

# Progressing Cavity Pumps

## SERIES ANBP



### Use

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.

### Main fields of application

Wastewater and clarification plants, chemical and petrochemical industries, paper and cellulose, soap and grease, paint and coatings, food and beverage, plastics, ceramics, agriculture, sugar industry, shipbuilding, etc.

### Function

Self-priming, rotating displacement pump. The pumping elements are the rotor and the fixed 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 content of the chambers is moved continuously in the axial direction from the suction side to the pressure 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

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

Discharge casing, stator, suction casing, and lantern base are held together by means of external casing connection screws (clamp bolts).

The suction casings of all sizes are provided with large suction cross-sections. The stator is vulcanized into a pipe and is equipped on both ends with external collars that provide reliable sealing with the suction and discharge casings and protect the stator casing from corrosion.

The exchangeable stuffing box casing (can be retrofitted to another seal type) is located between the lantern base and suction casing.

Drive torque is transferred over a stub shaft and a 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.

### Shaft seal

Uncooled stuffing box or uncooled, maintenance-free, unbalanced, single-acting mechanical seal. Installation spaces for the mechanical seals according to DIN EN 12756.

Material pairing and construction are adapted to the respective operating conditions.

See pages 3, 4, and 5 for more information

### Bearing

The bearing of the drive/plug-in shaft is provided in the reinforced bearings of the electric motors, gear motors or variable gear, 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.**

### Exchangeability of parts

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

### Drive

The drive can take the form of non-explosion-proof or explosion-proof three-phase motors, gear motors, or variable gears. See Page 7 for drive options. Refer to sales documentation for technical data and dimensions. Sheet 19-00-0000-040-3.

**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

Depending on the shaft seal, ANBP pumps can be installed horizontally or vertically. When installed vertically, a "motor down" arrangement is not permitted.

### Technical data

Refer to the performance graph on Page 3 or the separate individual curves for data on pump capacities, permissible speed ranges, and required drive output.

Capacity	Q	l/min	up to	42
Liquid temperature	t <sup>①</sup>	°C	up to	100
Two-stage discharge pressure	Δp	bar	up to	12
Outlet pressure	p <sub>d</sub> <sup>②</sup>	bar	up to	16
Achievable underpressure	p <sub>s</sub> <sup>③</sup>	bar	up to	0,9
Viscosity	η <sup>③</sup>	mPas	up to	20.000
Permissible proportion of solids	Vol	% <sup>③</sup>	up to	60

① depends on pumped liquid and selected elastomers

② depends on rotational direction and inlet pressure.

