Eccentric Screw Pumps in Block-Design

Series AEB4H Design IE



Application

For handling liquid to highly viscous, neutral or aggressive, uncontaminated or abrasive liquids, liquids containing gases or which tend to froth, also containing fibers and solid matter.

In waste water and waste water treatment engineering, chemical and petrochemical industry, paper and cellulose industry, soap and fats industry, paint and lacquer industry, food and beverage industry, plastics industry, ceramics industry, agriculture, sugar industry and in shipbuilding.

Operating

Self-priming, four-stage, rotary positive displacement pump. Conveying 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 contents of the sealed chambers which are formed as the rotor turns, are displaced axially and with complete continuity from the suction to the delivery end of the pump. Despite rotor rotation, there is no turbulence. The constant chamber volume prevents squeezing, thus ensuring an extremely gentle low-pulsating delivery.

Design features

The pump and drive are held together by the bearing bracket to form a modular unit.

By means of external casing connecting screws (clamping screws), the pressure casing, stator and suction casing are interconnected. The suction casings are designed particularly favorable to flow. The pump sizes 50 is supplied in cast iron and is provided with staggered holes for cleaning. The stator vulcanized into a tube is provided with external collars vulcanized to it on both sides, reliably sealing towards the suction casing and protecting the stator shell from corrosion.

The exchangeable shaft sealing housing or mechanical seal housing (subsequent conversion to another sealing variant is possible) are arranged between the suction casing and bearing bracket.

The torque of the drive is transmitted over the driving shaft and the joint shaft onto the rotor. On both sides, the joint shaft ends in liquid-tight encapsulated bolt joints, which are of particularly simple and sturdy design and easily absorb the eccentric movement of the rotor.

Shaft seal

By uncooled or heated stuffing box or by uncooled or cooled maintenance-free unbalanced, single or double-acting mechanical seal.

Material pairing and design are adapted to the respective operating conditions. For further data, refer to pages 4, 5.

The stuffing box or mechanical seal housings of the various shaft sealing types are interchangeable within one size. The various mechanical seal housing parts form a modular construction system and, in case of conversion to a different mechanical seal design, can be easily combined with one another.

Installation spaces for mechanical seals according to DIN 24 960 (except for double mechanical seal).

For further information, refer to pages 4, 5, 6 and 7.

Technical data

Deliveries, admissible speed ranges and required drive powers are to be taken from the performance graph on page 3 and/or the separate individual characteristic curves.

				AEB4H
Delivery	Q	l/min	up to	200
Temperature of fluid pumped	t	° C ①	up to	100
Delivery pressure	∆р	bar	up to	24
Pump outlet pressure	p _d	bar 3	up to	25
Attainable underpressure	ps	bar 2	up to	0,95
Viscosity	η	mPa·s ②	up to	270.000
Admissible solids content	Vol	% ②	up to	60

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.

Max. admissible grain sizes and fiber length

Size		12	25	50
max. grain size	mm	2	2,5	3
max. fiber length	mm	35	42	42

Increasing solids content and increasing grain size require a reduction of the pump speed:

① depending on the fluid to be pumped and the elastomers employed

2 depending on the pump size/design, speed and fluid to be pumped.

3 depending on the direction of rotation, inlet pressure.

Bearings

The driving/joint shaft are situated in the reinforced bearings of the electric motors, gear motors or control gear which also absorb the generated axial forces.

As all drives are only supplied with reinforced bearings it must be assured that the assigned pumps can be run at full capacity within their permissible application limits.

Drive

The drive can be provided by non-explosion-proof or explosionproof three-phase motors, gear motors or control gear. For drive options see page 12. For technical data and dimensions, please refer to the separate sales documentation, data sheet 19-00-0000-111-3.

A considerable advantage is the fact that within a pump size the connection dimensions for all drive types are the same. This facillitates a later change to a different drive type or size.

Installation

AE pumps may be installed horizontally or vertically. In case of vertical arrangement, "shaft shank downwards" is not admissible.

