SEALLESS

DRUM PUMPS PP

FOR AGGRESSIVE LIQUIDS
THE RIGHT DRUM PUMPS

- This saves maintenance costs
- This avoids malfunctions
- This saves time
- This saves money

grün-pumpen
take out, what's in.

The most popular model for the most applications in drums and containers and technical objects...

PP drum pumps...

...for acids and bases.

are the basis ...

Advantages for the reliability

This saves maintenance costs

- robust coupling
- strong shaft
- stainless steel for stressed parts
- new development without seal

Advantages for the operational safety

This avoids malfunctions

- optional magnetic clutch for hermetical sealed pump
- strong connection motor-pump

Advantages for the user

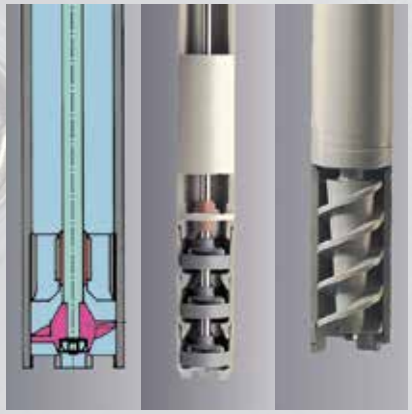
This saves time

- quick release coupling
- no problems with failed threads

Advantages for the customer

This saves money

- one supplier for the most applications
- one motor for all types of impeller
- less equipment required



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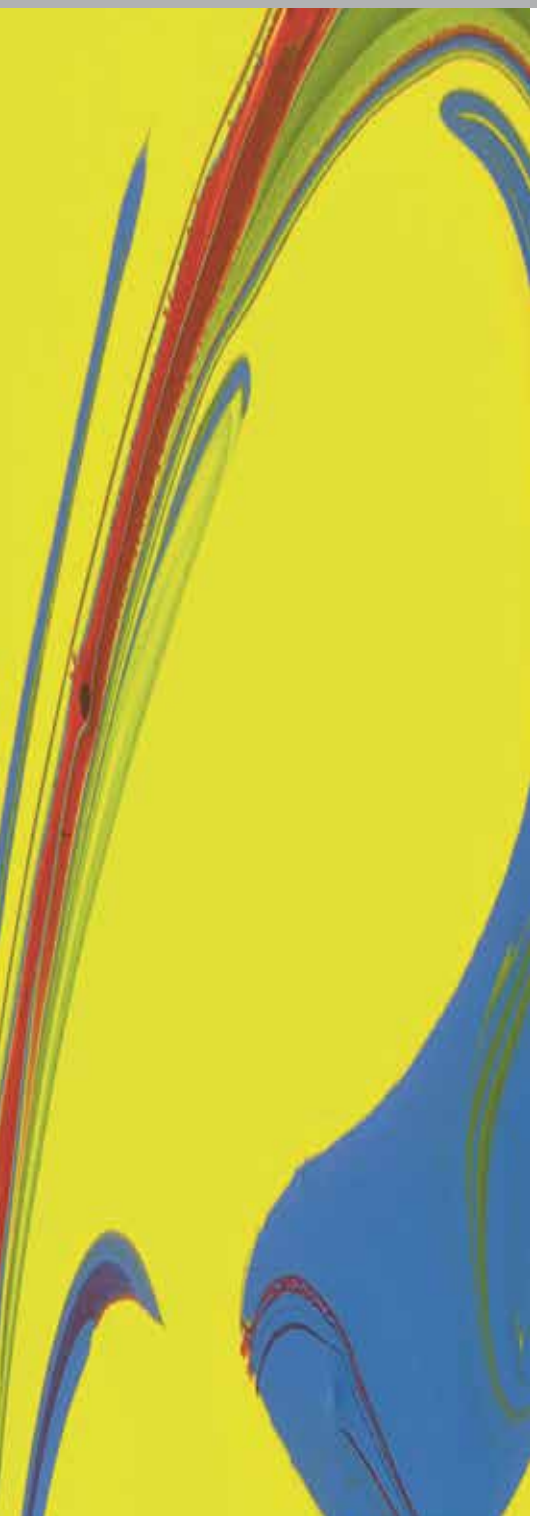


SEALLESS

- **acids, low concentrated**
- **bases, low concentrated**
- colours
- emulsions
- dispersions
- suspensions
- fluids of medium viscosity
- cosmetics

For aggressive* liquids...

Versions A, R column 1-2, page 7

If the liquid has to be mixed...

