

ZPD

Operating and maintenance instructions

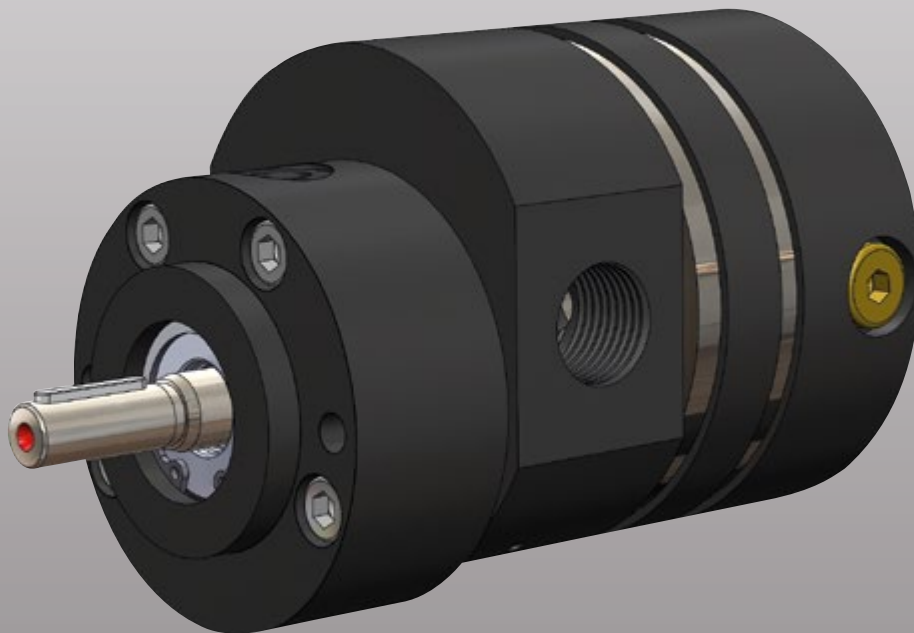


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1. IMPORTANT INFORMATION AND LEGAL NOTICES

Dear customer, dear user,

These operating instructions for the "ZPD" external gear dosing pump from Beinlich Pumpen GmbH (Beinlich) contain information required to properly install and commission the pump for its intended purpose.

Any installation, commissioning, operation, maintenance and testing may only be carried out by trained and authorized personnel. The operating instructions must be read carefully and followed in detail to ensure trouble-free, proper and safe operation of the pump. In particular, the safety instructions must be observed.

These operating instructions must be kept in a place where they can be viewed by authorised personnel at all times. The contents of the operating instructions must not be removed at any time. Missing operating instructions or missing pages must be replaced immediately if lost. The operating instructions can be requested from Beinlich or downloaded from our website www.beinlich-pumps.com at any time. The operating instructions must be passed on to any subsequent user of the pump.

These operating instructions are not subject to any modification service by Beinlich. Beinlich reserves the right to make technical changes at any time without notice.

Beinlich makes no warranties, express or implied, with respect to commercial qualities and suitability for a particular purpose.

Beinlich accepts no liability for damage and malfunctions resulting from operating errors, failure to observe these operating instructions, improper installation, commissioning or maintenance as well as improper use of the pump.

Opening the pump is generally not permitted. If the pump is opened or modified without authorization, or after a single incorrect connection, Beinlich's warranty and product liability will expire.

The publication of these operating and maintenance instructions renders all information from previous publications invalid. Beinlich reserves the right to make modifications and differences. Beinlich accepts no liability for possible printing errors. Reproduction, even in excerpt form, is permitted only following written consent from Beinlich. Beinlich reserves the right to make technical modifications at any time. Last updated: 06/2023

2. GENERAL INFORMATION

These operating instructions form part of the supplied package and must be read before you start using the pump. The instructions in these operating instructions must be followed without exception. Keep these operating instructions in the vicinity of the pump.

2.1. Details of the pump type

The full type designation can be found in the technical data sheet or order confirmation. The serial number is comprised of the order number and a sequential serial

NOTE

No liability will be accepted for any damage or malfunctions arising from failure to comply with these operating instructions. Beinlich Pumpen GmbH reserves the right in the interests of further development to make modifications to individual components or assemblies that are considered to be useful for improving the product while at the same time preserving its key characteristics.

number (e.g. 15/0000-01). It is affixed to the type plate or directly to the pump.

2.2. Technical data sheet

The technical data sheet forms part of our order confirmation and contains all of the key technical details that have been agreed between the buyer and the manufacturer.

2.3. Permissible use

The pump / pump unit is only designed for the applications listed in the technical data sheet included with our order confirmation. Operating conditions at variance to the ones listed will require new contractual agreements.

If the pump / pump unit is used in areas at risk of explosion, the addendum to the general operating and maintenance instructions for Beinlich gear pumps and units for use in areas at risk of explosion must be observed.

3. SAFETY AND WARNING SIGNS

You must comply with all safety warnings in the operating instructions that are identified as followed:



Warning of mechanical hazard, e.g. operations on rotating shafts



Read the operating instructions / comply with regulations



Warning of hot surface



Enable



Warning of hazardous electric voltage



Secure



Important information for safe and fault-free operation



Information, tips

4. GENERAL INFORMATION

Every delivery must be checked for any damage sustained during transport immediately after it is received. Commissioning may need to be cancelled. The customer is responsible for the correct set-up of the pump.

Confirmed properties of the pump require compliance with the information in these operating instructions. Ensure that you never use damaged products.

