

Gerotor Pumps Product series 143

For oil, for use in SKF CircOil centralized lubrication systems



Gerotor pumps, product series 143

SKF gerotor pump units of product series 143 are self-priming positive-displacement pumps with fixed displacement and high efficiency. They are used in SKF CircOil centralized lubrication systems for a variety of tasks and applications, especially in circulating-oil and total-loss lubrication systems.

Fields of application:

- General mechanical and plant engineering
- Shipbuilding and offshore industry
- Paper, printing, and pulp industries
- Heavy industry

Advantages:

- Flexible delivery range from 0.85 to 50 l/min at system pressures up to 50 bar
- Large viscosity range for standard mineral and synthetic lubricating and hydraulic oils from 20 to 1000 mm²/s

- Ambient temperature of 0 to +40 °C
- Low volumetric flow pulsation and thus very smooth running
- Gerotor with a cycloid contour and thus good suction characteristics
- Low-noise
- Gerotor pumps are available in NBR and FKM designs.
- Squirrel cage motors are available in different voltage designs for 50 and 60 Hz
- Compact design
- Modular ordering system (order as a complete pump unit, single pump, or pump with flange and shaft coupling)

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Note

The technical data in this publication provide for general information. Follow the assembly instructions and any instructions on and accompanying the products when performing assembly, operating, and maintenance.

Technical data and selection and ordering data, including availability, for accessories are subject to change.

Further information

Brochure (EEX design)
Assembly instructions

PUB 17345
951-170-002

You can download the publications as PDF file from the SKF website: skf.com/143

Online configurable and CAD models under skf-lubrication.partcommunity.com

Gerotor pumps, product series 143

Illustration of designs and accessories

Gerotor pump unit in foot design



Gerotor pump unit in flange design



Gerotor



Gerotor pump



Pump flange



Shaft coupling



ICE squirrel cage motor



Gerotor pump+pump flange+ shaft coupling



Gerotor pumps, product series 143

Fundamentals

General use

SKF gerotor pump units of product series 143 are used in circulating-oil and total-loss lubrication systems in a flow rate range of 0.85 to 50 l/min. The standard permissible ambient temperature is between 0 and +40 °C. Higher ambient temperatures are possible, though they lead to a reduction in motor performance and thus the delivery rate. The permissible temperature of the pumped medium is between 0 and +80°C. The gerotor pumps are available in NBR and FKM designs.

SKF gerotor pump units feed lubricating and hydraulic oils from a reservoir and into the pipe system of a centralized lubrication system. In doing so, they increase the energy of the pumped medium (pressure increase) to overcome flow resistance in the pipelines (pressure loss), the components (filters, valves, distributors) and the bearings and friction points. SKF gerotor pump units of different types and performance ratings are used depending on the type and size of the centralized lubrication system and the lubricant.

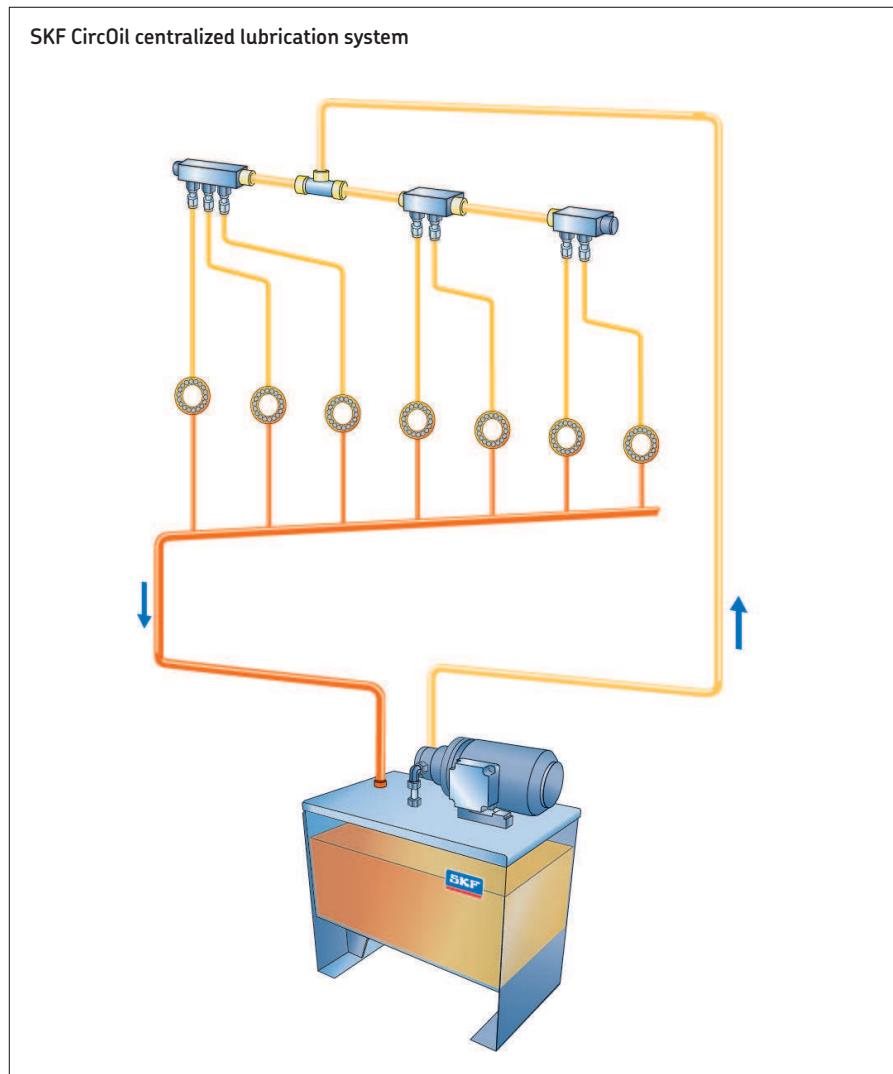
Applications

The main area of application is the broad field of circulating-oil and total-loss lubrication systems for general mechanical engineering and plant engineering applications. Here, the focus is on lubricating and cooling heavily loaded bearings and friction points for a wide range of uses. SKF gerotor pump units are used primarily as lubricating, hydraulic, hydrostatic, and cooling oil pumps. They can be set up either as single pumps or integrated into a reservoir unit. Other areas include the shipbuilding and offshore industry as well as the paper, printing, pulp, and heavy industries.

Delivery rates and characteristic curves

The nominal delivery rates indicated in the catalog refer to the nominal output multiplied by the speed of the motor. The actual delivery rate changes with operating viscosity and back pressure and can be found in the characteristic curve diagrams in the catalog (→ page 12–13). These diagrams are based on the range between 20 and 1000 mm²/s in increments of 20, 140, 750, and 1000 mm²/s. Each gerotor pump has a characteristic curve represented as a function of the delivery rate above the delivery pressure (back pressure).

It is important to note that temperature influences can render lubricating and hydraulic oils extremely thin or viscous. Please consult with us in advance if you will use lubricating and hydraulic oils with an operating viscosity outside the specified range.



Gerotor pumps, product series 143

Fundamentals

Design (→ Figure 1)

SKF gerotor pump units of product series 143 have a constant displacement volume and one delivery circuit. The annular-toothed feeding element, also referred to as the gerotor, is equipped with a cycloid contour, which creates a large tooth meshing length. This yields a low volumetric flow pulsation and thus very smooth running, low noise production, and good suction characteristics.

SKF gerotor pumps consist primarily of pump housing (1), the shaft (2), the displacement elements toothed rotor (3) and annular gear (4), and the lid (5).

Suction and displacement process (→ Fig. 1)

The shaft drives the centrally mounted toothed rotor in the indicated direction of rotation via a feather key. The toothed rotor meshes with the outer, eccentrically mounted annular gear and rotates with it. The openings between teeth arising in the suction area (S) draw the pumped medium in. The suction and pressure area is separated from the tooth meshing area (Z) by a radial gap (R) formed by the tooth profiles of the annular gear and the toothed rotor as they slide onto one another. In the pressurized area (P), the fluid is fed to the pressure port through increasingly small chambers.

Drive

SKF gerotor pump units of product series 143 are driven by IEC squirrel cage motors sized 63 to 132 in the standard design. The motors are designed for a rated motor voltage of 230/400 V or 400/690 V for 50 networks according to DIN IEC 60038. The normal coils used here in motors with performance ≤ 0.75 kW are designed for the wide voltage range. The normal coils in motors with performance ≥ 0.75 kW are tailor-made and meet the IE3 efficiency level according to EU Directive 2009/125/EC. Special voltage versions with special coils for 50 Hz and 60 Hz networks are available for order.

The standard design of the motors comes with a terminal box. Motors with UL/CSA certification are available. Further certifications are available on request.

Shaft coupling

The shaft couplings are designed as curved-tooth couplings. Curved-tooth couplings are flexible shaft connections for positive torque transmission. The material combination of steel hub and polyamide sleeve used for the curved-tooth couplings permits maintenance-free continuous duty with very low friction on the teeth. They, therefore, do not require any lubrication or maintenance and are nearly wear-free in operation.

Installation

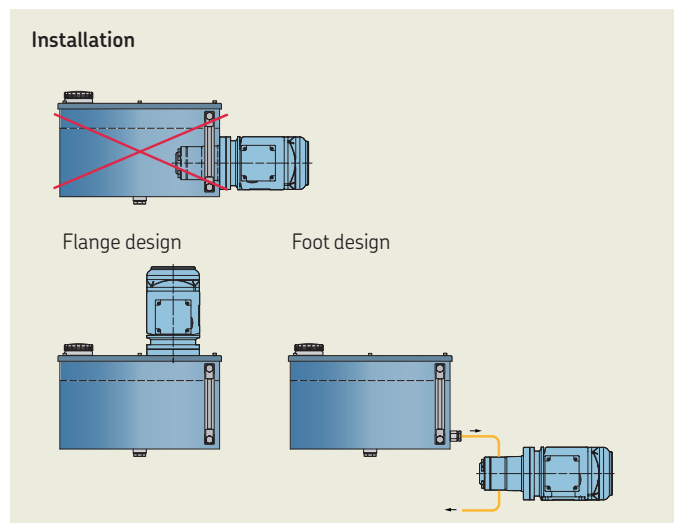
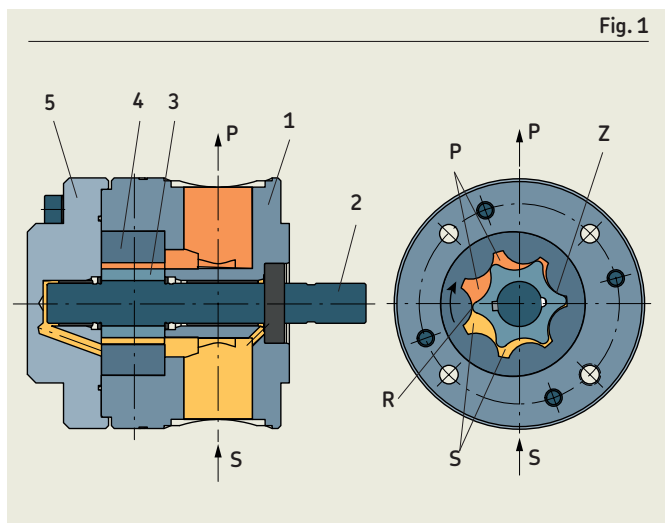
SKF gerotor pump units of product series 143 can be installed both horizontally and vertically. Foot or flange versions are available for each gerotor pump unit design.

When the gerotor pump unit is set up separately from the reservoir, the suction port on the pump can be connected to a reservoir at a higher position (max. 2000 mm).

To flange the gerotor pump unit to a reservoir horizontally below the oil level, use a sealed pump in a special design. Please consult our Engineering department in advance.

In its design as a pump with flange and coupling, various technical designs of customer-specific electrical motors can be used. The flange allows for the installation of all IEC standard motors with a flange according to DIN EN 50347, design FT (with threaded holes). See the drawings in this publication for the geometric dimensions of the flange.

If only gerotor pumps without a motor are used, for example as an integrated/attached pump on a machine housing, ensure that no radial or axial load is applied to the drive shaft. The pumps can be installed in any position.