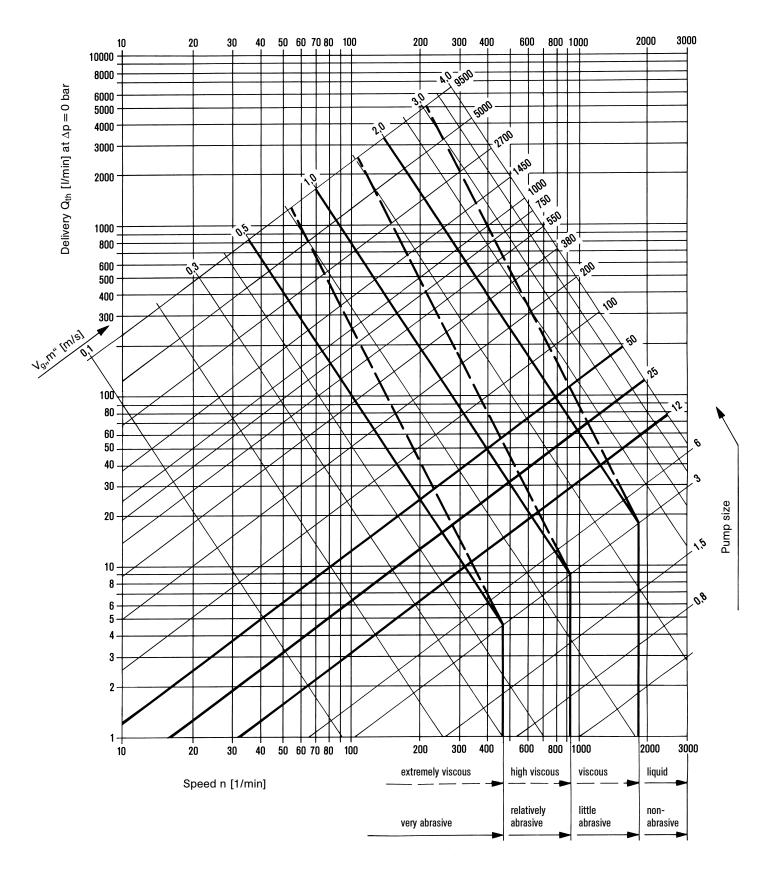
Exchangeability of components

The components of all eccentric screw pumps are of a modular design. This allows a simple and cost-effective spare parts management even if different series and designs of pumps are used.



Performance graph

For a rough selection of the pump size and speed as a function of the requested delivery and kind of fluid to be pumped. $V_{g,m}$ " = available, mean sliding speed of the rotor in the stator.



Sizes of the series AEB4H. Data on the performance range not covered by AEB series are to be taken from the last page of this brochure and/or the individual brochures of the other series. For exact performance data, please refer to the individual characteristics.



Type code																			
Material design Geometric design									_										
Type series																			
					_														
	2	3	4	5	6		8	9			12	(13)	(14)	15			18	(19) 	20
				– IE – IE				P G	0 0	1 D	D	1	NC CS	1 4	1 2	2 3	V P	V P	6230 6ATTV/2P
Product	erial	s – Is –																	
Joint sleeve materials Shaft seal materials																			
Example: double-acting mechanical seal	Spr Aux Slic	ring: kilia: dina	s and ry ga mate	erial p l cons skets, erial p skets,	truc pro airir	tion duct ia. a	ma t-sio tmc	iteri de - osph	als nere	e-sic	de -								

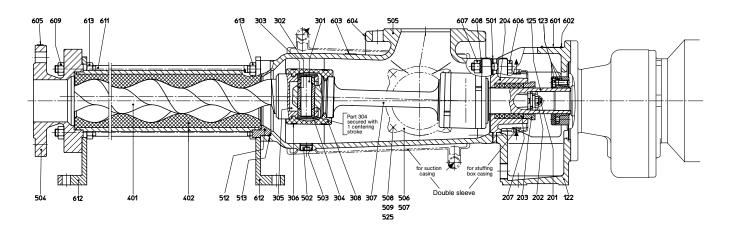
Explanations to the type code:

