Shanley Pump & Equipment, Inc.

ADP/ADBP Series

Progressive Cavity Pumps

Applications

For pumping and metering liquids of low or high viscosity, neutral or corrosive liquids, uncontaminated 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 the chemical and petrochemical industries, the paper and cellulose industries, the soap and fats industry, the paint industry, the food and beverage industry, the plastics industry, the ceramics industry, the sugar industry, etc.

Operation

Rotary self-priming, positive-displacement pump, whose pumping elements are formed by a rotating eccentric screw (the rotor) and a fixed stator. In any cross-sectional plane, these two elements are in contact with each other at two points which form two sealing lines over the length of the pumping elements. The material contained in the sealed cavities which are formed as the rotor turns, is displaced axially and with complete continuity from the suction end to the delivery end of the pump. Despite the fact that the rotor rotates, no turbulence is produced. The constant volume of the enclosed cavities means that there are no pressurizing forces and thus guarantees a low-surge pumping action which is ideal for shear sensitive materials.

Design features

The suction casing, bearing, shaft seal and coupling rod are the same for all three sizes.

Depending on the size, the stator is either screwed directly into the suction casing or screwed indirectly via a reducing ring.

By using/omitting the reducing ring (between the suction casing and stator) and by changing the rotor and stator, the basic pump can easily be converted to a different size, while retaining the above-mentioned components/subassemblies of the basic pump.

The pumps are basically of a three-stage design. Extremely high metering accuracy is obtained, due to the long sealing line between the rotor and stator.

The suction casing with integrally mounting flange and integral seal housing is bolted directly onto the bearing housing.

The drive shaft is supported by bearings in the bearing housing. The torque from the drive unit is transmitted via the drive shaft and coupling rod to the rotor. The coupling rod terminates at both ends in encapsulated universal joints, which are of particularly simple, rugged design and are able to withstand the eccentric movement of the rotor without any difficulty.

Shaft seals

Shafts are sealed by uncooled stuffing boxes or by uncooled non-balanced single-acting mechanical seals which require no maintenance.

On request, lip seals can be used to seal the shaft (special design).

The type of seal and the material of construction are adapted to the particular operating conditions. For further details see page 3.

Bearings

Two deep groove ball bearings are utilized which are lubricated for life and absorb all radial and axial forces arising.

For further details, see pages 3 and 5.

Drivers

Drivers of any make can be used. The technical characteristics and dimensions can be found in the manufacturers' literature.

For possible types of variable speed drives, contact Shanley Pump.

The Shanley Metering System is shown on page 8.

Installation

ADP/ADBP pumps can be installed horizontally or vertically.

The pump and driver are connected together via a flexible coupling or close coupled (generally to a gear motor) and are mounted on a common baseplate. Dimensions of assemblies available on request.

Technical characteristics

The output, permitted speed ranges and drive power required can be taken from the selection curves on page 4 or from the selection program.

Permissible suction casing pressure	150 PSI/10 bar	①
Maximum delivery pressure	175 PSI/12 bar	
Suction obtainable	10 PSI/0.7 bar	②
Maximum permitted temperature for liquid pumped	300 °F/150°C	③
Maximum permissible viscosity	20,000 CP/95,000 SSU	④
Maximum permissible solid content	60% by volume	⑤

Maximum permitted grain sizes and fibre lengths:

Pump size	0.4	0.8	1.5
Max grain size in/mm	.002" / 0.6	.03" / 0.8	.035" / 0.9
Max fibre length in/mm	.98" / 25	.98" / 25	1.2" / 30

Increases in solid content and grain size mean that the speed of the pump must be reduced.