Read the operating instructions carefully before starting any set-up, assembly or maintenance work. Assembly, connection, commissioning and maintenance or repair work must only be carried out by suitably qualified professionals taking account of:

- These instructions,
- All other project management documentation, commissioning instructions and circuit diagrams pertaining to the drive;
- National and regional regulations currently in force governing safety and accident prevention.



Assembly and maintenance work must only be carried out with the drive stationary! The unit must be isolated and secured to prevent accidental start-up.

4.1. Safety instructions for the user / operator



If hot or cold machine parts present a hazard, these parts must be secured against being touched during installation.



Contact protection for moving parts, such as the coupling, must not be removed when the machine is in operation.



Leakage (e.g. the shaft seal) of hazardous materials (e.g. explosive, toxic, hot) must be dealt with and disposed of so that neither people nor the environment are endangered. Legal obligations are to be complied with.



Hazards caused by electrical energy must be eliminated in all instances. (For details of these, see the regulations provided by the VDE, for example, and the energy supply companies). Electrical connections must be installed by trained personnel.



Opening of the pump during the warranty period is only permitted following consultation with and approval from Beinlich Pumpen GmbH!

4.2. Safety instructions for maintenance / inspection and assembly work

The operator must ensure that all maintenance, inspection and assembly work is carried out by authorised and qualified professionals who are appropriately skilled following the in-depth study of the operating instructions.

Work on the pump must only be carried out when it is stationary.

The procedures for stopping the machine described in the operating instructions must be followed to the letter. Pumps and pump units transporting media that are hazardous to health must be decontaminated. Immediately after work is completed, all safety and security devices must be re-attached and re-enabled. Before recommissioning, the points listed under the commissioning section must be noted.

4.3. Use in areas at risk of explosion

When using the pumps in areas at risk of explosion, the addendum to the general operating and maintenance in-

structions for Beinlich pumps and units for use in areas at risk of explosion must be noted.

4.4. Non-permitted forms of operation

The operational safety of the supplied machine is only assured if it is used correctly in accordance with section 1 "General information" of these operating instructions.

The limit values specified in the data sheet must under no circumstances be fallen short of or exceeded.

5. STRUCTURAL DESIGN

5.1 Pump housing

The pump is composed of a front plate, centre plate and back plate. It is designed with a suction and pressure connection with BSP inlet thread or SAE flange connection. Depending on the type, a pressure relief valve is

mounted on the back plate and either thrust washers or sliding plates are integrated. The shaft seals are customer specifically chosen.

5.2 Gears

The gears have an involute gearing. Straight tooth spur gears are generally used in dosing pumps. Owing to the greater running smoothness, helical tooth spur gears are

given preference in high speed lube oil pumps in the low pressure range. The gear wheel bodies are generally connected to the shafts by feather keys.

5.3 Shaft, bearing and lubrication

The drive shaft and the pump shaft are positioned in plain bearings or bearing bushes. The bearing points must be adequately lubricated by the medium!



The pump must always be supplied with liquid. It must never run dry!

The running play on the sliding surfaces is rated so as to constantly assure an adequate lubrication film. The lower the viscosity of a medium to be pumped, the closer the running play must be kept in order to achieve a favour-

able volumetric efficiency of the pump. However, this also requires a purer medium to be pumped in order to achieve high operating liability and a long pump service life.

6. COMMISSIONING – PREPARATORY WORK

The pump may only be commissioned if

- The information in the technical data in the order confirmation matches the conditions of use.
- There is no obvious damage, e.g. caused by storage or transport.
- Especially the shaft sealings, sealing caps and cover hoods are undamaged.
- There are no visible leaks or oil loss.
- There is no corrosion or any other signs of incorrect storage or storage in a damp environment.
- All of the packaging material has been removed.

Basically, contaminations and anticorrosive material must thoroughly be removed from the drive shafts and flange surfaces; for this, standard solvents can be used.



The lip seals of the shaft sealing should not get in contact with any kind of solvent – material damages possible!

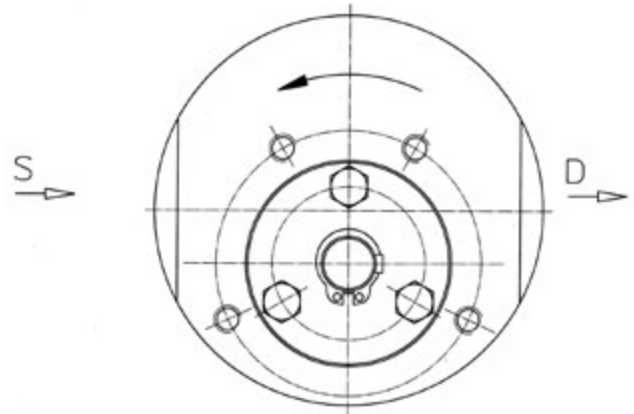
7. COMMISSIONING – GENERAL

7.1. Installation position

Any

7.2. Direction of rotation

The direction of rotation is indicated with view on the pump shaft. "L" stands for left rotation; "R" stands for right rotation and "L+R" for bi-directional rotation.



ATTENTION

The designations "S" and "D" as well as the direction arrow are stamped on the back plate or next to the connection ports!

The pumps must be operated in the correct direction!

e.g. direction "L"; left, view on pump shaft:

S = suction port

D = pressure port (discharge port)

The attached arrow shows the direction of rotation – **NOT** the flow direction!

