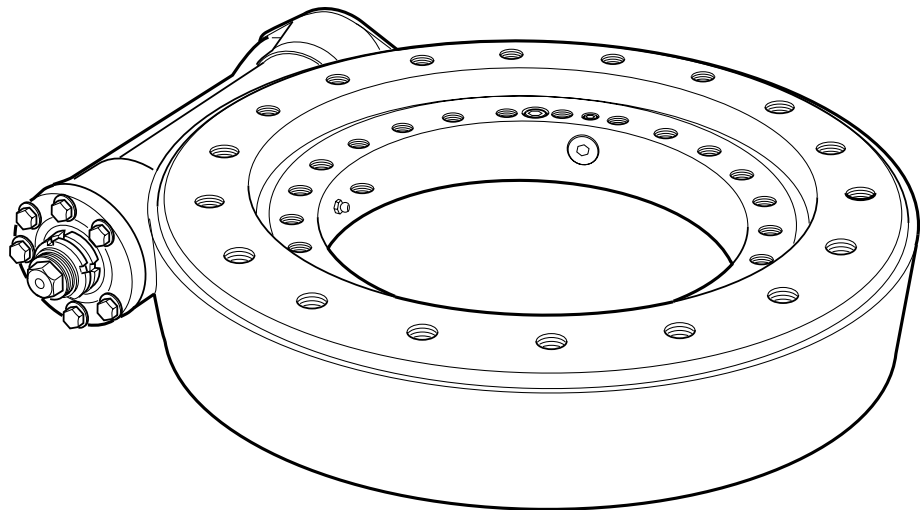


WORM DRIVE



Meta Hydraulic



WORM DRIVE

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1. INTRODUCTION

This manual contains instructions about how to assemble and service the DK worm drive. It must be read carefully and understood before the worm drive is used.

The worm drive will only function correctly if it is correctly assembled and adequately serviced.

Meta s.r.l. declines all liability for damage caused by negligence and failure to comply with the instructions in this manual.

Make sure that the worm drive is undamaged and complete as soon as it arrives.

Inform the persons in charge about any faults or discrepancies before the worm drive is installed and used.

2. DESCRIPTION OF THE SYMBOLS



Warning symbol

Indicates a potential danger.



Carefully read the instructions in this manual before proceeding with any operation.



Danger symbol

Wear protective gloves before proceeding with any operation.



Danger symbol

Wear adequate safety footwear before proceeding with any operation.

3. SAFETY

Anyone who assembles or uses rotational equipment must possess the necessary skills, must be familiar with the characteristics of the components he must assemble/use and must take all possible precautions able to guarantee the utmost safety in all operating conditions. No reasonably applicable precaution must be omitted in the interests of safety, either by the installer or by the operator.

4. TRANSPORT AND STORAGE



4.1 Transport regulations.

The worm drives must only be transported in the horizontal position. Take care to prevent jolting and impact during the handling operations.

Use a hoist to handle the worm drive after having screwed 3 equidistant eyelet screws (1, Fig.1) into the holes in the worm drive itself. Make sure that the screws and fasteners are in a perfect condition. In exceptional cases, the worm drive can be moved in the vertical position. In this case, it should be positioned with the seat of the worm screw at the bottom (1 Fig1a).

