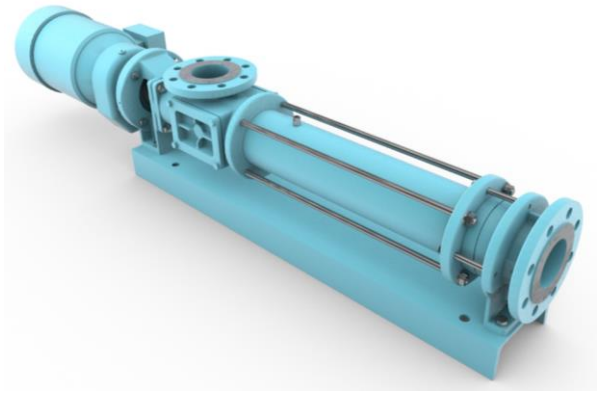
Progressing cavity pumps
OptiFix
SERIES AEB 1F
SERIES AEB 2E

Construction type MF in block-design



Main fields of use
Progressing cavity pump with a service-friendly design. The structural design permits service and replacement of the main components (rotor, stator, joint, mechanical seal) without removing the pump from the piping.

Suitable for pumping low- to high-viscosity liquids, neutral or aggressive liquids, undiluted or abrasive liquids, liquids containing gases, liquids prone to foaming, including liquids with fibrous or solid particles.

Primary fields of use include wastewater, water clarification, environmental engineering, the pulp and paper industry, soap and grease, plastics, ceramics, agriculture, and shipbuilding.

Function
One or two-stage, self-priming, rotating displacement pump. Pumping elements are the rotating screw (rotor) and the stationary stator. These two parts contact each other at two points in their cross-section. Viewed along the length of the pumping elements, these points form two sealing lines. As the rotor turns, sealed chambers are created. The contents of the chambers is moved continuously in the axial direction from the suction side to the discharge side of the pump. Despite rotation of the rotor, no turbulence results. The consistent chamber volumes eliminate crushing forces and ensure an extremely gentle, low-pulse pumping action.

Structural design
Pump with a very maintenance- and service-friendly design. Technicians can replace the rotor, stator, joint, stub shaft, and mechanical seal without removing the pump from the piping.

The pump and drive are flanged together via a lantern base to create a block unit.

Discharge casing, spacer unit, stator, and suction casing are held together with external casing connection screws. The specially designed discharge-side spacer unit makes it easy to switch out the rotor and stator without dismantling the discharge casing and suction casing.
The suction casings are designed for optimal flow and are constructed from gray castings with inspection openings on both sides. The stator is vulcanized into a pipe and is equipped on both ends with vulcanized external collars that provide reliable sealing with the suction casing and discharge side and protect the stator casing from corrosion.

The mechanical seal casing is part of the lantern base. The lantern base is screwed to the suction casing.

Drive torque is transferred over a stub shaft and the universal joint shaft to the rotor. Both ends of the universal joint shaft end in liquid-sealed encapsulated pin joints that are designed to be very simple and robust and absorb the rotor's eccentric movement without disturbances. The universal joint shaft is in two pieces, allowing separation of the rotor-side from the drive-side.

Shaft seal
The shaft is sealed with a non-cooled, maintenance-free single-acting mechanical seal.

Material pairing and configuration are adapted to the operating conditions.

Specifications
Please refer to the chart on page 3 or the separate individual charts for data on pump capacities, permissible speed ranges, and required drives.

				AEB1F	AEB2E
Capacity	Q	l/min	to	1600	1100
Pumped liquid temperature	t	°C ①	to	100	
Discharge pressure					
single-stage	Δ p	bar	to	6	-
two-stage	Δ p	bar	to	-	10
Outlet pressure	p_d	bar ③	to	16	
Achievable underpressure	p_s	bar ②	to	0,95	
Viscosity	η	mPa·s ②	to	190.000	
Permissible proportion of solids	vol	% ②	to	10	

The performance specifications are intended only to provide an overview of the product and its performance. Refer to the quotation and order confirmation for precise operational limits.

Maximum permissible grain sizes and fiber lengths

Size (single-stage)		1F403	1F553	1F703	1F1003	1F1603
Max. grain size	mm	5	6,8	6,8	9,5	9,5
Max. fiber length	mm	60	79	79	98	98

Size (two-stage)		2E200	2E380	2E750
Max. grain size	mm	5	6,8	9,5
Max. fiber length	mm	60	79	98

Pump speed must be reduced as the proportion of solids and the grain size increase.

