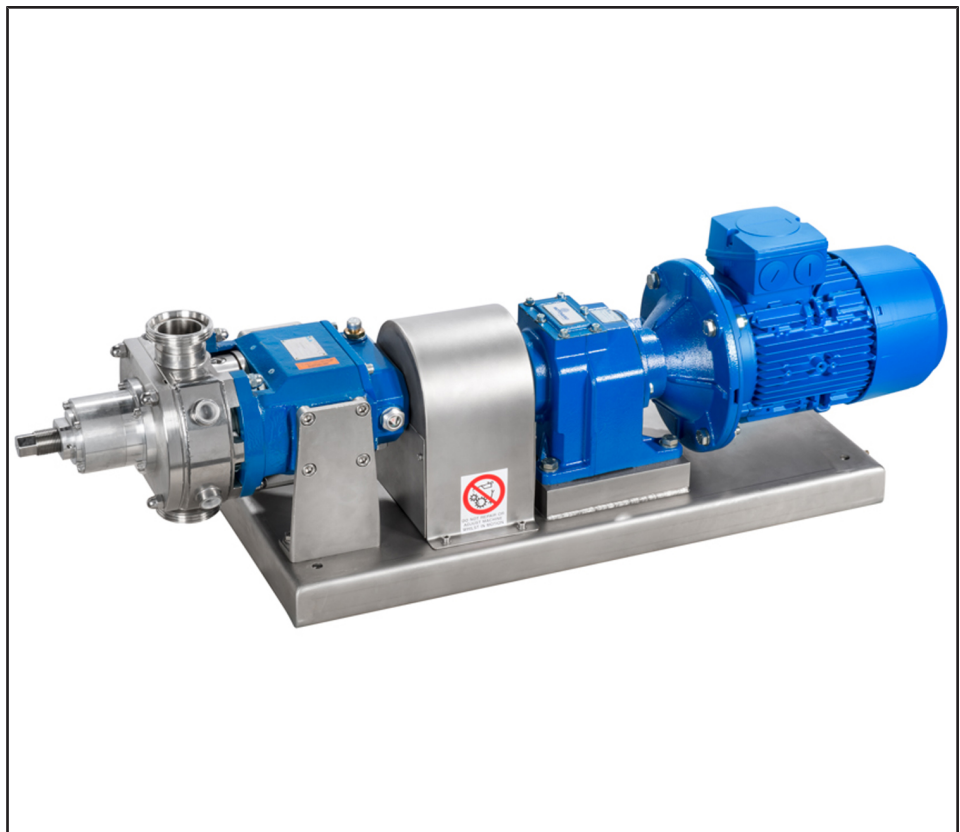


Hygienic Pump

**Vitalobe**

**Type Series Booklet**



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Type Series Booklet Vitalobe

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## Hygienic Pump

### Rotary Lobe Pump

## Vitalobe



#### Main applications

- Beverage industry and food industry
- Pharmaceutical industry
- Cosmetics industry
- General industry
- Chemical industry

#### Fluids handled

Liquid and viscous fluids:

- Food and beverages
- Cosmetics
- Pharmaceuticals
- Chemical products

#### Further information on fluids handled

(⇒ Page 7)

#### Operating data

Operating properties

Characteristic	Value	
Flow rate	Q [m <sup>3</sup> /h]	≤ 342
	Q [l/min]	≤ 5700
Head	H [m]	≤ 200
Operating pressure	p [bar]	≤ 20
Differential pressure	p <sub>D</sub> [bar]	≤ 20
Fluid temperature	T [°C]	≥ -40
		≤ +180
Viscosity	v [mPas]	≤ 200000
Volume displaced	V <sub>v</sub> [litre/revolution]	≤ 10,5

#### Design details

##### Design

- Standard design with materials to Regulation (EC) No. 1935/2004<sup>1)</sup>
- Design to ATEX

##### Design

- Hygienic rotary lobe pump
- Long-coupled design
- In-line design
- Wetted parts made of stainless steel 1.4404/1.4409 (AISI 316L/CF3M)
- Cleanability levels 1 + 2 to EN 13951 for Vitalobe design B
- Cleanability levels 3 + 4 to EN 13951 for Vitalobe design BB

##### Pump casing

- Rotor casing

##### Impeller type

- Tri-lobe, bi-lobe, gear-shaped or bi-wing rotor

##### Bearings

- Size 100: deep groove ball bearing and needle bearing
- Sizes 105 to 115: tapered roller bearings
- Sizes 215 to 490: double tapered roller bearings
- Sizes 550 to 680: cylindrical roller bearing and two-row deep groove ball bearings

##### Shaft seal

- Single mechanical seals with or without flushing system to EN 12756
- Double mechanical seals to EN 12756

Different seal types

- Seal type Y: external single mechanical seal, with or without flushing system
- Seal type Q: external double mechanical seal in back-to-back arrangement
- Seal type L: shaft seal ring, single or double

1) Only for Vitalobe design BB

### Clearance

- The rotors rotate in the casing without touching each other.

The clearances depend on the application.

- Standard clearance for minimum leakage flow and best hydraulic efficiency
- Enlarged clearance for high pressures or high temperatures

### Drive

Speed and torque of the motor are adjusted to the values required for the pump by means of a gear unit.

- Surface-cooled KSB squirrel-cage motor
- Type of construction B5, V1
- Thermal class F
- 3 PTC thermistors
- Duty cycle: continuous duty S1
- Winding 50 Hz, 220 - 240 V / 380 - 420 V  $\leq$  2.20 kW; 380 - 420 V / 660 - 725 V  $\geq$  3.00 kW

### Connections

- Axial suction nozzle, tangential discharge nozzle
- Adjustable through 360°

Types of connection:

- Threaded connection to DIN 11851 (hygienic pipe union)
- Threaded connection to DIN 11853
- Threaded connection to DIN 11864-1-G5-A
- Threaded connection to SMS standard
- Threaded connection to ISO 2853 (IDF)
- Threaded connection to RJT standard
- Clamped connection to DIN 32676-C (Tri-Clamp/Tri-Clover fitting)
- Clamped connection to DIN 11864-3-NKS-A
- Clamped connection to DIN 32676-A
- Clamped connection to ISO 2852
- Flange to EN 1092-1
- Flange to DIN 11864-2-NF-A
- Flange to ANSI B16.5 Class 150
- APV flange
- Varivent flange
- Other connection types on request

### Designation

Designation example

Position																											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
V	L	B		1	0	0	/	0	4	0	2	G	D	B	Y	3	1	A	E	C	C	S	P	P	H	S	A
See name plate and data sheet																											

Designation key

Position	Code	Description	
1-4	Pump type		
	VLB	Vitalobe B	
	VLBB	Vitalobe BB	
5-8	Size, e.g.		
	100/	Rotor diameter [mm]	
	...	...	
	550/	Rotor diameter [mm]	Vitalobe B
	660/	Rotor diameter [mm]	Vitalobe B
9-11	Motor rating P <sub>N</sub> [kW]		
	007	0,70	
	...	...	
	550	55,00	
12	Number of motor poles		
13	Scope of supply		
	G	Baseplate	
	V	Trolley	
14-15	Shaft seal type		
	DB	Double mechanical seal, external, in back-to-back arrangement	
	J	Single mechanical seal, external	
	JY	Single mechanical seal, external flushing system (quench)	
	L	Lip seal	
16-18	Seal code, single mechanical seal		
	Y31	BGEFG	
	Y32	BGVFG	
	Y34	BGMFG	

Position	Code	Description		
16-18	Y41	BU3EFG		
	Y42	BU3VFG		
	Y44	BU3MFG		
	Y51	U3U3EFG		
	Y52	U3U3VFG		
	Y54	U3U3MFG		
	Seal code, double mechanical seal in back-to-back arrangement			
	Q31	GBEFG	Vitalobe B	
		GBEFG	Vitalobe B	
	Q32	GBVFG	Vitalobe B	
		GBVFG	Vitalobe B	
	Q34	GBMFG	Vitalobe B	
		GBMFG	Vitalobe B	
	Q41	U3BEFG	Vitalobe B	
		U3BEFG	Vitalobe B	
	Q42	U3BVFG	Vitalobe B	
		U3BVFG	Vitalobe B	
	Q44	U3BMFG	Vitalobe B	
		U3BMFG	Vitalobe B	
	Q51	U3U3EFG	Vitalobe B	
		U3U3EFG	Vitalobe B	
	Q52	U3U3VFG	Vitalobe B	
		U3U3VFG	Vitalobe B	
	Q54	U3U3MFG	Vitalobe B	
		U3U3MFG	Vitalobe B	
	Seal code, lip seal			
	HN	S.S./PTFE	Vitalobe B / Vitalobe BB	
S1	H-ECOPUR FDA	Vitalobe B		
S16	H-ECOPUR FDA	Vitalobe BB		
UM	FKM	Vitalobe B		
19	Pipe connection			
	A	Flange	APV	
	B	Thread	DIN 11864-1A	
	C	Flange	DIN 11864-2A	
	D	Clamped connection	DIN 11864-3A	
	E	Thread	DIN 11853	
	F	Thread	RJT	
	G	Flange	Varivent	
	I	Thread	ISO 2853 (IDF)	
	L	Flange	EN 1092-1	
	M	Thread	DIN 11851 (hygienic pipe union)	
	S	Thread	SMS	
	T	Clamped connection	DIN 32676-A	
	U	Clamped connection	DIN 32676-C (Tri-Clamp)	
	V	Clamped connection	ISO 2852	
	Z	Flange	ANSI B16.5 Class 150	
20	O-ring material (casing/impeller)			
	E	EPDM		
	F	FFKM (Kaflon)		
	K	FFKM (Kalrez)		
	M	FEP (encapsulated)		
	T	PTFE (Viton core)		
	V	FKM		
21	Pump casing material			
	C	Stainless steel	1.4409	
	D	Super duplex stainless steel	1.4469 / 1.4410	
	M	Monel 400	2.4360	
	T	Titanium	B348 GR5	
	X	Hastelloy C276	2.4819	
22	Rotor material			
	C	Stainless steel	1.4409	