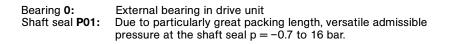
Position in type code	Designation	Design
1	Product	ALLWEILER eccentric screw pumps
2	Number of stages	4 = four-stage up to delivery pressure Δp 24 bar
3	Mechanical system	H = rated for delivery presure ∆p 24 bar
4	Size	Possible sizes: 12, 25, 50. The numbers indicate the theoretic delivery in I/min with $n = 400$ 1/min and $\Delta p = 0$ bar
5	Design	IE = Industrial design with external bearing
6 7	Bearing design	0 = external bearing in drive unit
1	Suction and outlet branch design	1 = DIN flanges 3 = ANSI flanges - according to dimensional sheet, pages 9 and 10 X = Suction and/or delivery branch of special design
8	Branch position	1, 2, 3, 4 – For arrangement please refer to the representation, page 9. Arrangement 3 is not possible for size 12.
9	Shaft seal type	P = Stuffing box or other non-mechanical shaft seal G = Mechanical seal (mechanical shaft seal)
10 (1)	Shaft design	0 = Shaft without shaft sleeve
(11)	Shaft seal design	Stuffing boxesP01 = Stuffing box of normal design (without sealing chamber ring/without flushing ring)P02 = Stuffing box with flushing ringP03 = Stuffing box with internal sealing chamber ringP04 = Stuffing box with external sealing chamber ringP0X = Non-mechanical shaft seal of special design

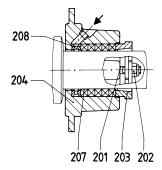
1	Shaft seal	Mechanical seals			
0	design	for pump sizes	12	25	50
	(continued) X = design	Shaft diameter at the location of the shaft	seal 25	30	35
	possible	G0K = individual mechanical seal, DIN 24 960, design K, shape U	x	х	Х
		G0N = as above, however design N	X	Х	Х
		G0S = individual mechanical seal, DIN 24 960, design K, shape U, rotating part with integrated locking device and pump-sided throttling ring	e X	х	х
		GOT = as above, however design N	x	Х	Х
		G0Q = individual mechanical seal, DIN 24960, design K, shape U with quench	n X	х	Х
		G0D = double mechanical seal	1	1	1
		G0X = Mechanical seal of special design			
		① design available on request			
(12)	Double shell	D = Double shell for heating/cooling, a Connections as threaded nipples t maximum heating temperature +1	for liquid media. Maximi	um heating/cool	
(13)	Double shell design	1=Suction case with double shell2=Stuffing box for P01 with double s12=Suction and shaft sealing housingX=Special design for other double sh	P01 with double shell		
14	Design variants	Stators with uneven elastomer wall thickness (all qualities) N M H T Stators with temperature play as a function of the temperature of the fluid pumped			
		C = Rotor hard chromium-plated Y = Rotor ductile hard chromium-plate Z = Rotor metallically coated S = Worm on joint shaft		ng protection or designs	n joint shaft
15	Suction and delivery casing in contact with fluid, materials	$ \begin{array}{rcl} 1 & = & \text{grey cast iron EN-GJL-250/St} \\ 3 & = & \text{grey cast iron EN-GJL-250/inside} \\ 4 & = & 1.4408/1.4571 \\ A & = & 1.4462 \\ X & = & \text{Special materials} \end{array} $	H-rubberized		
16	Driving shaft, joint shaft casing in contact with fluid, materials	$\begin{array}{rcrrr} 1 & = & 1.4021 \\ 2 & = & 1.4301/1.4571/1.4462 \\ 4 & = & 1.4571/1.4462 \\ A & = & 1.4462 \\ X & = & {\rm Special materials, e.g. also for article} \end{array}$	culated components		
17)	Rotor materials		= 1.4571= Special materials,		= 1.4462 s, plastic materials
18	Stator materials	$ \begin{array}{llllllllllllllllllllllllllllllllllll$	 Viton Perbunan/hydroge Silicon bright 	PE = PT = nated E = X =	 Teflon glass-fiber reinforced EPDM
19	Joint sleeve materials	$\begin{array}{rcl} P &=& Perbunan N & Y \\ PL &=& Perbunan bright & V \\ N &=& Neoprene & B \end{array}$	HypalonVitonButyl rubber	X =	 Special materials
20	Shaft seal materials	Stuffing box: 5846 = Ramie fiber with PTFE impregnat 6426 = Aramid endless fiber with PTFE i 6230 = Graphite-incorporated PTFE with Mechanical seal:	tion, asbestos-free mpregnation, asbestos- s sliding means, asbesto	os-free	
		Sliding material pairing	Spring and constr. mat	erials Auxilia	ary gaskets
		1st point for single gaskets 1st + 4th points for double gasket	2nd point	3rd +	bint for single gasket 5th points for double gasket
		 2 = CrMo cast iron/hard carbon 4 = Ceramics/hard carbon 5 = Hard metal/hard metal, highly wear-resistant 6 = Silicon carbide/silicon carbide highly wear-resistant, corrosion-resistant 7 = Silicon carbide/silicon carbide highly wear-resistant, highly corrosion-resistant X = Special materials 	$\begin{array}{llllllllllllllllllllllllllllllllllll$	E = S = N = V = TTE = TTV = TTS =	Perbunan ① double EP rubber PTFE- Silicon rubber coated Neoprene Viton Viton ① Silicon rubber ① Silicon rubber ① Special materials