① Depends on pumped liquid and selected elastomers.

② Depends on pump size/design type, speed, pumped liquid.

③ Depends on rotational direction, inlet pressure.

Bearing
The bearing of the drive/stub shaft is provided in the reinforced bearings of the gear motors, which simultaneously absorb any axial forces.

Since all drives are delivered only with reinforced bearings, the customer can confidently run up the respective pumps within the permissible operational limits

Drive
The drive can take the form of non-explosion-proof or explosion-proof drive motors, gear motors, or adjustable gears. See Page 8 for drive options. For specifications and dimensions, see the separate sales literature, sheet 19-00-0000-111-3.

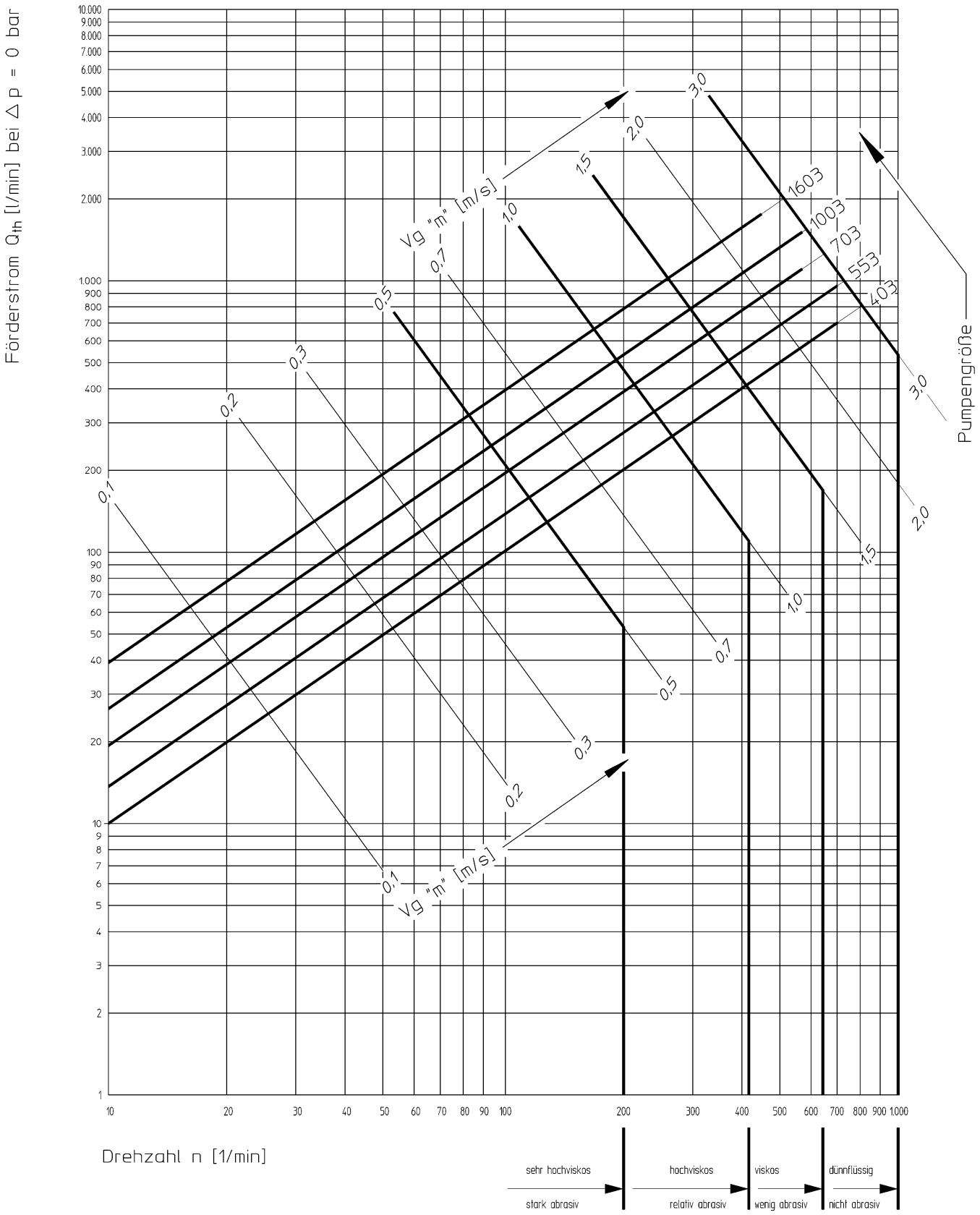
A major benefit is that each design size has consistent connection dimensions for all drive types. This makes it very easy to convert to a new drive type or size at a later time.