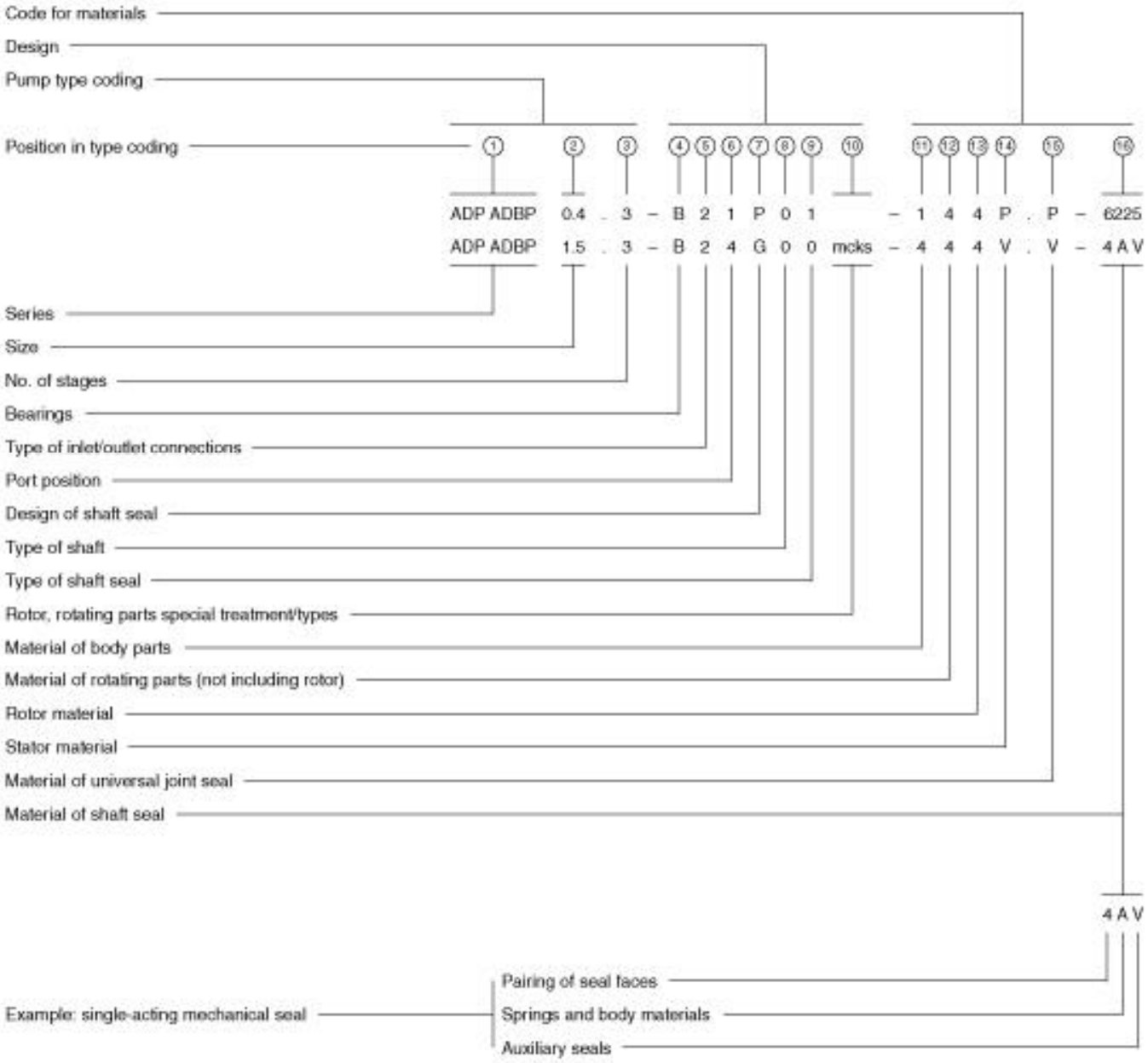
① Note also the permitted pressure for the shaft seal (see p. 6 and 7).

② Depending on operating conditions, direction of rotation and type of shaft seal.

③ Depending on the liquid being pumped, and the elastomers used.

④ Depending on the liquid being pumped, the speed and the pump size.

⑤ Depending on pump size and nature and size of solids.


Code for materials
Design
Pump type coding
Position in type coding
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯
ADP ADBP 0.4 . 3 – B 2 1 P 0 1 – 1 4 4 P . P – 6225
ADP ADBP 1.5 . 3 – B 2 4 G 0 0 mcks – 4 4 4 V . V – 4 A V
Series
Size
No. of stages
Bearings
Type of inlet/outlet connections
Port position
Design of shaft seal
Type of shaft
Type of shaft seal
Rotor, rotating parts special treatment/types
Material of body parts
Material of rotating parts (not including rotor)
Rotor material
Stator material
Material of universal joint seal
Material of shaft seal
4 A V
Example: single-acting mechanical seal
Pairing of seal faces
Springs and body materials
Auxiliary seals

