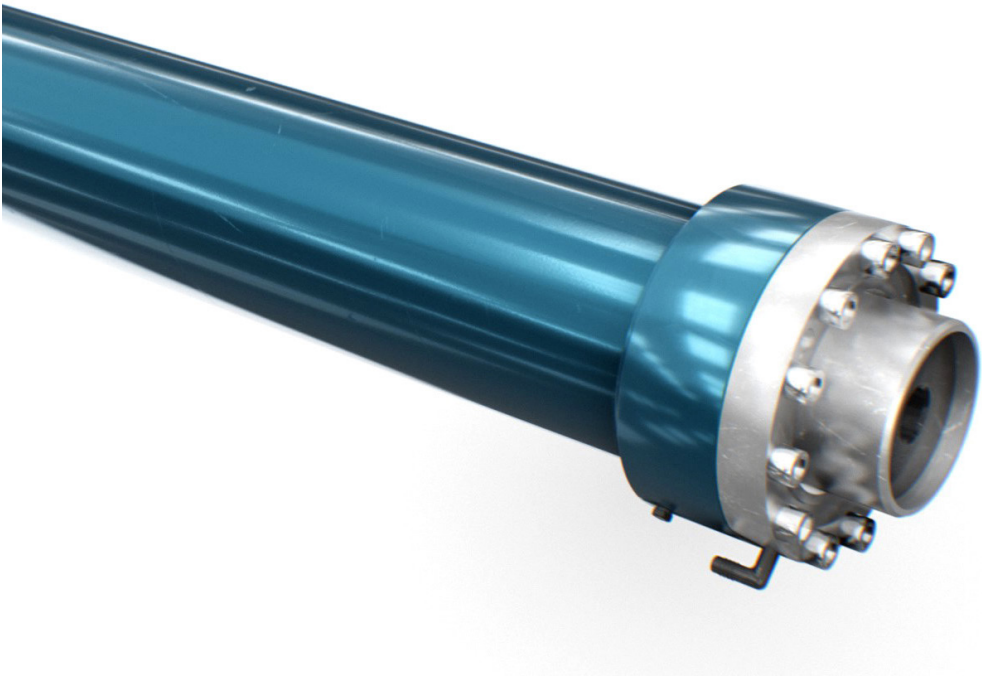
MORIS

PISTON ASSEMBLY MANUAL



MM01001-en rev.00


MORIS

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WARNING
In order to reduce the risk of injury, as well as any damage to property, sufficient working areas must be ensured inside the pit and headroom during the plant installation.

INSTRUCTIONS BEFORE INSTALLATION

All personnel responsible for carrying out any installation and/or work on lift plants must be qualified and specialised. Access to the lift is regulated by safety standards which may vary according to local regulations.

PPE must be worn by any worker, before starting any installation and/or maintenance work, in line with the safety procedures provided for by the installer and/or maintenance company, in conjunction with the lift plant installation and/or maintenance service operation procedures.

- Safety helmet against accidental impacts
- Anti-slip footwear
- Gloves against the risk of cuts
- Goggles against the risk of explosion

Check that the lift is clear of any people or objects.

In the event of any component breaking, deteriorating or being lost during assembly, only use original replacement parts.

PRELIMINARY CHECKS, PACKAGING, HANDLING AND ACCESSORIES

PISTONS CAN BE PACKAGED IN DIFFERENT WAYS:

WITHOUT PACKAGING (split piston rods, however, bear protections at the end of the joint).

METAL BASKET PACKAGING.

WOODEN SLAT PACKAGING.

WOODEN CRATE PACKAGING.

INSPECTIONS UPON RECEIPT OF GOODS:
Check the integrity of the packaging. If the packaging is not integral, you should take photos before proceeding with the packaging removal. In that case, carefully check that the piston has not been damaged. If you notice anything wrong, please call the freight forwarder or supplier for a technical assessment of the damage.

ENSURE THE ACCURACY OF PISTON DETAILS BY CHECKING ORDER NUMBER, DIAMETER AND LENGTH.

COMPOSITION AND ACCESSORIES:
Piston (in 1, 2 or more pieces)
Installation manual available.
Sandpaper, Loctite and joint sealing (only for pistons supplied in 2 or more pieces)
Oil recovery pipe

OPTIONAL ACCESSORIES
Oil recovery tank
Blockage valve
Flexible tube of variable length, as needed (sizes from 3⁄4" to 2")
Replacement sealing kit
Tightening clips for piston assembly
Stroke spacer according to customer needs

PRODUCT HANDLING
The piston must be handled with suitable lifting equipment. Extreme care must be taken when handling the piston in order to avoid any impacts on its rod.
Prevent the piston from rolling.
When the cylinder is lifted vertically, the piston rod must be facing upwards with the lifting ropes secured onto the cylinder.
Store the pistons in a dry place, protected from the effects of weather.

PISTON ASSEMBLY: GENERAL INSTRUCTIONS FOR SINGLE AND SPLIT PISTONS.

The cylinder must always be assembled perfectly plumb and the extended piston rod must always be perfectly parallel to the guide rails.

Protect the cylinder head during any masonry work, welding and painting of the shaft structure. Before putting the piston rod into service, the piston rod and sealing must be thoroughly cleaned and checked. Any foreign matter could enter the cylinder-head sealing hence damage O-ring seals and the piston rod.

All pistons are supplied with an elbow connector and a waste oil recovery pipe which must be connected to an oil recovery tank so that the oil leakage can be kept under control.

After the first stroke, check the rod surface for any potential damage to the rod. If necessary, remove small abrasions using fine-grained emery cloth.

In two-piston tandem systems, the connecting pipes must be symmetrical. The block valves of the two cylinders must be hydraulically connected to allow for piloting pressure balancing.

INDIRECT ACTING PISTON 9130: ASSEMBLY REQUIREMENTS.

1. Assemble the piston on a suitable pillar or pit bottom. The top of the piston rod is indicated on the label. Make sure that the piston is perfectly plumb to the guide rails (the piston must be at the same distance between each of the two guide rails of the plant).

2. Secure the cylinder head to the wall or guide rails.

3. Assemble the sheave onto the piston head.

4. Fill the piston rod with oil, evacuating any air from the vent screw on the cylinder head.

DIRECT ACTING PISTON 9140: ASSEMBLY REQUIREMENTS.

1. Place the lower fixing plate on top of the concrete or welded metal casing, which should have been levelled beforehand.