Gerotor pumps, product series 143

Technical data

Gerotor pump unit in foot design



Gerotor pump unit in flange design



Gerotor pump



Table 1

Technical data

Lubricant	standard mineral, synthetic lubricating and hydraulic oils
Operating viscosity	20–1000 mm ² /s
Flow range	0,85–50 l/min
Operating pressure	up to 50 bar
Ambient temperature range	0 to +40 °C
Medium temperature range	0 to +80 °C
Protection class acc. to DIN EN 60529	IP 54
Operating noise level	60 dBA
Drive speed depending on design	1400 and 2800 min ⁻¹
Suction head, max.	1000 mm
Varnishing	RAL 7024 graphite grey, special painting optional
Duty type per VDE 0530	S1
Sealing material	NBR, FKM
Mounting position	horizontal, vertical

Materials

Pump housing	hydraulic cast (pressure-proof) with good wear and antifriction properties
Gerotor insert	sintered material
Shafts	low-deformation steels, case-hardened
Bearing	SKF plain bearing

! General notes on usage

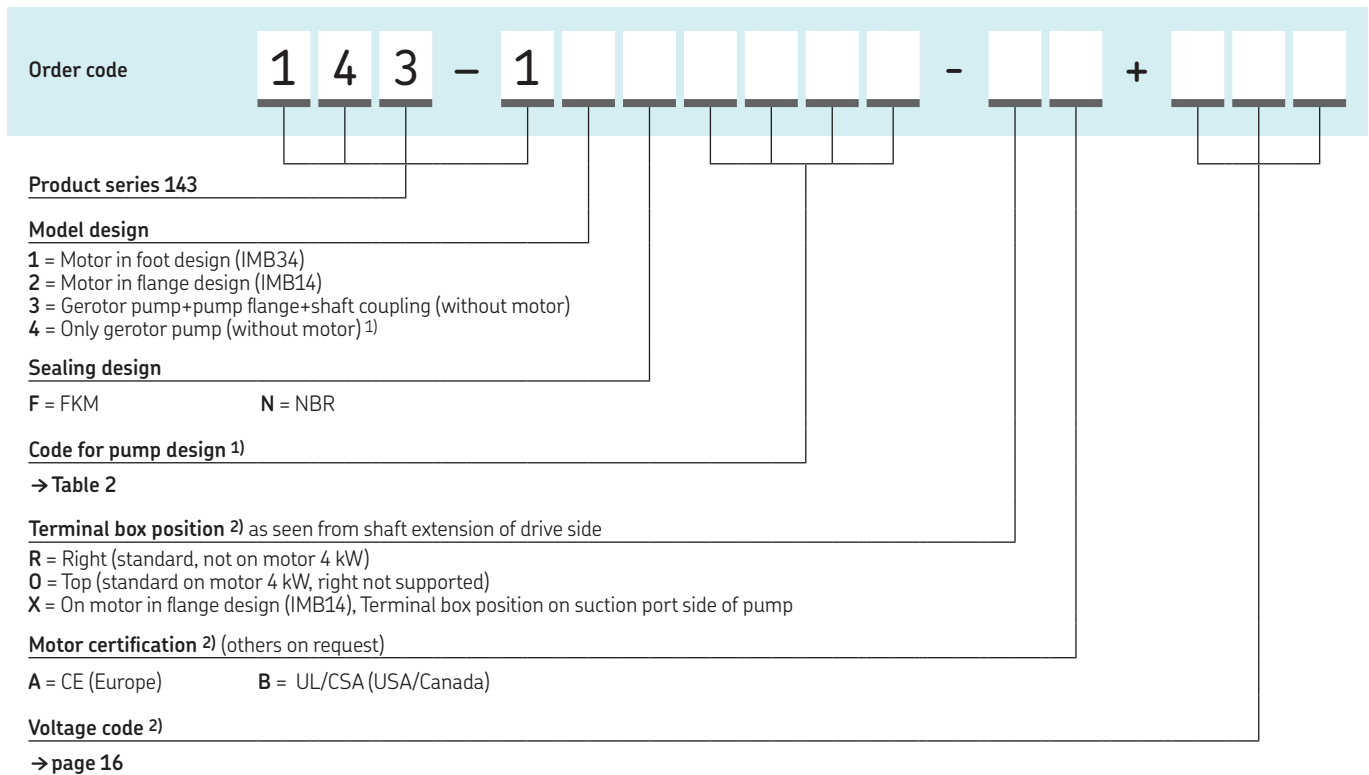
During commissioning, pay attention to the pump's direction of rotation. See the rating plate and motor rotation arrow on the pump.

If using the pumps in systems without any open pressure lines, provide pressure-regulating valves to limit the maximum pressure of the system.

The selected cross-section of the intake tube must be equal to or greater than the cross-section of the pump's suction port.

SKF Lubrication Systems Germany GmbH recommends the use of filters for trouble-free operation of the pumps or pump units. Effective filtration prevents malfunctions while also increasing the service life of the pumps. A pumped medium of at least the purity class 20/17/14 according to ISO 4406(c) is recommended. This corresponds to the U.S. standard NAS code (1638) class 8 and SAWAS 4059 class 8. A filter rating of approx. 5 - 10 µm meets this requirement. The filter rating used is always based on the most sensitive component in the entire system. This is not necessarily the pump.

Gerotor pumps, product series 143



2) Not applicable on designs without motor

Table 2

Code for pump design

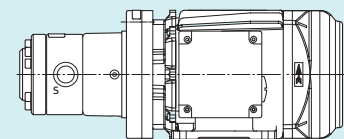
Code ¹⁾	Nominal delivery rate ³⁾	Back pressure max.	Motor drive power	Permissible operating viscosity	Frame size	Number of poles
–	l/min	bar	kW	mm ² /s	–	–
B03C	0.85	30	0.18	20–1000	63	4
D03E	1.70	30	0.37	20–1000	71	2
F02D	2.50	20	0.25	20–1000	71	4
F05F	2.50	50	0.55	20–1000	80	4
H02F	5.25	20	0.55	20–1000	80	4
H05J	5.25	50	1.10	20–1000	90	4
K02H	9.00	20	0.75	20–1000	80	4
K05J	9.00	50	1.10	20–1000	90	4
M02H	12.50	20	0.75	20–1000	80	4
M05K	12.50	50	1.50	20–1000	90	4
P02K	19.00	20	1.50	20–1000	90	4
R02M	30.00	20	3.00	20–1000	100	2
R03M	30.00	30	3.00	20–750	100	2
R03N	30.00	30	4.00	20–1000	112	2
T02M	40.00	20	3.00	20–750	100	2
T03N	40.00	30	4.00	20–1000	112	2
V02N	50.00	20	4.00	20–1000	112	2
V03N	50.00	30	4.00	20–750	112	2
V03P	50.00	30	5.50	20–1000	132	2

1) For model design 4 delete item 4 of the code for the pump design, also the following items of the code.
 3) Nominal delivery rate at motor speed 1400/2800 min⁻¹ acc. to number of motor pins.

Order example

143-11ND03E-RA+1FX

- Gerotor pump unit PS 143
- Motor in foot design
- Sealing NBR
- Nominal delivery rate 1.7 l/min
- Back pressure 30 bar
- Motor index 0.37 kW
- Terminal box on right
- Motor certification CE
- 220–240 V / 380–420 V, 50 Hz
254–280 V / 440–480 V, 60 Hz



If ordering the gerotor pump+pump flange+shaft coupling (model design 3) the identification letters of terminal box position, motor certification and voltage code is omitted
 Example: 143-13ND03E

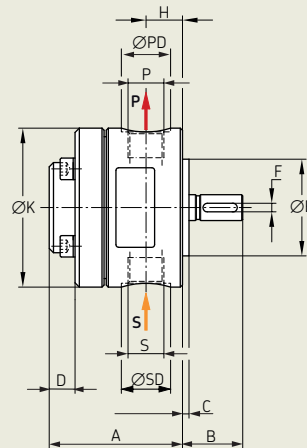
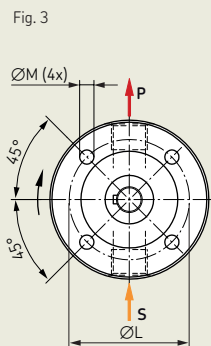
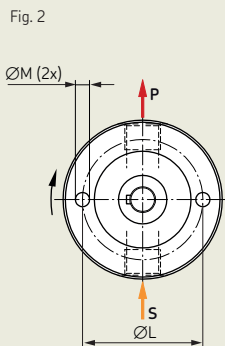
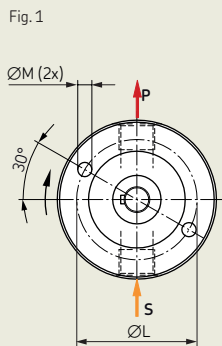
If ordering the gerotor pump (model design 4) the identification letters of terminal box position, motor certificate and voltage code is omitted, also item 4 of the code for the pump design
 Example: 143-14ND03

Gerotor pumps, product series 143

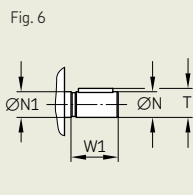
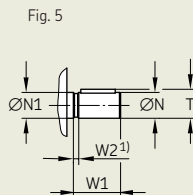
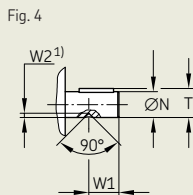
Gerotor pump design, technical data and dimensions

Figure 2

Gerotor pump



Shaft extension



↺ = direction of rotation

1) For securing the coupling boss in axial direction.

Gerotor pump (→ Figure 2)

Nimnal delivery rate [l/min]	Back pressure max. [bar]	Perm. viscosity range [mm ² /s]	Char. curve No. ¹⁾	Nominal output [cm ³ /rev.]	Required drive Speed [min ⁻¹]	Required drive power [kW]	Suction port S	Pressure port P	Design N (NBR) / F (FKM)	Dimensions [mm]	ØPD	ØSD	Order No. ⁴⁾	A	B	C	D	ØE	F	H	ØK	ØL	ØM	ØN	ØN1	T	W1	W2	Fig.
														ØM	ØN	T	W1	W2	Fig.										
0.85	30	20-1000	1	0.61	1400	0.18	G1/4 12 deep	G1/4 12 deep	19	143-14...B03	49	25	3	9	36 _{h7}	2	12.5	60	48	6.6	8 _{h5}	-	8.8	14	2	1/4			
1.7	30	20-1000	2	0.61	2800	0.37	G1/4 12 deep	G1/4 12 deep	19	143-14...D03	49	25	3	9	36 _{h7}	2	12.5	60	48	6.6	8 _{h5}	-	8.8	14	2	1/4			
2.5	20	20-1000	3	1.79	1400	0.25	G3/8 12 deep	G3/8 12 deep	23	143-14...F02	62	28	3	12	45 _{h7}	4	17	74	56	6.6	12 _{g5}	12 _{g5}	13.5	18.5	2.5	2/5			
2.5	50	20-1000	3	1.79	1400	0.55	G3/8 12 deep	G3/8 12 deep	23	143-14...F05	62	28	3	12	45 _{h7}	4	17	74	56	6.6	12 _{g5}	12 _{g5}	13.5	18.5	2.5	2/5			
5.25	20	20-1000	4	3.75	1400	0.55	G1/2 14.5 deep	G1/2 14.5 deep	27	143-14...H02	69	30	3	12.7	56 _{h7}	5	18.5	88	70	6.6	14 _{g5}	14 _{g5}	16	20.5	2.5	3/5			
5.25	50	20-1000	4	3.75	1400	1.1	G1/2 14.5 deep	G1/2 14.5 deep	27	143-14...H05	69	30	3	12.7	56 _{h7}	5	18.5	88	70	6.6	14 _{g5}	14 _{g5}	16	20.5	2.5	3/5			
9	20	20-1000	5	6.44	1400	0.75	G1/2 14.5 deep	G1/2 14.5 deep	27	143-14...K02	77	30	3	12.7	56 _{h7}	5	20	88	70	6.6	14 _{g5}	14 _{g5}	16	20.5	2.5	3/5			
9	50	20-1000	5	6.44	1400	1.1	G1/2 14.5 deep	G1/2 14.5 deep	27	143-14...K05	77	30	3	12.7	56 _{h7}	5	20	88	70	6.6	14 _{g5}	14 _{g5}	16	20.5	2.5	3/5			
12.5	20	20-1000	6	8.93	1400	0.75	G3/4 16 deep	G3/4 16 deep	33	143-14...M02	89	30	3	12.7	56 _{h7}	5	22	88	70	6.6	14 _{g5}	14 _{g5}	16	20.5	2.5	3/5			
12.5	50	20-1000	6	8.93	1400	1.5	G3/4 16 deep	G3/4 16 deep	33	143-14...M05	89	30	3	12.7	56 _{h7}	5	22	88	70	6.6	14 _{g5}	14 _{g5}	16	20.5	2.5	3/5			
19	20	20-1000	7	13.6	1400	1.5	G1 18 deep	G1 18 deep	40	143-14...P02	100	30	3	21.5	56 _{h7}	5	25	98	80	8.5	16 _{g5}	16 _{g5}	18	21.5	2.5	3/5			
30	20	20-1000	8	10.74	2800	3	G1 18.5 deep	G1 18.5 deep	41	143-14...R02	108	42	4	23.5	80 _{h7}	6	30	119	104	8.5	19 _{g6}	22	21.5	36.5	-	3/6			
30	30	20-750	8	10.74	2800	3	G1 18.5 deep	G1 18.5 deep	41	143-14...R03	108	42	4	23.5	80 _{h7}	6	30	119	104	8.5	19 _{g6}	22	21.5	36.5	-	3/6			
30	30	20-1000	8	10.74	2800	4	G1 18.5 deep	G1 18.5 deep	41	143-14...R03	108	42	4	23.5	80 _{h7}	6	30	119	104	8.5	19 _{g6}	22	21.5	36.5	-	3/6			
40	20	20-750	9	14.36	2800	3	G1 18.5 deep	G1 18.5 deep	41	143-14...T02	108	42	4	23.5	80 _{h7}	6	30	119	104	8.5	19 _{g6}	22	21.5	36.5	-	3/6			
40	30	20-1000	9	14.36	2800	4	G1 18.5 deep	G1 18.5 deep	41	143-14...T03	108	42	4	23.5	80 _{h7}	6	30	119	104	8.5	19 _{g6}	22	21.5	36.5	-	3/6			
50	20	20-1000	10	17.87	2800	4	G1 1/4 20.5 deep	G1 18.5 deep	41	143-14...V02	111	42	4	23.5	80 _{h7}	6	30	119	104	8.5	19 _{g6}	22	21.5	36.5	-	3/6			
50	30	20-750	10	17.87	2800	4	G1 1/4 20.5 deep	G1 18.5 deep	41	143-14...V03	111	42	4	23.5	80 _{h7}	6	30	119	104	8.5	19 _{g6}	22	21.5	36.5	-	3/6			
50	30	20-1000	10	17.87	2800	5.5	G1 1/4 20.5 deep	G1 18.5 deep	41	143-14...V03	111	42	4	23.5	80 _{h7}	6	30	119	104	8.5	19 _{g6}	22	21.5	36.5	-	3/6			