③ depends on pump size/design type, speed, pumped liquid

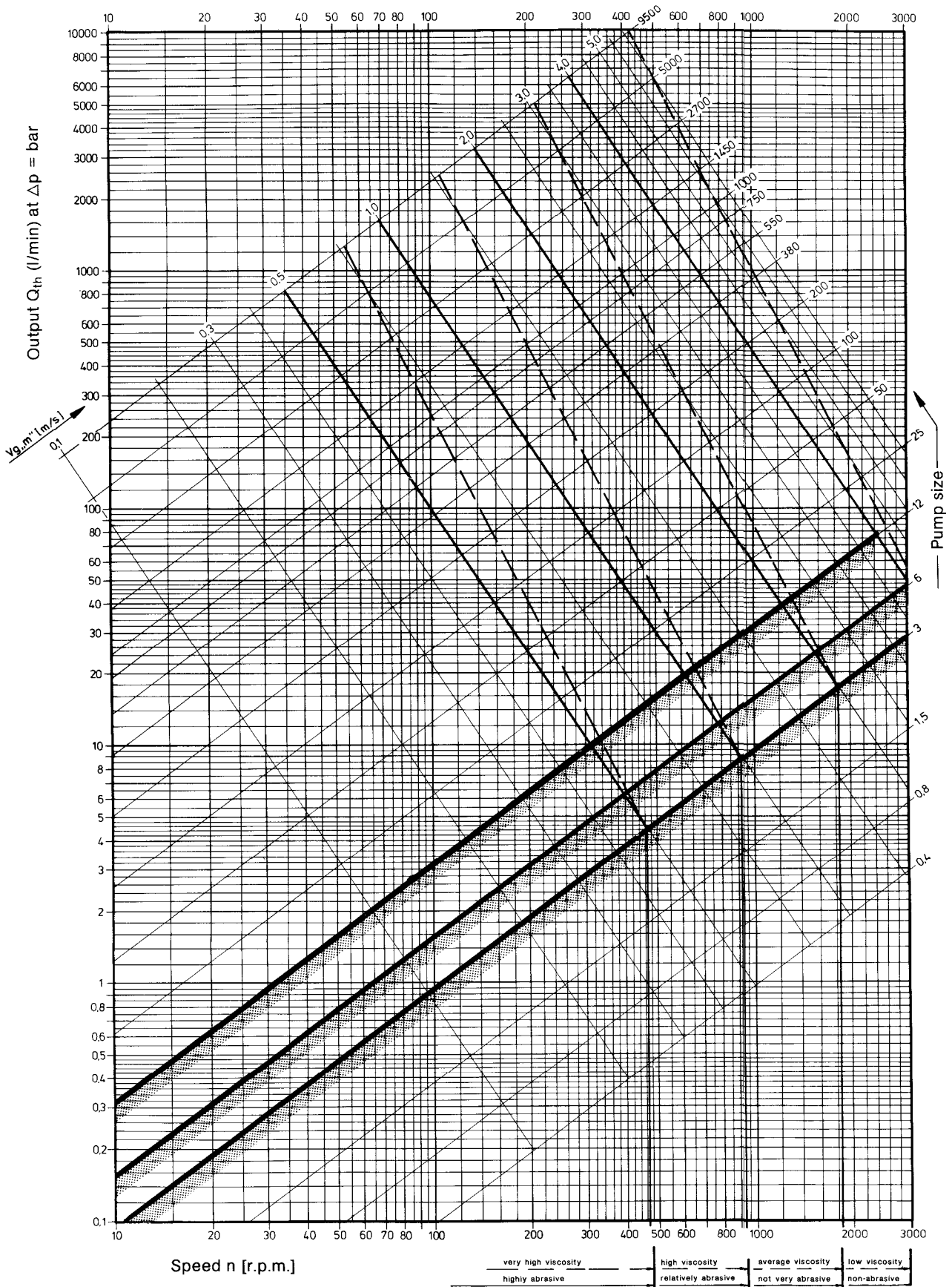
The provided performance specifications are meant only as a product/performance overview. Refer to the quotation and order confirmation for precise operational limits.

Maximum permissible grain sizes and fibre lengths:

Size	3	6	12
Max. grain size in mm	1	1,5	2
Max. fiber length in mm	35	35	35

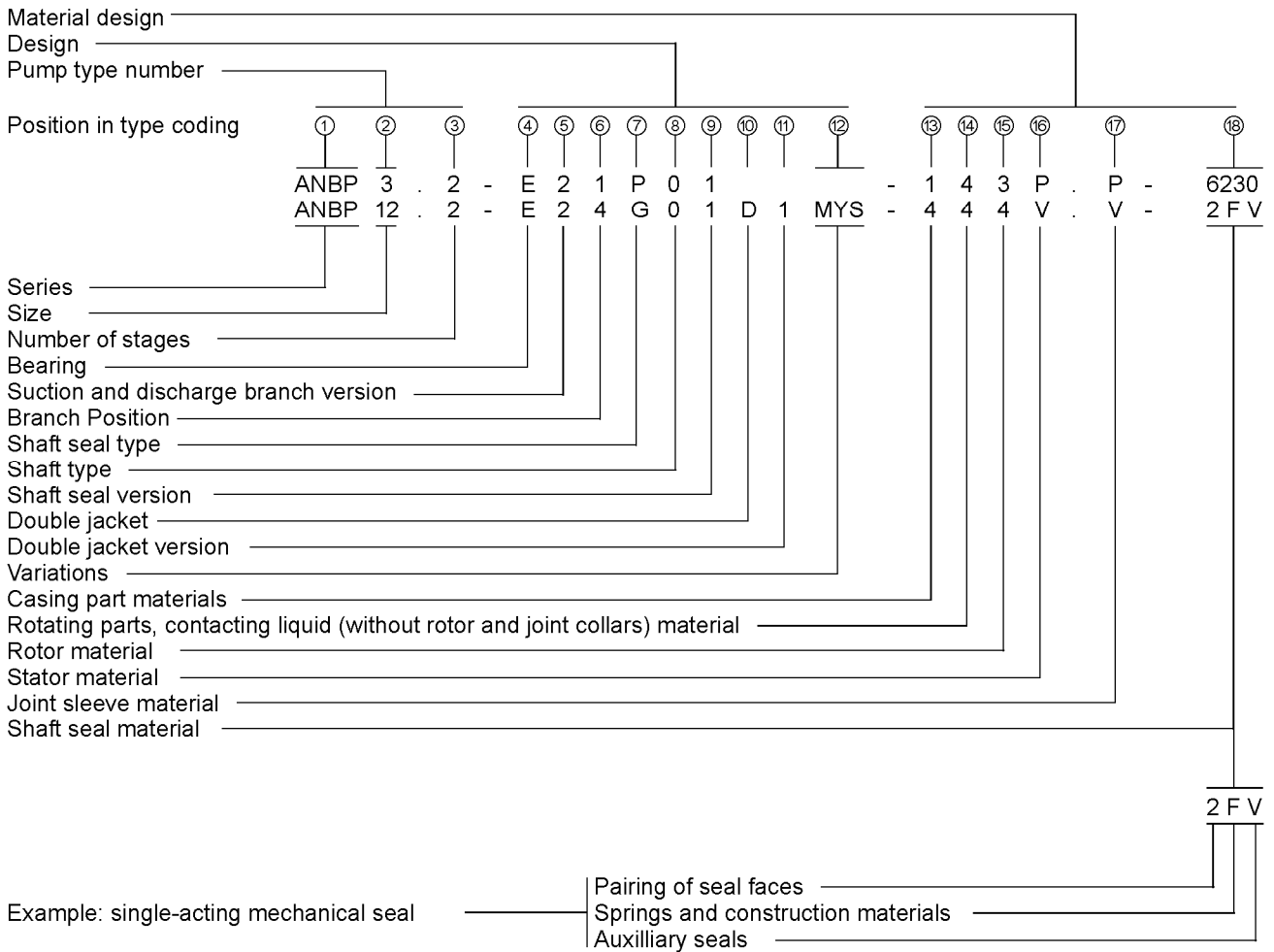
Pump speed must be reduced as the proportion of solids and the grain size increase.

Performance graph for rough selection of pump size and speed depending on desired capacity and the type of liquid.  
vg "m" = existing average sliding speed of the rotor in the stator.



Sizes in ANBP series. Refer to the reverse side of this technical documentation or the technical documentation of the other series for data on the performance range not covered by ANBP. See individual curves for precise performance data.