Sectional drawing and components list

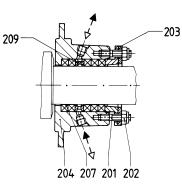






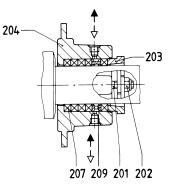
P02 Stuffing box with flushing ring

To be employed for very abrasive fluids pumped with external flushing p = -0.7 to 12 bar



P03 Stuffing box with internal sealing chamber ring

To be employed for pure fluids with internal sealing or for abrasive fluids with external sealing p = -0.8 to 6 bar

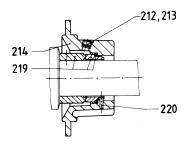


P04 Stuffing box with internal sealing chamber ring

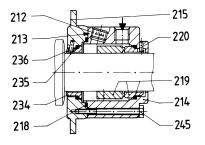
To be employed in case of incompatibility of the external sealing liquid with the fluid pumped or if air inlet is to be avoided p = -0.9 to 12 bar

Part No.	Denomination	Part No.	Denomination	Part No.	Denomination
122	Bearing bracket	214	Mechanical seal housing	302	Joint bush
123	Tensioning set	215	Mechanical seal cover	303	Bush for joint bolt
125	Driving shaft	218	O-ring	304	Joint sleeve
201	Stud bolt	219	Mechanical seal	305	Joint lubricant
202	Self-locking nut	220	Locking pin	306	Joint clamp
203	Gland half	232	Shaft seal ring	307	Joint shaft
204	Shaft sealing housing	234	Throttling ring	308	Joint collar
207	Stuffing box	235	O-ring	401	Rotor
208	Flushing ring	236	Locking pin	402	Stator
209	Sealing chamber ring	245	Hexagon screw	403	Stator gasket delivery-side
212	Screw plug	251	Sealing compound	404	Stator gasket suction-side
213	Joint tape	301	Joint bolt	501	Gasket for suction casing

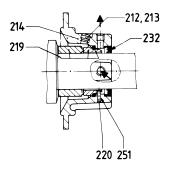




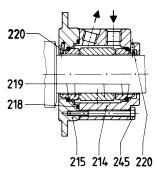
GOK/GON Single mechanical seal, DIN 24 960, K/N design, U shape. For employment, please inquire p = -0.5 to 16 bar



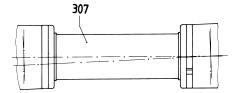
GOS/GOT Single mechanical seal, DIN 24 960, K/N design, U shape. Integrated locking device with flushing liquid connection and pump-side throttling ring. For employment, please inquire, p = -0.5 to 16 bar



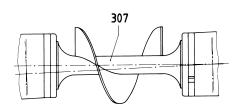
GOQ Single mechanical seal, DIN 24960, K design, U shape, with quench. For employment, please inquire, p = -0.5 to 16 bar



GOD Double mechanical seal, with sealing liquid connection. For employment, please inquire, p = -0.95 to 16 bar



