

Instruction Sheet

## Shrink disc

Information on corrosion resistant gearboxes



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## 1 About this manual

These instructions describe the mounting on a gearbox with blind hollow shaft / hollow shaft / hollow shaft interface. It is an amendment to the standard operating manual. Contradictory specifications in the standard manual thereby become void.

The operator must ensure that all persons assigned to install, operate, or maintain the gearbox have read and understand these instructions in full.

Store these instructions within reach of the gearbox.

Inform colleagues who work in the area around the machine about the **safety and warning notices** to avoid injuries.

The original instructions were prepared in German; all other language versions are translations of these instructions.

### 1.1 Information symbols and cross references

The following information symbols are used:

- Indicates an action to be performed
  - ➞ Indicates the results of an action
  - ① Provides additional information about the action

A cross reference refers to the chapter number and the header of the target section (e. g. 2.1 "Intended use").

A cross reference on a table refers to the table number (e. g. Table "Tbl-15").

### 1.2 Scope of delivery

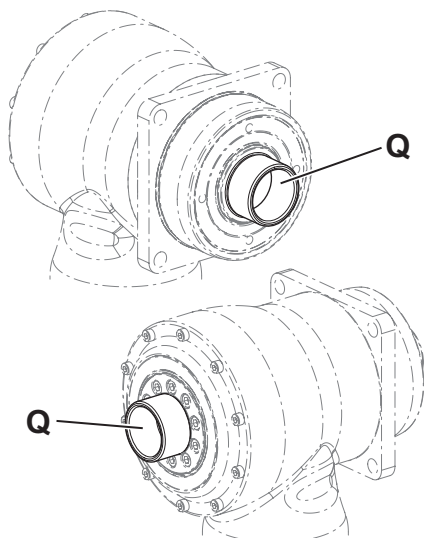
- Check the completeness of the delivery against the delivery note.
  - ① Missing parts or damage must be notified immediately in writing to the carrier, the insurance company, or **WITTENSTEIN alpha GmbH**.

## 2 Safety

These instructions, especially the safety instructions and the rules and regulations valid for the operating site, must be observed by all persons working with the gearbox.

In addition to the safety instructions in this manual and in the standard manual, also observe any (legal and otherwise) applicable environmental and accident prevention rules and regulations (e.g. personal safety equipment).

### 2.1 Intended use



The shrink disc serves to mount a gearbox with blind hollow shaft / hollow shaft / hollow shaft interface [Q] to a load shaft.

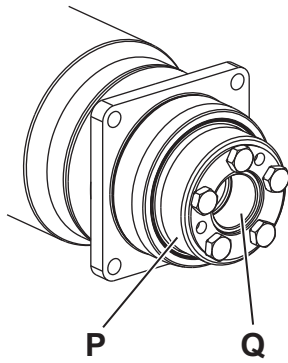
The shrink disc may not be operated in areas with potentially explosive atmosphere.

In food processing / pharmaceuticals / cosmetics, the shrink disc may only be used next to or under the product area.

The shrink disc has been constructed according to current technological standards and accepted safety regulations.

- To avoid danger to the operator or damage to the machine, employ the shrink disc only for its intended use and in a technically flawless and safe state.

### 3 Assembly



- If a different shrink disc is used, observe the instructions of the manufacturer.
- If you have questions about correct mounting, consult our Customer Service department.

The slip-on shaft / hollow shaft / hollow shaft interface [Q] is axially secured to the load shaft by means of a shrink disc connection. If a gearbox with shrink disc [P] was ordered, then it is already mounted.

#### 3.1 Preparations

	<b>NOTICE</b>		
	<p><b>Dirt can inhibit transmission of the torque.</b></p> <ul style="list-style-type: none"> <li>• Do not disassemble the shrink disc prior to installation.</li> <li>• De-grease the load shaft and the blind hollow shaft bore in the area of the shrink disc seat, leaving no residual traces.</li> </ul>		

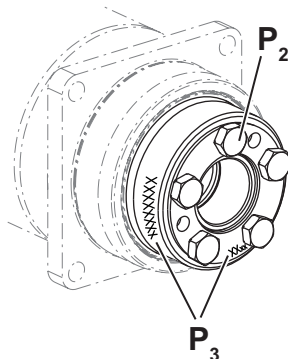
ⓘ Only the exterior surface of the blind hollow shaft / hollow shaft / hollow shaft interface may be greased in the area of the shrink disc seat.

