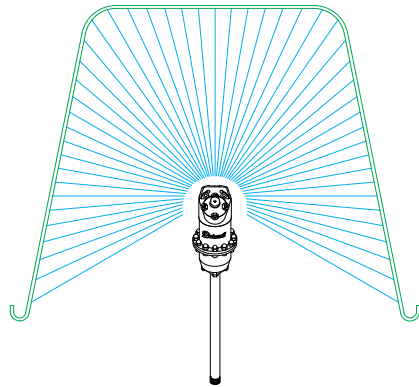
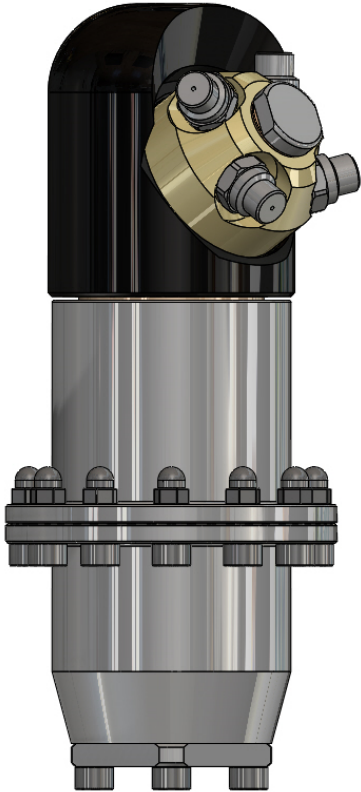


# **Bolondi** Cleaning Heads



## **INSTRUCTION MANUAL MANUAL HEADS MOD. SW 049.07**

SERIAL N°: XXXXXXXX



**WARNING:** THIS MANUAL IS AN INTEGRAL PART OF THE MACHINE AND MUST BE READ AND KEPT FOR REFERENCE.

**Translation of the original instructions**

SW 049.07-MANUAL Rev.02  
Last update 18.11.2019

# INTRODUCTION

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## DECLARATION OF INCORPORATION OF INCOMPLETE MACHINES

The undersigned Bolondi Ivano in his role of Legal Representative of Officina meccanica Bolondi Ivano and Person authorised to constitute the technical folder, DECLARES under his own responsibility that the material supplied, indicated in this manual and to which this declaration refers, consists of a washing head that complies with:

- The applicable essential safety requirements (1.1.2 – 1.1.3 – 1.1.5 – 1.3.1 – 1.3.2 – 1.3.3 – 1.3.4 – 1.3.9 – 1.5.1 – 1.5.2 – 1.5.3 – 1.5.4 – 1.5.6 – 1.5.7 – 1.5.8 – 1.5.13 – 1.5.14 – 1.6 – 1.7) of appendix I of machinery directive 2006/42/EC
- The applicable essential safety requirements of directive 2014/68/UE (pressurised equipment classified in art. 4 cat. 3)

It also complies with the following harmonised European standards:

ISO TR 14121-2:2013 - Guidance document for risk assessment

UNI EN ISO 12100:2010 - Safety of machinery - General principles for design.

The undersigned also declares that the incomplete machine cannot be started-up until the machine on which it will be incorporated and of which it will become part has been identified and declared to be compliant with the provisions of directive 2006/42/EC; in other words until the incomplete machine to which this declaration refers has become an integral part of the end machine.

The pertinent technical documents have been drawn-up in compliance with appendix VII B. We shall forward the information concerning the incomplete machine by fax, e-mail or other means following a reasonable request from National authorities.

*(00A-01CE-00-EN)*

BOLONDI IVANO  
The legal representative  
Ivano Bolondi



## REFERENCE LEGISLATION

### AIRBORNE NOISE AND VIBRATIONS:

Sound intensity measurements relating to the noise produced by the machine were taken in compliance with DIR. 2006/42/CE.

The acoustic pressure was measured at the workstation, at 1 m from the machine surface and 1.6 m off the ground, in normal machine operating conditions.

Sound intensity measurements gave readings below 70 dB(A).

Measurement of vibrations was not made as these were considered clearly below risk levels.

The intensity of the sound produced by machine operation is normally below sound intensity caused by the impact of washing water against the walls to be washed.

*(00D-LdrCE-00-EN)*


## TERMS OF WARRANTY

- 1) The manufacturer guarantees the rotating head to be free of manufacturing or material defects.
- 2) Warranty: 2 years for EC countries, 1 year for countries outside the EC (valid from date of delivery).
- 3) The warranty excludes: all parts subject to normal wear, damage due to carelessness or improper use.
- 4) The validity of the warranty shall be decided indisputably by the manufacturer.
- 5) The warranty excludes labour and transport costs, which are always the responsibility of the purchaser.
- 6) All spare parts replaced under warranty must be returned to the manufacturer, carriage paid, within a maximum of 20 days.
- 7) The warranty on the finished product or its components shall be void if the product is tampered with, modified, or has parts manufactured by third parties installed on it without prior authorisation from Bolondi.
- 8) Competent court: Judicial Authority of the court of Reggio Emilia, Italy  
*(00C-Garanzia-00-17)*

# 1) INTRODUCTION

Read this operating and maintenance manually carefully before using the head. Only by following the instructions herein and becoming familiar with the symbols used is it possible to obtain conditions of maximum efficiency and safety. The contents of this manual are in compliance with machine directive 2006/42/CE and subsequent amendments. The Manufacturer reserves the right to make any modifications without notice and without incurring any sanctions on condition that the main technical safety features are not affected. The Manufacturer is not responsible for personal injury or material damage resulting from the non-observance of the indications that accompany the symbol.



The symbol  represents a safety warning. Failure to follow the instructions given can cause serious personal injury.

## **N.B.:**

For accident prevention purposes the equipment must be fitted with suitable devices to prevent automatic re-starting when the equipment is powered after a shut-down. The head must not be used without these devices. The Manufacturer declines all responsibility in the case of improper use of the equipment.

## **N.B.:**

Please consult the chapter EXPLODED VIEW for all the numbers and references in the manual.

*(01-000-00-EN)*

## 2) RECEIVING AND UNPACKING

### 2.1) CHECKING AND UNPACKING

2.1.1) On receipt, make sure that the model and technical specifications correspond with the order.

2.1.2) Make sure that goods were not damaged during transport.

2.1.3) Any damage found when the goods are received must be documented and the sender informed within 3 days of receipt.

2.1.4) Disposal of packaging: the purchaser is responsible for following the correct procedure and applicable regulations in their country for disposing of the consumables and refuse created by unpacking the product.

#### ***INSTRUCTIONS FOR CORRECT WASTE MANAGEMENT.***

|                               |                     |
|-------------------------------|---------------------|
| Material: Paper and cardboard | (EWC code 15 01 01) |
| Plastic                       | (EWC code 15 01 02) |
| Wood                          | (EWC code 15 01 03) |

### 2.2) DEMOLITION AND DISPOSAL

It is the purchaser's responsibility to follow the correct procedure and comply with the current laws in force in his country as regards to disposing of consumables and materials resulting from demolition.