2. Place the cylinder head so that the piston axis is exactly in the intended position in relation to the guide rails.

3. Move the base of the cylinder so that the cylinder body generator is parallel to the guide rails.

4. Tighten the upper fixing plate, and adjust side and level variations by means of wedges.

5. Tighten the lower fixing plate in the same way and check the parallelism with the guide rails using a spirit level.

6. Place the lift car on top of the piston head.

7. Countermark the fixing holes of the piston head on the car frame.

8. Drill the car frame in order to secure it.

9. Fill the piston rod with the oil, evacuating any air from the vent screw on the cylinder head.

10. Perform a complete travel operation over the entire piston stroke.

9150 CENTRAL DIRECT PISTON: ASSEMBLY REQUIREMENTS.

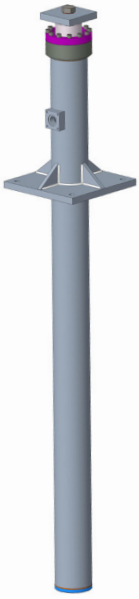
1. Check that the buried pipe is plumb and sized to accommodate the cylinder.

2. Insert the cylinder into the hole, supporting it properly.

3. Use a spirit level to ensure the centring of the cylinder axis in relation to the guide rails.

4. Once the cylinder has been levelled, seal the the support at its bottom, using cement or additional plates, so that the adjustment screws do not have to bear the load, and then tighten the nut and locknut.

5. Fill the piston rod with the oil, evacuating any air from the vent screw on the cylinder head.



MORIS

TWO-PIECE PISTON ASSEMBLY:
DIAMETERS 70 TO 100 RANGE

PURPOSE AND IMPORTANT NOTES

This manual is intended for the installation and commissioning of the two-piece piston with a threaded joint supplied by Moris Italia. It describes the correct phases of installation of the product and the recommendations to adopt in order to carry out the correct assembly of the piston.

This manual is intended for operators, lift installers and repair engineers.

THE MANUFACTURER RESERVES THE RIGHT NOT TO RECOGNISE THE WARRANTY IF THE ASSEMBLY IS NOT CARRIED OUT ACCORDING TO THE INSTRUCTIONS GIVEN IN THIS MANUAL.

NECESSARY EQUIPMENT FOR THE INSTALLATION

- **Lifting device**

- **Hanger clamp for tightening rod and liner:**

- **Code 0745/2 Ø70 - Ø120**
- **Code 0747/2 Ø130 - Ø200**
- **Code 0747/1 Ø201 - Ø280**

- **Sandpaper, O-rings and replacement seals**

- **LOXEAL 86-55**

- **Hand tools (screwdrivers, Allen keys by 8 and 10 mm, spanner by 30 or 24 mm for M30 or M24 bolts)**

ASSEMBLY SEQUENCE

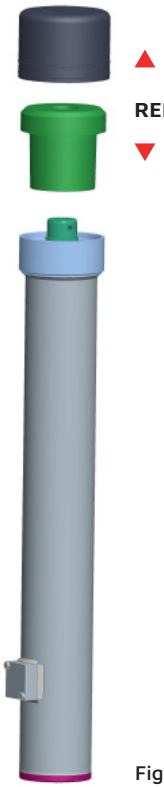


Figure 1

A) PREPARING THE HALF PISTON

1. Position the semi-assembly vertically.

2. Install into pit or onto pillar, then secure.

3. Remove the binding tie from the rubber protection; then remove the inner and outer rubber protections.

Figure 2

A) PREPARING LOWER HALF PISTON

4. Insert the longer SHCS screw (inserted in the transport hook of the upper half-piston) in the hole of the rod joint (Fig.2).

5. Hook the lifting device on the screw and then lift the piston rod so that there is sufficient space to assemble the tightening hanger clamp (fig.2).

6. Assemble the hanger clamp for rod tightening, then remove the lifting device and the longer SHCS screw (Fig. 3).

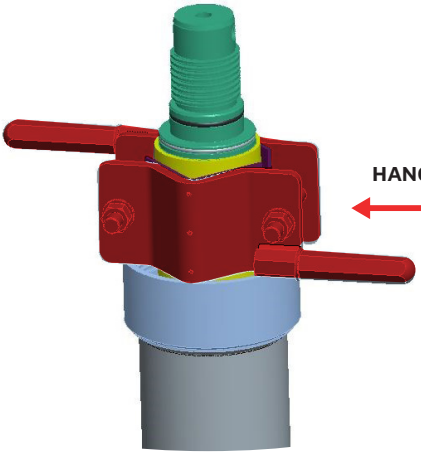


Figure 3

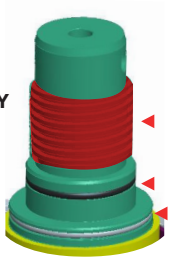


Figure 3.1

WARNING: remove any potential dirt from the threads. If case, proceed with replacing the O-rings (Fig. 3.1).

Figure 4

B) PREPARING THE UPPER HALF-PISTON

1. Position the semi-assembly vertically and remove any strapping band on and around the bottom rubber protection. Leave the protection in place.

2. Disassemble the upper hook and remove the seal-bearing head, the oil scraper gasket and the sealing gasket. Then reassemble the hook using only the longer SHCS screws (Fig. 6).

Figure 5

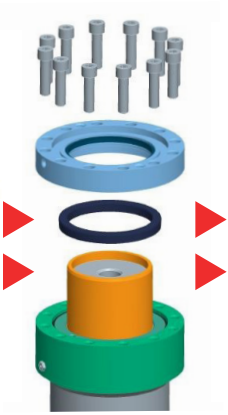


Figure 17

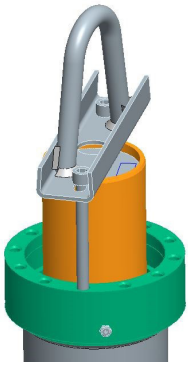


Figure 6

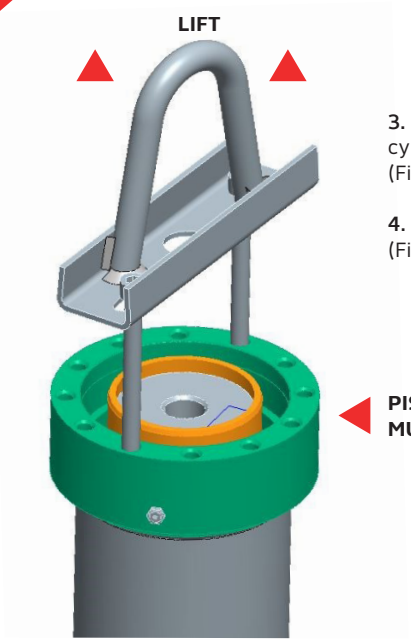


Figura 7

3. Connect the lifting device to the hook, then lift the cylinder liner up to where it is aligned with the piston rod (Fig.7)