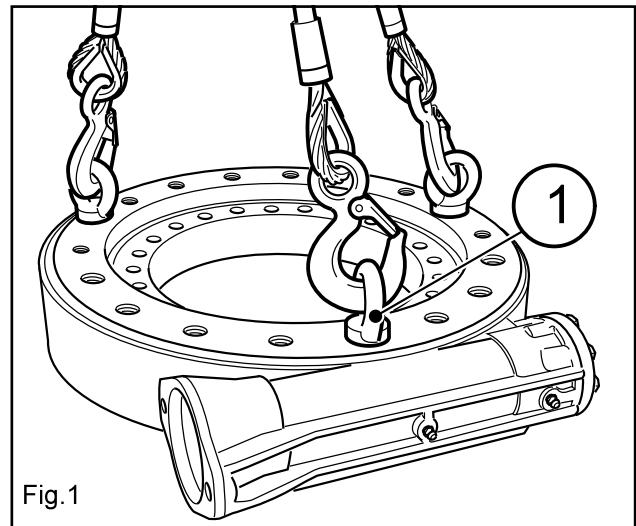


Fig.1

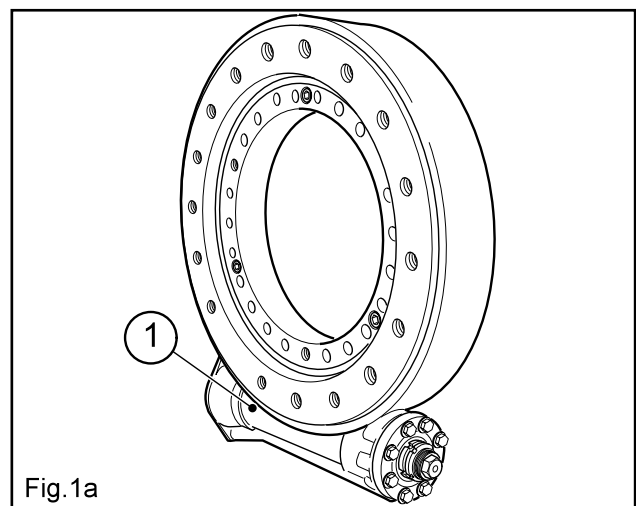


Fig.1a

4.2 Storage regulations.

Worm drives must be stored in the horizontal position, preferably on a wooden pallet and in a dry place.

5. ASSEMBLY

5.1 Surface cleaning

The fixing surfaces of the worm drive must be perfectly clean.

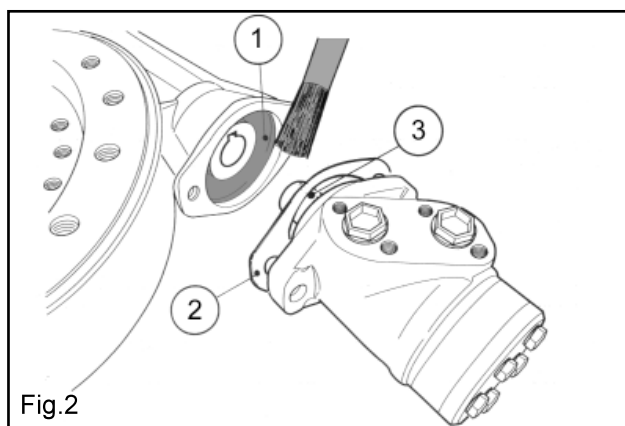


Only use products that will not damage the operator's health, the environment, the product and particularly, the rubber seals.

5.2 Motor assembly

Clean carefully the slewing ring-motor coupling surfaces. Fill the hollow containing the input shaft with grease (1 Fig.2). Insert the joint (2 Fig.2) or otherwise seal with appropriate mastics. Lubricate the driving shaft (3 Fig.2) before inserting it with its key into the housing.

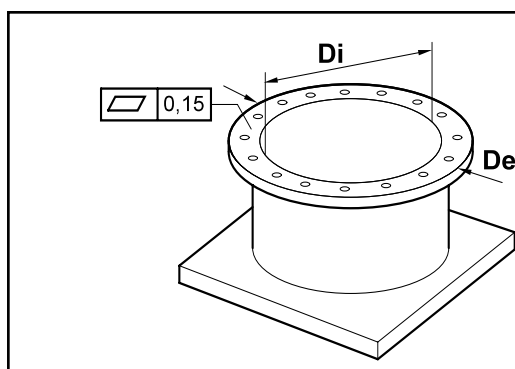
Fix with M12 class 8.8 screws and lock up with the dynamometric key set 73 Nm.



5.3 How to fix the worm drive

It is advisable to use bolts of at least class 10.9 ISO or degree 8 SAE in order to fix the worm drives.

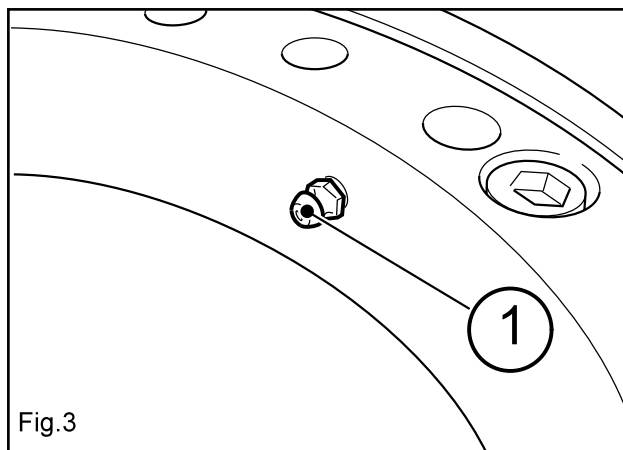
The length of the bolts must equal 5 times their diameter. It is advisable to tighten the bolts to a 280 Nm driving torque value.