Please remember that by waste is meant any substance or object under obligation of disposal.

According to their origin and pursuant to the above mentioned Decree, waste products are classified as urban or special waste and, depending on their dangerous characteristics, as hazardous or non-hazardous waste.

Waste resulting from the demolition of the machine is classified as special waste.

**WARNING! It is forbidden to mix together different categories of hazardous waste and hazardous waste with non-hazardous waste.**

#### ***INSTRUCTIONS FOR THE MOST APPROPRIATE HANDLING OF WASTE.***

##### **Ferrous materials (EWC code 17 04 05)**

As this is recyclable material (secondary raw materials), it should be taken to an authorised collection centre.

##### **Plastic materials (EWC code 16 02 16)**

Recycling permitted where landfill disposal is performed for urban-type waste.

Incineration permitted in plants equipped with post-combustion and fly-ash capture systems.

Follow applicable national legislation, as amended.

(02-000-00-EN)

### 3) CONDITIONS AND LIMITS OF USE

3.1) Never point the jet of water at people, animals or electrical parts.

3.2) Always check that the equipment and the safety features are in good working before using the machine. It is forbidden to use the equipment if it is not in perfect condition.

**3.3) Intended use: the head was designed exclusively for washing closed containers.**

3.4) Improper use: any other use that does not comply with the safety standards indicated in this manual is to be considered improper.

3.5) Declaration of the manufacturer: if the head is installed, as a component, on machines or systems, it is forbidden to use it before the latter have been declared to comply with the provisions of the Machine Directive.

*(03-000-00-EN)*






## 4) GENERAL SAFETY INSTRUCTIONS

- 4.1) The equipment must be started only by personnel in charge of the plant and only after it has been validated.
- 4.2) Ensure that the device is securely blocked by the flanging.
- 4.3) When the equipment is inside the container or plant, check that it does not collide with any of the moving parts.
- 4.4) Before start-up, check that all the openings, valves, etc., are closed and allow no pressurised jets escape.
- 4.5) Make sure the supply pipes and connection fittings are suitable for the working pressures/flow rates and for the type of fluids used.
- 4.6) Ensure that the screwed coupling of the connecting hoses is airtight.
- 4.7) Make sure the supply motor pump is fitted with a relief valve and its setting is compatible with the head.
- 4.8) Make sure the quantity and diameter of the nozzles are suitable for the characteristics of the plant (pump pressure and flow).
- 4.9) The high pressure hose must be perfectly intact (to avoid the risk of bursting). If the high pressure hose is damaged, it must be replaced immediately.
- 4.10) Do not inspect the container or plant when the head is working or in the presence of considerable quantities of vapour.
- 4.11) Each time before using and after each use, make sure the screws are perfectly tight.  
**See table B “tightening torques”.**

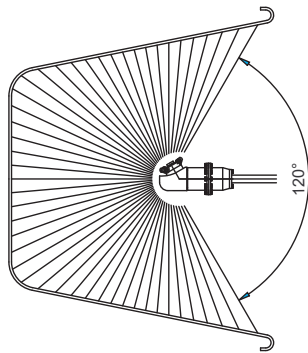
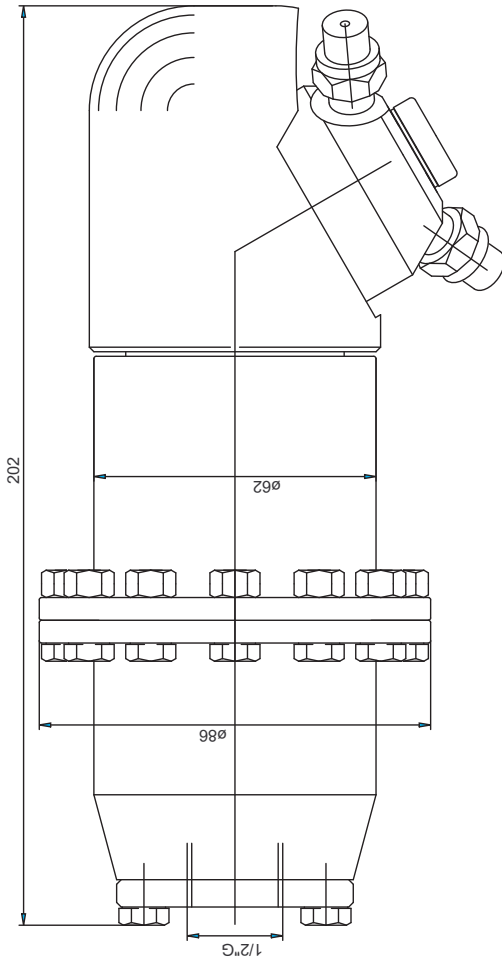



- 4.12) The symbol  marked on the head draws the operator's attention to situations that could jeopardise workers' safety.
- 4.13) The general safety and accident prevention regulations laid down by law must be observed, as well as the warnings given in the operating instructions.

(04-000-00-EN)

## 5) TECHNICAL SPECIFICATIONS

|                              |                      |
|------------------------------|----------------------|
| FLOW                         | 15 - 60 LT/MIN       |
| MAX PRESSURE                 | 150 BAR              |
| HYDROSTATIC TEST PRESSURE    | 255 BAR              |
| MAX OPERATING TEMPERATURE    | 90 °C                |
| WATER INLET                  | 1/2"                 |
| FILTER                       | 700 MICRON           |
| NUMBER OF NOZZLES            | 2 - 3 - 4            |
| NOZZLES                      | 1/8" NPT             |
| O.RING                       | NBR - EPDM - VITON   |
| SEALS                        | PTFE + CARBON FIBRE  |
| MATERIAL                     | AISI 316 - ALUMINIUM |
| MIN.CENTER LINE THROUGH HOLE | 88 MM                |
| DIFFUSER                     | SEE CHART "A"        |
| FULL CYCLE TIME              | 14 MIN A 100 RPM     |
| WEIGHT                       | KG 3,500             |

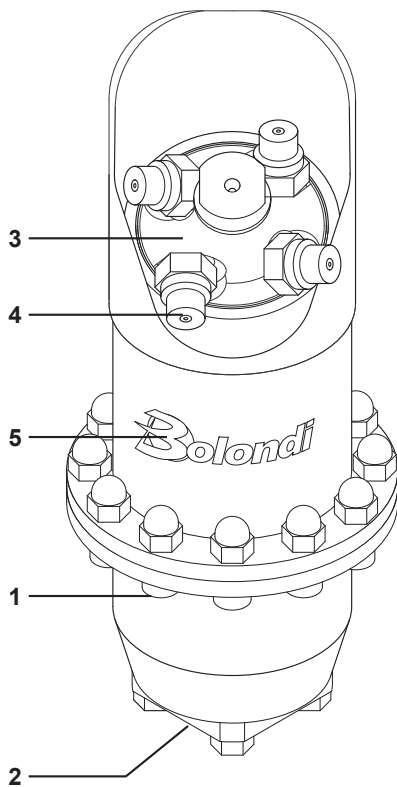


|   |  |                                    |  |
|---|--|------------------------------------|--|
|  |  | <b>DM</b><br>DISEGN.: CR   CONTR.: |  |
| CLEANING HEADS<br>MONTECCHIO E. (RE) - ITALY                                      |  | VERSIONE<br>DATA: 13.11.19         |  |
| VERSIONE 01   |  | 04 05                              |  |
| FOGLIO 11.05.06   |  | 01.01.12 01.06.12                  |  |
| DATA 01.03.07   |  | 20.07.07 08 09 10                  |  |
| VERSIONE 06   |  | 07 08                              |  |
| FOGLIO 0020   |  | 0036                               |  |
| DATA 01.01.17   |  | 13.11.19                           |  |
| NOTE: XXXXX   |  |                                    |  |
| DESCRIZIONE: SW049-AA.07  |  |                                    |  |
| CODICE:   |  | <b>SW049-AA</b>                    |  |