1) → see page 12

Gerotor pumps, product series 143

Gerotor pump+pump flange+shaft coupling design, technical data and dimensions

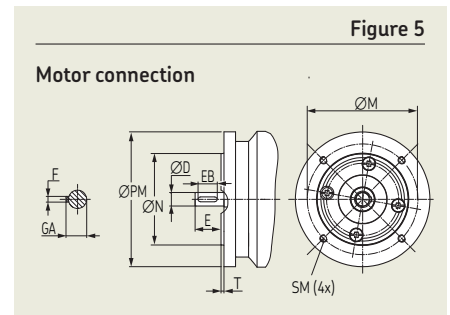
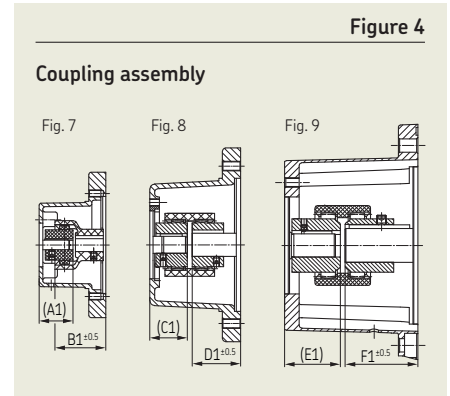
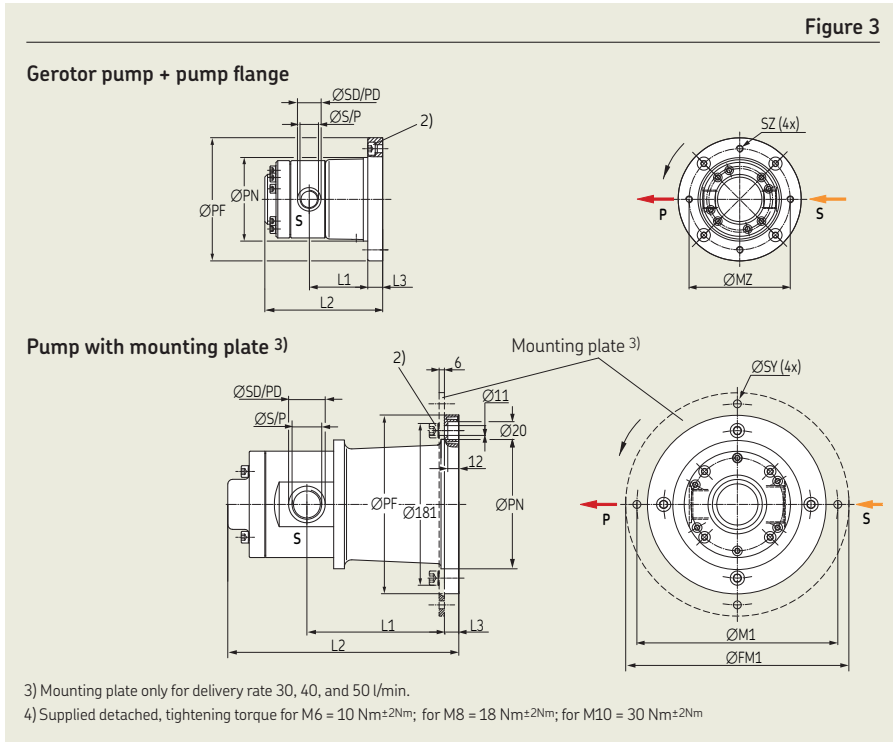


Table 3

Design N (NBR) / F (FKM) Order No. 5)	Gerotor pump + pump flange (→ Figure 3)					Coupling assembly (→ Figure 4)					Motor connection (→ Figure 5)																			
	Maße [mm]					Fig. 7	Fig. 8	Fig. 9	Frame	ØN	T	ØM	SM	ØD	E	EB	GA	F												
	ØPF	ØPN	L1	L2	L3	ØFM1	ØM1	ØSY	ØMZ	SZ	(A1)	B1	(C1)	D1	(E1)	F1	size													
143-13...B03C	120	72	53.5	104	14	-	-	-	85	M6	28	42	-	-	-	-	63	80	3	100	M ₆ ⁸ tief	11 ₆	23	18	12.5	4				
143-13...D03E	140	95	55.5	109	12	-	-	-	115	M8	28	42	-	-	-	-	71	95	3	115	M ₈ ¹² tief	14 ₆	30	25	16	5				
143-13...F02D	140	95	65	127	17	-	-	-	115	M8	31	51	-	-	-	-	71	95	3	115	M ₈ ¹² tief	14 ₆	30	25	16	5				
143-13...F05F	160	110	77	137	15	-	-	-	130	M8	-	-	31	40	-	-	80	110	3.5	130	M ₈ ¹² tief	19 ₆	40	32	21.5	6				
143-13...H02F	160	110	78.5	144	15	-	-	-	130	M8	-	-	31	40	-	-	80	110	3.5	130	M ₈ ¹² tief	19 ₆	40	32	21.5	6				
143-13...H05J	160	110	85.5	153	17	-	-	-	130	M8	-	-	31	49	-	-	90	110	3.5	130	M ₈ ¹³ tief	24 ₆	50	40	27	8				
143-13...K02H	160	110	80	152	15	-	-	-	130	M8	-	-	31	40	-	-	80	110	3.5	130	M ₈ ¹² tief	19 ₆	40	32	21.5	6				
143-13...K05J	160	110	87	161	17	-	-	-	130	M8	-	-	31	49	-	-	90	110	3.5	130	M ₈ ¹³ tief	24 ₆	50	40	27	8				
143-13...M02H	160	110	82	164	15	-	-	-	130	M8	-	-	31	40	-	-	80	110	3.5	130	M ₈ ¹² tief	19 ₆	40	32	21.5	6				
143-13...M05K	160	110	89	173	17	-	-	-	130	M8	-	-	31	49	-	-	90	110	3.5	130	M ₈ ¹³ tief	24 ₆	50	40	27	8				
143-13...P02K	160	110	92	184	17	-	-	-	130	M8	-	-	30	50	-	-	90	110	3.5	130	M ₈ ¹³ tief	24 ₆	50	40	27	8				
143-13...R02M	200	144.6	124	218	16	250	225	9	165	-	-	-	-	46	60	100	130	3.5	165	M ₁₀ ¹² tief	28 ₆	60	50	31	8					
143-13...R03M	200	144.6	124	218	16	250	225	9	165	-	-	-	-	46	60	100	130	3.5	165	M ₁₀ ¹² tief	28 ₆	60	50	31	8					
143-13...R03N	200	144.6	124	218	16	250	225	9	165	-	-	-	-	46	60	100	130	3.5	165	M ₁₀ ¹² tief	28 ₆	60	50	31	8					
143-13...T02M	200	144.6	124	218	16	250	225	9	165	-	-	-	-	46	60	100	130	3.5	165	M ₁₀ ¹² tief	28 ₆	60	50	31	8					
143-13...T03N	200	144.6	124	218	16	250	225	9	165	-	-	-	-	46	60	100	130	3.5	165	M ₁₀ ¹² tief	28 ₆	60	50	31	8					
143-13...V02N	200	144.6	124	221	16	250	225	9	165	-	-	-	-	46	60	112	130	3.5	165	M ₁₀ ¹² tief	28 ₆	60	50	31	8					
143-13...V03N	200	144.6	124	221	16	250	225	9	165	-	-	-	-	46	60	112	130	3.5	165	M ₁₀ ¹² tief	28 ₆	60	50	31	8					
143-13...V03P	200	145	154	251	16	250	225	9	165	-	-	-	-	48	88	132	130	3.5	165	M ₁₀ ¹² tief	38 ₆	80	70	41	10					

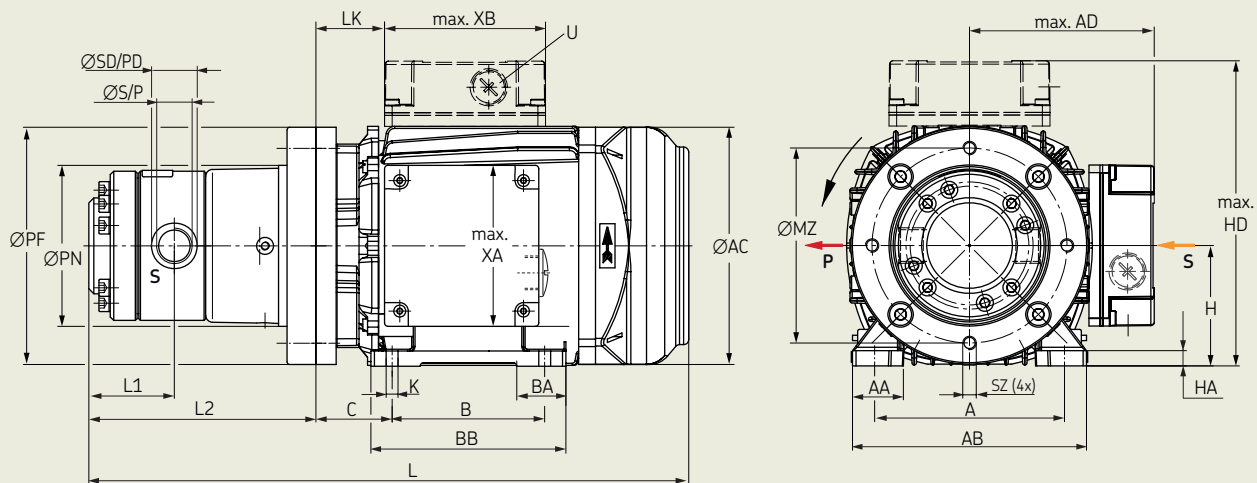
5) Supplement the order No. with the code letter for the desired seal design. Seal design NBR (N) or FKM (F).

