KRACHT

Gear Pumps

KF

for Compressor Applications

Description

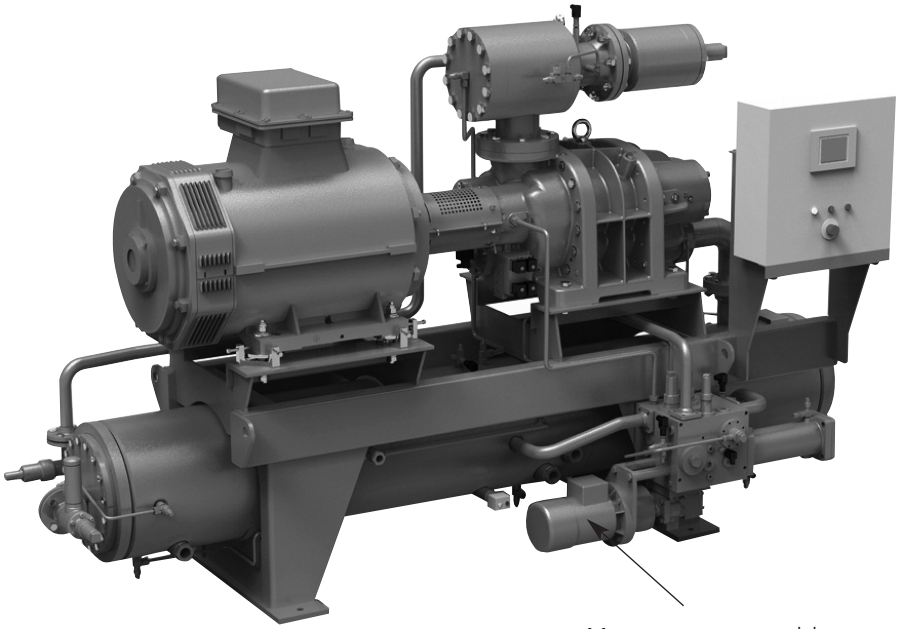
Gear pumps, Motor-pump assemblies and oil pressure control valves*

The gear pump runs for pre-lubrication and during the whole compressor operation. It draws the refrigeration machine oil out of the collecting tank of the oil trap through the oil cooler and oil filter and presses it to the bearings, the balance piston, the stuffing box, power control and – if planned – to the hydraulic compressor adjustment.

The gear pump pumps more oil than is used by the compressor. The excessive oil quantity is returned to the pump inlet side via the spring-loaded oil pressure control valve. The oil pressure control valve regulates the pressure difference between the pump discharge side and final unit pressure in line with specifications.

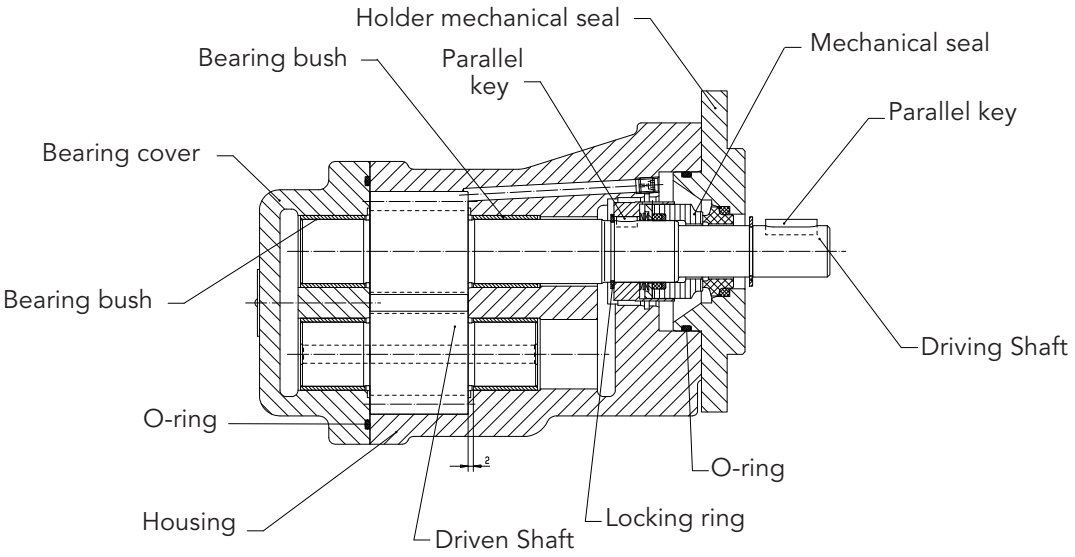
* Oil pressure control valves on request.

