

Eccentric screw pumps of block construction for vertical installation

Series SETBP

Applications

For handling liquid to highly liquid, neutral or corrosive, pure or abrasive liquids, liquids containing gases or which tend to froth, including liquids containing fibrous and solid material.

Principal fields of application

Waste water and waste water treatment engineering, 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 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.

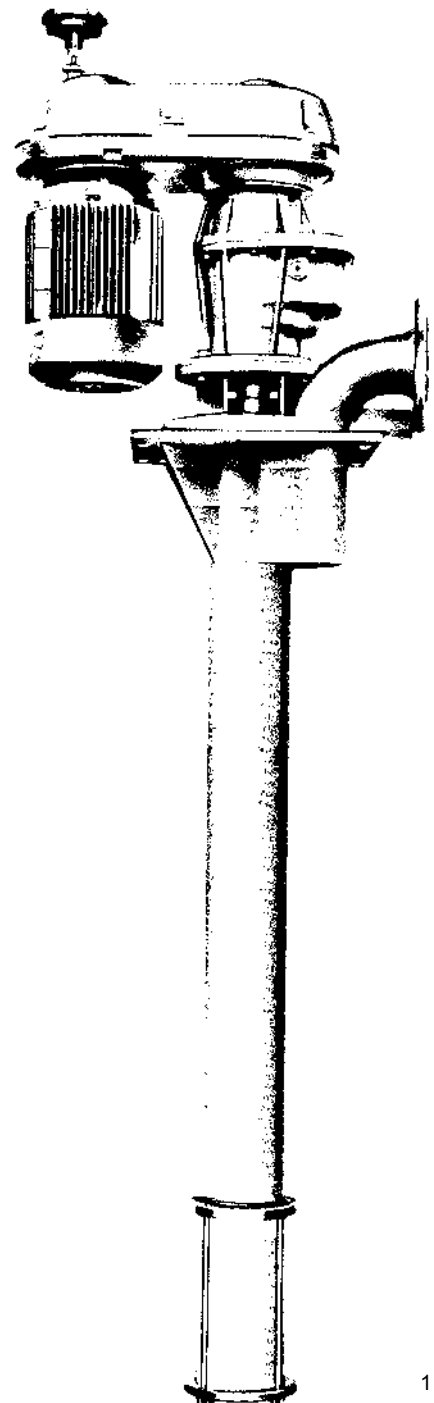
The stator vulcanized into a tube or shell (uniform elastomer wall thickness) is provided with external collars vulcanized to it on both sides sealing towards the suction cover and delivery casing. This design moreover reliably prevents the vulcanized elastomer from separating from the stator shell as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

In addition, the stator of the stainless steel design is protected against corrosion from the outside by a separate sealed stator shell (for other material designs on request at extra charge).

The suction cover of all sizes is designed so that an inlet screen can be attached or a securing device (with/without inlet screen) for suction-side guidance of the pump can be provided (accessories available at extra charge).

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 a 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 and mounting flange dimensions listed in the table of dimensions (Page 9) 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 5, 6 and 7.

Seepage is collected in a collector trough and can be carried off externally or into the pump sump/tank.

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-speed gears can be provided for the drive. For drive variants, see Page 10. For corresponding technical data and dimensions, please refer to separate sales document, Sheets 19-32-0000-001-4 and 19-00-0000-040-3.

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.

If required, drives are supplied with shelter.

Installation

SETBP pumps are installed vertically.

As a function of the immersion depth and pump speed, it may be necessary that for the suction-side guidance of the pump, a securing device should be provided. Its design will be adapted to suit the structural conditions.

Assembly dimensions on request.

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	
single-stage	6 bar ①
two-stage	10 bar ①
Suction obtainable	0.9 bar ②
Max. permissible temperature	
of liquid pumped	100°C ③
Max. permissible viscosity	150.000 mPa s ④
Max. permissible solid content	60 by vol. % ⑤
Submerged pumps for higher deliver pressures on request.	

The stated performance data are to be understood only as an outline of performance of our products. For exact limits of application please refer to the quotation and acceptance of order.

