

Equipment and options

Pump head series PL 7 – 10

Stainless steel plunger pump heads

- PL 7** Plunger
- PL 8** Plunger, high pressure
- PL 9** Double-acting disc plunger

Plastic plunger pump heads

- PL 10** Plunger

Housing material

- Stainless steel (1.4571, 1.4462)
- PVC / PP / PVDF
- Titanium
- Hastelloy
- HALAR coating

Special pump heads

- Pump head or valves with heating or cooling jacket
- Custom design and construction

Special equipment

- Special pump heads with heating or cooling jacket
- Supplementary heating or cooling for suction and discharge valves
- Fully heated plunger pump heads, with heated housing, cover and plunger from 16 mm diameter)
- Pump heads with optimized flow channels for pumping suspensions or viscous liquids

Valve material

- Stainless steel (1.4571, 1.4581)
- PVC / PP / PVDF
- Ceramic
- Stellite, tungston carbide

Valve types

- Ball valve (single, double or triple)
- Cone valve
- Plate valve
- Mushroom valve
- With or without spring loading

Volume adjustment

Manual

- Handwheel with integrated precision display unit for stroke length

Pneumatic

- Standard version with remote setting
- With pneumatic converter

- With electro-pneumatic converter

Electric motor

- Standard version with remote setting
- With control card
- With compact controller
- Explosion-proof versions: EExi or EExd

Gears and drives

- Modular design enables horizontal combination of multiple pumps
- Selectable reduction ratios
- Drive motors with standard or special equipment (variable speed, explosion-proof)

Double-acting pump heads

This type of pump head is characterized by a disc plunger with plunger rod coming out on one side and with 2 suction and 2 discharge valves. This permits delivery during both strokes of the plunger.

A double-acting pump has almost twice the metering capacity of a single-acting pump head with only a small increase in size. This system allows energy-saving use to be made of the high pressure in circulating systems.

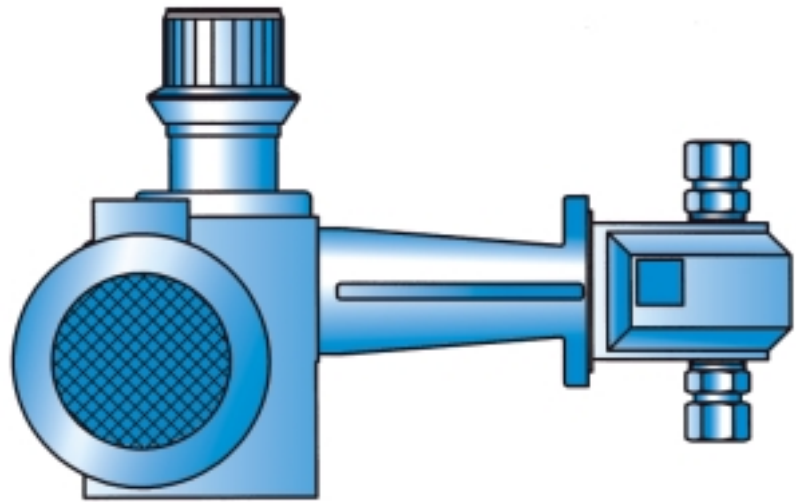
Only the differential pressure between suction and discharge side and the seal friction exert a load on the gear via the plunger rod. The driving power required is thereby reduced.



Plunger Metering Pumps Type P horizontally combinable

Horizontal series

- **Type**
Single-head plunger metering pump
- **Flow rate**
0...724 l/h with standard plunger pump head
- **Pressure**
Stainless steel plunger pump head up to 1000 bar (on request), plastic pump head up to 10 bar.



Advantages

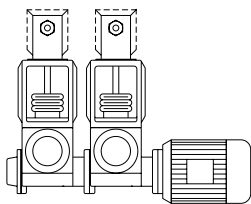
- Robust and compact construction
- High volumetric efficiency
- Low investment costs
- Flexible modular design
- High precision gear technology

Applications

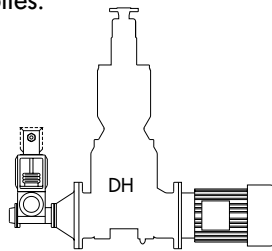
For metering non-hazardous fluids.

Combinations

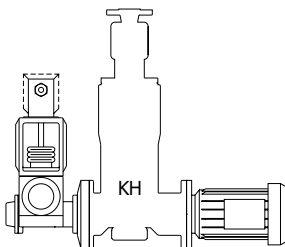
Horizontal Type P plunger pumps can be combined with each other and with Type KH, DH and DSH pumps in **horizontal** assemblies.



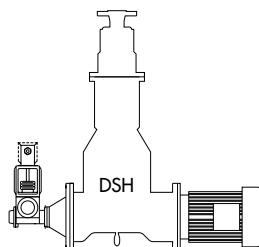
P-P-combination



P-DH-combination



P-KH-combination



P-DSH-combination

The number of pumps which can be combined depends on the operating pressure, the pump head type and the piston diameter.

