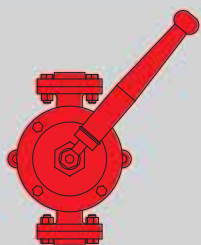


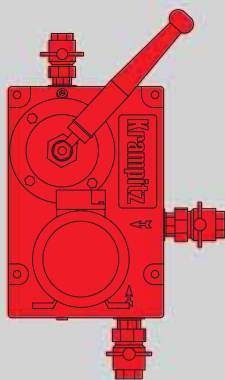


SYSTEM PUMPS

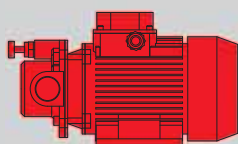
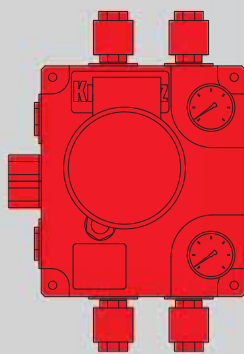
for fuels and engine oils



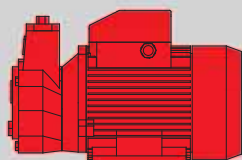
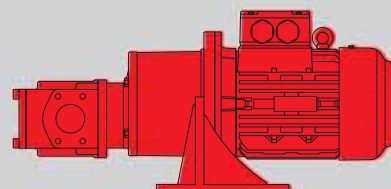
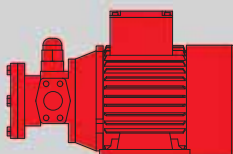
manual pumps



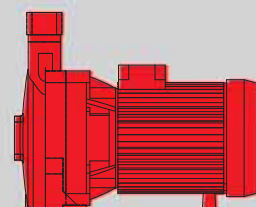
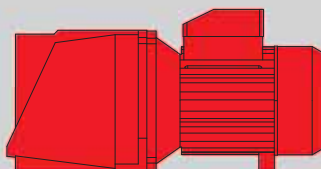
pump combinations, block pumps



displacement pumps



centrifugal pumps



Our pump types

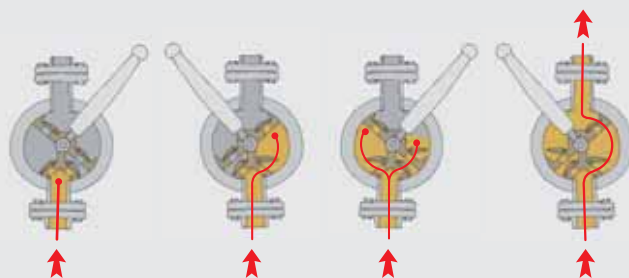
Brief overview - Manual vane-type and centrifugal pumps for low-viscosity fluids

5 manual vane-type pump

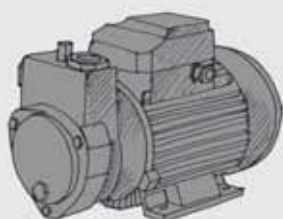


PH-30-001 manual vane-type pump

design	flaps
delivery	15 liters/minute
media:	- water - diesel fuel - fuel oil - mineral oil

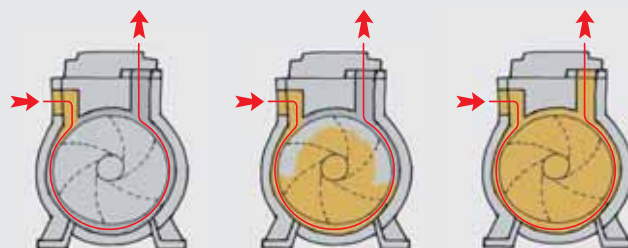


6 centrifugal pump

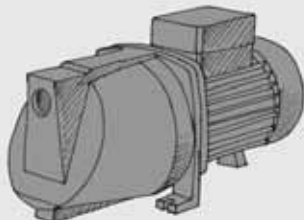


PK-80 centrifugal pump

design	impeller
delivery	10 - 50 liters/minute
media:	- diesel fuel - fuel oil

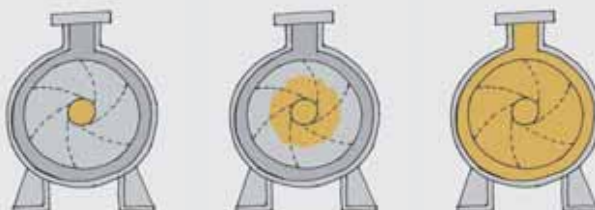


7 jet centrifugal pump

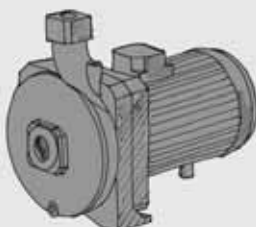


PK-10-010 centrifugal pump

design	impeller + jet body
delivery	20 - 80 liters/minute
media:	- water - diesel fuel - fuel oil

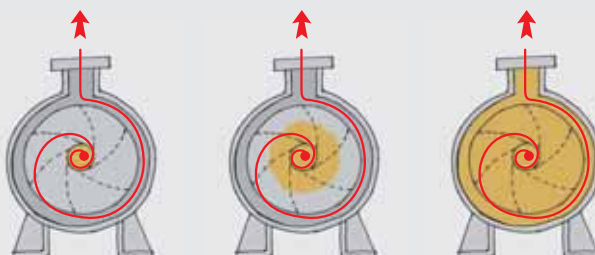


8 radial centrifugal pump

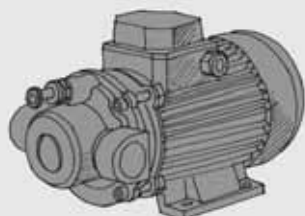


PK-170-11 centrifugal pump

design	radial impeller
delivery	60 - 120 liters/minute
media:	- water - diesel fuel - fuel oil

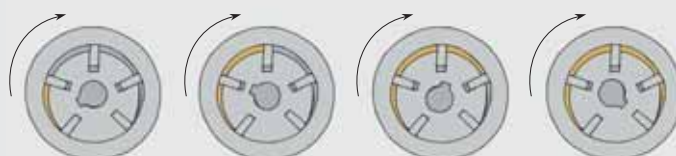


9 Sliding vane pump type PG-60-25



PG gerotor pump

design	sliding vanes
delivery	50 liters/minute
media:	- oil - vegetable oil - biodiesel

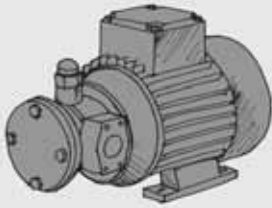


Our pump types

Brief overview - Gerotor and geared pumps for high-viscosity fluids

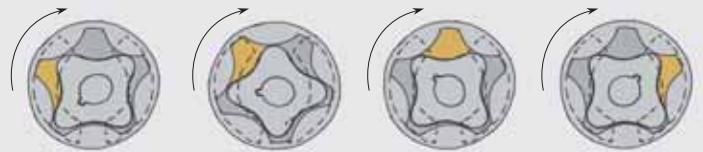
10 gerotor pump

page



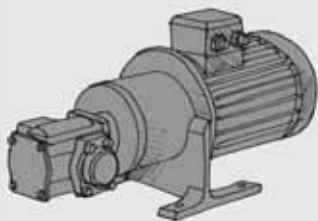
PG gerotor pump

design	trochoid gear type pair of rotors
delivery	6 - 26 liters/minute
media:	- diesel - fuel oil - mineral oil - vegetable oil - biodiesel



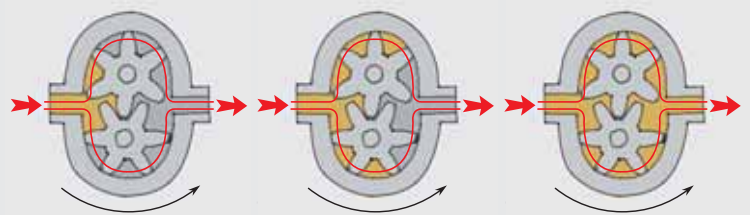
11 geared pump

page



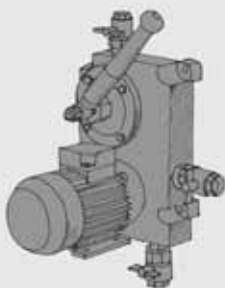
PZ geared pump

design	counter-rotating pair of gears
delivery	50 - 200 liters/minute
media:	- diesel - fuel oil - mineral oil - vegetable oil - biodiesel



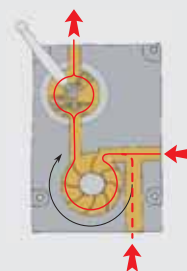
12 pump combination

page

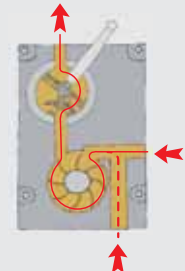


Z-PK pump combination

design	centrifugal pump
delivery	50 liters/minute
design	manual vane-type pump
delivery	15 liters/minute
media:	- diesel - fuel oil



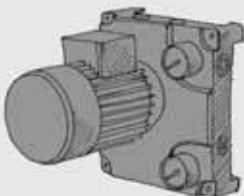
centrifugal pump



manual vane-type pump

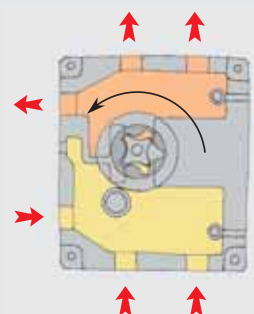
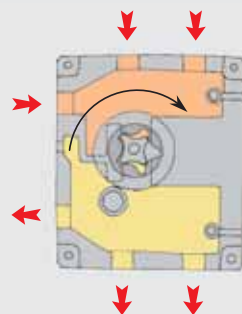
14 block pump set

page



Z-PG block pump set

design	trochoid gear type pair of rotors in block housing
delivery	6 - 26 liters/minute
media:	- diesel - fuel oil - mineral oil - vegetable oil - biodiesel



other pump types on request

- transfer pumps with delivery up to 1000 liters/minute
- heated pumps
- pumps for potentially explosive atmospheres (ATEX)
- pumps for special liquids
- pumps for dispensing systems



Cavitation & viscosity

Explanation, system errors and correction

Cavitation

Cavitation describes the process of small hollows (gas bubbles) in a fluid due to pressure differences. As a rule, this causes gassing of the fluid due to the vacuum generated by the conveying pump if the cross sectional area of the intake line of a pump system is too small or the intake pipe too long. The fluid flow is interrupted or the fluid column in the intake line gets hanged up.

