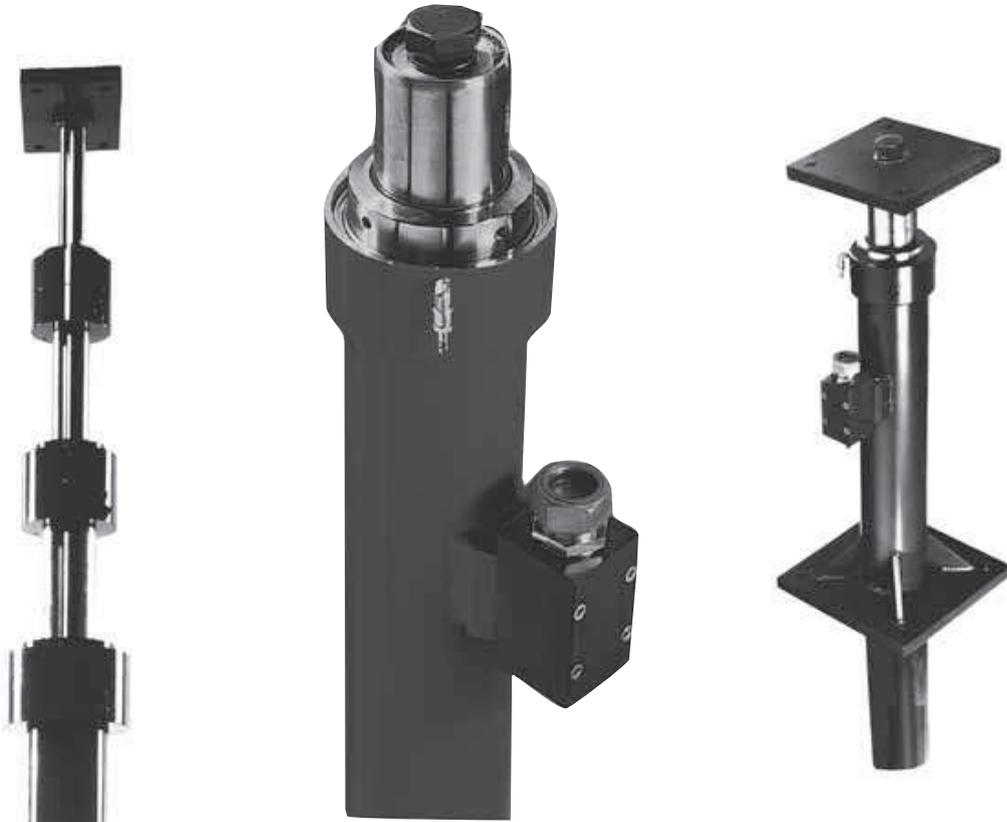


OPERATING INSTRUCTIONS FOR OMAR LIFT HD HYDRAULIC CYLINDERS

D842M2L



OMARLIFT SRL

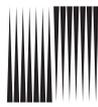
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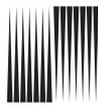
We reserve the right to modify the specifications, data and pictures of this manual.



Operating instructions

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Operating instructions

1. Transport and storage of the hydraulic cylinders

1.1 General information

For the transport and storage of the hydraulic components, the general safety regulations always have to be followed:

 When loads have to be lifted, use only proper hoists and respect their max. capacity.

 Never walk or stop under the hanging loads.

 Avoid hydraulic components from shocks.

- If the hydraulic components have to be stored, first control that packaging and protections are in a perfect state; if necessary repair or replace them with other more suitable ones;
- Store the hydraulic components in a dry place, dust free with a temperature between 5° and 30° C;
- If the cylinders or the pump units have to be stored for a long time, it is better for their preservation to fill them with oil.

1.2 Cylinder

The cylinder rod is blocked against the cylinder with a stirrup so that it can not get off during any moving or transport. In the cylinders in two pieces, the joints are protected by two protection flanges, blocked against the cylinder flanges with two screws. The two protection flanges are needed to keep the two parts of the rod blocked, avoiding water and dirt from getting inside it.