Pump head series PL 8 + 10

Plunger pump heads

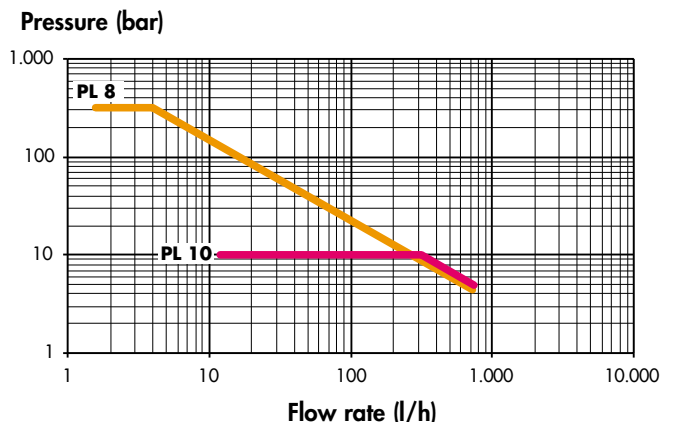
Stainless steel pump heads

PL 8 Plunger

Plastic pump heads

PL 10 Plunger

Characteristics



Pump head series PL 8 + 10 / Flow rate and pressure

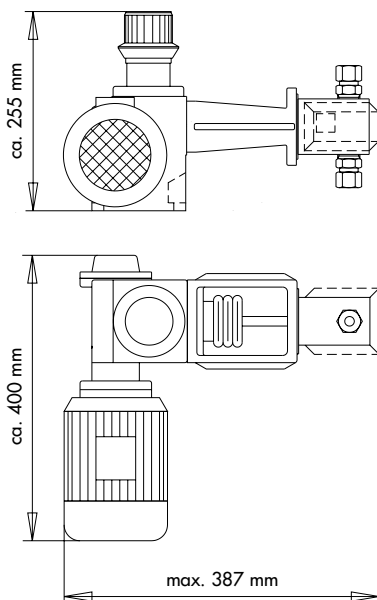
Type		PL 8	PL 10
Plunger material		Stainless steel	Al ₂ O ₃
Pump head housing material ^①		1.4571	Plastic
Plunger Ø	Flow rate ^② at 200 min ⁻¹ ^③	max. operating pressure (bar)	
mm	l/h		
3	0... 1.7	325	–
5	0... 4.71	325	–
8	0... 12.1	298	10
12	0... 27.1	133	10
20	0... 75.4	48	10
30	0... 170	21	10
42	0... 332	11	10
50	0... 471	7.5	7.5
56	0... 591	6	6
62	0... 725	5	5

① Special types available, e.g. ceramic, rubberized.

② Values at 100% efficiency. Allow for liquid transmission losses.

③ Selectable frequencies: 50, 72, 100, 127, 144, 151, 170, 200 min⁻¹. Additional flow charts on page 240.

Dimensions and gear data



Gear type

Integrated worm gear

Reduction ratios (selectable)

28:1, 28:2, 33:2, 37:2, 39:2, 44:2

Resultant stroke frequency depends on motor type and mains frequency

Lubrication

- Splash lubrication

Drive motor

Electric motor to customer specification

- Standard
- Variable speed
- Explosion-proof version

Weight, according to equipment (without motor)

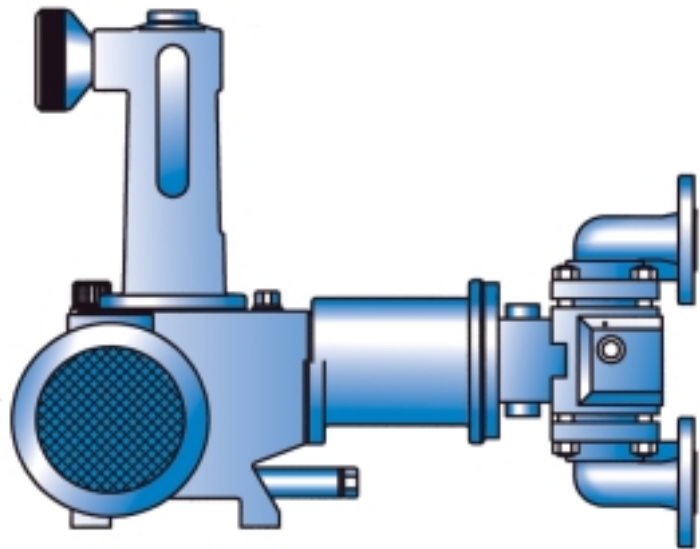
10,5 - 30 kg



Plunger Metering Pumps Type KH horizontally combinable

Horizontal series

- **Type**
Single-head plunger metering pump
- **Flow rate**
0...1590 l/h
with standard plunger pump head
0...1700 l/h
with double-acting disc plunger
- **Pressure**
Stainless steel plunger pump head up to 1000 bar (on request), double-acting disc plunger and plastic pump heads up to 10 bar.

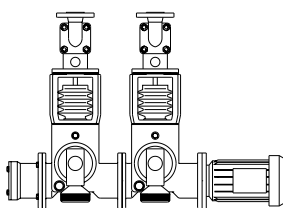


Advantages

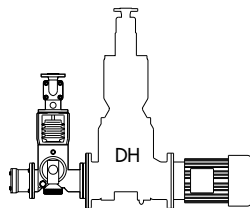
- Robust and compact construction
- High volumetric efficiency
- Low investment costs
- Flexible modular design
- High precision gear technology

Combinations

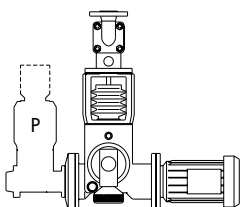
Horizontal Type KH plunger pumps can be combined with each other and with Type P, DH and DSH pumps in **horizontal** assemblies.



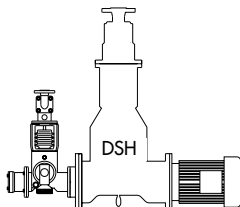
KH-KH-combination



KH-DH-combination



KH-P-combination



KH-DSH-combination

The number of pumps which can be combined depends on the operating pressure, the pump head type and the piston diameter.

Applications

For metering non-hazardous fluids.

Pump head series PL 8 – 10

Plunger pump heads

Stainless steel pump heads

PL 8 Plunger

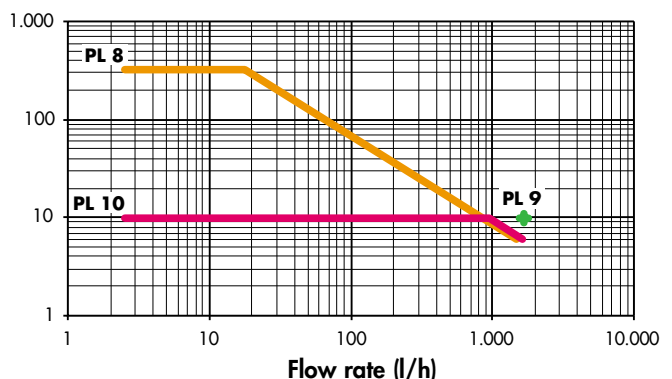
PL 9 Double-acting disc plunger

Plastic pump heads

PL 10 Plunger

Characteristics

Pressure (bar)



Pump head series PL 8 – 10 / Flow rate and pressure

Type	PL 8	PL 9	PL 10
Plunger material	Stainless steel	Stainless steel	Al ₂ O ₃
Pump head housing material ^①	1.4571	1.4571	Plastic
Plunger Ø	Flow rate ^② at 200 strokes min ⁻¹ ③		
mm	l/h		max. operating pressure (bar)
3	0... 2.54	325	–
5	0... 7.07	325	–
6	0... 10.18	325	–
8	0... 18.1	325	–
12	0... 40.7	220	–
16	0... 72.4	124	–
20	0... 113	80	–
25	0... 177	50	–
30	0... 254	35	–
36	0... 366	25	–
42	0... 499	18	–
50	0... 707	13	–
56	0... 887 (1700)	10	10
62	0... 1087	8	–
68	0... 1307	7	–
75	0... 1590	6	–