Installation
AEB-MF pumps can be installed horizontally only. Other installation types can damage the pump.

Exchangeability of parts
The components of all progressing cavity pumps are designed to be modular. As a result, a customer who employs several pumps of various series and designs will be able to maintain a simple and cost-effective stock of reserve parts.

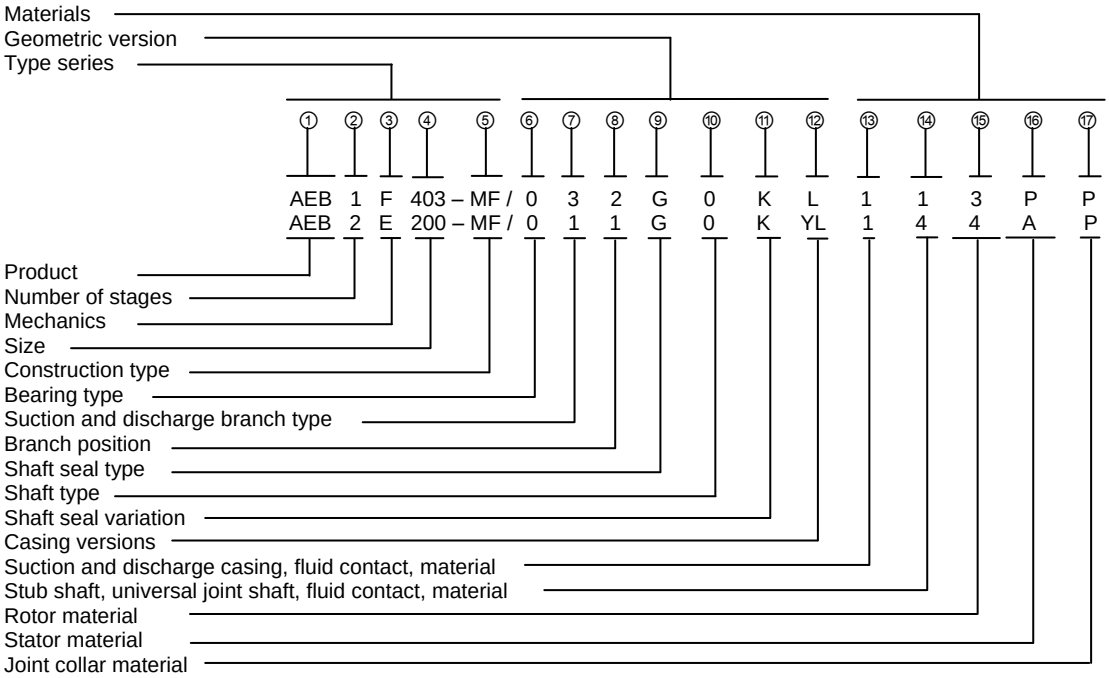
Performance graph

Used for rough selection of the pump size and rotational speed for a particular desired flow rate and the type of liquid being pumped. V_g "m" = current average slip speed of the rotor in the stator.



Sizes of the AEB1F series. Refer to the separate individual characteristic curves for specifications on the performance range not covered by the AEB1F series and for more detailed performance data.