1.3 Cylinders transport

- The loading and unloading on the means of transport have to be made with proper hoists or clamp trucks.
- If the cylinder is vertically lifted, the rod has to be turned upward and the ropes for the lifting have to be fixed on the cylinder and not on the rod (see drawing n. 1).



Draw. n.1 Cylinder lifting with ropes

- If the cylinder is lifted with clamp trucks, it has to be lifted in the middle and the arms have to be positioned at their max. distance.
- If the cylinder needs to be rolled, make it roll very slowly to avoid bruises on the rod.
- Lay the cylinders preferably horizontally on the truck floor and avoid leaning the cylinder against the cabin roof in order to prevent that vibrations during the transport cause bruises on the rod.

1.4 Anti-pollution measures

Possible spilled oil from the circuit during repair operations has not to be spread in the environment. For the disposal of oil and clothes containing oil contact the specialised companies and follow carefully the regulations in force in the country of operation.

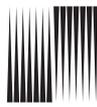
1.5 Control of the supplied material

When the material is collected before signing the delivery document of the forwarding agent, check that the goods correspond to the list reported in the delivery document and to the requested order.

1.6 Identification stickers

The main supplied components have their own sticker containing all the data needed to identify them:

- Cylinder: adhesive sticker on the cylinder head
- Rupture valve: sticker on the valve side



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1.7 Storage of the cylinders

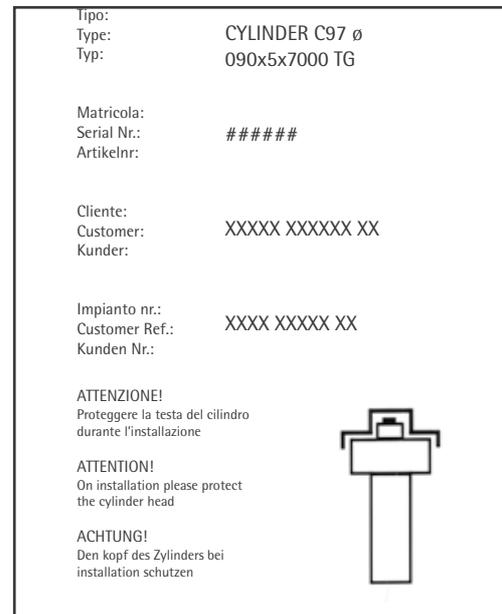
- Before storing, check that the protection packaging is in a perfect state of preservation.
 - After having positioned the cylinders on proper supports, block them in a way that they can not fall.
 - If cylinders in one piece have to be stored for a long time, it is better to fill them with anti-corrosive oil. Since the oil volume increases or decreases according to the temperature, it is better not to fill the cylinders completely.
 - If cylinders in two pieces have to be stored for a long time, check that the flanges closing the joint close hermetically and that the rods are well greased. Keep both the closing flanges and the rod which comes out from the cylinder well covered with grease.
 - Before putting the installation into action, replace the oil used for the filling up and remove the excessive grease.
- The oil inlet (and therefore the rupture valve) can be at the top or at the bottom; this data has to be decided when ordering.
 - The rupture valve, assembled directly on the cylinder, can be oriented in four directions with intervals of 90° each.

2. Assembling of the hydraulic cylinders

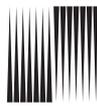
2.1 The cylinder

The cylinder serial number is on a sticker on the cylinder head on the same side where the rupture valve is assembled. This number appears also on the identification sticker together with the remaining data of the cylinder (see drawing n. 2).