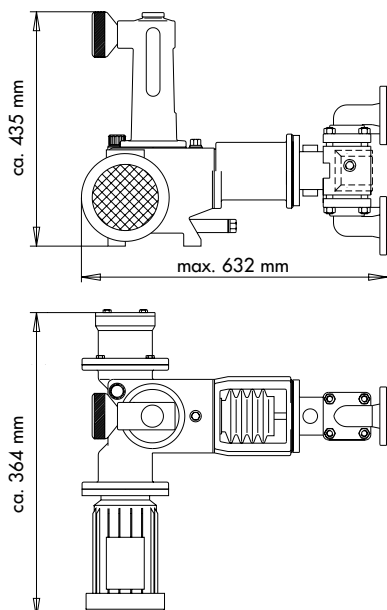
Flow rate in () for double-acting pump heads

① Special types available, e.g. ceramic, rubberized.

② Values at 100% efficiency. Allow for liquid transmission losses.

③ Selectable frequencies: 50, 72, 100, 127, 144, 170, 200 min⁻¹. Additional flow charts on page 240.

Dimensions and gear data



Gear type

Integrated worm gear

Reduction ratios (selectable)

22:1, 28:1, 28:2, 33:2, 39:2

Resultant stroke frequency depends on motor type and mains frequency

Lubrication

- Oil circulation system

Drive motor

Electric motor to customer specification

- Standard
- Variable speed
- Explosion-proof version

Weight, according to equipment (without motor)

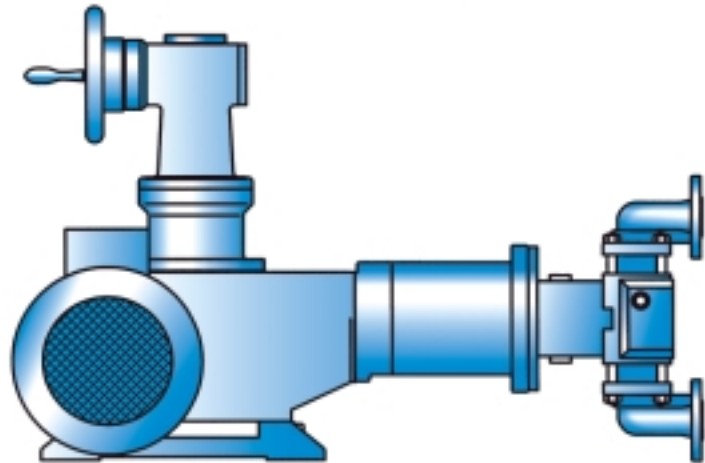
31,5 - 88 kg



Plunger Metering Pumps Type DH horizontally combinable

Horizontal series

- **Type**
Single-head plunger metering pump
- **Flow rate**
0...6361 l/h with standard plunger pump head
0...24590 l/h with double-acting disc plunger
- **Pressure**
Stainless steel plunger pump head up to 1000 bar (on request), double-acting disc plunger up to 25 bar and plastic pump heads up to 10 bar.

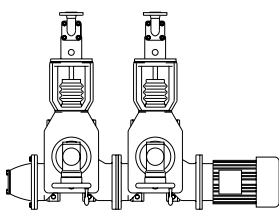


Advantages

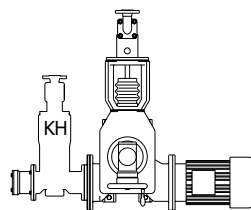
- Robust and compact construction
- High volumetric efficiency
- Low investment costs
- Flexible modular design
- High precision gear technology

Combinations

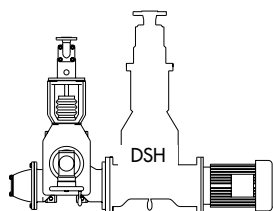
Horizontal Type DH plunger pumps can be combined with each other and with Type DSH, KH, and P pumps in **horizontal** assemblies.



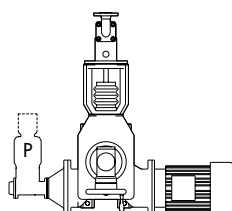
DH-DH-combination



DH-KH-combination



DH-DSH-combination



DH-P-combination

The number of pumps which can be combined depends on the operating pressure, the pump head type and the piston diameter.

Applications

For metering non-hazardous fluids.

Pump head series PL 8 – 10

Plunger pump heads

Stainless steel pump heads

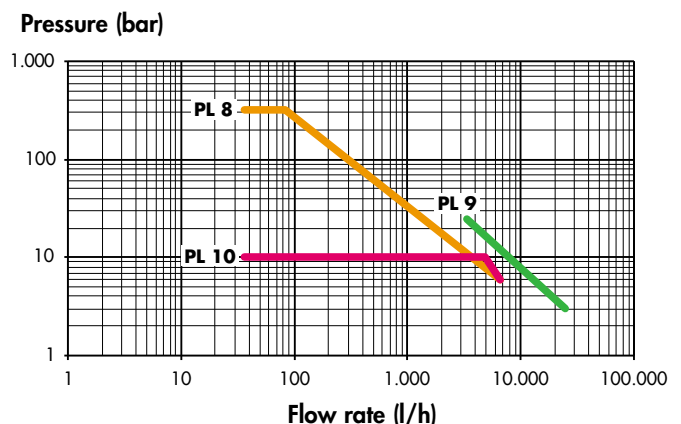
PL 8 Plunger

PL 9 Double-acting disc plunger

Plastic pump heads

PL 10 Plunger

Characteristics



Pump head series PL 8 – 10 / Flow rate and pressure

Type	PL 8	PL 9	PL 10
Plunger material	Stainless steel	Stainless steel	Al ₂ O ₃
Pump head housing material ^①	1.4571	1.4571	Plastic
Plunger Ø	Flow rate ^② at 200 strokes min ⁻¹ ^③		
mm	l/h		max. operating pressure (bar)
8	0... 36.19	325	–
10	0... 56.55	325	–
12	0... 81.43	325	–
16	0... 145	200	–
20	0... 226	200	–
25	0... 353	163	–
30	0... 509	113	–
36	0... 733	79	–
42	0... 997	57	–
50	0... 1414	41	–
56	0... 1773 (3321)	32	25
62	0... 2174	26	–
68	0... 2615	22	–
75	0... 3181 (6136)	18	18
82	0... 3802 (7378)	15	15
90	0... 4580 (8935)	12.5	12.5
100	0... 4798 ¹⁾ (11084)	10	10
110	0... 4912 ²⁾ (13459)	8	8
125	0... 5622 ³⁾ (17445)	6.5	6.5
150	0... (17904) ²⁾	–	4.5
175	0... (24502) ²⁾	–	3

