Vertical eccentric screw pumps of block construction for emptying vats and tanks

Series SEFBP

Applications
For pumping neutral or corrosive, uncontaminated or abrasive liquids, liquids containing gases or which tend to froth and liquids of high or low viscosity including liquids containing fibres and solid matter.

Main fields of application
Chemical and petrochemical industry, paper and cellulose industry, soap and fats industry, paint industry, food and beverage industry, plastics industry, ceramics industry, agriculture, sugar industry, shipbuilding, sewage and clarification engineering etc.

Operation
Rotary, self-priming positive displacement pump whose pumping elements are the rotating eccentric screw (rotor) and the fixed stator. In the cross-sectional plane, both are in contact with one another at two points forming two sealing lines along the length of the conveying elements. The material contained in the sealed chambers which are formed as the rotor turns is displaced axially and with complete continuity from the suction to the delivery end of the pump. Despite the fact that the rotor rotates, no turbulence is produced. The constant chamber volume excludes squeezing, thus ensuring an extremely gentle low-pulsating delivery.

Design features
By means of a lantern, pump and drive are flanged together so as to form a block unit.

The stator vulcanized into a tube or shell (uniform elastomer wall thickness) is provided with external collars vulcanized to it on both sides sealing towards the suction cover and delivery casing. This design moreover reliably prevents the vulcanized elastomer from separating from the stator shell as a result of the influence of the fluid pumped.

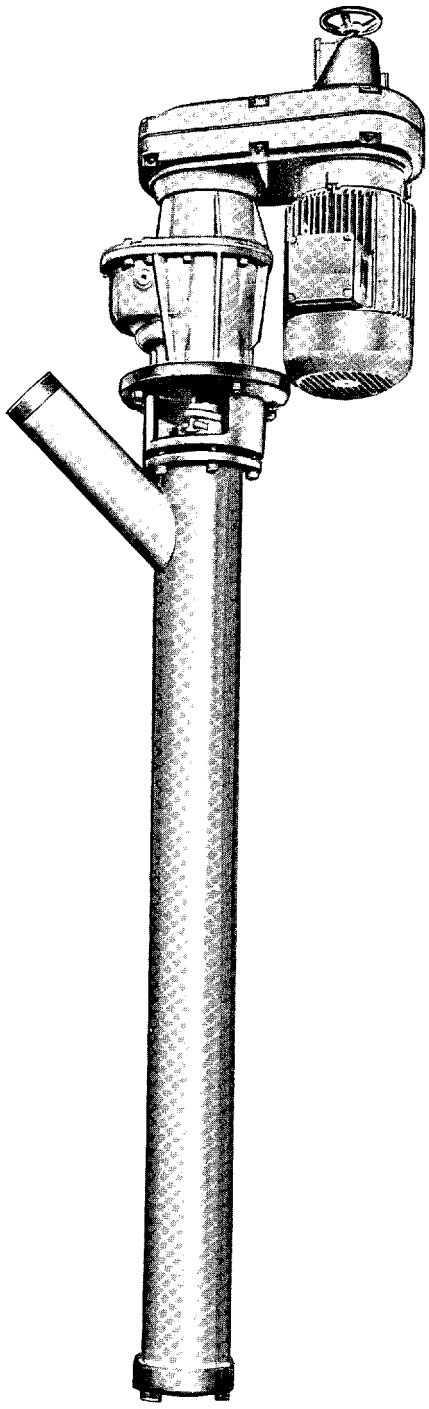
By an appropriate design of the delivery casing, the stator of all designs is protected against corrosion from the outside.

The suction cover of all sizes is designed so that with the pump arranged on top (tank bottom), the necessary minimum supply cross-section is provided.

The outlet branch arranged so as to provide a favourable flow effect is available in two standard sizes. As a result hereof, adaptation to different viscosities of the fluids pumped is possible.

Arranged between lantern and pressure casing is the exchangeable shaft sealing housing (subsequent conversion to any other sealing variant is possible).

The drive torque is transmitted onto the rotor via the stub shaft and coupling rod. The coupling rod ends on both sides in liquid-tight enclosed pin-type universal joints which are of a particularly simple and sturdy design properly absorbing the eccentric movement of the rotor.



In special cases, the standard immersion depths listed in the table of dimensions (Page 8) can be adapted to the customer's requests.

Shaft seal
By an uncooled stuffing box or by an uncooled maintenance-free, non-balanced, single-acting mechanical seal. Mounting spaces for the mechanical seals according to DIN 24 960.

Material pairing and design are adapted to suit the respective operating conditions.

For further details, see Pages 4 and 5.

Bearing
The drive/stub shaft is supported in the reinforced bearings of the electric motors, geared motors or variable speed gears which are also capable of absorbing the axial forces incurred.

As all drives are only supplied with reinforced bearing, it is ensured that the allocated pumps can always be fully employed within their admissible operating limits.