- All the cylinders, both those in one piece and those in two pieces, are tested in the factory at two levels of pressure to guarantee the sealing of the seals and the sealing of the welding.
 - The oil used for tests is then taken out of the cylinder. The small quantity which remains inside acts as a protection against rust for a long period of time. If the cylinders remain on the site for a long time, it is better to control the state of preservation of the rod, cleaning and polishing it, if necessary. For long periods of storage see point 2.2 in the operating instructions manual for the hydraulic components.
- If in the lift shaft brickwork, painting or welding has to be carried out, protect the cylinder head with grease and clothes. Clean carefully after having finished the work before putting the installation in action.
 - The cylinder has to be assembled perfectly perpendicular. When the rod has reached its max. length out of the cylinder it has to be perfectly parallel to the guides.
 - All the cylinders have a line elbow fitting on the head. This fitting allows the collection of the oil lost by the cylinder, it has to be screwed in the proper threaded hole on the highest part of the cylinder and then connected through a PVC pipe to a small tank for the oil recovery. In this way the oil loss can always be detected.



Draw. n. 2 Identification stickers of the cylinder



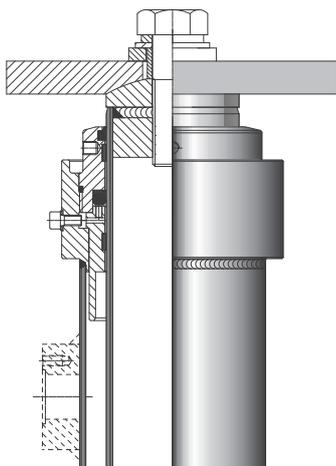
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2.2 Assembling of side acting cylinders, roped 2:1 or 1:1

The assembling of side acting cylinders is normally carried out according to the following two systems:

a) Indirect side acting cylinder, roped 2:1, at one stage, assembled on a small pillar (same system for the installation with two cylinders).

- The pillar is fixed at the bottom to the beam of the pit and at the top of the wall or to the guides through adjustable fixing.
- The cylinder lays on an adjustable support assembled on the top of the pillar. A disk of anti-vibration insulating material can be placed between the pillar and the cylinder.
- The cylinder head is fixed to the wall or to the guides in an adjustable way. Other middle fixing points can be added according to the cylinder length. At this purpose follow carefully the installation project drawing.
- The pulley assembled on the rod head has to be well guided, without excessive clearances on the guides or forcing all along the travel.



Draw. n. 3 Head of the direct acting cylinder with spherical joint

b) Direct side acting cylinder roped 1:1, at one stage (same system for installations with two cylinders).

- The direct side acting cylinder lays directly on the pit bottom. The rod head is equipped with a spherical joint (see drawing n. 3), which allows the frame to be hooked in a flexible way, without movements. The spherical joint has to be greased before fixing the plate at the frame.

2.3 Assembling of underground direct acting cylinders

Underground direct central acting cylinders are supplied with an upper plate with a spherical joint (see drawing n. 3, page 005) and with a middle support plate which is articulated in case of telescopic cylinders. The cylinder part laying under the middle plate is protected by a special anti-corrosive black paint.

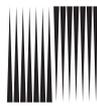
- The articulated plates have to be greased where they move, before being installed.
- Before installing the cylinder, it is better to control the dimensions of the hole which is going to contain the cylinder.
- Moreover the cylinder has to be protected against corrosion and has to be installed inside a protection tube. Only when the installation is perfectly working, the cylinder could be rammed.

- The cylinder positioning has to be made according to the project dimensions.
- It is suggested to operate according to the following directions to position the cylinder perfectly perpendicular and parallel to the guides:

Normal direct central acting cylinders at one stage: draw the nylon wire, which is inside the rod, and check if it comes out perfectly at the centre of the threaded hole and is parallel to the guides.

2.4 Cylinders in two pieces

- Cylinders in two or three pieces have a rod with a threaded joint, while the cylinder has a joint with a squared flange.



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- The upper half of the cylinder in two pieces has a rod which is longer than the cylinder, so it is possible to fix the screwer to the rod without disassembling the cylinder.

- The two joints of the cylinder in two pieces are hermetically closed by two metal hoods which act as a protection and packaging during the transport.



It is necessary, after having removed the protection hoods, to put some rubber stripes between the rod and the cylinder, in order to avoid damages to the rod. These stripes have to be fixed well to the screws of the flanges and have to be removed just before closing the square flanges of the cylinder.