## 6) DIAGRAM OF THE ASSEMBLY

- 1) Main body
- 2) Inlet connection
- 3) Nozzle-holder
- 4) Nozzles
- 5) Identification plate

(06-000-00-EN)





## 7) INSTALLATION AND COMMISSIONING (WARNINGS)



During installation and commissioning, comply with the indications in Chapter 04 of the General Safety Standards in this Manual. If the aforesaid indications are not complied with, the Manufacturer shall not be held liable.



See the Technical Data Chapter in the Manual for the pump/head connection and fastening.



Before switching on, it is advisable to flush the system to get rid of any waste or impurities.

Any breakage or problem due to waste and/or impurities is not covered by the warranty.



It is advisable to install a 60 micron filter between the head and the pump assembly.



Install a safety valve on the head delivery, set at the maximum pressure indicated on the rotating head or in the Technical Data Chapter in this Manual.



N.B. Do not turn the nozzle holder by hand

**IMPORTANT:** The head is calibrated with the specifications required in the order.

If there are any changes to these parameters, please contact the Manufacturer.

Any breakages or problems due to parameters that do not conform with specifications, shall not be covered by the warranty.

*(07-AQM-00-EN)*

## 8) CHOICE OF DIFFUSER ACCORDING TO FLOW RATE

Upon consignment, the head is built as requested in the order placed.

If the flow rate is varied, for best use replace the diffuser pos. 33.

From table "A", choose the most suitable diffuser pos.33 for the new parameters.

It is understood that in the event of variations, the nozzles pos. 55 must also be replaced.

Before you make any changes you are recommended to contact the manufacturer.

To replace the internal diffuser, follow the procedure described in the maintenance chapter.

| TABLE "A"                   |        |        |        |        |        |        |        |        |        |
|-----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| FLOW LT/MIN                 | 15-18  | 20     | 25     | 30     | 35     | 40     | 45     | 50     | 55-60  |
| DIFFUSER CODE               | DF1402 | DF1404 | DF1403 | DF1409 | DF1405 | DF1406 | DF1410 | DF1408 | DF1419 |
| PARAMETERS: 100BAR - T=20°C |        |        |        |        |        |        |        |        |        |

(08-CA0280-00-EN)



## 9) MAINTENANCE

### ATTENTION:

Disconnect the head from the hydraulic system before starting any routine or special maintenance.

(N.B. For all the numbers and references appearing in the chapter, see the spare parts exploded diagram)

(N.B. For all tightening jobs using a torque wrench, please consult table "B")

Lubricant recommended for maintenance: PETRONAS TUTELA ZETA 2 grease

### 9.1) Cleaning the inlet filter pos.63.

#### Disassembly

9.1.01) Loosen and remove the screws pos. 57, disassemble the filter holder flange pos.62, and remove the cartridge pos.63 (Fig.9.00).

9.1.02) Clean the cartridge pos.63 thoroughly, make sure there is no breakage, and fit back in place (pay attention as shown in fig.9.01)

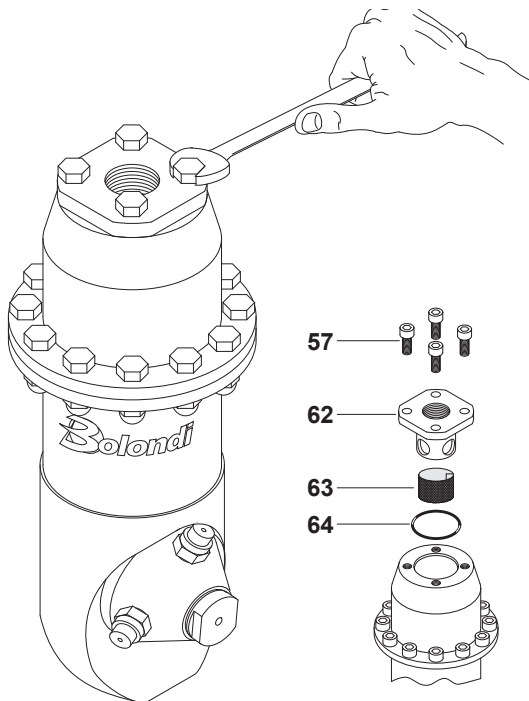


Fig. 9.00

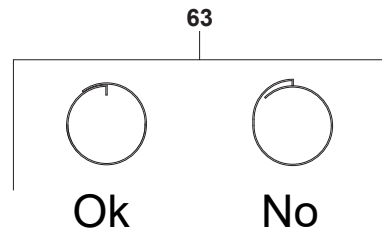


Fig. 9.01

## Assembly

9.1.03) Grease the filter holder flange pos.62 by the O-ring pos.64.

9.1.04) Put the filter holder flange pos.62 back in its seat.

9.1.05) Tighten the screws pos.57 using a torque wrench.

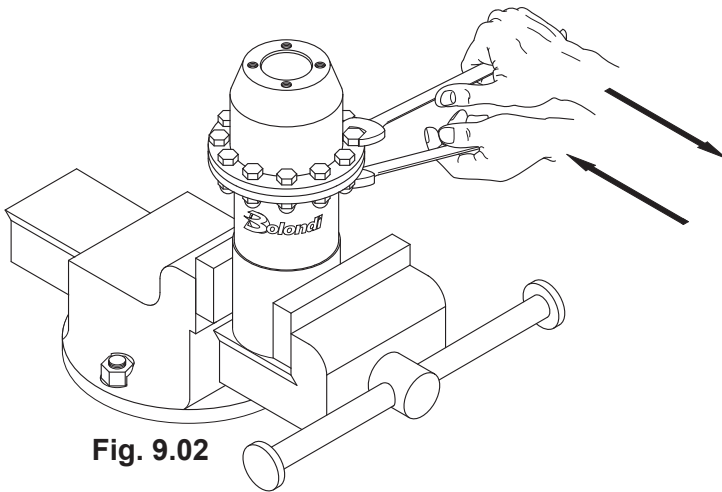
## 9.2) Replacing the diffusor pos.33.