4. Assemble the plate supplied using a M30X60 screw. (Fig.8)

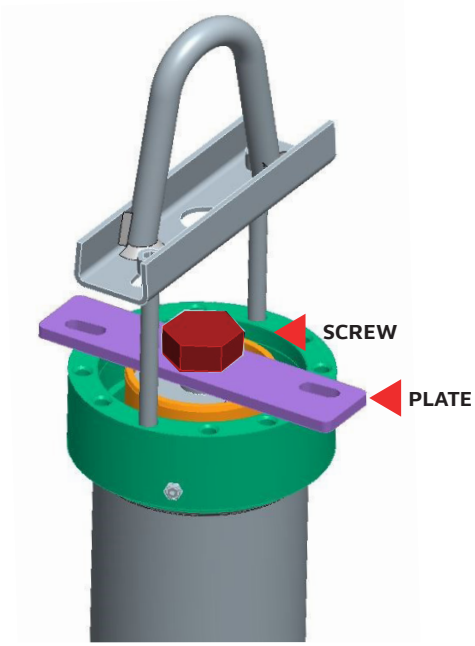


Figura 8

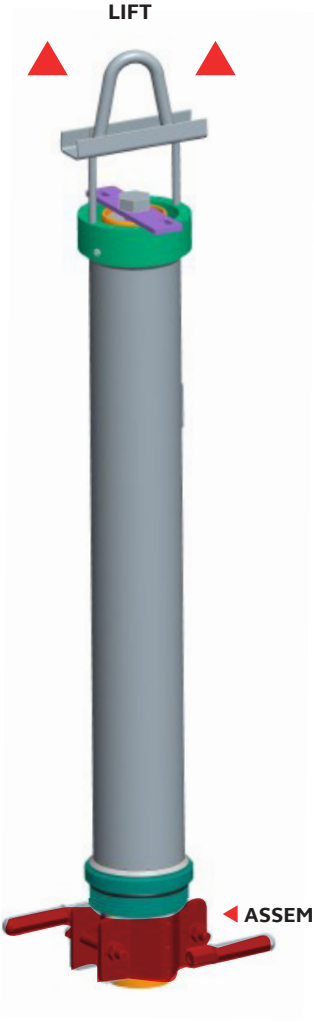


Figure 9

5. Lift the assembly slightly, remove the lower protection (Fig. 9), then assemble the rod tightening hanger clamp in the lower part of the rod (Fig. 9.1). Check threads and O-rings on the cylinder liner.

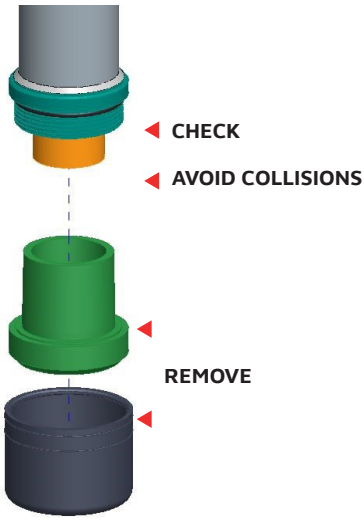


Figura 9.1

WARNING: The lower end of the rod is now exposed. Any damage to this part can compromise the mechanical sealing of the piston rod joint, as well as the hydraulic sealing of the entire piston. Operate with extreme caution, in case you need to position the whole unit onto the ground.

Figure 10

C) PISTON ASSEMBLY

1. Carefully, insert the upper semi-piston. Lift it and align it with the lower semi-piston. Only moisten the first 2 or 3 threads using LOXEAL 86-55.

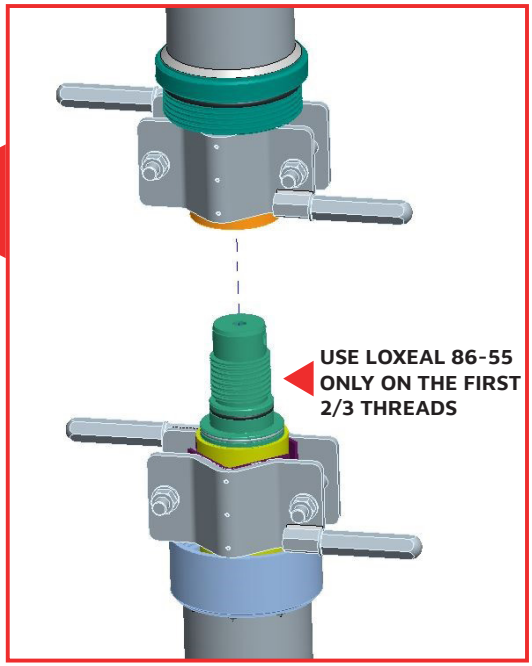


Figure 10.1

2. Bring the two pieces together and screw the upper rod with the lower rod, rotating slowly and avoiding forcing. WARNING: once the piston has been closed, unscrew by half a turn, then screw it back in quickly for final tightening. Check that the two matching pieces are aligned