Position	Code	Description	
22	D	Super duplex stainless steel	1.4469 / 1.4410
	E	EPDM-coated (core 1.4404)	-
	F	Stainless steel sliding alloy	ASTM A494 CY5SNBIM
	M	Monel 400	2.4360
	N	NBR	-
	T	Titanium	B348 GR5
	X	Hastelloy C276	2.4819
23	Motor shroud		
	S	With shroud	
	O	Without shroud	
24	Drain		
	P	Casing drain via piping	
	V	Casing drain via valve	
	D	Casing drain with plug	
	O	No drain	
25	Safety valve		
	B	By-pass	
	O	Without safety valve	
	V	Mechanical safety valve	
26	Position of nozzles		
	H	Horizontal	
	V	Vertical	
27	Design		
	S	Standard	
	X	Non-standard (BT3D, BT3)	
28	Product generation		
	A	Vitalobe	

### Product benefits

- Hygienic zero dead volume design for residue-free and fast CIP/SIP
- Flexible with horizontal in-line or vertical in-line connections
- Flexible with different types and materials of rotary lobes, matched to the specific application
- Reliable with solid design of pressure-retaining and rotating parts and shafts supported on two double tapered roller bearings
- Reliable with integrated pressure relief valve

Optional materials for wetted components:

- Hastelloy C276
- Monel 400
- Titanium B348 GR5

Further material variants (⇒ Page 12)

### Certifications

Overview

Label	Effective in:	Comment
	All countries	Certified quality management to ISO 9001
	All countries	European Hygienic Engineering & Design Group Vitalobe BB only
	All countries	Elastomers certified to FDA, 3A, USP Class VI

### Materials

Overview of available materials

Component	Material
Rotor casing <sup>2)</sup>	1.4409 (AISI CF3M)
Casing cover <sup>2)</sup>	1.4404 (AISI 316L)
Rotor <sup>2)</sup>	1.4404 (AISI 316L), optional: EPDM or NBR coated or stainless steel sliding alloy ASTM A494 CY5SNBIM
Bolts/screws at the rotary lobe <sup>2)</sup>	1.4404 (AISI 316L)
Bearing bracket, gear housing	EN GJL 250, coated or nickel-plated, optional 1.4308 (AISI 304)
Drive shafts <sup>2)</sup>	1.4404 (AISI 316L), optional duplex 1.4462
O-rings	EPDM, FKM, FEP, FFKM

2) Wetted component

**Overview of product features / selection tables**
**Overview of fluids handled**

The following table does not purport to be exhaustive. The viscosity data for the temperature indicated serve as examples only. For the selection of a Vitalobe pump, checking the actual properties of the fluid to be handled and selecting the pump accordingly is indispensable.

The recommended maximum speed must always be considered as a function of viscosity. In the case of high viscosities the recommended speed indicated may be higher than the maximum possible pump speed at the viscosity indicated. In such cases, observe the maximum pump speed rather than the recommended speed in the table.

If no maximum speed is recommended, similar fluids can serve as a reference. If no similar fluid is listed, the pump can be selected for its complete speed range. Bear in mind the general recommendation: The higher the viscosity, the slower the pump should run.

Selection table

Fluid handled	Concentration [%]	T		Operating mode	Seal code	Material	Typical viscosity	Speed
		Min.	Max.				[mPas]	[rpm]
[°C]								
<b>Acid</b>								
Acetic acid	≤ 5	0	60	J	Y41	BU3EGG	-	-
	≤ 10	0	60	J	Y41	BU3EGG	-	-
	≤ 20	0	60	J	Y41	BU3EGG	-	-
	≤ 25	0	25	J	Y41	BU3EGG	-	-
	≤ 30	0	20	JQ DB	Y51 Q51	U3U3EFG	-	-
							-	-
≤ 50	0	20	JQ DB	Y51 Q51	U3U3EFG	-	-	
Tannic acid	≤ 20	0	100	J	Y41	BU3EGG	-	-
	≤ 50	0	100	J	Y41	BU3EGG	-	-
Lactic acid	≤ 5	0	60	J	Y42	BU3VFG	-	-
	≤ 10	0	60	J	Y41	BU3EGG	-	-
	≤ 30	0	60	J	Y42	BU3VFG	-	-
	≤ 40	0	60	J	Y42	BU3VFG	-	-
	≤ 50	0	60	J	Y41	BU3EGG	-	-
Oxalic acid	≤ 5	0	20	JQ DB	Y51 Q51	U3U3EFG	-	-
Sulfonic acid	-	0	40	J	Y52	U3U3VFG	125	400
Tartaric acid	≤ 8	0	60	J	Y41	BU3EGG	-	-
	≤ 50	0	60	J	Y41	BU3EGG	-	-
Citric acid		0	40	J	Y41	BU3EGG	1	450
	≤ 10	0	80	J	Y41	BU3EGG	-	-
	≤ 25	0	80	J	Y41	BU3EGG	-	-
	≤ 50	0	80	J	Y41	BU3EGG	-	-
<b>Alcohol</b>								
Ethanol	95	0	60	J	Y31	BGEFG	-	-
	<sup>3)</sup>	0	60	J	Y31	BGEFG	1	500
Methanol	<sup>3)</sup>	0	60	J	Y31	BGEFG	-	-
	<sup>3)</sup>	0	60	J	Y31	BGEFG	-	-
1-propanol	-	0	60	J	Y31	BGEFG	-	-
2-propanol	-	0	60	J	Y31	BGEFG	-	-
<b>Beer production</b>								
Beer	-	0	70	J	Y31	BGEFG	1	400
Brewer's yeast (propagation)	-	0	30	J	Y51	U3U3EFG	350	300
Beer trub	-	0	90	J	Y51	U3U3EFG	-	-
Hops	-	0	100	JQ	Y51	U3U3EFG	-	-
<b>Beverages</b>								
Brandy	40	0	60	J	Y31	BGEFG	10 to 100	400
Coke syrup, concentrated	< 65° Bx	0	100	J	Y52	U3U3VFG	40	-
Coke syrup, concentrated	< 65° Bx	0	100	JQ	Y52	U3U3VFG	-	-
Liqueur with egg yolks	-	0	100	J	Y41	BU3EGG	1000	-
Ice water	-	0	110	J	Y31	BGEFG	-	-
Fruit juice	-	0	60	J	Y51	U3U3EFG	-	-