Series MP

Versions A, R column 4, page 7

For liquids of medium viscosity...

Version S column 3, page 7

SL-PP:
For transfilling and draining of drums and containers.
The perfect drum pump for the most thin liquids. Version A for high flow rate, Version R for high pressure, with foot valve for complete drainage.

Recommendation:
SL-PP-R-HC with motor p400-A.

*with drive shaft hastelloy C (HC) there are no problems with aggressive liquids

SL-MP-PP:
For stirring of emulsions, dispersions, suspensions, etc. before starting the transfilling action.
The mixing drum pump is fitted with mixing apertures. By moving a sliding sleeve with a lever, these holes can be opened or closed.
„Open" is for mixing inside the drum and „closed" is for pumping out of the drum. All this can be achieved with one unit.

Recommendation:
For a good stirring efford use the powerful motor p400-A.

SL-PP-S:
The feed screw (S) is dedicated for liquids of medium viscosity ($\eta > 200$ mPas), if the impeller types A and R reach their limitations.
With induction motor ideal combination for gentle dealing with the liquid.

Recommendation:
Induction motor with frequency inverter for variable flow rate.

grün-pumpen
take out, what's in.

Sealless pumping units

Sealless pump tubes from grün are reliable without using a mechanical seal and are suitable for almost any aggressive, low viscosity media. Our sealless pumping units are available in PP, PVDF, stainless steel (SS) and aluminium (Alu) material versions.
(Separate brochure for each material available).

Design PP:

The pump tube (3) is devided by the inner tube into sections to separate the fluid under pressure (3 flow channels) and the low pressure section (wave channel).

Advantages of sealless drum pumps

► Cleaning the pumping unit is greatly facilitated; the risk of fluid carry-over when moving the pump to a different container is minimized.

► The build-in webs add considerable rigidity to the pump tube, resulting in greatly improved mechanical stability of the pumping unit.

► No bearings in the wave channel.

► Motor power is transferred by proven, robust coupling (1) with curved teeth over the stainless steel coupling element (2) with a large double bearing.

► Of course, the sealless pump tubes are fully compatible with the sealed models, allowing you to use the pumping units with any motor from grün product range.

► Depending on the application you can select one of 3 different types of impellers: axial (A), radial (R) and feed screw (S).

Product profile

A drum pump always consists of a pump tube and a motor. These components are connected by means of a quick coupling. Any pump tube can be used with any motor.

Selecting the right order-no.
In the general order-no., for example **500**-00XX, fill in the specific numbers for your choice. Example: Order-No.

p310-A 230V:	500-0017
SL-PP-A-SS-1000 (SS drive shaft):	670-0002
SL-PP-A-HC-1200 (HC drive shaft):	670-0006

- **optimised in price**
- **short and occasional usage**
- **it likes light and thin liquids**
- **opt. LVR: low voltage release for advanced safety**
- **opt. SR: speed reducer for simple flow rate variation**

Motor		Pump tube	1 SL-PP-A	2 SL-PP-R	3 SL-PP-S	4 SL-MP PP-A	5 SL-MP PP-R
p310		Performance curve	A100	R100		A100	R100
		Hydr. Values	max	max		max	max
Power (W)	520	Capacity Q (l/min)	100	90		100	90
Voltage (V)	230 / 120	Delivery head H (mWS)	6	14		6	14
Protection	IP 24	Density φ (kg/l)	1,3	1,6		1,3	1,6
LVR*	optional	Viskosity η (mPas)	300	250		300	250
Weight (kg)	3,5	Weight (kg)	1,5	1,5		1,5	1,5
		Temperature (°C)	50	50		50	50
Order-No.	500-00XX		670-000X	675-000X		670-00XX	675-00XX
Voltage (V)	230 120	L (mm)	SS HC	SS HC		SS HC	SS HC
p310 (LVR)	16 28	700	1 4	1 4		19 22	37 40
p310-A	17 29	1000	2 5	2 5		20 23	38 41
p310-A-SR	54 -	1200	3 6	3 6		21 24	39 42

- **the ideal drive**
- **big resources in power and durability**
- **quick working and saving time**
- **opt. LVR: low voltage release for advanced safety**
- **opt. SR: speed reducer for simple flow rate variation**
- **opt. IP 54: 230V Order-No. 500-0052**