Corrective action:

1. The cross section of the intake line should never be smaller than the intake line socket in the pump housing.
2. Keep the intake line short. If possible, place the pump on the storage tank or in the vicinity of the tank from which fluid is withdrawn. The intake line should not be longer than 6 meters.
If the intake line is a horizontal line and must be longer than 6 meters, double the cross section of the intake line.
3. Limit the level difference of the intake line between the storage tank and the pump to maximum 4 meters.
4. Observe the delivery head of the pump. Centrifugal pumps have a limited delivery head, which is 30 to 40 meters, as a rule.
Gerotor pumps can deliver up to 50 meters head. The delivery volume will be smaller, however.

Viscosity of fluids

Viscosity (toughness, shear viscosity) is a property of a fluid (liquid or gas) to change its shape under the effect of tension or, when being deformed, of absorbing tension which depends on the rate of deformation (cf. DIN 1342). Viscosity is a function of temperature and pressure. There are two types of viscosity: dynamic and kinematic viscosity.

Dynamic viscosity, η , [Pa*s, N*s/m²] comprises Newton's law of friction for laminar flows and is obtained from the ratio of shear stress and velocity gradient in a medium.

Kinematic viscosity, ν , [m²/s; mm²/s], also refers to diffusion coefficient of the pulse, is obtained from the quotient of the dynamic viscosity, η , and the medium density, ρ ($\nu = \eta / \rho$) and is the critical dimension for dimensioning a pump system.

Viscosity of diesel fuel and lubricating oils

Major requirements on pump design are made by the viscosity of liquids.

The lower the temperature and the higher the pressure, the higher the viscosity. For example, the viscosity of diesel fuel about doubles when the temperature drops from 40°C to 20°C or the pressure rises to about 600 bar. Viscosity affects the flow and pumping behavior of the fuel in the fuel system. If the viscosity is too high, it is difficult to pump at low temperature whereas if the viscosity is too low, power is lost at high temperature and pump wear also increases.

The viscosity of lubricating oils at certain temperatures is indicated by the SAE grade (SAE = Society of Automotive Engineering) and describes the internal friction of the oil. The SAE grade is not a quality criterion, it merely indicates flowability.

Corrective action: Viscosity too high - use tank heater and pipeline trace heating
Viscosity too low - use flow coolers

Viscosity of different media at 101.325 kPa atmospheric pressure

substance	density (15 °C) [kg/dm ³]	kinematic viscosity [mm ² /s]	setting point [°C]	flashpoint [°C]
water (0,01°C)	1,0	1,792	0	k.A.
water (20°C)	1,0	1,004	0	k.A.
water (25°C)	1,0	0,891	0	k.A.
water (40°C)	1,0	0,658	0	k.A.
water (80°C)	1,0	0,365	0	k.A.
fuel oil EL/diesel (20°C)	0,84	4...6	k.A.	>55 (80)
fuel oil EL/diesel (40°C)	0,84	2...4	k.A.	>55 (80)
fuel oil S (50°C)	0,97	450	k.A.	>55
fuel oil S (100°C)	0,97	40	k.A.	>55
Lubricating oil (gear) GL48 (40°C)	0,85-0,9	10-150	-18	>150
biodiesel (RME) (20°C)	0,88	4	k.A.	100
rapeseed oil (20°C)	0,92	74	0...-3	317
palm oil (20°C)	0,93	53	27...43	>260
palm oil (40°C)	0,93	25	27...43	>260
ad-blue (32% urea)	1,09	1,27	-11	k.A.

Old units of kinematic viscosity are Stokes / centi-Stokes and can be converted as follows:

1 St (Stokes) = 1 cm²/s

1 cSt = 1 mm²/s = 0,01 St



Manual vane-type pump PH-30-001

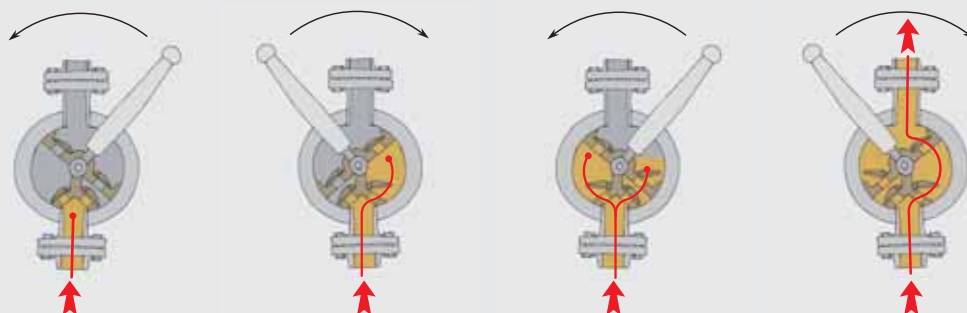
Application and installation

Manual vane type pumps can be used for clear liquids such as water, petrol, diesel fuel and other fuels as well as for paraffin, alcohol, light chemical solutions, edible oils, etc. They are the only manual pump type which can handle very hot liquids up to 80°C. The simple and robust construction, the quality of the materials and the machining ensure a long and efficient life of the pump. The manual vane-type pump is used for priming liquids in piping systems and for conveying small amounts of liquid.

The pumps are operated by moving the lever left to right and back. This causes the shaft and the vane piston – with flap valves – in the pump to carry out half rotations. Also installed in the pump body is the suction divider with flaps. A stuffing box sleeve which is compressed by a stuffing box ring and nut acts as seal between shaft and pump cover. The standard version has bolted flanges and is supplied with bolted mating flanges. The pump can be wall mounted at the eyelets of in the body.



mode of action of the manual vane type pump



materials:

housing: grey-cast iron
internals: brass
shaft: steel
seal: stuffing box seal
(asbestos-free)

main applications:

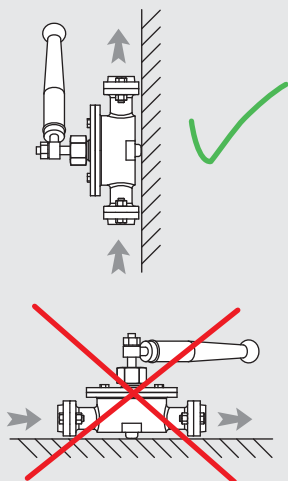
- diesel engines production
- petrochemical industry
- naval architecture
- building industry
- farming
- workshop equipment
- reliable stand-by for electric pumps

installation note:

- installation in closed rooms and protected from weather, in any case
- **the pump must be primed before it is started**

installation position:

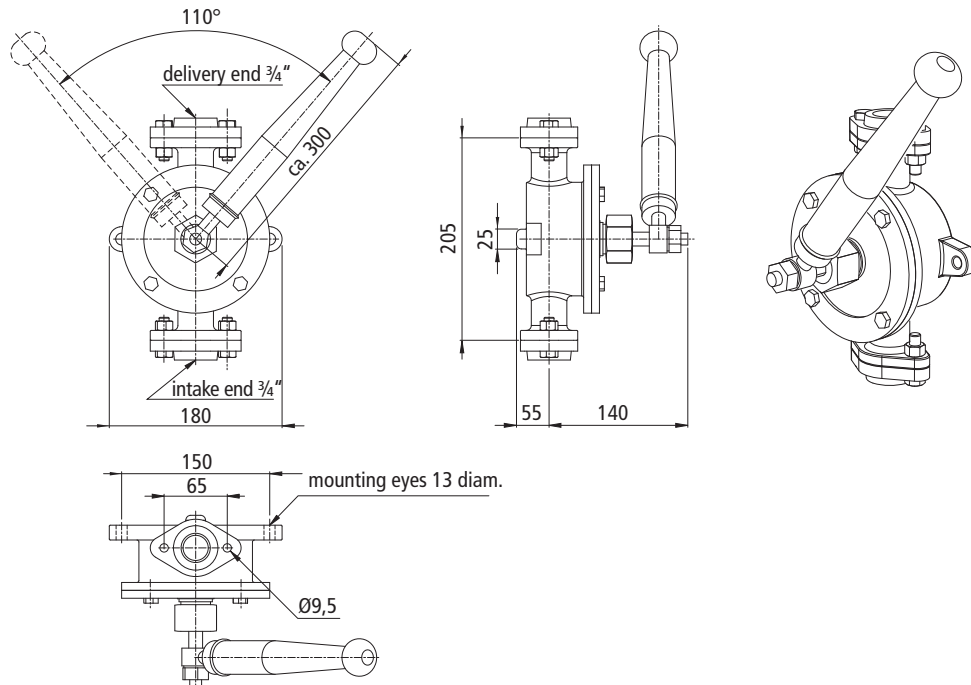
- always vertical



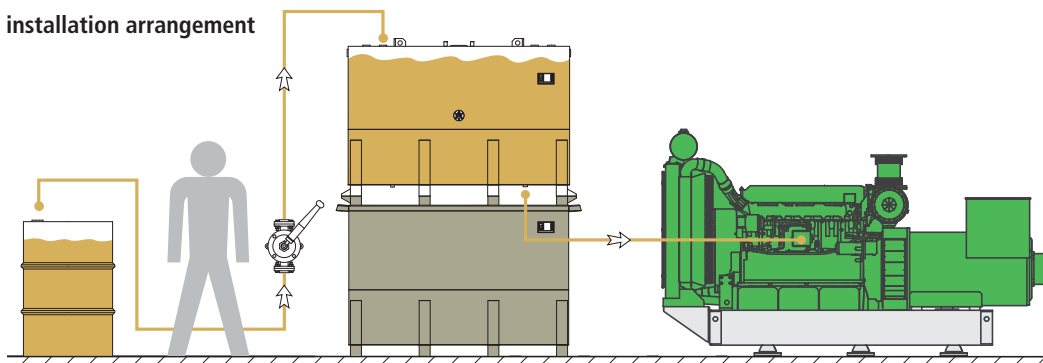
type	delivery	double strokes	delivery head	suction head	connection	weight
	liters/min	per minute	m	m		kg
PH-30-001	15	60*	ca. 10	ca. 4	G 3/4"	6,2