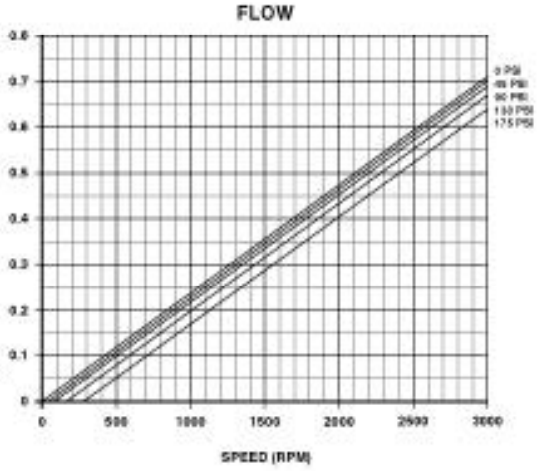
Explanatory notes on the type coding

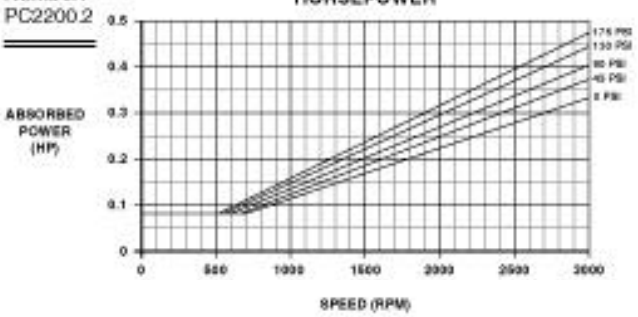
Position in type coding	Name	Explanation
①	Series	ALLWEILER Progressive Cavity pump
②	Size	Possible sizes: 0,4; 0,8; 1,5 The numbers indicate the theoretical output in l/min. at n = 400 r.p.m. and Δp = 0 bar
③	Number of stages	3 = Three-stage up to 12 bar/175 PSI
④	Bearings	B = Two deep groove ball bearings with grease retaining shields on both sides E = Close coupled to driver
⑤	Type of inlet-/ outlet connections	2 = Threaded connections acc. to dimensional drawing on page 5 X = NPT female threaded connections
⑥	Port position	1, 2, 3, 4 see drawings on Page 5
⑦	Design of shaft seal	P = Stuffing box or other non-mechanical shaft seal. G = Mechanical seal
⑧	Type of shaft	0 = Standard shaft
⑨	Type of shaft seal	P.01 = Standard stuffing box (no lantern ring / no flushing ring) P.0X = Special type of non-mechanical shaft seal (lip seals) G.00 = Mechanical seal, single acting, non-balanced, either direction of rotation, single spring elastomer O-rings G.0X = Special-type mechanical seal
⑩	Rotor/rotating parts special treatment/types	m = Rotor with moderate thermal expansion clearance h = Rotor with high thermal expansion clearance c = Rotor chrome plated k = Shaft ceramic coated s = Anger on coupling rod x = Other types
⑪	Material of body parts	1 = GG-20 (cast iron) 4 = 1.4410 (316 SS) x = Special material
⑫	Material of rotating parts (not including rotor)	4 = 1.4571 (316 Ti SS) X = Special material
⑬	Rotor material	4 = 1.4571 (316 Ti SS) X = Special material, e.g. metal, plastics, elastomers
⑭	Stator material	P = Buna N Y = Hypalon V = Viton X = Special material
⑮	Material of universal joint sleeve	P = Buna N V = Viton 0 = No joint seal fitted X = Special materials
⑯	Materials of shaft seal	Stuffing boxes: 6225 = PTFE-Silk packing 6230 = Gortex, graphite impregnated X = Other packing materials Mechanical seals:

Seal faces	Springs and body material	Auxiliary seals
1st figure	2nd figure	3rd figure
4 = Ceramic/Hard carbon 7 = Carbide/Carbide highly corrosion resistant X = Special materials	A = 1.4300 (316 SS) X = Special materials	P = Buna N E = EP rubber V = Viton X = Special materials

