

Simple Pumping for Viscous Products

PC-CC - Progressive Cavity Pump - CIP Clean

Application

The Progressive Cavity Pump is used in a wide range of applications, eg. fruit and vegetable processing, food and beverage, pharmaceutical and chemical industries.

The pump is used for pumping neutral or corrosive, uncontaminated or abrasive products as well as products containing gases or tending to froth. The pump handles both high and low viscosity products even with fibrous or solid material.

Adapted to modern cleaning processes, the Alfa Laval Progressive Cavity CIP Clean Pump provides a pump type which without dismantling can be cleaned by way of CIP absolutely free from residue and thus bacteria.

For a pump with open joints to be completely cleaned and drained, it can be temporarily switched in during the flushing process.

Operation

Self-priming rotary positive displacement pump whose pumping elements are the rotating eccentric screw (rotor) and the fixed stator. In any cross-sectional plane, the two are in contact with one another at two points, and along the length of the conveying elements, these points form two sealing lines. The material contained in the sealed enclosed cavities which are formed as the rotor turns is displaced axially and with complete continuity from the suction to the discharge side of the pump.

Despite the fact that the rotor rotates, no turbulence is produced. The constant chamber volume assures an extremely gentle low-surge pumping action.



Standard design

The progressive pump is an eccentric block screw pump. This design has the main advantage that the shaft seals are arranged in the suction chamber so that they are completely flushed by the liquid pumped; thus optimum cleaning possibility.

In addition to the interior pump design all product wetted components, eg. shaft seal and pin joints, are installed and designed so that they are properly cleaned during through-flushing.

Materials and surface quality of the product wetted components are adapted to the increased demands for cleanliness.

Discharge casing, stator, suction casing and lantern are held together by corrosion-resistant, easily removable casing connecting screws (tie rods).

The PC-CC pump is designed and approved according to 3A.

For all sizes, the suction (discharge and flushing connections are of particularly large designs.

Due to a horizontal clearance-volume-free bottom of the discharge branch, complete draining is possible at this point. The suction casings, and in case of branch position H, the discharge casing are designed with a flushing/drain connection tangentially arranged at the underside of the casing (other connection arrangements are possible.)

The metallic pump components in contact with the liquid are micro-ground, all out surfaces are polished.

The stator which is vulcanized into a tubular or shell casing (uniform elastomer wall thickness) is provided with external collars vulcanized to both ends which provide a safe seal of the suction and discharge casings thus preventing any corrosion.

The stator shell propel is in principle protected against corrosion from the outside by means of an additional stainless steel shell which can be designed for cooling purposes (special variant).

Via an easily dismountable driver pin, the drive torque is transmitted onto the hollow shaft and from there, via the coupling rod, onto the rotor. The coupling rod terminates at both ends in special pin-type universal joints, which can easily be flushed and cleaned. As a special variant, pin-type joint connections are possible which are encapsulated by collars, liquid tight.

Shaft seal

By means of uncooled, maintenance-free non-balanced or balanced, single-acting mechanical seal which is supplied with or without quench. O-ring seal for stationary seal ring of the CIP type. Mounting spaces for mechanical seals correspond to DIN 24 960 (short type).

Seal faces and types are adapted to the respective operating conditions..

Bearing

The bearing of the drive/hollow shaft is in the reinforced bearings of the geared motors or variable-speed gears which, at the same time, absorb the axial forces occurring.

As all drives are only supplied with reinforced bearings, it is assured that the allocated pumps can always be fully run within their permissible operation limits.

Drive

Non-explosion-proof or explosion-proof geared motors or variable speed gears can be provided for the drive.