Winding protection on joint shaft

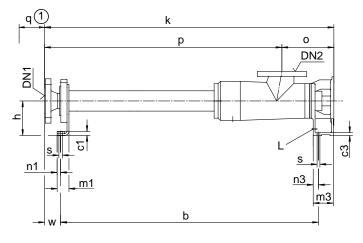


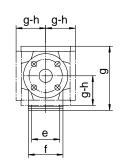
Worm on joint shaft

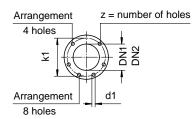
Part No.	Denomination	Part No.	Denomination
502	Screw plug	602	Round head grooved pin
503	Joint tape	603	Information plate
504	Delivery casing		commissioning
505	Suction casing	604	Information plate suction
506	Suction casing cover	605	Information plate pressure
507	Gasket	606	Hexagon screw
508	Stud bolt	607	Hexagon nut
509	Hexagon nut	608	Fan-type lock washer
512	Reduction flange	609	Hexagon nut
513	O-Ring	611	Clamp bolt
525	Washer	612	Support
601	Type plate	613	Hexagon screw



Pump dimensions, auxiliary connections, possible branch positions, weights







Dimensions in mm, nominal width of ANSI flanges (DN) in inches. Subject to alteration.

Sense of rotation: counter-clockwise as seen from driving side with DN_1 = outlet branch, DN_2 = suction branch

Series		Pump dimensions														
Size	b	C ₁	C3	e	f	h	m ₁	m ₃	n ₁	n ₃	0	1) q	S	L	mass kg	
AEB4H 12-IE	668	8	10	75	95	90	42	84	11	19	162	360	9	Rp 3/8		
AEB4H 25-IE	814	8	10	85	105	100	42	93	11	19	185	465	9	Rp ³ /8		
AEB4H 50-IE	1032	13	13	100	125	125	48	106	13	25	220	605	11,5	Rp 1/2		

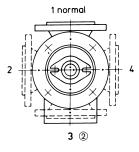
Series		Connection dimensions/Flange dimensions for outlet branch														
Size			Flanges	DIN 2501,				Flanges ANSI B16.5 RF, Class 300 ④								
			5		5	5				5		5	5			
	DN ₁	d ₁	k	k ₁	р	w	Z	DN ₁	d ₁	k	k ₁	р	w	Z		
AEB4H 12-IE	32	18	775	100	613	39	4	1 ¹ / ₄	19	797	98,4	635	61	4		
AEB4H 25-IE	40	18	938	110	753	47	4	1 ¹ / ₂	22,2	960	114,3	775	69	4		
AEB4H 50-IE	50	18	1164	125	944	48	4	2	19	1185,5	127	965,5	69,5	8		

Series		Connection dimensions/Flange dimensions for suction branch														
Size		Flanges I	DIN 2501, 5	PN 16 ©	1	FI	anges AN	SI B16.1, (5	Class 125 (4) 	Flanges ANSI B16.5, Class 150 ④					
	DN ₂	d ₁	g	k ₁	z	DN ₂	d ₁	g	k ₁	z	DN ₂	d ₁	g	k ₁	z	
AEB4H 12-IE	40	18	175	110	4	1 ¹ / ₂	15,9	172	98,4	4	1 ¹ / ₂	15,9	175	98,4	4	
AEB4H 25-IE	50	18	190	125	4	2	19	186	120,6	4	2	19	190	120,6	4	
AEB4H 50-IE	65	18	230	145	4	2 ¹ / ₂	19	229	139,7	4	2 ¹ / ₂	19	234	139,7	4	

Stator dismantling dimension
 Sealing surface DIN 2526 shape C
 Sealing surface: stock finish

for rubber-coating + 3 mm
 up to DN 100 sealing surface DIN 2526 shape C, machined as shape A from DN 125 sealing surface DIN 2526 shape A

Possible branch positions as seem from the drive

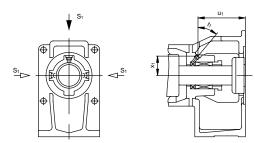




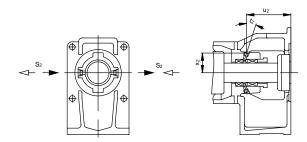
Se

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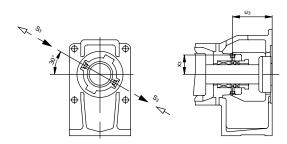
Arrangement of auxiliary connections for shaft seals