Size: 0.40

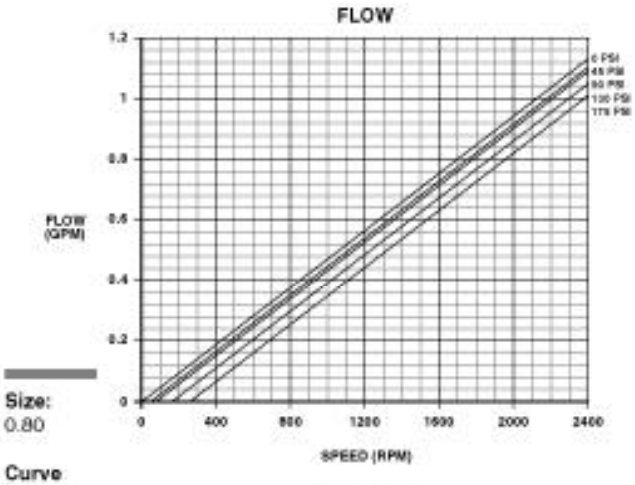
Curve Number: PC2200.2

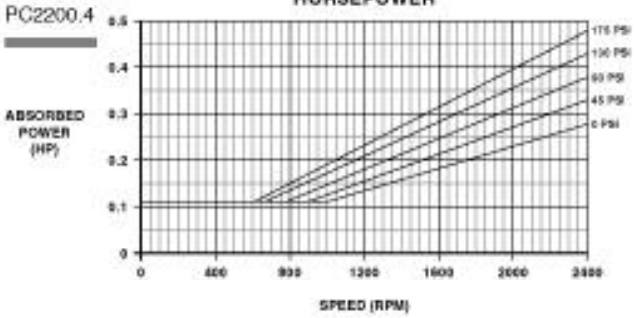




Size: 0.80

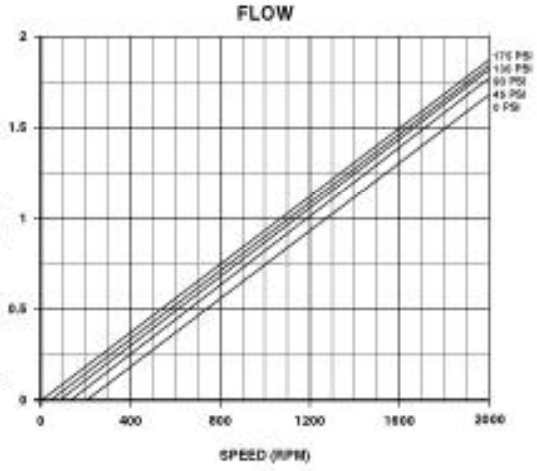
Curve Number: PC2200.4

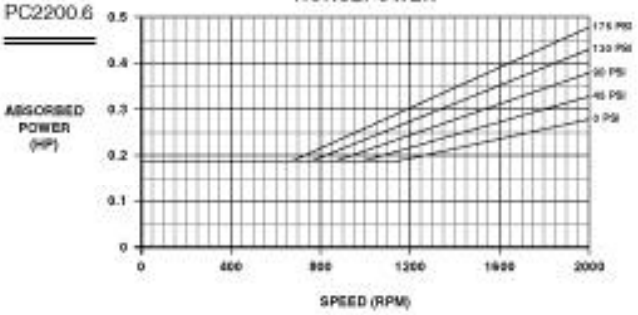




Size: 1.5

Curve Number: PC2200.6





Specifications Data

Size	Stage	Starting Torque	Maximum Pressure	Maximum RPM	Curve Number
0.40	3	0.4 to 0.9 Ft. lb.	175 PSI	2900	PC2200.2
0.80	3	1.3 to 2.6 Ft. lb.	175 PSI	2400	PC2200.4
1.5	3	1.7 to 3.4 Ft. lb.	175 PSI	2000	PC2200.6