7.3. Venting

The pumps are self-venting. Only the sealing system must be vented accordingly.

7.4. Drive

The drive should preferably be connected by a flexible/elastic coupling (e.g. Softex® or Starex® couplings from HBE). If using a belt drive or a gear wheel drive, a support-bearing **MUST** be used to avoid potential radial/

axial forces. We can supply pumps with an integral shaft bearing for this purpose. The clutch or pulley must be used with ISA fits H7.



ATTENTION

The drive shaft must not be subjected to any axial and/or radial forces.

7.5. Connections

BSP inlet thread or flange connections (please check the type description).



ATTENTION

Due to the risk of contamination, sealants such as hemp or putty are not permitted!

7.6. Suction conditions for gear pumps

The maximum inlet pressure at the suction port depends on the shaft sealing system used. Pipe bends with a small radius, pipe contractions as well as shut-off valves must

be avoided. We recommend a free inlet or a pre-pressure p_1 according to the shaft sealing system.

7.7. Shaft sealing system and max. pre-pressures

Shaft seal/with support ring	3 bar (44 psi)
Block chamber:	3 (10) bar (44 (145) psi)
Packing gland:	50 bar (725 psi)
Mechanical seal:	15 bar (218 psi)
Magnetic coupling:	25 bar (363 psi)
(others on request)	

7.8. Viscosity

All pumps are matched for a specific viscosity range. The viscosity at working temperature should be within the recommended speed range.

7.9. Speed recommendation (without pre-pressure; $p_1=0$ bar)

These recommendations are only guideline values and depend greatly on the application and in situ conditions.

7.9.1. Medium without fillers

Viscosity (mPa*s)	Recommended speed (rpm) for			
	Size 1	Size 2	Size 3	Size 4
Up to 1.000	1000	900	800	700
Up to 2.000	800	725	600	600
Up to 5.000	600	500	450	400
More than 5.000	≤ 500	≤ 400	≤ 350	≤ 300

7.9.2. Medium with fillers

Speed range after consultation with Beinlich Pumpen (depends on type and concentration of filler).

7.10. Temperature

The minimum and maximum temperature depends on the sealing material. Please note that there might be a possible change in the medium's viscosity when the

temperature changes. Also take into account the technical data sheet.

7.11. Heating and cooling units

Some units have heating cartridges, heating jackets or heating ports and will be heated up or cooled down electrically with liquid or gas medium. Please also take

into account the national and regional regulations currently in force governing safety prevention.

7.12. Filtration

We recommend using a sufficient sized filter with a filtration rate of 60 µm.

Before commissioning, the whole system has to be cleaned very carefully of foreign particles like dust from casting, shavings, welding beadsetc. and afterwards be serviced with filtered oil.

7.13. Built-in pressure relief valve

V1 = External bypass of the over-flow. The pipe must be connected un-pressurised back to the tank.

V2 = Internal bypass back to the suction side.

The relief pressure setting in both versions may be made via the adjustment screw after undoing the securing nut. A change in the valve setting on the pressure relief valve may only be carried out after prior consultation with Beinlich Pumpen!



ATTENTION

If there is no built-in pressure relief valve one must be incorporated into the pipe as an independent safeguard.

8. SHAFT SEALING SYSTEMS

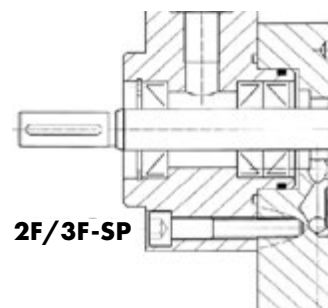
It is possible to combine different shaft sealing systems, e.g. mechanical seal with block chamber. These need to be maintained and checked as particular ones!

8.1. Radial shaft seal; standard, no description in type code

The radial shaft seal is maintenance free. If it leaks, it has to be renewed. If the drive shaft is worn, it has to be changed, too, as a sealing is no more possible and the new shaft seals may be damaged immediately again.

8.2. Block chamber; type code description: 2F-SP / 3F-SP

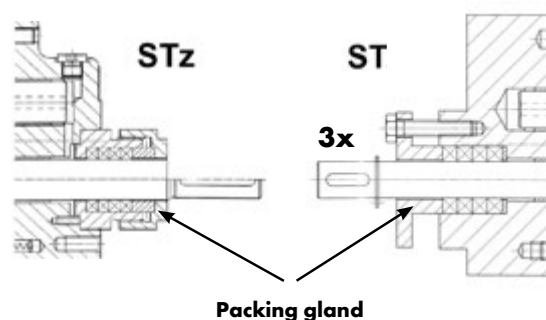
With two or three shaft seals. When using double sealings, the fluid level in the storage tank has to be checked and re-filled if necessary. Changing of the fluid level indicates a wear on the sealing lip! If the shaft displays running marks, it has to be changed, as a sealing is more possible and the new shaft seals may be damaged immediately again.