### Disassembly

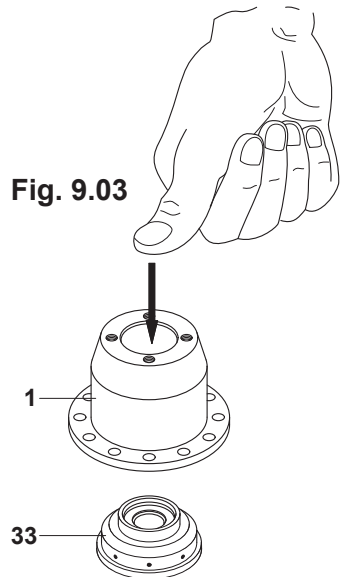
9.2.01) Remove the inlet filter as explained in section 9.1.01.

9.2.02) Use a 5mm allen wrench and 10mm ring spanner to loosen the twelve screws and the twelve nuts pos.57 and pos.58, see fig.9.02.

9.2.03) Remove the top casing pos.1 and push out the diffusor pos.33 (Fig. 9.03), then replace it after having selected the desired diffusor as per table "A" chapter 8.



**Fig. 9.02**



**Fig. 9.03**



## Assembly

9. 2.04) Fit the diffuser on the impeller kit "G", making sure to position the washer pos.5 correctly (see fig.9.04).

9.2.05) Position the top casing and secure it with the twelve screws pos.57 and the nuts pos.58.

Use a torque wrench to tighten.

9.2.06) Re-fit the inlet filter as specified in section 9.1.03 to 9.1.05.

## 9.3) Replacing seals pos.23 in the nozzle holder hub pos.27.

### Disassembly

9.3.01) Use a 17mm fixed jaw spanner to unscrew the pin pos.21 (Fig.9.05).

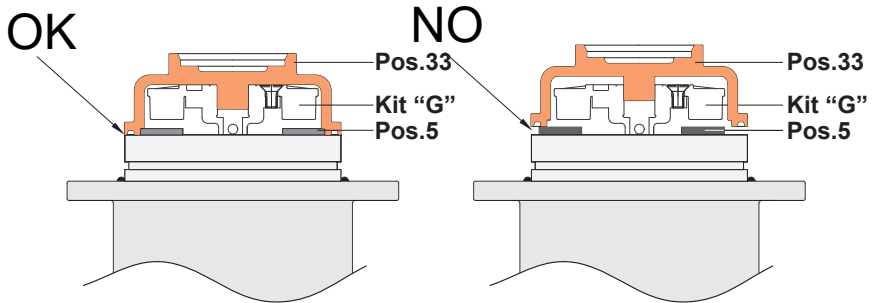


Fig. 9.04

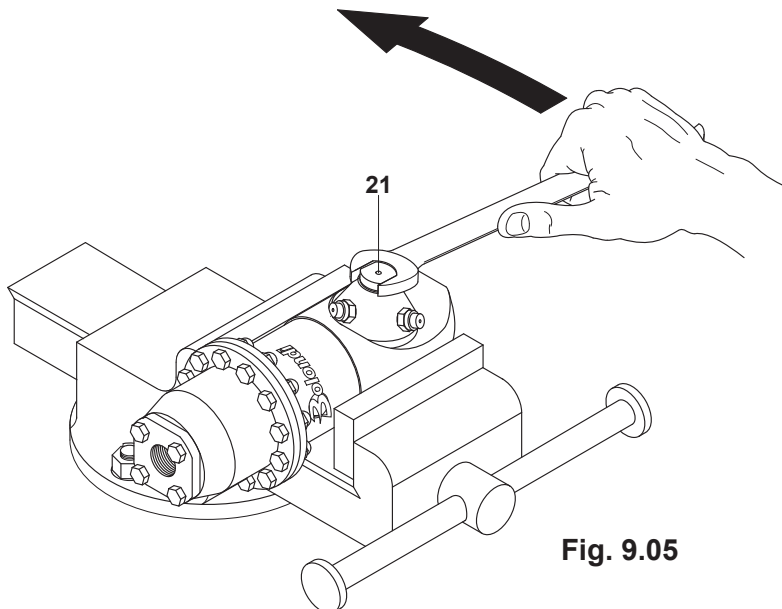
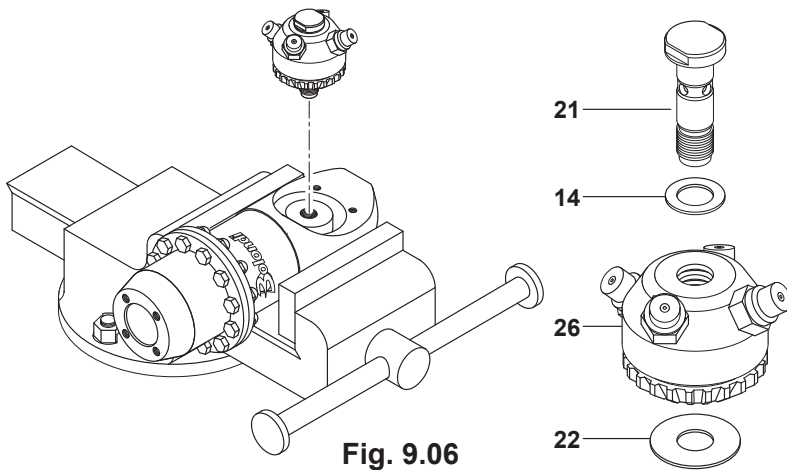


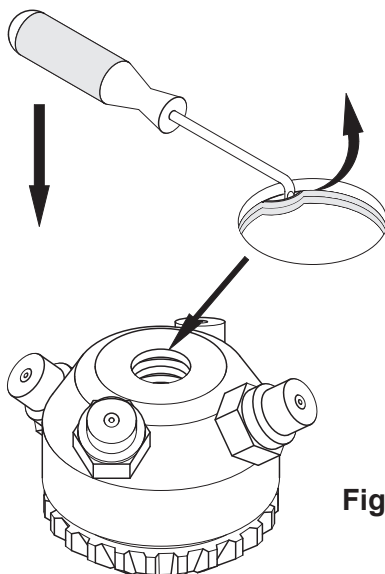
Fig. 9.05

9.3.02) Slide out the pin pos.21 from the nozzle holder crown and remove the washers pos.22 - 14 (Fig.9.06).

9.3.03) Use the dedicated tool to remove the seals and the O-ring pos.23 from their seats on the nozzle holder unit (Fig.9.07).



**Fig. 9.06**



**Fig. 9.07**

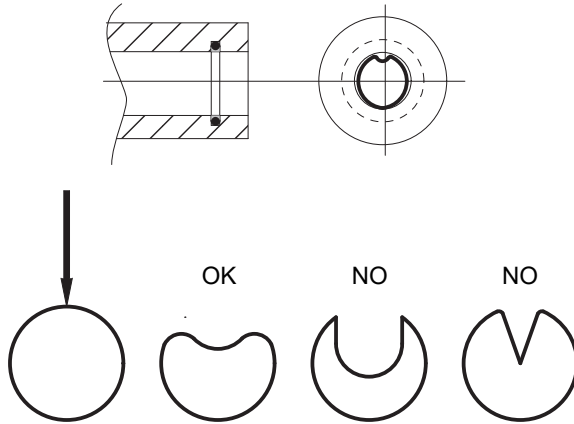
## Assembly

9.3.04) Put the O-ring back in its seat first and then the seal ring pos.23, making it adhere perfectly to the O-ring using a blunt tool.