Screw Compressor

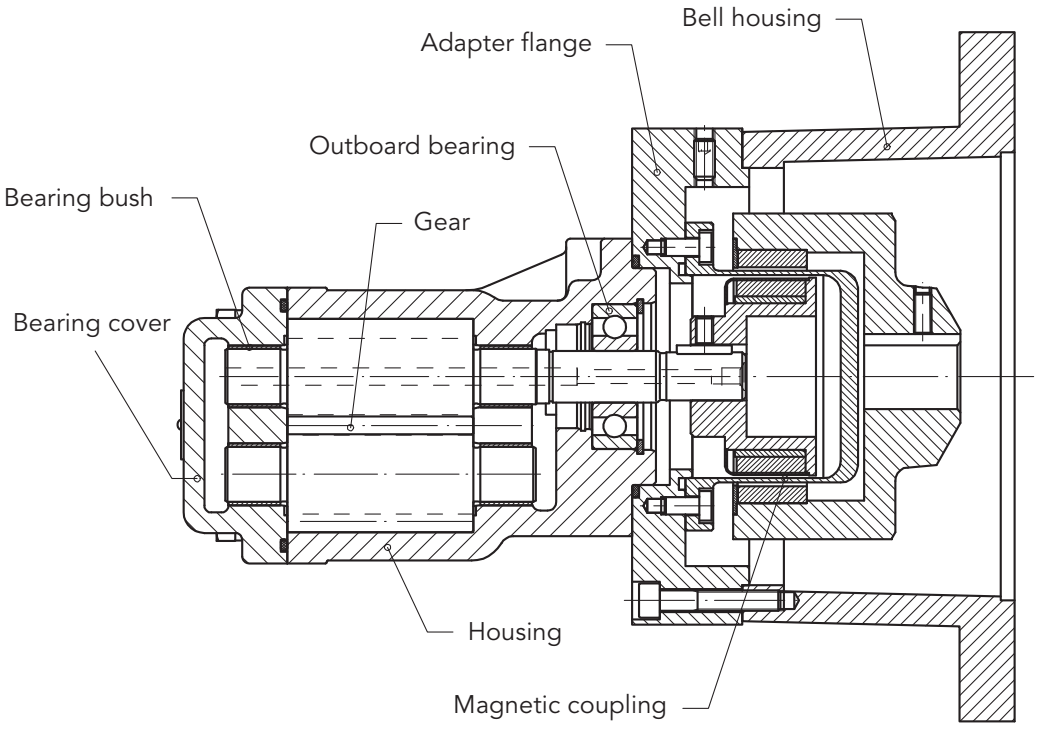


Motor-pump assembly

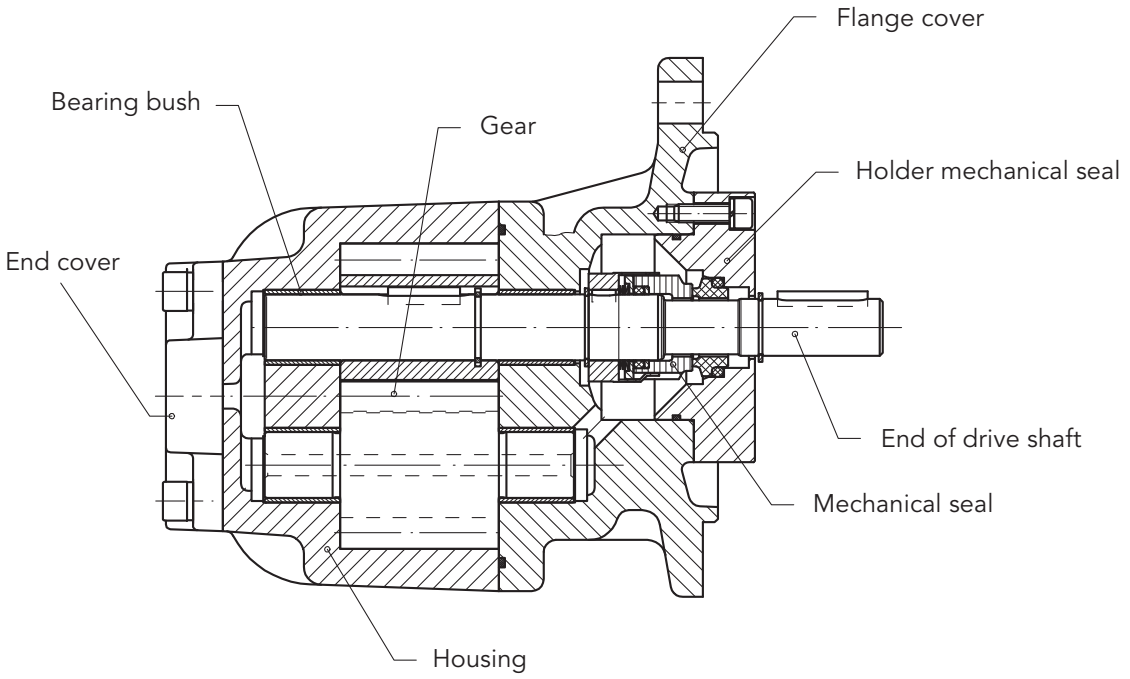
Construction Gear Pumps KF 2.5 ... 