8.3. Packing gland; type code description: ST / STz

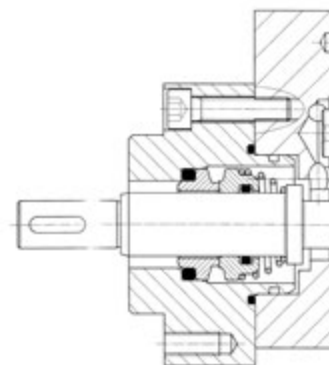
The packing gland cover must not be tightened too hard, so that there is a small outflow to reduce the frictional heat. If the leakage is too much after a longer runtime, the three bolts have to be tightened evenly (ST), or the gland nut has to be tightened 1/6 of a turn (STz) to minimise the leakage. If an adjustment of the bolts or the gland nut is no longer possible, a packing ring needs to be renewed. Normally, a complete change of all rings is not necessary. However, if a replacement is necessary, the shaft bearing as well as the seal seat need to be checked. If the drive shaft shows score marks, it has to be changed, as a sealing with new packing rings is not possible.

The joints of each packing ring must be installed at a 90° angle to each other. The joint of the last ring (seen on packing gland) should be placed upwards.



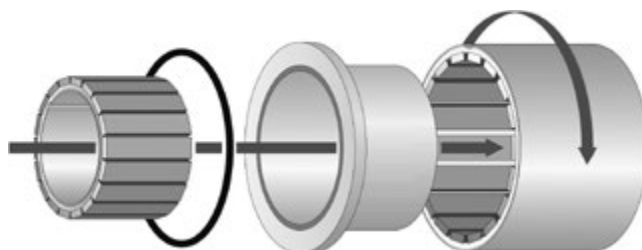
8.4. Mechanical seal; type code description: GL

The maintenance of the mechanical seal is just visually inspection of leakage. A small perspiration of the mechanical seal is admissible. When leakage becomes excessive, the seal has to be removed. During the repair please double check the pump bearing clearances.



8.5. Mag-drive; type code description: MAG

The magnetic coupling is maintenance free. The medium will be hermetically sealed by using the canister. The maintenance is just visually inspection of leakage.

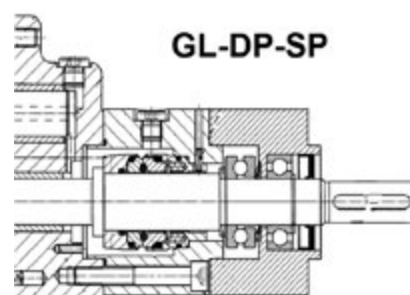


ATTENTION

The operator must follow the security advices when using a magnetic coupling. During the assembly of the motor with the pump, the forces of the magnetic coupling must be considered! To reduce the increasing temperatures, we recommend the use of a cooling pump for magnetic forces over >80 Nm (please also see the user manual of the mag-drives of DST Dauermagnet-SystemTechnik GmbH).

8.6. Special features for "KIG" version: GL-DP-SP

To be used in fluids with fillers. The occurring axial and radial forces will be kept down by using roller bearing. These bearings need to be cooled and lubricated via the block chamber. Please consider the maintenance advices for the mechanical seal and the block chamber.



9. STORAGE, RETURN AND DISPOSAL

Storage

All Beinlich pumps are supplied with sealing plugs and in suitable packaging for all destinations and modes of transport to ensure optimum protection. The pumps should always be stored in their original packaging.

The units must not be exposed to temperatures below -20°C or above $+60^{\circ}\text{C}$ and must be protected from moisture and its effects.

When storing the pumps, the following points must be noted:

- Drive units should generally be stored in enclosed rooms.
- Ambient temperature max. 25°C / 77°F ; relative humidity max. 80%
- The pump units must be protected against sunlight and UV light.
- No aggressive or corrosive materials or agents must be stored nearby.
- The pump shafts should be turned 1 to 2 rotations every six months to make sure the internal parts are in contact with the medium.
- The units must be protected against mechanical strain and the impact of external forces.

Return

1. Only cleaned, medium-free pumps can be accepted by Beinlich Pumpen for maintenance or repair. The pump must therefore be properly cleaned by the customer before being returned to prevent the risk of poisoning/contamination by harmful, explosive and other high-risk pumped media for humans and the environment.
2. If media have been conveyed whose residues with atmospheric humidity lead to corrosion damage or ignite on contact with oxygen, the pump must be additionally neutralised and thoroughly cleaned with anhydrous, inert gas to dry.
3. The return of the pump must always be accompanied by a fully completed declaration of non-objection (see section 14, page 23). All applied safety and decontamination measures must be indicated. Pumps for which this safety certificate has not been completed

and signed cannot be inspected or repaired for safety reasons and will be returned uninspected at your expense. The declaration of no objection can be requested from Beinlich Pumpen or downloaded from our website.

4. When returning the pump, it must be packed in accordance with the applicable logistics standards and sealed with sealing plugs.

Disposal

Beinlich actively promotes environmental awareness and has an operational management system that meets the requirements of ISO 9001:2015. The impact on the environment and people should be minimised during the production, storage, transport, use and disposal of our products and solutions.

- Collect rinsing liquid as well as residual liquid and dispose of it in accordance with the statutory provisions and regulations.
- Wear protective clothing and protective mask/ + goggles if necessary.

Materials must be disposed of properly as follows:

- Metal
- Plastics
- Grease and lubricants
- Electronic components
- etc.

When disposing of the materials, ensure that the waste-relevant rules and regulations of the respective country of destination are observed!

10. MAINTENANCE, SERVICE LIFE AND WARRANTY

Beinlich gear pumps are maintenance free under standard conditions. A continuous control of the technical parameters is recommended. The use of corresponding control equipment like working hour counter, pressure and temperature switches, etc. should be done in relation to general regulations. During maintenance on the unit please consider the following:

- Check all fastening screws and connections to ensure they are securely tightened and re-tighten if necessary.
- Control the alignment of the coupling. Check elastomers for wear.
- Control the tightness of the pump, especially the shaft seal.