**Type key**

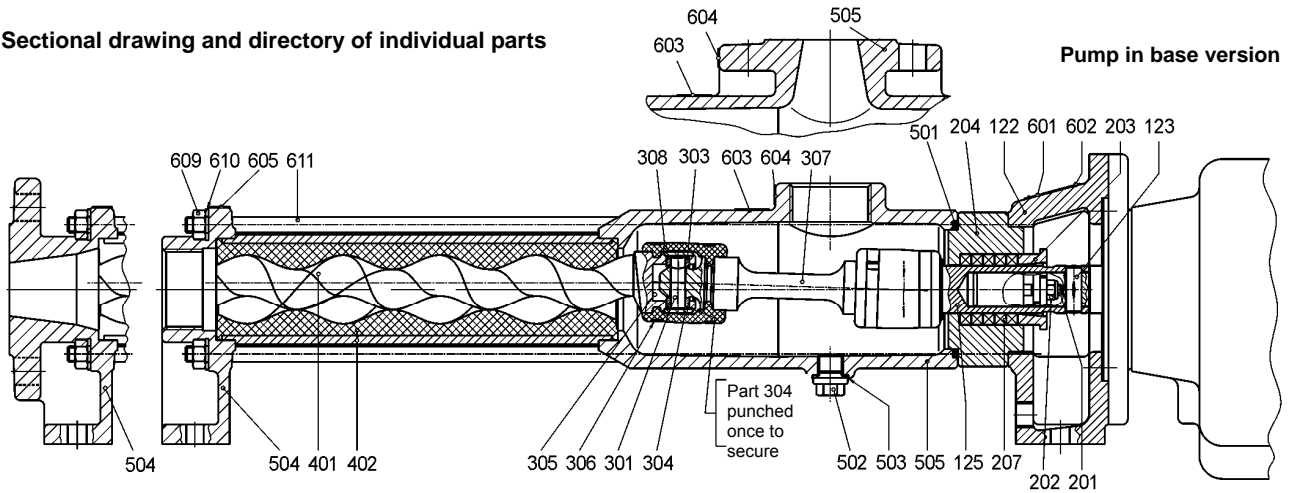


**Explanations for the type key:**

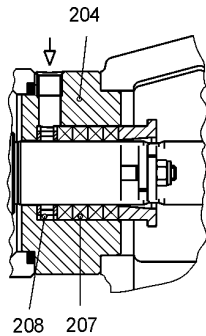
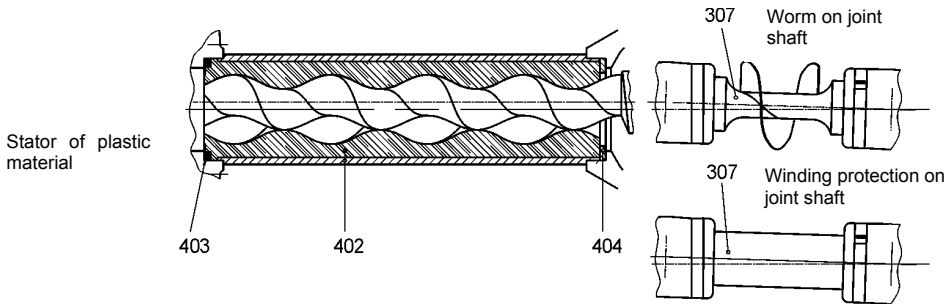
Position in type key	Designation	Version
①	Series	Block version of ALLWEILER progressing cavity pump
②	Size	Possible sizes: 3, 6, 12 The figures indicate the theoretical capacity in l/min. at n = 400 1/min and Δp = 0 bar.
③	Number of stages	2 = two-stage up to 12 bar
④	Bearing	E = external bearing in drive unit
⑤	Suction and discharge branch version	1 = DIN flange (available only with casing material EN – GJL – 250) 2 = thread connections acc. to dimension sheet p. 6 X = special suction and/or pressure branch
⑥	Branch position	1, 2, 3, 4 - See diagram on page 7 for arrangement
⑦	Shaft seal type	P = Stuffing box or other non-mechanical shaft seal G = Mechanical shaft seal
⑧	Shaft type	0 = Shaft without shaft sleeve
⑨	Shaft seal version	P.1= Stuffing box in normal version (without seal chamber ring/without flush ring) P.2= Stuffing box with flushing ring P.3= Stuffing box with inner-lying seal chamber ring P.4= Stuffing box with outer-lying seal chamber ring P.X= Non-mechanical shaft seal in a special version



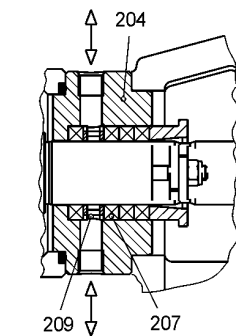
Sectional drawing and directory of individual parts



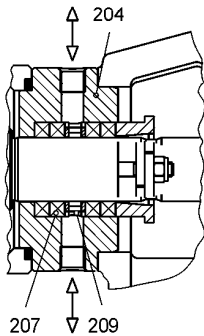
Bearings = **E** External (reinforced bearings in drive unit)  
 Shaft seal: **P01** Stuffing box of standard type (no lantern ring/no flushing ring).  
 Particularly long packing allows pump to be used in a wide variety of applications.  
 Permitted pressure at shaft seal  $p = -0.7$  to 3.0 bar