Drive
Non-explosion-proof or explosion-proof three-phase motors, geared motors or variable-sped gears can be provided for the drive. For drive variants, see Page 9. For corresponding technical data and dimensions, please refer to separate sales document, Sheets 19-32-0000-001-4 and 19-32-0000-002-4.

It is a significant advantage that the companion dimensions for all drive types within one size are identical. As a result hereof, subsequent conversion to any other drive variant or size is easily possible.

It required, drives are supplied with shelter.

Installation
SEFBP pumps are installed vertically.

For crane suspension, a suspension loop can be supplied at extra charge (refer to Page 8).

Interchangeability of components
The components of all eccentric screw pumps are produced to a modular system. As a result hereof, an easy and inexpensive stockkeeping of spare parts is ensured even if pumps of different series and types of construction are used in one plant.

Technical data
Deliveries and required drive powers can be taken from the performance chart Page 3 or the separate individual characteristics.
For reference values for maximum pump speeds as a function of pump size and immersion depth, refer to table below.

Permissible casing pressure	10 bar ①
Max. delivery pressure	6 bar ①
Attainable underpressure	0.9 bar ②
Max. permissible temperature of liquid pumped	100ºC ③
Max. permissible viscosity	150.000 mPa s ④
Max. permissible solid content	60 by vol. % ⑤

Max. permissible grain sizes and fibre length:

Size	50	100	200	380	550
Max. grain size mm	3	3.8	5	6.8	6.8
Max. fibre length mm	42	48	60	79	79

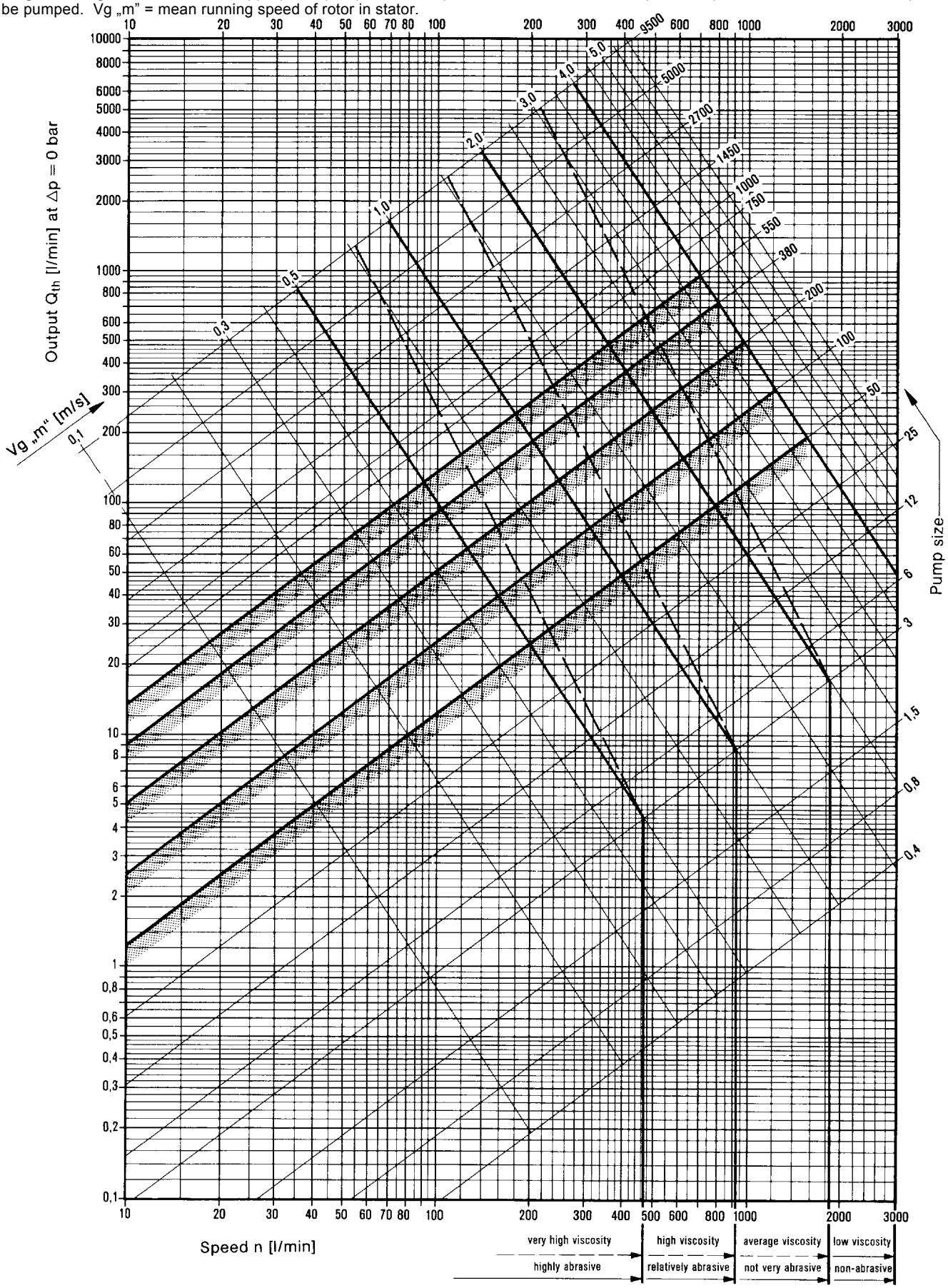
Increases in solid content and grain size require reduction of the pump speed.
Reference values for maximum pump speeds (1/min) as a function of pump size and immersion depth T (mm):