Max. permissible grain sizes and fiber lengths:

Size	50	100	200	380	550
Max. grain size mm	3	3.8	5	6.8	6.8
Max. fiber 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):

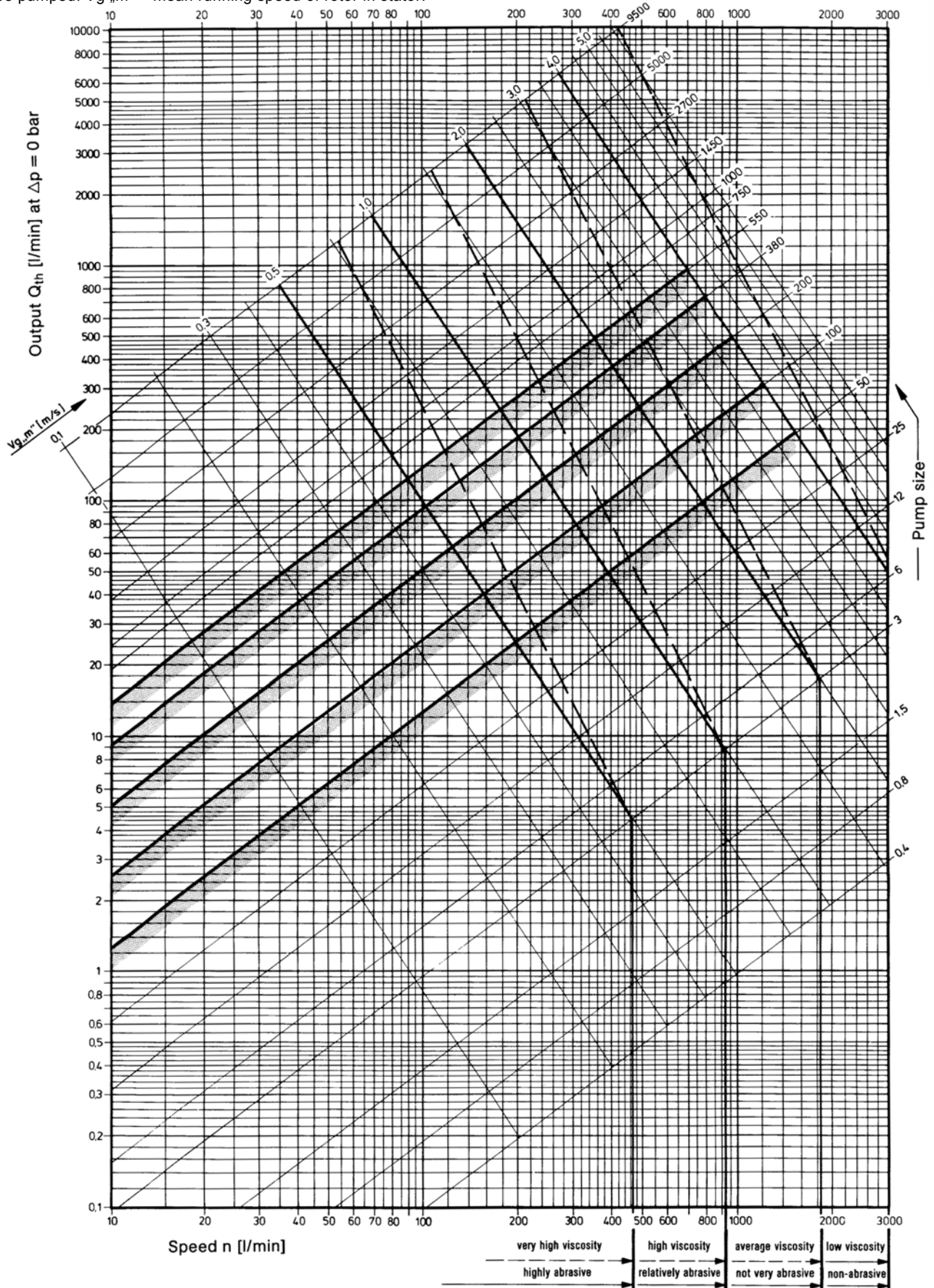
		Immersion depth T (mm)								
		800	1200	1600	2000	2400	2800	3200	3600	4000
		max. pump speed (1/min) ⑥								
Pump size	50	850	850	850	850	830	720	620	530	460
	100	700	700	700	680	580	510	440	380	320
	200	-	600	550	480	410	360	310	270	230
	380	-	480	410	360	310	270	230	200	170
	550	-								

- 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. When using securing devices, partly higher speeds are possible (please inquire).