Depending on the material of the shrink disc, the load shaft has to meet the following conditions:

	Material of the shrink disc		
	Standard (steel)	nickel-plated*	stainless steel*
<b>Minimum yield stress [N/mm<sup>2</sup>]</b>	≥ 385	≥ 260	≥ 260
<b>Surface roughness Rz [μm]</b>	≤ 16		
<b>Tolerance</b>	h6		

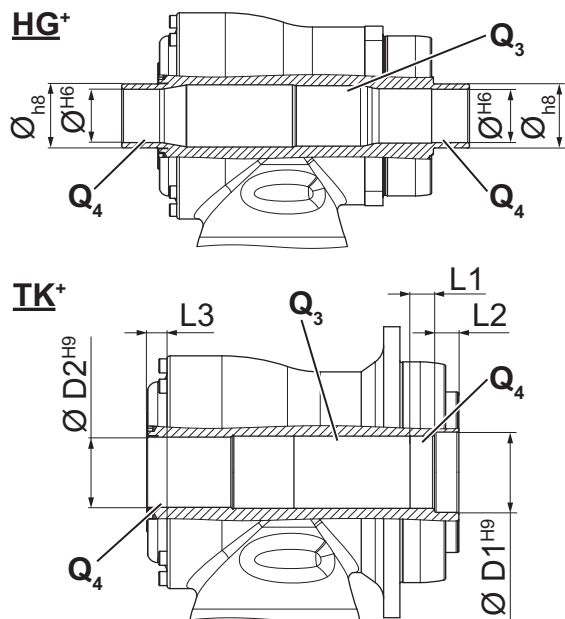
\* Observe the instructions given in Chapter 3.2 "Information on corrosion resistant gearboxes".

Tbl-1: Features of the load shaft



- ⓘ The material of the shrink disc can be determined via the material number [P<sub>3</sub>] (see Chapter 4.3 "Specifications on the shrink disc").
- ⓘ The material number is located, depending on the design, on the front side or the circumference of the shrink disc.

### 3.2 Information on corrosion resistant gearboxes



In the hollow shaft / hollow shaft interface, unprotected parts [Q<sub>3</sub>] need to be protected against aggressive media.

- ① We recommend a two-sided sealing by O-rings using a suitable material in the area of the fit bore [Q<sub>4</sub>] (shaft dimensions: HG<sup>+</sup>, VH<sup>+</sup>, NVH, CVH, VDH<sup>+</sup> and VDHe see catalog; TK<sup>+</sup> see Table "Tbl-2").
- Check the firmness of the load shaft in the area of the O-ring groove.

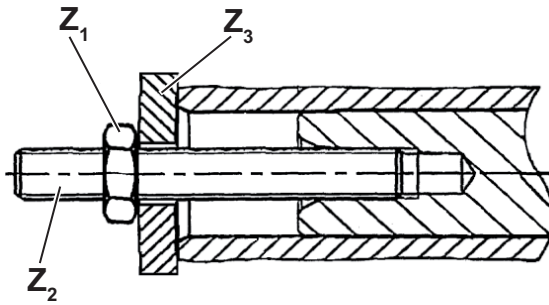
Gearbox size TK <sup>+</sup>	ØD1 x L1* [mm] x [mm]	L2 [mm]	ØD1 x L3* [mm] x [mm]
004	Ø19 x 8	9	Ø17 x 11
010	Ø25 x 10	14	Ø25 x 15.5
025	Ø36 x 12	12	Ø35 x 16
050	Ø50 x 25	7	Ø50 x 20
110	Ø72 x 10	20	Ø70 x 23
* L1, L3 = Fitting length			

Tbl-2: Shaft dimensions TK<sup>+</sup>

### 3.3 Mounting with shrink disc

- ① If a separately supplied shrink disc is to be mounted, read the information in Chapter 3.4 "Installing the shrink disc".

	NOTICE
	<p><b>The forces of the shrink disc can deform the blind hollow shaft / hollow shaft / hollow shaft interface.</b></p> <ul style="list-style-type: none"> <li>• Always install the load shaft first before tightening the clamping screws of the shrink disc.</li> </ul>
	<p><b>Incorrectly aligned shafts can lead to damage.</b></p> <ul style="list-style-type: none"> <li>• Ensure that the blind hollow shaft / hollow shaft / hollow shaft interface are aligned with the load shaft.</li> <li>• Mount the blind hollow shaft / hollow shaft / hollow shaft interface onto the load shaft without using force.</li> <li>• Never attempt to assemble by hammering or applying pressure.</li> </ul>

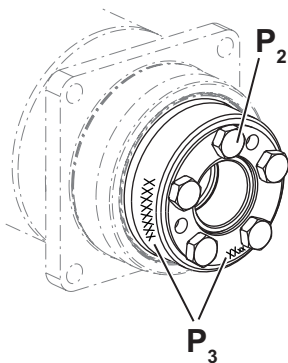


**Applies only to gearboxes VH<sup>+</sup>, NVH, CVH, VDH<sup>+</sup> and VDHe:**

- Draw the hollow shaft onto the load shaft using a nut [Z<sub>1</sub>] and a threaded spindle [Z<sub>2</sub>]. The brace [Z<sub>3</sub>] needs to be provided by the hollow shaft.