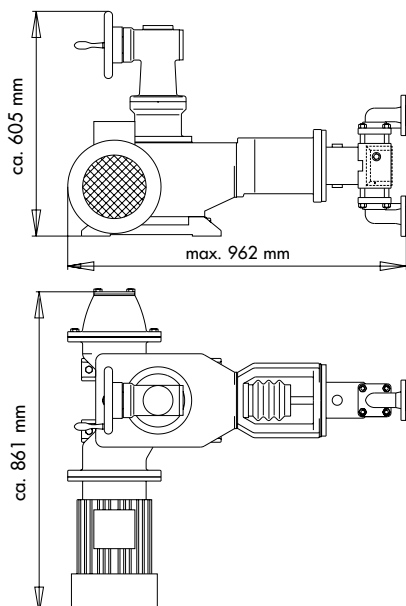
¹⁾ Stroke frequency 170 min⁻¹ ²⁾ Stroke frequency 144 min⁻¹ ³⁾ Stroke frequency 127 min⁻¹ Flow rate in () for double-acting pump heads

① Special types available, e.g. ceramic, rubberized.

② Values at 100% efficiency. Allow for liquid transmission losses.

③ Selectable frequencies: 50, 72, 100, 127, 144, 170, 200 min⁻¹. Additional flow charts on page 241.

Dimensions and gear data



Gear type

Integrated worm gear

Reduction ratios (selectable)

33:2, 39:2, 44:2, 56:1, 56:2, 56:4

Resultant stroke frequency depends on motor type and mains frequency

Lubrication

- Oil circulation system

Drive motor

Electric motor to customer specification

- Standard
- Variable speed
- Explosion-proof version

Weight, according to equipment (without motor)

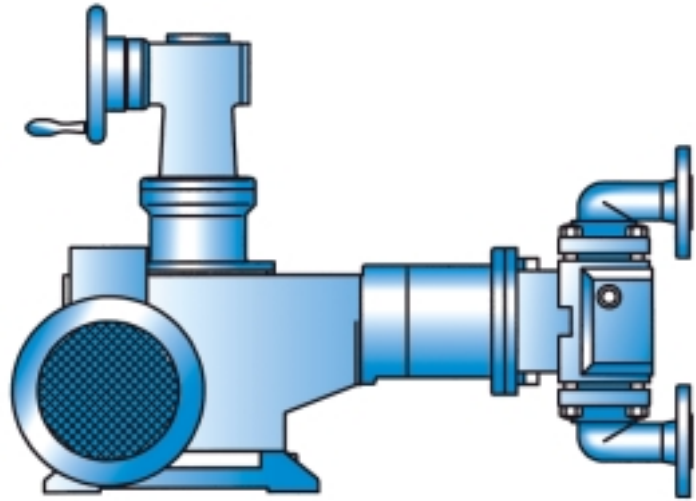
129 - 250 kg



Plunger Metering Pumps Type DSH horizontally combinable

Horizontal series

- **Type**
Single-head plunger metering pump
- **Flow rate**
0...16286 l/h each pump head with standard plunger pump head
0...44385 l/h each pump head with double-acting disc plunger
- **Pressure**
Stainless steel plunger pump head up to 1000 bar (on request), double-acting disc plunger up to 25 bar.

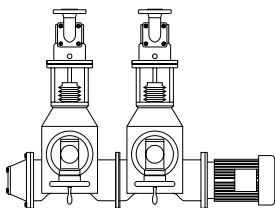


Advantages

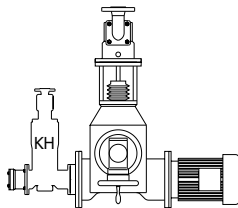
- Robust and compact construction
- High volumetric efficiency
- Low investment costs
- Flexible modular design
- High precision gear technology

Combinations

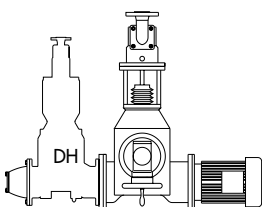
Horizontal Type DSH plunger pumps can be combined with each other and with Type DH, KH, and P pumps in **horizontal** assemblies.



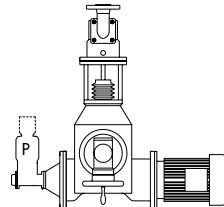
DSH-DSH-combination



DSH-KH-combination



DSH-DH-combination



DSH-P-combination

The number of pumps which can be combined depends on the operating pressure, the pump head type and the piston diameter.

Applications

For metering non-hazardous fluids.

Pump head series PL 7 + 9

Plunger pump heads

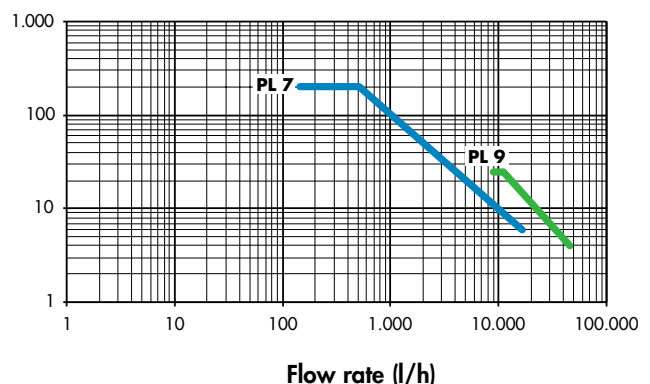
Stainless steel plunger pump heads

PL 7 Plunger

PL 9 Double-acting disc plunger

Characteristics

Pressure (bar)



Pump head series PL 7 + 9 / Flow rate and pressure

Type	PL 7	PL 9
Plunger material	Stainless steel	Stainless steel
Pump head housing material ^①	1.4571	1.4571
Plunger Ø	Flow rate ^② at 200 strokes min ⁻¹ ^③	
mm	l/h	
	max. operating pressure (bar)	
12	200	-
16	200	-
20	200	-
25	200	-
30	200	-
36	196	-
42	144	-
50	102	-
56	81	-
62	66	-
68	55	-
75	45	-
82	38	-
90	32	25
100	25	25
110	21	21
125	16	16
150	11	11
175	8	8
200	6	6
225	-	5
250	-	4