630 with Mechanical Seal



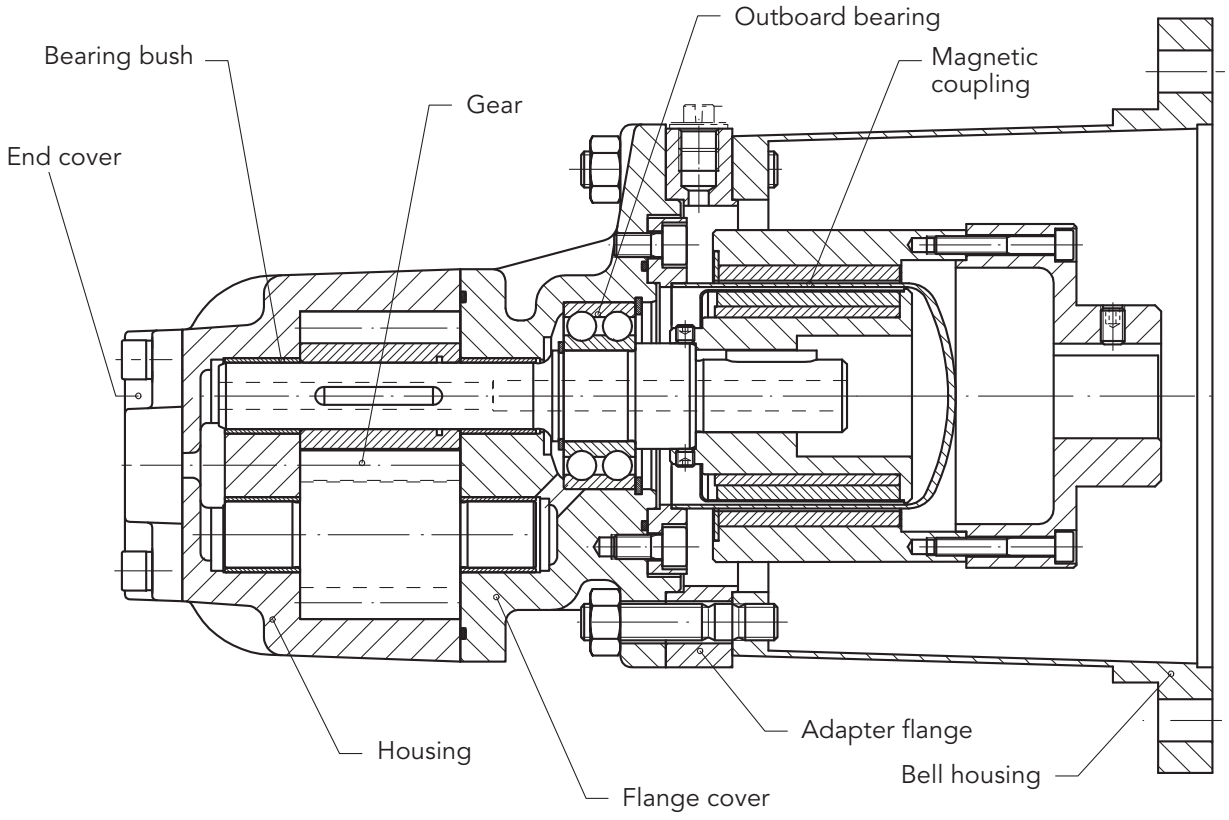
Construction Gear Pumps KF 2.5 ... 630 with Magnetic Coupling