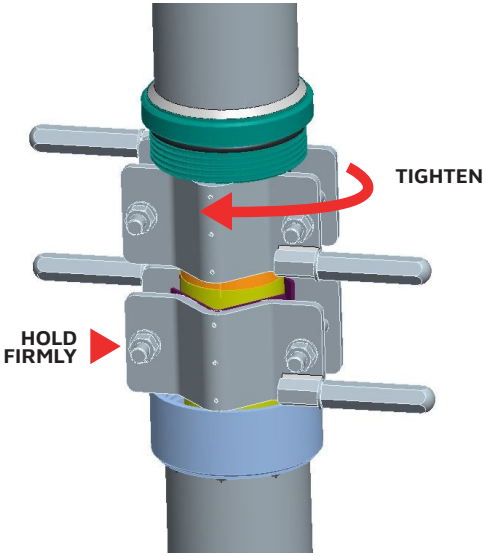


Figure 11

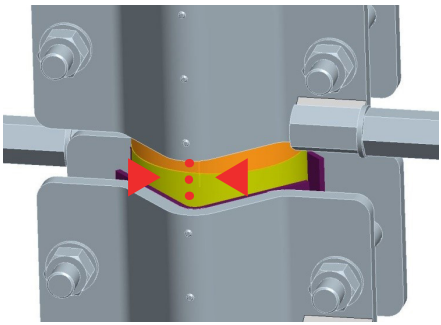


Figure 11.1

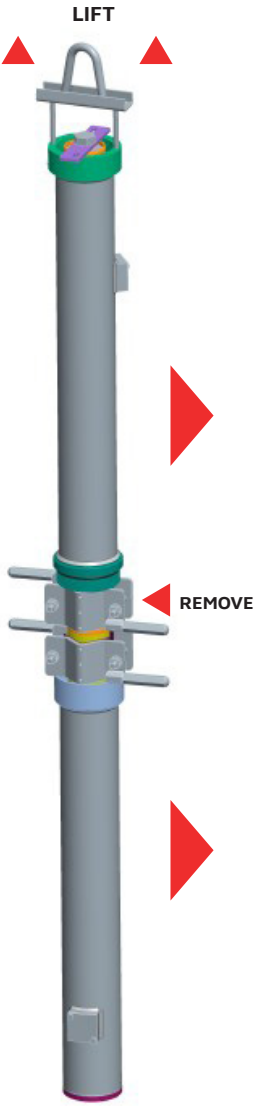


Figure 12

Figure 13

3. Lift up the upper liner and remove the two tightening hanger clamps.

4. Using the sandpaper supplied, sand down any burr or roughness at the junction point.

LOWER

5. Slightly lowering the upper part, bring the rod into contact with the liner base. **(Fig. 14).**

Figure 14

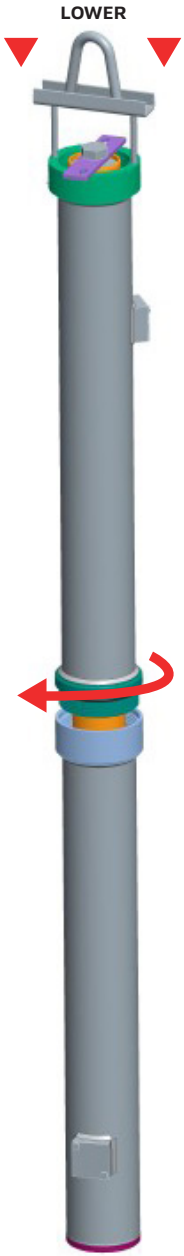


Figure 15

6. Screw in the two outer cylinders by 3-4 threads, making sure that the whole system is securely fastened.

7. Remove the M30x60 Hex Head bolt, plate, longer screws and lifting device **(Fig. 16).**

8. Complete the screwing of the liners in total safety.

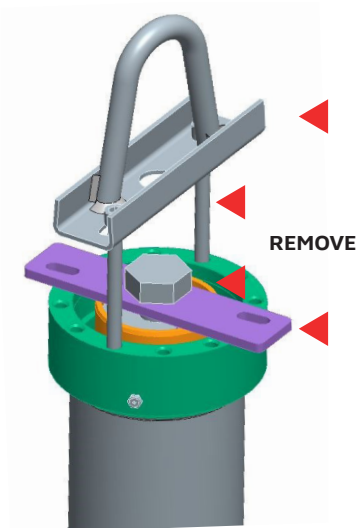


Figure 16

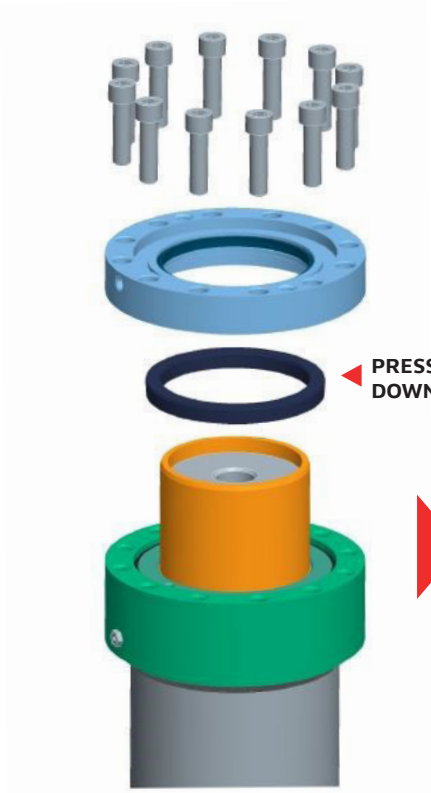


Figure 17

9. Reassemble the sealing parts and the seal-bearing head, making sure that the screws are securely tightened **(Fig. 17.1).**

10. Fix the piston perfectly plumb.

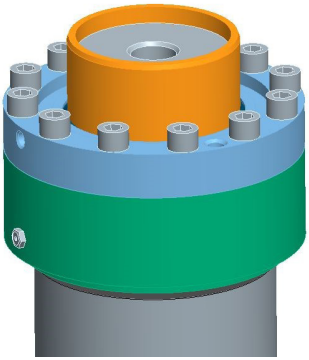
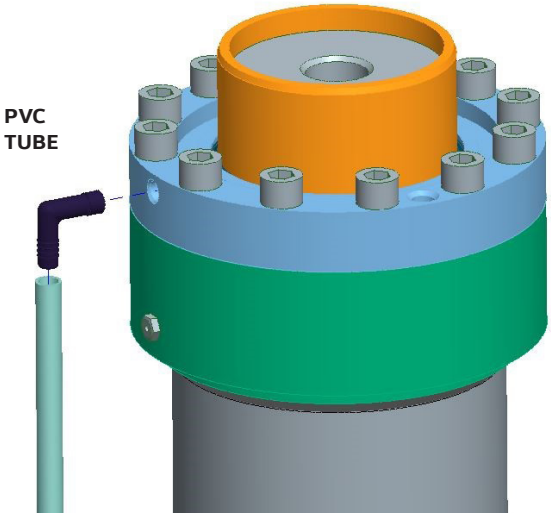


Figure 17.1

11. Screw in the oil recovery fitting and connect the PVC pipe to it.

12. Connect the piston to the car frame.



PLEASE NOTE: during the first stroke, check the rod surface for any potential damage. If necessary, remove any smaller abrasions using the fine-grained emery cloth supplied.