<sup>3)</sup> Not specified

Fluid handled	Concentration [%]	T		Operating mode	Seal code	Material	Typical viscosity	Speed
		Min.	Max.				[mPas]	[rpm]
		[°C]						
Fruit liqueur	-	0	60	JQ	Y51	U3U3EFG	-	-
Vegetable juice	-	0	100	J	Y51	U3U3EFG	-	-
Grappa	-	0	100	J	Y31	BGEFG	1	-
Hot water	-	0	110	J	Y31	BGEFG	-	-
Invert sugar syrup	-	0	150	JQ	Y51	U3U3EFG	-	-
Coffee	-	0	60	J	Y52	U3U3VFG	-	-
Caffeine crystals	-	20	100	J	Y51	U3U3EFG	-	-
Herbal liqueur	-	0	60	J	Y51	U3U3EFG	-	-
Liqueur	-	0	100	J	Y31	BGEFG	1	-
Lemonade	-	0	90	J	Y51	U3U3EFG	-	-
Lemonade syrup, concentrated	-	0	100	J	Y51	U3U3EFG	40	-
Must	-	0	60	J	Y51	U3U3EFG	-	-
Orange juice	-	0	60	J	Y51	U3U3EFG	-	-
Orange juice concentrate	-	5	20	J	Y52	U3U3VFG	500 to 5000	200
	60° Bx	5	100	J	Y51	U3U3EFG	2000	-
	65° Bx	-10	180	JQ	Y51	U3U3EFG	18000 at -2 °C 2730 at +10 °C 2500 at +30 °C 80 at +170 °C	-
Sparkling wine	-	0	50	J	Y31	BGEFG	-	-
Grape concentrate	-	8	100	J	Y51	U3U3EFG	800	-
Grape must	-	0	100	J	Y51	U3U3EFG	1	-
Grape must, concentrated	-	0	130	J	Y51	U3U3EFG	120	-
Grape juice	-	0	60	J	Y51	U3U3EFG	1	450
Drinking water	3)	0	110	J	Y31	BGEFG	-	-
		0	110	J	Y31	BGEFG	-	-
Water	-	0	110	J	Y31	BGEFG	-	-
	-	0	180	J	Y31	BGEFG	1	-
Wine	-	-10	100	J	Y31	BGEFG	1	750
Wine; red, white	-	0	60	J	Y31	BGEFG	1	600
Wine concentrate	-	0	100	J	Y52	U3U3VFG	500 to 4000	-
Wine lees	-	-10	100	J	Y51	U3U3EFG	6000	-
<b>Cosmetics</b>								
Deodorant, liquid	-	0	60	J	Y51	U3U3EFG	1	-
Deodorant, gel	-	20	180	J	Y51	U3U3EFG	180	-
Hair dye	-	0	40	J	Y32	BGVEF	1	-
Hair gel	-	10	50	J	Y51	U3U3EFG	5000	300
Hand cream	-	5	30	J	Y52	U3U3VFG	800 to 35000	350
Cosmetic cream	-	0	50	J	Y52	U3U3VFG	-	-
Nail polish	-	5	30	J	Y54	U3U3MFG	10000	300
Shoe polish	-	0	50	JQ	Y52	U3U3VFG	300	-
Shampoo	-	10	50	J	Y51	U3U3EFG	2000	300
Soap	-	10	50	J	Y42	BU3VFG	3000	250
Vaseline	-	10	40	J	Y51	U3U3EFG	500 to 30000	300
Tooth paste	-	10	50	J	Y52	U3U3VFG	100000	150
<b>Dairy products</b>								
Butter	-	0	10	J	Y52	U3U3VFG	50000	70
Buttermilk	-	10	100	J	Y31	BGEFG	50 to 70	250
Yogurt with chunks of fruit	-	-10	100	J	Y52	U3U3VFG	700	200
Yogurt	-	0	40	J	Y42	BU3VFG	50 to 150	250
Evaporated milk	-	0	40	J	Y42	BU3VFG	40 to 80	300
Evaporated milk, with sugar	-	0	90	J	Y52	U3U3VFG	-	-
Skim milk	-	0	90	J	Y42	BU3VFG	-	-
Milk	-	0	90	J	Y42	BU3VFG	-	-
Milk concentrate	-	0	50	J	Y52	U3U3VFG	-	-
Milk permeate	-	0	90	J	Y42	BU3VFG	-	-
Whey	-	0	100	J	Y32	BGVFG	1	-
	-	0	20	J	Y42	BU3VFG	1	350



Fluid handled	Concentration [%]	T		Operating mode	Seal code	Material	Typical viscosity	Speed
		Min.	Max.				[mPas]	[rpm]
		[°C]						
Curd	-	0	30	J	Y42	BU3VFG	20 to 500	200
Cream	3)	20	100	J	Y32	BGVFG	10	250
Cream	30 % fat	0	30	J	Y42	BU3VFG	14	250
	35% fat	0	100	J	Y32	BGVFG	20	250
	45% fat	0	100	J	Y32	BGVFG	48	250
	50% fat	0	100	J	Y32	BGVFG	120	250
Cream; sweet, sour	-	0	90	J	Y42	BU3VFG	-	-
Soured milk	-	-10	100	J	Y31	BGEFG	1	-
Drinking yogurt	-	-10	100	J	Y42	BU3VFG	50 to 500	300
<b>Food</b>								
Pineapple mash	-	0	100	J	Y51	U3U3EFG	400	-
Pineapple concentrate	-	0	100	J	Y51	U3U3EFG	150	-
Apple mash	-	0	40	J	Y51	U3U3EFG	-	-
Apple concentrate	-	0	40	J	Y51	U3U3EFG	300 to 10000	150
	-	0	100	JQ	Y51	U3U3EFG	300 to 10000	150
Apple juice concentrate	-	0	180	J	Y51	U3U3EFG	75	-
Apricots, diced	-	0	100	J	Y51	U3U3EFG	10	-
Apricot pulp with 40 % water	-	0	20	J	Y51	U3U3EFG	-	-
Baby food	-	0	90	J	Y51	U3U3EFG	1000 to 1400	-
Bechamel sauce	-	0	100	J	Y51	U3U3EFG	200	-
Pear mash	-	0	100	JQ	Y51	U3U3EFG	500	-
Butter, melted	-	20	50	J	Y52	U3U3VFG	40	350
Egg	-	0	20	JQ	Y51	U3U3EFG	150	200
Egg, liquid	-	0	20	J	Y52	U3U3VFG	-	-
Egg yolk	-	0	100	J	Y31	BGEFG	50	-
Egg yolk with sugar	-	0	100	JQ	Y51	U3U3EFG	1000	-
Egg white	-	0	100	J	Y31	BGEFG	10	-
Egg white, concentrated	-	0	100	JQ DB	Y52 Q52	U3U3VFG	40	-
Ice cream	-	-10	20	J	Y51	U3U3EFG	400	300
Strawberry mash	-	0	100	J	Y51	U3U3EFG	13000	-
Strawberry jam	-	80	180	J	Y51	U3U3EFG	20000	-
Vinegar	-	0	60	J	Y31	BGEFG	15	500
Fat, vegetable	-	0	100	J	Y32	BGVFG	-	-
Fish oil	-	0	180	J	Y52	U3U3VFG	300	-
Fish sauce concentrate	-	0	100	J	Y52	U3U3VFG	50000	-
Meat extract	-	10	70	JQ	Y52	U3U3VFG	10000	250
Liquid fat	-	0	100	J	Y52	U3U3VFG	-	-
Fruit pulp	-	0	100	JQ	Y51	U3U3EFG	200 to 4000	-
Fruit nectar	-	0	100	J	Y51	U3U3EFG	50	-
Fruit juice concentrate	-	5	100	J	Y51	U3U3EFG	5000	-
Biscuits	-	5	35	J	Y51	U3U3EFG	5000 to 10000	150
Gelatine	-	0	100	J	Y41	BU3EGG	60 to 270	-
Icing	-	10	40	J	Y51	U3U3EFG	500 to 2000	300
Grapefruit concentrate	-	10	100	J	Y51	U3U3EFG	1400	-
Minced meat	-	10	40	J	Y52	U3U3VFG	100000	100
Mince sauce	-	0	100	J	Y51	U3U3EFG	5000 to 20000	-
Hazelnut paste	-	0	100	L	S1 S16	H-Ecopur (FDA)	2000	-
Yeast	-	5	100	JQ	Y51	U3U3EFG	500	-
Honey	-	10	50	JQ	Y51	U3U3EFG	1500	350
Chicken soup	-	0	100	J	Y52	U3U3VFG	-	-
Cottage cheese	-	10	80	J	Y52	U3U3VFG	30000	100
Cocoa	-	0	100	L	S1 S16	H-Ecopur (FDA)	-	100
Cocoa butter	-	40	100	J	Y52	U3U3VFG	0.5 to 1000	400
Caramel	-	20	180	JQ DB	Y51 Q51	U3U3EFG	500 to 30000	-
Carrot mash	-	0	100	J	Y51	U3U3EFG	1000	-