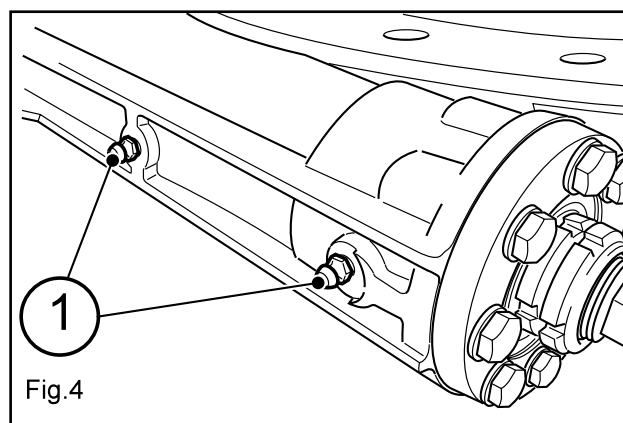
The best fixing surface is one that complies with the measurements in the following table. It must also be flat, with a flatness error of no more than 0.15 mm.

5.4 How to grease the worm drive

Worm drives must be greased with waterproof grease, using the relative grease nipples in the inner ring (1 Fig.3). Turn the worm drive while injecting grease into all the grease nipples until it oozes from the seal, forming a light, even ring.



Periodically grease the rotation screw using the grease nipples (1 Fig.4) on the casing.



As for the lubrication frequency and the grease type, pls look at paragraph 11 (page 11).

Model	Di mm	De mm
DK0256	max 90	160 ÷ 240
DK0316	max 150	230 ÷ 320
DK0437	max 270	350 ÷ 440
DK0527	max 330	430 ÷ 530
DK0576	max 380	480 ÷ 560
DK0744	max 525	630 ÷ 720

6. ADJUSTMENTS AND OPERATIONS



6.1 Ring adjustment

When play forms between the ring and worm screw, it must be eliminated. Loosen the 3-4 Allen screws (1 Fig.5) that fix the ring, pull this towards the worm screw as shown in Fig.5, then fix the previously removed Allen screws back in place.

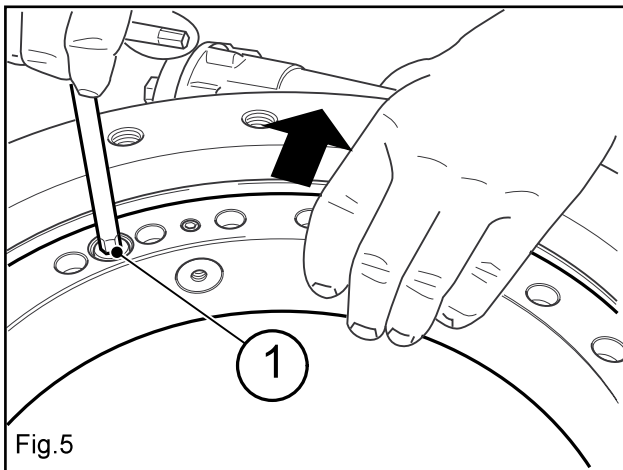


Fig.5

6.2 Float adjustment

To check for float between the worm screw and ring (which would prevent the assembly from working properly), fit a comparator on to the body of the worm drive (1 Fig.6), then measure the float by working axially on the screw. If the float measured exceeds 0.10 mm, it must be adjusted.

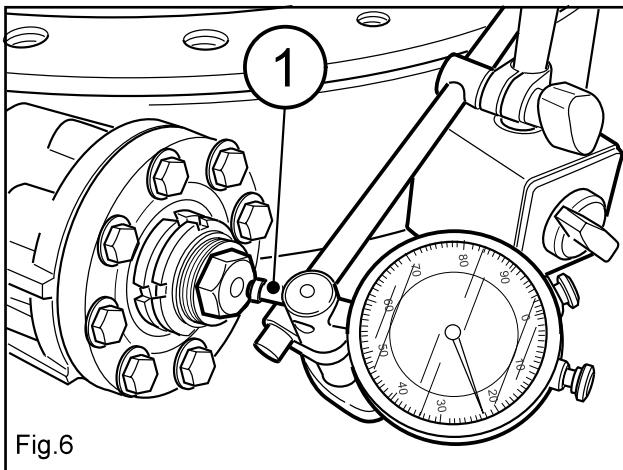


Fig.6

To eliminate the float, loosen the self-locking ring nut (1 Fig.7), then tighten the adjuster ring nut (2 Fig.7) until the play has been completely eliminated. Now lock the position by retightening the self-locking ring nut (1 Fig.7).