*average value

Dimensions (in mm) / Specifications are subject to change!



installation arrangement





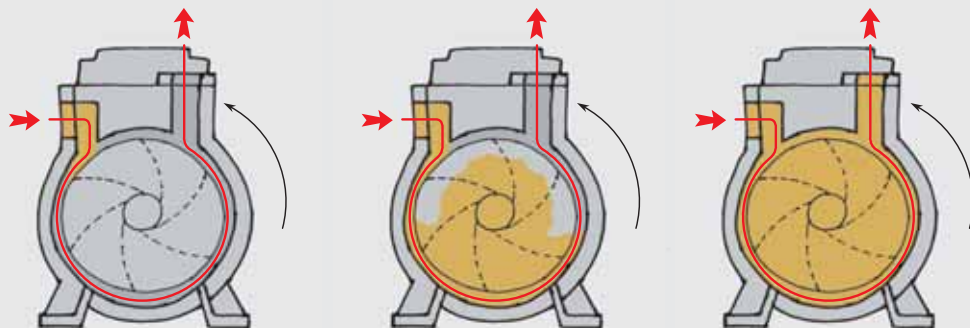
Centrifugal pump type PK-80

Application and installation

The centrifugal pump is recommended for diesel fuel/fuel oil as well as thin-bodied media which do not attack the materials of the pump chemically. The PK-80 pump is a compact self-priming pump used to convey scanty, irregular liquid flows or media mixed with air.



mode of action of the centrifugal pump



materials:

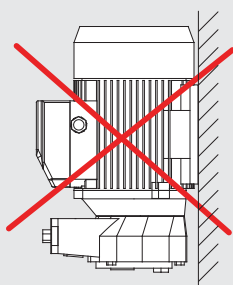
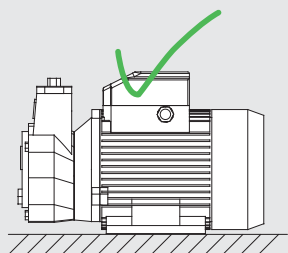
housing: grey-cast iron
internals: brass / plastics
shaft: stainless steel
seal: ceramics / graphite / viton

installation note:

- installation in closed rooms and protected from weather, in any case
- **The pump must be primed before it is started, then it is self-priming.**
- **Dry running of more than 3 minutes not permitted.**

installation position:

- always horizontal, not vertical



type	pump		motor			connection intake	connection delivery	weight kg
	delivery liters/min.	del. head mWC	voltage V	amperage A	output kW			
PK-80-015	5	46	230	5,0	0,6	1"	1"	11,6
	50	10						
PK-80-016	5	46	400	2,0	0,6	1"	1"	10,8
	50	10						

Dimensions (in mm) / Specifications are subject to change!

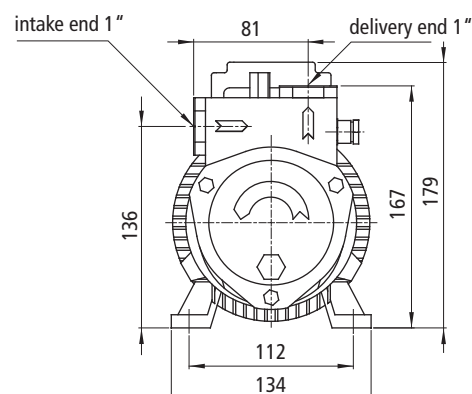
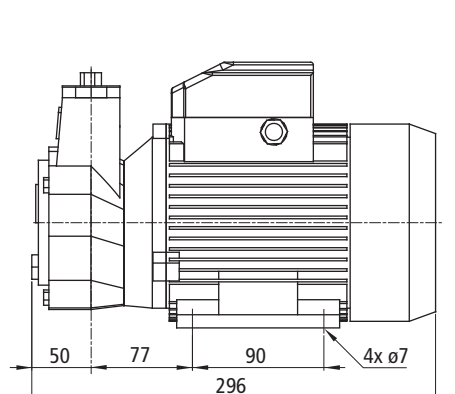
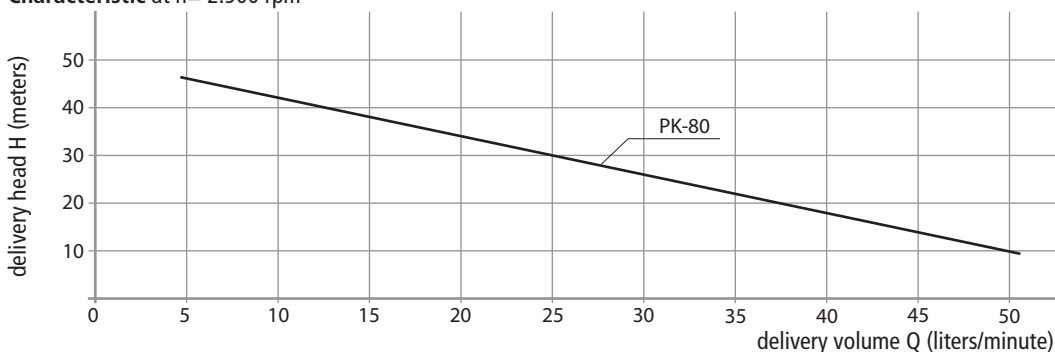
flow rate relates to viscosity of 3-10 mm²/s (cSt) of the medium and
length of the suction line = 1 meter, manometric/theoretical suction head up to 9 meters

temperature of the conveyed medium up to +90°C (+50°C for diesel fuel/fuel oil),
ambient temperature up to +40°C, insulation class: F; type of protection: IP 44

order note:

PK-80-015: single-phase 230 V, 50 Hz (with capacitor and heat protection switch integrated in the winding)
PK-80-016: 3-phase 400 V, 50 Hz

Characteristic at n= 2.900 rpm





Jet centrifugal pump type PK-10-010

Application and installation

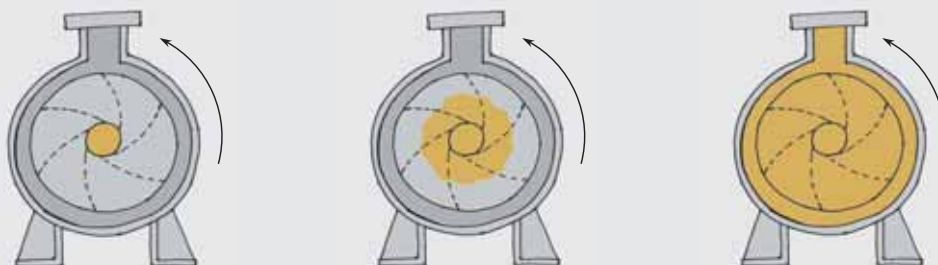
The jet centrifugal pump is recommended for thin-bodied media such as EL fuel oil, diesel fuel, clean water and liquids which do not attack the materials of the pump chemically.

The design of this self-priming pump is such that the medium can also be taken in when it is mixed with air.

A high level of reliability and freedom from maintenance make the pump suitable for industrial applications, e.g., systems which are supplied with fuel.



mode of action of the centrifugal pump



materials:

housing: grey-cast iron

internals: brass / plastics

shaft: stainless steel

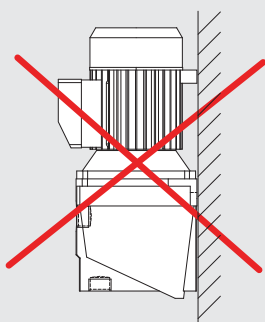
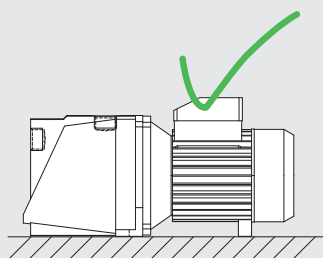
seal: ceramics / graphite / NBR

installation note:

- installation in closed rooms and protected from weather, in any case
- installation position: always horizontal, not vertical
- **The pump must be primed before it is started, then it is self-priming.**
- **Dry running of more than 3 minutes not permitted.**

installation position:

- always horizontal, not vertical



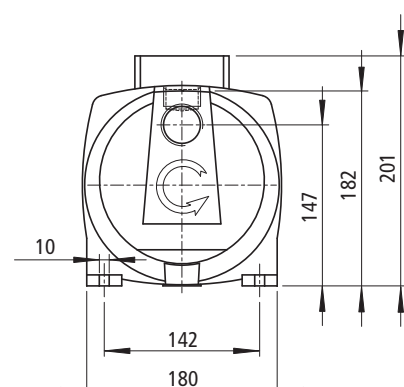
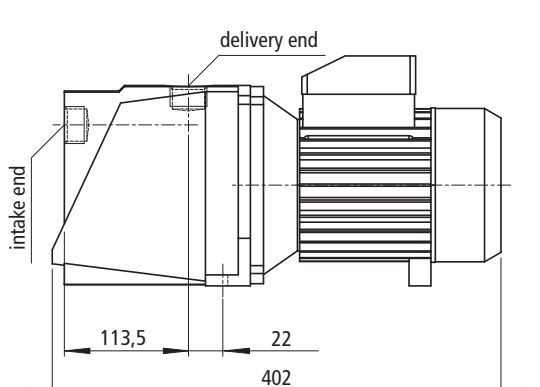
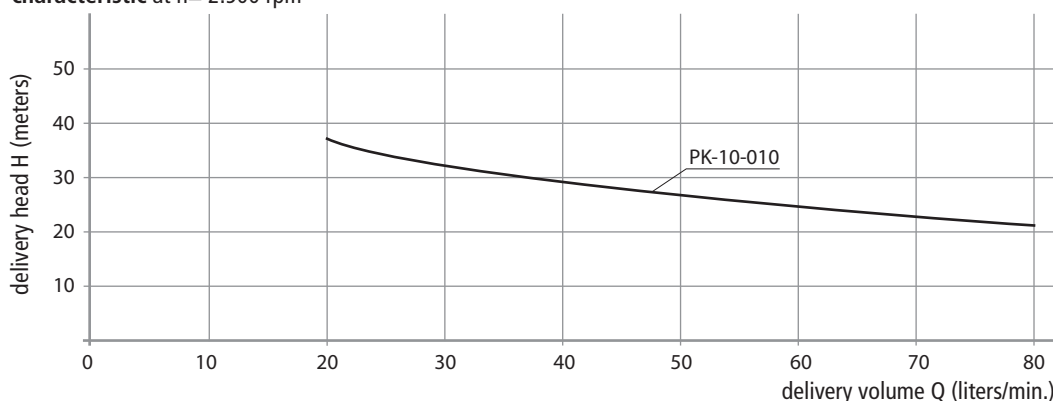
type	pump		motor			connection		weight
	delivery	del. head	voltage	amperage	output	intake	delivery	
	liters/min.	mWC	V	A	kW			kg
PK-10-010	80	21	400	2,6	0,75	1"	1"	13,8
	20	38						