		Immersion depth T (mm)							
		800	1200	1600	2000	2400	2800	3200	3350
		max. pump speed (1/min) ⑥							
Pump size	50	850	850	850	850	830	720	620	530
	100	700	700	700	680	580	510	440	380
	200	-	600	550	480	410	360	310	270
	380 550	-	480	410	360	310	270	230	200

① The permissible pressure for the shaft seal must be observed (refer to Pages 6 and 7).
② Depending on operating conditions and number of stages
③ Depending on liquid pumped and elastomers used.
④ Depending on liquid pumped, speed and pump size.
⑤ Depending on pump size and kind and size of solids.
⑥ Depending upon installation conditions, reduction may be necessary.

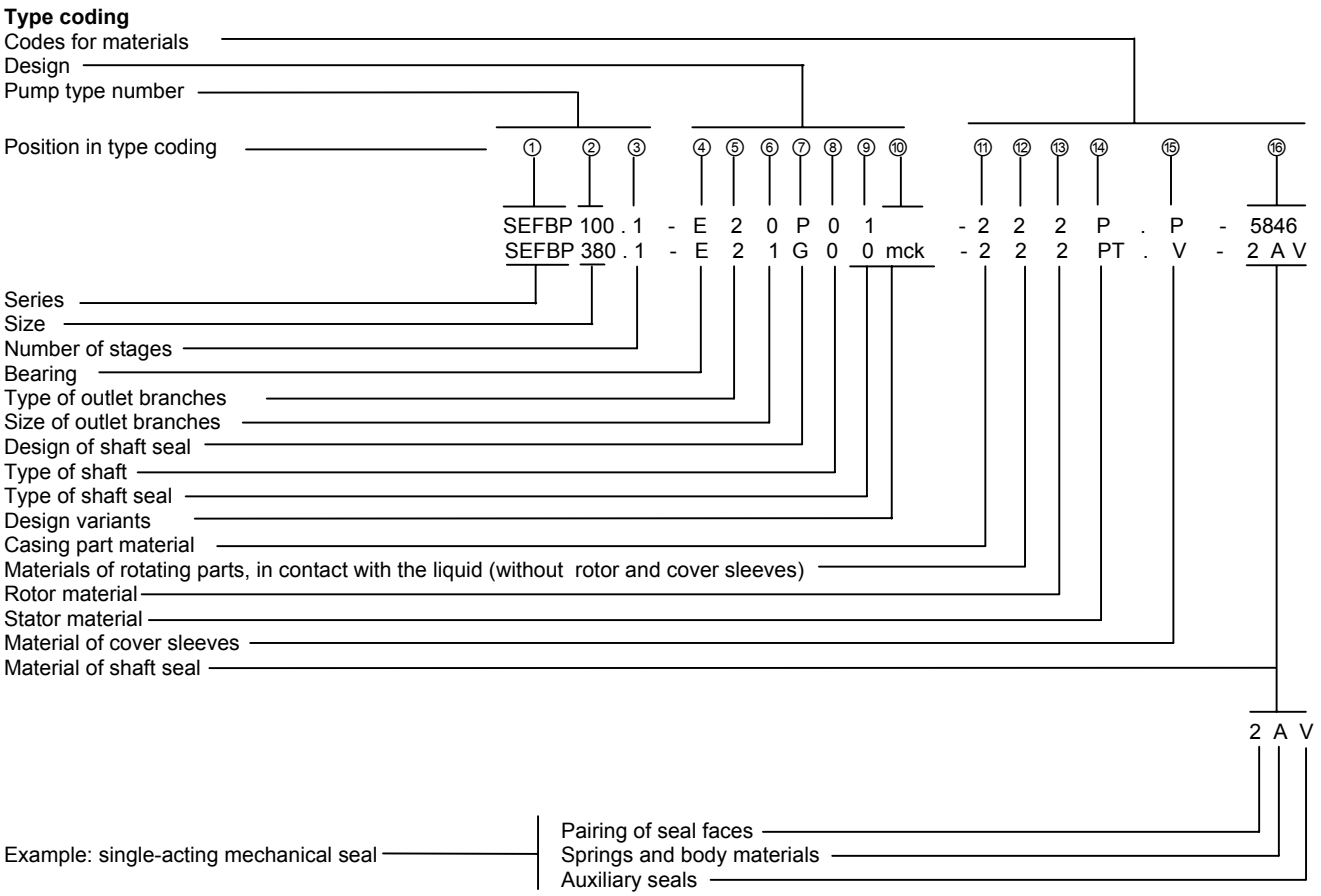
Performance chart

To give a rough indication of the appropriate pump size and speed as a function of the required output and the nature of the liquid to be pumped. Vg „m" = mean running speed of rotor in stator.