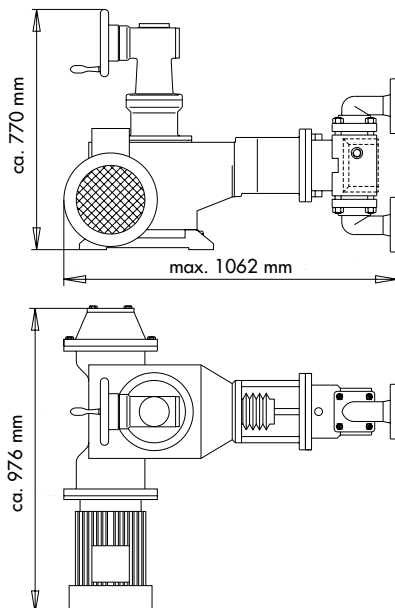
¹⁾ Stroke frequency 170 min⁻¹ ²⁾ Stroke frequency 144 min⁻¹ ³⁾ Stroke frequency 127 min⁻¹ Flow rate in () for double-acting pump head

① Special types available, e.g. ceramic, rubberized.

② Values at 100% efficiency. Allow for liquid transmission losses.

③ Selectable frequencies: 50, 72, 100, 127, 144, 170, 200 min⁻¹. Additional flow charts on page 242.

Dimensions and gear data



Gear type

Integrated worm gear

Reduction ratios (selectable)

28:1, 28:2, 33:2, 39:2, 44:2, 56:1

Resultant stroke frequency depends on motor type and mains frequency

Lubrication

- Oil circulation system

Drive motor

Electric motor to customer specification

- Standard
- Variable speed
- Explosion-proof version

Weight, according to equipment (without motor)

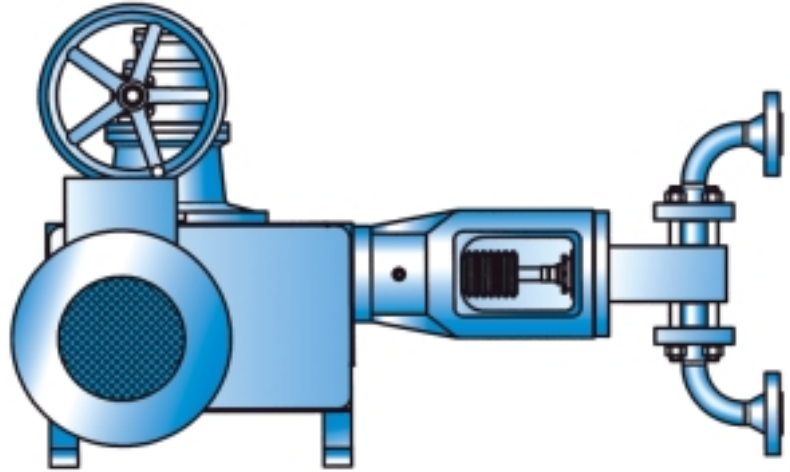
216 - 350 kg



Plunger Metering Pumps Type B horizontally combinable

Horizontal series

- **Type**
Single-head plunger metering pump
- **Flow rate**
0...32140 l/h
- **Pressure**
Stainless steel plunger pump head up to 1000 bar (on request)

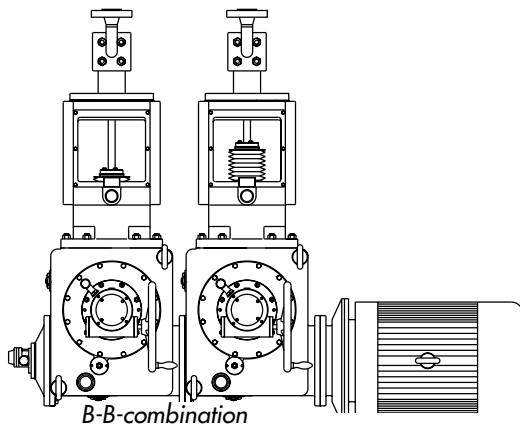


Advantages

- Robust and compact construction
- High volumetric efficiency
- Low investment costs
- Flexible modular design
- High precision gear technology

Combinations

Horizontal Type B plunger pumps can be combined with each other in **horizontal** assemblies.



B-B-combination

The number of pumps which can be combined depends on the operating pressure, the pump head type and the piston diameter.

Applications

For metering non-hazardous fluids.

Pump head series PL 7

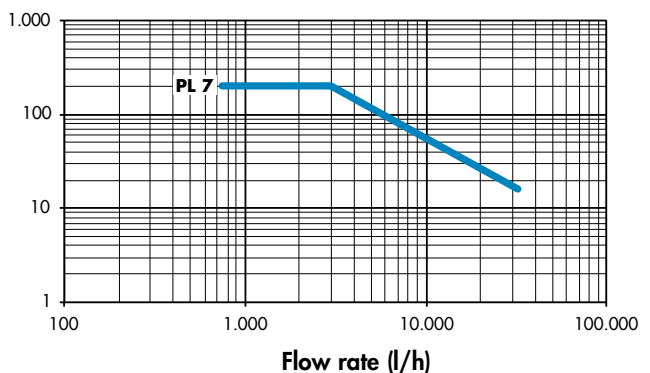
Plunger pump heads

Stainless steel pump heads

PL7 Plunger

Characteristics

Pressure (bar)



Pump head series PL 7 / Flow rate and pressure

Type		PL 7
Plunger material		Stainless steel
Pump head housing material ^①		1.4571
Plunger Ø	Flow rate ^② at 170 strokes min ⁻¹ ③	
mm	l/h	max. operating pressure (bar)
25	0... 755 ¹⁾	200
30	0... 1087 ¹⁾	200
36	0... 1566 ¹⁾	200
42	0... 1693	200
50	0... 2400	200
56	0... 3010	200
62	0... 3690	166
75	0... 5400	113
90	0... 7775	79
100	0... 9599	64
125	0... 12585 ²⁾	41
150	0... 18123 ²⁾	28
175	0... 24667 ²⁾	21
200	0... 32218 ²⁾	16

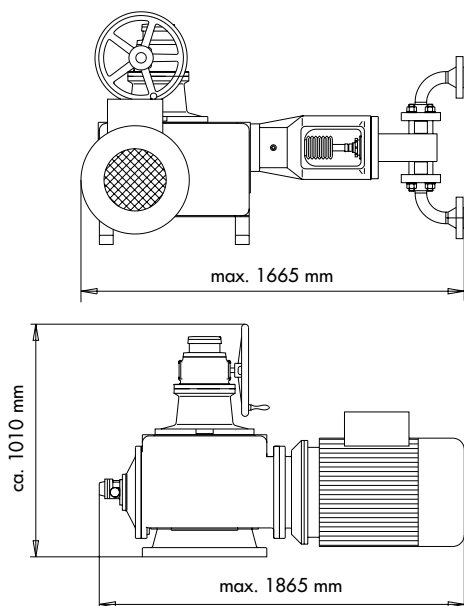
1) Stroke frequency 214 min⁻¹ 2) Stroke frequency 142 min⁻¹

① Special types available, e.g. ceramic, rubberized.