Type key

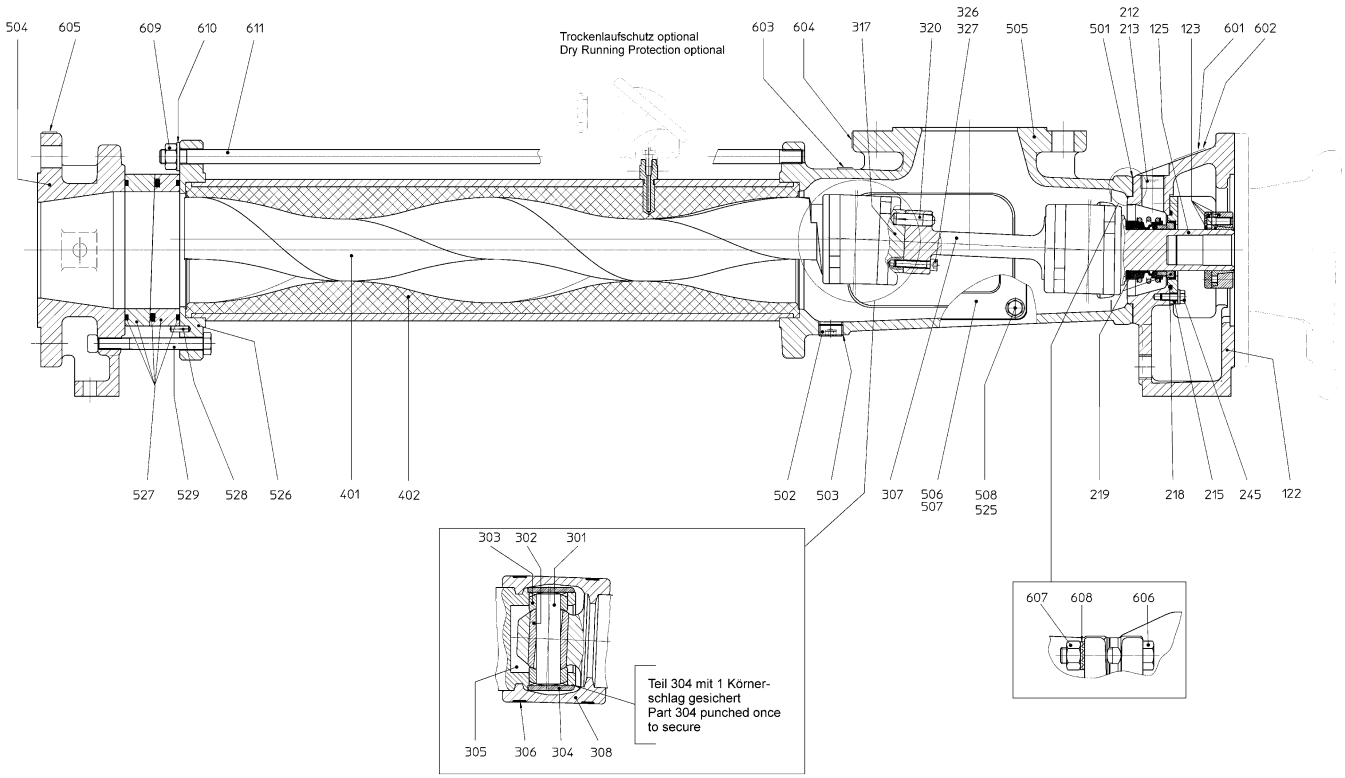


Explanations for type key:

Position in type key	Designation	Design
①	Product	ALLWEILER progressing cavity pump
②	Number of stages	1 = single-stage up to discharge pressure Δp = 6 bar (F mechanics only) 2 = two-stage up to discharge pressure Δp 10 bar (E mechanics only)
③	Mechanics	F = sized for discharge pressure Δp = 6 bar E = sized for discharge pressure Δp = 10 bar
④	Size	Available sizes 1F: 403, 553, 703, 1003, 1603 Available sizes 2E: 200, 380, 750 The figures indicate theoretical capacity in l/min. at n = 400 1/min and Δp = 0 bar.
⑤	Construction type	MF = Maintenance Friendly
⑥	Bearing version	0 = external bearing in drive unit
⑦	Suction and discharge branch version	1 = DIN-flange 3 = ANSI-flange According to brochure, pages 7 and 8
⑧	Branch position	1, 2, 3, 4 – See diagram on page 7 for arrangement
⑨	Shaft seal type	G = Mechanical seal
⑩	Shaft version	0 = Shaft without shaft sleeve
⑪	Shaft seal version	K = single mech. seal, DIN EN 12756, K version, U shape; Materials pairing SIC/SIC; springs: 1.4571/1.4404; secondary seals; Viton
		for pump sizes: 1F: 403 553 703 1003 1603; 2E: 200 - 380 - 750
		Shaft diameter at location of shaft seal: 35 43 43 53 53
⑫	Variations	Stators with non-uniform elastomer wall thickness (all qualities) N, M, H, T: Rotor with temp. tolerance that depends on liquid temperature
		Y = Hard-chromed ductile rotor L = Stator for thermal dry-running protection (ATLS-T1V ready)