Gerotor pumps, product series 143

Foot and flange designs, technical data and dimensions

Figure 6

Foot design (type IMB34)



Nimial delivery rate [l/min]	Back pressure max. [bar]	Perm. viscosity range [mm ² /s]	Char. curve Nr. 1)	Foot design N (NBR) / F (FKM) Order No. 2)3)	Flange design N (NBR) / F (FKM) Order No. 2)3)	Nominal output [cm ³ /rev.]	Suction port S	Pressure port P	Dimensions [mm] (→ Figure 6+7)						
									$\varnothing PD$	$\varnothing SD$	$\varnothing PN$	$\varnothing PF$	$\varnothing FM1$	$\varnothing MZ$	$\varnothing M1$
0.85	30	20–1000	1	143-11...B03C-R...	143-12...B03C-X...	0.61	G1/4 _{12 deep}	G1/4 _{12 deep}	19	72	120	-	100	-	
1.7	30	20–1000	2	143-11...D03E-R...	143-12...D03E-X...	0.61	G1/4 _{12 deep}	G1/4 _{12 deep}	19	95	140	-	115	-	
2.5	20	20–1000	3	143-11...F02D-R...	143-12...F02D-X...	1.79	G3/8 _{12 deep}	G3/8 _{12 deep}	23	95	140	-	115	-	
2.5	50	20–1000	3	143-11...F05F-R...	143-12...F05F-X...	1.79	G3/8 _{12 deep}	G3/8 _{12 deep}	23	110	160	-	130	-	
5.25	20	20–1000	4	143-11...H02F-R...	143-12...H02F-X...	3.75	G1/2 _{14.5 deep}	G1/2 _{14.5 deep}	27	110	160	-	130	-	
5.25	50	20–1000	4	143-11...H05J-R...	143-12...H05J-X...	3.75	G1/2 _{14.5 deep}	G1/2 _{14.5 deep}	27	110	160	-	130	-	
9	20	20–1000	5	143-11...K02H-R...	143-12...K02H-X...	6.44	G1/2 _{14.5 deep}	G1/2 _{14.5 deep}	27	110	160	-	130	-	
9	50	20–1000	5	143-11...K05J-R...	143-12...K05J-X...	6.44	G1/2 _{14.5 deep}	G1/2 _{14.5 deep}	27	110	160	-	130	-	
12.5	20	20–1000	6	143-11...M02H-R...	143-12...M02H-X...	8.93	G3/4 _{16 deep}	G3/4 _{16 deep}	33	110	160	-	130	-	
12.5	50	20–1000	6	143-11...M05K-R...	143-12...M05K-X...	8.93	G3/4 _{16 deep}	G3/4 _{16 deep}	33	110	160	-	130	-	
19	20	20–1000	7	143-11...P02K-R...	143-12...P02K-X...	13.6	G1 _{18 deep}	G1 _{18 deep}	40	110	160	-	130	-	
30	20	20–1000	8	143-11...R02M-R...	143-12...R02M-X...	10.74	G1 _{18.5 deep}	G1 _{18.5 deep}	41	144.6	200	250	165	225	
30	30	20–750	8	143-11...R03M-R...	143-12...R03M-X...	10.74	G1 _{18.5 deep}	G1 _{18.5 deep}	41	144.6	200	250	165	225	
30	30	20–1000	8	143-11...R03N-0...	143-12...R03N-X...	10.74	G1 _{18.5 deep}	G1 _{18.5 deep}	41	144.6	200	250	165	225	
40	20	20–750	9	143-11...T02M-R...	143-12...T02M-X...	14.36	G1 _{18.5 deep}	G1 _{18.5 deep}	41	144.6	200	250	165	225	
40	30	20–1000	9	143-11...T03N-0...	143-12...T03N-X...	14.36	G1 _{18.5 deep}	G1 _{18.5 deep}	41	144.6	200	250	165	225	
50	20	20–1000	10	143-11...V02N-0...	143-12...V02N-X...	17.87	G1 1/4 _{20.5 deep}	G1 _{18.5 deep}	41 51	144.6	200	250	165	225	
50	30	20–750	10	143-11...V03N-0...	143-12...V03N-X...	17.87	G1 1/4 _{20.5 deep}	G1 _{18.5 deep}	41 51	144.6	200	250	165	225	
50	30	20–1000	10	143-11...V03P-R...	143-12...V03P-X...	17.87	G1 1/4 _{20.5 deep}	G1 _{18.5 deep}	41 51	145	200	250	165	225	

1) → see page 12

2) Supplement the order No. with the code letter for the desired seal design. Seal design NBR (N) or FKM (F).

3) Supplement the order No. with the code letter for the desired motor certification (→ page 7) and the voltage code (→ page 16).

For associated motor data → page 17.

Gerotor pumps, product series 143

Foot and flange designs, technical data and dimensions

Figure 7

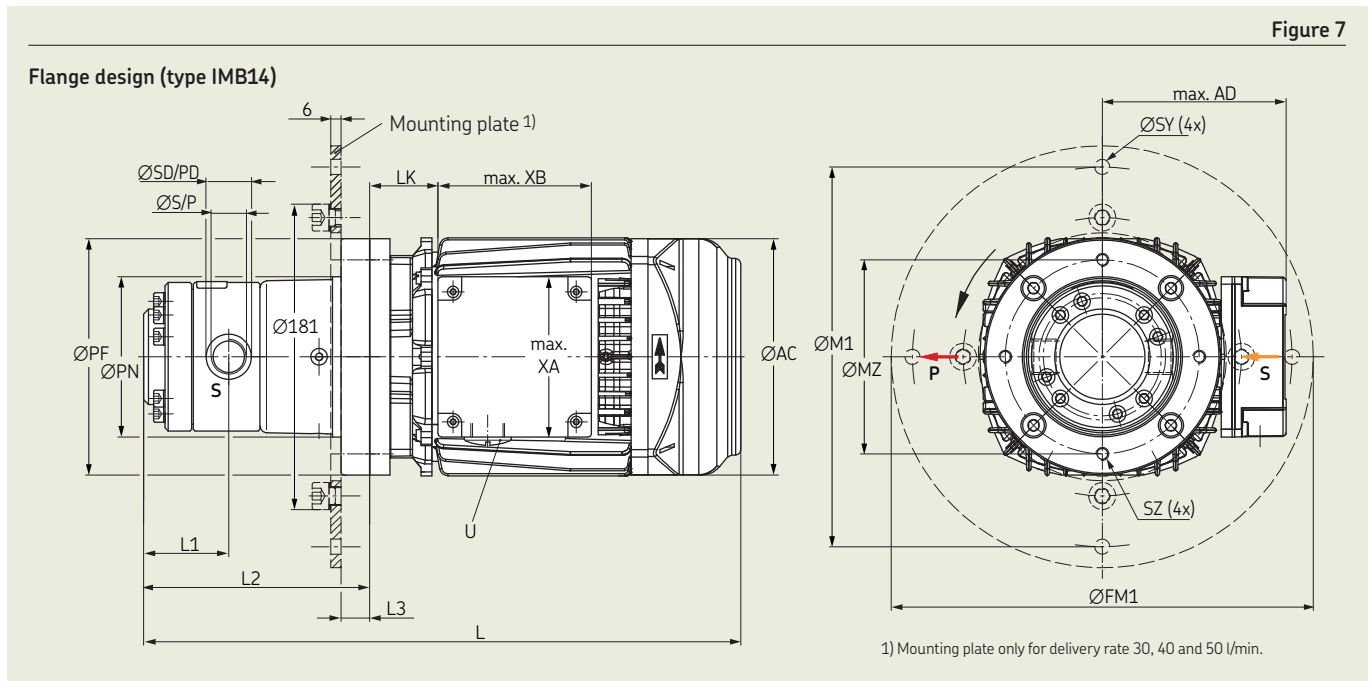


Table 4

Dimensions [mm] (→ Figure 6+7)

SZ	ØSY	L1	L2	L3	A	AA	AB	ØAC	AD	B	BA	BB	C	H	HA	HD ⁴⁾	K	L	LK	U	XA	XB
M6	-	36.5	104	14	100	29.5	124.5	124	122.5	80	25	100	40	63	8	-	7	289	19.5	1x M20×1.5	100	116
M8	-	36.5	109	12	112	30	138	141	109.5	90	29	115	45	71	9	-	7	329	40.5	1x M20×1.5	95	95
M8	-	45	127	17	112	30	138	141	109.5	90	29	115	45	71	9	-	7	347	40.5	1x M20×1.5	95	95
M8	-	45	137	15	125	33.5	153	159	118.5	100	32	125	50	80	10	-	10	392	43.5	1x M20×1.5	95	95
M8	-	50.5	144	15	125	33.5	153	159	118.5	100	32	125	50	80	10	-	10	399	43.5	1x M20×1.5	95	95
M8	-	50.5	153	17	140	35	170	176	118.5	125	33.5	155	56	90	11	-	10	432.5	31	1x M20×1.5	100	116
M8	-	57	152	15	125	33.5	153	159	118.5	100	32	125	50	80	10	-	10	407	43.5	1x M20×1.5	95	95
M8	-	57	161	17	140	35	170	176	118.5	125	33.5	155	56	90	11	-	10	440.5	31	1x M20×1.5	100	116
M8	-	67	164	15	125	33.5	153	159	118.5	100	32	125	50	80	10	-	10	419	43.5	1x M20×1.5	95	95
M8	-	67	173	17	140	35	170	176	148.5	125	33.5	155	56	90	11	-	10	452.5	31	1x M20×1.5	100	116
M8	-	75	184	17	140	35	170	176	148.5	125	33.5	155	56	90	11	-	10	463.5	31	1x M20×1.5	100	116
Ø11	9	78	218	16	160	38	195	196	155	140	43	176	63	100	13	-	12	521	116	2x M25×1.5	100	116
Ø11	9	78	218	16	160	38	195	196	155	140	43	176	63	100	13	-	12	521	116	2x M25×1.5	100	116
Ø11	9	78	218	16	190	44	225	220	168	140	45	176	70	112	15	280	12	538	52	2x M25×1.5	100	116
Ø11	9	78	218	16	160	38	195	196	155	140	43	176	63	100	13	-	12	521	116	2x M25×1.5	100	116
Ø11	9	78	218	16	190	44	225	220	168	140	45	176	70	112	15	280	12	538	52	2x M25×1.5	100	116
Ø11	9	81	221	16	190	44	225	220	168	140	45	176	70	112	15	280	12	541	52	2x M25×1.5	100	116
Ø11	9	81	221	16	190	44	225	220	168	140	45	176	70	112	15	280	12	541	52	2x M25×1.5	100	116
Ø11	9	81	251	16	216	55	256	246	188	140	88	218	89	132	18	-	12	656	183	2x M32×1.5	117	142

4) Only standard terminal box position on top is supported; right position is not possible.

Gerotor pumps, product series 143

Characteristic curves

Chart 1

Operating viscosity 20 mm²/s, 50 Hz

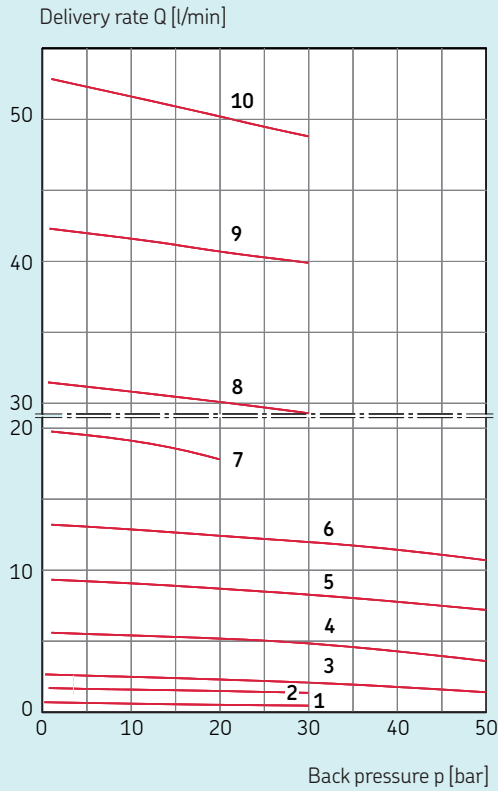
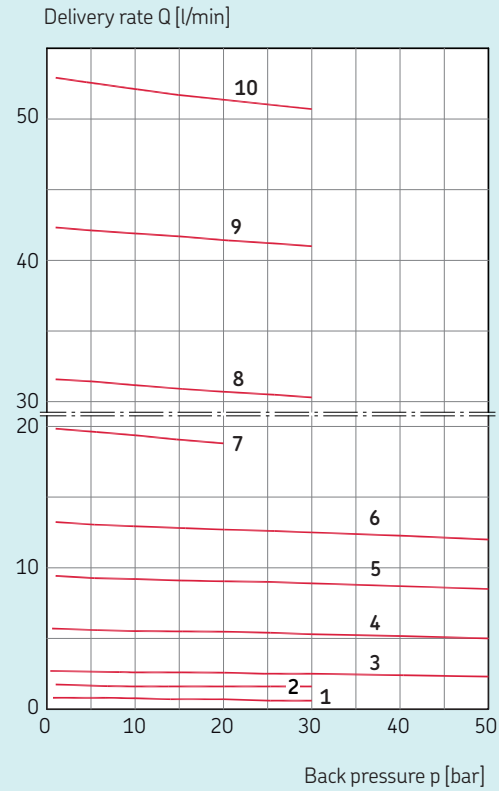


Chart 2

Operating viscosity 140 mm²/s, 50 Hz



Legend to diagrams 1–4:

- Characteristic curve 1: 0.85 l/min
- Characteristic curve 2: 1.7 l/min
- Characteristic curve 3: 2.5 l/min
- Characteristic curve 4: 5.25 l/min
- Characteristic curve 5: 9 l/min
- Characteristic curve 6: 12.5 l/min
- Characteristic curve 7: 19 l/min
- Characteristic curve 8: 30 l/min
- Characteristic curve 9: 40 l/min
- Characteristic curve 10: 50 l/min

Tolerances: VDMA 24284-II

For connection with a frequency of 60 Hz, the speed and the volumetric flow are increased by 20% (compared to the table specifications, basis 50 Hz).