Dimensions (in mm) / Specifications are subject to change!

flow rate relates to viscosity of 3-10 mm²/s (cSt) of the medium and length of the suction line = 1 meter;
delivery maximum 80 liters/min; delivery head maximum 35 meters;
manometric/theoretical suction head up to 9 meters

temperature of the conveyed medium up to +40°C, ambient temperature up to +40°C,
insulation class: F; type of protection: IP 44

characteristic at n= 2.900 rpm



Radial centrifugal pump type PK-170-11

Application and installation

The radial centrifugal pump is recommended for thin-bodied media such as EL fuel oil, diesel fuel, clean water and liquids which do not attack the materials of the pump chemically.

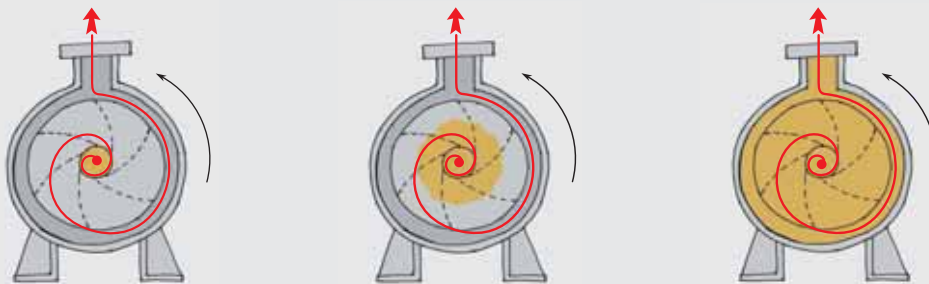
The design of this self-priming pump is such that the medium can also be taken in when it is mixed with air.

A high level of reliability and freedom from maintenance make the pump suitable for industrial applications, e.g., for systems which are supplied with fuel.

The advantage of the centrifugal pump is a relatively high flow rate with comparably low suction and delivery head and very compact design.



mode of action of the radial centrifugal pump



materials:

housing: grey-cast iron

internals: brass / plastics

shaft: stainless steel

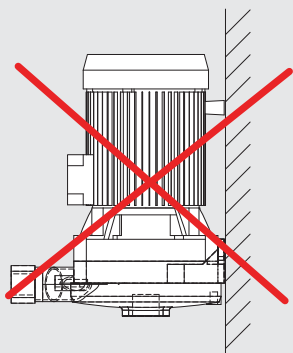
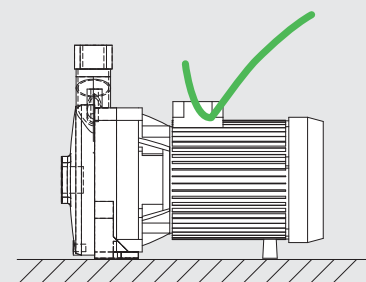
seal: ceramics / graphite / NBR

installation note:

- installation in closed rooms and protected from weather, in any case
- installation position: always horizontal, not vertical
- **The pump must be primed before it is started, then it is self-priming.**
- **Dry running of more than 3 minutes not permitted.**

installation position:

- always horizontal, not vertical



type	pump		motor						
	delivery	del. head	voltage	frequency		output	intake	delivery	weight
	liters/min.	mWC	V	Hz	rpm	kW	DN 1	DN 2	kg
PK-170-11	120	22	400	50	2900	1,1	1 1/4"	1"	18,5
	60	35							

Dimensions (in mm) / Specifications are subject to change!

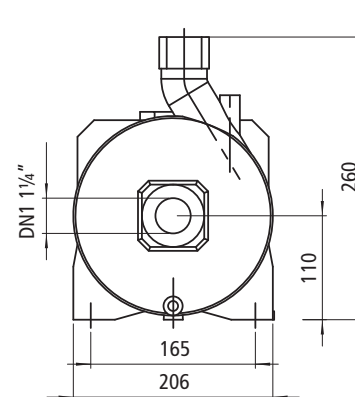
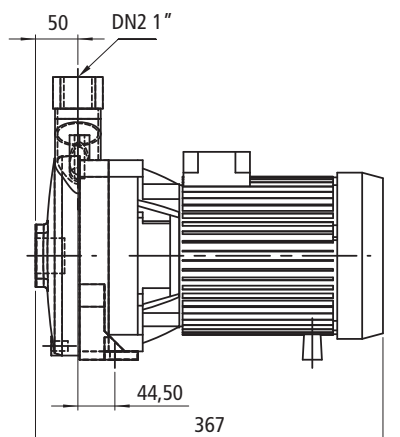
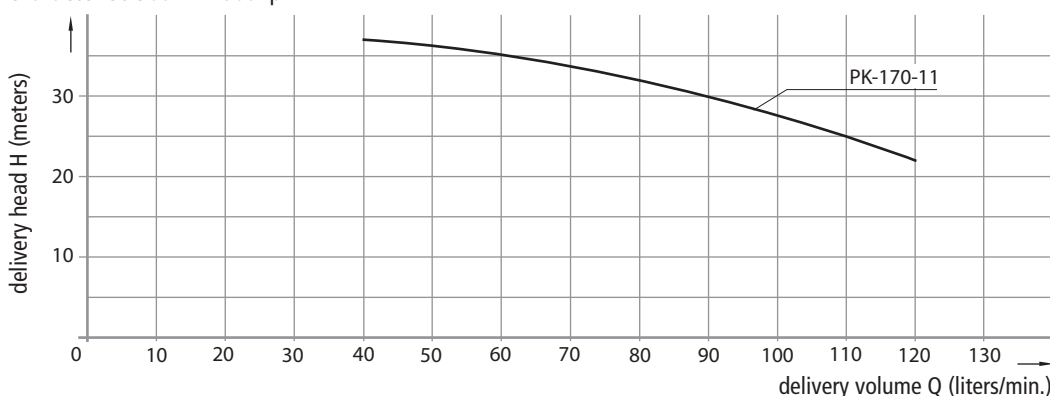
flow rate relates to viscosity of 3-10 mm²/s (cSt) of the medium and length of the suction line = 1 meter; manometric/theoretical suction head up to 7 meters

temperature of the conveyed medium up to +90°C (+50°C for diesel fuel/fuel oil), ambient temperature up to +40°C, insulation class: F; type of protection: IP 44

order note:

PK-170-011: 3-phase 400 V, 50 Hz

characteristic at n= 2.900 rpm





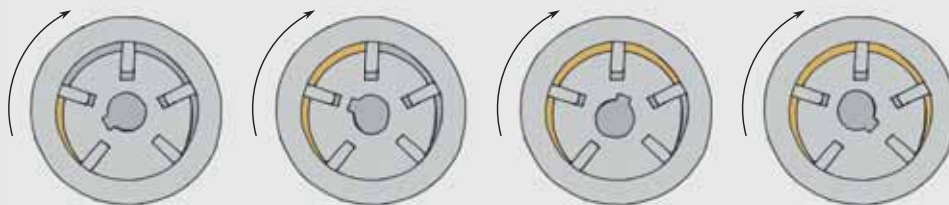
Sliding vane pump type PG-60-25

Application and installation

The small, compact and very silent pump is suitable for thin-bodied media, e.g., fuel oil EL and diesel fuel. The high priming power makes the pump ideal where a certain volume of liquid must be made available intermittently but quickly. The pump delivers fairly high volumes also at pressure.



mode of action of the sliding vane pump



materials:

housing: cast aluminium
internals: sintered steel / plastics
shaft: steel
seal: shaft seal

installation note:

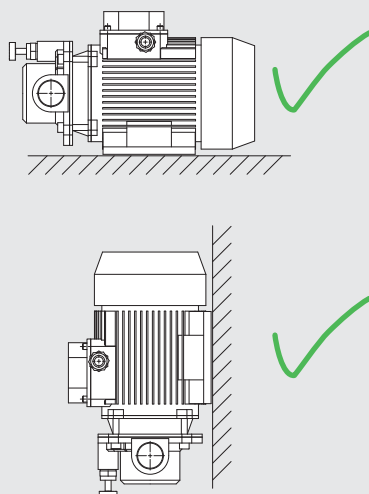
- installation in closed rooms and protected from weather, in any case
- no priming required
- **Brief dry running permitted; dry running of more than 3 minutes causes damage.**

Caution!

By-pass operation with the delivery line closed is only permitted for a very short time (not more than 2-3 minutes). As soon as the overheat guard trips, the power supply must be disconnected and the motor allowed to cool. If a particular application involves a risk that by-pass operation must be maintained for a longer time, it is absolutely necessary to prevent recirculation in the pump but the liquid is returned to the suction vessel.

installation position

- different positions are possible



type	pump		motor					
	max. flow	pressure	3-phase			output	connection	weight
	liters/min.	bar	V	Hz	rpm	kW		kg
PG-60-25	50	5	400	50	1450	2.0	1" G	14,1

Dimensions (in mm) / Specifications are subject to change!