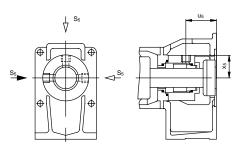
P02 with flushing rod



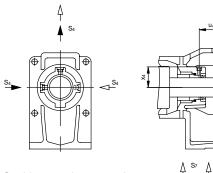
P03 with internal sealing chamber ring



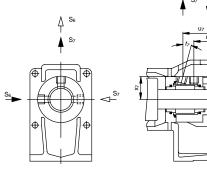
P04 with external sealing chamber ring



GOS/GOT with flushing connection



GOQ with quench connection



46,5

55

69,5

71,5

79

95

34

38

41,5

Rp 1/4

Rp 1/4

Rp 1/4

GOD with sealing connection

Series				Conne	ection din	nensions fo	or auxiliary co	nnections for	shaft seals			
Size		PO2 with flushing ring						ernal sealing er ring	P04	with external chamber ring		
	S ₁ ⑦	u ₁	x ₁	t ₁		S ₂ ⑦	u ₂	x ₂	t ₂	S ₃ 7	U ₃	X3
AEB4H 12-IE	M 8 x 1	84	28	42	° I	M 8 x 1	77	30	20 °	M 8 x 1	69	30,5
AEB4H 25-IE	M 8 x 1	93	31,	5 40	° I	M 8 x 1	87	32	20 °	M 8 x 1	78,5	33,5
AEB4H 50-IE	Rp ¹ / ₈	104,5	38	42	D	Rp ¹ / ₈	97	40	17°	Rp ¹ / ₈	85	39,5
Series				Conne	ection din	nensions fo	or auxiliary co	nnections for	shaft seals			
lize		S/GOT with ng connectio	n		GOQ with th connect	ction		ealing connec	ng connection			
	S ₅ ⑦				u ₄	x4	S ₆ ⊘	S7 7	u ₆	u7	x ₆ x ₇	t ₇

AEB4H 12-IE 46,5 56 30,5 Rp 1/4 34 Rp 1/8 Rp 1/4 AEB4H 25-IE 63,5 30,5 Rp 1/4 55 38 Rp 1/8 Rp 1/4 AEB4H 50-IE Rp 1/4 69,5 41,5 Rp 1/8 74 33,5 Rp 1/4

⑦ Threaded connection DIN 3852, shape Z

Standard supply

Possible supply, for these purposes, the sealing housing must be turned in case of designs P02, G0S, G0T, G0Q, G0D.
 VM 851 GB/04.00 2001

33

36,5

40

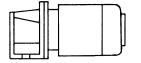
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15°

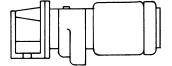
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Driving possibilities

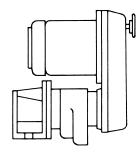




AEB4H-IE with electric motor



AEB4H-IE with gear motor



AEB4H-IE with infinitely variable gear





Range of eccentric screw pumps	Series	Number of stages	Maximu	Im output at $\Delta p = 0$ bar	Maximum del. pressure	Maximum viscosity						
		0	m³/h	l/min	bar	mPa∙s ُ						
	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						
	AEB.E-IE	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						
	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.NRG	1,2,4	30	500	20	1.000.000						
	TECFLOW	1	186	3100	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						
				G	D Special versions for high	ner pressures available						
Peristaltic range	Series		Maximu	ım output	Maximum del. pressure	Maximum viscosity						
			m³/h	l/min	bar	mPa∙s						
	ASL		2,4	40	4	100.000						
	ASH		60	1000	15	100.000						
Macerator range	Series	Maximum thro m ³ /h	ughput	Generated delivery hea m	d							
	AM S-1	80 at 3 % sol	ids	3	_							
	ABM S-1	80 at 3 % sol		3								
	AM I-1	160 at 3 % sol		_								
	ABM I-1	80 at 3 % sol		-								
Accessories				ectrical heaters, bridge bi								
	combustion en	gines, pneumatic	and hydrau		-							
	<u>Transmission components:</u> Couplings, V-belt transmissions, toothed belt transmissions, other types of transmission.											
	Base plates: Standard and special versions, wheeled trolleys, mounting flanges.											
	<u>Safety arrangements:</u> Bypass lines with safety or regulating valves, systems to guard against dry running (conductive, capacitive, thermal etc.).											
		•		pneumatic control arrange	ements. filter svste	ms. meterina						

equipment, seal liquid and circulating systems for shaft seals, valves, flanges, flexible pipes.

Subject to technical alterations.



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