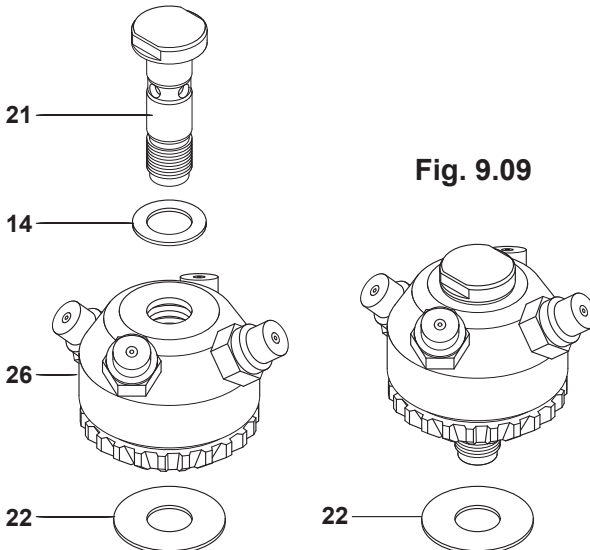
To facilitate the introduction of the ring, follow the indications shown in fig.9.08.

9.3.05) Make sure all components are fitted correctly in their seats and lubricate with grease.

9.3.06) Fit the washer pos.14 on the pin pos.21 first, then insert the pin in the nozzle holder crown (to make it easier to fit the threaded part through the seals, turn as if screwing), then fit the second washer pos.22 (Fig.9.09).

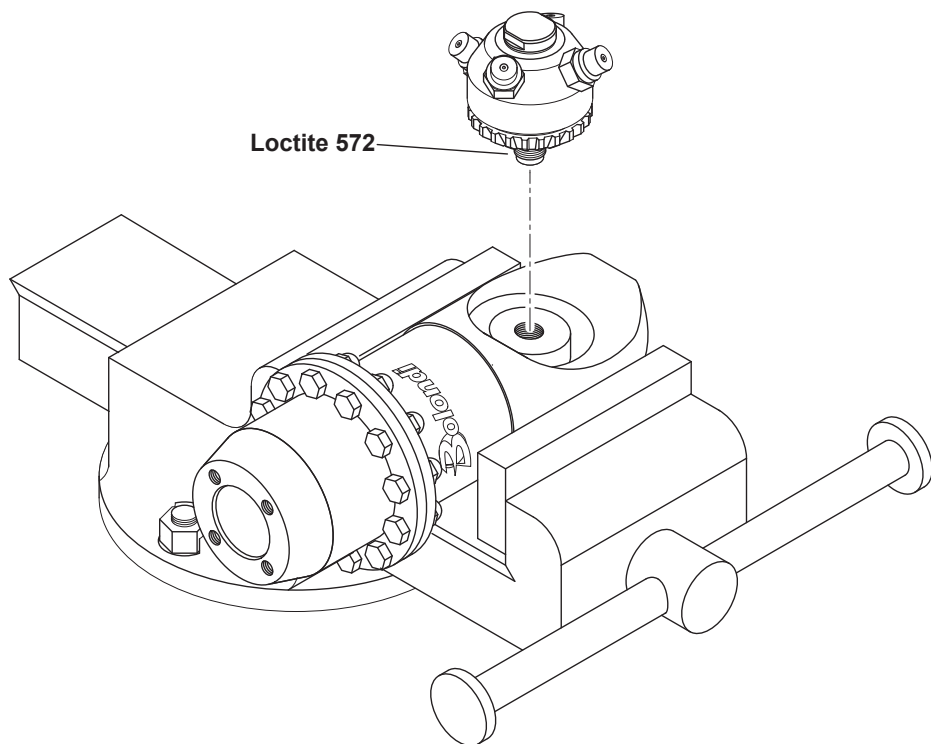


**Fig. 9.08**



**Fig. 9.09**

9.3.07) Apply a few drops of loctite 572 on the thread of the pin pos.21, screw the complete unit onto the casing pos.49 (Fig.9.10), and tighten using a 17mm fixed jaw spanner, checking for correct coupling of the bevel gears pos.12 and pos.26 (see exploded view diagram). Use a torque wrench to tighten.



**Fig. 9.10**

## 9.4) Replacing the seals pos.23 situated in the pinion pos.12.

### Disassembly

9.4.01) Use a 17mm spanner to loosen the pin pos.21 as explained in sect.9.3.01 and remove the complete unit.

9.4.02) Disassemble the top casing pos.1 as explained in sect.9.2.01 to sect.9.2.03.

9.4.03) Take all the parts off the head as shown in fig.9.11 and fig.9.12.