Technical data:

Maximum inlet pressure: 12 bar
 Temperature range: max. 100°C
 Max. outlet pressure, single stage: 6 bar
 Max. outlet pressure, two-stage: 12 bar

Materials:

Product wetted parts: 1.4404 (316L)
 Product wetted seals: EPDM
 Other seals: Sic., NBR

Voltage and frequency:

≤ 3 kW 230/400 V, 50 Hz
 ≥ 4 kW 400/690 V/ 50Hz

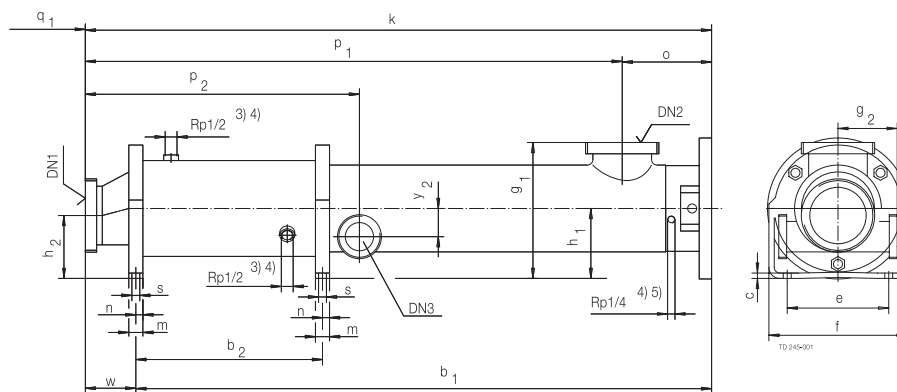
Maximum Solid Size Capability:

Pump size	12	25	50	100	200	380	550
max. particle size mm	2	3	3	3.8	5	6.8	6.8
max. fibre length mm	35	42	42	48	60	79	79

Increases in the solids content and particle size require a reduction of the pump speed.

Dimensions

.4



All dimensions in mm

PUMP	12.2	25.1	50.1	100.1	200.1	380.1	550.1
b_1	487.5	479	577	701	856	1022	1176
b_2	-	-	-	-	-	331	485
c	10	10	10	10	10	10	10
e	70	80	95	140	170	180	180
f	133	143	157	198	233	245	245
g_1	146	158	176	192	220	241	241
g_2	142	157	173	186	218	229	229
h_1	85	90	95	95	113	124	124
h_2	82	84	87	87.5	103.5	111.5	111.5
k	530.5	534	640	764	929	1111	1265
m	20	20	20	20	25	25	25
n	10	10	10	10	12.5	12.5	12.5
o	88	91	108	123	137	159	159
p_1	442.5	443	532	641	792	952	1106
p_2	296	238	286	334	409	486	640
q_1	130	190	240	320	360	450	450
s	11	11	11	11	14	14	14
w	43	55	63	63	73	89	89
y_2	23	27.5	34	43.5	50	50	50

Suction/pressure connection

Pump	12.2	25.1	50.1	100.1	200.1	380.1	550.1
DN ₁ DN ₂	Threaded connection acc. to DIN 11 887-A						
32	Rd 68 x 1/6						
40		Rd 65 x 1/6					
50			Rd 78 x 1/6				
65				Rd 95 x 1/6			
80					Rd 110 x 1/4		
100						Rd 130 x 1/4	

Flushing connection

Pump	12.2	25.1	50.1	100.1	200.1	380.1	550.1
DN ₃	Threaded connection acc. to DIN 11 887-A						
20	Rd 44 x 1/6						
25		Rd 52 x 1/6					
32			Rd 58 x 1/6				
40				Rd 65 x 1/6			
50						Rd 78 x 1/6	

Options

- A) Pump accessories - Stator setting devices, electrical heaters, bridge breakers
- B) Drivers - Electric motors, geared motors, variable speed transmissions, reduction gearboxes, internal combustion engines, pneumatic and hydraulic drives
- C) Base plates - Standard and special versions, mounting flanges
- D) Safety arrangements - Bypass lines with safety or regulating valves, dry run protection (conductive, capacitive, thermal, etc.)
- E) Other accessories - Electrical, hydraulic and pneumatic control arrangements, filter systems, metering equipment, seal liquid and circulating systems for shaft seals, valves, flanges, flexible pipes
- F) Available as painted, trolley-mounted pump - please specify PC-T model

Ordering

Please state the following when ordering:

- Flow rate, pressure and temperature
- Media type
- Media viscosity
- Media density
- Connections