Depending on the operating conditions, the service life and therefore the specific properties of the pumps are limited by wear, corrosion, deposits or ageing. The operator is responsible for regular inspection, maintenance and recalibration. Any observation of a malfunction or damage prohibits further use. On request, we can provide you with a loan unit for the duration of the overhaul. We recommend an annual check and recalibration. Under normal operating conditions, the service life is 10,000 hours. The warranty period is 12 months.

11. DISASSEMBLY AND RE-ASSEMBLY

11.1. Basic regulations

Before disassembly, the unit must be secured so that it cannot be switched on. The shut-off devices in the supply line must be closed. The pump must be brought up to ambient temperature.

11.2. Disassembly of the unit

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Interrupt power supply 2. Dismount all extra connections / piping <p>3a. Unit on ground plate (FB):</p> <ol style="list-style-type: none"> 3a.1. Remove coupling cover
Disconnect motor
Dismount motor from ground plate by moving it
Uncouple pump and motor | <ol style="list-style-type: none"> 3a.2. Loosen the suction and pressure connection 3a.3. Dismount pump from ground plate <p>3b. Unit with bell housing (FcV / FcB):</p> <ol style="list-style-type: none"> Disconnect motor
Dismount motor 3b.1. Loosen the suction and pressure connection 3b.2. Dismount pump from bell housing |
|---|--|

11.3. Disassembly of the pump

Please use the corresponding sectional drawing or installation instructions to help you. Note the position of the parts respective to each other. We recommend marking the position of the pump parts and numbering them consecutively.

1. Dismount shaft sealing system (see 10.2.4.)
2. Loosen the socket screws and remove them from the back plate

3. Pull away pump shaft with gear from the pump housing.
4. Remove thrust washer / wear plates (consider the position of the pressure grooves)
5. Remove centre plate.
6. Loosen the drive shaft with gear from the pump housing.

11.4. Disassembly of the shaft sealing system

	Block chamber (2F-SP/3F-SP)	Packing gland (ST / STz)		Mechanical seal (GL)	Magnetic coupling (MAG)
		ST	STz		
1	Remove circlip	Screw off the 3 bolts of the packing gland cover	Remove swivel nut	Screw off shaft seal carrier	Screw off canister
2	Dismount shaft seals	Remove packing rings	Remove packing rings	Remove cover carefully with the built in mechanical seal	Remove safety screw on the inner rotor
3	–	–	–	Dismount set screws on the ring unit	Pull away the inner rotor from the drive shaft
4	–	–	–	Pull away the ring unit from the drive shaft	Dismount MAG flange



All dismantling work must be carried out with care. Due to the risk of breakage, do not use force. (warranty)

11.5. Assembly of the pump / unit

Assembly must be carried out with observation of the rules applicable to mechanical engineering. O-rings must be checked for damage and replaced with new ones if necessary. PTFE gaskets must be replaced. All sealant resi-

dues must be completely removed. The assembly should be done in opposite direction as the disassembly (please also see 10.2.4, shaft sealing systems).

11.6. Spare parts

Please include the following information in spare parts orders:

- Order no.
- Article no. of the pump
- Part no. as per parts list
- Quantity

We only offer a warranty for original spare parts we have supplied. A stock of the most important replacement and wear parts at the pump location is a vital prerequisite for ensuring the pump is ready for operation at all times.

Alternatively, we recommend keeping a spare pump in stock and sending the dismantled pump to our company for repair if required. Our parts list with sectional drawings diagrams can be used for ordering spare parts. We expressly point out that replacement parts and accessories that we have not supplied will also not have been checked and approved by us. In certain circumstances the installation and / or use of such products can therefore have a negative impact on the pump's properties by virtue of its design and therefore impair active and / or passive safety.

For damages caused by the use of non-original spare parts or accessories, we exclude any liability and warranty.

11.7. Related documents

The related documents can be found in the technical data sheet or order confirmation.

14. TYPE CODE

ZPD - 2 - 15,70 - KIN - L - FCV - R / MAG (7-G) / M(0,37) B35 / V1 / PTFE

Series

ZPD	Dosing gear pump
-----	------------------

Size

(see sizes and displacements)

Displacement

(see sizes and displacements)

Main application

KIN	sliding plate, low pressure
KI	With thrust washers
KIG	With special materials for fillers
EEN	In stainless steel with sliding plate
EEE	In stainless steel with thrust washers
EEK	In stainless steel with thrust washers ceramic

Direction of rotation

L	Left seen on pump shaft
R	Right seen on pump shaft

Design

F	Fixing holes
FB	Foot bracket
FcV	Bell housing
FcB	Bellhousing with foot bracket

Connection

R	Pipe thread
T	SAE flange

Coupling

K	Mechanical coupling
MAG	Magnetic coupling (Torque in Nm) G = Encapsulated N = Non encapsulated

Motor

M	AC or DC motor
UM	Motor with converter
GM	Gear box motor
GUM	Gear box motor with converter

Design of the motor

B3	Foot mounting
B5	Flange mounting
B35	Foot-flange mounting
EX	With Ex protection

Specials

3F-SP	Triple block chamber
ST	Packing gland, bi-directional
STz	Packing gland with central taper
GL-SP	Mechanical seal with block chamber
GL-SP-DP	Mechanical seal with block chamber and force balance
V1	Pressure relief valve, external piping
V2	Pressure relief valve, internal traced
PTFE	PTFE sealing
...	Other specials