Sizes of SEFBP series. Information on performance ranges not covered by the SEFBP series can be found on the back cover of this brochure or in the separate brochures dealing with the other series. For exact performance data, see the individual pump characteristics.

Type coding



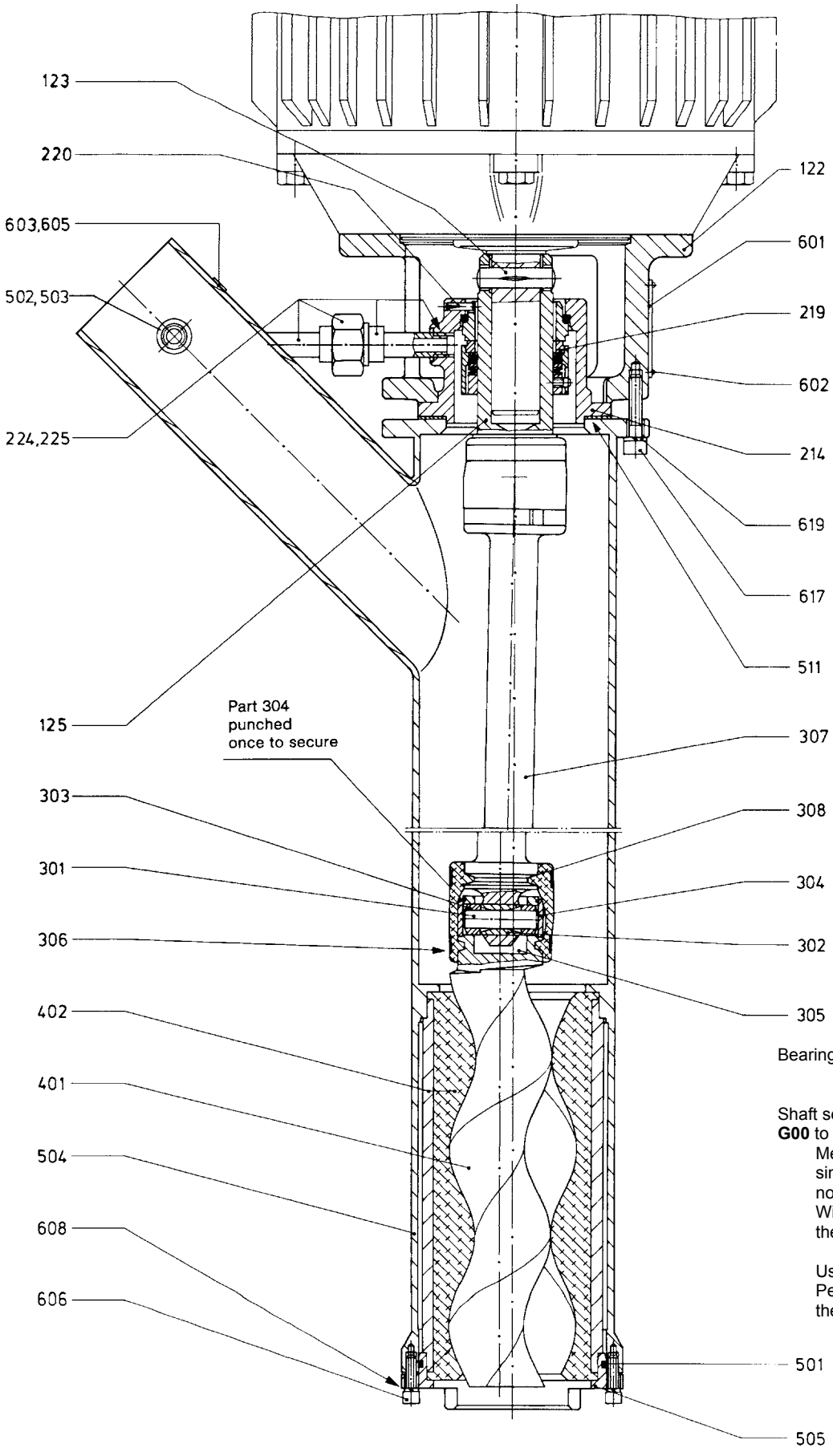
Explanatory notes on the type coding:

Position in type coding	Name	Explanation
①	Series	ALLWEILER eccentric screw pump in block construction for vertical installation
②	Size	Possible sizes: 50, 100, 200, 380, 550 The numbers indicate the theoretical output in l/min, at n = 400 1/min and Δp = 0 bar
③	Number of stages	1 = single acting delivery pressure up to 6 bar
④	Bearing	E = external bearing in the drive unit
⑤	Type of outlet branches	2 = Thread connection according to DIN 2999 (see dimensional sheet Page 8) 4 = NPT thread (refer to dimensional sheet Page 8). X = Delivery branch of special type
⑥	Size of outlet branches	0 = DN_1 in dimensional sheet Page 8. 1 = DN_2 in dimensional sheet Page 8 X = Other sizes

⑦	Design of shaft seal	P = Stuffing box or other non-mechanical shaft seal G = Mechanical seal (mechanical shaft seal)
⑧	Type of shaft	0 = Shaft without shaft sleeve
⑨	Type of shaft seal	P.1 = Standard stuffing box (no lantern ring / no flushing ring) P.2 = Stuffing box with flushing ring P.3 = Stuffing box with internal lantern ring P.4 = Stuffing box with external lantern ring P.X = non-mechanical special-type shaft seal G.0 = Mechanical seal, single-acting, non balanced, either direction of rotation, single spring, auxiliary gaskets of elastomer. With venting line to the outlet branch G.1 = as G.0, however, with multiple springs G.2 = as G.0, however, auxiliary gaskets with double PTFE-sheathing G.3 = as G.1, however, auxiliary gaskets with double PTFE-sheathing G.X = Special-type mechanical seal
⑩	Design variants	N = Rotor with low temperature tolerance (standard stator) M = Rotor with moderate temperature tolerance (standard stator) H = Rotor with high temperature tolerance (standard stator) D = Rotor with low temperature tolerance (stator with uniform elastomer wall thickness) E = Rotor with moderate temperature tolerance (stator with uniform elastomer wall thickness) F = Rotor with high temperature tolerance (stator with uniform elastomer wall thickness) C = Rotor hard-chromium-plated K = Pump shaft ceramic-coated W = Winding protection on coupling rod G = Stator with uniform elastomer wall thickness X = Other types
⑪	Casing part materials	1 = St 35/St 37/1.4301 (not for size 50) 2 = 1.4301 4 = 1.4571 X = Special materials
⑫	Materials of rotating parts in contact with the liquid (without rotor and cover sleeves)	2 = 1.4301 4 = 1.4571 X = Special materials, e.g. also for universal joints
⑬	Rotor material	2 = 1.4301 / 1.4308 3 = 1.2436 / 1.2601 / 1.2379 4 = 1.4571 / 1.4408 X = Special materials e.g. other metals, plastic materials
⑭	Stator material (DIN ISO 1629)	WB = Natural caoutchouc/butadiene (NR/BR) P = Acrylonitrile-butadiene rubbers (NBR) PL = Acrylonitrile-butadiene rubbers (NBR) N = Polychloroprene (N) NL = Polychloroprene (N) Y = Chlorosulfonated polyethylene (CSM) YL = Chlorosulfonated polyethylene (CSM) V = Fluoroelastomer (FPM) B = Butyl (IIR) HP = Acrylonitrile-butadiene rubbers hydrated (HNBR) SL = Silicon light-coloured (MVQ) VU = Vulcollan (AU) PE = Polyethylene (PE) PT = Teflon fibre-glass-reinforced (PTFE) ME = Cast meehanite X = Special materials (elastomers, plastic materials, metal
⑮	Cover sleeve Material (DIN ISO 1629)	P = Acrylonitrile-butadiene rubbers (NBR) PL = Acrylonitrile-butadiene rubbers (NBR) N = Polychloroprene (N) Y = Chlorosulfonated polyethylene (CSM) V = Fluoroelastomer (FPM) B = Butyl (IIE) O = no cover sleeves X = Special materials
⑯	Shaft seal material	Stuffing boxes: 5846 = Ramie fibre with PTFE impregnation and sliding agent 6426 = Aramid endless fibre with PTFE impregnation and sliding agent 6230 = PTFE yarn with incorporated graphite and sliding agent X = Other packing materials Mechanical seal:

Seal faces	Springs and body materials	Auxiliary seals
1st figure	2nd figure	3rd figure with single seal
1 = Cast Cr steel/hard carbon 2 = Cast CrMo steel/hard carbon 3 = CrNiMo steel/ armoured/hard carbon 4 = Ceramics/hard carbon 5 = Hard metal/hard metal, highly wear-resistant 6 = Hard metal/hard metal, corrosion-resistant 7 = Hard metal/hard metal, highly corrosion-resistant X = Special materials	A = 1.4300 F = 1.4571 L = Hastelloy B M = Hastelloy C X = Special materials	P = Acrylonitrile-butadiene rubbers (NBR) E = EP caoutchouc S = Silicon caoutchouc N = Polychloroprene (N) V = Fluoroelastomer (FPM) TTE = EP caoutchouc① TTV = Fluoroelastomer (FPM) ① TTS = Silicon caoutchouc① X = Special materials ① double PTFE-coated