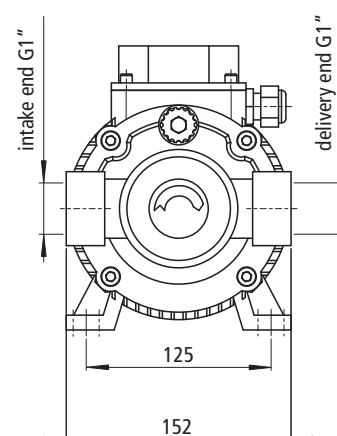
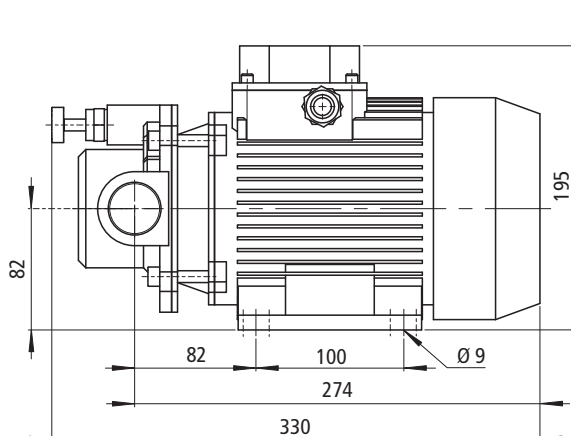
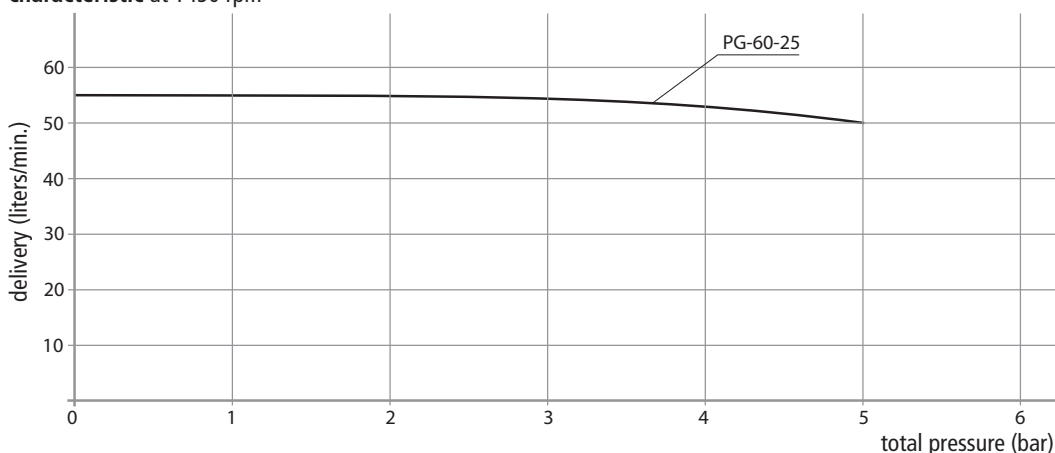
The sliding vane pump can be used for oil of 50 to 500 mm²/s (cSt) viscosity (at 10-40°C operating temperature).

flow rates from 25 to 60 liters/minute; pressures up to 6 bar; continuous operation
Temperature range: min. -10°C / max. +60°C; relative humidity: max. 90%, low-noise pump run (less than 70 dB); possible operation with delivery end closed due to integrated adjustable by-pass valve (to protect the electric motor from overload)

insulation class:

F; type of protection: IP 55, PG 60; 3-phase 230/400V, 50Hz

characteristic at 1450 rpm



Gerotor pump types PG 6 / PG 13 / PG 26

Application and installation

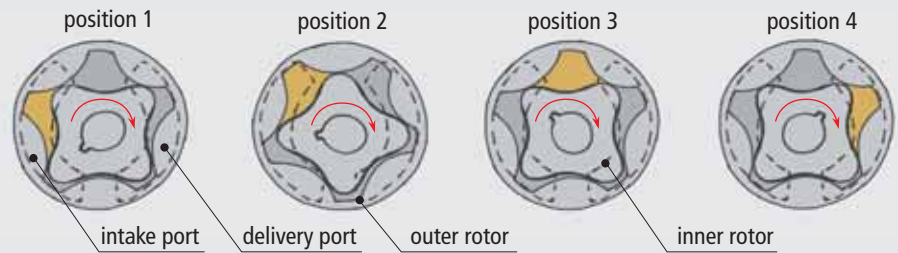
Gerotor pumps can be used for conveying liquid media which have some lubrication effect and do not contain solid contamination. The compact block design without coupling saves a significant amount of construction length. To protect the electric motor from overload, a by-pass valve with 1-15 bar opening pressure is integrated in every pump.

The gerotor pump has the following advantages:

- robust, compact design, low-noise run, self-priming with above-average suction performance, high efficiency, long life



mode of action of the gerotor pump



materials:

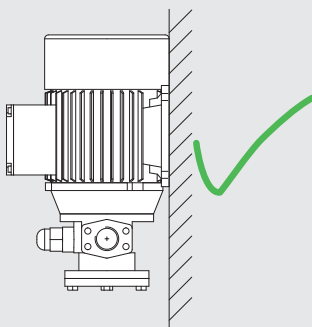
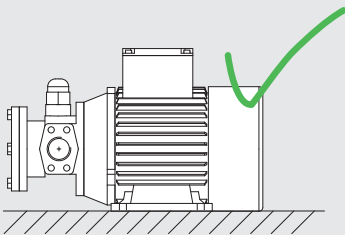
- housing parts GG-20
- shaft 16MnCr55
- gerotor set: sintered steel
- multi-layer bearing bush
- radial shaft seal NBR ww. FKM

installation note:

- installation in closed rooms and protected from weather, in any case
- different installation positions possible
- by-pass service not to exceed 3 minutes
- **The pump must be primed before it is started, then it is self-priming.**
- **Brief dry running permitted; dry running of more than 3 minutes causes damage.**

installation position:

- different positions are possible

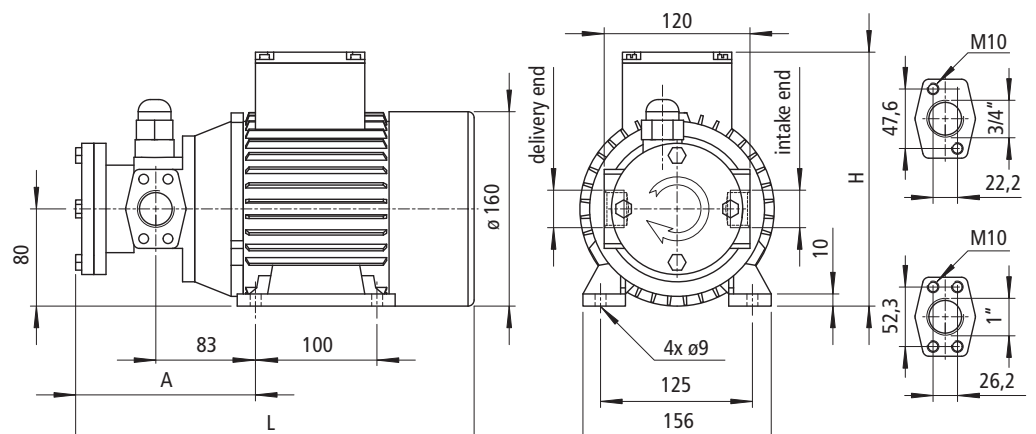
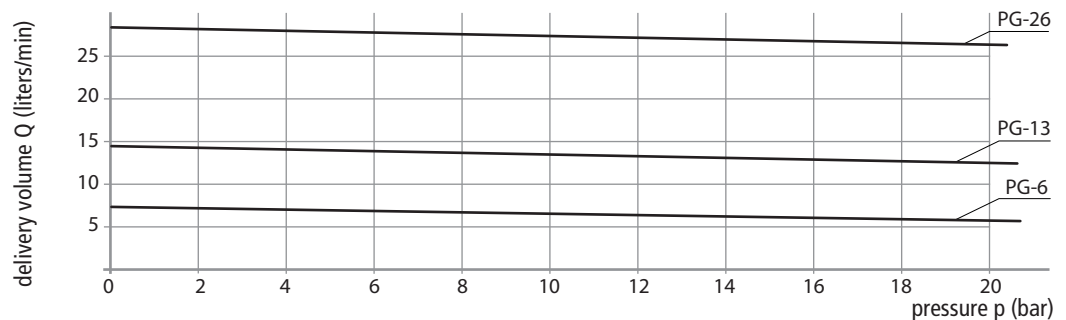


type	max. flow liters/min.	pressure bar	motor			A mm	L mm	H mm	nom. size intake / deliv.
			voltage ~ V	amperage A	output kW				
PG-6-110	6	5,0	230	4,2	0,55	148	327	219	3/4"
PG-6-111			Y 400 / Δ 230	1,5 / 2,6					
PG-13-112	13	5,0	230	4,9	0,55	148	327	219	3/4"
PG-13-113			Y 400 / Δ 230	1,9 / 3,3					
PG-26-114	26	5,0	230	4,9	0,75	156	335	219	1"
PG-26-115			Y 400 / Δ 230	2,1 / 3,6					

Dimensions (in mm) / Specifications are subject to change!

flow rate and delivery related to 50-150 mm²/s (cSt), 5 bar delivery pressure mineral oils, viscosity of 50-500 mm²/s (cSt); other viscosities can affect delivery and power ratings

characteristic at n= 1.380 rpm

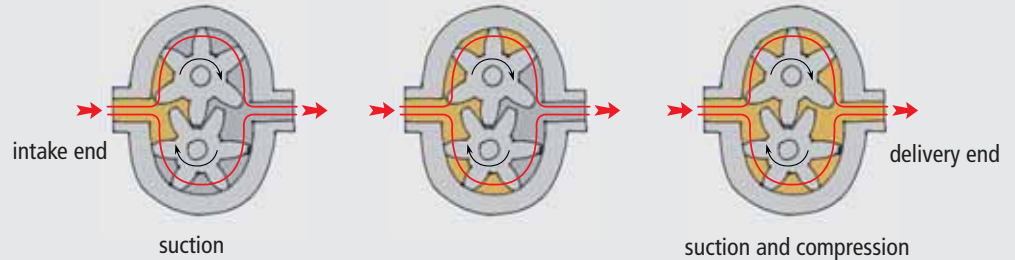


Geared pump types PZ-50 / PZ-100 / PZ-200

Application and installation

Geared pumps are suitable especially for conveying media of high viscosity which do not contain solid material, ensure a minimum of lubrication and are compatible chemically. The standard version has clockwise rotation. The rotation of the gears can be reversed simply by turning of the pump housing by 180 degrees. This also changes the direction of flow.