Fluid handled	Concentration [%]	T		Operating mode	Seal code	Material	Typical viscosity	Speed
		Min.	Max.				[mPas]	[rpm]
		[°C]						
Mashed potatoes	-	10	50	J	Y51	U3U3EFG	400 to 4000	300
Cheese, melted	-	0	100	J	Y52	U3U3VFG	10000	-
Kefir	-	0	100	J	Y31	BGEFG	50	-
Tomato sauce (ketchup)	-	10	50	J	Y51	U3U3EFG	1000	300
Chickpea paste	-	0	100	J	Y52	U3U3VFG	10000	-
Coconut oil	-	10	100	J	Y32	BGVFG	55	-
Coconut juice	-	0	100	J	Y51	U3U3EFG	50	-
Cake batter	-	0	50	J	Y51	U3U3EFG	17000	-
Chocolate icing	-	20	100	L	S1 S16	H-Ecopur (FDA)	125000	-
Creamed corn	-	20	100	L	S16	H-Ecopur (FDA)	100	150
Corn syrup	> 65° Bx	0	100	J	Y51	U3U3EFG	1200	-
Maltodextrin	-	0	100	J	Y51	U3U3EFG	35000	-
Malt	-	0	100	JQ	Y51	U3U3EFG	-	-
Malt extract	-	5	60	J	Y51	U3U3EFG	3000 to 9500	250
Malt syrup	-	15	100	J	Y51	U3U3EFG	4500	-
Margarine	-	0	100	J	Y52	U3U3VFG	-	-
Jam	-	10	40	J	Y51	U3U3EFG	8000	200
Chestnut mash	-	0	100	J	Y51	U3U3EFG	20000	-
Marzipan	-	10	160	J	Y51	U3U3EFG	30000	100
Mascarpone cheese	-	0	180	J	Y31	BGEFG	40	-
Mayonnaise	-	10	30	J	Y52	U3U3VFG	20000	200
Melone jam	-	0	70	J	Y51	U3U3EFG	10	-
Molasses	-	20	90	J	Y51	U3U3EFG	280 to 15000	300
Olive paste	-	0	100	J	Y52	U3U3VFG	10000	-
Oil, vegetable	-	20	100	J	Y52	U3U3VFG	30	-
Pectin	-	5	50	J	Y51	U3U3EFG	300 to 5000	400
Pectin, liquid	-	0	100	J	Y31	BGEFG	1	-
Pesto	-	0	100	J	Y52	U3U3VFG	4000	-
Peaches, diced	-	0	100	J	Y51	U3U3EFG	10	-
Risotto	-	0	100	J	Y51	U3U3EFG	5000	-
Red berry compote	-	0	100	J	Y51	U3U3EFG	-	-
Chocolate	-	18	40	L	S1 S16	H-Ecopur (FDA)	200 to 5000	150
Processed cheese	-	10	80	J	Y52	U3U3VFG	6500 to 30000	200
Mustard	-	10	180	J	Y51	U3U3EFG	10000 to 40000	-
Soy milk	-	0	100	J	Y32	BGVFG	1	-
Soybean oil	-	15	100	J	Y32	BGVFG	120	-
Soy sauce	-	0	100	J	Y52	U3U3VFG	1000	-
Starch	-	0	100	JQ DB	Y51 Q51	U3U3EFG	-	-
Tomatoes, diced	-	10	50	J	Y51	U3U3EFG	10	100
Tomato mash	-	10	50	J	Y51	U3U3EFG	7000	250
Tomato cream	-	10	180	J	Y52	U3U3VFG	75 at 8° Bx, 70 °C 270 at 15° Bx, 70 °C	-
Tomato concentrate	-	0	150	JQ	Y52	U3U3VFG	400 at 20° Bx, 70 °C 2700 at 38° Bx, 70 °C	-
Tomato concentrate, triple concentrate	-	0	100	JQ	Y51	U3U3EFG	10000 to 12000	-
Tomato paste	-	0	100	J	Y51	U3U3EFG	10	-
Tomato paste	-	10	50	J	Y51	U3U3EFG	200	300
Tomato juice	-	10	150	J	Y51	U3U3EFG	100	-
Tomato sauce	-	10	50	J	Y51	U3U3EFG	10	300
Vanilla sauce	-	0	90	J	Y51	U3U3EFG	1000	-
Citrus fruit mash	-	0	100	J	Y51	U3U3EFG	-	-
Citrus fruit concentrate	-	5	100	J	Y51	U3U3EFG	5000	-
<b>Oil</b>								
Cotton seed oil	-	5	100	J	Y52	U3U3VFG	20 to 60	300
Peanut oil	-	5	100	J	Y52	U3U3VFG	20 to 60	300

Fluid handled	Concentration [%]	T		Operating mode	Seal code	Material	Typical viscosity	Speed
		Min.	Max.				[mPas]	[rpm]
		[°C]						
Lavender oil	-	0	100	J	Y52	U3U3VFG	20 to 60	300
Linseed oil	-	0	60	J	Y52	U3U3VFG	20 to 60	300
Corn oil	-	0	100	J	Y52	U3U3VFG	20 to 60	300
Oilseeds	-	20	100	J	Y52	U3U3VFG	30	-
Olive oil	-	0	100	J	Y52	U3U3VFG	280 at 0 °C 34 at 40 °C 18 at 60 °C 12 at 80 °C	300
Palm oil	-	45	100	J	Y52	U3U3VFG	20 to 60	300
Rapeseed oil	-	0	100	J	Y52	U3U3VFG	20 to 60	300
Castor oil	-	26	100	J	Y52	U3U3VFG	700 at 25 °C	300
Sunflower oil	-	0	100	J	Y52	U3U3VFG	20 to 60	300
Edible oil	-	0	100	J	Y52	U3U3VFG	20 to 60	300
Walnut oil	-	0	100	J	Y52	U3U3VFG	20 to 60	300
<b>Miscellaneous</b>								
Acrylic resin	-	10	50	JQ DB	Y54 Q54	U3U3MFG	5000	300
Alkyd resin	-	5	40	JQ DB	Y52 Q52	U3U3VFG	180 to 900	350
Animal blood	-	0	60	J	Y51	U3U3EFG	20	-
Calcium acetate	<10	0	100	J	Y41	BU3EGG	-	-
Calcium nitrate	<10	0	30	J	Y51	U3U3EFG	-	-
CIP solution	<sup>3)</sup>	0	85	J	Y41	BU3EGG	-	-
Dextrose, dry substance	-	10	70	JQ DB	Y51 Q51	U3U3EFG	3000	-
Printing ink	-	10	40	J	Y52	U3U3VFG	500 to 2000	500
Enamel	-	0	50	J	Y51	U3U3EFG	200	-
Animal fat	-	40	100	J	Y42	BU3VFG	60	400
Fermentation broth	-	0	80	J	Y51	U3U3EFG	20	200
Liquid silicone	-	20	60	JQ DB	Y54 Q54	U3U3MFG	500	400
Glucose	> 80° Bx	0	100	JQ	Y51	U3U3EFG	4300 to 8600	250
Glucose, unsaturated solution	-	0	50	JQ	Y51	U3U3EFG	4300 to 8600	400
Glycerine	-	10	30	J	Y51	U3U3EFG	600	350
Glycerine	<sup>3)</sup>	0	100	J JQ DB	Y51	U3U3EFG	-	-
Lime	-	0	60	J	Y52	U3U3VFG	1 to 500	-
Lime milk	-	0	60	J	Y52	U3U3VFG	-	-
Calcium carbonate with water	-	0	30	JQ DB	Y51 Q51	U3U3EFG	1	-
Herb extract	-	0	100	J	Y51	U3U3EFG	10000	-
Sodium hydroxide	<sup>3)</sup>	0	80	J	Y51	U3U3EFG	-	-
	5	0	80	J	Y51	U3U3EFG	-	-
	10	0	80	J	Y51	U3U3EFG	-	-
	30	5	80	JQ DB	Y51	U3U3EFG	-	-
	35	15	80	JQ DB	Y51	U3U3EFG	-	-
	40	15	80	JQ DB	Y51	U3U3EFG	-	-
	45	15	80	JQ DB	Y51	U3U3EFG	-	-
50	20	80	JQ DB	Y51	U3U3EFG	-	-	
Soy lecithin	-	50	150	J	Y51	U3U3EFG	2500 to 16000	200
Tobacco aroma	-	0	40	J	Y51	U3U3EFG	36799	450
Wax	-	40	100	J	Y51	U3U3EFG	500	300
Detergent, liquid	-	18	40	J	Y52	U3U3VFG	100 to 4000	400
Cellulose	-	18	100	JQ DB	Y54	U3U3MFG	6000 to 15000	250
Sugar solution	30° Bx	10	100	J	Y51	U3U3EFG	4	500

Fluid handled	Concentration [%]	T		Operating mode	Seal code	Material	Typical viscosity [mPas]	Speed [rpm]
		Min.	Max.					
Sugar solution	40° Bx	10	100	J	Y51	U3U3EFG	10	500
	50° Bx	10	100	J	Y51	U3U3EFG	25	400
	60° Bx	18	100	J	Y51	U3U3EFG	60	400
	70° Bx	0	100	JQ	Y51	U3U3EFG	550	300
	80° Bx	0	100	JQ	Y51	U3U3EFG	6000	200
Sugar juice (sugar production)	-	0	100	J	Y51	U3U3EFG	-	-
	-	0	95	JQ	Y51	U3U3EFG	-	-

**Material variants**

Material variants available for selection:

Material variants

Code	Rotary lobe	Shaft	Casing	Casing cover	Bolts/screws at the rotary lobe
C	1.4404	1.4404	1.4404/1.4409	1.4404	1.4404
CA	ASTM A494 CY5SNBIM <sup>4)</sup>	1.4404	1.4404/1.4409	1.4404	1.4404
CE	1.4404, EPDM-coated	1.4404	1.4404/1.4409	1.4404	1.4404
CN	1.4404, NBR-coated	1.4404	1.4404/1.4409	1.4404	1.4404

**Maximum discharge pressure in [bar] depending on the fluid temperature**

Valid for single mechanical seal or shaft seal ring

- Shaft material 1.4404

Maximum discharge pressure in [bar] depending on the fluid temperature [°C]