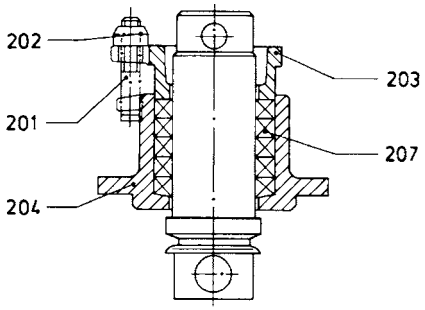
Sectional drawing and parts list



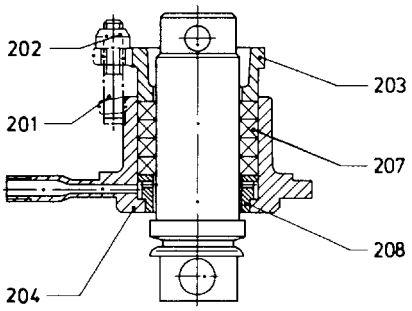
Bearing: **E** (external bearing in the drive unit)

Shaft seal:
G00 to **G03**
Mechanical seal, single-acting non-balanced. With venting line to the outlet branch.

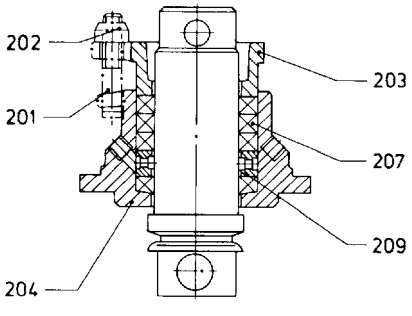
Use after consultation. Permissible pressure at the shaft seal p = 6 bar.



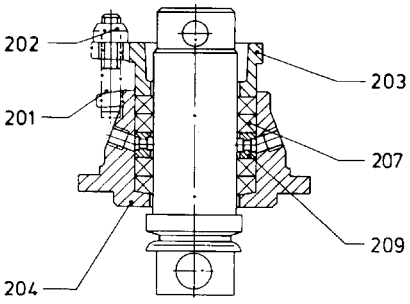
P01 Stuffing box of standard type (without lantern ring/ without flushing ring).
Particularly long packing allows pump to be used in a wide variety of applications.
p = up to 6.0 bar.



P02 Stuffing box with flushing ring.
Application with highly abrasive fluids pumped with external sealing.
p = up to 4.0 bar.



P03 Stuffing box with internal lantern ring.
Application with clean liquids with internal sealing or with abrasive fluids pumped with external sealing
p = up to 6.0 bar.



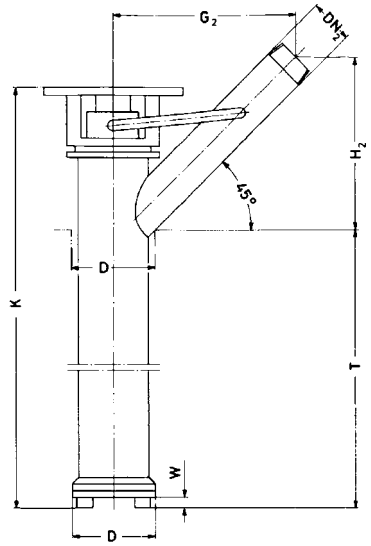
P04 Stuffing box with external lantern ring.
Application in case of incompatibility of the external sealing liquid with the fluid pumped.
p = up to 3.0 bar.

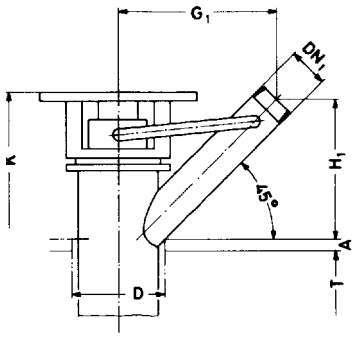
Part No.	Description
122	Lantern
123	Drive pin
125	Stub shaft
201	Hammer bolt
202	Self locking nut
203	Gland
204	Stuffing box housing
207	Stuffing box packing
208	Flushing ring
209	Lantern ring
214	Mechanical seal housing
219	Mechanical seal
220	Retaining pin
224	Venting line for mechanical seal
225	Sealing agent
301	Coupling rod pin
302	Coupling rod bush
303	Guide bush
304	Retaining sleeve
305	Joint grease
306	Clamping band
307	Coupling rod
308	Cover sleeve
401	Rotor
402	Stator
501	O-ring
502①	Screw plug
503②	Gasket
504	Pressure casing
505	Suction cover
511	Gasket for pressure casing
601	Name plate
602	Dome-headed grooved pin
603	Instruction plate for commissioning
605	Instruction plate for pressure
606	Socket-head cap screw
608	Spring ring
617	Hexagon screw
619	Spring ring

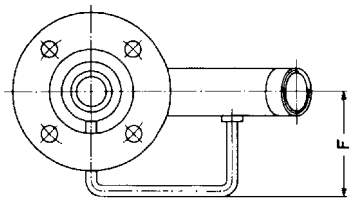
① with stuffing box.