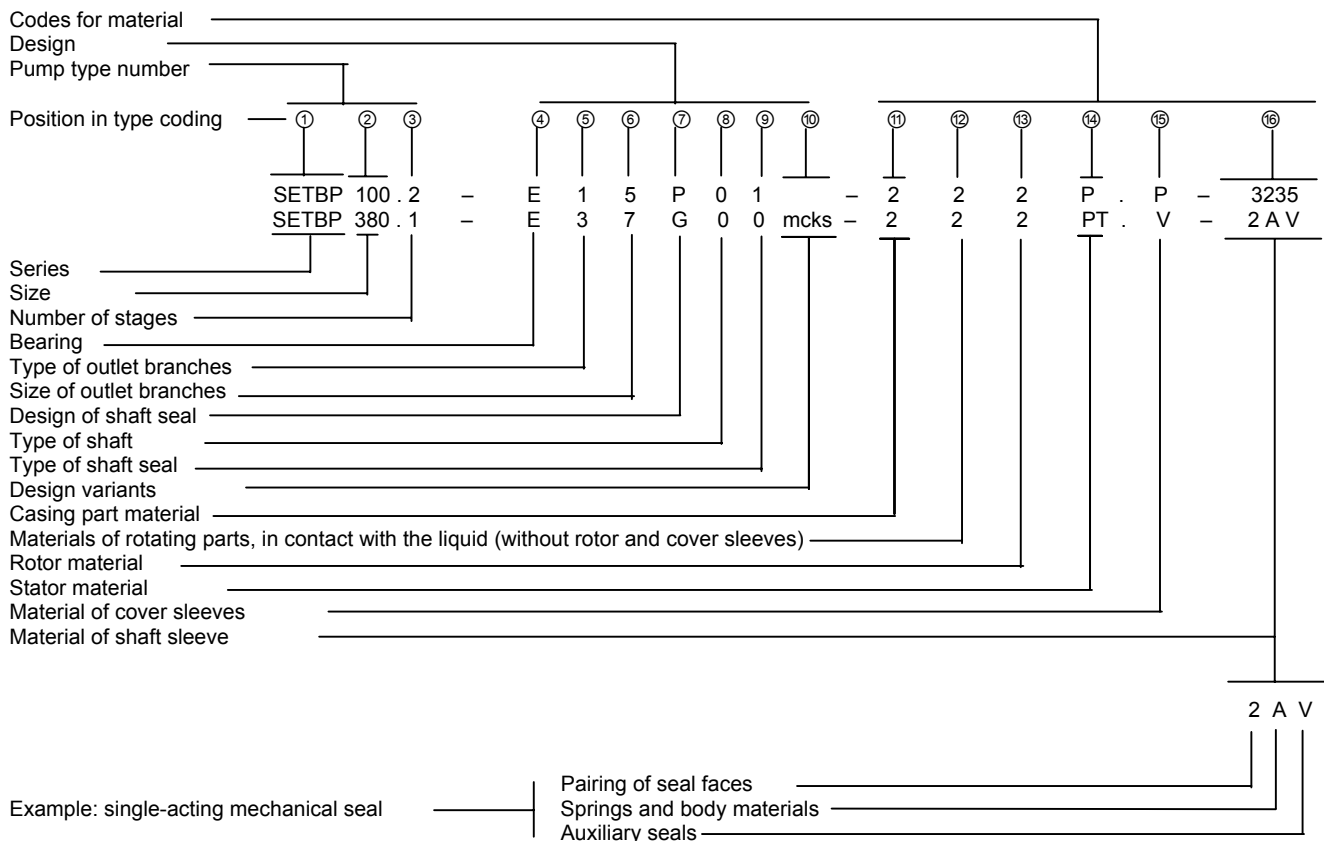
Performance chart

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. V_g „m“ = mean running speed of rotor in stator.