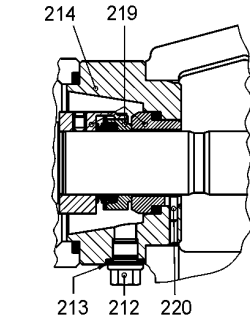
**P02** Stuffing box with flushing ring.  
 Suitable for highly abrasive pumped liquids with external flushing.  
 $p = -0.7$  to 8 bar



**P03** Stuffing box with internal lantern ring.  
 Suitable for uncontaminated pumped liquids with internal liquid sealing, or for abrasive pumped liquids with external liquid sealing.  
 $p = -0.8$  to 6 bar



**P04** Stuffing box with external lantern ring  
 For use where external sealing liquid incompatible with pumped liquid or where the ingress of air is to be prevented  
 $p = -0.9$  to 4.0 bar



**G00 to G03** mechanical seal, single acting non-balanced  
 can be used for pressures of  $p = -0.5$  to 10 bar  
 consult manufacturer

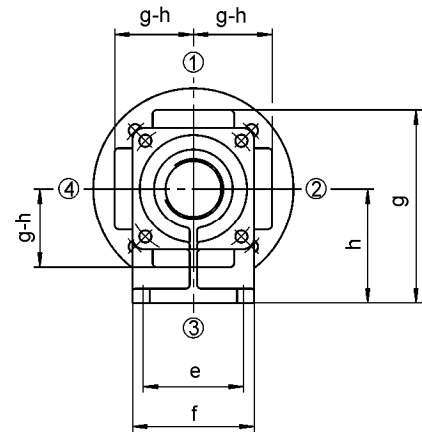
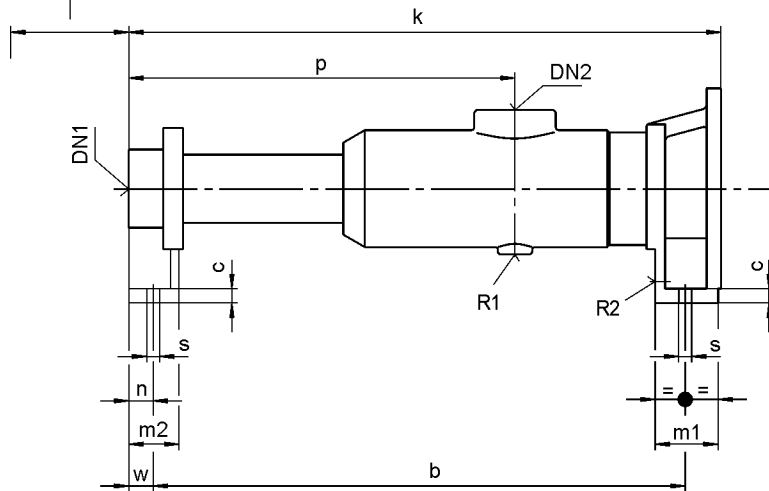
Part No.	Part name
122	Lantern base
123	Retainer pin
125	Stub shaft
141	Lubrication paste
201	Stud bolt
202	Self-locking nut
203	Gland
204	Stuffing box casing
207	Gland packing
208	Flushing ring
209	Seal chamber ring
212	Screw plug
213	Seal ring
214	Mechanical seal housing
219	Mechanical seal
220	Locking pin
301	Joint pin
303	Bush for joint pin
304	Joint sleeve
305	Joint oil
306	Joint clamps
307	Universal joint shaft
308	Joint collar
401	Rotor
402	Stator
403	Pressure-side stator seal
404	Suction-side stator seal
501	Suction casing O-ring
502	Screw plug
503	Seal ring
504	Discharge casing
505	Suction casing
601	Nameplate
602	Round head grooved pin
603	Information plate "Start-up"
604 ①	Information plate "Suction"
605 ①	Information plate "Discharge"
609	Hexagon nut
610	Washer
611	Clamp bolt

① With normal rotational direction only (left when viewed from drive end) If direction changed, info plates are exchanged in accordance with branch change.