mode of action of the geared pump



materials:

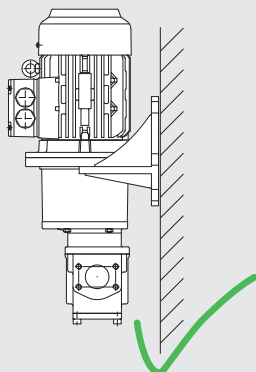
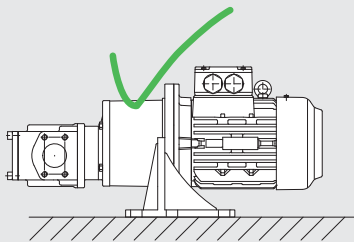
housing parts: grey-cast iron
shafts: nitrided steel
gears: ductile cast iron
bearings: multiple-layer sliding bearing (PTFE/PBz/ St)
shaft seal: radial shaft seal
housing seal: O-ring T < 80 Grad C
= NBR (perbunan)

installation note:

- installation in closed rooms and protected from weather, in any case
- different positions are possible
- max. 3 minutes by-pass service
- **The pump must be primed before it is started, then it is self-priming.**
- **Brief dry running permitted; dry running of more than 3 minutes causes damage.**

installation position:

- different positions are possible

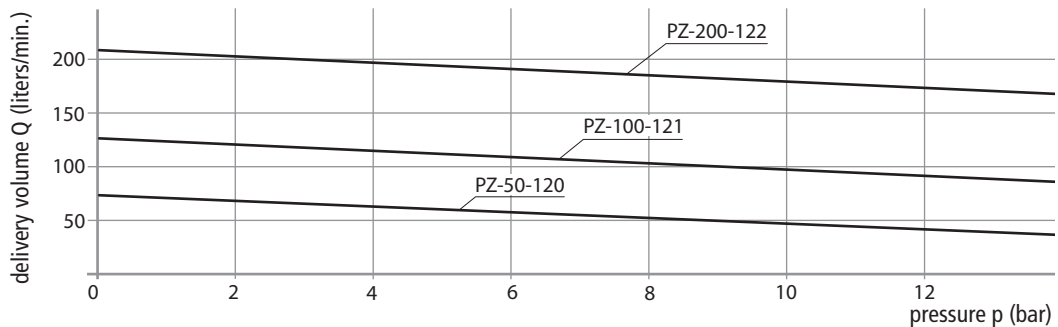


type	pump				motor		
	deliv. volume	deliv. pressure	connection	flange	output	voltage	amperage
	liters/min.	bar	NW		kW	~ V	A
PZ-50-120	approx. 50	6,0	40	INW 38-38	1,5	Y 400 / Δ 230	3,6 / 6,6
PZ-100-121	approx.110	6,0	50	INW 51-51	3,0	Y 400 / Δ 230	3,9 / 6,8
PZ-200-122	approx. 200	6,0	65	INW 63-63	4,0	Y 400 / Δ 230	5,4 / 9,3

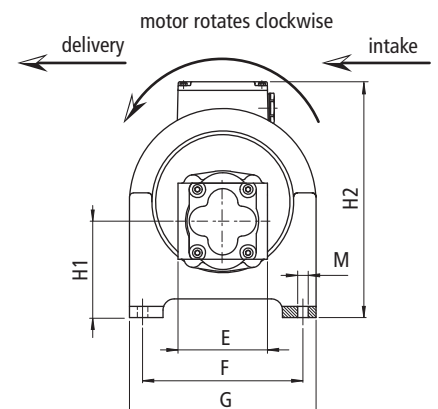
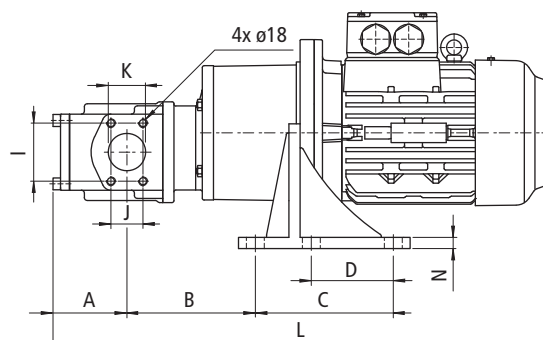
Dimensions (in mm) / Specifications are subject to change!

- Flow rate and delivery related to 50-150 mm²/s (cSt), 5 bar delivery pressure mineral oils, viscosity of 50-500 mm²/s (cSt);
- Other viscosities can affect delivery and power ratings.

characteristic at n= 1.450 rpm



Typ	A	B	C	D	E	F	G	H1	H2	I	J	K	L	M	N
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	DN	mm	mm	mm
PZ-50-120	70	131	60	-	110	180	210	93	240	69,9	35,7	40	562	ø11	12
PZ-100-121	99	172	185	110	120	215	250	129	316	77,8	42,9	50	662	ø14	15
PZ-200-122	100	187	185	110	130	215	250	123	330	88,9	50,8	65	699	ø14	15





Pump combination type Z-PK for fuel supply to units

The pump combination type Z-PK comprises of a manual vane-type pump and a centrifugal pump in a housing designed especially for stand-by diesel generating sets. The main feature of the combination is the common pump body in which the electric centrifugal pump and the manual vane-type pump are installed. The pump-combination is protected by utility.

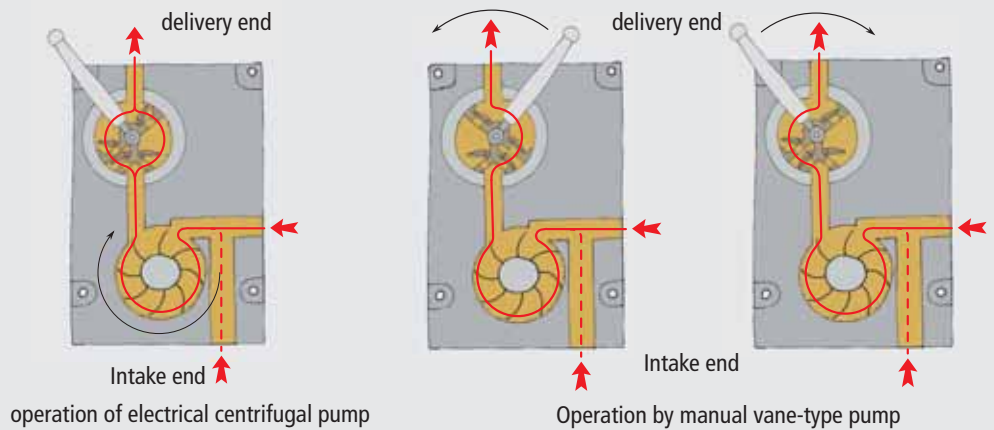
Advantages:

- both pumps can run independent of each other without the need of operating ball valves
- compact construction of the pump combination
- easy to replace due to easy installation of ball valves with separating screw fittings
- easy access to priming and drain openings
- efficient seal due to combination of radial shaft seal and stuffing box
- factory test run with leak and pressure test on test rig
- lower weight and smaller installation space
- easy priming and venting of the pipe system by means of the manual pump

Applications of the pump combination

The pump combination type Z-PK / 2000 (230V) and Z-PK / 2001 (400V) is exclusively used for diesel fuel and fuel oil EL. A wide application range is available in view of the high delivery volume of up to about 35-40 liters/minute and approximately 5 m head (5 l/min at 35 m head). The ambient temperature of the pump combination is from +5°C to +30°C. The following versions are available: 230V; 50Hz and 400V, 3-phase AC; 50Hz.

mode of action of the pump combination

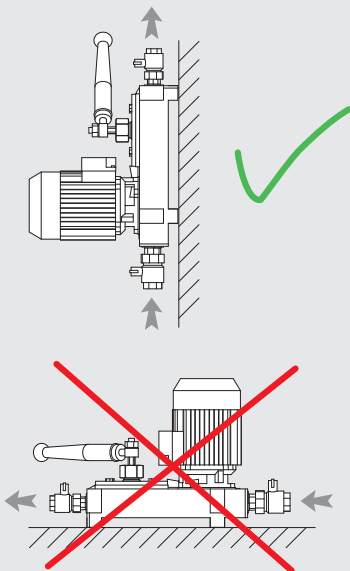


installation note:

- installation in closed rooms and protected from weather, in any case
- The pump must be primed before it is started, then it is self-priming.
- Brief dry running permitted; dry running of more than 3 minutes causes damage.

installation position:

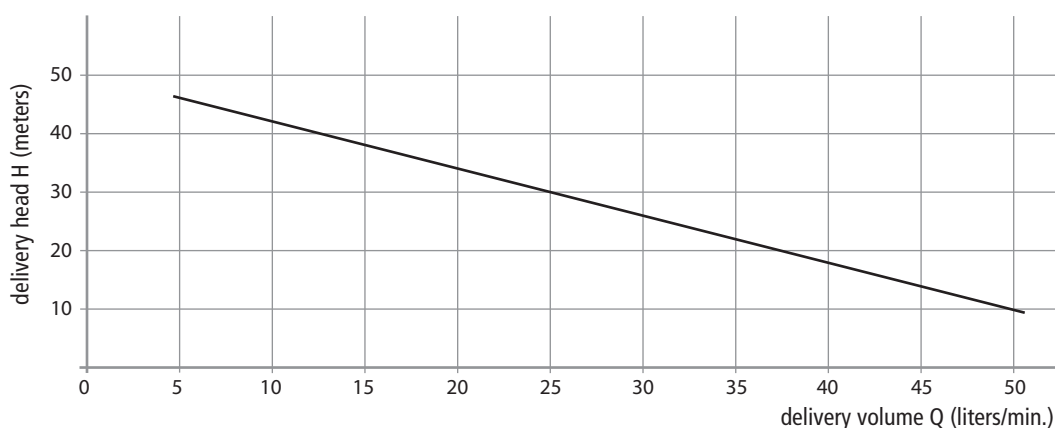
- always vertical, not horizontal



	type	Z-PK-2000		Z-PK-2001	
	units	electric pump	manual vane-type pump	electric pump	manual vane-type pump
delivery volume	ltrs./min.	5 to 50	15	5 to 50	15
delivery head	m WC	46 to 10	approx. 10	46 to 10	approx. 10
suction head	m	6	4	6	4
voltage	V	230		400	
amperage	A	5,0		2,0	
frequency	Hz	50		50	
electric output	kW	0,6		0,6	
speed	rpm	2.900		2.900	
weight	kg	27		27	

Dimensions (in mm) / Specifications are subject to change!