MORIS

TWO-PIECE PISTON ASSEMBLY:
DIAMETERS RANGE 110 TO 200, INCLUDING MCE AND MCS PISTONS

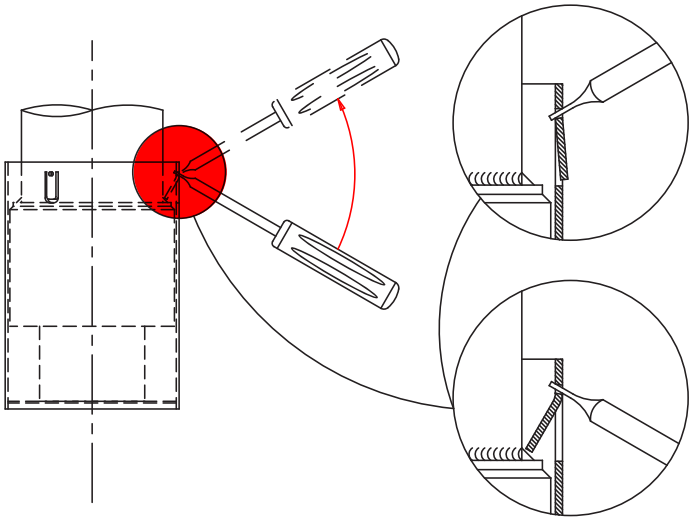
PURPOSE AND IMPORTANT NOTES

This manual is intended for the installation and the putting into service of a two-piece welded piston supplied by Moris Italia. It describes the correct steps to install the product, as well as the advice to be taken for a correct assembly of the piston.

This manual is intended for use by competent operators, installers and repair engineers.

THE MANUFACTURER RESERVES THE RIGHT NOT TO RECOGNISE THE WARRANTY IF THE ASSEMBLY IS NOT CARRIED OUT ACCORDING TO THE INSTRUCTIONS GIVEN IN THIS MANUAL.

DISASSEMBLY OF SPLIT PISTON PROTECTION FOR TRANSPORTATION



TOOLS REQUIRED FOR ASSEMBLY

- **Lifting device**

- **hanger clamp for tightening rod and liner:**

  - **Code 0745/2 Ø70 - Ø120**
  - **Code 0747/2 Ø130 - Ø200**
  - **Code 0747/1 Ø201 - Ø280**

- **Sandpaper, O-rings and replacement seals.**

- **LOXEAL 86-55**

- **Hand tools (screwdriver, Allen key by 8 and 10 mm, spanner by 30mm or 24mm for M30 or M24 bolts)**

ASSEMBLY SEQUENCE

1. Carefully, insert the piston parts into the hoist-way. **(Fig 1-2)**

2. Place the lower part in the cylinder at the bottom of the pit or on the pillar, and secure in place perfectly plumb. **(Fig 2)**

3. Lift the top part of the piston and remove the metal protection; remove the bubble wrap protection. Carefully, place the piston onto the ground. **(Fig 5)**

Fig 1

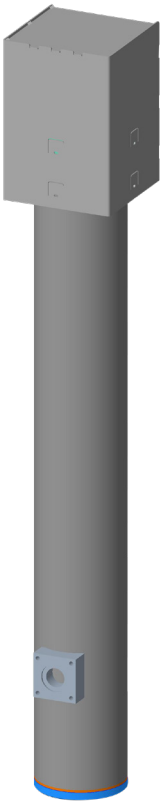


Fig 2

4. Remove the transport hook and the seal-bearing head; fix the transport hook to the piston rod by means of an M30 (or M60) head screw. **(Fig 3)**

5. Using a hoist, carefully pull the piston rod out of the cylinder, holding the cylinder in place. Remove the metal protection from the lower piston, remove the bubble wrap and protective paper. **(Fig 4)**

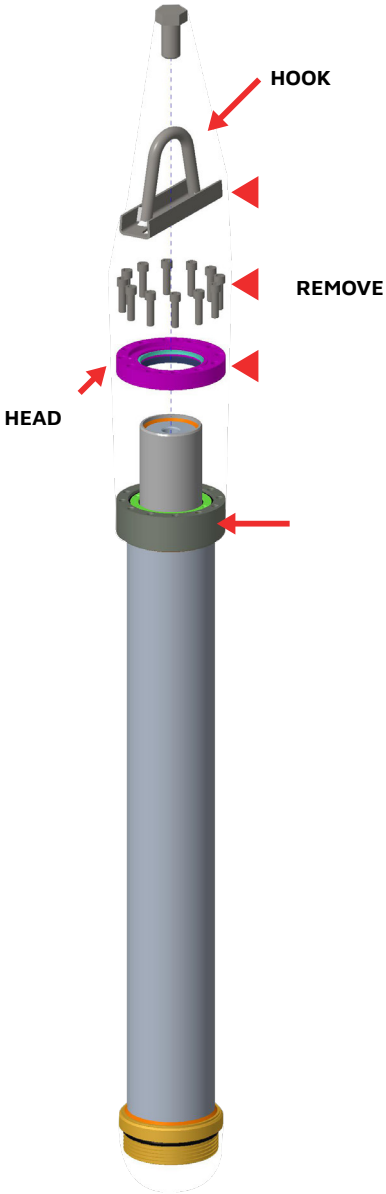


Fig 3

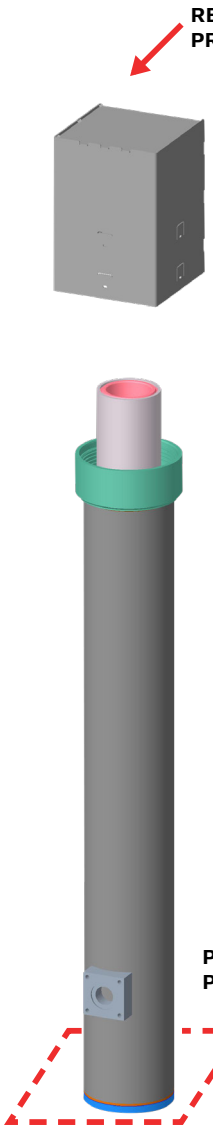


Fig 4

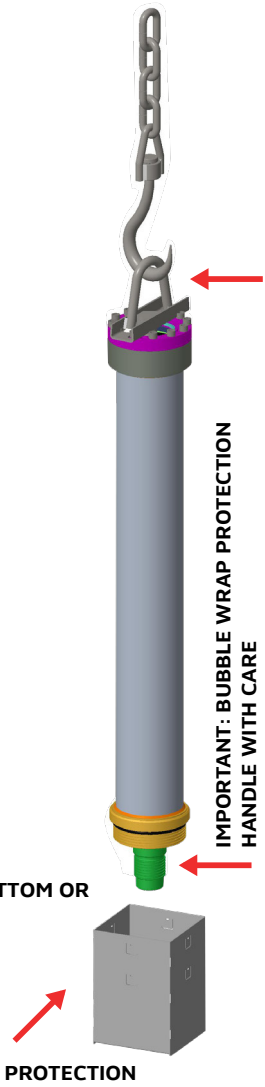


Fig 5

6. Screw in the rod by approximately 90% using the fastening clip first. Lift the piston rod of about 50 cm to allow the second clip to be fixed to the lower piston rod. Make sure the second fastening clip is placed on the lower cylinder joint in order to prevent the rod from dropping. **(Fig 6)**