T	Clearance	Size																
		100	105	110	115	215	220	325	330	390	430	440	450	470	490	550	660	680
< 70 °C	Standard	7	10	10	7	10	7	10	7	5	10	7	5	10	7	5	7	4
	Enlarged	-	15	15	12	15	12	15	12	10	15	12	4,5	15	12	7	-	-
	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 90 °C	Standard	5,2	8,8	8,9	6,5	9	6,5	9,1	6,5	4,5	9,1	6,4	-	9,1	6,3	4,4	6,4	3,4
	Enlarged	-	15	15	12	15	12	15	12	10	15	12	-	15	12	7	-	-
	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 110 °C	Standard	4	7,6	7,8	5,7	8	5,9	8,2	6	-	8,4	5,8	-	8,4	5,9	5,8	5,8	2,9
	Enlarged	-	15	15	12	15	21	15	12	-	15	12	-	15	12	10	-	-
	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 120 °C	Standard	3,4	7	7,3	5,5	7,5	5,6	7,8	5,7	-	7,9	5,5	-	7,8	5,4	3,7	5,5	2,7
	Enlarged	-	14	14,6	11,7	14,5	11,7	14,5	11,7	-	14,6	11,7	-	14,6	11,6	6,8	-	-
	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 140 °C	Standard	2,2	6	6,3	5,1	6,5	5	7	5,2	-	7,2	4,9	-	7,2	4,9	3,2	4,9	2,2
	Enlarged	-	13	13,6	11,3	13,6	11,1	13,8	11,2	-	13,7	11,1	-	13,7	11,1	6,4	-	-
	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 160 °C	Standard	-	-	5,3	5	5,5	4,4	6,1	4,6	-	6,4	4,3	-	6,4	4,2	2,6	4,3	1,6
	Enlarged	-	-	12,7	10,8	12,7	10,5	12,9	10,7	-	12,9	10,4	-	12,7	10,4	6	-	-
	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 180 °C	Standard	-	-	4,3	4,2	4,5	3,9	5,2	4,1	-	5,5	3,6	-	5,4	3,6	2	3,6	1
	Enlarged	-	-	12,1	9,9	11,8	10,5	12,1	10,1	-	12	9,7	-	12	9,7	5,5	-	-
	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- Shaft material 1.4462

Maximum discharge pressure in [bar] depending on the fluid temperature [°C]

T	Clearance	Size																
		100	105	110	115	215	220	325	330	390	430	440	450	470	490	550	660	680
< 70 °C	Standard	10	13	13	10	13	10	13	10	7	13	10	7	13	10	-	-	-

4) Stainless steel sliding alloy

T	Clearance	Size																
		100	105	110	115	215	220	325	330	390	430	440	450	470	490	550	660	680
< 70 °C	Enlarged	-	18	18	15	18	15	18	15	12	18	15	12	18	15	-	-	-
	High-pressure	-	-	20	-	20	-	20	-	-	20	20	-	20	-	-	-	-
< 90 °C	Standard	8,2	11,8	11,9	9,5	12	9,5	12,1	9,5	6,5	12,1	9,4	6,5	12,1	9,3	-	-	-
	Enlarged	-	18	18	15	18	15	18	15	12	18	15	12	18	15	-	-	-
	High-pressure	-	-	18,8	-	18,9	-	19	-	-	19	19	-	19	-	-	-	-
< 110 °C	Standard	7	10,6	10,8	8,7	11	8,9	11,2	9	-	11,4	8,8	-	11,4	8,9	-	-	-
	Enlarged	-	18	18	15	18	24	18	15	-	18	15	-	18	15	-	-	-
	High-pressure	-	-	17,6	-	17,7	-	18	-	-	18	18	-	18	-	-	-	-
< 120 °C	Standard	6,4	10	10,3	8,5	10,5	8,6	10,8	8,7	-	10,9	8,5	-	10,8	8,4	-	-	-
	Enlarged	-	17	17,6	14,7	17,5	14,7	17,5	14,7	-	17,6	14,7	-	17,6	14,6	-	-	-
	High-pressure	-	-	17,1	-	17,2	-	17,6	-	-	17,5	17,5	-	17,5	-	-	-	-
< 140 °C	Standard	5,2	9	9,3	8,1	9,5	8	10	8,2	-	10,2	7,9	-	10,2	7,9	-	-	-
	Enlarged	-	16	16,6	14,3	16,6	14,1	16,8	14,2	-	16,7	14,1	-	16,7	14,1	-	-	-
	High-pressure	-	-	16,1	-	16,3	-	16,8	-	-	16,6	16,6	-	16,6	-	-	-	-
< 160 °C	Standard	-	-	8,3	8	8,5	7,4	9,1	7,6	-	9,4	7,3	-	9,4	7,2	-	-	-
	Enlarged	-	-	15,7	13,8	15,7	13,5	15,9	13,7	-	15,9	13,4	-	15,7	13,4	-	-	-
	High-pressure	-	-	15,1	-	15,3	-	15,8	-	-	15,8	15,8	-	15,6	-	-	-	-
< 180 °C	Standard	-	-	7,3	7,2	7,5	6,9	8,2	7,1	-	8,5	6,6	-	8,4	6,6	-	-	-
	Enlarged	-	-	15,1	12,9	14,8	13,5	15,1	13,1	-	15	12,7	-	15	12,7	-	-	-
	High-pressure	-	-	14,1	-	14,3	-	14,9	-	-	14,9	14,9	-	14,6	-	-	-	-

**Valid for double mechanical seal**

- Shaft material 1.4404

Maximum discharge pressure in [bar] depending on the fluid temperature [°C]

T	Clearance	Size																
		100	105	110	115	215	220	325	330	390	430	440	450	470	490	550	660	680
< 70 °C	Standard	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	7	4
	Enlarged	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 90 °C	Standard	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,4	6,4	3,4
	Enlarged	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 110 °C	Standard	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,8	5,8	2,9
	Enlarged	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 120 °C	Standard	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,7	5,5	2,7
	Enlarged	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 140 °C	Standard	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,2	4,9	2,2
	Enlarged	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 160 °C	Standard	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,6	4,3	1,6
	Enlarged	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 180 °C	Standard	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3,6	1
	Enlarged	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- Shaft material 1.4462

Maximum discharge pressure in [bar] depending on the fluid temperature [°C]

T	Clearance	Size																
		100	105	110	115	215	220	325	330	390	430	440	450	470	490	550	660	680
< 70 °C	Standard	-	8	8	5	8	5	8	5	3	8	5	3	8	5	-	-	-
	Enlarged	-	13	13	10	13	10	13	10	7	13	10	7	13	7	-	-	-
	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 90 °C	Standard	-	6,8	6,9	4,5	7	4,5	7,1	4,5	2,5	7,1	4,4	2,5	7,1	4,3	-	-	-
	Enlarged	-	13	13	10	13	10	13	10	7	13	10	7	13	7	-	-	-

T	Clearance	Size																
		100	105	110	115	215	220	325	330	390	430	440	450	470	490	550	660	680
< 90 °C	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 110 °C	Standard	-	5,6	5,8	3,7	6	3,9	6,2	4	-	6,4	3,8	-	6,4	3,9	-	-	-
	Enlarged	-	13	13	10	13	19	13	10	-	13	10	-	13	7	-	-	-
< 120 °C	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Standard	-	5	5,3	3,5	5,5	3,6	5,8	3,7	-	5,9	3,5	-	5,8	3,4	-	-	-
	Enlarged	-	12	12,6	9,7	12,5	9,7	12,5	9,7	-	12,6	9,7	-	12,6	6,6	-	-	-
< 140 °C	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Standard	-	4	4,3	3,1	4,5	3	5	3,2	-	5,2	2,9	-	5,2	2,9	-	-	-
	Enlarged	-	11	11,6	9,3	11,6	9,1	11,8	9,2	-	11,7	9,1	-	11,7	6,1	-	-	-
< 160 °C	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Standard	-	-	3,3	3	3,5	2,4	4,1	2,6	-	4,4	2,3	-	4,4	2,2	-	-	-
	Enlarged	-	-	10,7	8,8	10,7	8,5	10,9	8,7	-	10,9	8,4	-	10,7	5,4	-	-	-
< 180 °C	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Standard	-	-	2,3	2,2	2,5	1,9	3,2	2,1	-	3,5	1,6	-	3,4	1,6	-	-	-
	Enlarged	-	-	10,1	7,9	9,8	8,5	10,1	8,1	-	10	7,7	-	10	4,7	-	-	-
< 180 °C	High-pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

### Maximum solid particle size

Selection table

Size	Solid particle size
	[mm]
100	> 10
115	> 10
215	> 12
220	> 12
325	> 15
330	> 15
430	> 19
450	> 19
470	> 22
490	> 22
550	> 25
660	> 30
680	> 30

- Critical solid particle size: +/- 0.5 mm of the clearance in the pump
- On average, the pipeline diameter should be 4 x the size of the solids contained in the fluid handled.