Construction Gear Pumps KF 3/100…KF 6/730 with Mechanical Seal



Construction Gear Pumps KF 3/100…KF 6/730 with Magnetic Coupling



Product Characteristics

- Large selection of variants
- Available for special applications
- Special gear geometry for a low noise level and reduced pressure pulsation
- Leak control connection for mechanical seal
- High operational safety

Characteristics

	Standard	Special version
Principle	External gear pump	
Discharge flow at 50 Hz, 1450 1/min, 3 bar, 34 mm^2/s	2.5 ... 1020 l/min	
Discharge flow at 60 Hz, 1750 1/min, 3 bar, 34 mm^2/s	3.0 ... 1200 l/min	
Working pressure inlet port	… 25 bar	… 63 bar *
Working pressure outlet port	… 31 bar	… 63 bar *
Permissible differential pressure	... 10 bar (KF 6/730: … 6 bar)	
Housing material	EN-GJL-250 (GG 25)	EN-GJS-400 (GGG 40)
Gear	Steel 1.7139	
Bearing	Plastic bearing bushes free of non-ferrous metal	
Shaft seal	Mechanical seal	Magnetic coupling
O-ring material	CR, HNBR, FKM	
Speed	200 … 2000 1/min (depending on viscosity)	
Viscosity	12 … 20 000 mm^2/s	
Ambient temperature	– 20 … 60 °C	
Media temperature	– 10 … 100 °C (CR) – 10 … 150 °C (FKM, HNBR)	
Permissible media	Refrigerant machine oil, hydraulic oil, mineral oil (refer also to the table on page 8)	
Filtering	≤ 60 µm	
Pressure relief valve	optional	

Note: From 25 bar supply pressure, magnetic coupling and housing material EN-GJS-400 (GGS 40) are essential.