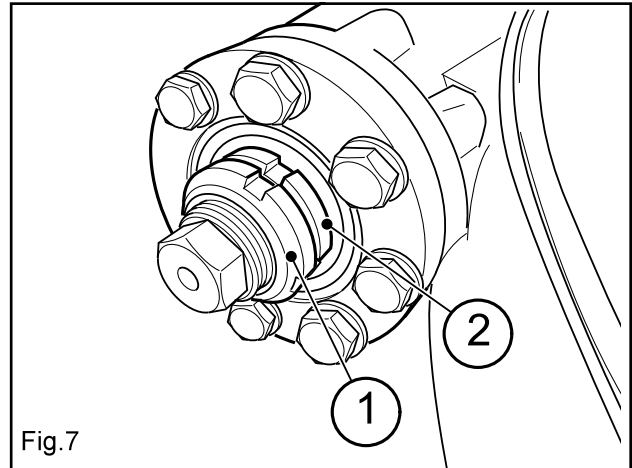


Fig.7

6.3 Thrust bearing replacement

If one of the two thrust bearings must be replaced (14 Fig.11), pay particular attention during the assembly phase to ensure that centering occurs correctly on the inner diameter of the outer rings of the bearings (1 Fig.8) and on the outer diameter of the inner rings (2 Fig.8).

Make sure that the plug (3 Fig.8) NEVER projects from the diameter of the shaft.

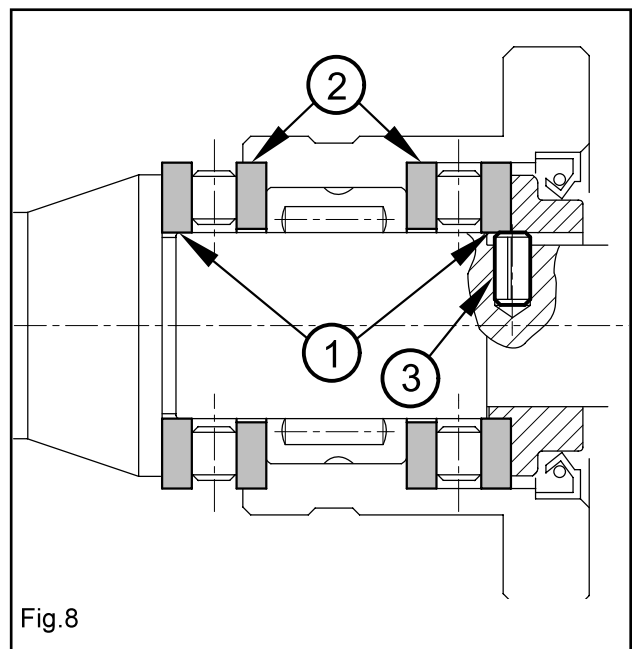


Fig.8



6.4 Seal assembly/replacement

Fit the seal into the relative groove (1 Fig.9) and apply it evenly around the entire circumference. Having done this, cut the end of the seal so that the two edges match.

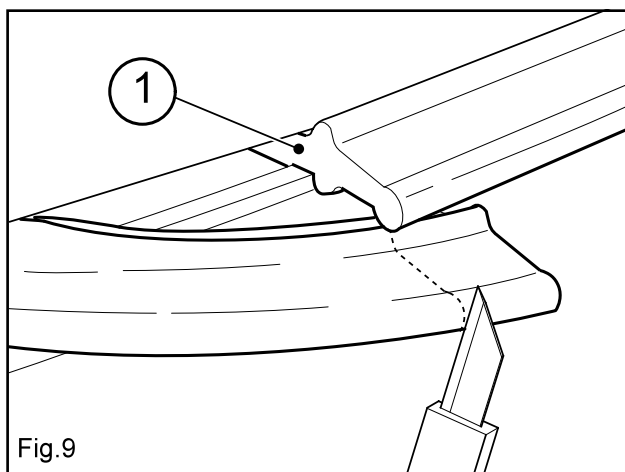


Fig.9



6.5 Manual rotation locking operation

If the motor blocks, the worm drive can be operated by hand (after having turned off the motor and set all the devices to the safety position) using an appropriate wrench to turn the worm screw by means of the terminal hexagon (1 Fig.10a). Disassemble the protective cap (21 Fig.11) if this is installed.