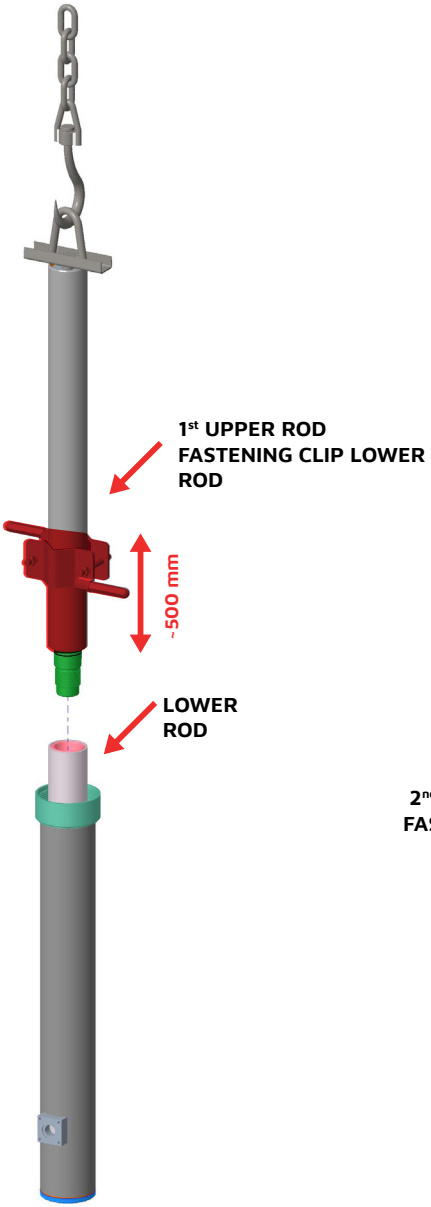


Fig 6

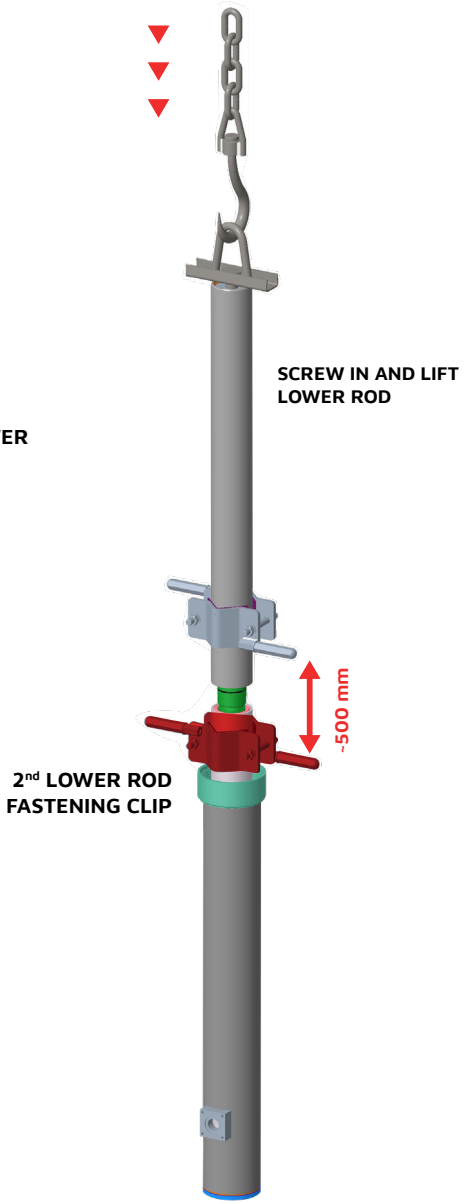


Fig 7

7. Unscrew the upper rod. Apply the supplied thread-blocker "Loxeal 86-55" to the first 2 or 3 threads only. Tighten fully, without interruption, checking that it is perfectly sealed (applying a light force). Unscrew by 90° to give a quick final tightening, using the clip with two hands. Make sure that the reference lines are perfectly aligned: this is an indication of a correct tightening. **(Fig 8-9-10)**

8. After tightening the rod, make sure that there are no sharp edges or roughness at the joint (if necessary remove them using the emery cloth supplied). **(Fig 10)**