② Values at 100% efficiency. Allow for liquid transmission losses.

③ Selectable frequencies: 53, 72, 96, 107, 114, 142, 170, 214 min⁻¹. Additional flow charts on page 243.

Dimensions and gear data



Gear type

Integrated worm gear

Reduction ratios (selectable)

41:3, 41:4, 41:6, 43:5

Resultant stroke frequency depends on motor type and mains frequency

Lubrication

- Oil circulation system

Drive motor

Electric motor to customer specification

- Standard
- Variable speed
- Explosion-proof version

Weight, according to equipment (without motor)

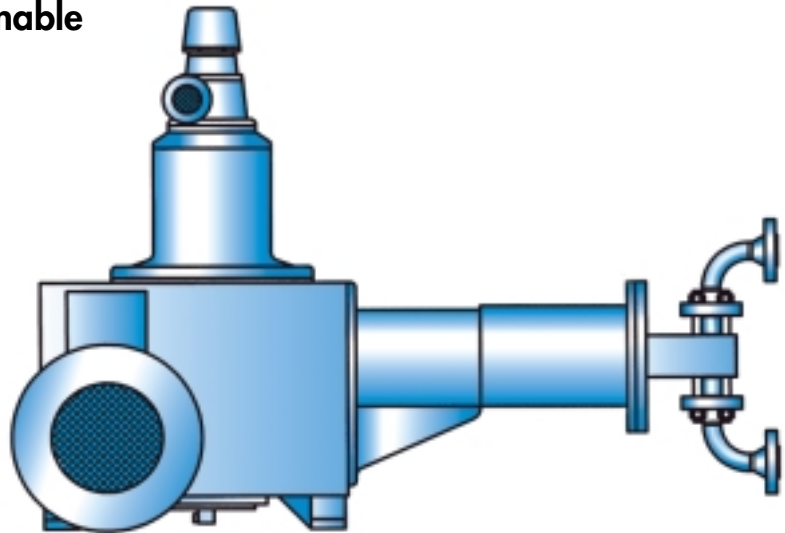
750 - 1100 kg



Plunger Metering Pumps Type BS horizontally combinable

Horizontal series

- **Type**
Single-head plunger metering pump
- **Flow rate**
0...36420 l/h
- **Pressure**
Stainless steel plunger pump head up to 1000 bar (on request)

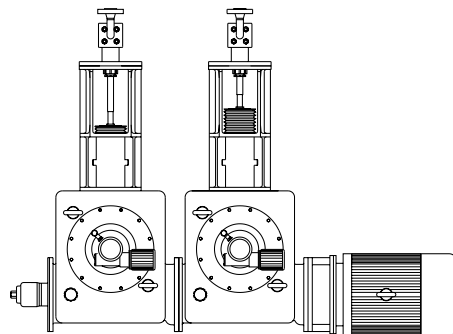


Advantages

- Robust and compact construction
- High volumetric efficiency
- Low investment costs
- Flexible modular design
- High precision gear technology

Combinations

Horizontal Type BS plunger pumps can be combined with each other in **horizontal** assemblies.



BS-BS-combination

The number of pumps which can be combined depends on the operating pressure, the pump head type and the piston diameter.

Applications

For metering non-hazardous fluids.

Pump head series PL 7

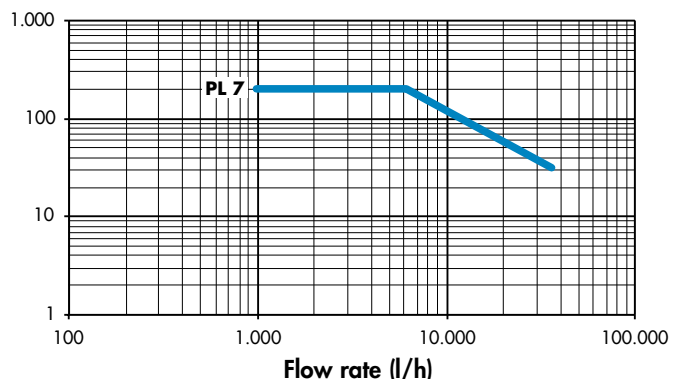
Plunger pump heads

Stainless steel pump heads

PL7 Plunger

Characteristics

Pressure (bar)



Pump head series PL 7 / Flow rate and pressure

Type		PL 7
Plunger material		Stainless steel
Pump head housing material ^①		1.4571
Plunger Ø	Flow rate ^② at 195 strokes min ⁻¹ ^③	
mm	l/h	max. operating pressure (bar)
30	0... 991	200
36	0... 1427	200
42	0... 1942	200
56	0... 3452	200
62	0... 4232	200
75	0... 6192	200
90	0... 8917	157
100	0... 11008	127
125	0... 17200	81
150	0... 21230 ¹⁾	57
175	0... 28896 ¹⁾	42
200	0... 37742 ¹⁾	32

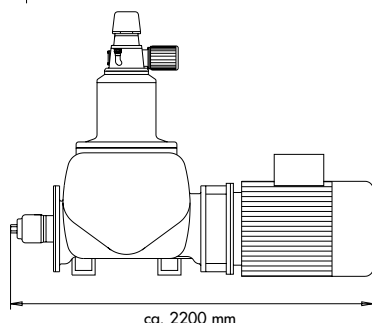
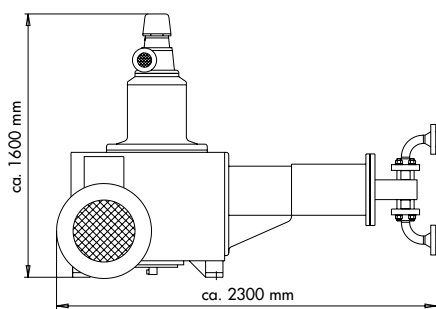
¹⁾ Stroke frequency 167 min⁻¹

^① Special types available, e.g. ceramic, rubberized.