⑬	Suction and discharge casing in contact with liquid, material	1 = EN-GJL-250		
⑭	Stub shaft, universal joint shaft, in contact with liquid, material	1 = 1.4021/1.1191 4 = 1.4571/1.4404/1.4462		
⑮	Rotor material	3 = 1.2436/1.2379 4 = 1.4571/1.4404		
⑯	Stator material	PA = Perbunan HP = Perbunan/hydriert	P = Perbunan N E = EPDM	A = ALLDUR Y = Hypalon
⑰	Joint sleeve material	P = Perbunan N B = Butylkautschuk	Y = Hypalon	

Sectional drawing and directory of individual parts



Bearing **0:** External bearing in drive unit
Shaft seal **G0K:** permissible pressure at the shaft seal p = -0.5 to 12 bar

Part No.	Designation
122	lantern base
123	clamping set
125	stub shaft
212	screw plug
213	joint tape
215	mechanical seal cover
218	O-ring
219	mechanical seal
245	hexagon screw

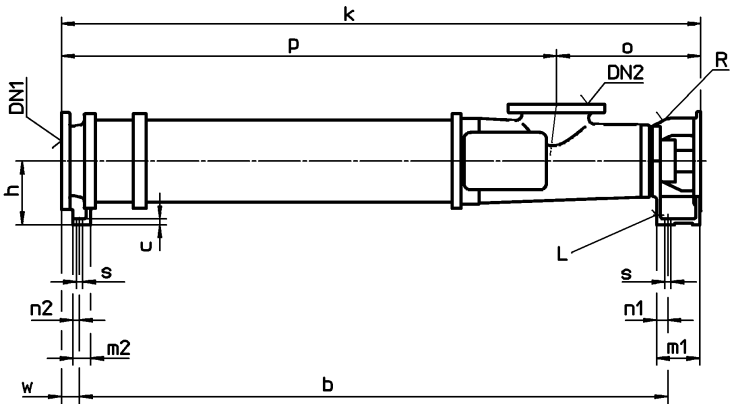
Part No.	Designation
301	joint pin
302	joint bush
303	bush for joint pin
304	joint sleeve
305	joint oil
306	joint clamps
307	joint shaft
308	joint collar
317	rotor-side joint head
320	joint centering pin

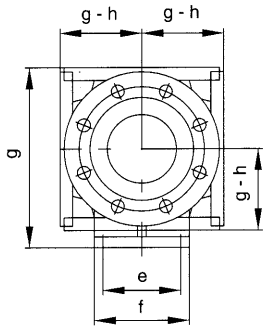
Part No.	Designation
326	cylinder head screw
327	protective cap
401	rotor
402	stator
501	seal for suction casing
502	screw plug
503	joint tape
504	discharge casing

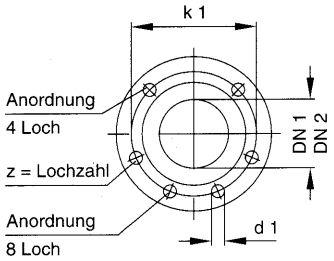
Part No.	Designation
505	suction casing
506	suction casing cover
507	seal
508	hexagon screw
525	washer
526	stator receiver
527	spacer unit, complete
528	grooved dowel pin
529	hexagon screw
601	nameplate
602	round head grooved pin
603	information plate “Start-up“
604	information plate “Suction“
605	information plate “Discharge“

Part No.	Designation
606	hexagon screw
607	hexagon nut
608	serrated washer
609	hexagon nut
610	washer
611	clamping set

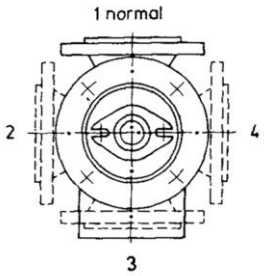
Pump dimensions, auxiliary connections, possible connection positions, weights
Suction casing with flange connection







Possible branch positions
viewed from drive



Dimensions in mm, standard widths of the ANSI flanges (DN) in inches.
Subject to change.