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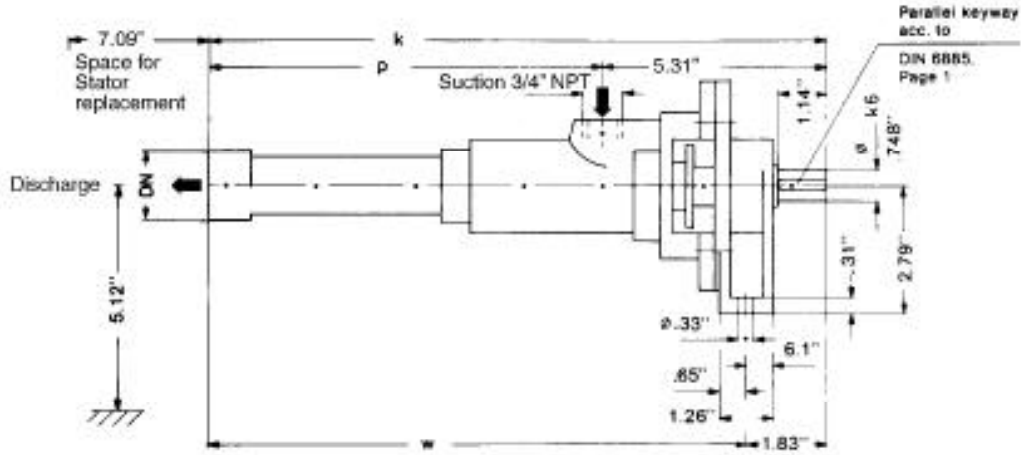
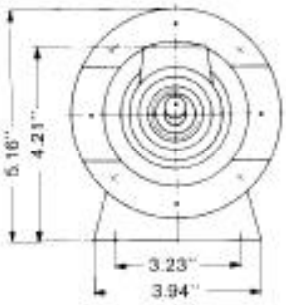
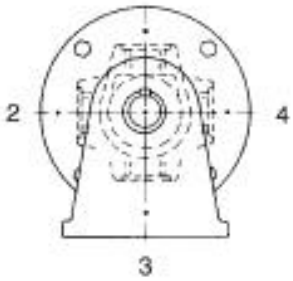
Direction of rotation:
Counterclockwise looking from the drive end is standard, in which case DN = delivery connection, NPT 3/4 = suction connection.
Opposite direction of rotation is possible in which case DN = suction connection, NPT 3/4 = delivery connection.

Dimensions in mm and inches. Made in metric.
Nominal diameters of suction and discharge connections in inches.
The manufacturer reserves the right to make technical modifications without prior notice.





Possible port positions looking from drive end
1 = standard

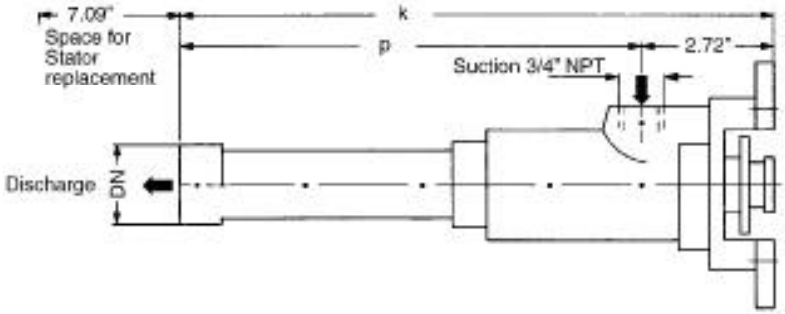


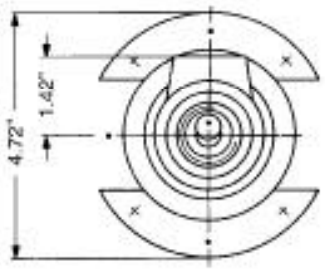
Pump Size	Disch. DN	Pump dimensions mm k inches	mm p inches	mm w inches	Weight Appr. kg	lbs.
0.4	NPT 1/2	343 / 13.50"	208 / 8.19"	296.5 / 11.67"	3.3	7.3
0.8	NPT 3/4	368 / 14.49"	233 / 9.17"	321.5 / 12.65"	3.5	7.7
1.5	NPT 1	399 / 15.70"	264 / 10.39"	352.5 / 13.88"	3.8	8.4

① Minimum space to mounting surface with stuffing box versions, when connection NPT 3/4 horizontally (branch position 2 or 4).