Sizes of SETBP series. Information on performance ranges not covered by the SETBP 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

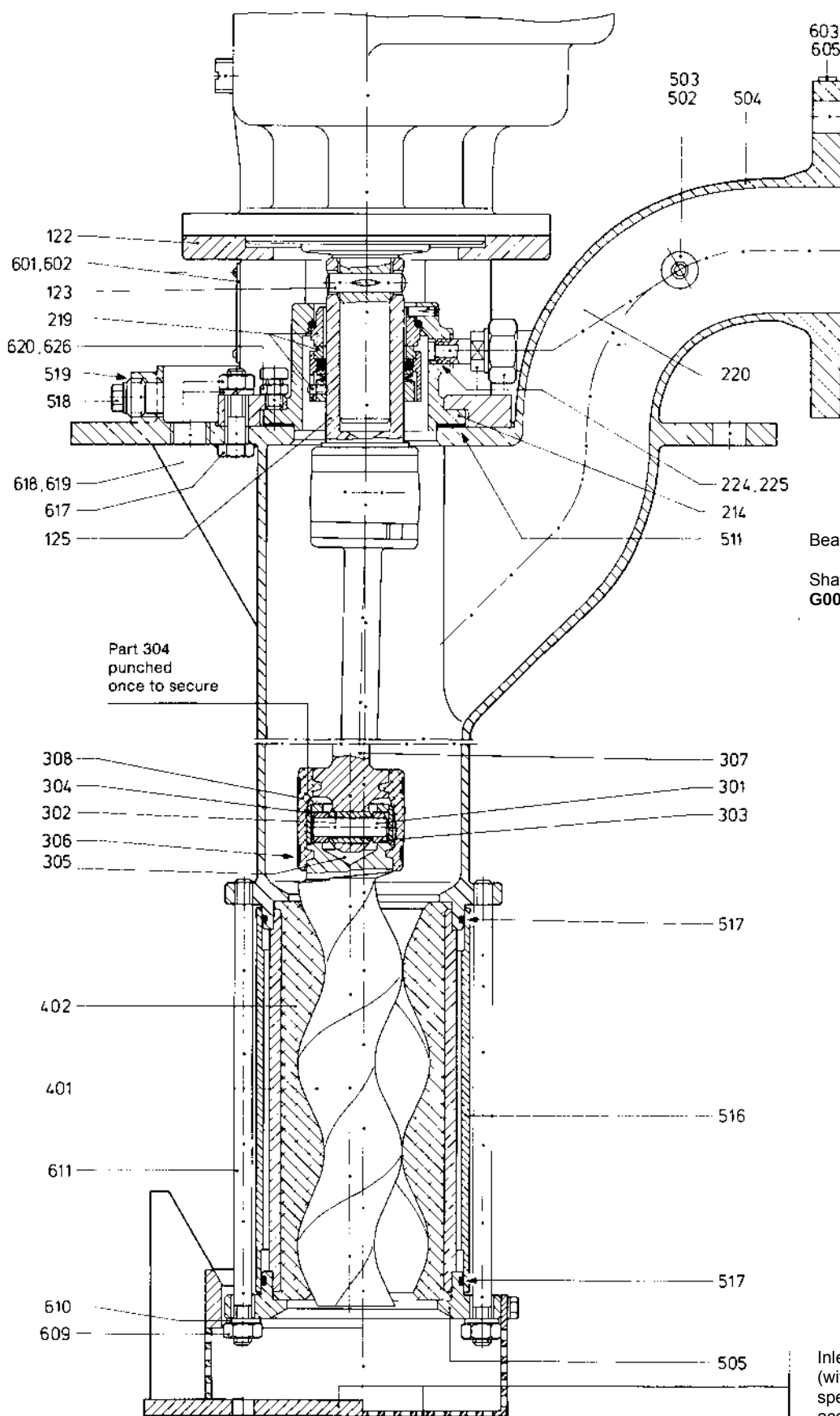


Explanatory notes on the type coding:

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 $\Delta p = 0$ bar
③	Number of stages	1 = single-stage, delivery pressure up to 6 bar 2 = two-stage, delivery pressure up to 10 bar (size 550 only available of the single-stage type)
④	Bearing	E = external bearing in the drive unit
⑤	Type of outlet branches	1 = DIN flanges 3 = ANSI flanges X = Delivery branch of special type as per dimensional sheet Page 8
⑥	Size of outlet branches	5 = normal, square 6 = small, square 7 = round X = Mounting flanges of special type (e.g. with sealing surface) without sealing surface, as per dimensional sheet Page 9