**Pump dimensions, auxiliary connections, weights**

q = space for disassembly

① ... ④ = Branch position DN2



Dimensions for drives,  
Sheet 19-00-0000-040-3

Type	Female threads DIN EN 10226-1											NPT – female threads: USAS B2.1-1968						M <sup>1)</sup> kg								
	b	c	e	f	h	m1	m2	n	q	s	R2 <sup>3)</sup>	DN1	DN2	R1 <sup>2)</sup>	g	k	p		w	DN1	DN2	R1	g	k	p	w
ANBP 3.2	372											Rp1		G1/4	414	270		17	1-11 ½ NPT		¼-18 NPT	135	414	270		11
ANBP 6.2	412	10	70	85	80	46	35	17		9	Rp1/4			G1/4	454	310		17			¼-18 NPT	135	454	310		11.3
ANBP 12.2	448													Rp1 1/4	490	346			1 1/4-11 ½ NPT				490	346		11.6

<sup>1)</sup> maximum mass: kg

<sup>2)</sup> DIN EN ISO 228-1

<sup>3)</sup> DIN EN ISO 10226-1

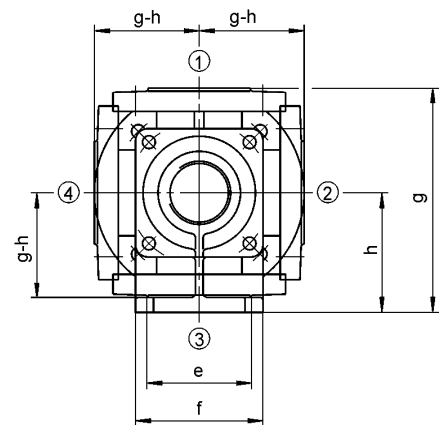
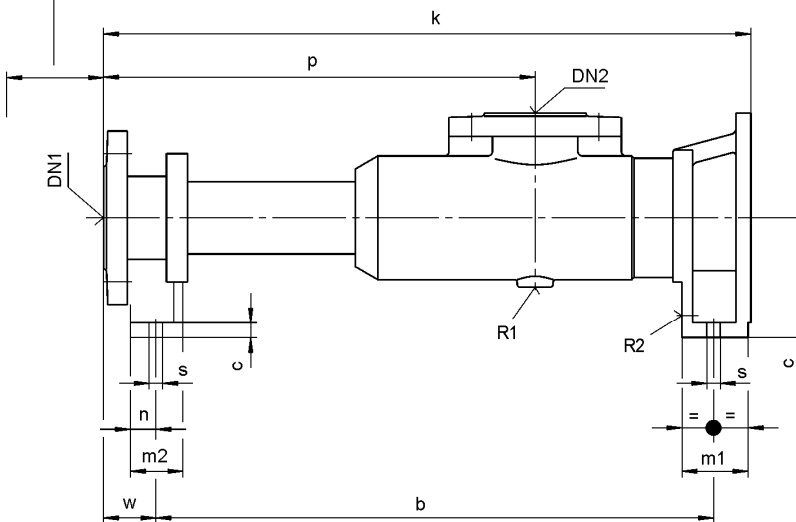
Dimensions in mm. Nominal dia. of suction, discharge, and aux. connections in inch.

Direction of rotation: normally left when viewed from drive end, hereby:

DN1 = discharge branch, DN2 = suction branch. Dir. of rotation may be changed, then DN1 = suction branch, DN2 = discharge branch.

q = space for disassembly

① ... ④ = Branch position DN2



Dimensions for drives,  
Sheet 19-00-0000-040-3

Type	DIN EN 1092-2											M <sup>1)</sup> kg							
	b	c	e	f	h	m1	m2	n	q	s	R2 <sup>3)</sup>		R1 <sup>2)</sup>	DN1	k <sup>4)</sup>	p <sup>4)</sup>	w <sup>4)</sup>	DN2	g <sup>4)</sup>
ANBP 3.2	372													432	288				
ANBP 6.2	412	10	70	85	80	46	35	17	142	9	Rp1/4	G1/4	25	472	328	35	25	150	
ANBP 12.2	448								172					508	364				

<sup>1)</sup> maximum mass: kg

<sup>2)</sup> DIN EN ISO 228-1

<sup>3)</sup> DIN EN ISO 10226-1

<sup>4)</sup> when rubber-coated: +3mm

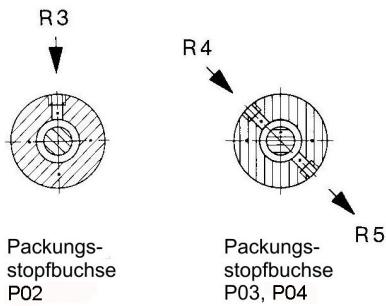
Dimensions in mm. Nominal dia. of auxiliary connections in inch