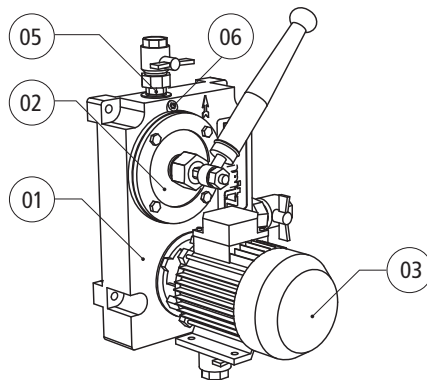
Pump characteristic at 2900 rpm



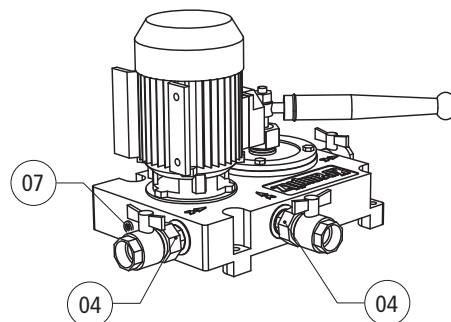
Pump combination type Z-PK for fuel supply to units

Construction of the pump combination:

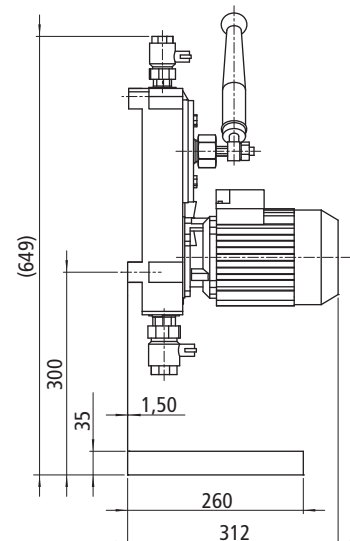
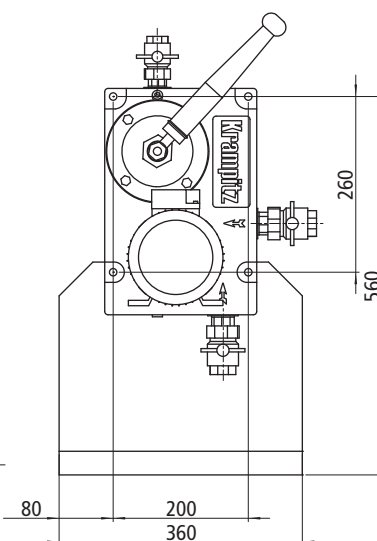
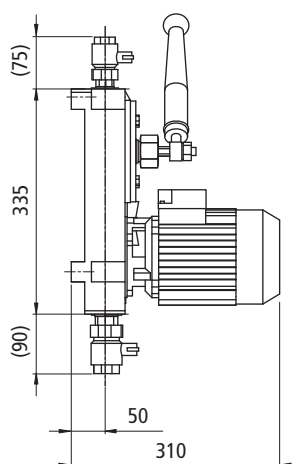
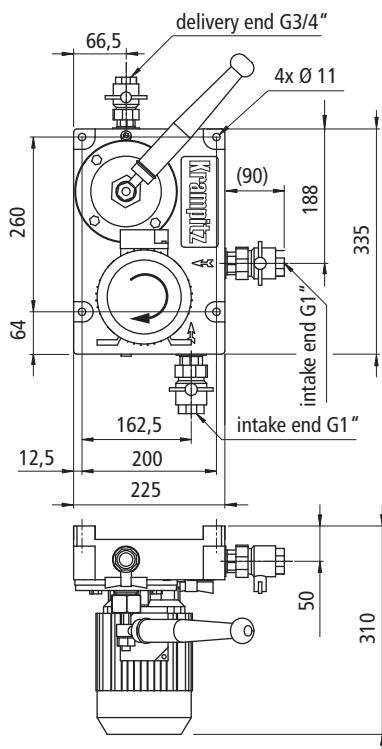
The pump base is made of grey cast iron and is CNC machined. This ensures long life and exact fit of replacement parts. The pump combination is fastened with the pump body to a plane, vertical wall. The pump body also contains the centrifugal pump and the manual vane-type pump. The impeller diameter of the centrifugal pump is 90 mm, the manual vane-type pump is double-acting with 4 flap valves.



- 01 - twin pump body
- 02 - manual vane-type pump
- 03 - electric fuel pump
- 04 - two inlet ports G1" at intake end



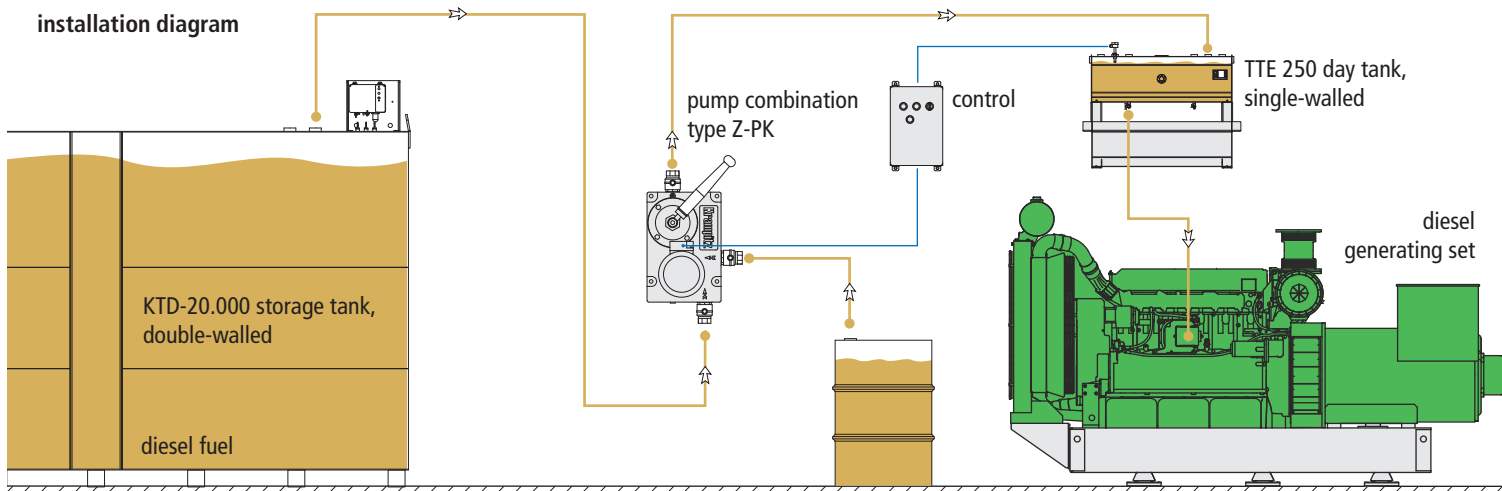
- 05 - delivery port G 3/4"
- 06 - priming port (shown closed by screw plug)
- 07 - drain port (shown closed by screw plug)



Standard version: Collection tank Art. No. Z-PK 2100

The collection tank for the pump combination is mounted to a solid, strong wall together with the pump combination. The collection tank is fastened to the wall at the two bottom fastening points of the pump combination.

installation diagram



Pump set type Z-PG for oil supply of industrial internal combustion engines

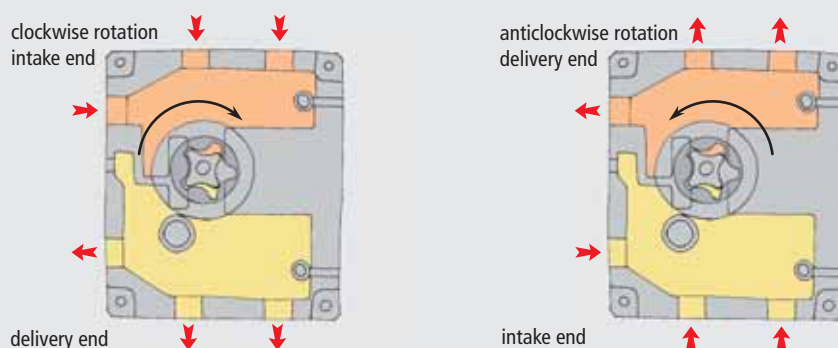
The block pump set type Z-PG was developed specifically for the requirements of oil change and oil supply of industrial internal combustion engines. The target of the development of this pump was a compact design which integrated a maximum number of functions and valves in the pump housing. The block pump housing is made of grey-cast iron machined to high precision. This ensures a long service life and exact fit of replacements. The pump rotation can be reversed. To ensure simplicity of function, the two conveying routes of the pump are activated by a simple changeover of the rotation of the electric motor. Each sense of rotation has a pressure limiting valve assigned to it.