15. SIZES AND DISPLACEMENTS

Size	Displacements	Design									
		ZPD / ZPA BSP connection		ZPD / ZPA SAE connection		ZPD Connections in centre plate		ZPBD Pipe thread connection		ZPBD SAE connection	
	cc/rev	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
1-0.1	0.1	G 1/2"	G 1/2"	-	-	-	-	-	-	-	-
1-0.12	0.1	G 1/2"	G 1/2"	-	-	-	-	G 1/2"	G 1/2"	-	-
1-0.25	0.3	G 1/2"	G 1/2"	-	-	-	-	G 1/2"	G 1/2"	-	-
1-0.3	0.3	G 1/2"	G 1/2"	-	-	-	-	G 1/2"	G 1/2"	-	-
1-0.5	0.5	G 1/2"	G 1/2"	-	-	-	-	G 1/2"	G 1/2"	-	-
1-0.73	0.7	G 1/2"	G 1/2"	-	-	-	-	G 1/2"	G 1/2"	-	-
1-0.87	0.9	G 1/2"	G 1/2"	-	-	-	-	G 1/2"	G 1/2"	-	-
1-1.17	1.2	G 1/2"	G 1/2"	-	-	-	-	G 1/2"	G 1/2"	-	-
1-1.46	1.5	G 1/2"	G 1/2"	-	-	-	-	G 1/2"	G 1/2"	-	-
1-1.9	1.9	G 1/2"	G 1/2"	-	-	-	-	G 1/2"	G 1/2"	-	-
1-2.5	2.5	G 1/2"	G 1/2"	-	-	-	-	G 1/2"	G 1/2"	-	-
1-3.2	3.2	G 1/2"	G 1/2"	-	-	-	-	G 1/2"	G 1/2"	-	-
1-3.8	3.8	G 1/2"	G 1/2"	-	-	-	-	G 3/4"	G 1/2"	-	-
1-4.4	4.4	G 1/2"	G 1/2"	-	-	-	-	G 3/4"	G 1/2"	-	-
1-5.1	5.1	G 1/2"	G 1/2"	-	-	-	-	G 3/4"	G 1/2"	-	-
1-5.7	5.7	G 1/2"	G 1/2"	-	-	-	-	G 3/4"	G 1/2"	-	-
1-7.3	7.3	G 1/2"	G 1/2"	-	-	-	-	G 3/4"	G 1/2"	-	-
1-9.54	9.5	-	-	-	-	-	-	G 3/4"	G 1/2"	-	-
1-11.1	11.1	-	-	-	-	-	-	G 3/4"	G 1/2"	-	-
1-12.72	12.7	-	-	-	-	G 3/4"	G 1/2"	G 3/4"	G 1/2"	-	-
2-6.3	6.3	G 3/4"	G 3/4"	SAE 3/4"	SAE 3/4"	-	-	-	-	-	-
2-7.8	7.8	G 3/4"	G 3/4"	SAE 3/4"	SAE 3/4"	-	-	-	-	-	-
2-9.3	9.3	G 3/4"	G 3/4"	SAE 3/4"	SAE 3/4"	-	-	-	-	-	-
2-11.8	11.8	G 3/4"	G 3/4"	SAE 3/4"	SAE 3/4"	-	-	G 1"	G 1"	SAE 1"	SAE 1"
2-15.7	15.7	G 3/4"	G 3/4"	SAE 3/4"	SAE 3/4"	-	-	G 1"	G 1"	SAE 1"	SAE 1"
2-19.6	19.6	G 3/4"	G 3/4"	SAE 3/4"	SAE 3/4"	-	-	G 1"	G 1"	SAE 1"	SAE 1"
2-23.6	23.6	G 3/4"	G 3/4"	SAE 3/4"	SAE 3/4"	-	-	G 1 1/4"	G 1"	SAE 1 1/4"	SAE 1"
2-27.5	27.5	-	-	-	-	-	-	G 1 1/4"	G 1"	SAE 1 1/4"	SAE 1"
2-31.5	31.5	-	-	-	-	-	-	G 1 1/4"	G 1"	SAE 1 1/4"	SAE 1"
2-35.4	35.4	-	-	-	-	-	-	G 1 1/4"	G 1"	SAE 1 1/4"	SAE 1"
2-39.3	39.3	-	-	-	-	G 1"	G 1"	G 1 1/4"	G 1"	SAE 1 1/4"	SAE 1"
2-43.3	43.3	-	-	-	-	G 1 1/4"	G 1"	G 1 1/4"	G 1"	SAE 1 1/4"	SAE 1"