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.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	m = Rotor with moderate temperature tolerance (standard stator) h = Rotor with high temperature tolerance (standard stator) 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 = Stub shaft ceramic-coated s = Auger on coupling rod w = Winding protection on coupling rod g = Stator with uniform elastomer wall thickness x = Other types												
⑪	Casing part materials	1 = St 35 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 3 = 1.2436 4 = 1.4571	X = Special materials e.g. other metals, plastic materials											
⑭	Stator material	W = Natural caoutchouc, soft P = Acrylonitrile-butadiene rubbers (NBR) L = Acrylonitrile-butadiene rubbers (NBR) Y = Chlorosulfonated polyethylene (CSM) V = Fluoroelastomer (FPM)	B = Butyl caoutchouc T = Thiokol VU = Vulcollan (AU) PA = Polyamide N = Polychloroprene (N) PP = Polypropylene PT = PTFE-reinforced	ME = Cast meehanite X = Special materials e.g. metals, plastic materials, elastomers										
⑮	Cover sleeve material	P = Acrylonitrile-butadiene rubbers (NBR) L = Acrylonitrile-butadiene rubbers (NBR) N = Polychloroprene (N)	Y = Chlorosulfonated polyethylene (CSM) V = Fluoroelastomer (FPM) B = Butyl caoutchouc	T = Thiokol O = no cover sleeves X = Special materials										
⑯	Shaft seal material	Stuffing box: 3207 mo = White asbestos packing, molykoted 4003 = Light-coloured cotton packing, tallowed 3207 mol = Oil packing 3235 = PTFE white asbestos packing, solvent packing 3326/D/SA = PTFE blue asbestos packing 6426 = Araflon packing X = Ohter packing materials Mechanical seal: <table><tr><td>Seal faces</td><td>Springs and body materials:</td><td>Auxiliary seals</td></tr><tr><td>1st figure</td><td>2nd figure</td><td>3rd figure with single seal</td></tr><tr><td>1 = Cast Cr steel/hard carbon 2 = Cast CrMo steel/hard carbon 3 = Cr Ni Mo 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</td><td>A = 1.4300 F = 1.4571 L = Hastelloy B M = Hastelloy C X = Special materials</td><td>P = Acrylonitrile-butadiene rubbers (NBR) E = EP caoutchouc S = Silicon caoutchouc N = Polychloroprene (N) V = Fluoroelastomer (FPM) TTE = EP caoutchouc ① TTV = Fluoroelastomer (FPM) ① TTS = Silicon caoutchouc ① X = Special materials ① double PTFE-coated</td></tr></table>				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 = Cr Ni Mo 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 caoutchouc ① TTV = Fluoroelastomer (FPM) ① TTS = Silicon caoutchouc ① X = Special materials ① double PTFE-coated
Seal faces	Springs and body materials:	Auxiliary seals												
1st figure	2nd figure	3rd figure with single seal												
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Bearings: E (external bearing in the drive unit)

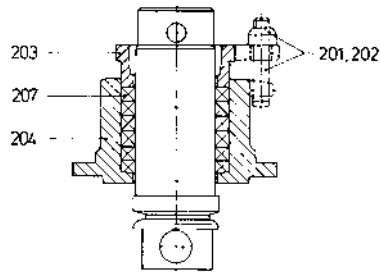
Shaft seal:

G00 to G03

Mechanical seal, single-acting, non-balanced. With venting line to the outlet branch.

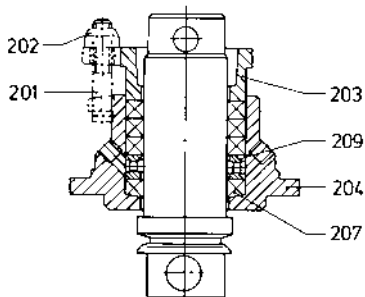
Use after consultation. Permissible pressure at the shaft seal $p = 10$ bar.

Inlet screen or securing device (with/without inlet screen) of special production available as accessory at extra charge

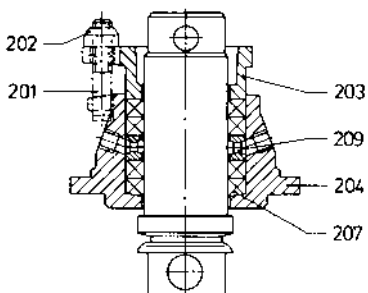


P01 Stuffing box of standard type (without lantern ring/without flushing ring).

Particularly long packing allows pump to be used in a wide variety of applications.
p = up to 10 bar.