Gerotor pumps, product series 143

Characteristic curves

Chart 3

Operating viscosity 750 mm²/s, 50 Hz

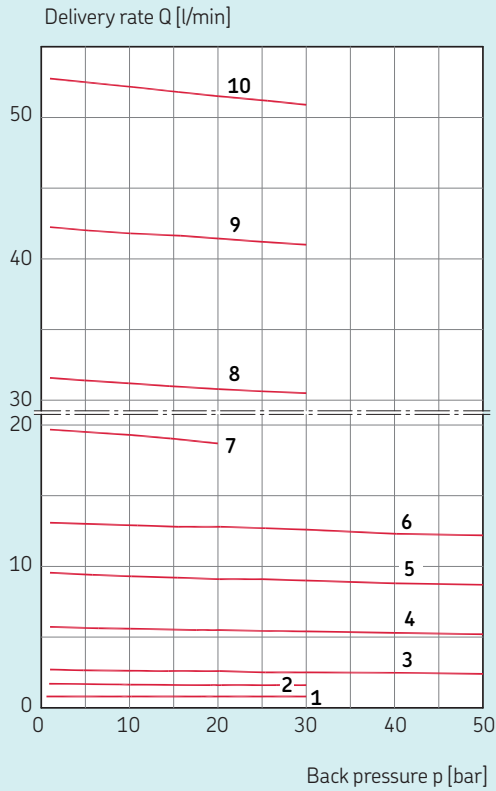
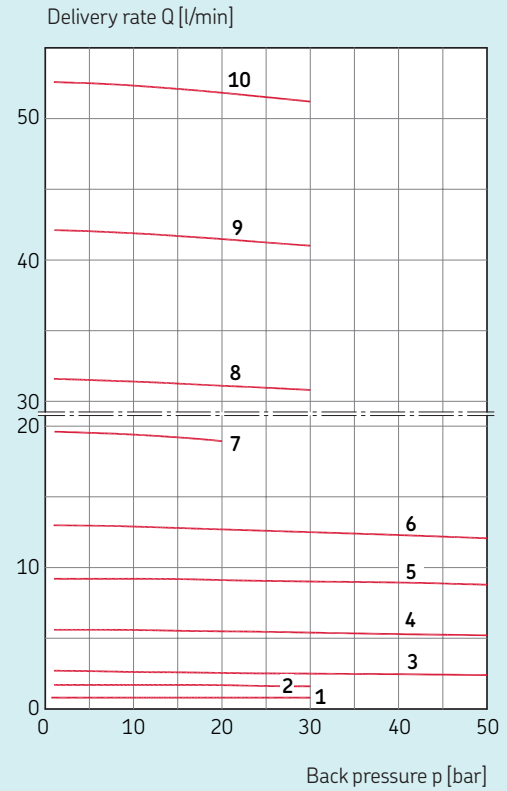


Chart 4

Operating viscosity 1000 mm²/s, 50 Hz



Legend to diagrams 1–4:

- Characteristic curve 1: 0.85 l/min
- Characteristic curve 2: 1.7 l/min
- Characteristic curve 3: 2.5 l/min
- Characteristic curve 4: 5.25 l/min
- Characteristic curve 5: 9 l/min
- Characteristic curve 6: 12.5 l/min
- Characteristic curve 7: 19 l/min
- Characteristic curve 8: 30 l/min
- Characteristic curve 9: 40 l/min
- Characteristic curve 10: 50 l/min

Tolerances: VDMA 24284-II

For connection with a frequency of 60 Hz, the speed and the volumetric flow are increased by 20% (compared to the table specifications, basis 50 Hz).

IEC squirrel cage motors

Fundamentals

General information

The standard design of SKF gerotor pump units of product series 143 is driven by IEC asynchronous motor. The motors are used in sizes 63 to 132, in 2-pole and 4-pole designs. They meet the relevant IEC/EN standards both mechanically and electrically. The standard design of the motors comes with a terminal box. The motors bear a CE marking in accordance with Low Voltage Directive 2014/35/EC. There is no CE marking with respect to Machinery Directive 2006/42/EC and EMC Directive 2014/30/EC because asynchronous motors do not fall under the scope of these Directives.

Special provisions

The motors can be ordered in a UL- and CSA-compliant design and are approved as a „recognized component“ by UL (Underwriter Laboratories).

These motors have an electrical design according to NEMA MG1-12.

CSA BG56-80 File-No.: LR 88093 (listed under Master Contract No. 150227)

CSA BG90-132 File-No.: LR 12638 (listed under Master Contract No. 150227)

UL BG56-80 File-No.: E123665 (combined acceptance per UL 1004 and CSA 22.2.100)

UL BG90-132 File-No.: E125750 (combined acceptance per UL 1004 and CSA 22.2.100)

Further certifications are available on request.

Types

The motors are used exclusively in the types IM B34 and IM B14. The type is indicated according to Code I, DIN EN 60034-7 on the rating plate.

IM B34: Shaft horizontal, feet on floor

IM B14: Shaft horizontal, no feet

Rated voltage, frequency and power output

The motors are configured as standard for a rated motor voltage in accordance with IEC 38 of 230 V, 400 V or 690 V for 50 Hz networks (standard winding). Motors for other voltages and frequencies (non-standard winding) are available at additional cost.

The voltage deviation permitted in operation for the aforementioned rated motor voltages and for special voltages is $\pm 5\%$ for range A (continuous duty operation) and $\pm 10\%$ for range B (short-time duty operation), as specified in EN 60034-1. The permitted frequency deviation is $\pm 2\%$ for range A and $-5/+3\%$ for range B. For supply voltages that are 95% or 105% of the rated motor voltage, the tolerances described in EN 60034-1 are met. Furthermore, motor temperature is allowed to exceed the permitted temperature rise limit by 10 K. The percentile specifications for the permitted voltage and frequency deviations are not stamped onto the rating plate of the motor. The presence of the CE mark on the motor rating plate, accompanied by a reference to standard EN 60034, guarantees that these requirements have been incorporated by the motor manufacturer during configuration of the motor.

Motors for a rated motor voltage in accordance with DIN IEC 38 of 230 V and 400 V for 50 Hz networks (standard winding) and with power outputs of < 0.75 kW are configured for the wide voltage range for 50 and 60 Hz networks. Within this wide voltage range, the motors may be used as continuous running duty type S1. EN 60034-1 also holds for the guideline values of the voltage range in respect of permitted voltage and frequency deviations for ranges A and B. The wide voltage range is indicated on the motor rating plate.

Indication of wide voltage range:

50 Hz: 400 V $\pm 5\%$ or
220 – 240 V / 380 – 420 V

60 Hz: 460 V $\pm 5\%$ or
254 – 280 V / 440 – 480 V

Use of the wide voltage range in the case of motors with power outputs < 0.75 kW is permitted because these motors do not come under Directive 2005/32/EC (Energy Using Products) and are not therefore required to comply with Commission Regulation (EC) No 640/2009 in terms of meeting the IE3 efficiency level. For this reason, the rating plates of these motors do not carry the IE3 mark. Motors for special voltages with power outputs < 0.75 kW contain non-standard windings optimised for a single voltage/frequency point (such motors are also referred to as tailor-made motors). Special voltages for 50 and 60 Hz networks are available at additional cost and should be specified at the time of order. Motors with performance ≥ 0.75 kW are optimized for one voltage/frequency point and are designed solely on a tailor-made basis. They are configured as standard for a rated motor voltage in accordance with IEC 38 of 230 V, 400 V or 690 V for 50 Hz networks (standard winding). They meet the IE3 efficiency level as set out in Directive 2005/32/EC (Energy Using Products) and Commission Regulation (EC) No 640/2009. The rating plates of these motors carry the IE3 mark. Motors for special voltages with power outputs ≥ 0.75 kW contain non-standard windings optimised for a single voltage/frequency point. Special voltages for 50 and 60 Hz networks for all rated motor voltages in general use throughout the world are available and should be specified at the time of order. The stated rated outputs and operating values apply to duty type S1 in accordance with EN 60034-1 at the stated rated frequency, rated voltage, a coolant temperature of 40°C maximum and a site installation altitude up to 1 000 metres above sea level. Enquiries for motors for operating conditions other than those mentioned are welcome, on the understanding that these will incur additional costs.

IEC squirrel cage motors

Fundamentals

Circuit

The phase belts of the motor that are laid on the terminal board can be interconnected in two different connection systems:

Star connection

In the star connection, the coil ends U₂, V₂, and W₂ are interconnected on the terminal board, creating the neutral point. Mains

power is connected on the free connection ports of the coil ends U₁, V₁, and W₁ on the terminal board.

Delta connection

In the delta connection, the end of the phase belt is interconnected with the beginning of the next phase belt. (U₂ to V₁, V₂ to W₁, W₂ to U₁). Mains power is connected at the connection points on the terminal board.

Cooling method

The motors are designed for cooling method IC 411 (surface cooling).

Temperature class

The insulation on the motor coils is designed for temperature class 155 (F). When utilized at their performance rating, the motors meet temperature class 130 (B). Given a coolant temperature of 40°C, the power reserve is thus approx. +10%; when operated at their performance rating, the temperature reserve is approx. +20 K.

Terminal box

The terminal boxes have a protection class of IP55. The terminal box of the standard motor is positioned on the right when viewed from the drive side. An exception is 2-pole motors of size 112 (4.0 kW), in which the terminal box is installed on the top for design reasons. Special motors with other terminal box positioned as standard motor are available on request.

The position of the openings for cable entry can be adjusted to the available connections by turning the terminal box by 90° each time (terminal box design 95×95 mm). Terminal boxes with dimensions 120×115 mm can only be turned by 180°. The thread on the cable inlets have a metric thread of 1x M20x1.5 for frame sizes 63 to 90.

Frame size 100 and 112 have a metric thread of 2x M25x1.5 and frame size 132 have 2x M32x1.5. The terminal board has a 6-pole design.

Protection class

The motors are designed for protection class IP55 according to DIN EN 60034-5.

Touch and foreign object protection: Provides complete protection against contacting or getting close to such parts, as well as against touching moving parts within the housing. Provides protection against the ingress of damaging amounts of dust deposits. Water protection: A jet of water from a nozzle and aimed at the motor from all directions has no adverse effect.