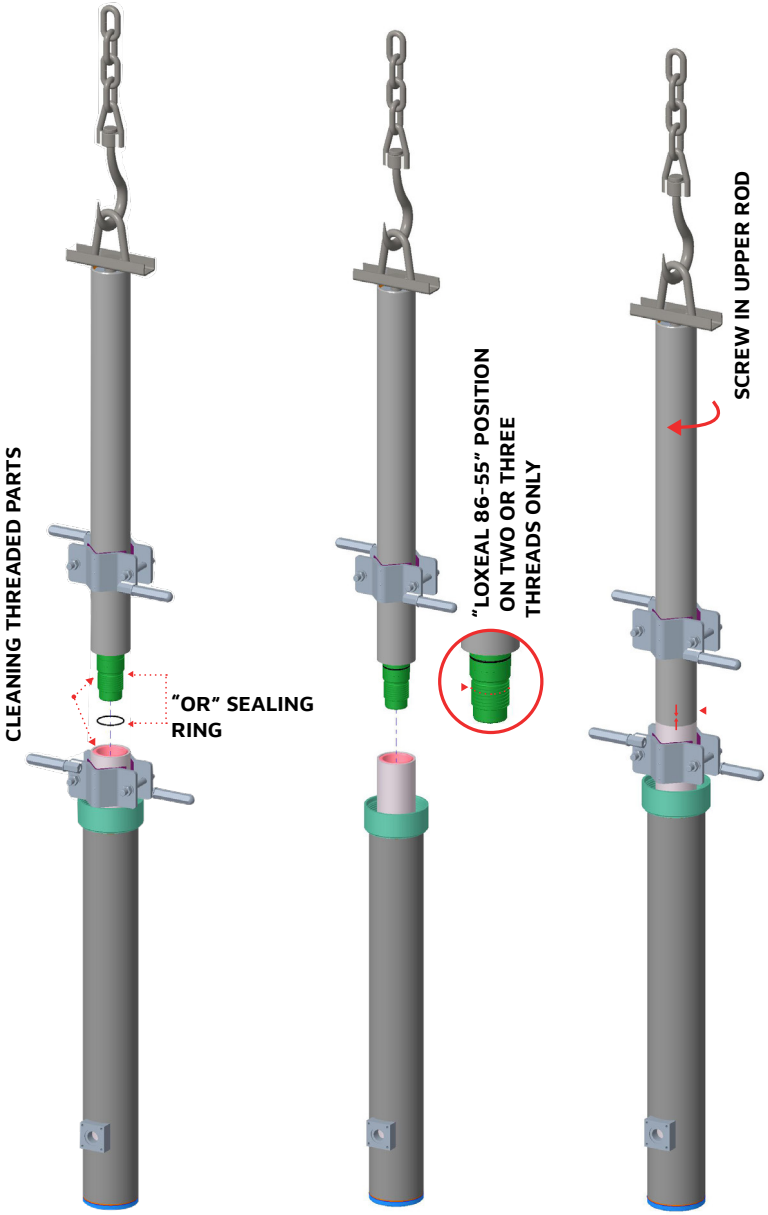


Fig 8 Fig 9 Fig 10

9. Remove the clips from the rod, then position the latter at the bottom of the cylinder; remove the transport hook. **(Fig 11)**

10. Fix the transport hook to the welded head, using the two screws supplied. **(Fig 11)**

11. Slide the cylinder onto the piston rod carefully, tightening the whole unit. Remove the transport hook. **(Fig 12)**

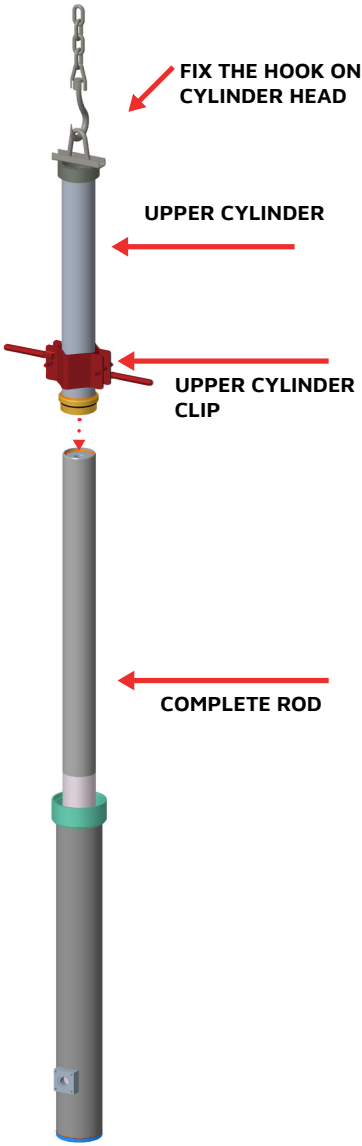


Fig 11

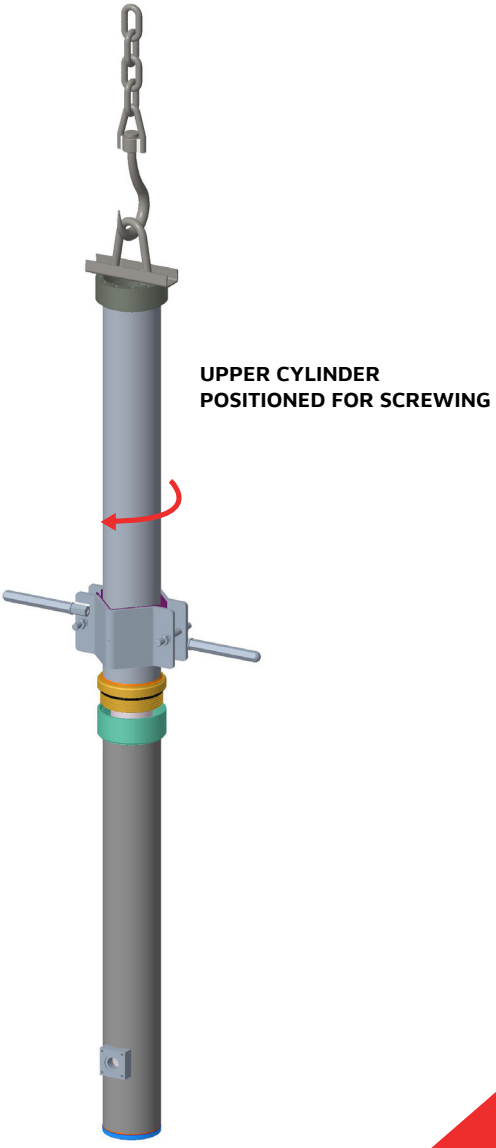


Fig 12

12. Assemble the seal-bearing head, making sure the screws are perfectly tightened; insert the fitting with the oil recovery tube. For a correct assembly of the seal kit, refer to the relevant instructions. **(fig 13-14)**

13. Secure the upper cylinder in place, ensuring it is perfectly plumb.

14. The piston is ready for use (only for central direct pistons, it is necessary that you wait at least 24 hours before inserting the oil)