Size	Displacements	Design									
		ZPD / ZPA BSP connection		ZPD / ZPA SAE connection		ZPD Connections in centre plate		ZPBD Pipe thread connection		ZPBD SAE connection	
	cc/rev	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
3-17.3	17.3	G 1 1/4"	G 1 1/4"	SAE 1" 1 1/4	SAE 1" 1 1/4	-	-	-	-	-	-
3-22.0	22.0	G 1 1/4"	G 1 1/4"	SAE 1" 1 1/4	SAE 1" 1 1/4	-	-	-	-	-	-
3-25.0	25.0	G 1 1/4"	G 1 1/4"	SAE 1" 1 1/4	SAE 1" 1 1/4	-	-	-	-	-	-
3-29.4	29.4	G 1 1/4"	G 1 1/4"	SAE 1" 1 1/4	SAE 1" 1 1/4	-	-	G 1 1/2"	G 1 1/2"	SAE 1 1/2"	SAE 1 1/2"
3-37.4	37.4	G 1 1/4"	G 1 1/4"	SAE 1" 1 1/4	SAE 1" 1 1/4	-	-	G 1 1/2"	G 1 1/2"	SAE 1 1/2"	SAE 1 1/2"
3-45.4	45.4	G 1 1/4"	G 1 1/4"	SAE 1" 1 1/4	SAE 1" 1 1/4	-	-	G 1 1/2"	G 1 1/2"	SAE 1 1/2"	SAE 1 1/2"
3-53.0	53.0	G 1 1/4"	G 1 1/4"	SAE 1" 1 1/4	SAE 1" 1 1/4	-	-	G 1 1/2"	G 1 1/2"	SAE 1 1/2"	SAE 1 1/2"
3-60.0	60.0	G 1 1/4"	G 1 1/4"	SAE 1" 1 1/4	SAE 1" 1 1/4	-	-	G 2"	G 1 1/2"	SAE 2"	SAE 1 1/2"
3-72.0	72.0	G 1 1/4"	G 1 1/4"	SAE 1" 1 1/4	SAE 1" 1 1/4	G 1 1/4"	G 1 1/4"	G 2"	G 1 1/2"	SAE 2"	SAE 1 1/2"
3-80.1	80.1	-	-	-	-	-	-	G 2"	G 1 1/2"	SAE 2"	SAE 1 1/2"
3-93.5	93.5	-	-	-	-	G 1 1/2"	G 1 1/2"	G 2"	G 1 1/2"	SAE 2"	SAE 1 1/2"
3-106.8	106.8	-	-	-	-	G 1 1/2"	G 1 1/2"	G 2"	G 1 1/2"	SAE 2"	SAE 1 1/2"
3-120.0	120.0	-	-	-	-	G 2"	G 1 1/2"	G 2"	G 1 1/2"	SAE 2"	SAE 1 1/2"
3-140.0	140.0	-	-	-	-	SAE 2"	SAE 1 1/2"	-	-	-	-
4-44.4	44.4	G1 1/2 oder G2"	G1 1/2 oder G2"	SAE 2"	SAE 2"	-	-	-	-	-	-
4-57.9	57.9	G1 1/2 oder G2"	G1 1/2 oder G2"	SAE 2"	SAE 2"	-	-	-	-	-	-
4-67.0	67.0	G1 1/2 oder G2"	G1 1/2 oder G2"	SAE 2"	SAE 2"	-	-	-	-	-	-
4-74.5	74.5	G1 1/2 oder G2"	G1 1/2 oder G2"	SAE 2"	SAE 2"	-	-	-	-	-	-
4-89.3	89.3	G1 1/2 oder G2"	G1 1/2 oder G2"	SAE 2"	SAE 2"	-	-	-	-	-	-
4-101.0	101.0	G1 1/2 oder G2"	G1 1/2 oder G2"	SAE 2"	SAE 2"	-	-	-	-	-	-
4-110.0	110.0	G1 1/2 oder G2"	G1 1/2 oder G2"	SAE 2"	SAE 2"	-	-	-	-	SAE 3"	SAE 2"

Size	Displacements	Design									
		ZDP / ZPA BSP connection		ZPD / ZPA SAE connection		ZPD Connections in centre plate		ZPBD Pipe thread connection		ZPBD SAE connection	
		cc/rev	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet
4-122.0	122.0	G1 1/2 oder G2"	G1 1/2 oder G2"	SAE 2"	SAE 2"	-	-	-	-	SAE 3"	SAE 2"
4-131.0	131.0	G1 1/2 oder G2"	G1 1/2 oder G2"	SAE 2"	SAE 2"	-	-	-	-	SAE 3"	SAE 2"
4-149.0	149.0	G1 1/2 oder G2"	G1 1/2 oder G2"	SAE 2"	SAE 2"	-	-	-	-	SAE 3"	SAE 2"
4-166.8	166.8	G1 1/2 oder G2"	G1 1/2 oder G2"	SAE 2"	SAE 2"	-	-	-	-	SAE 3"	SAE 2"
4-184.6	184.6	G1 1/2 oder G2"	G1 1/2 oder G2"	SAE 2"	SAE 2"	-	-	-	-	SAE 3"	SAE 3"
4-223.0	223.0	-	-	-	-	-	-	-	-	SAE 3"	SAE 3"
4-236.0	236.0	-	-	-	-	-	-	-	-	SAE 3"	SAE 3"
4-280.0	280.0	-	-	-	-	-	-	-	-	SAE 3"	SAE 3"
4-316.0	316.0	-	-	SAE 3"	SAE 3"	-	-	-	-	SAE 3"	SAE 3"
4-354.0	354.0	-	-	SAE 3"	SAE 3"	-	-	-	-	SAE 4"	SAE 3 1/2"
4-400.0	400.0	-	-	SAE 3"	SAE 3"	-	-	-	-	SAE 4"	SAE 3 1/2"
4-434.0	434.0	-	-	SAE 3" 3 1/2	SAE 3" 3 1/2	-	-	-	-	SAE 4"	SAE 3 1/2"
4-472.0	472.0	-	-	SAE 3" 3 1/2	SAE 3" 3 1/2	-	-	-	-	SAE 4"	SAE 3 1/2"
4-517.0	517.0	-	-	SAE 3" 3 1/2	SAE 3" 3 1/2	-	-	-	-	SAE 4"	SAE 3 1/2"
5-289.0	289.0	-	-	-	-	*	*	-	-	SAE 4"	SAE 4"
5-372.0	372.0	-	-	-	-	*	*	-	-	SAE 4"	SAE 4"
5-450.0	450.0	-	-	-	-	*	*	-	-	SAE 5"	SAE 5"
5-550.0	550.0	-	-	-	-	*	*	-	-	SAE 5"	SAE 5"
5-570.0	570.0	-	-	-	-	*	*	-	-	SAE 5"	SAE 5"
5-600.0	600.0	-	-	-	-	*	*	-	-	SAE 5"	SAE 5"
5-650.0	650.0	-	-	-	-	*	*	-	-	SAE 5"	SAE 5"
5-670.0	670.0	-	-	-	-	*	*	-	-	SAE 5"	SAE 5"
5-700.0	700.0	-	-	-	-	*	*	-	-	SAE 5"	SAE 5"
5-745.0	745.0	-	-	-	-	*	*	-	-	SAE 5"	SAE 5"
5-750.0	750.0	-	-	-	-	*	*	-	-	SAE 5"	SAE 5"
5-840.0	840.0	-	-	-	-	*	*	-	-	SAE 5"	SAE 5"
5-850.0	850.0	-	-	-	-	*	*	-	-	SAE 5"	SAE 5"
5-900.0	900.0	-	-	-	-	*	*	-	-	SAE 5"	SAE 5"