### Hydraulic system

Selection table

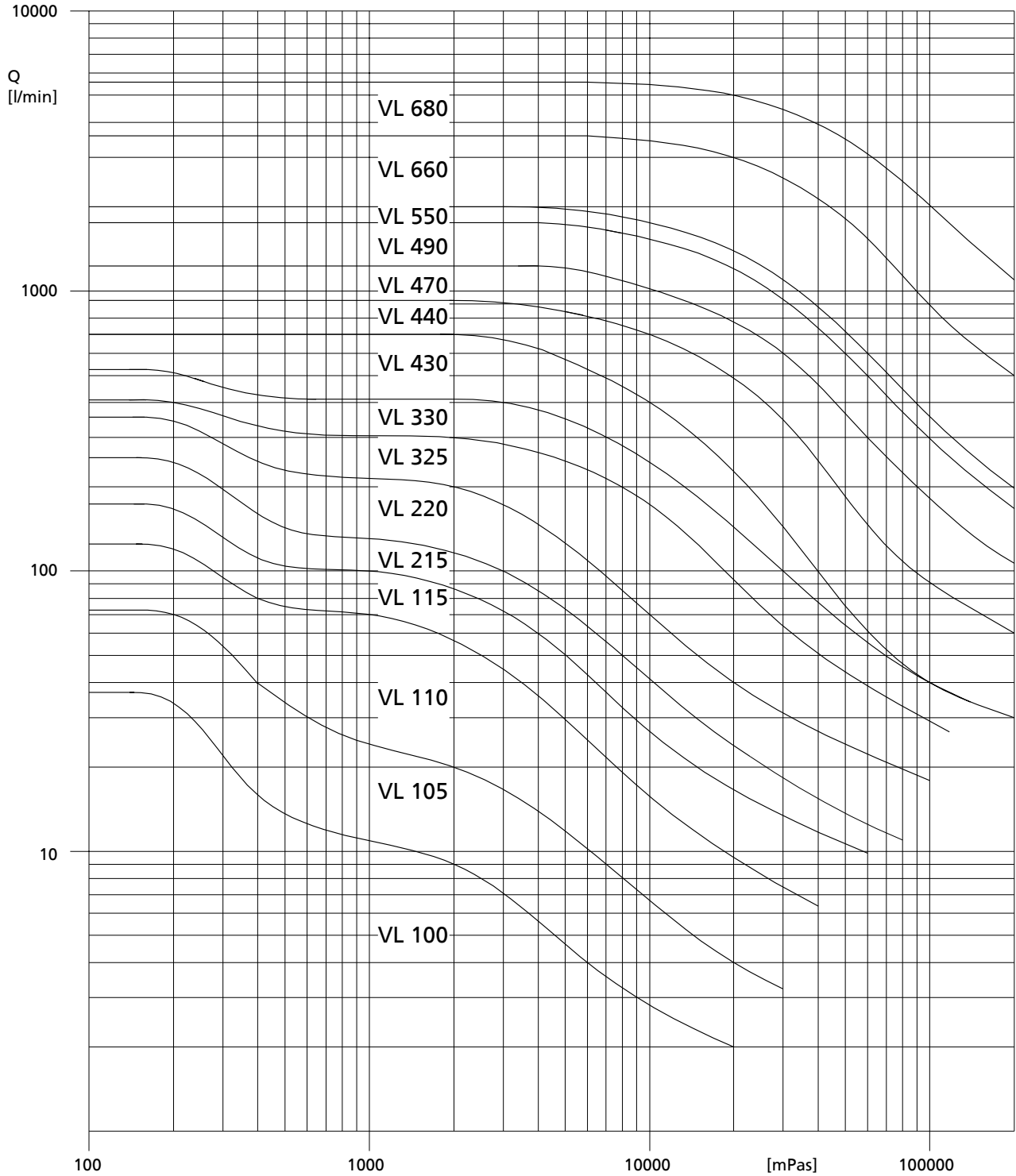
Size	Rotor type				Clearance			Displacement [l/revolution]	Maximum speed [rpm]	Internal designation
	Bi-lobe	Tri-lobe	Bi-wing	Gear-shaped	Standard	Enlarged	High-pressure			
100	X	-	-	-	X	-	-	0,035	1400	100-bi-st
100	-	-	X	-	X	-	-	0,07	1400	100-du-st
100	-	-	-	X	X	-	-	0,035	1400	100-gr-st
105	-	-	X	-	X	-	-	0,07	1000	105-du-st
105	-	-	-	X	-	X	-	0,07	1000	105-gr-in
105	-	-	-	X	X	-	-	0,075	1000	105-gr-st
110	X	-	-	-	-	X	-	0,138	1000	110-bi-in
110	X	-	-	-	X	-	-	0,138	1000	110-bi-st
110	-	-	X	-	-	-	X	0,124	700	110-du-HP
110	-	-	X	-	-	X	-	0,124	700	110-du-in
110	-	-	X	-	X	-	-	0,126	700	110-du-st
110	-	X	-	-	-	X	-	0,138	1000	110-tr-in

Size	Rotor type				Clearance			Displacement [l/revolution]	Maximum speed [rpm]	Internal designation
	Bi-lobe	Tri-lobe	Bi-wing	Gear-shaped	Standard	Enlarged	High-pressure			
110	-	X	-	-	X	-	-	0,138	1000	110-tr-st
115	X	-	-	-	-	X	-	0,204	1000	115-bi-in
115	X	-	-	-	X	-	-	0,2	700	115-bi-st
115	-	-	X	-	-	X	-	0,18	900	115-du-in
115	-	-	X	-	X	-	-	0,19	700	115-du-st
115	-	X	-	-	-	X	-	0,204	1000	115-tr-in
115	-	X	-	-	X	-	-	0,204	1000	115-tr-st
215	X	-	-	-	-	X	-	0,274	900	215-bi-in
215	X	-	-	-	X	-	-	0,274	900	215-bi-st
215	-	-	X	-	-	-	X	0,24	700	215-du-HP
215	-	-	X	-	-	X	-	0,24	700	215-du-in
215	-	-	X	-	X	-	-	0,244	700	215-du-st
215	-	X	-	-	-	X	-	0,274	900	215-tr-in
215	-	X	-	-	X	-	-	0,274	900	215-tr-st
220	X	-	-	-	-	X	-	0,39	900	220-bi-in
220	X	-	-	-	X	-	-	0,39	700	220-bi-st
220	-	-	X	-	-	X	-	0,34	700	220-du-in
220	-	-	X	-	X	-	-	0,348	500	220-du-st
220	-	X	-	-	-	X	-	0,39	900	220-tr-in
220	-	X	-	-	X	-	-	0,39	900	220-tr-st
325	X	-	-	-	-	X	-	0,62	700	325-bi-in
325	X	-	-	-	X	-	-	0,62	500	325-bi-st
325	-	-	X	-	-	-	X	0,55	700	325-du-HP
325	-	-	X	-	-	X	-	0,55	700	325-du-in
325	-	-	X	-	X	-	-	0,55	500	325-du-st
325	-	X	-	-	-	X	-	0,62	700	325-tr-in
325	-	X	-	-	X	-	-	0,62	700	325-tr-st
330	X	-	-	-	-	X	-	0,79	700	330-bi-in
330	X	-	-	-	X	-	-	0,79	500	330-bi-st
330	-	-	X	-	-	X	-	0,7	500	330-du-in
330	-	-	X	-	X	-	-	0,7	500	330-du-st
330	-	X	-	-	-	X	-	0,79	700	330-tr-in
330	-	X	-	-	X	-	-	0,79	700	330-tr-st
390	X	-	-	-	-	X	-	1	700	390-bi-in
390	X	-	-	-	X	-	-	1	500	390-bi-st
390	-	-	X	-	X	-	-	0,9	500	390-du-st
390	-	X	-	-	-	X	-	1	700	390-tr-in
390	-	X	-	-	X	-	-	1	700	390-tr-st
430	X	-	-	-	-	X	-	1,31	600	430-bi-in
430	X	-	-	-	X	-	-	1,31	400	430-bi-st
430	-	-	X	-	-	-	X	1,17	500	430-du-HP
430	-	-	X	-	-	X	-	1,17	500	430-du-in
430	-	-	X	-	X	-	-	1,17	400	430-du-st
430	-	X	-	-	-	X	-	1,31	600	430-tr-in
430	-	X	-	-	X	-	-	1,31	600	430-tr-st
440	X	-	-	-	-	X	-	1,75	600	440-bi-in
440	X	-	-	-	X	-	-	1,74	400	440-bi-st
440	-	-	X	-	-	-	X	1,56	400	440-du-HP
440	-	-	X	-	-	X	-	1,56	400	440-du-in
440	-	-	X	-	X	-	-	1,56	400	440-du-st
440	-	X	-	-	-	X	-	1,75	600	440-tr-in
440	-	X	-	-	X	-	-	1,75	600	440-tr-st
450	X	-	-	-	-	X	-	1,92	600	450-bi-in
450	X	-	-	-	X	-	-	1,92	600	450-bi-st
450	-	-	X	-	X	-	-	1,92	500	450-du-st
450	-	X	-	-	-	X	-	1,92	600	450-tr-in
450	-	X	-	-	X	-	-	1,92	600	450-tr-st

Size	Rotor type				Clearance			Displacement [l/revolution]	Maximum speed [rpm]	Internal designation
	Bi-lobe	Tri-lobe	Bi-wing	Gear-shaped	Standard	Enlarged	High-pressure			
470	X	-	-	-	-	X	-	2,38	500	470-tr-in
470	X	-	-	-	X	-	-	2,36	400	470-tr-st
470	-	-	X	-	-	-	X	2,1	400	470-du-HP
470	-	-	X	-	-	X	-	2,1	400	470-du-in
470	-	-	X	-	X	-	-	2,1	400	470-du-st
470	-	X	-	-	-	X	-	2,38	500	470-tr-in
470	-	X	-	-	X	-	-	2,38	500	470-tr-st
490	X	-	-	-	-	X	-	3,27	500	490-bi-in
490	X	-	-	-	X	-	-	3,24	400	490-bi-st
490	-	-	X	-	-	X	-	2,88	350	490-du-in
490	-	-	X	-	X	-	-	2,88	350	490-du-st
490	-	X	-	-	-	X	-	3,27	500	490-tr-in
490	-	X	-	-	X	-	-	3,3	500	490-tr-st
550	X	-	-	-	-	X	-	4	500	550-bi-in
550	X	-	-	-	X	-	-	4	400	550-bi-st
550	-	-	X	-	X	-	-	3,8	300	550-du-st
550	-	X	-	-	-	X	-	4	500	550-tr-in
550	-	X	-	-	X	-	-	4	450	550-tr-st
660	-	X	-	-	X	-	-	7,6	400	660-tr-st
680	-	X	-	-	X	-	-	11,4	400	680-tr-st