Direction of rotation: normally left when viewed from drive end, hereby:

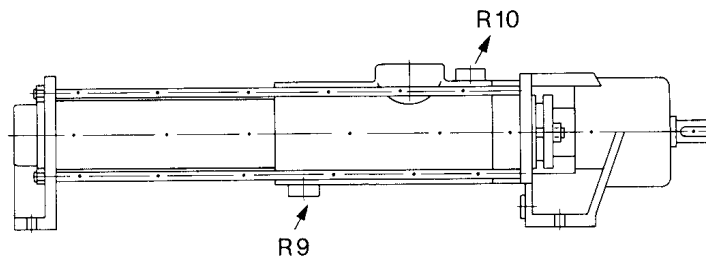
DN1 = discharge branch, DN2 = suction branch. Dir. of rotation may be changed, then DN1 = suction branch, DN2 = discharge branch.

**Arrangement of auxiliary connections on shaft seal**

(viewed from drive)



Auxiliary connections with double jacket for heating or cooling



**Connection diameters of auxiliary connections (all sizes)**

Flushing	Sealing	Heating/cooling
① R3	① R4/R5	② R9/R10
Rp 1/8	Rp 1/8	R 3/8

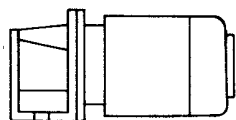
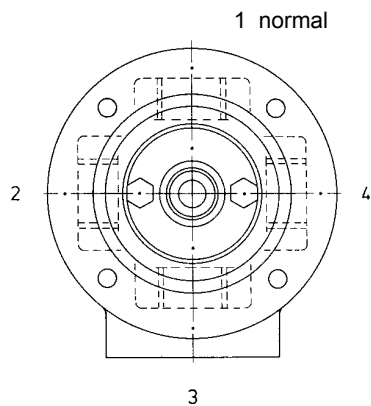
① Screw hole DIN 3852, form Z

② Pipe thread DIN EN 10226

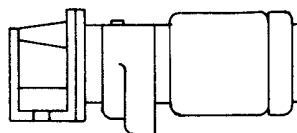
All auxiliary connections available upon request with NPT threads with same nominal diameter.

**Possible branch positions**

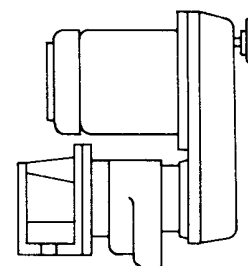
Viewed from drive



ANBP with electric motor



ANBP with gear motor



ANBP with infinitely adjustable gear box

**Progressing cavity pump product line**

Series	Number of stages	Max. capacity at $\Delta p = 0$ bar		Max. pump pressure bar	Max. viscosity mPa * s
		m <sup>3</sup> /h	l/min		
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	2,4	2,5	42	24	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 available in special version for higher pressure.

**Progressing cavity Peristaltic pumps**

Series	Max. flow rate		Max. pump pressure bar	Max. viscosity mPa * s
	m <sup>3</sup> /h	l/min		
ASL	2,4	40	4	100.000
ASH	60	1000	15	100.000

**Progressing cavity Macerators**

Series	Max. flow volume m <sup>3</sup> /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**

<u>Pump accessories:</u>	Stator adjustment devices, electric heating units, bridge breakers.
<u>Drives:</u>	Electric motors, gear motors, variable gearbox, reduction gearbox, combustion motors, pneumatic and hydraulic drives.
<u>Power transmitting parts:</u>	Couplings, V-belts, toothed belt drives, other transmission devices.
<u>Safety equipment:</u>	Bypass lines with safety or control valve, dry-running protection systems (conductive, capacitive, thermal etc.).
<u>Pump skid accessories:</u>	Electric, hydraulic or pneumatic control devices, separators, dosing equipment, barrier fluid and circular systems for shaft seals, fittings, flanges, hoses.

Subject to technical changes.