**Valid for all other gearboxes:**

- Slide the blind hollow shaft / hollow shaft / hollow shaft interface onto the load shaft by hand, taking into account the minimum clamping length and the maximum permissible depth.
- ① The required dimensions for the slip-on shaft / hollow shaft / hollow shaft interface are found in Chapter 4.1 "Dimensions and performance data".



- Read the material number [P<sub>3</sub>] and determine the specified tightening torque, see Chapter 4.3 "Specifications on the shrink disc".
- Tighten the clamping screws [P<sub>2</sub>] slightly by hand and align the shrink disc.
- Tighten the clamping screws in stages, one after another in multiple circular passes.
- Tighten the individual clamping screws only up to the maximum permitted tightening torque.

- Check the clamping screws [P<sub>2</sub>] one after the other with the maximum permitted tightening torque.

### 3.4 Installing the shrink disc

- ① A removed shrink disc does not need to be disassembled and regreased prior to bracing it again. It is only necessary to disassemble and clean the shrink disc if it is dirty.

	NOTICE
	<p><b>A cleaned shrink disc can have another coefficient of friction. This can lead to damage during assembly.</b></p> <ul style="list-style-type: none"> <li>• Lubricate the inner smooth surfaces of the shrink disc using a solid lubricant with a coefficient of friction of <math>\mu = 0.04</math>.</li> </ul>

- ① The following lubricants are permitted for relubricating the shrink disc:

Lubricant	Commercial form	Manufacturer
<b>Molykote 321 R (lubricating varnish)</b>	Spray	DOW Corning
<b>Molykote Spray (powder spray)</b>	Spray	DOW Corning
<b>Molykote G Rapid</b>	Spray or paste	DOW Corning
<b>Aemasol MO 19 P</b>	Spray or paste	A. C. Matthes
<b>Unimoly P 5</b>	Powder	Klüber Lubrication

Tbl-3: Approved lubricants for relubricating the shrink disc

- Loosen the clamping screws by one revolution.
- Push the shrink disc onto the blind hollow shaft / hollow shaft / hollow shaft interface.
- ① Only the exterior surface of the blind hollow shaft / hollow shaft / hollow shaft interface may be greased in the area of the shrink disc seat.
- Observe the further instructions given in Chapter 3.3 "Mounting with shrink disc".

## 4 Appendix

### 4.1 Dimensions and performance data

The dimensions, the maximum permissible speeds and torques, and information on the service life can be found

- in our catalog,
- at [www.wittenstein-alpha.de](http://www.wittenstein-alpha.de),
- in the specification software **cymex**<sup>®</sup>,
- in the respective customized performance data (X093–D...).

① Consult our Customer Service department if the gearbox is older than a year. The user will then receive the valid performance data.

### 4.2 Storage

Store the shrink disc in a dry area in the closed original packaging. Store the shrink disc for a **maximum of 6 months**. Consult our Customer Service department if conditions are different. For storage logistics, we recommend the "first in - first out" method.

### 4.3 Specifications on the shrink disc

Material number	Material of the shrink disc	Tightening torque [Nm]	Clamping screw thread
2000744	Standard (steel)	12	M6
20001389	Standard (steel)	12	M6
20001391	Standard (steel)	30	M8
20001394	Standard (steel)	30	M8
20001396	Standard (steel)	30	M8
20001397	Standard (steel)	59	M10
20003159	Standard (steel)	59	M10
20020687	Standard (steel)	13	M6
20020688	Standard (steel)	30	M8
20020689	Standard (steel)	34	M8
20020690	Standard (steel)	34	M10
20023267	Standard (steel)	100	M12
20035055	stainless steel	16	M8
20043198	stainless steel	7.5	M6
20047530	nickel-plated	34	M8



Material number	Material of the shrink disc	Tightening torque [Nm]	Clamping screw thread
20047860	stainless steel	16	M10
20047885	stainless steel	6.8	M6
20047927	nickel-plated	34	M10
20047934	nickel-plated	14	M6
20047935	nickel-plated	34	M8
20047937	stainless steel	16	M8
20047957	nickel-plated	7.5	M6
20048491	stainless steel	7.5	M6
20048492	stainless steel	16	M8
20048496	nickel-plated	7.5	M6
20048497	nickel-plated	34	M8
20048498	nickel-plated	34	M8
20048499	nickel-plated	34	M8
20050257	Standard (steel)	13	M6
20050261	Standard (steel)	34	M8

Tbl-4: Specifications on the shrink disc

#### 4.4 Supplementary information

- For further information, please visit our website at [www.wittenstein-alpha.de](http://www.wittenstein-alpha.de). Or contact our Customer Service department at [service-alpha@wittenstein.de](mailto:service-alpha@wittenstein.de)

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## Revision history

Revision	Date	Comment	Chapter
01	05.03.2018	New version	All



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