Available motor-pump assemblies (further versions available on request)

1. Standard motor-pump assemblies with standard motor and mechanical seal
   Supply pressure ≤ 25 bar
   Pump housing material: EN-GJL-250 (GG 25)
2. Standard motor-pump assemblies with Danfoss FU motors and mechanical seal
   Supply pressure ≤ 25 bar
   Pump housing material: EN-GJL-250 (GG 25)
3. Motor-pump assemblies with magnetic coupling and standard motor IP55 (not ATEX)
   Supply pressure > 25 bar and ≤ 60 bar
   Pump housing material: EN-GJS-400 (GGG 40)
4. Motor-pump assemblies with magnetic coupling and motor ATEX II 2G TX** (According to customer requirements)
   Supply pressure ≤ 25 bar
   Pump housing material: EN-GJL-250 (GG 25)
5. Motor-pump assemblies with magnetic coupling and motor ATEX II 2G TX** (According to customer quirements)
   Supply pressure > 25 bar and ≤ 40 bar
   Pump housing material: EN-GJS-400 (GGG 40)

* Depending on the size, ** deviating operating temperatures

Types of Seals*

Type of seal	Gear pump	Seals
6	**KF 2.5 … 25**	Loaded mechanical seal (SIC-Si/SIC-Si, O-rings FFKM), depending on direction of rotation Other O-rings are defined in the special number
15	**KF 2.5 … 200**	Magnetic coupling with flushing, O-rings FKM
25		Magnetic coupling with flushing, O-rings CR
27		Magnetic coupling with flushing, O-rings HNBR
33	**KF 32 ... 80** **KF 100 ... 200 on request**	Unloaded mechanical seal (CSiC/carbon impregnated with metal), O-rings CR
34		Unloaded mechanical seal (CSiC/carbon impregnated with metal), O-rings FKM
35		Unloaded mechanical seal (CSiC/carbon impregnated with metal), O-rings HNBR
62	**KF 3/ .** **KF 4/ .** **KF 5/ .** **KF 6/ .**	Magnetic coupling with flushing, O-rings CR
65		Magnetic coupling with flushing, O-rings FKM
67		Magnetic coupling with flushing, O-rings HNBR
74	**KF 3/ .**	Unloaded mechanical seal (CSiC/carbon impregnated with metal), O-rings CR
75		Unloaded mechanical seal (CSiC/carbon impregnated with metal), O-rings HNBR
77		Unloaded mechanical seal (CSiC/carbon impregnated with metal), O-rings FKM
87	**KF 4/ .** **KF 5/ .** **KF 6/ .**	Unloaded mechanical seal (CSiC/carbon impregnated with resin), O-rings CR
88		Unloaded mechanical seal (CSiC/carbon impregnated with resin), O-rings HNBR
89		Unloaded mechanical seal (CSiC/carbon impregnated with resin), O-rings FKM

Note ATEX version with magnetic coupling possible.

* refer also to respective datasheets KF 2.5…630 and KF 3/100…KF 6/730

Special Numbers *

Special number	Gear pump	Description
153	**KF 3/.**	Plastic bearing bushes, O-rings CR, special shaft end, leak control connection integrated in pump, mounting position: vertical (2)
156	**KF 2.5 ...25**	Plastic bearing bushes, O-rings CR
172	**KF 3/.**	Plastic bearing bushes, O-rings HNBR, special shaft end, leak control connection integrated in pump, mounting position: vertical (2)
206	**KF 2.5 ...25**	Plastic bearing bushes, O-rings HNBR
346	**KF ...**	Plastic bearing bushes
375	**KF 32 ... 200**	Plastic bearing bushes, special shaft end, special flange
379	**KF 3/.**	Plastic bearing bushes, O-rings CR, special shaft end, leak control connection integrated in bell housing, mounting position: horizontal
393	**KF 3/.**	Plastic bearing bushes, O-rings FKM, special shaft end, leak control connection integrated in pump, mounting position: vertical (2)
415	**KF 3/.**	Plastic bearing bushes, O-rings HNBR, special shaft end, leak control connection integrated in bell housing, mounting position: horizontal
437	**KF 2.5 ...25**	Plastic bearing bushes, O-rings FKM
438	**KF 3/.**	Plastic bearing bushes, O-rings FKM, special shaft end, leak control connection integrated in bell housing, mounting position: horizontal
445	**KF 4/.**	Plastic bearing bushes, special shaft end, leak control connection integrated in bell housing, mounting position: horizontal
446	**KF 4/.**	Plastic bearing bushes, special shaft end, leak control connection integrated in pump, mounting position: vertical (2)
447	**KF 5/.** **KF 6/.**	Plastic bearing bushes, special shaft end, leak control connection integrated in pump, mounting position: horizontal/vertical (2)