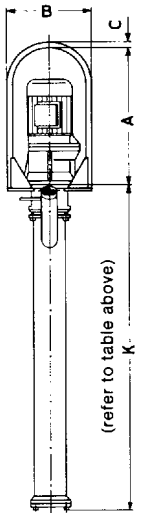
Pump dimensions

For the technical data and dimensions of the drives, please refer to the separate sales document Pages 19-32.0000-001-4 and 19-32.0000-002-4









Dimensions im mm.
Subject to alterations.

Sense of rotation: Clockwise, as seen from the driving side.

		Pump size									
		50.1		100.1		200.1		380.1		550.1	
Outlet branch ①		DN_1	DN_2	DN_1	DN_2	DN_1	DN_2	DN_1	DN_2	DN_1	DN_2
acc. to DIN ②		R 1 ½	R2	R2	R 2 ½	R 2 ½	R3	R3	R4	R3	R4
acc. to ANSI/ASME③		1 ½ - 11½ NPT	2- 11½ NPT	2- 11½ NPT	2½- 8 NPT	2 ½- 8 NPT	3 - 8 NPT	3- 8 NPT	4- 8 NPT	3- 8 NPT	4 – 8 NPT
Pump dimensions	D	103		124		146		187		187	
	W	11		11		14		23		23	
	A	18	-	24	-	19	-	35	-	35	-
	F④	135	135	155	155	160	160	180	180	180	180
	G1	198	-	231	-	261	-	300	-	300	-
	G2	-	211	-	246	-	274	-	321	-	321
	H1	180	-	210	-	242	-	269	-	269	-
	H2	-	202	-	237	-	264	-	307	-	307

		Pump size									
		50.1		100.1		200.1		380.1		550.1	
		T	K	T	K	T	K	T	K	T	K
Immersion depth T ⑤ Overall length K		800	1001	800	1041	800	1072	800	1130	954	1284
		1200	1401	1200	1441	1200	1472	1200	1530	1354	1684
		1600	1801	1600	1841	1600	1872	1600	1930	1754	2084
		2000	2201	2000	2241	2000	2272	2000	2330	2154	2484
				2400	2641	2400	2672	2400	2730	2554	2884
						2800	3072	2800	3130	2954	3284
								3200	3530	3354	3684
Pump weight	$M_1$⑥										
	$M_2$⑦										

① DN_1 or DN_2 as a function of the viscosity of the fluid pumped.

② Pipe thread according to DIN 2999

③ Pipe thread according to ANSI/ASME B1.20.1-1983

④ only with design with mechanical seal G00…G03

⑤ Immersion depth with outlet branch DN_1 = T + A

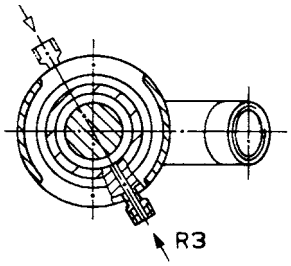
⑥ Weight with T = 800 or 954 with size 550.1; maximum values

⑦ Weight per 400 mm immersion depth extension, maximum values.

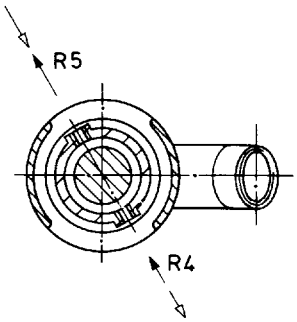
Dimensions Pumps with suspension loops	Drive		Pump size				
			50.1	100.1	200.1	380.1	550.1
	Electric motor	A	440	540	880	-	-
		B	320	360	440	-	-
		C	27	27	33	-	-
	Geared motor	A	490	570	700	840	840
		B	280	300	380	430	430
		C	27	27	33	33	33
	Variable-speed gear⑧	A	650	770	980	1170	1170
		B	350	400	500	530	530
		C	27	27	33	33	33

⑧ technical data and dimensions according to separate document 19-32.0000-001-4, Sheets 3.50 to 3.52