Size	Displacements	Design									
		ZPD / ZPA BSP connection		ZPD / ZPA SAE connection		ZPD Connections in centre plate		ZPBD Pipe thread connection		ZPBD SAE connection	
	cc/rev	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
6-550.0	550,0	-	-	-	-	*	*	*	*	*	*
6-650.0	650,0	-	-	-	-	*	*	*	*	*	*
6-770.0	770,0	-	-	-	-	*	*	*	*	*	*
6-900.0	900,9	-	-	-	-	*	*	*	*	*	*
6-1,150.0	1,150.0	-	-	-	-	*	*	*	*	*	*
7-1,100.0	1,100.0	-	-	-	-	*	*	*	*	*	*
7-1,400.0	1,400.0	-	-	-	-	*	*	*	*	*	*
7-1,600.0	1,600.0	-	-	-	-	*	*	*	*	*	*
8-2,100.0	2,100.0	-	-	-	-	*	*	*	*	*	*
8-2,300.0	2,300.0	-	-	-	-	*	*	*	*	*	*
8-2,600.0	2,600.0	-	-	-	-	*	*	*	*	*	*

Standard: SAE 3000 PSI

Other designs on request

- = not available

* = to be determined with project

**SAFETY DECLARATION
(CERTIFICATE OF NON-OBJECTION)**

Last revised: 04/2023

Please reply to reparaturen@beinlich-pumps.com

Pumps for which this safety certificate has not been completed and signed can neither be inspected nor repaired for safety reasons and will be returned unchecked at your expense.

Part no.		Serial no.	
Pump type			
Reason for return			
Pumped medium		Manufacturer	
Cleaning medium		Manufacturer	
Safety data sheet for the cleaning medium	<input type="radio"/> Yes*	<input type="radio"/> No	CAS no. <input type="text"/>
Safety data sheet for the pumped medium	<input type="radio"/> Yes*	<input type="radio"/> No	CAS no. <input type="text"/>

*if positive, please enclose as an attachment

The pump was used in media which are hazardous to health/environment.	<input type="radio"/> No	<input type="radio"/> Yes
The pump was carefully emptied before dispatch and cleaned inside and outside.	<input type="radio"/> No	<input type="radio"/> Yes
Special safety measures or treatment is necessary or expected.	<input type="radio"/> No	<input type="radio"/> Yes

The pump, including accessories were last used with the following media:

If yes, which

Solvents	<input type="radio"/> No	<input type="radio"/> Yes	<input type="text"/>
Toxic liquids	<input type="radio"/> No	<input type="radio"/> Yes	<input type="text"/>
Biologically active liquids	<input type="radio"/> No	<input type="radio"/> Yes	<input type="text"/>
Radioactive liquids	<input type="radio"/> No	<input type="radio"/> Yes	<input type="text"/>
Corrosive liquids	<input type="radio"/> No	<input type="radio"/> Yes	<input type="text"/>
Alkali	<input type="radio"/> No	<input type="radio"/> Yes	<input type="text"/>
Explosive liquids	<input type="radio"/> No	<input type="radio"/> Yes	<input type="text"/>
Other media	<input type="radio"/> No	<input type="radio"/> Yes	<input type="text"/>

SAFETY DECLARATION (CERTIFICATE OF NON-OBJECTION)

Please reply to reparaturen@beinlich-pumps.com

The undersigned assures that the above information is correct and complete and the shipping is carried out according to legal regulations. The undersigned is liable for all damages which arise as a result of the non-marked decontamination of the returned pump.

Beinlich expressly points out that repairs and verification work is carried out by trusting the correctness of the completion of this safety declaration (certificate of non-objection). Should physical injuries, death or even damage to property occur, claims for damages will be asserted.

Company

Street / Building no.

Postcode / Town

Phone

Fax

Email

Contact

(in capitals)

Date

Signature

(company stamp)

Enclosed

beinlich.*pump*
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