Rating plates according to DIN EN 60034-1

Europe (CE) without IE3

Wide voltage range

		3~ Mot 63	1
AF 63/4B-7 /0805		H 0001 361079	
YΔ 400/230 V	0,60/1,04 A	0,18 kW	
cos φ 0,69	1380 1/min	50 Hz	
Th.Cl. 155 (F) IP55 IMB34 EN 60034		4,4 kg	4
YΔ 380-420/220-240 V	0,63/1,09 A	0,18 kW	
cos φ 0,69	1380 1/min	50 Hz	
YΔ 440-480/254-280 V	0,60/1,04 A	0,215 kW	
cos φ 0,69	1675 1/min	60 Hz	
		CE	10

Tailor-made

		3~ Mot 71	1
LF 71/2A-11 /0805		H 0001 575540	
YΔ 500/290 V	0,76/1,32 A		
cos φ 0,81	0,37 kW	2860 1/min	4
Th.Cl. 155 (F) IP55 IMB34 EN 60034			
YΔ 575/330 V	0,73/1,26 A		
cos φ 0,83	0,45 kW	3440 1/min	11
		CE	10

USA / Canada (UL/CSA) without IE3

Wide voltage range

		AC 3 Phase-Motor	H 0001
Serie 63 AF 63/4B-11 /0805		571730	
YΔ 400/230 V	YΔ 380-420/220-240 V		5
50 Hz	0,60/1,05 A		
0,24 HP 0,18 kW 1380 rpm cos φ 0,71			
AMB TEMP 40 °C TEFC EN 60034			
YΔ 440-480/254-280 V	0,30 HP 0,60/1,05 A		
cos φ 0,72	60 Hz 0,22 kW	1670 rpm	
4,40 kg Class 155 (F) IP55		DutyCycle 51	
		UL	10

Tailor-made

		AC 3 Phase-Motor	H 0001
Serie 71 LF 71/2A-11 /0805		xxxxx	
YΔ 500/290 V			CE
50 Hz	0,76/1,32 A		
0,50 HP 0,37 kW 2860 rpm cos φ 0,81			
AMB TEMP 40 °C TEFC EN 60034			
YΔ 575/330 V	0,60 HP 0,73/1,26 A		
cos φ 0,83	60 Hz 0,45 kW	3440 rpm	
8,5 kg Class 155 (F) IP55		DutyCycle 51	
		UL	10

Europe (CE) and USA / Canada (UL/CSA) with IE3¹⁾

Tailor-made

		CE
3~ Mot NF 80/4H-13+E3 /1611		
S1	IMB34	-0001 586419 H
IP55	Th.Cl. 155 (F)	
		CE
		IE3
		12

Tailor-made

		UL/CSA
AC 3 Mot NF 80/4H-13+E3 /1611		
Serie N80	TEFC	-0001 586419 H
IP55	Class 155 (F)	IMB34 DutyCycle 51
AMB TEMP 40 °C		
		UL
		12

- 1 Size
- 2 Protection class
- 3 Temperature class
- 4 Type
- 5 Rated voltage range
- 6 Rated current
- 7 Rated speed
- 8 Data for 50 Hz
- 9 Data for 60 Hz
- 10 Certification
- 11 Rated operating voltage
- 12 Efficiency (only IE3 motors)

¹⁾ In the UL/CSA design, the motor is also supplied with a rating plate for CE.

IEC squirrel cage motors

Voltage code

Table 5

Voltages and frequencies of different countries

	Voltage V	Voltage tolerance		Design with terminal box				Country code
		Range A %	Range B %	without IE3 (P < 0.75 kW)		with IE3 (P ≥ 0.75 kW)		
				CE	UL/CSA	CE	UL/CSA	
50 Hz	200 / 345	±5	±10	+1GF	+1GF	+1GF	+1GF	JP, HK
	220 / 380	±5	±10	+1FX	+1HM	+1GP	+1GP	CN, RU, TR, IQ, IR, ID, IN, TH, VN, AR, CL, EG, DZ, LY, AF
	230 / 400	±5	±10	+1FX	+1HM	+1GD	+1GD	EU, IL, PK, ZA, AE, BD, MM
	240 / 415	±5	±10	+1FX	+1HM	+1GQ	+1GQ	UK, IN, IQ, MY, AU, NZ, SG, KW, QA
	255 / 440	±5	±10	+MFN	+MFN	+MFN	+MFN	
	290 / 500	±5	±10	+1HQ	+1HQ	+1HQ	+1HQ	
	305 / 525	±5	±10	+MMP	–	+MMP	–	ZA
	380 / 660	±5	±10	–	–	+1GH ¹⁾	–	CN, RU, TR, IQ, IR, ID, IN, TH, VN, AR, CL
	400 / 690	±5	±10	–	–	+1GK ¹⁾	–	
	415 Δ	±5	±10	–	–	+1GL ¹⁾	–	UK, IN, IQ, MY, AU, NZ, SG
500 Δ	±5	±10	+1LL	+1LL	+1LL	+1LL		
60 Hz	200 / 345	±5	±10	+1GG	+1GG	+1GG	+1GG	JP
	220 / 380	±5	±10	+MDP	+MDP	+MDP	+MDP	BR, KP, KR, PE, MX, SA, TW, VE, BO
	230 / 400	±5	±10	+1GR	+1GR	+1GR	+1GR	
	240 / 415	±5	±10	+1KS	+1KS	+1KS	+1KS	
	255 / 440	±5	±10	+1FX	+1HM	+1GP	+1GP	MX, PA, PH
	440 Δ	±5	±10	–	–	+1GH ¹⁾	–	MX, PA, PH
	265 / 460	±5	±10	+1FX	+1HM	+1GD	+1GD	US, CA, MX
	460 Δ	±5	±10	–	–	+1GK ¹⁾	+1KG ²⁾	US, CA, MX
	280 / 480	±5	±10	+1FX	+1HM	+1GQ	+1GQ	CA
	480 Δ	±5	±10	–	–	+1GL ¹⁾	–	CA
	330 / 575	±5	±10	+1HQ	+1HQ	+1HQ	+1HQ	CA
	575 Δ	±5	±10	+1LL	+1LL	+1LL	+1LL	CA

AE = United Arab Emirates
AF = Afghanistan
AR = Argentina
AU = Australia
BO = Bolivia
BR = Brazil
CA = Canada
CL = Chile
CN = China

DZ = Algeria
EG = Egypt
EU = Europe
HK = Hong Kong
ID = Indonesia
IL = Israel
IN = India
IQ = Iraq
IR = Iran

JP = Japan
KR = Korea
KW = Kuwait
LY = Libya
MX = Mexico
MY = Malaysia
NZ = New Zealand
PA = Panama
PE = Peru

PH = Philippines
PK = Pakistan
QA = Qatar
RU = Russia
SA = Saudi Arabia
SG = Singapore
TH = Thailand
TR = Turkey
TW = Taiwan

UK = United Kingdom
US = USA
VE = Venezuela
VN = Vietnam
ZA = South Africa

Note: Motors with a performance rating of ≥0.75 kW must be designed for efficiency class IE3.

(others available on request)

¹⁾ P ≥ 5.5 kW not for UL/CSA

²⁾ P ≥ 5.5 kW not for UL/CSA

Voltage code texts

+1FX	220–240 V / 380–420 V, 50 Hz (CE) 254–280 V / 440–480 V, 60 Hz (CE)	+1GL	415 V, 50 Hz, Δ; 480 V, 60 Hz, Δ ¹⁾	+1KG	400 V, 50 Hz, Δ; 460 V, 60 Hz, Δ ²⁾
+1GD	230 / 400 V, 50 Hz; 265 / 460 V, 60 Hz	+1GP	220 / 380 V, 50 Hz; 255 / 440 V, 60 Hz	+1KS	240 / 415 V, 60 Hz
+1GF	200 / 345 V, 50 Hz	+1GQ	240 / 415 V, 50 Hz; 280 / 480 V, 60 Hz	+1LL	500 V, 50 Hz, Δ; 575 V, 60 Hz, Δ
+1GG	200 / 345 V, 60 Hz	+1GR	230 / 400 V, 60 Hz	+MDP	220 / 380 V, 60 Hz
+1GH	380 / 660 V, 50 Hz; 440 V, 60 Hz ¹⁾	+1HM	220–240 V / 380–420 V, 50 Hz (UL/CSA) 254–280 V / 440–480 V, 60 Hz (UL/CSA)	+MFN	255 / 440 V, 50 Hz
+1GK	400 / 690 V, 50 Hz; 460 V, 60 Hz ¹⁾	+1HQ	290 / 500 V, 50 Hz; 330 / 575 V, 60 Hz	+MMP	305 / 525 V, 50 Hz

IEC squirrel cage motors

Technical data

Squirrel cage motor in foot design



Table 6

Technical data

Type	Foot design IM B34, Flange design IM B14
Protection class	IP55
Temperature class	
Duty type	
Temperature range	-20 to +40 °C
Max. site altitude	1000 m above sea level
Cooling method	IC 411 (surface cooling with fan))
Temperature monitoring	none
Frequency converter operation	According to DIN IEC / TS 60034-17 (VDE 0530 Part 17) 2004, suitable for converter operation for supply voltages up to and including 480 V
Terminal box material	Metal

Table 7

Code for pump design

Frame size	Certi- fication	Number of poles	Flange- design (with threaded hole) ¹⁾	Weight kg	50 Hz				60 Hz			
					Rated voltage ²⁾ Δ / Y	Rated power ³⁾ kW	Speed min ⁻¹	Rated current Δ / Y	Rated voltage ²⁾ Δ / Y	Rated power ³⁾ kW	Speed min ⁻¹	Rated current Δ / Y
63	CE UL/CSA	4	FT100 (C120)	5	230 / 400	0.18	1380	1.15 / 0.65	265 / 460	0.22	1670	1.05 / 0.65
71	CE UL/CSA	2	FT115 (C140)	8	230 / 400	0.37	2880	1.86 / 1.08	265 / 460	0.44	3470	1.75 / 1.00
71	CE UL/CSA	4	FT115 (C140)	8	230 / 400	0.25	1420	0.90	265 / 460	0.30	1710	0.90
71	CE UL/CSA	4	FT115 (C140)	8	230 / 400	0.37	1430	1.80 / 1.00	265 / 460	0.44	1735	1.75 / 1.00
80	CE UL/CSA	4	FT130 (C160)	10	230 / 400	0.55	1410	2.90 / 1.70	265 / 460	0.62	1720	2.70 / 1.50
80	CE UL/CSA	4	FT130 (C160)	10	230 / 400	0.75	1440	2.96 / 1.71	265 / 460	0.90	1740	2.98 / 1.72
80	CE UL/CSA	4	FT130 (C160)	10	-	-	-	-	265 / 460	0.90	1740	2.98 / 1.72
90	CE	4	FT130 (C160)	20	230 / 400	1.10	1435	4.33 / 2.50	265 / 460	1.30	1740	4.23 / 2.44
90	UL/CSA	4	FT130 (C160)	20	-	-	-	-	265 / 460	1.30	1740	4.23 / 2.44
90		4	FT130 (C160)	20	230 / 400	1.50	1440	5.70 / 3.30	265 / 460	1.80	1730	5.70 / 3.30
90	UL/CSA	4	FT130 (C160)	20	-	-	-	-	265 / 460	1.80	1730	5.70 / 3.30
100		2	FT165 (C200)	25	230 / 400	3.00	2900	9.90 / 5.70	460	3.60	3485	5.80
100	UL/CSA	2	FT165 (C200)	25	-	-	-	-	460	3.60	3485	5.80
112		2	FT165 (C200)	35	230 / 400	4.00	2880	12.4 / 7.15	460	4.80	3475	7.35
112	UL/CSA	2	FT165 (C200)	35	-	-	-	-	460	4.80	3475	7.35
132		2	FT165 (C200)	45	400 / 690	5.50	2910	10.0 / 5.75	460	6.60	3500	10.30
132	UL/CSA	2	FT165 (C200)	45	400	5.50	2910	10.0	460	6.60	3500	10.30

1) Flange with threaded hole acc. to DIN EN 50347 (FT).

2) Beyond a performance rating of 0.75 kW, the motors come with tailor-made coils. Wide voltage range motors only for performance ratings < 0.75 kW.

3) Beyond a performance rating of 0.75 kW, the motors are designed for efficiency class IE3.