- Follow the next operating instructions for the assembling of the two pieces (see drawing n. 4):

1) Put the lower part of the cylinder in a perfect vertical position and fix it, unscrew the screws that fix the protection hood to the flange on the cylinder head. Draw out the rod for a length of around 1/2 metre, fix the special wrench or other tools well protected by rubber or similar material. Then take the protection hoods away.

2) Remove the protection rubber on the upper half of the rod.



Check if the upper block stirrup is present and if it is fixed through the M30 screw.

3) Disassemble the rod protection hood unscrewing the fixing screws.

4) Lift the upper half of the cylinder with an hoist fastening it to the holed plates welded on the head.

5) Let the rod draw out paying attention to avoid scriping and knocks to the cylinder.

6) Block the rod of the upper half with a screwer or with another tool insulated with rubber, without making it come out of the head which contains the seals.



The block stirrup of the rod has to be removed only when the operation has finished.

7) Remove grease and clean the male and female threads, avoiding that the solvent contacts the OR of the joint.



Control carefully that there are no bruises neither on the threads nor on the joint. If necessary, get rid of them.

8) Control that the OR of the joint is not damaged and is well greased.



Lower the upper half of the cylinder and slowly approach the threads without harsh movements. Control the alignment and completely screw without using the thread-locking liquid.



If there are any difficulties with screwing, unscrew immediately, control the threads and try again.

9) After having completely screwed the two halves, unscrew by 4/5 turns, apply the thread-locking liquid on the screw (not on the OR), quickly screw again, checking that the red paint signs are aligned (max tolerance 4/5 mm).



Remove the screwers and control by hand that the joint of the rod is perfect all around, without bruises and steps. If necessary, smooth with fine abrasive paper (grain 320-400).

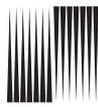
10) Check that the OR of the lower flange is perfect and positioned in its own housing. Clean the two flanges.

11) Pull the two square flanges closer, matching the pin with the hole. Then screw the four screws that block the flanges, tightening crosswise.

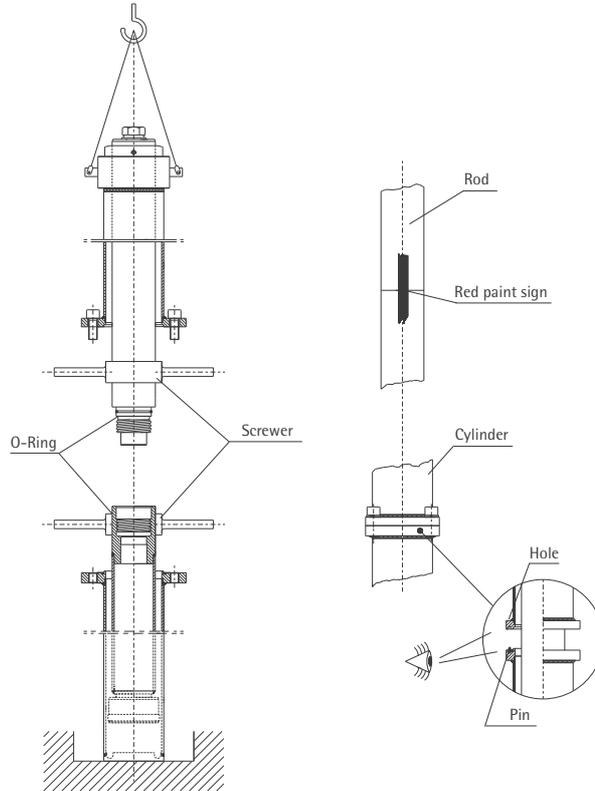
2.5 Cylinders in three pieces

In case of three pieces cylinders, we advice to proceed as follows:

1) In the first step, assembly the cylinder lower part with the intermediate one, considering these two parts as being one cylinder in two pieces. To facilitate this operation, the intermediate part jacket can be completely unthreaded and put back after having assembled the first two parts.