Motor		Pump tube	1 SL-PP-A	2 SL-PP-R	3 SL-PP-S	4 SL-MP PP-A	5 SL-MP PP-R
p400		Performance curve	A200	R200	S200	A200	R200
		Hydr. Values	max	max	max	max	max
Power (W)	850	Capacity Q (l/min)	110	100	60	110	100
Voltage (V)	230 / 120	Delivery head H (mWS)	8	20	10	8	20
Protection	IP 24	Density φ (kg/l)	1,6	2	1,5	1,6	2
LVR*	optional	Viskosity η (mPas)	800	700	700	800	700
Weight (kg)	4	Weight (kg)	1,5	1,5	1,5	1,5	1,5
		Temperature (°C)	50	50	50	50	50
Order-No.	500-00XX		670-000X	675-000X	670-00XX	670-00XX	675-00XX
Voltage (V)	230 120	L (mm)	SS HC	SS HC	SS HC	SS HC	SS HC
p400 (LVR)	23 25	700	1 4	1 4	09 13	19 22	37 40
p400-A	24 26	1000	2 5	2 5	19 14	20 23	38 41
p400-A-SR	56 -	1200	3 6	3 6	11 15	21 24	39 42

- **the power drive**
- **variable speed**
- **starting knob fixable**
- **for heavy duty**
- **easy handling**
- **economical air consumption**

Motor		Pump tube	1 SL-PP-A	2 SL-PP-R	3 SL-PP-S	4 SL-MP PP-A	5 SL-MP PP-R
d600		Performance curve	A600	R600	S600	A600	R600
		Hydr. Values	max	max	max	max	max
Power (W)	600	Capacity Q (l/min)	90	80	60	90	80
Pressure (bar)	3-7	Delivery head H (mWS)	6	11	6	6	11
		Density φ (kg/l)	1,6	2	1,5	1,6	2
Consumption of air (l/s)	10	Viskosity η (mPas)	800	700	700	800	700
Weight (kg)	1,7	Weight (kg)	1,5	1,5	1,5	1,5	1,5
		Temperature (°C)	50	50	50	50	50
	Order-No.		670-000X	675-000X	670-00XX	670-00XX	675-00XX
		L (mm)	SS HC	SS HC	SS HC	SS HC	SS HC
d600	520-0016	700	1 4	1 4	09 13	19 22	37 40
		1000	2 5	2 5	19 14	20 23	38 41
		1200	3 6	3 6	11 15	21 24	39 42

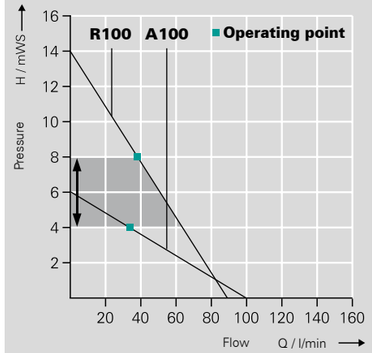
New connection technology: metal replaces plastic, robust for use in harsh environments

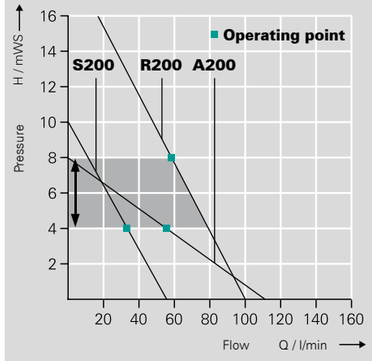
- **the silent marathon worker**
- **ideal for viscous liquids**
- **smooth product treatment with feed screw**
- **voltage 230 V (1-ph) and 400 V (3-ph)**
- **opt.: with frequency inverter**
- **opt.: Ex-proof versions**

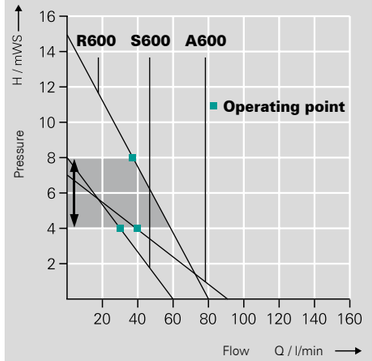
Motor		Pump tube	1 SL-PP-A	2 SL-PP-R	3 SL-PP-S	4 SL-MP PP-A	5 SL-MP PP-R
pd500		Performance curve			S500		
		Hydr. Values			max		
Power (W)	see below	Capacity Q (l/min)			20		
Voltage (V)	230 / 400	Delivery head H (mWS)			6		
Protection	IP 54	Density φ (kg/l)			1,5		
Overload release	1-ph: yes 3-ph opt.	Viskosity η (mPas)			1500 (min 100)		
Weight (kg)	5	Weight (kg)			1,5		
		Temperature (°C)			50		
	Order-No.				670-00XX		
		L (mm)			SS HC		
pd500-1 550W	500-0044	700			09 13		
		1000			10 14		
pd500-3 370W	500-0039	1200			11 15		

* LVR: Low voltage release (restart protection)

Other voltages on demand.