P03 Stuffing box with internal lantern ring.
Application with clean 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 or if the intake.
p = up to 4.0 bar.

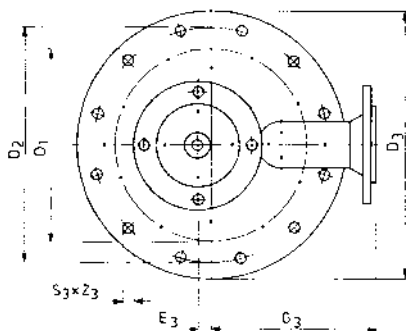
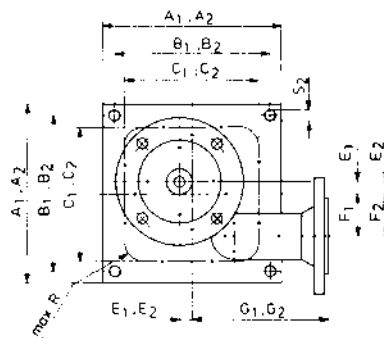
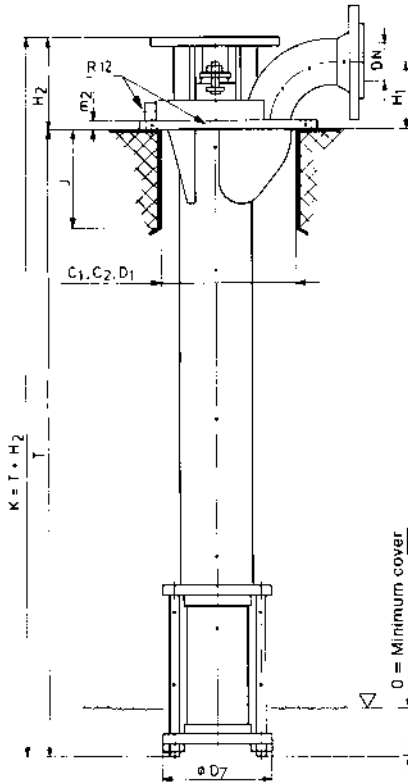
Part No.	Description
122	Lantern
123	Drive pin
125	Stub shaft
201	Hammer bolt
202	Self-locking nut
203	Gland
204	Stuffing box housing
207	Stuffing box packing
209	Lantern ring
214	Mechanical seal housing
219	Mechanical seal
220	Retaining pin
224	Venting line for mechanical seal
225	Sealing material
301	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
502②	Screw plug
503②	Gasket
504	Pressure casing
505	Suction cover
511	Gasket for pressure casing
516①	Stator shell
517①	O-ring
518	Leakage drain screw
519	Sealing material
601	Name plate
602	Dome-headed grooved pin
603	Instruction plate for commissioning
605	Instruction plate for pressure
609	Hexagon nut
610	Washer
611	Tie rod
617	Hexagon screw
618	Hexagon nut
619	Spring ring
620	Hexagon screw
626	Hexagon nut

① for stainless steel design
(for other material designs on request at extra charge).

② for 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 19-00-0000-040-3.



Dimensions in mm.

Subject to alterations

Companion dimensions for outlet branch DIN 2633, PN 16							
Size					for mounting flange		
					normal, square G ₁	small, square G ₂	round G ₃
50.1	50	125	18	4	188	173	236 ^①
50.2	50	125	18	4	188	173	236 ^①
100.1	65	145	18	4	225	205	245 ^②
100.2	65	145	18	4	225	205	245 ^②
200.1	80	160	18	8	265	240	265
200.2	80	160	18	8	265	240	265
380.1	100	180	18	8	315	285	310
380.2	100	180	18	8	315	285	310
550.1	100	180	18	8	315	285	310

Companion dimensions for outlet branch ANSI B 16.5, class 150							
Size					for mounting flange		
					normal, square G ₁	small, square G ₂	round G ₃
50.1	2	120,6	19	4	207	192	236 ^③
50.2	2	120,6	19	4	207	192	236 ^③
100.1	2 1/2	139,7	19	4	250	230	270 ^④
100.2	2 1/2	139,7	19	4	250	230	270 ^④
200.1	3	152,4	19	4	285	260	285
200.2	3	152,4	19	4	285	260	285
380.1	4	190,5	19	8	339	309	334
380.2	4	190,5	19	8	339	309	334
550.1	4	190,5	19	8	339	309	334

