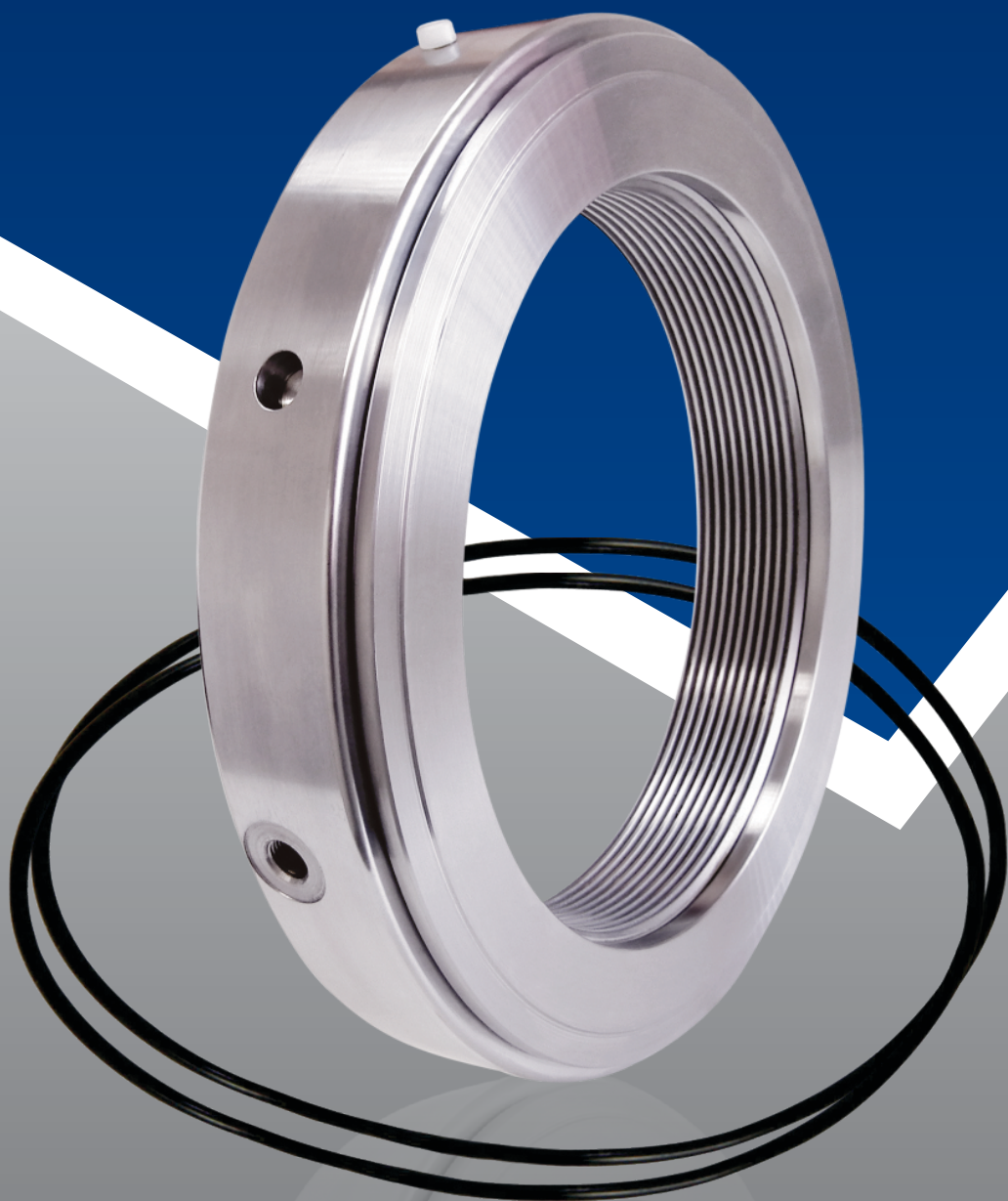


# BGI<sup>®</sup>

**BERTOLOTO & GROTTA**



**INSTRUCTIONS FOR  
HYDRAULIC NUTS HMVE  
ORING REPLACEMENT**

## A ) REQUIRED MATERIAL

- 1 Marker pen;
- 1 Small screwdriver (suggested 1/8" edge);
- 1 Large screwdriver (suggested 5/16" edge);
- 6 Rubber pieces (approx. 50x50 mm);
- 3 "C" clamps (bar clamps);
- 1 Rubber hammer or with plastic edges;
- 1 Caliper, measuring tape or ruler;
- 1 Brush;
- Hydraulic oil** (oil used for HMV operation);
- 2 Nylon clamps;
- 1 ORING set (internal and external).



## B ) LOCATION

The use of a bench or table covered with a rubber coat to avoid accidents or damage to the part is advisable.

## C ) REMOVAL OF THE PISTON

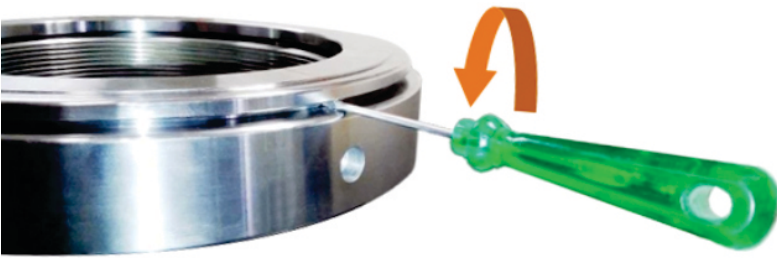
**1-**Mark 3 equidistant dots on the surface of the Piston and give them numbers, as shown by the figures below.



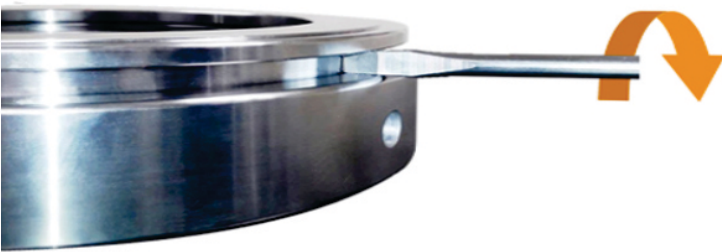