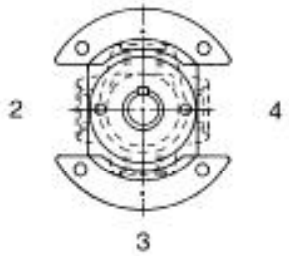
ADP

ADBP

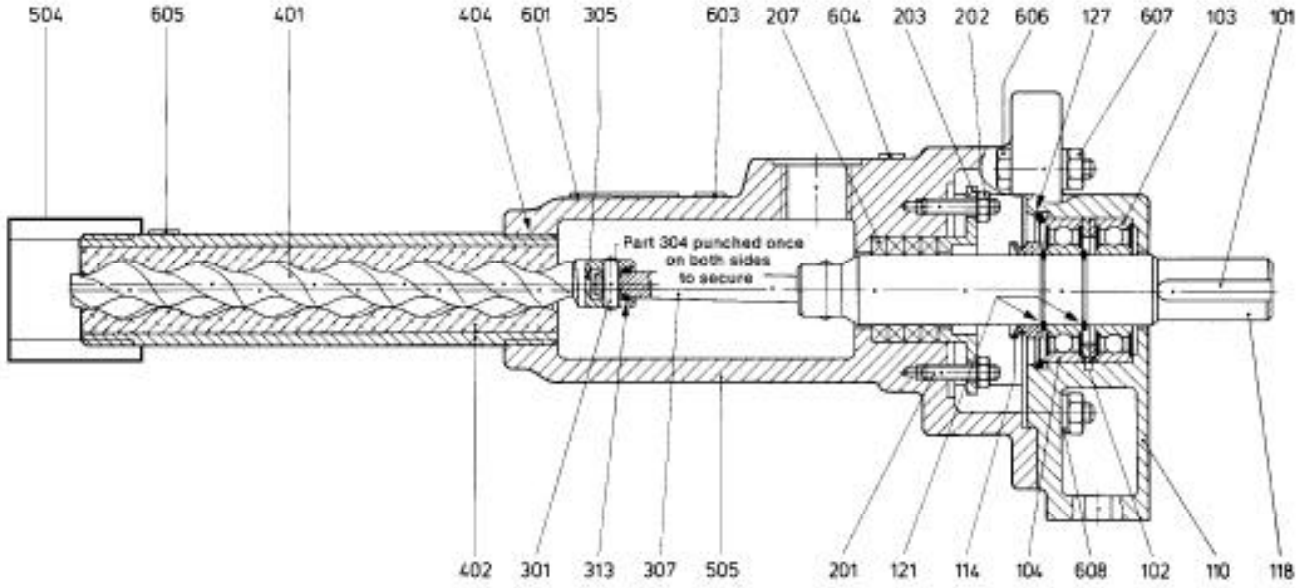




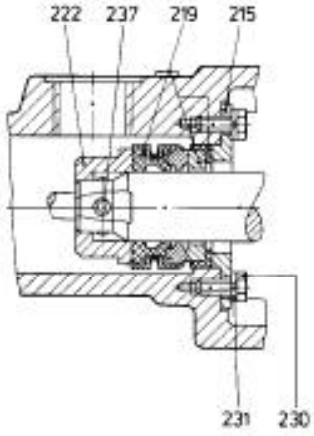
Possible port positions looking from drive end
1 = standard



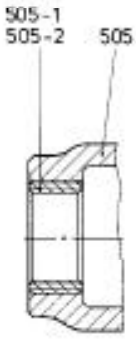
Pump Size	Disch. DN	Pump dimensions mm k inches	mm p inches	Weight Appr. kg	lbs.
0.4	NPT 1/2	259 / 10.20"	190 / 7.48"	2.4	5.3
0.8	NPT 3/4	283 / 11.14"	214 / 8.42"	2.8	6.2
1.5	NPT 1	311 / 12.24"	242 / 9.52"	2.9	6.4



Bearings: **B** (lubricated for life)
Shaft seal: **P 01** Stuffing box of standard type (no lantern ring/no flushing ring).
Particularly long life packing allows pump to be used in a wide variety of applications. Permitted pressure at shaft seal p = –0.7 to 3.0 bar (–10 to 44 PSI).



G 00 Mechanical seal, single acting non-balanced, either direction of rotation
For pressures of p = –0.5 to 10 bar (145 PSI).