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Draw. n. 4 Cylinder in two pieces with screws

- 2) In the second step, assembly the upper part with the two ones previously connected. Even in this phase, we can proceed like for the two pieces cylinders assembling and follow the same indications mentioned above.

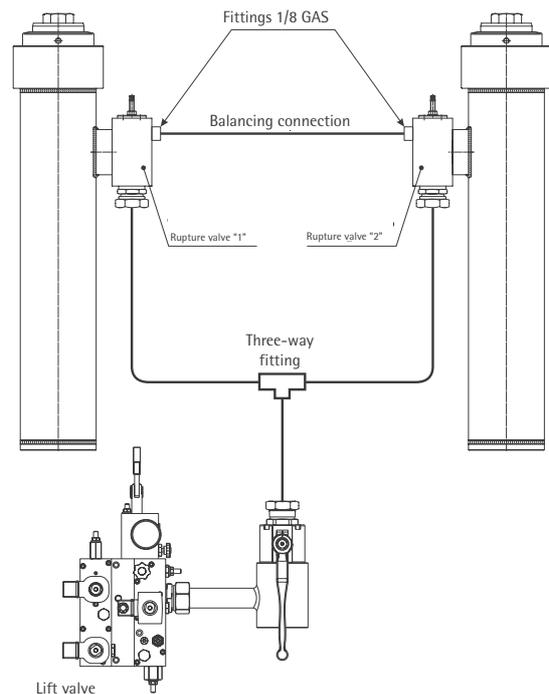
2.6 Connection of installations with two cylinders



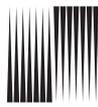
In case of installations with two cylinders, the pipes which feed the two cylinders must have the same diameter, the same length, and follow ways as symmetrical as possible (see drawing n. 5).



The rupture valves of the two cylinders have to be hydraulically connected allowing the piloting pressure balance. The rupture valves are equipped with a 1/8" threaded hole. The connection has to be done with 1/8" fittings and steel pipes with a 6 mm diameter, 1 mm thick or flexible hose. See also "Operating instructions for rupture valves" (D840M).



Draw. n. 5 Installation with two cylinders



Operating instructions

3. Maintenance of the hydraulic cylinders

3.1 Circuit filling and air purging

When an installation is new, the tank, the cylinder, the connection pipes, the valve and the silencer have no oil inside. Consequently, it is necessary to fill very well all the components of the hydraulic circuit and purge air out of them completely.



In order to have a very silent installation, without foam in the oil, and very low overheating, the quantity of oil to be put in the installation has to be the max allowed. The max quantity of oil necessary for the installation corresponds to the sum of the oil needed to fill the tank, plus the oil needed to fill the cylinder (space between the cylinder and the rod), plus the oil needed to fill the pipes. The oil filling has to be done pouring the oil from the side of the moving half-cover, bringing the level at about 8/10 cm from the upper edge.



Before pouring the oil into the tank, make sure that there is no dirt or water inside.



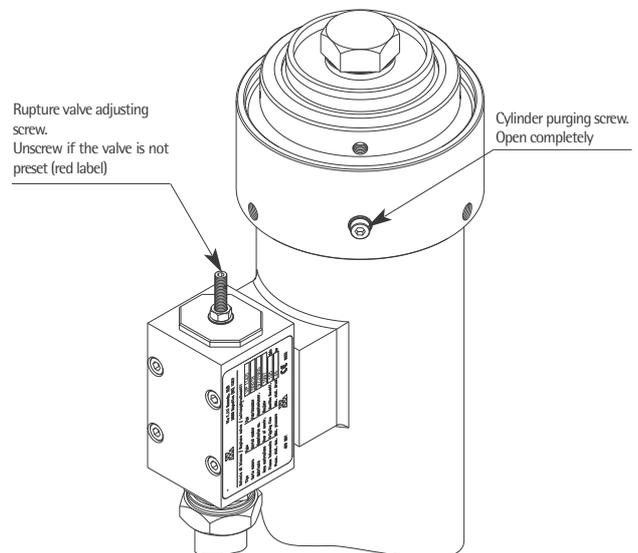
The air has to be purged from the highest point of the circuit which normally is the cylinder head. The oil has to enter the circuit very slowly, without creating turbulence and mixing with air which needs time to get out.