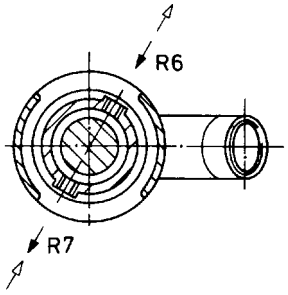
Auxiliary connections



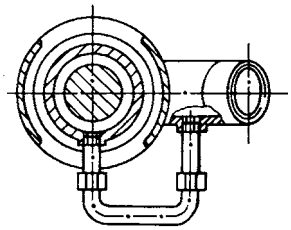
Stuffing box
P02



Stuffing box
P03



Stuffing box
P04



Mechanical seal
G00 to G03

Nominal connection widths of auxiliary connections

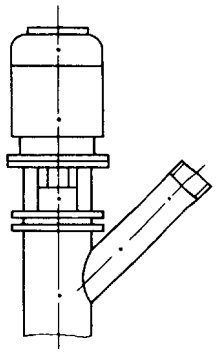
Pump size	Flushing	Sealing	
	R 3	R4 / R5	R 6 / R 7
50.1	R $^1/_8$ ①	M 8 X 1 ②	M 8 x 1 ②
100.1	R $^1/_8$ ①	M 8 X 1 ②	Rp $^1/_8$ ③
200.1	R $^1/_8$ ①	M 8 X 1 ②	Rp $^1/_8$ ③
380.1	R $^1/_8$ ①	Rp $^1/_8$ ③	Rp $^1/_8$ ③
550.1	R $^1/_8$ ①	Rp $^1/_8$ ③	Rp $^1/_8$ ③

① Pipe thread acc. to DIN 2999, Part 1 (external thread)

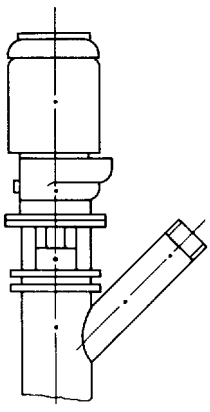
② Fine thread acc. to DIN 13

③ Pipe thread acc. to DIN 2999, Part 1 (internal thread)

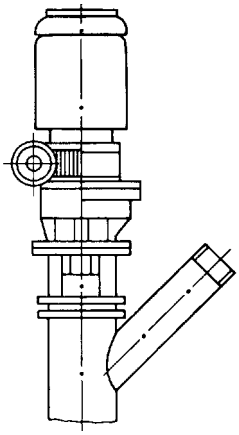
Driving possibilities



with electric motor



with geared motor



with infinitely variable gear

Range of eccentric screw pumps

Series	Number of stages	Maximum output at Δp = 0 bar		Maximum del. pressure	Maximum viscosity
		m^3/h	l/min	bar	mPa·s
AE.E-ID	1,2	450	7500	10	300.000
AE.N-ID	1,2	290	4850	12	270.000
AEB.E-IE	1,2	174	2900	6	300.000
AEB.N-IE	1,2	111	1850	12	270.000
AED.E-ID	1	720	12000	8	250.000
AED.N-ID	2	450	7500	16	225.000
AEDB.E-IE	1	258	4300	6	250.000
AEDB.N-IE	2	174	2900	12	225.000
AE.N…-RG	1,2,4	21	350	20	1.000.000
TECFLOW	1	186	3100	4	200.000
SEZP	1,2	21	350	10	1.000.000
SHP	2,4	110	1830	24	270.000
SNZP	1,2	45	750	12	1.000.000
SNZBP	1,2	45	750	12	1.000.000
SSP	1,2	48	800	12	150.000
SSBP	1,2	48	800	12	150.000
SETP①	1,2	140	2350	10	300.000
SETBP	1,2	40	670	10	150.000
SEFBP	1	40	670	6	150.000
SMP	1	40	670	6	150.000
SMP2	1	5,5	92	6	11.500
AFP	1	2,8	47	6	50.000
ANP	2	2,5	42	12	20.000
ANBP	2	2,5	42	12	20.000
ASP	2	2,5	42	12	20.000
ASBP	2	2,5	42	12	20.000
ADP	3	0,6	10	12	20.000
ADBP	3	0,6	10	12	20.000
ACNP	1,2	29	480	12	150.000
ACNBP	1,2	29	480	12	150.000

①Special versions for higher pressures available.

Peristaltic range

Series	Maximum output		Maximum del. pressure	Maximum viscosity
	m^3/h	l/min	bar	mPa·s
ASL	2,4	40	4	100.000
ASH	60	1000	15	100.000

Macerator range

Series	Maximum throughput m^3/h	Generated delivery head m
AM … S-1	80 at 3 % solids	3
ABM … S-1	80 at 3 % solids	3
AM … I-1	160 at 3 % solids	-
ABM … I-1	80 at 3 % solids	-

Accessories

Pump accessories: Stator setting devices, electrical heaters, bridge breakers.
Drivers: Electric motors, geared motors, variable speed transmissions, reduction gearboxes, internal combustion engines, pneumatic and hydraulic drives.
Transmission components: Couplings, V-belt transmissions, toothed belt transmissions, other types of transmission.
Base plates: Standard and special versions, wheeled trolleys, mounting flanges.
Safety arrangements: Bypass lines with safety or regulating valves, systems to guard against dry running (conductive, capacitive, thermal etc.).
Other accessories: Electrical, hydraulic and pneumatic control arrangements, filter systems, metering equipment, seal liquid and circulating systems for shaft seals, valves, flanges, flexible pipes.

Subject to technical alterations

The mentioned performance data are to be considered as a product and performance abstract only. The particular operating limits can be taken from the quotation or order acknowledgement.

ALLWEILER
ALL FLUIDS. NO LIMITS.

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