① min D₁ = 200, G₃ = 184

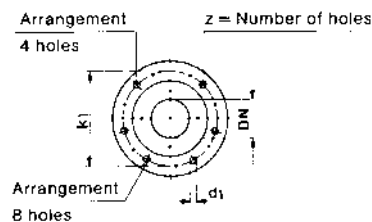
② min D₁ = 250, G₃ = 220

③ min D₁ = 200, G₃ = 203

④ min D₁ = 250, G₃ = 245

round mounting flanges which can also be supplied with smaller dimensions (refer to dimensions for mounting flanges)

Nominal widths of ANSI flanges (DN) and threaded pipe connections in inch.



Z₃ = Number of holes

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

		Pump size									
		50.1	50.2	100.1	100.2	200.1	200.2	380.1	380.2	550.1	
Pump size	D ₇	135	135	150	150	180	180	215	215	215	
	H ₁	82	82	107	107	127	127	155	155	155	
	H ₂	97	97	114	114	125	125	149	149	149	
	J	120	120	150	150	180	180	220	220	220	
	m ₂	10	10	12	12	12	12	12	12	12	
	O	20	20	20	20	25	25	25	25	25	
	R 12 ④	Rp 3/8	Rp 3/8	Rp 1/2	Rp 1/2	Rp 1/2	Rp 1/2	Rp 3/4	Rp 3/4	Rp 3/4	
Standard immersion depths ⑤	T	640	800	600	800						
		1040	1200	1000	1200	948	1200	894	1200	1048	
		1440	1600	1400	1600	1348	1600	1294	1600	1448	
		1840	2000	1800	2000	1748	2000	1694	2000	1848	
				2200	2400	2148	2400	2094	2400	2248	
						2548	2800	2494	2800	2648	
								2894	3200	3048	
Mounting flange ③ ⑦	normal, square	A ₁	270	270	320	320	380	380	440	440	440
		B ₁	240	240	280	280	340	340	400	400	400
		C ₁	210	210	250	250	300	300	360	360	360
		E ₁	0	0	0	0	0	0	0	0	0
		F ₁	71	71	85	85	100	100	120	120	120
		R	30	30	35	35	45	45	55	55	55
		S ₂	14	14	18	18	18	18	18	18	18
	small, square	A ₂	240	240	280	280	330	330	380	380	380
		B ₂	210	210	240	240	290	290	340	340	340
		C ₂	180	180	210	210	250	250	300	300	300
		E ₂	15	15	20	20	25	25	30	30	30
		F ₂	56	56	65	65	75	75	90	90	90
		R	30	30	35	35	45	45	55	55	55
		S ₂	14	14	18	18	18	18	18	18	18
	round ⑥	D ₁	300 ①	300 ①	300 ②	300 ②	300	300	350	350	350
		D ₂	375	375	375	375	375	375	420	420	420
		D ₃	415	415	415	415	415	415	460	460	460
		E ₃	0	0	15	15	41	41	55	55	55
		S ₃	18	18	18	18	18	18	18	18	18
		Z ₃	12	12	12	12	12	12	16	16	16

① min D1 = 200, E₃ = 33② min D1 = 250, E₃ = 40

③ without sealing surface

④ Pipe thread according to DIN 2999, Part 1

⑤ Other immersion depths are possible (please inquire)

⑥ Companion dimensions according to DIN 28 034

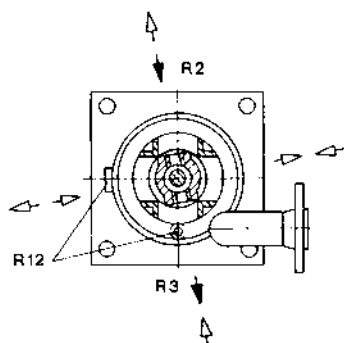
⑦ Larger flanges are possible (please inquire)

 round mounting flanges, which can also be supplied with smaller dimensions. For all other mounting flanges, see ⑦

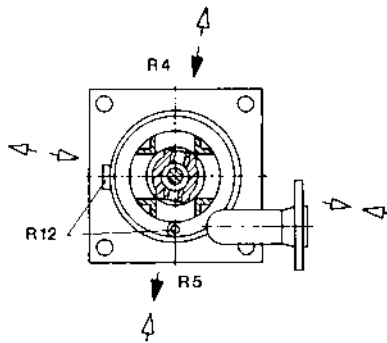
Weights, auxiliary connections, drive possibilities