Direction of rotation: normally left when viewed from drive end, whereby DN_1 = discharge branch, DN_2 = suction branch, change of direction possible, then DN_1 = suction branch, DN_2 = discharge branch

Series Size	Pump dimensions b	c	e	f	h	m_1	m_2	n_1	n_2	o	s	L	R		Max. mass kg
AEB1F 0403-MF	927	13	100	125	125	76	38	25	13	227	11,5	Rp ½	Rp ½		69
AEB1F 0553-MF	971	15	114	140	140	84	40	26	14	274	14	Rp ¾	Rp ½		96
AEB1F 0703-MF	1123	15	114	140	140	84	40	26	14	274	14	Rp ¾	Rp ½		109
AEB1F 1003-MF	1124,5	16	132	168	160	101	50	31	19	331	18	Rp ¾	Rp ½		155
AEB1F 1603-MF	1412,5	16	132	168	160	101	50	31	19	331	18	Rp ¾	Rp ½		183

Series Size	Flanges DIN EN 1092, PN 16 DN_1	DN_2	k	p	w	g	Flanges ANSI B16.1, Class 125 ① DN_1	DN_2	k	p	w	g
AEB1F 0403-MF	80	80	1026	799	45	230	3	3	1024	797	43	228
AEB1F 0553-MF	100	100	1076	802	43,5	260	4	4	1078	804	45,5	262
AEB1F 0703-MF	100	100	1228	954	43,5	260	4	4	1230	956	45,5	262
AEB1F 1003-MF	125	125	1243	912	44	300	5	5	1243	912	44	300
AEB1F 1603-MF	125	125	1531	1200	44	300	5	5	1531	1200	44	300

①sealing surface: stock finish

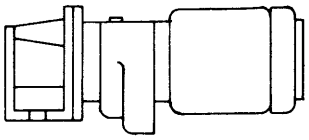
Series Size	Pump dimensions														Max. mass kg
	b	c	e	f	h	m_1	m_2	n_1	n_2	o	s	L	R		
AEB2E 0200-MF	927	13	100	125	125	76	38	25	13	227	11,5	Rp ½	Rp ½		69
AEB2E 0380-MF	1123	15	114	140	140	84	40	26	14	274	14	Rp ¾	Rp ½		109
AEB2E 0750-MF	1412,5	16	132	168	160	101	50	31	19	331	18	Rp ¾	Rp ½		183

Series Size	Flanges DIN EN 1092, PN 16						Flanges ANSI B16.1, Class 125 ①					
	DN_1	DN_2	k	p	w	g	DN_1	DN_2	k	p	w	g
AEB2E 0200-MF	80	80	1026	799	45	230	3	3	1024	797	43	228
AEB2E 0380-MF	100	100	1228	954	43,5	260	4	4	1230	956	45,5	262
AEB2E 0750-MF	125	125	1531	1200	44	300	5	5	1531	1200	44	300

①sealing surface: stock finish

Flange dimensions							
DIN EN 1092, PN 16				ANSI B16.1, Class 125 ①			
DN_1/DN_2	k_1	d_1	z	DN_1/DN_2	k_1	d_1	z
80	160	18	8	3	152,4	19	4
100	180	18	8	4	190,5	19	8
125	210	18	8	5	215,9	22,2	8

Drive options



AEB-MF with gear motor

Optional: gear motor and frequency converter
IEC gearbox with and without motor

Progressing cavity pump product line

Series	Number of stages	max. flow rate at Δp = 0 bar m^3/h	l/min	max. Discharge pressure	max. Viscosity mPa·s
AE1F	1	228	3800	6	300.000
AEB1F	1	228	3800	6	300.000
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
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
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

①available in special version for higher pressure.

Progressing cavity Peristaltic pumps

Series	max. flow rate m^3/h	l/min	max. Discharge pressure bar	max. viscosity mPa·s
ASL	2,4	40	4	100.000
ASH	60	1000	15	100.000

Progressing cavity Macerators

Series	max. flow volume m^3/h	Static pressure head m
AM … S-1	80 at 3 % dry substance	3
ABM S-1	80 at 3 % dry substance	3
AM … I-1	160 at 3 % dry substance	-
ABM I-1	80 at 3 % dry substance	-

Progressing cavity Accessories

Pump accessories: Stator adjustment devices, electric heating units, bridge breakers.
Drives: Electric motors, gear motors, variable gearbox, reduction gearbox, combustion motors, pneumatic and hydraulic drives.
Power-transmitting parts: Couplings, V-belts, toothed belt drives, other transmission devices.
Base plates: Standard and special versions, mobility equipment, assembly flanges
Safety equipment: Bypass lines with safety or control valve, dry-running protection systems (conductive, capacitative, thermal, etc.)
Pump skid accessories: Electric, hydraulic, or pneumatic control devices; collector systems, dosing equipment, barrier fluid and circulation systems for shaft seals, fittings, flanges, hoses.

Subject to technical changes.

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