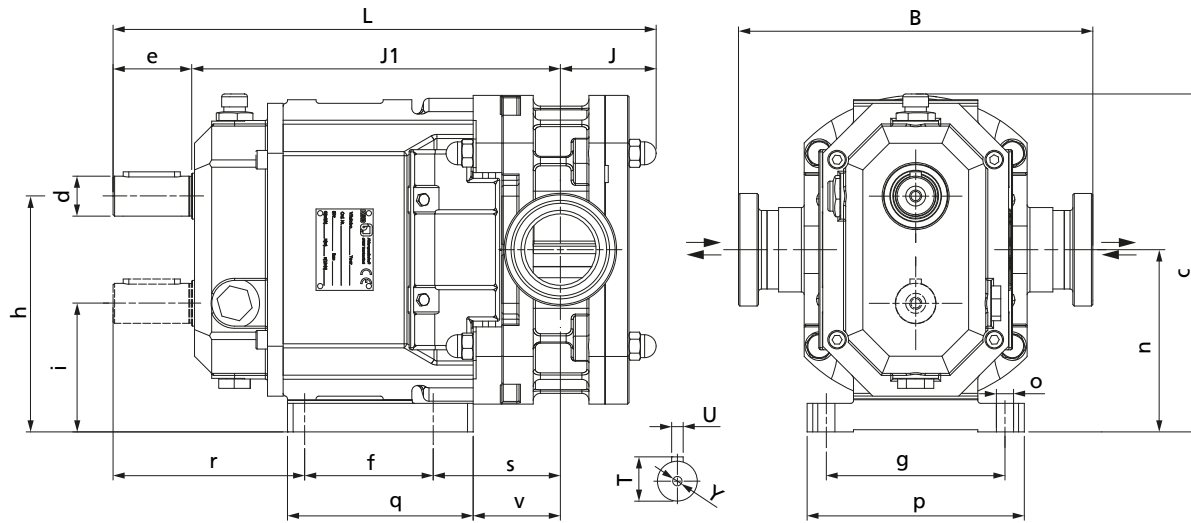
Selection chart



For individual characteristic curves, refer to Vitalobe characteristic curve booklet 1969.56.

Dimensions

Horizontal installation



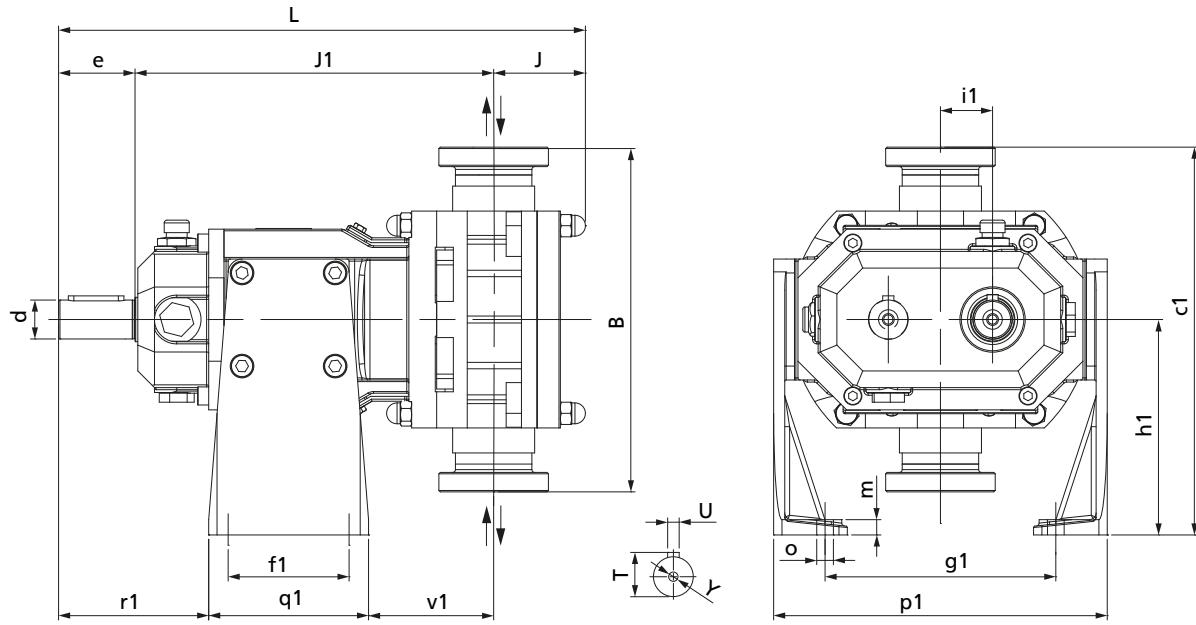
Dimensions

Size	Design	c	d	e	f	g	h	i	J	J1	L	n	o	p	q	r	s	T	U	v	Y
		[mm]																			
100	B/BB	115,5	18	42,5	65	105	80	-	44	181,5	268	58,6	9	125	92	99,5	52	20,5	6	39,5	-
105	B/BB	181	24	50	65	105	125	62	54,5	186	290,5	93,5	10	128	90	115,5	55,5	27	8	42,5	M6
110	B/BB	181	24	50	65	105	125	62	54,5	186	290,5	93,5	10	128	90	115,5	55,5	27	8	42,5	M6
115	B/BB	181	24	50	65	105	125	62	55	197,5	302,5	93,5	10	128	90	115,5	67	27	8	54	M6
215	B/BB	235,5	28	55	90	125	165	90	61	249,5	365,5	127,5	12	152	130	136,5	78	31	8	52	M8
220	B/BB	235,5	28	55	90	125	165	90	67	258,5	380,5	127,5	12	152	130	136,5	87	31	8	61	M8
325	B/BB	270	35	65	120	140	190	100	78	316	459	145	14	174	170	167	94	38,5	10	62	M10
330	B/BB	270	35	65	120	140	190	100	84	325	474	145	14	174	170	167	103	38,5	10	71	M10
390	B/BB	270	35	65	120	140	190	100	84	345	494	145	14	174	170	167	123	38,5	10	91	M10
430	B/BB	367,5	48	85	140	190	255	130	88	370,5	543,5	192,5	18	235	195	206,5	109	52	14	76,5	M12
440	B/BB	367,5	48	85	140	190	255	130	100,5	378	563,5	192,5	18	235	195	206,5	116,5	52	14	84	M12
450	B/BB	367,5	48	85	140	190	255	130	120,5	378	583,5	192,5	18	235	195	206,5	116,5	52	14	104	M12
470	B/BB	442,5	55	110	150	250	300	160	105,5	438,5	654	230	22	300	255	255	143,5	60	16	63,5	M12
490	B/BB	442,5	55	110	150	250	300	160	106	468	684	230	22	300	255	255	173	60	16	93	M12
550	B	515	55	110	20	300	350	178	283,5	243,5	637	264	19	350	250	227	106,5	60	16	81,5	M12
660	B	690	80	140	300	300	480	250	102	565	807	365	26	460	360	283	122	85	22	92	M16
680	B	690	80	140	300	400	480	250	132	595	867	365	26	460	360	283	152	88	22	122	M16

Dimension B for various connections

Size	Dimension B [mm]													
	Threaded connection					Flanged connection					Clamped connection			
	DIN 11851	DIN 11864-1A	SMS	RJT BS 4825-5	IDF BS 4825-4 / ISO 2853	EN 1092-1 (PN16)	DIN 11864/2A	ASME150lb EX ANSIB16,5	APV FN	Varivent	DIN 32676-C Tri-Clamp/Tri-Clover ASME BPE	DIN 32676-A	ISO 2852	DIN 11864-3A
100	160	160	150	157	153	165	152	160	154	156	160	149	160	160
105	210	210	210	210	210	186	217	189	218	220	210	213	210	210
110	210	210	210	210	210	186	217	189	218	220	210	213	210	210
115	210	210	210	210	210	186	217	189	218	220	210	213	210	210
215	248	248	248	248	248	224	255	227	256	258	248	251	248	248
220	248	248	248	248	248	228	255	230	256	258	248	251	248	248
325	296	296	296	290	296	256	267	264	268	270	293	278	293	293
330	296	296	296	286	276	256	267	264	264	266	290	258	290	290
390	296	296	296	286	276	256	267	264	264	266	290	258	290	290
430	395	395	395	385	375	355	366	363	363	365	389	371	389	389
440	395	395	395	389	378	355	386	363	383	385	392	391	392	392
450	395	395	395	389	378	355	386	363	383	385	392	391	392	392
470	445	445	445	439	428	405	436	413	433	435	442	441	442	442
490	445	445	445	439	428	405	436	413	433	435	442	441	442	442
550	632	632	-	-	-	566	-	-	-	-	-	-	-	-
660	-	-	-	-	-	680	-	-	-	-	-	-	-	-
680	-	-	-	-	-	670	-	-	-	-	-	-	-	-