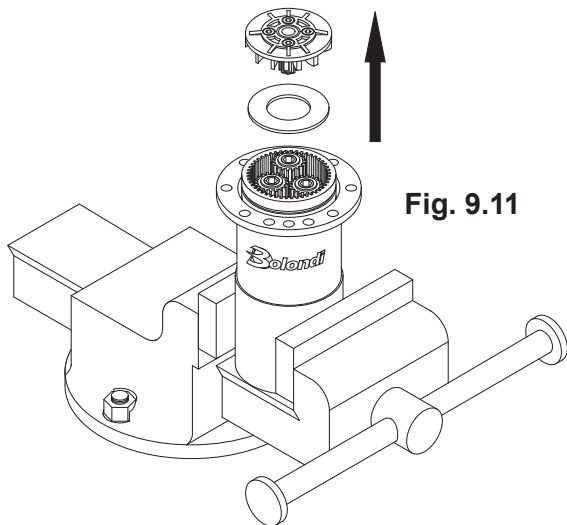


Fig. 9.11

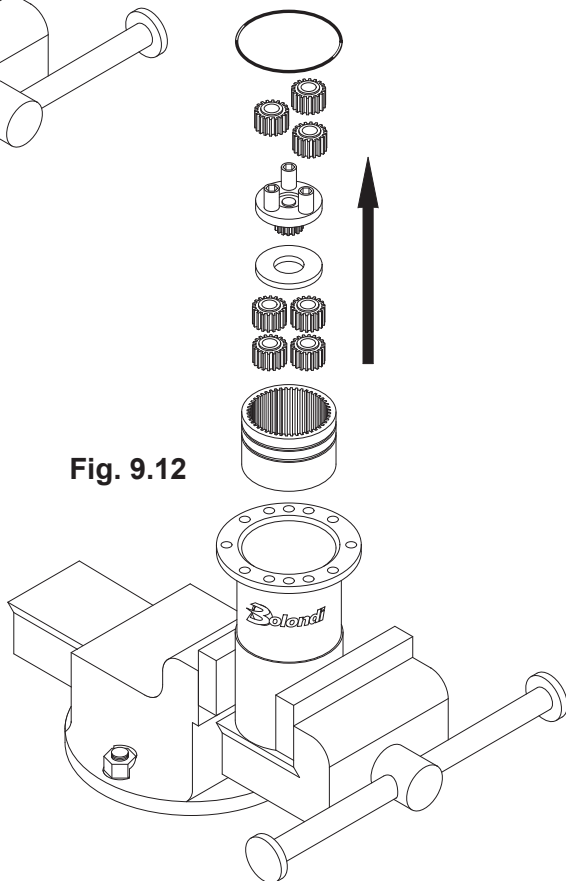
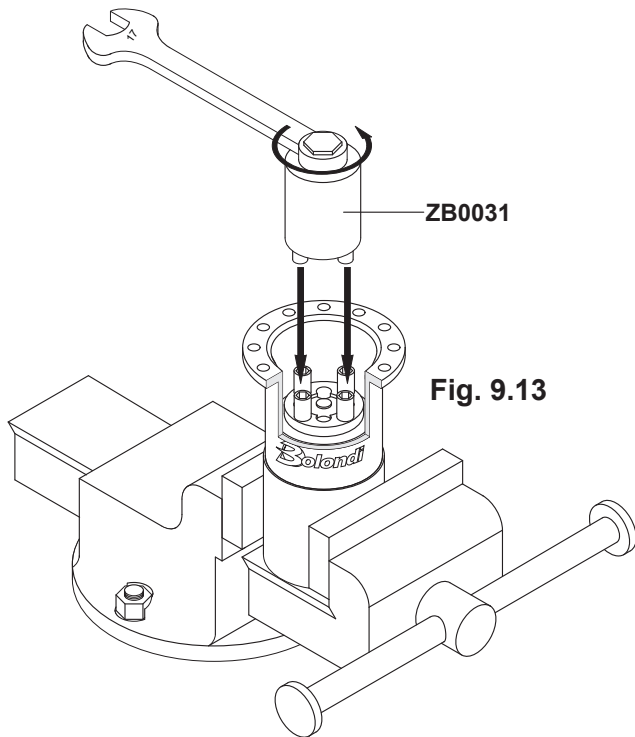


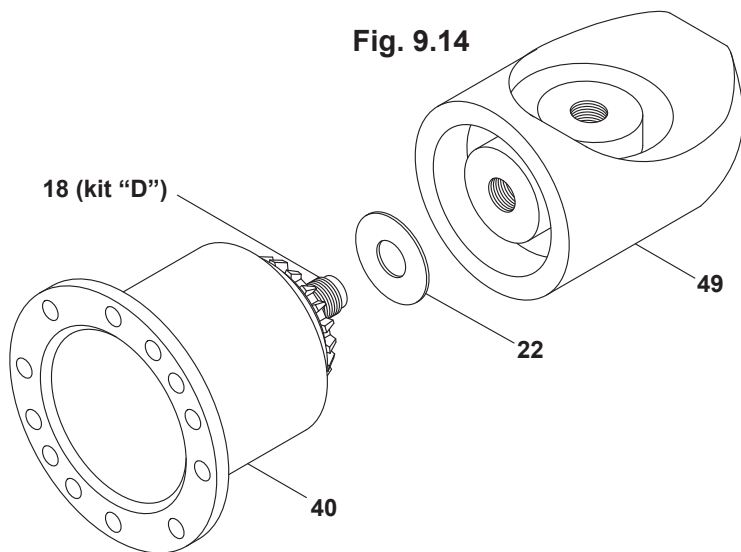
Fig. 9.12

9.4.04) Insert the dedicated spanner (code ZB0031) onto the central shaft pos.18 (kit "D") and unscrew it with aid of a 17mm fixed jaw spanner, see (Fig.9.13).

9.4.05) Remove the casing pos.49 and the washer pos.22 (Fig.9.14).



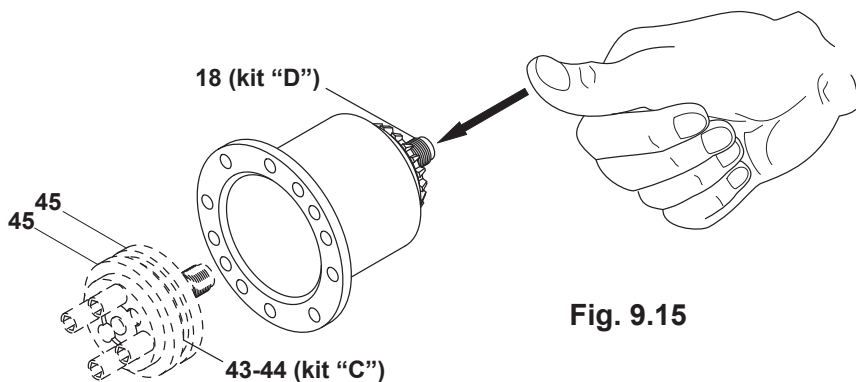
**Fig. 9.13**



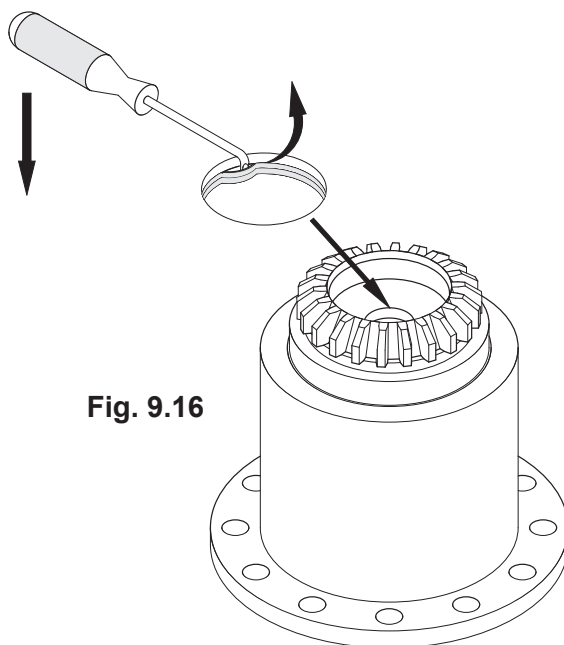
**Fig. 9.14**

9.4.06) Push the shaft pos.18 (Kit "D") fig.9.15 and the bearing composed of the part pos.45 and the parts pos.43-44 (Kit "C") out of the part pos.40.

9.4.07) Use the dedicated tool to remove the seals and the O-ring pos.23 from their seats (Fig.9.16).



**Fig. 9.15**



**Fig. 9.16**

## Assembly

9.4.08) Put the O-ring back in its seat first and then the seal ring pos.23, making it adhere perfectly to the O-ring using a blunt tool.