**2-**With the help of the rubber hammer, introduce the small screwdriver into DOT 1 as shown by the figure below. Repeat the operation for DOTS 2 and 3.



**3-**Introduce again the small screwdriver into DOT 1 and turn the driver so to displace the Piston, as shown by the next figure. Repeat the operation for DOTS 2 and 3.



**4-** Position the large screwdriver onto DOTs 1, 2 and 3 and, turning the driver, displace the Piston in appropriate balance until fully displacing it.



**5-** Position the shaft of the small screwdriver as a wedge over DOT 1, lean the large screwdriver over the shaft of the small screwdriver and repeat step 4.



**6-** If the Piston has not been fully disengaged, use a thicker wedge or lever it with the large screwdriver, as shown by the figure at the side.



## ATTENTION

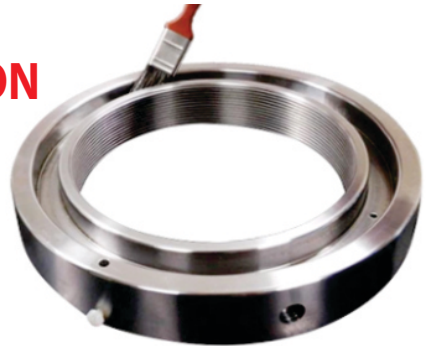
NEVER ATTEMPT TO REMOVER THE PISTON USING HYDRAULIC FORCE. THIS MAY DISTORT THE PISTON AND/OR CAUSE ACCIDENTS.