^② Values at 100% efficiency. Allow for liquid transmission losses.

^③ Selectable frequencies: 54, 70, 97, 108, 125, 136, 167, 195 min⁻¹. Additional flow charts on page 243.

Dimensions and gear data



Gear type

Integrated worm gear

Reduction ratios (selectable)

30:4, 35:4, 43:4, 54:4

Resultant stroke frequency depends on motor type and mains frequency

Lubrication

- Oil circulation system

Drive motor

Electric motor to customer specification

- Standard
- Variable speed
- Explosion-proof version

Weight, according to equipment (without motor)

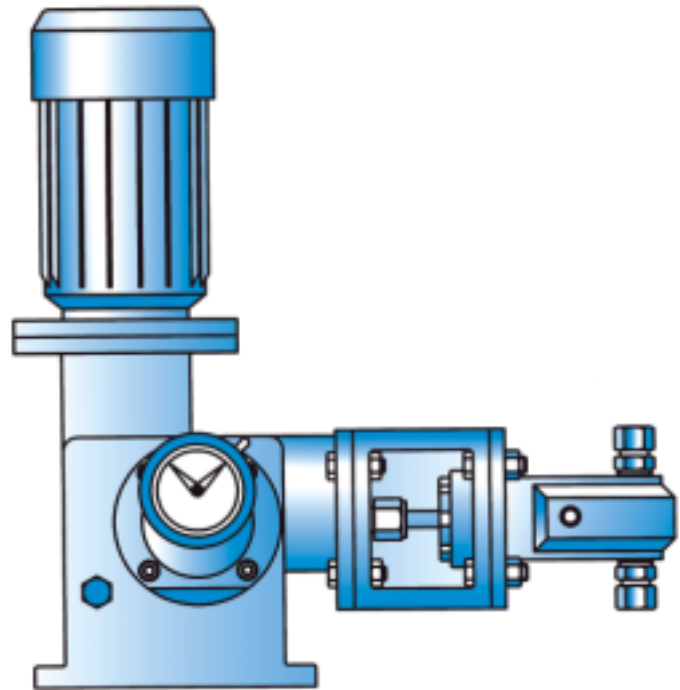
2100 - 2400 kg



Plunger Metering Pumps Type K horizontally combinable

Horizontal series

- **Type**
Single-head
plunger metering pump
- **Flow rate**
0...1590 l/h
with standard plunger pump head
0...1700 l/h
with double-acting disc plunger
- **Pressure**
Stainless steel plunger pump head
up to 1000 bar (on request),
double-acting disc plunger and pla-
stic pump heads up to 10 bar.



Advantages

- Robust and compact construction
- High volumetric efficiency
- Low investment costs
- Flexible modular design
- High precision gear technology

Combinations

Not combinable.

Applications

For metering non-hazardous fluids.

Pump head series PL 8 – 10

Plunger pump heads

Stainless steel pump heads

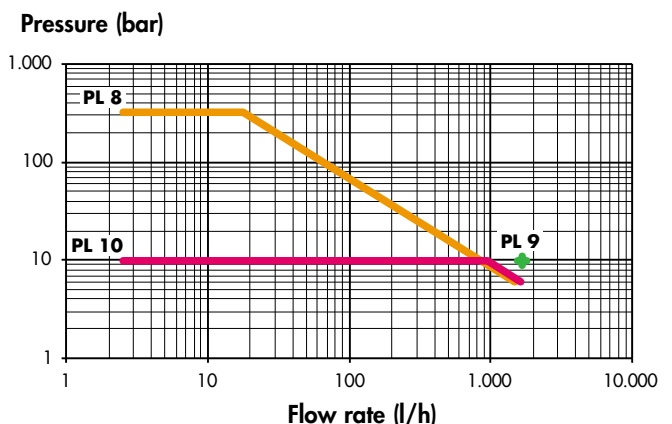
PL 8 Plunger

PL 9 Double-acting disc plunger

Plastic pump heads

PL 10 Plunger

Characteristics



Pump head series PL 8 – 10 / Flow rate and pressure

Type	PL 8	PL 9	PL 10
Plunger material	Stainless steel	Stainless steel	Al ₂ O ₃
Pump head housing material ^①	1.4571	1.4571	Plastic
Plunger ∅	Flow rate ^② at 200 strokes min ⁻¹ ^③		
mm	l/h		max. operating pressure (bar)
3	0... 2.54	325	–
5	0... 7.07	325	–
6	0... 10.18	325	–
8	0... 18.1	325	–
12	0... 40.7	220	–
16	0... 72.4	124	–
20	0... 113	80	–
25	0... 177	50	–
30	0... 254	35	–
36	0... 366	25	–
42	0... 499	18	–
50	0... 707	13	–
56	0... 887 (1700)	10	10
62	0... 1087	8	–
68	0... 1307	7	–
75	0... 1590	6	–

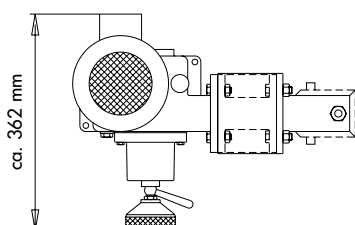
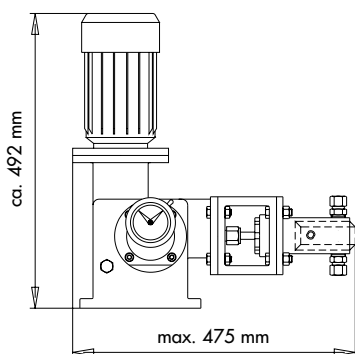
Flow rate in () for double-acting pump heads

① Special types available, e.g. ceramic, rubberized.

② Values at 100% efficiency. Allow for liquid transmission losses.

③ Selectable frequencies: 50, 72, 100, 127, 144, 170, 200 min⁻¹. Additional flow charts on page 240.