Reducing ring for suction casing (only with sizes 0,4 and 0,8)

Part No.	Description
101	Parallel key
102	Spacer sleeve
103	Radial bearing
104	Axial bearing
110	Bearing housing
114	Flinger ring
118	Drive shaft
121	Retaining circlip
127	Retaining circlip
201	Stud
202	Hexagon nut
203	Packing gland
207	Stuffing box packing
219	Mechanical seal
222	Spacer sleeve

Part No.	Description
230	Hexagon-head bolt
231	Locking washer
237	Grub screw
301	Coupling rod pin
305	Joint grease
307	Coupling rod
313	O-ring
401	Rotor
402	Stator
404	Stator seal (Teflon tape or similar)
504	Adapter socket
505	Suction casing
505-1	Reducing ring for size 0.4 ②
505-2	Reducing ring for size 0.8 ②
601	Name plate

Part No.	Description
603	Instruction label for commissioning
604 ①	Suction label
605 ①	Discharge label
606	Hexagon-head bolt
607	Hexagon nut
608	Locking washer

① So positioned for normal direction of rotation (counter-clockwise looking from drive end). For clockwise rotation the labels change places to match the change in the function of the connections.

② Seal with loctite/Teflon tape.

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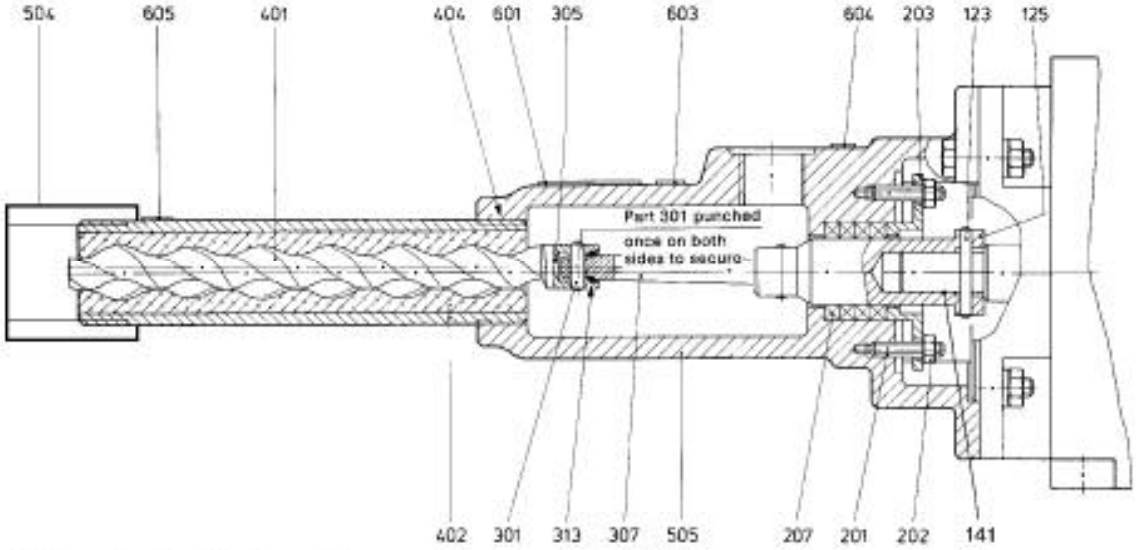
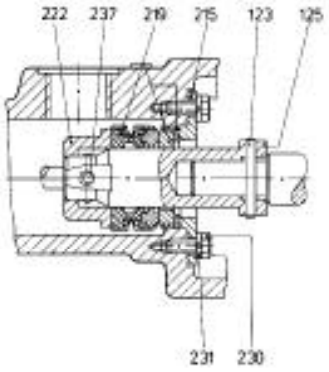
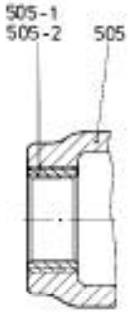


Bearing: **E** (external bearing in the drive unit)
Shaft seal: **P 01** Stuffing box of standard type (without lantern ring/without flushing ring). Particularly long life packing quality allows a wide variety of applications. Admissible pressure at the shaft seal p = –0.7 to 3.0 bar (–10 to 44 PSI).



G 00 Mechanical seal, single acting, non-balanced, either direction of rotation.
Application on consultation p = –0.5 to 10 bar (145 PSI).