Operate as follows to get rid of the air completely.

- 1) Unscrew completely and remove the purge screw on the head of the cylinder (or cylinders).
- 2) If the rupture valve is not adjusted (red label on it), its regulation screw has to be unscrewed.
- 3) Disconnect electrically the coil of the high speed electro-valve. Only in this way a small quantity of oil gets into the cylinder without turbulence.

- 4) Activate the motor for an up travel (star-delta too, if it exists) for some seconds and check if the pump turns in the right direction. If it turns in the wrong way, a strong and bothering noise will be heard. The two phases in the motor feeding need to be inverted.
- 5) Keep the motor activated for 10-15 seconds and stop it for 20-30 seconds to allow the air to go out. Repeat this operation several times, until only oil, without air, comes out from the purge screw.
- 6) Close the purge screw of the cylinder.
- 7) Reset the oil level in the tank, if necessary, and make an upward travel at low speed, checking that all the parts of the installation are in order and that the oil quantity is enough. The motor has always to be covered by oil even when the cylinder is at the upper end.



Avoid that the oil level decreases until it uncovers the motor-pump group. In this case in fact the pump could suck air, making all the above purging operations void.



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9) Connect again the coil of the electro-valve to obtain the high speed and check the other functions: acceleration, deceleration, upward start, downward start, etc.

10) Check that in the circuit there is no remaining air. At this purpose, stop the car on an intermediary floor, close the shut-off valve and turn off the power, get into the car and check that there is no strong lowering, get off the car and verify that the car does not go quickly back to its initial position.

3.2 Control on the new cylinder

After having installed the hydraulic part, make the following checks starting up the first travels:



Before putting the cylinder into action, control that on its head, close to the wiper, there are no debris, concrete, metal particles or welding cinders which could scrape the rod during its first travel.



After the first up travel, immediately control the whole surface of the rod to verify its state of preservation. In particular, if the cylinder is long, control the central part of the rod whose rectified surface could have been bruised by the vibrations during the transport. It would be necessary to smooth patiently with fine abrasive paper to avoid the precocious damaging of the seals.



Protect the cylinder head during the assembling and till all the operations are finished.

3.3 Cylinder losses

Big cylinder losses are due to wear or to damaged seals, which are located in the head of the cylinder itself. The oil coming out from the cylinder is collected in the provided room and, through a PVC pipe, conveyed to a transparent tank.

It is necessary that the room inside the cylinder head and the hole leading to the PVC pipe are not obstructed by dirt. Cylinder losses depend on the traffic intensity and seal wear.

When losses are more than 1 or 2 litres per month, it is better to replace the cylinder seals.

- In underground direct acting cylinders, oil losses can be due to chemical or electrical corrosion of the cylinder. This phenomenon is detected by the continuous decreasing of the oil level in the tank.



Underground cylinder have to be put inside a protection wrapping to avoid ground and groundwater pollution.



In case oil soaks into the ground, the underground cylinder has to be disassembled and replaced.

3.4 Seal replacement on a single-stage cylinder

The seals of a normal cylinder are positioned on the cylinder head (see drawing n. 6). Seals replacement consists in replacing the three sealing parts:

- The main seal of the rod
- The sealing O'ring on the iron ring thread
- The rod scraper

The iron ring which holds the seal is screwed. The unscrewing operation is facilitated by 4 blind threaded holes M10. It is possible to unscrew the iron ring introducing 4 screws in the 4 holes or using proper hook spanners which can be found on the market.