IEC squirrel cage motors

Installation drawing and dimensions

Figure 8

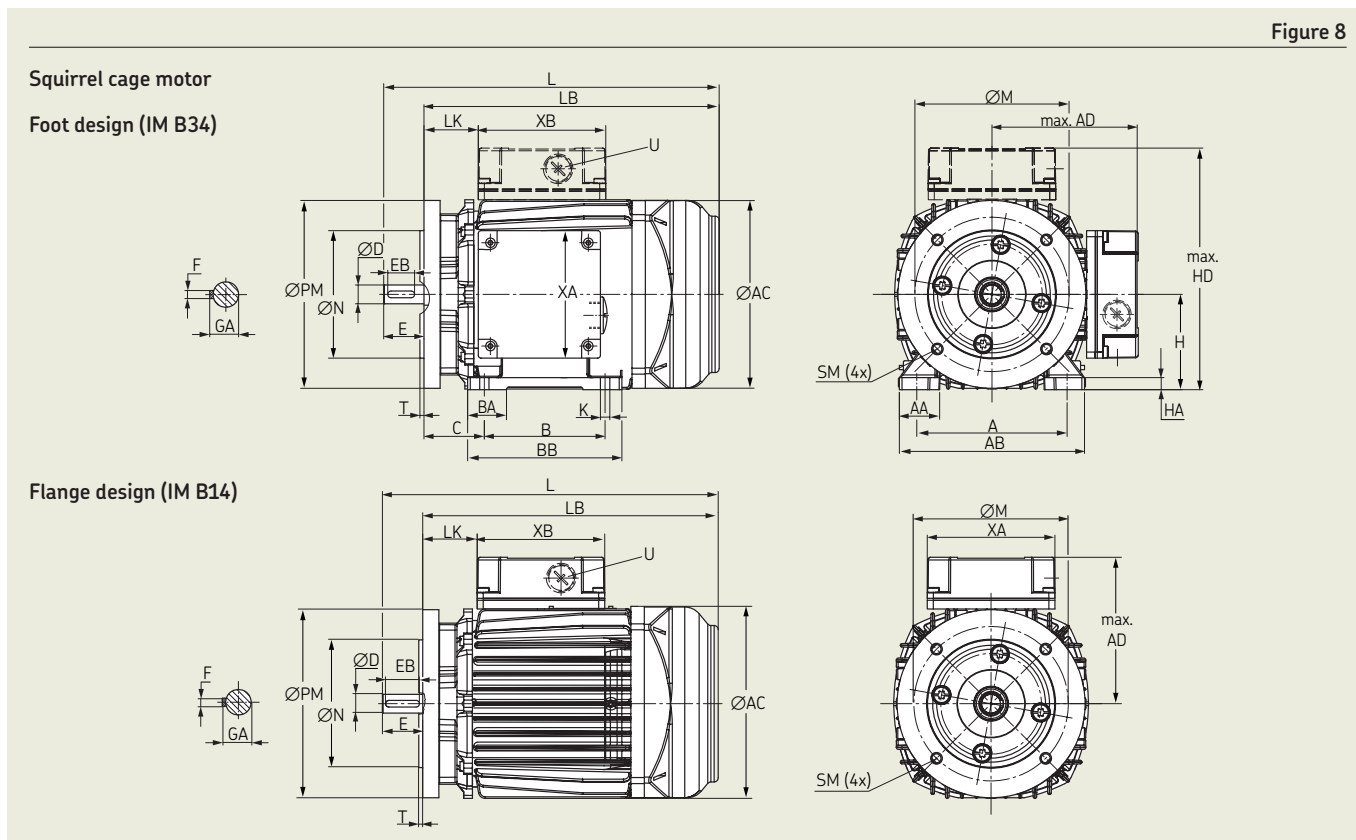


Table 8

Dimensions [mm]

Ser. No.	Frame size	Number of poles	ØM	ØN	ØPM 1)	SM	T	A	AA	AB	ØAC	ADmax.	B	BA	BB	C
1	63	4	100	80	120	M6 _{8 deep}	3	100	29.5	124.5	124	101.5 122.5	80	25	100	40
2	71	2, 4	115	95	140	M8 _{12 deep}	3	112	30	138	141	109.5	90	29	115	45
3	80	4	130	110	160	M8 _{12 deep}	3.5	125	33.5	153	159	118.5	100	32	125	50
4	90	4	130	110	160	M8 _{13 deep}	3.5	140	35	170	176	148.5	125	33.5	155	56
5	100	2	165	130	200	M10 _{12 deep}	3.5	160	38	195	196	155	140	43	176	63
6	112	2	165	130	200	M10 _{12 deep}	3.5	190	44	225	220	168	140	45	176	70
7	132	2	165	130	200	M10 _{12 deep}	3.5	216	55	256	246	188	140	88	218	89

Ser. No.	H	HA	HDmax.	K	U	XA	XB	LK	LB	L	ØD	E	EB	F	GA
1	63	8	-	7	1x M20x1.5	61 100	61 116	43.5 19.5	185	208	11J6	23	18	4	12.5
2	71	9	-	7	1x M20x1.5	95	95	40.5	220	250	14J6	30	25	5	16
3	80	10	-	10	1x M20x1.5	95	95	43.5	255	295	19J6	40	32	6	21.5
4	90	11	240 2)	9	1x M20x1.5	100	116	31	280	330	24J6	50	40	8	27
5	100	13	255	12	2x M25x1.5	100	116	116	303	363	28J6	60	50	8	31
6	112	15	280 2)	12	2x M25x1.5	100	116	52	320	380	28J6	60	50	8	31
7	132	18	320	12	2x M32x1.5	117	142	183	405	485	38k6	80	70	10	41

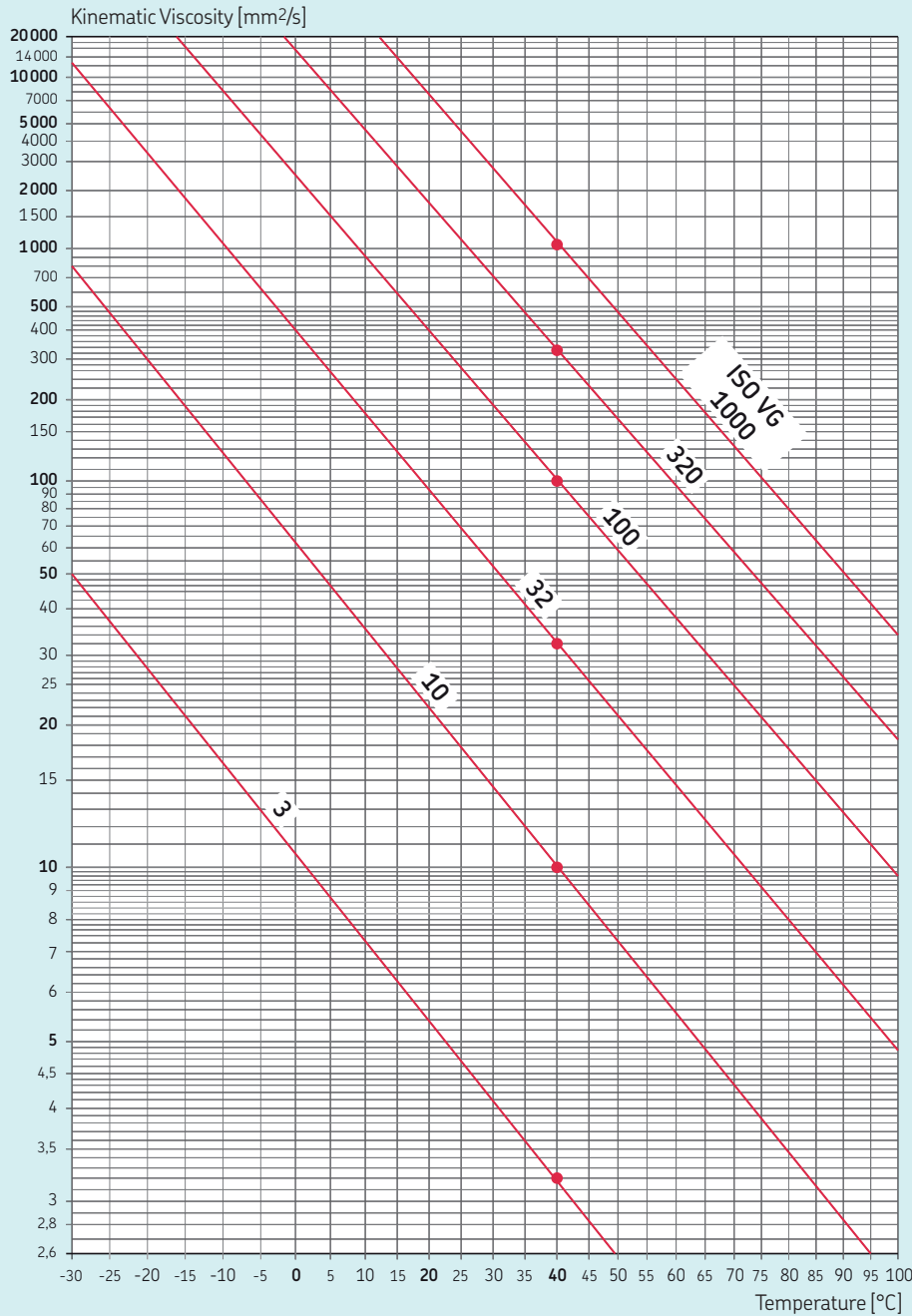
1) Mounting flange acc. to DIN EN 50347.

2) Only standard terminal box position on top is supported, right is not possible.

For motor data → page 17.

Viscosity-temperature relationship of oils with different rated viscosity

Viscosity-temperature relationship of oils



The curves are based on a viscosity index of VI ~ 95, approximately corresponding to standard mineral oil. The viscosity index describes the slope of the curve and thus the viscosity-temperature relationship at temperatures other than +40 °C.

The lines appear straight because a logarithmic scale was selected for the ordinates so that the slope of the curves can be determined easily based on 2 measuring points.

Viscosity class *

ISO VG	is approx.
3, 10	Spindle oils
32, 100	Normal machine oils
320	Medium-heavy machine oils
1000	Gear oil or similar

* The values correspond to the midpoint viscosity at 40 °C in mm²/s

Note
 The change in the viscosity of oils is disproportionately greater in lower temperature ranges than in higher temperature ranges. For example, an oil with a rated viscosity of 100 undergoes the following viscosity change in different temperature ranges at the same temperature difference:

at +80 °C = 18 mm²/s
 at +75 °C = 21 mm²/s
 change of 3 mm²/s

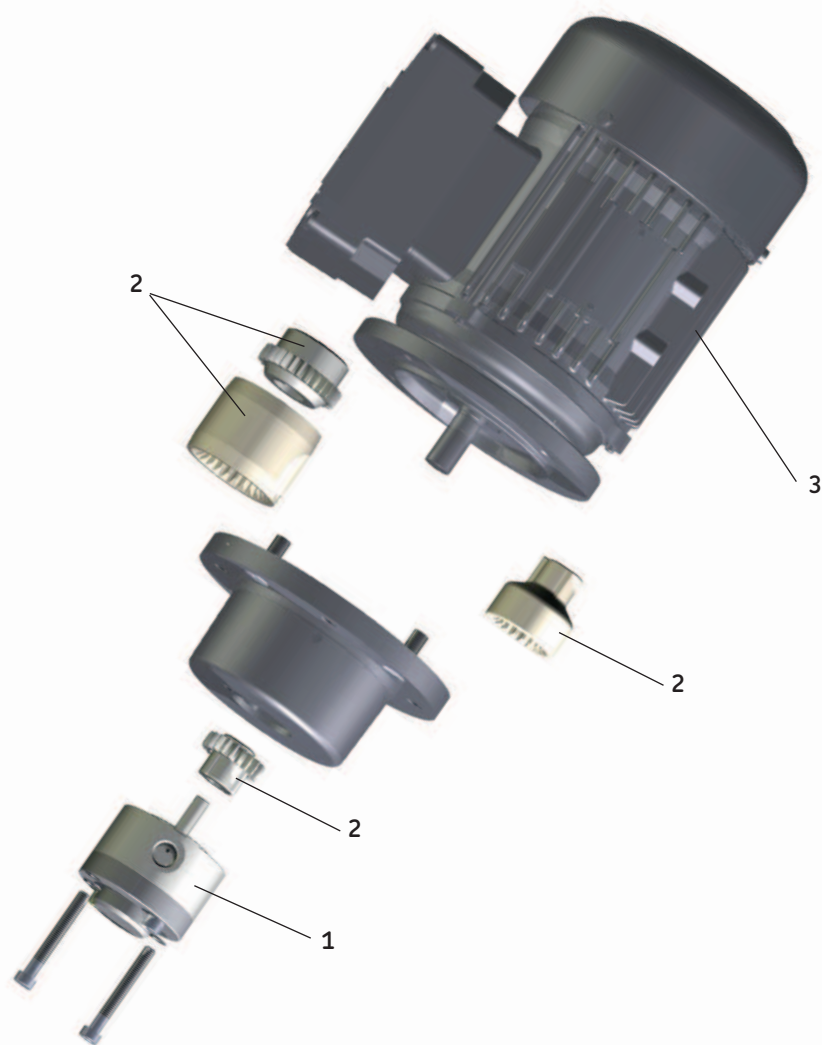
versus

at +10 °C = 875 mm²/s
 at + 5 °C = 1450 mm²/s
 change of 575 mm²/s

Spare parts

Exploded view

Figure 9



Position description → page 21, table 9.