* refer also to respective datasheets KF 2.5…630 and KF 3/100…KF 6/730

(2) Shaft end up

Oil Selection List

The oils specified in the table are permitted for screw compressors. The selection of oils depends on their chemical properties, the working materials to be compressed, the working conditions in the respective system and the required oil viscosity at the start and during operation.

O-rings depending on refrigerant and lubricating oil

Refrigerant	Oil							
	M	M*	M* - PAO	AB	E	PAO	AB – PAO	PAG
R717 (Ammoniac)	CR/ HNBR	CR/ HNBR	CR/ HNBR	CR	-	HNBR CR**	CR	CR/ HNBR
R22	CR	-	-	CR	CR	-	CR	-
R134a, R404A, R407C, R410A, R507, R23	-	-	-	-	HNBR	-	-	-
R290 (propane), R1270 (propene)	-	-	-	-	-	HNBR	-	HNBR
R744 (CO_2)	-	-	-	-	CR	HNBR	-	CR

** only for oils: Fuchs Reniso Synth 68 and Klüber Summit R100 / R150 / R200.

M = Mineral oil
M* = Mineral oil with special treatment (hydrocracked oil)
AB = Alkyl benzene
E = Polyol
PAO = Poly-alpha-olefin
PAG = Poly-alkyl-glycol
CR = Chloroprene rubber
HNBR = Hydrogenated nitrile butadiene rubber

Selection Assistance

Mechanical Seal Design

Gear pump	Type of seal	Special number	Seal material	Mounting position	Position of leak control connection
KF 2.5…25	6	/156	CR	horizontal + vertical *	bell housing
		/206	HNBR		
		/437	FKM		
KF 32 ... 200	33	/375	CR	horizontal + vertical *	bell housing
	34		HNBR		
	35		FKM		
KF 3/.	74	/153	CR	vertical *	pump
		/379		horizontal	bell housing
	75	/172	HNBR	vertical *	pumpe
		/415		horizontal	bell housing
	77	/438	FKM	horizontal	bell housing
		/393		vertical *	pumpe
KF 4/.	87	/445	CR	horizontal	bell housing
	88		HNBR		
	89		FKM		
	87	/446	CR	vertical *	pump
	88		HNBR		
	89		FKM		
KF 5/. KF 6/.	87	/447	CR	horizontal + vertical *	pump
	88		HNBR		
	89		FKM		

* Shaft end up

Magnetic Coupling Design

Gear pump	Type of seal	Special number	Seal material	Mounting position
KF 2.5…200	25	/346	CR	optional
	27		HNBR	
	15		FKM	
KF 3/. KF 4/. KF 5/. KF 6/.	62		CR	
	67		HNBR	
	65		FKM	

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Product Portfolio

Gear Pumps

Gear pumps for lubricating oil supply equipment, low pressure filling and feed systems, dosing and mixing systems.

Mobile Hydraulics

Single and multistage high pressure gear pumps, hydraulic motors and valves for construction machinery, vehicle-mounted machines.

Flow Measurement

Gear, turbine and screw type flow meters and electronics for volume and flow metering technology in hydraulics, processing and laquering technology.

Industrial Hydraulics / Test Bench Construction

Cetop directional control and proportional valves, hydraulic cylinders, pressure, quantity and stop valves for pipe and slab construction, hydraulic accessories for industrial hydraulics (mobile and stationary use).

Technology Test benches / Fluid Test benches.

Gear Pumps KF
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