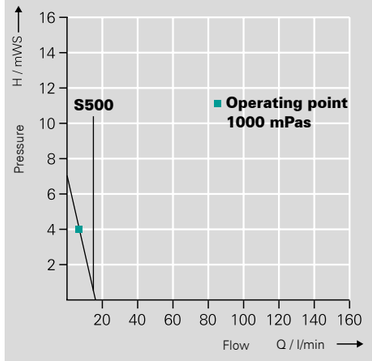
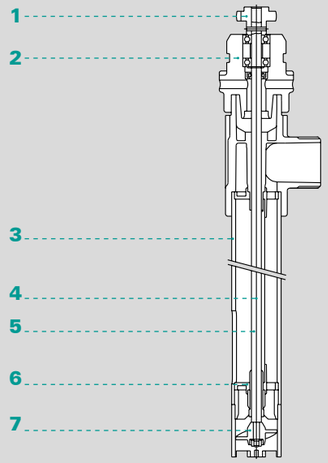


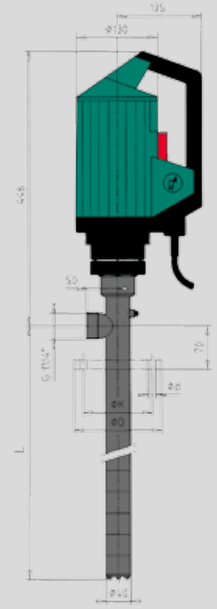
Table of materials

Description	Pump tube version
1. Curved teeth coupling	PA
2. Coupling element	PP/SS
3. Pump tube with flow and wave channel	PP
4. Drive shaft opt.	SS or HC
5. Wave channel	PP
6 Slide bearing	PTFE
7. Impeller	PP



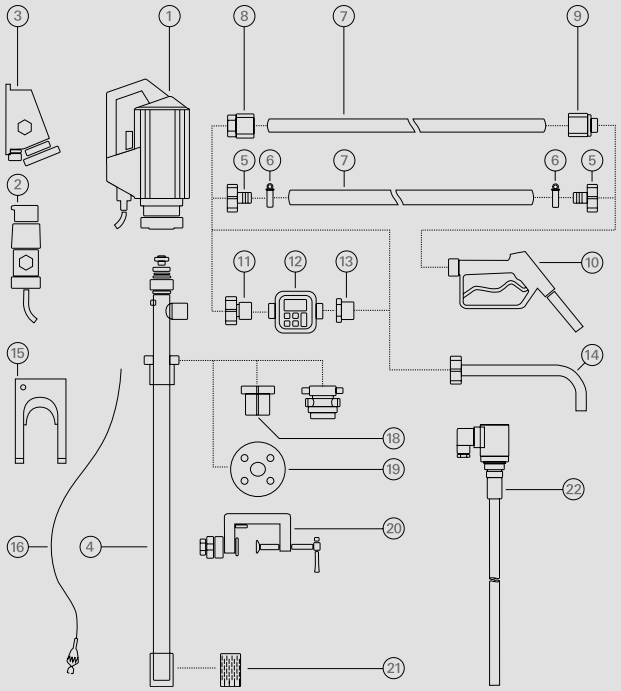
Cross-section of pump:

When fluid enters the wave channel, a surge hole allowes it to escape into the fluid area surrounding the pumping unit. In the wave channel is no overpressure and the fluid level in both (wave channel and drum) is always the same. For this reason the pump doesn't need a seal between drive shaft and housing.



Mechanical sealed (MS) pumps in separate catalogue.

ACCESSORIES



1 Drive motor
2 Explosion-proof plug
3 Explosion-proof socket
4 Pump tube
5 Hose connector
6 Hose clamps
7 Hose
8 Hose fittings
9 Hose fittings
10 Nozzle
11 Flow meter connection **12**
Flow meter **13**
Reducing piece **14**
Discharge spout
15 Wall bracket **16**
Equipotential bounding cable
17 Emission proof drum adapter
18 Drum adapter **19**
Installation flange **20**
Clamping device
21 Foot strainer
22 Level switch

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