Advantages:

- simple and robust construction
- no solenoid valves or ball valves needed directly at the pump
- time- and space-saving installation
- minimum piping system
- suitable for vertical or horizontal set-up
- integrated valves and fittings, e.g., flow sight glass, pressure gauge, non-return valves
- suction and filling needs only one pump
- continuous service possible without restriction due to pressure limiting valve



construction and mode of action of the Z-PG pump set when rotor sense is changed

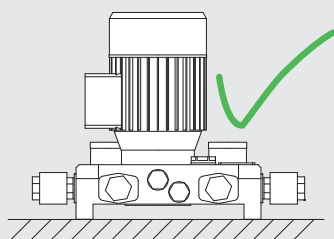
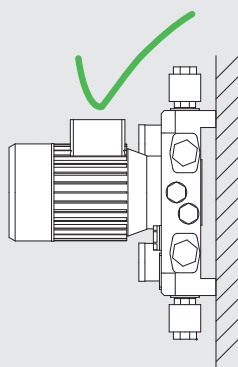


installation note:

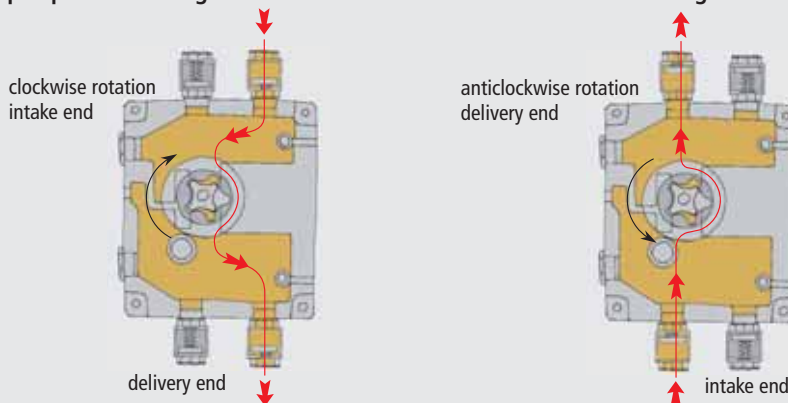
- installation in closed rooms and protected from weather, in any case
- **The pump must be primed before it is started, then it is self-priming.**
- **Brief dry running permitted; dry running of more than 3 minutes causes damage.**

installation position:

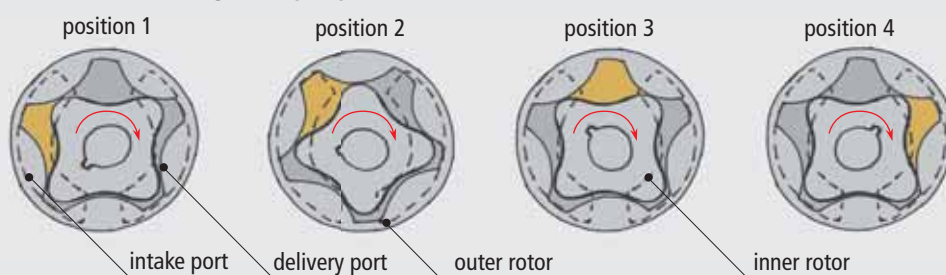
- different positions are possible



Z-PG pump set with integrated non-return valves when rotor sense is changed



Mode of action of the gerotor pump



positions 1+2: The pump chamber is located above the intake port. The chamber volume which becomes larger due to the rotation fills with oil.

positions 3: The pump chamber is at "top dead center". Intake ends. The chamber has expanded to maximum volume.

positions 4: As the chamber volume decreases, the oil is forced out of the delivery port. On its way to the next intake cycle, the chamber passes the "bottom dead center". The shaft has completed a 360-degree rotation during the pump stroke. The characteristic illustrating the change of the chamber volume is essentially sinusoidal.

Pump set type Z-PG for oil supply of industrial internal combustion engines

Mode of action of the pump set:

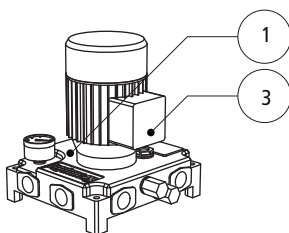
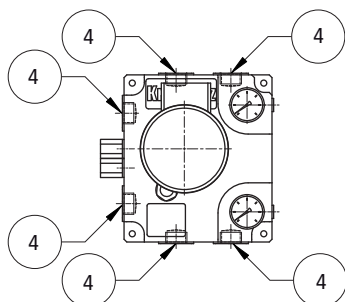
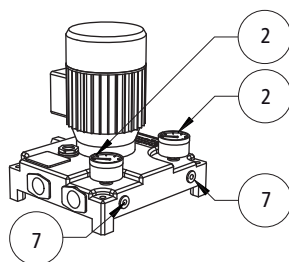
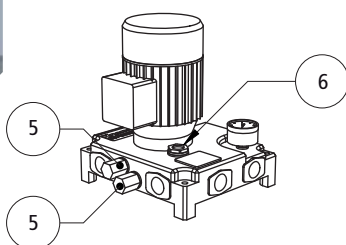
In principle, a gerotor pump is a rotary piston pump or displacement pump with an outer and an inner rotor of trochoid gearing. The inner rotor has one gear tooth less than the outer rotor. All teeth of the inner rotor are in contact with the outer rotor at any position of rotation. Rotation of the gerotor forms displacement chambers between the contact points of the inner and outer rotors whose change of volume causes the liquid to flow. Volume flow and speed are proportional to each other. The mode of action is illustrated here with reference to a stroke of the pump with one chamber (dark area) being considered at different positions.



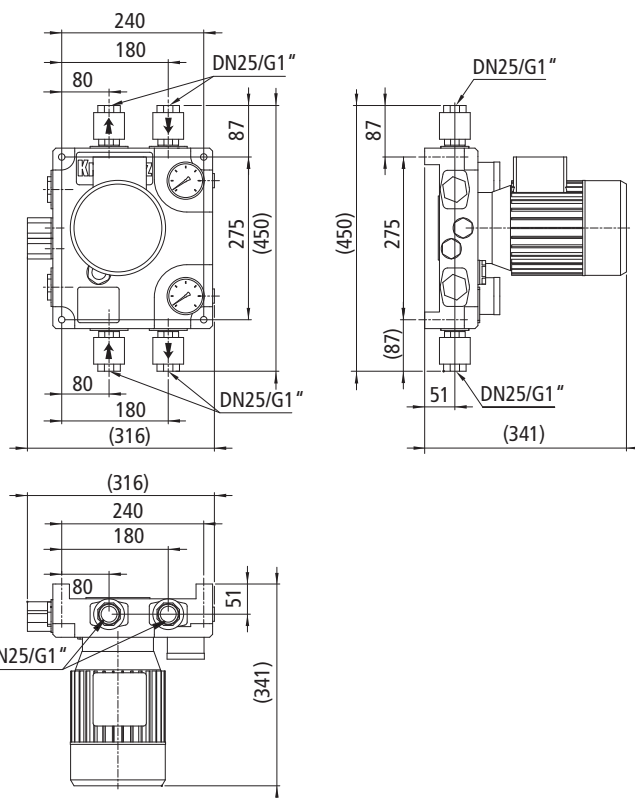
Oil supply module with permanent installation of the pump set

construction of the pump set:

- 1 - pump body
- 2 - 2x pressure gauge (-1.0 to +9.0 bar)
- 3 - electric motor, 400V, 50 Hz
- 4 - 6x connection G1" (female)
(3 connections each direction)
- 5 - 2x pressure limiting valve 1"
- 6 - sight glass
- 7 - 2x drain with plug screw

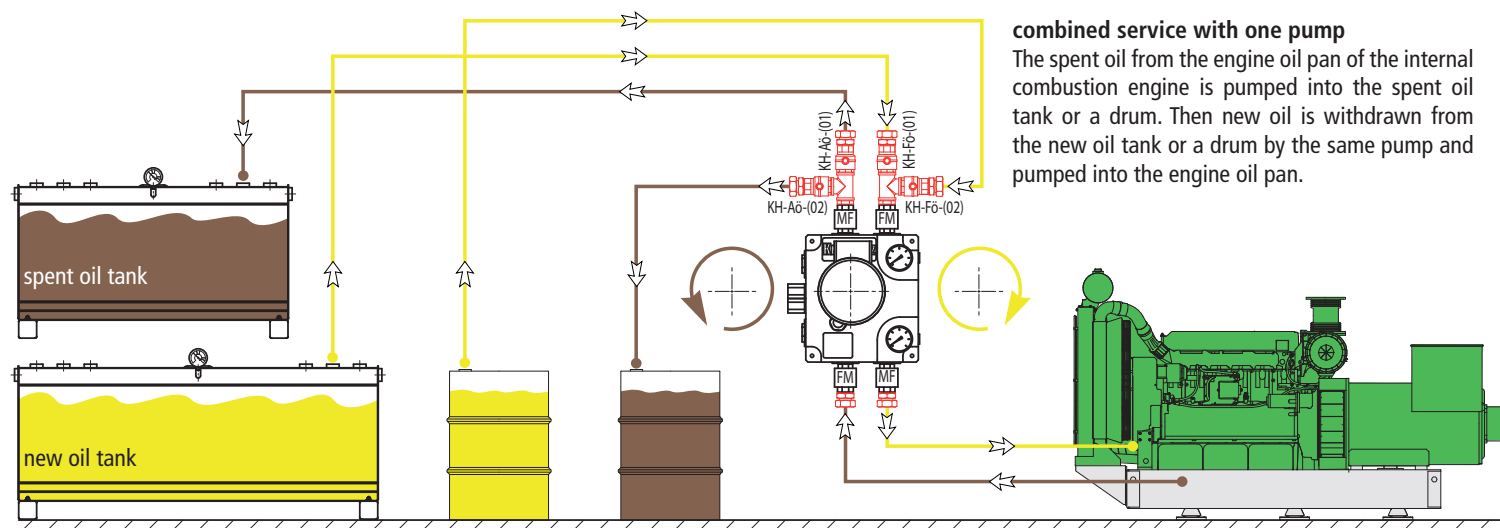


Z-PG pump set with integrated non-return valves



combined service with one pump

The spent oil from the engine oil pan of the internal combustion engine is pumped into the spent oil tank or a drum. Then new oil is withdrawn from the new oil tank or a drum by the same pump and pumped into the engine oil pan.



To maintain our high quality requirements, we cooperate with the following test, inspection and accreditation organizations:



Our containers will be manufactured in heavy all-steel quality with ISO standard dimensions or special dimensions and on request approved by GL respectively TÜV. All essential construction parts will be designed and manufactured according to DIBt permissions and certificated statics. Substantial equipment cares for manifold container variations. The excellent corrosion protection coating guarantees a long-life cycle.

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Filling-Station Container



Machine Container
(Aggregate Container)



Switchgear Container



Supplying Container for
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