Vertical design



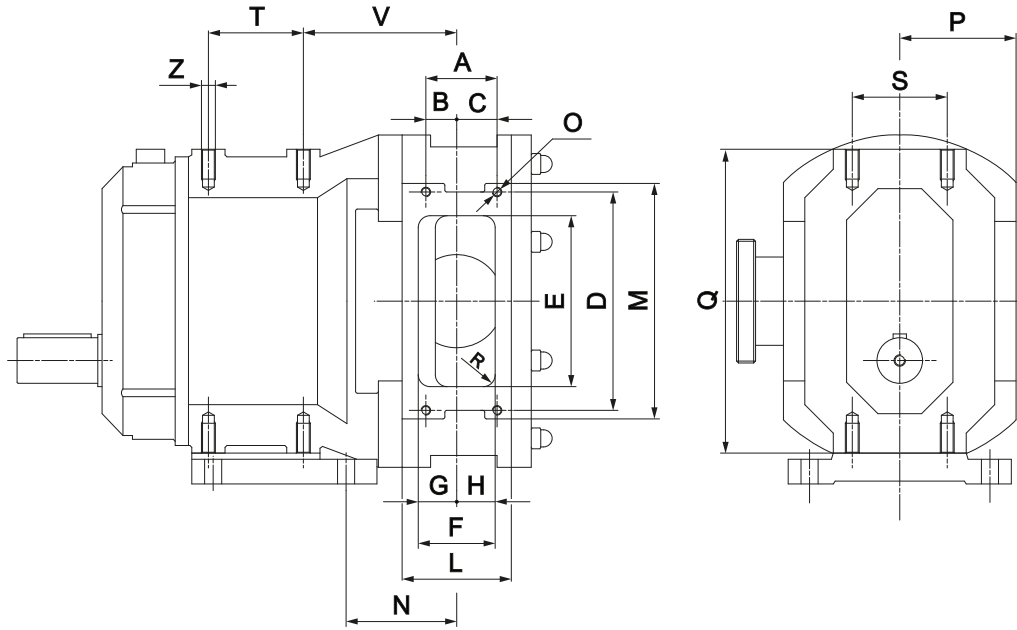
Dimensions

Size	Design	[mm]																	
		d	e	f1	g1	h1	i1	J	J1	L	m	o	p1	q1	r1	T	U	v1	Y
100	B/BB	18	42,5	49	84	100	21,37	44	181,5	268	10	9	-	-	110,5	20,5	6	-	-
105	B/BB	24	50	49	124	150	31,5	54,5	186	290,5	10	10	180	75	98,5	27	8	62,5	M6
110	B/BB	24	50	49	124	150	31,5	54,5	186	290,5	10	10	180	75	98,5	27	8	62,5	M6
115	B/BB	24	50	49	124	150	31,5	55	197,5	302,5	10	10	180	75	98,5	27	8	74	M6
215	B/BB	28	55	87	166	155	37,5	61	249,5	365,5	11	12	240	115	108,5	31	8	81	M8
220	B/BB	28	55	87	166	155	37,5	67	258,5	380,5	11	12	240	115	108,5	31	8	90	M8
325	B/BB	35	65	110	192	175	45	78	316	459	12	14	272	140	134	38,5	10	107	M10
330	B/BB	35	65	110	192	175	45	84	325	474	12	14	272	140	134	38,5	10	116	M10
390	B/BB	35	65	110	192	175	45	84	345	494	12	14	272	140	134	38,5	10	136	M10
430	B/BB	48	85	135	270	210	62,5	88	370,5	543,5	12	18	360	170	165,5	52	14	119	M12
440	B/BB	48	85	135	270	210	62,5	100,5	378	563,5	13	18	360	170	165,5	52	14	126,5	M12
450	B/BB	48	85	135	270	210	62,5	120,5	378	583,5	13	18	360	170	165,5	52	14	146,5	M12
470	B/BB	55	110	175	320	300	70	105,5	438,5	654	17	22	430	220	210	60	16	118,5	M12
490	B/BB	55	110	175	320	300	70	106	468	684	17	22	430	220	210	60	16	148	M12

Dimensions B and c1 for various connectoins

Size	Threaded connection										Flanged connection										Clamped connection									
	DIN 11851		DIN 11864-1A		SMS		RJT BS 4825-5		IDF BS 4825-4 / ISO 2853		EN 1092-1 (PN16)		DIN 11864/2A		ASME150lb EX ANSIB16,5		APV FN		Varivent		DIN 32676-C Tri-Clamp/Tri-Clover ASME BPE		DIN 32676-A		ISO 2852		DIN 11864-3A			
	B	c1	B	c1	B	c1	B	c1	B	c1	B	c1	B	c1	B	c1	B	c1	B	c1	B	c1	B	c1	B	c1	B	c1	B	c1
	[mm]																													
100	160	180	160	180	150	175	157	178,5	153	176,5	165	182,5	152	176	160	180	154	177	156	178	160	180	149	174,5	160	180	160	180		
105	210	255	210	255	210	255	210	255	210	255	186	243	217	258,5	189	244,5	218	259	220	260	210	255	213	256,5	210	255	210	255		
110	210	255	210	255	210	255	210	255	210	255	186	243	217	258,5	189	244,5	218	259	220	260	210	255	213	256,5	210	255	210	255		
115	210	255	210	255	210	255	210	255	210	255	186	243	217	258,5	189	244,5	218	259	220	260	210	255	213	256,5	210	255	210	255		
215	248	279	248	279	248	279	248	279	248	279	224	267	255	282,5	227	268,5	256	283	258	284	248	279	251	280,5	248	279	248	279		
220	248	279	248	279	248	279	248	279	248	279	228	269	255	282,5	230	270	256	283	258	284	248	279	251	280,5	248	279	248	279		
325	296	323	296	323	296	323	290	320	296	323	256	303	267	308,5	264	307	268	309	270	310	293	321,5	278	314	293	321,5	293	321,5		
330	296	323	296	323	296	323	286	318	276	313	256	303	267	308,5	264	307	264	307	266	308	290	320	258	304	290	320	290	320		
390	296	323	296	323	296	323	286	318	276	313	256	303	267	308,5	264	307	264	307	266	308	290	320	258	304	290	320	290	320		
430	395	407,5	395	407,5	395	407,5	385	402,5	375	397,5	355	387,5	366	393	363	391,5	363	391,5	365	392,5	389	404,5	371	395,5	389	404,5	389	404,5		
440	395	407,5	395	407,5	395	407,5	389	404,5	378	399	355	387,5	386	403	363	391,5	383	401,5	385	402,5	392	406	391	405,5	392	406	392	406		
450	395	407,5	395	407,5	395	407,5	389	404,5	378	399	355	387,5	386	403	363	391,5	383	401,5	385	402,5	392	406	391	405,5	392	406	392	406		
470	445	522,5	445	522,5	445	522,5	439	519,5	428	514	405	502,5	436	518	413	506,5	433	516,5	435	517,5	442	521	441	520,5	442	521	442	521		
490	445	522,5	445	522,5	445	522,5	439	519,5	428	514	405	502,5	436	518	413	506,5	433	516,5	435	517,5	442	521	441	520,5	442	521	442	521		

Rectangular, enlarged pump inlet



Dimensions

Size	Design	A	B	C	D	E	F	G	H	L	M	N	O	P	Q	R	S	T	U	V	Z
		[mm]																			
115	B/BB	40	22	18	90	70	42	23	19	61	120	67	M6	64	154	6	55	35	93,5	94	M8
220	B/BB	55	31	24	110	92	54	32	22	72	150	87	M8	78	210	15	67	67	127,5	114	M10
330	B/BB	75	37	38	146	133	65	32	33	93	176	103	M8	95	236	125,5	70	85	145	143,5	M12
390	B/BB	95	57	38	146	133	85	52	33	113	162	123	M8	95	236	12,5	70	85	145	163,5	M12
440	B/BB	75	32,5	42,5	230	180	81	40,5	40,5	115	248	116,5	M10	122,5	320	125,5	100	100	192,5	161,5	M14
490	B/BB	107	67	40	230	180	107	69	38	143	256	173	M12	152,5	370	12,5	130	135	230	190,5	M20

#### **Pump accessories**

- Integrated pressure relief valve, mechanical or pneumatic
- Motor shroud made of stainless steel
- Pump on trolley
- Heatable casing and/or casing cover
- Machine feet for foundation-less installation
- Enlarged pump inlet for highly viscous fluids
- Residual drainage of pump casing



**KSB SE & Co. KGaA**  
Johann-Klein-Straße 9 • 67227 Frankenthal (Germany)  
Tel. +49 6233 86-0  
[www.ksb.com](http://www.ksb.com)