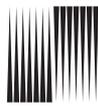


Before replacing the seals, control the rod surface and get rid of possible irregularities, such as scores or bruises which could damage the new seals:

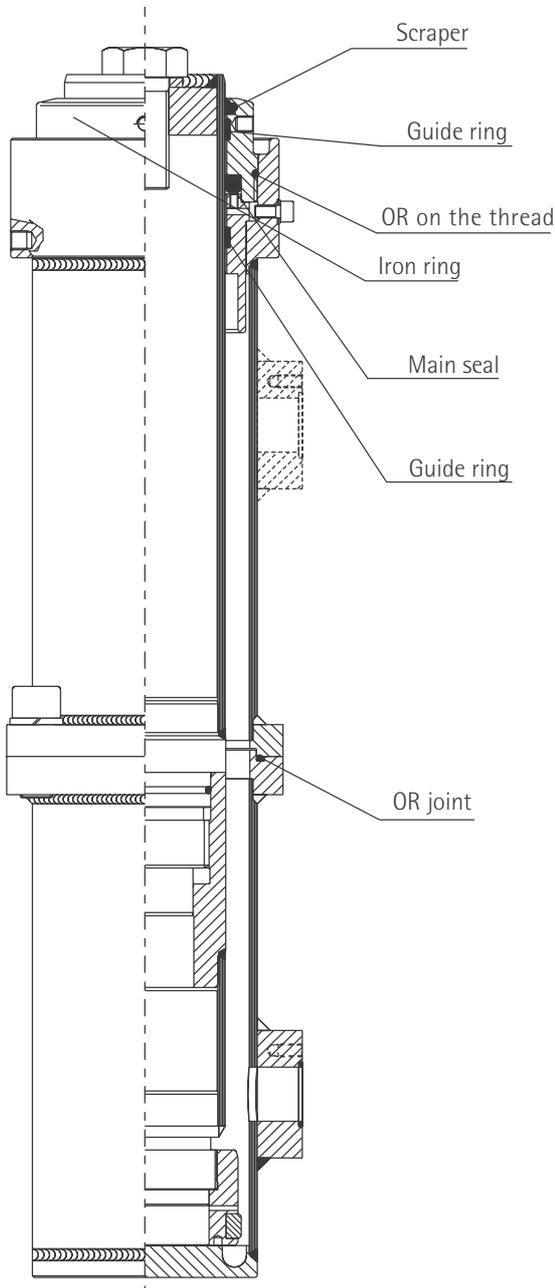
- Take the car in upper extra travel and the cylinder in upper end position.



Carefully take place near the head and, if necessary, secure with a proper safety sling to be able to work safely and freely.



Operating instructions



Draw. n. 6 Replacement of the seal on a one-stage cylinder

- Check the rod surface half metre by half metre, all along its length, making a slow down travel with hand emergency.



Get rid of any irregularities found visually or touching it by using a thin abrasive paper (320 ÷ 400). In case scores are deep or damages are important, fix the paper on a wooden support.

- After having controlled the last half metre of the rod, operate to replace the seals.



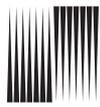
Block the car, using stops in the most comfortable position. In case of indirect acting installations, block with a stop even the support of the pulley.

- In case of direct acting installation disconnect the rod from the frame. While in case of indirect acting ones, disconnect the rod from the pulley.



Clean the cylinder head, unscrew completely the screw of the counter-pressure. Make the rod break back with the hand manoeuvre until the manometer shows pressure = zero.

- Unscrew the threaded iron ring holding the seals.
- Remove the old seal, the O'ring on the thread and the scraper.
- Control and clean the guide rings and position them in their place. (Have access to the second guide ring by taking out the metal bush, laying under the iron ring, screwing two small screws M3 on the bush itself to lift it).
- Clean and control the seats, reassemble the new seals, paying attention not to damage them and position them in the same way as the old ones. (The writing "PRESSURE SIDE", if existing, has to be turned toward the cylinder inside!).
- Reassemble the bush (in case it has been taken out), screw again the iron ring with the new seal, purge the air and put the installation into action.



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