! Dismantling of the product or individual parts thereof within the statutory warranty period is not permitted and voids any warranty claims..

Spare parts

Table 9

Position description (→ Figure 9)

Gerotor pump unit 1)	Pos. 1 Pump 1)	Pos. 2 Coupling, complete 2)	Pos. 3 Motor	Description	Order No.
143-11...B03C-RA+1FX	143-14...B03	995-000-350	178-AA12C-AMRA+1FX	Docu. package	995-810-002
143-12...B03C-XA+1FX	143-14...B03	995-000-350	178-AA22C-AMXA+1FX		
143-11...D03E-RA+1FX	143-14...D03	995-000-351	178-AA11E-AMRA+1FX	Rotation arrow	760-072
143-12...D03E-XA+1FX	143-14...D03	995-000-351	178-AA21E-AMXA+1FX		
143-11...F02D-RA+1FX	143-14...F02	995-000-353	178-AA12D-AMRA+1FX		
143-12...F02D-XA+1FX	143-14...F02	995-000-353	178-AA22D-AMXA+1FX		
143-11...F05F-RA+1FX	143-14...F05	995-000-354	178-AA12F-AMRA+1FX		
143-12...F05F-XA+1FX	143-14...F05	995-000-354	178-AA22F-AMXA+1FX		
143-11...H02F-RA+1FX	143-14...H02	995-000-356	178-AA12F-AMRA+1FX		
143-12...H02F-XA+1FX	143-14...H02	995-000-356	178-AA22F-AMXA+1FX		
143-11...H05J-OA+1GD	143-14...H05	995-000-357	178-AA12J-AMOA+1GD		
143-12...H05J-XA+1GD	143-14...H05	995-000-357	178-AA22J-AMXA+1GD		
143-11...K02H-RA+1GD	143-14...K02	995-000-356	178-AA12H-AMRA+1GD		
143-12...K02H-XA+1GD	143-14...K02	995-000-356	178-AA22H-AMXA+1GD		
143-11...K05J-OA+1GD	143-14...K05	995-000-357	178-AA12J-AMOA+1GD		
143-12...K05J-XA+1GD	143-14...K05	995-000-357	178-AA22J-AMXA+1GD		
143-11...M02H-RA+1GD	143-14...M02	995-000-356	178-AA12H-AMRA+1GD		
143-12...M02H-XA+1GD	143-14...M02	995-000-356	178-AA22H-AMXA+1GD		
143-11...M05K-OA+1GD	143-14...M05	995-000-357	178-AA12K-AMOA+1GD		
143-12...M05K-XA+1GD	143-14...M05	995-000-357	178-AA22K-AMXA+1GD		
143-11...P02K-OA+1GD	143-14...P02	995-000-358	178-AA12K-AMOA+1GD		
143-12...P02K-XA+1GD	143-14...P02	995-000-358	178-AA22K-AMXA+1GD		
143-11...R02M-RA+1GD	143-14...R02	995-000-359	178-AA11M-AMRA+1GD		
143-12...R02M-XA+1GD	143-14...R02	995-000-359	178-AA21M-AMXA+1GD		
143-11...R03M-RA+1GD	143-14...R03	995-000-359	178-AA11M-AMRA+1GD		
143-12...R03M-XA+1GD	143-14...R03	995-000-359	178-AA21M-AMXA+1GD		
143-11...R03N-OA+1GD	143-14...R03	995-000-359	178-AA11N-AMOA+1GD		
143-12...R03N-XA+1GD	143-14...R03	995-000-359	178-AA21N-AMXA+1GD		
143-11...T02M-RA+1GD	143-14...T02	995-000-359	178-AA11M-AMRA+1GD		
143-12...T02M-XA+1GD	143-14...T02	995-000-359	178-AA21M-AMXA+1GD		
143-11...T03N-OA+1GD	143-14...T03	995-000-359	178-AA11N-AMOA+1GD		
143-12...T03N-XA+1GD	143-14...T03	995-000-359	178-AA21N-AMXA+1GD		
143-11...V02N-OA+1GD	143-14...V02	995-000-359	178-AA11N-AMOA+1GD		
143-12...V02N-XA+1GD	143-14...V02	995-000-359	178-AA21N-AMXA+1GD		
143-11...V03N-OA+1GD	143-14...V03	995-000-359	178-AA11N-AMOA+1GD		
143-12...V03N-XA+1GD	143-14...V03	995-000-359	178-AA21N-AMXA+1GD		
143-11...V03P-RA+1GK	143-14...V03	995-000-360	178-AA11P-AMRA+1GK		
143-12...V03P-XA+1GK	143-14...V03	995-000-360	178-AA21P-AMXA+1GK		

1) Supplement the order No. with the code letter for the desired seal. Design NBR (N) or FKM (F).

2) It is recommended that coupling parts always be replaced completely.

Gerotor pump, product series 143

Comparison of order numbers

Table 10

Comparison of old and new order Nos. for gerotor pump, product series 143

Nominal delivery rate	Back pressure max.	Permiss. viscosity range	Sealing design NBR		Sealing design FKM	
			Old	New	Old	New
l/min	bar	mm ² /s	order No.	order No.	order No.	order No.
0.85	30	20–1000	143-011-131	143-14NB03	143-011-132	143-14FB03
1.70	30	20–1000	143-011-131	143-14ND03	143-011-132	143-14FD03
2.50	20	20–1000	143-011-151 ¹⁾ /-152 ²⁾	143-14NF02 ²⁾	143-011-159 ¹⁾	143-14FF02 ²⁾
2.50	50	20–1000	143-011-151 ¹⁾ /-152 ²⁾	143-14NF05 ²⁾	143-011-159 ¹⁾	143-14FF05 ²⁾
5.25	20	20–1000	143-011-161	143-14NH02	143-011-169	143-14FH02
5.25	50	20–1000	143-011-161	143-14NH05	143-011-169	143-14FH05
9.00	20	20–1000	143-011-171	143-14NK02	143-011-173	143-14FK02
9.00	50	20–1000	143-011-171	143-14NK05	143-011-173	143-14FK05
12.50	20	20–1000	143-011-181-2	143-14NM02	143-011-187	143-14FM02
12.50	50	20–1000	143-011-181-2	143-14NM05	143-011-187	143-14FM05
19.00	20	20–1000	143-011-500	143-14NP02	143-011-508	143-14FP02
30.00	20	20–1000	–	143-14NR02	–	143-14FR02
30.00	30	20–750	–	143-14NR03	–	143-14FR03
30.00	30	20–1000	–	143-14NR03	–	143-14FR03
40.00	20	20–750	–	143-14NT02	–	143-14FT02
40.00	30	20–1000	–	143-14NT03	–	143-14FT03
50.00	20	20–1000	–	143-14NV02	–	143-14FV02
50.00	30	20–750	–	143-14NV03	–	143-14FV03
50.00	30	20–1000	–	143-14NV03	–	143-14FV03

1) counterclockwise

2) clockwise

Gerotor pump, product series 143

Comparison of order numbers

Table 11

Comparison of old and new order Nos. for gerotor pump unit in foot design, product series 143

Nominal delivery rate	Back pressure max.	Permiss. viscosity range	Sealing design N (NBR)		Sealing design F (FKM)	
			Old	New	Old	New
			order No.	order No.	order No.	order No.
0.85	30	20–1000	143-012-131+...	143-11NB03C-RA+1FX	–	143-11FB03C-RA+1FX
1.70	30	20–1000	143-012-141+...	143-11ND03E-RA+1FX	143-012-142+...	143-11FD03E-RA+1FX
2.50	20	20–1000	–	143-11NF02D-RA+1FX	–	143-11FF02D-RA+1FX
2.50	50	20–1000	–	143-11NF05F-RA+1FX	–	143-11FF05F-RA+1FX
5.25	20	20–1000	–	143-11NH02F-RA+1FX	–	143-11FH02F-RA+1FX
5.25	50	20–1000	–	143-11NH05J-OA+1GD	–	143-11FH05J-OA+1GD
9.00	20	20–1000	–	143-11NK02H-RA+1GD	–	143-11FK02H-RA+1GD
9.00	50	20–1000	143-012-171+...	143-11NK05J-OA+1GD	–	143-11FK05J-OA+1GD
12.50	20	20–1000	143-012-180+...	143-11NM02H-RA+1GD	–	143-11FM02H-RA+1GD
12.50	50	20–1000	143-012-181+...	143-11NM05K-OA+1GD	–	143-11FM05K-OA+1GD
19.00	20	20–1000	143-012-501+...	143-11NP02K-OA+1GD	143-012-509+...	143-11FP02K-OA+1GD
30.00	20	20–1000	–	143-11NR02M-RA+1GD	–	143-11FR02M-RA+1GD
30.00	30	20–750	–	143-11NR03M-RA+1GD	–	143-11FR03M-RA+1GD
30.00	30	20–1000	–	143-11NR03N-OA+1GD	–	143-11FR03N-OA+1GD
40.00	20	20–750	–	143-11NT02N-OA+1GD	–	143-11FT02N-OA+1GD
40.00	30	20–1000	–	143-11NT03N-OA+1GD	–	143-11FT03N-OA+1GD
50.00	20	20–1000	–	143-11NV02N-OA+1GD	–	143-11FV02N-OA+1GD
50.00	30	20–750	–	143-11NV03N-OA+1GD	–	143-11FV03N-OA+1GD
50.00	30	20–1000	–	143-11NV03P-RA+1GK	–	143-11FV03P-RA+1GK

Table 12

Comparison of old and new order Nos. for gerotor pump unit in flange design, product series 143

Nominal delivery rate	Back pressure max.	Permiss. viscosity range	Sealing design N (NBR)		Sealing design F (FKM)	
			Old	New	Old	New
			order No.	order No.	order No.	order No.
0.85	30	20–1000	143-012-231+...	143-12NB03C-XA+1FX	–	143-12FB03C-XA+1FX
1.70	30	20–1000	143-012-241+...	143-12ND03E-XA+1FX	143-012-242+...	143-12FD03E-XA+1FX
2.50	20	20–1000	–	143-12NF02D-XA+1FX	–	143-12FF02D-XA+1FX
2.50	50	20–1000	–	143-12NF05F-XA+1FX	–	143-12FF05F-XA+1FX
5.25	20	20–1000	–	143-12NH02F-XA+1FX	–	143-12FH02F-XA+1FX
5.25	50	20–1000	–	143-12NH05J-XA+1GD	–	143-12FH05J-XA+1GD
9.00	20	20–1000	–	143-12NK02H-XA+1GD	–	143-12FK02H-XA+1GD
9.00	50	20–1000	143-012-271+...	143-12NK05J-XA+1GD	–	143-12FK05J-XA+1GD
12.50	20	20–1000	143-012-280+...	143-12NM02H-XA+1GD	–	143-12FM02H-XA+1GD
12.50	50	20–1000	143-012-281+...	143-12NM05K-XA+1GD	–	143-12FM05K-XA+1GD
19.00	20	20–1000	143-012-601+...	143-12NP02K-XA+1GD	–	143-12FP02K-XA+1GD
30.00	20	20–1000	–	143-12NR02M-XA+1GD	–	143-12FR02M-XA+1GD
30.00	30	20–750	–	143-12NR03M-XA+1GD	–	143-12FR03M-XA+1GD
30.00	30	20–1000	–	143-12NR03N-XA+1GD	–	143-12FR03N-XA+1GD
40.00	20	20–750	–	143-12NT02M-XA+1GD	–	143-12FT02M-XA+1GD
40.00	30	20–1000	–	143-12NT03N-XA+1GD	–	143-12FT03N-XA+1GD
50.00	20	20–1000	–	143-12NV02N-XA+1GD	–	143-12FV02N-XA+1GD
50.00	30	20–750	–	143-12NV03N-XA+1GD	–	143-12FV03N-XA+1GD
50.00	30	20–1000	–	143-12NV03P-XA+1GK	–	143-12FV03P-XA+1GK



Important information on product usage

SKF and Lincoln lubrication systems or their components are not approved for use with gases, liquefied gases, pressurized gases in solution and fluids with a vapor pressure exceeding normal atmospheric pressure (1 013 mbar) by more than 0,5 bar at their maximum permissible temperature.



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