubo).

- Desmontar el cilindro para soldar sobre el vástago o sobre el fondo.
- Para el almacenamiento prolongado de los cilindros, evitar la intemperie, de no ser así, el vástago debe estar completamente introducido en la camisa, en caso contrario deberá forzosamente estar engrasado.
- Para exposiciones prolongadas a la intemperie, se recomienda engrasar la parte del vástago que quede fuera de la camisa.
- Para limpiezas del cilindro a alta presión, o chorreados deberá preverse una protección suficiente sobre el vástago y las tomas de aceite.
- Para cilindros de doble efecto que vayan a trabajar como simple efecto, es recomendable conectar el racor no utilizado al tanque.
- En caso de desmontar el cilindro, hay que tener en cuenta que el pistón va roscado al vástago y lleva fijador de roscas, prever el acopio de fijador de roscas para el posterior montaje.



# Instructions for Installation, Commissioning, and Safety of Hydraulic Cylinders

## 1. Preparatory Steps

### 1. Preparatory Steps:

- Check that the cylinder has no visible damage.
- Ensure that all required parts are present, including seals, bolts, and connectors.

### 2. Required Tools:

- Prepare specific tools such as adjustable wrenches, torque wrenches, pressure gauges, filters, and personal protective equipment (PPE), including gloves, safety glasses, a helmet, and steel-toe boots.
- Ensure that all tools are in good condition to prevent accidents.

### 3. Work Area Cleaning::

- The work area must be free of dirt, dust, spills, and objects that might interfere with the process.
- Establish an organized, designated, and safe work zone to avoid distractions or accidents.

## 2. Transportation and Positioning

- Use appropriate tools such as cranes, trolleys, hoists, or forklifts to move the cylinder. Ensure that slings or chains are correctly positioned at points designed for lifting the load.
- Never transport the cylinder by holding it by the hydraulic connections, as this could damage them.
- Position the cylinder in its final location, ensuring it is fully aligned with the anchor points or the system where it will be installed.



## 3. Cylinder Installation

### 1. Structural Mounting:

- Before securing the cylinder, ensure that the supports or anchoring points are suitable for bearing the maximum expected load.
- Install bolts and fasteners according to the manufacturer's recommendations, ensuring that there are no inclinations or misalignments that could generate lateral stresses.

### 2. Connecting Hydraulic Lines:

- Thoroughly clean the connections and hoses before installing them to prevent particles from entering the hydraulic system.
- Connect the hydraulic lines to the corresponding ports, paying special attention to the flow direction.
- Use a torque wrench to tighten the hydraulic connections to the recommended torque. Check for leaks after finishing.

### 3. Connecting Sensors or Electrical Components (if applicable):

- Review the technical manual to identify the required type of electrical connection.
- Perform electrical connections in a dry environment, using sealed connectors and ensuring the cables are protected from mechanical and environmental damage.



## 4. Commissioning

### 1. System Bleeding:

- Fill the system with the manufacturer-recommended hydraulic fluid. Ensure the oil is clean and free of contaminants.
- Slowly move the cylinder in both directions several times to expel any air bubbles trapped in the system.
- Monitor the oil levels in the reservoir during this process and top up if necessary.

### 2. Initial Adjustments:

- Gradually increase the hydraulic pressure, observing the cylinder's behaviour.
- Verify the cylinder's stability during movements, ensuring there are no oscillations, abnormal noises, or vibrations.

### 3. Functional Testing:

- Operate the cylinder under real load conditions, checking its functionality in all operating positions.
- Monitor the hydraulic system's temperature and connection points to ensure they are functioning correctly and without leaks.



## 5. Safety Measures

- Always use personal protective equipment, including oil-resistant gloves, safety glasses, a helmet, and steel-toe boots.
- Keep all personnel away from the cylinder during operation or testing.
- Do not position yourself under a moving cylinder or in areas where there is a risk of heavy objects falling.
- Disconnect system pressure before making adjustments or performing maintenance.

## 6. Preventive Maintenance

- Regularly inspect hydraulic lines, seals, and connections for leaks or wear.
- Replace the hydraulic fluid according to the manufacturer's schedule, using only recommended and filtered oils.
- Check anchoring points and tighten any bolts or connections that may have loosened over time.
- Keep a detailed record of all inspections, maintenance, and repairs performed to ensure traceability and improve future planning.