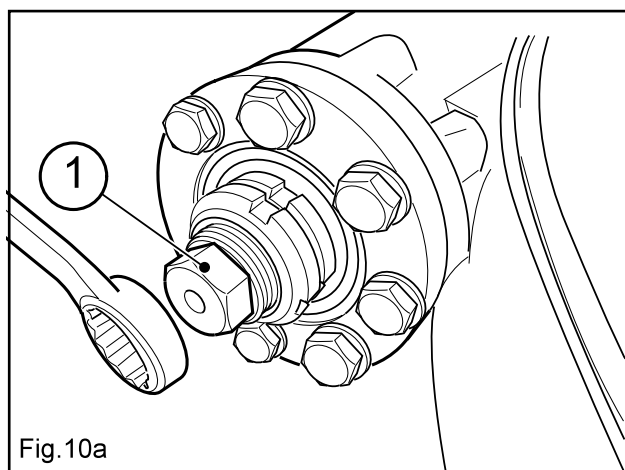


Fig.10a

7. WARNINGS

1. Never weld any part of the worm drive.
2. Never expose the worm drive to heat sources since this can cause irreparable damage to the unit.
3. Do not allow currents of any kind to pass through the unit.
4. During washing operations please avoid hitting the slew ring with the direct and close jet of a high pressure washer; its strong pressure can raise the lip of the seal with the consequent entry of water (Fig. 10b).

Bearings, toothings and rolling body races can be irretrievably damaged; if you fear for a possible modest water entry please make immediately a complete lubrication of the slew ring and the rotation screw.

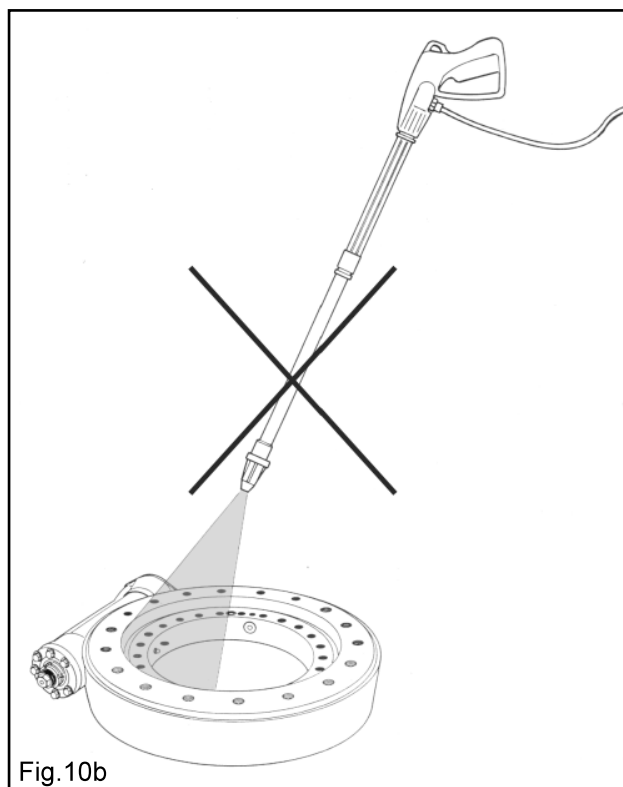


Fig.10b

8. DISMANTLING AND DISPOSAL

Comply with the provisions established by the laws in force where the equipment is used.

9. SPARE PARTS

Always contact one of the centers authorized by Meta Srl if spare parts are required.

11. GREASES AND LUBRICATION FREQUENCY CHART

The DK slew ring is supplied as perfectly lubricated

/	Type	Operating temperature
Grease	VANGUARD SILEX PLS/3	-35/+130°C



Alternativa fetter:

- Mobil Mobilgrease Special
- Total Caloris M/3
- Fina Bentex 5M
- Shell Retinax HDX
- Fuchs Renolit FLM/2
- BP Grease SM/2
- Castrol Moly grease/2

As for lubrication frequency pls keep to following chart.

Operating conditions	Servicing and greasing
Dry and clean places Open countryside	Every 300 hours or every 6 months
Marine, sandy, cold, dirty environments	Every 200 hours or every 4 months
Environments with ex- treme conditions	Every 70 hours or every 2 months