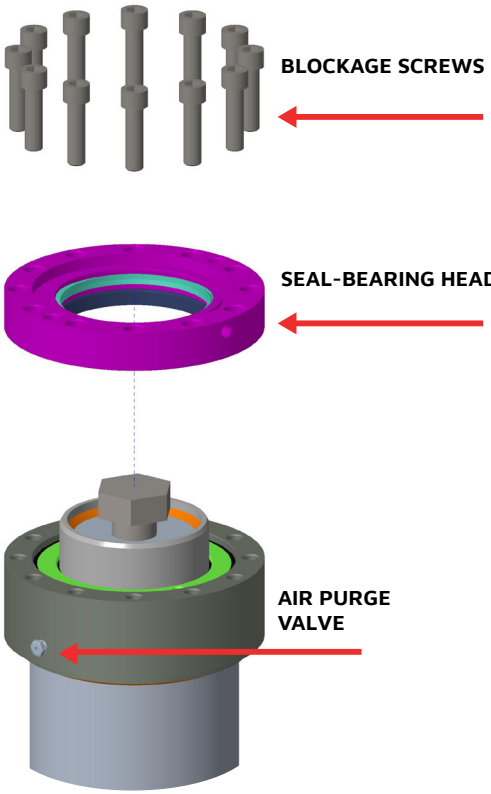


Fig 13

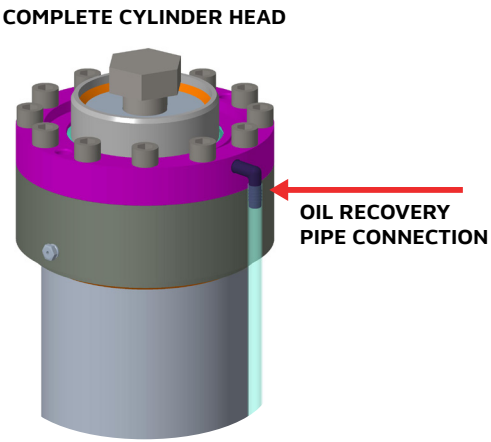


Fig 14

WARNING: During the first stroke, check the piston rod for damaged or imperfect surfaces. If necessary, remove them with the supplied emery cloth.

Description

High-strength anaerobic adhesive for metal used for fastening cylindrical couplings and sealing threaded joints at medium hardening speeds.
Due to its high viscosity and thixotropic properties, it is capable of filling considerable tolerance requirements.
Highly resistant to heat, corrosion, vibration, water, gases, oils, hydrocarbons and other chemicals.

PHYSICAL PROPERTIES

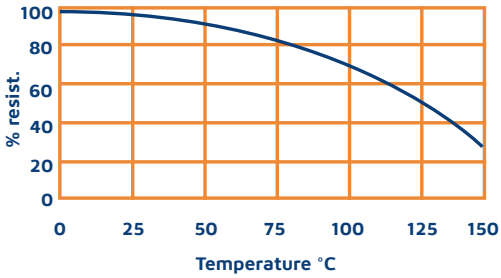
Composition : anaerobic meth-acrylic resin
Colour : red
Viscosity (+25°C - mPa s) : 5,000 - 8,000
Specific weight (g/ml) : 1.1
Detection : fluorescent in blue light
Flashpoint : > +100°C
Storage stability : 1 year at +25°C in original containers
Max. thread diameter/max. joint tolerance: 2"/ 0,30mm

POLYMERISATION FEATURES

The speed of polymerisation depends on the play between the parts, the type of material and the temperature. Functional strength is usually obtained within 1 to 3 hours. For final strength, a time of 24 to 36 hours is required. In case of passive surfaces and/or low ambient temperatures, instantaneous polymerisation can be achieved by using Loxeal Activator 11. However, its use may reduce the final strength.

Environmental Strengths

The graph below shows the mechanical strength of the product (expressed in %) as the temperature increases.
Steel specimen - ISO 4587



PROPERTIES OF THE POLYMERISED PRODUCT

M10 x 20 Zn bolts - grade 8.8 - nut h = 0.8 d at +25°C :
Time of manipulation : 60 - 90 minutes
Functional hardening time: 12 - 24 hours
Final hardening time : 24 - 48 hours
Initial torque (ISO 10964): 15 - 35 N m
Residual torque (ISO 10964) : 15 - 45 N m
Creep / shear strength (ISO 10123): 10 - 20 N/mm2
Temperature tolerance : -55°C/+150°C

Resistance to chemicals

Test carried out after 24 hours of polymerisation of the product at the indicated temperature.

Substance	°C	Resistance after 100 h	Resistance after 500 h	Resistance after 1000 h
Motor oil	125	excellent	excellent	excellent
Gearbox oil	125	excellent	excellent	excellent
Petrol	25	excellent	good	good
Water/glycol 50%	87	excellent	good	good
Brake fluid	25	excellent	excellent	excellent

* For further information on resistance to other chemicals, please contact Loxeal Technical Service.

INSTRUCTIONS FOR USE

The product is suitable for use on metal surfaces. Clean and remove any grease from surface with Loxeal Cleaner 10. Apply sufficient product to completely fill the joint. Assemble normally and wait for polymerisation. The liquid product can damage paints and elastomers; contact, even accidental, with some thermoplastics can generate stress cracking phenomena, which are often not immediately noticeable. For applications on non-metallic materials, please contact Loxeal Technical Service. For the disassembly of assembled parts, use conventional tools. Wherever possible, disassembly will be facilitated by heating to +150°C/+250°C. Mechanically, remove the hardened product, then finish cleaning using Acetone solvent.

Product storage

Keep the product in a cool, dry place at a temperature not exceeding +25°C. To avoid contamination, do not refill the bottle with any product left over from previous applications.
For further details regarding applications and storage, please call Loxeal Technical Service.

Safety and manipulation

Please refer to the safety instructions before its use.

Note

The above values, worked out in our laboratories, are purely informative, therefore do not constitute any form of supply specification. For further information, please call Loxeal Technical Services.

Loxeal guarantees the consistent quality of products supplied in accordance with its specifications. Due to the different types of materials available on the market and the fact that the application conditions are beyond our control, the user shall verify with appropriate tests the suitability of the product for the specific use under consideration. Loxeal expressly disclaims any express or implied warranties, including warranties of merchantability and suitability for a particular purpose, arising out of the sale or use of any Loxeal product. Loxeal expressly disclaims all liability for damage of any kind, whether incidental or resulting from the misuse of the product, including a loss in profits.

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LIST OF POSSIBLE ITEMS TO BE DISPOSED OF ACCORDING TO NATIONAL ENVIRONMENTAL PRESERVATION REGULATIONS:

PLASTICS
Plastic protective film, rubber caps, bubble wrap

METAL WASTE
Metal protection parts and transport hooks. Transport baskets for several pistons: if possible return to Moris Italia. Alternatively dispose of as metal waste.

CARDBOARD

UNDIFFERENTIATED
Oily paper

HYDRAULIC OIL
Hydraulic oil and rags soaked in oil: contact specialised companies, operating in line with the standards in force in the country where you are working.

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