Reducing ring in the suction casing (only with sizes 0,4 and 0,8)

Part No.	Description
123	Drive pin
125	Stub shaft
141	Lubricating paste
201	Stud bolt
202	Hexagon nut
203	Gland
207	Stuffing box packing
215	Mechanical seal cover
219	Mechanical seal
222	Spacer sleeve
230	Hexagon screw
231	Spring ring
237	Grub screw

Part No.	Description
301	Coupling rod pin
305	Joint grease
307	Coupling rod
313	O-ring
401	Rotor
402	Stator
404	Stator seal (Teflon tape)
504	Adapter socket
505	Suction casing
505-1	Reducing ring for size 0.4 ②
505-2	Reducing ring for size 0.8 ②

Part No.	Description
601	Name plate
603	Instruction plate for commissioning
604 ①	Suction label
605 ①	Discharge label

① Applies to normal direction of rotation (counter-clockwise as seen from the driving side). In case of change of the sense of rotation, the labels are exchanged according to the branch change.

② Seal with Loctite.

The Shanley Pump Metering System

Series ADP/ADBP

FEATURES

- ★ Completely programmable or (Programmable Computer Controlled)
- ★ LED digital readout (Display)
- ★ Portable/lightweight/durable
- ★ Economical, easy to set up
- ★ Non-pulsating continuous flow
- ★ Quick interchangeable pump units
- ★ Remote control options
- ★ Superior lift capabilities
- ★ Handles light, heavy or viscous fluids
- ★ Available in wide variety of stators
- ★ Reduces cleanup requirements

SPECIFICATIONS

- Pressures to 350 PSI
- Flows to 200 GPH
- Viscosities to 20,000 CST
- Suction Lift up to 28" Hg
- Operates on 110 Volts
- Standard material stainless steel (available in cast iron with tool steel internals)
- Available in Buna N, Hypalon, Viton, plus many other stators
- Standard NEMA 1 Enclosure (Optional NEMA 4)
- Repeatable Programmable Accuracy to 99%

PROGRESSIVE CAVITY METERING PUMP SIZING PERFORMANCE CHART

Volume Per Rev.			Volume @ 350 RPM Max Speed			Lbs Per Hour @ 350 RPM	Unit Weight
Series	Size	@ 0 PSI in (cm^3)	l/m	GPM	GPH	(Water) S.G. = 1.0	Lbs.
ADBP	0.4.3	1.00	0.350	0.092	5.52	45.99	32
	0.8.3	2.00	0.700	0.185	11.10	92.49	33
	1.5.3	3.75	1.313	0.347	20.82	173.5	34

ANBP Series also available (larger flows).

Our Complete Range of Progressive Cavity Pumps

	FLOW CAPACITIES		MAX. DISCH PRESS			MAX SPD	MAX TEMP	
SERIES	MIN./MAX. US GPM	MIN./MAX. L/MIN.	PSIG	BAR-G	NO. OF SIZES	RPM	DEG F	DEG C
ADP/ADBP	.001/1.8	.1/7	175	12	3	1750	302	150
AFP	.02/22	.7/83	87	6	1	1000	176	80
ANP	.13/11	.5/42	175	12	3	1750	302	150
ACNP	1/128	1/480	175	12	6	1500	270	130
SLP	6/485	25/1830	60	4	5	500	212	100
SLBP	6/220	25/830	60	4	4	500	212	100
SEP	1.3/2500	5/9500	145	10	15	1000	302	150
SEBP	1.3/211	5/800	87	6	7	1000	212	100
*SED	1.5/4095	6/15,500	116	8	10	1200	302	150
SEBD	1.5/1100	6/4160	116	8	7	1200	302	150
SNP	.25/485	1/1830	175	12	16	1500	302	150
SNBP	.25/120	1/450	175	12	9	1500	212	100
*SND	1.5/1480	6/5600	232	16	9	1200	302	150
SNBD	1.5/750	6/2830	232	16	7	1200	302	150
SHP	.25/485	1/1830	800	24	9	750	302	150
SHBP	.25/92	1/350	800	24	3	750	212	100
SZP	1.5/441	6/1670	175	12	13	400	302	150
SZBP	1.5/44	6/167	175	12	7	400	212	100
SSP	.4/211	1.5/800	175	12	10	1500	302	105
SSBP	.4/211	1.5/800	175	12	10	1500	212	100
SETP	4/530	15/2000	350	24	21	500	302	150
SETBP	4/160	15/600	87	6	5	500	212	100

* The SED/SND is a new generation of pumps developed with an advanced rotor/stator design. An innovative breakthrough, engineered to increase the overall volume by 150%, when compared to a standard progressive cavity pump of comparable size.

Shanley Pump & Equipment, Inc.

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