		Pump size								
		50.1	50.2	100.1	100.2	200.1	200.2	380.1	380.2	550.1
Weights	kg	T = 1000 mm, mounting flange, normal, square								
	kg	T = 1000 mm, mounting flange, small, square								
	kg	T = 1000 mm, mounting flange, round								
	kg	Extension per 1000 mm								

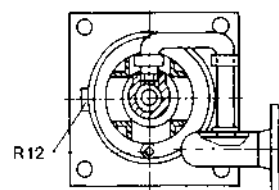
Arrangements of the auxiliary connections at the shaft sealings



Stuffing box
P03



Stuffing box
P04



Mechanical seal
G00 to G03

Nominal companion widths of the auxiliary connections

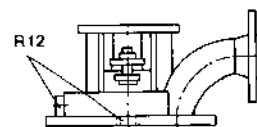
Size	Sealing		Leakage drain R12 ②
	R2/R3 ①	R4/R5 ①	
50.1	M 8 x 1	M 8 x 1	Rp 3/8
50.2	M 8 x 1	M 8 x 1	Rp 3/8
100.1	M 8 x 1	Rp 1/8	Rp 1/2
100.2	M 8 x 1	Rp 1/8	Rp 1/2
200.1	M 8 x 1	Rp 1/8	Rp 1/2
200.2	M 8 x 1	Rp 1/8	Rp 1/2
380.1	Rp 1/8	Rp 1/8	Rp 3/4
380.2	Rp 1/8	Rp 1/8	Rp 3/4
550.1	Rp 1/8	Rp 1/8	Rp 3/4

← Normal flow direction
↙ Possible flow direction

① Tapped hole DIN 3852, shape Z
② Pipe thread according to DIN 2999, Part 1 (female).

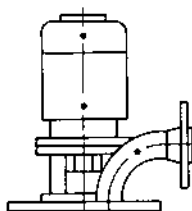
Connection bore holes for manometers can be provided on request (at extra charge).

The auxiliary connections R2 to R12 are also available on request of the same nominal widths with NPT thread.

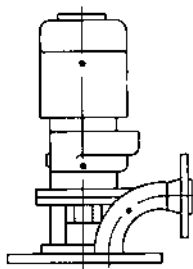


Leakage drain

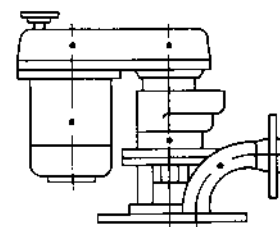
Drive possibilities



1 SETBP with electric motor



2 SETBP with geared motor



3 SETBP with infinitely
variable gear



Range of eccentric screw pumps	Series	Number of stages	Maximum output at $\Delta p = 0$ bar		Maximum del. pressure bar	Maximum viscosity mPa·s
			m ³ /h	l/min		
	AE1L-ID	1	162	2700	4	200.000
	AE.E-ID	1,2	450	7500	10	300.000
	AE.N-ID	1,2	290	4850	16	270.000
	AE.H-ID	2,4	174	2900	24	270.000
	AEB1L-IE	1	162	2700	4	200.000
	AEROMEXICO	1,2	174	2900	6	300.000
	AEB.N-IE	1,2	111	1850	12	270.000
	AEB4H-IE	4	12	200	24	270.000
	AE.N...RG	1,2,4	30	500	20	1.000.000
	TECFLOW	1	162	2700	4	200.000
	SEZP	1,2	21	350	10	1.000.000
	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
	SETP ^①	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

① Special versions for higher pressures available.

Peristaltic range

Series	Maximum output		Maximum del. pressure bar	Maximum viscosity mPa·s
	m ³ /h	l/min		
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



ALL FLUIDS. NO LIMITS.

ALLWEILER GmbH
Werk Bottrop

Postfach 200123 · 46223 Bottrop
Kirchhellener Ring 77-79 · 46244 Bottrop
Germany

Tel. +49 (0)2045 966-60
Fax +49 (0)2045 966-679
E-Mail: service-ge@allweiler.de
Internet: <http://www.allweiler.com>

VM 580 GB/ 04.04 – Ident No. 795 840