### D ) REPLACEMENT OF THE O-RING SET

- 1-Remove the o-rings from the Piston. Avoid tools which may scratch or damage the lodging trays or adjacent parts.
- 2-Clean the lodging trays of the rings. Check if there is damage on those parts (chips or burrs) and provide for maintenance if necessary.
- 3-Fit the new o-rings in the trays.

### E ) ASSEMBLY OF THE PISTON

- 1-Oil the Piston lodging as shown by the figure at the side.



- 2-Fit the Piston into the nut tray and fix both parts by using two nylon clampers as shown by the figure at the side.

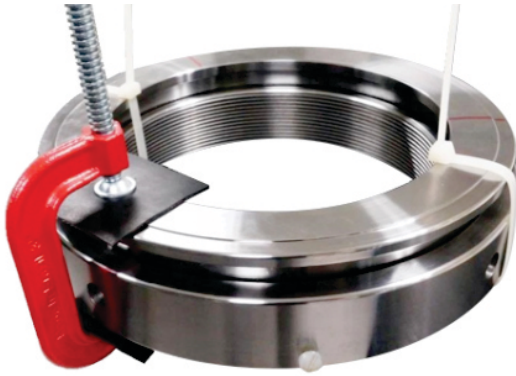




## REMARK

IT IS IMPORTANT THAT THE PISTON DOES NOT LOSE ALIGNMENT DURING THE ASSEMBLY. FOR BETTER CONTROL, 3 CLAMPS SHOULD BE USED.

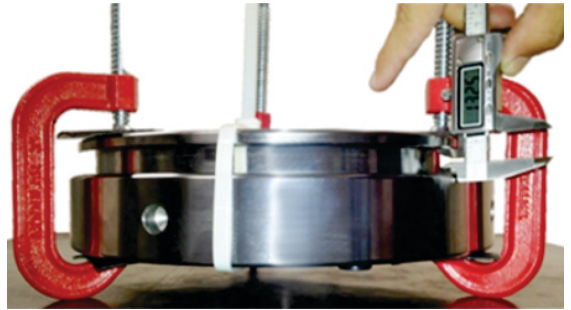
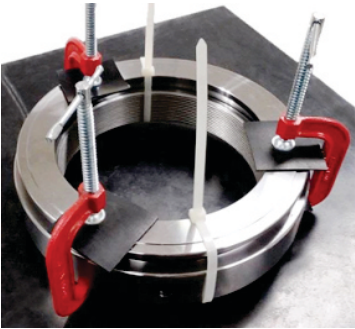
**3-**Protect HMV faces (with rubber) and fix the "C" clamp on DOT 1 as shown by the figure below.



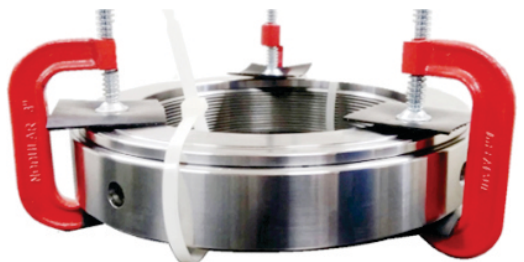
**4-**Position HMV vertically (on foot). Repeat step 3 for DOTs 2 and 3 as shown by the figures below.



**5-**Position HMV horizontally (lying). With the help of a caliper, measuring tape or ruler, check the distance (gap) between the flap of the Piston and the nut at each one of the three dots to which the “C” clamps have been fixed. Fluctuation in measurements between the dots should not be higher than 1 mm. If required, gently tighten (max. ¼ turn) the “C” clamp with the higher measurement and re-check.



**6-**Gently turn the 3 adjustment shafts of the “C” clamps (one at a time). The recommended turning is just ½ turn. Repeat this operation until the flap of the Piston abuts the face of the nut as per the figures below.



**7-**Remove the nylon clamps and check if the Piston fully abuts the nut.

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