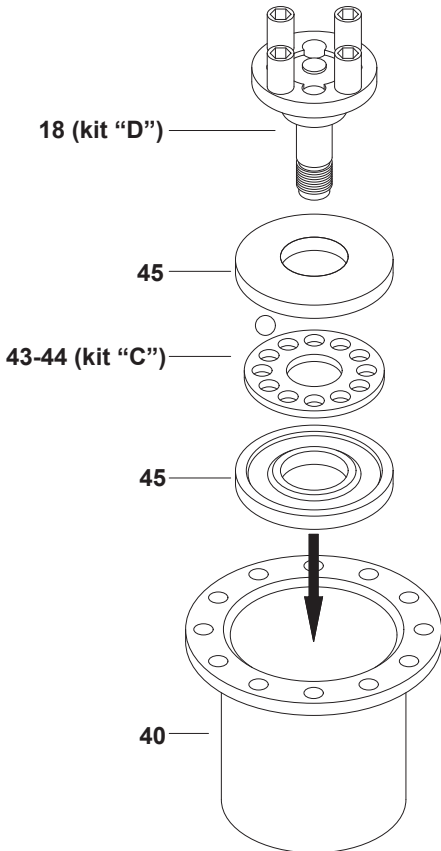
To facilitate the introduction of the ring, follow the indications shown in fig.9.08.

9.4.09) Make sure that all parts are fitted correctly into their seats and lubricate with grease.

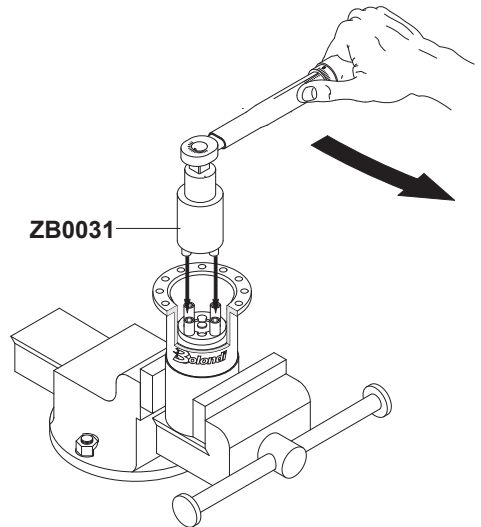
9.4.10) In sequence, insert in the casing pos.40 a swivel ring pos.45 with the ball seat facing upwards, the cage pos.44 with the twelve balls pos.43, and the second swivel ring pos.45 with the ball seat facing downwards (Fig.9.17).

9.4.11) Insert the output shaft pos.18 into the bottom casing pos.40 (to make it easier to fit the threaded section through the seals, turn as if screwing).

9.4.12) Insert the washer pos.22 on the shaft pos.18 and screw the casing pos.49 onto it (apply a few drops of loctite 222 on the thread), tighten with the dedicated spanner (code ZB0031) and a torque wrench calibrated as per table "B" of the manual (Fig.9.18).



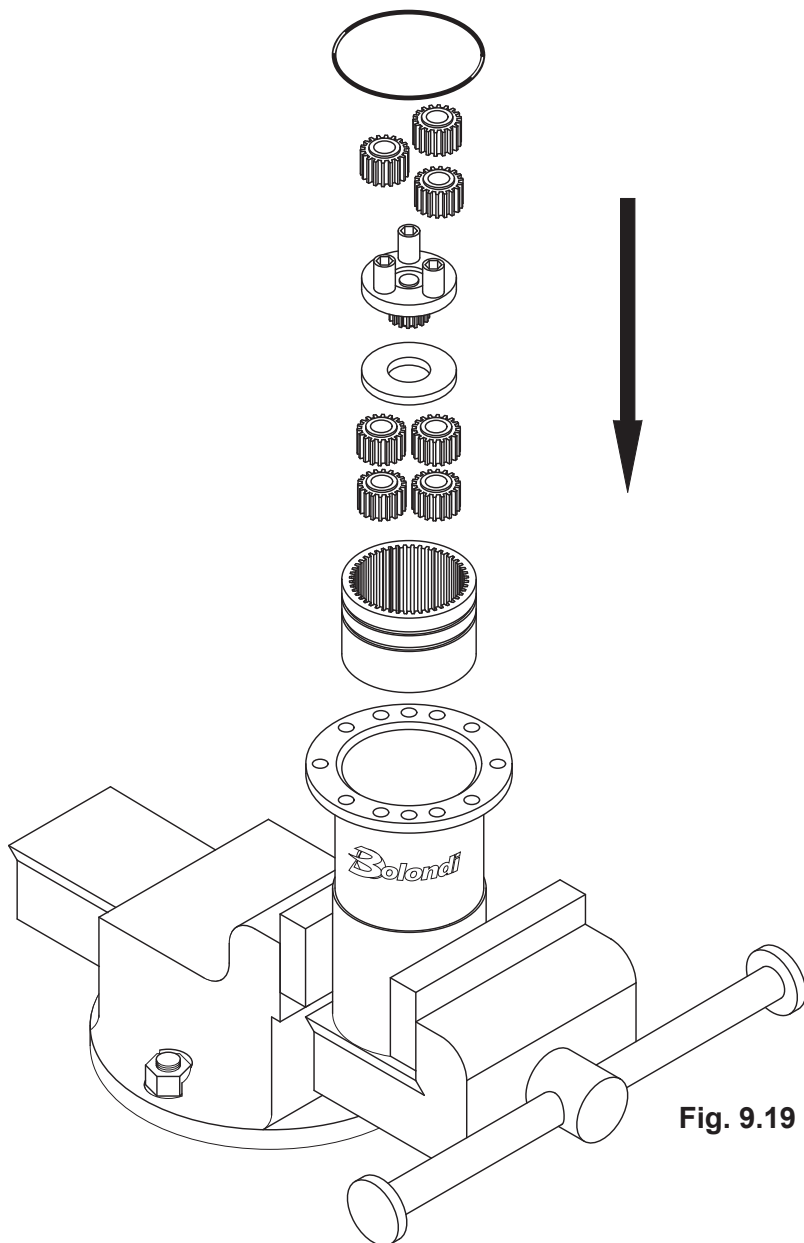
**Fig. 9.17**



**Fig. 9.18**



9.4.13) In sequence, insert in the casing pos.40: the crown pos.31, the four gears pos.10 (kit "F1") on the output shaft previously assembled, the first washer pos.8, the planetary gear holder pos.15 (kit "E"), the three planetary gears pos.29 (kit "F") fig.9.19.



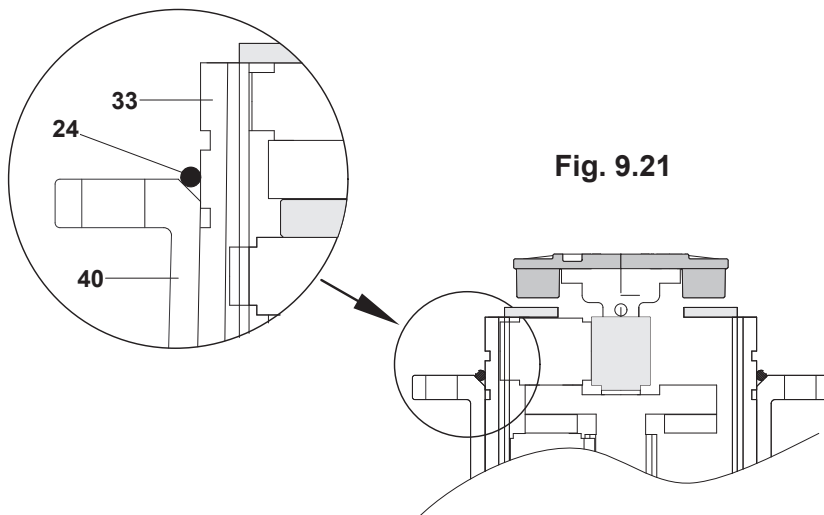
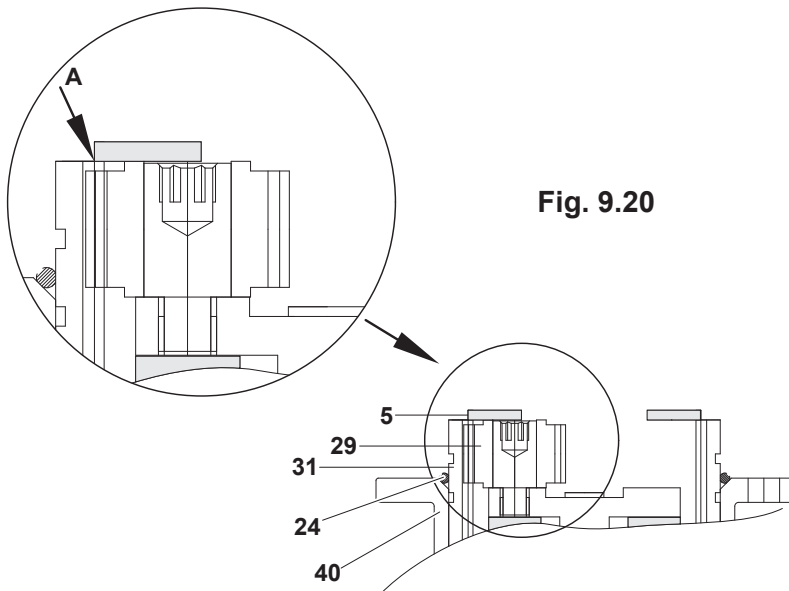
**Fig. 9.19**

9.4.14) Position the washer pos.5 and check that the assembly is correct, making sure there is no friction between the part pos.5 and the gears pos.29, see fig.9.20.

9.4.15) Fit the O-ring pos.24 and the complete impeller unit (kit "G") as shown in fig.9.21, so that the next step of the assembly can be carried out correctly.

9.4.16) Finish the assembly as explained in sect.9.2.05 to sect.9.2.07 and in sect.9.3.09 – 9.3.10.

(00M-SW049-02-EN)



## 10) SPARE PARTS

Always refer to the spare parts tables when choosing spare parts. Spare parts should be requested by fax to following address:

Bolondi  
Via A. Volta, 4 - 42027 MONTECCHIO (RE) - ITALY  
Tel. +39 0522 864434 Fax +39 0522 865780  
e-mail: bolondi@bolondi.com

always indicate:

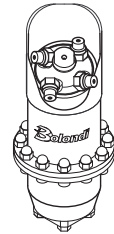
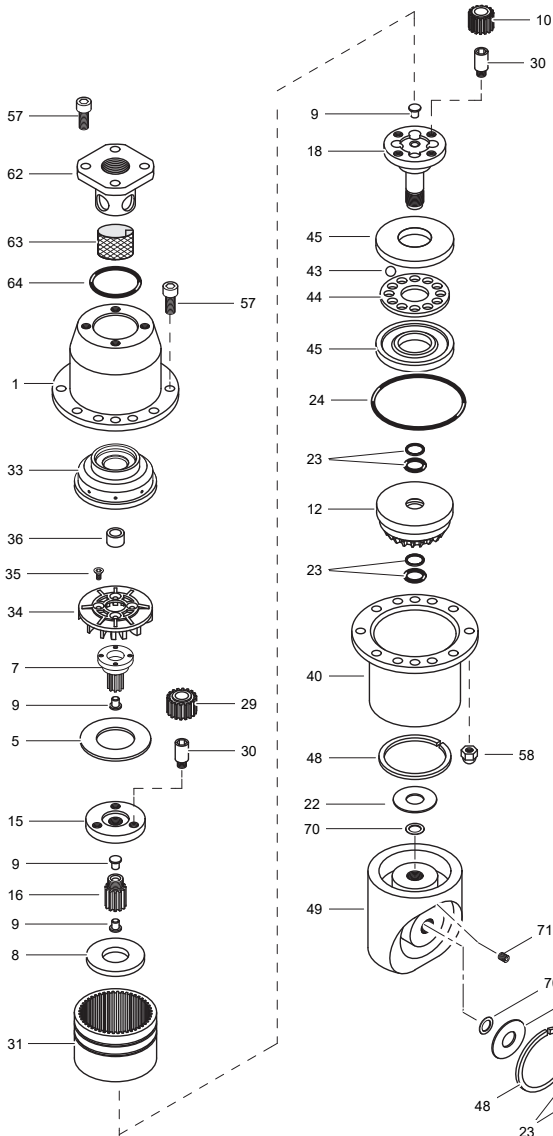
- the model and serial number of the head (see identification plate)
- the code and description of the part ordered (see table)
- the quantity required
- the preferred means of shipment

*(11-000-00-EN)*

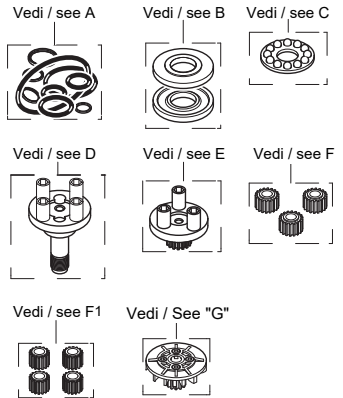
## TABLE "B" TORQUE WRENCH SETTINGS

| TABLE TORQUE WRENCH SETTINGS |    |     |
|------------------------------|----|-----|
| Structural screws            |    |     |
| Pitch                        | Nm |     |
| M6                           | 11 | All |
| M12x1.00                     | 30 | All |
| Nozzles                      |    |     |
| Pitch                        | Nm |     |
| 1/8 npt                      | 5  |     |

# EXPLODED VIEW



## KIT RICAMBI PART KITS



|                 |            |  |            |  |   |             |
|-----------------|------------|--|------------|--|---|-------------|
|                 |            | VIA A.VOLTA 4<br>MONTECCHIO E. (R.E.)<br>ITALY |            | TEL. +39 522 864434<br>FAX. +39 522 865780<br>E-mail bolondi@bolondi.com |   |             |
| MODIFICA        | 4          | 5  | 6          | 7  | 8 | DISEG. P.L. |
| FOGLIO          | XXXX       | XXXX   | 0020       | 0036   |   | DATA        |
| DATA            | 01.01.2012 | 01.06.2012                                     | 01.01.2017 | 13.11.2019   |   | 13.11.2019  |
| MODELLO: SW 049 |            |  |            |  |   | VERSIONE    |
| NOTE:           |            |  |            |  |   | <b>07</b>   |







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