Dimensions and gear data



Gear type

Integrated worm gear

Reduction ratios (selectable)

22:1, 28:1, 28:2, 33:2, 39:2

Resultant stroke frequency depends on motor type and mains frequency

Lubrication

- Splash lubrication

Drive motor

Electric motor to customer specification

- Standard
- Variable speed
- Explosion-proof version

Weight, according to equipment (without motor)

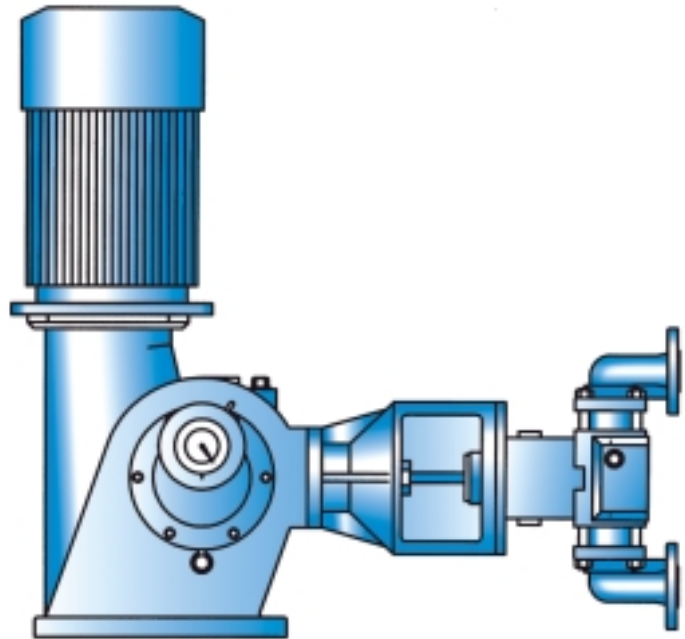
20,5 - 78 kg



Plunger Metering Pumps Type D horizontally combinable

Horizontal series

- **Type**
Single-head
plunger metering pump
- **Flow rate**
0...6361 l/h
with standard plunger pump head
0...24590 l/h
with double-acting disc plunger
- **Pressure**
Stainless steel plunger pump head up to 1000 bar (on request), double-acting disc plunger up to 25 bar and plastic pump heads up to 10 bar.

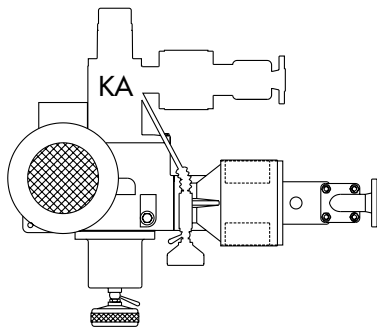


Advantages

- Robust and compact construction
- High volumetric efficiency
- Low investment costs
- Flexible modular design
- High precision gear technology

Combinations

Not combinable, but can be extended with special pump type KA.



Applications

For metering non-hazardous fluids.

Pump head series PL 8 – 10

Plunger pump heads

Stainless steel pump heads

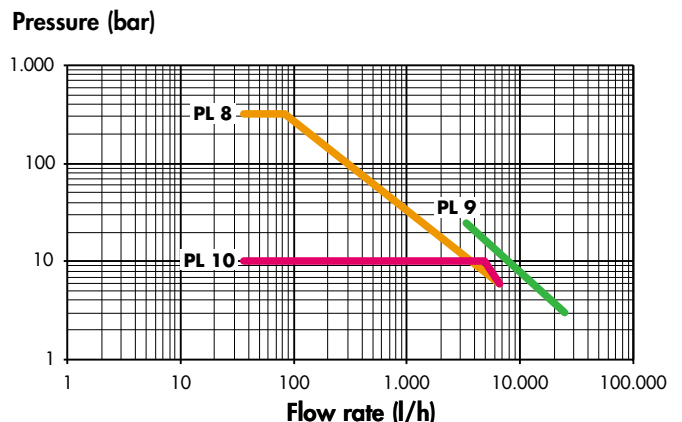
PL 8 Plunger

PL 9 Double-acting disc plunger

Plastic pump heads

PL 10 Plunger

Characteristics



Pump head series PL 8 – 10 / Flow rate and pressure

Type	PL 8	PL 9	PL 10
Plunger material	Stainless steel	Stainless steel	Al ₂ O ₃
Pump head housing material ^①	1.4571	1.4571	Plastic
Plunger ∅	Flow rate ^② at 200 strokes min ⁻¹ ^③		
mm	l/h		max. operating pressure (bar)
8	0... 36.19	325	–
10	0... 56.55	325	–
12	0... 81.43	325	–
16	0... 145	200	–
20	0... 226	200	–
25	0... 353	163	–
30	0... 509	113	–
36	0... 733	79	–
42	0... 997	57	–
50	0... 1414	41	–
56	0... 1773 (3321)	32	25
62	0... 2174	26	–
68	0... 2615	22	–
75	0... 3181 (6136)	18	18
82	0... 3802 (7378)	15	15
90	0... 4580 (8935)	12.5	12.5
100	0... 4798 ¹⁾ (11084)	10	10
110	0... 4912 ²⁾ (13459)	8	8
125	0... 5622 ³⁾ (17445)	6.5	6.5
150	0... (17904) ²⁾	–	4.5
175	0... (24502) ²⁾	–	3

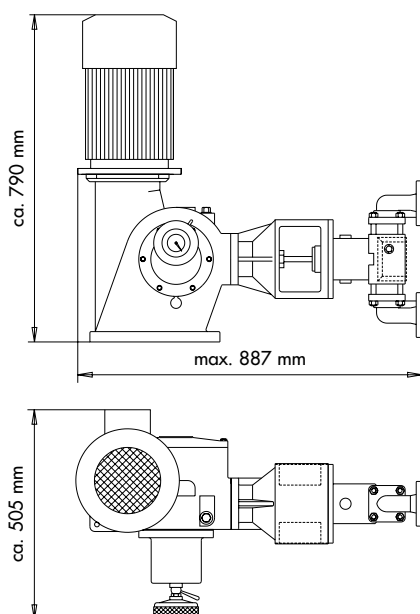
¹⁾ Stroke frequency 170 min⁻¹ ²⁾ Stroke frequency 144 min⁻¹ ³⁾ Stroke frequency 127 min⁻¹ Flow rate in () for double-acting pump heads

① Special types available, e.g. ceramic, rubberized.

② Values at 100% efficiency. Allow for liquid transmission losses.

③ Selectable frequencies: 50, 72, 100, 127, 144, 170, 200 min⁻¹. Additional flow charts on page 241.

Dimensions and gear data



Gear type

Integrated worm gear

Reduction ratios (selectable)

33:2, 39:2, 44:2, 56:1, 56:2, 56:4

Resultant stroke frequency depends on motor type and mains frequency

Lubrication

- Splash lubrication

Drive motor

Electric motor to customer specification

- Standard
- Variable speed
- Explosion-proof version

Weight, according to equipment (without motor)

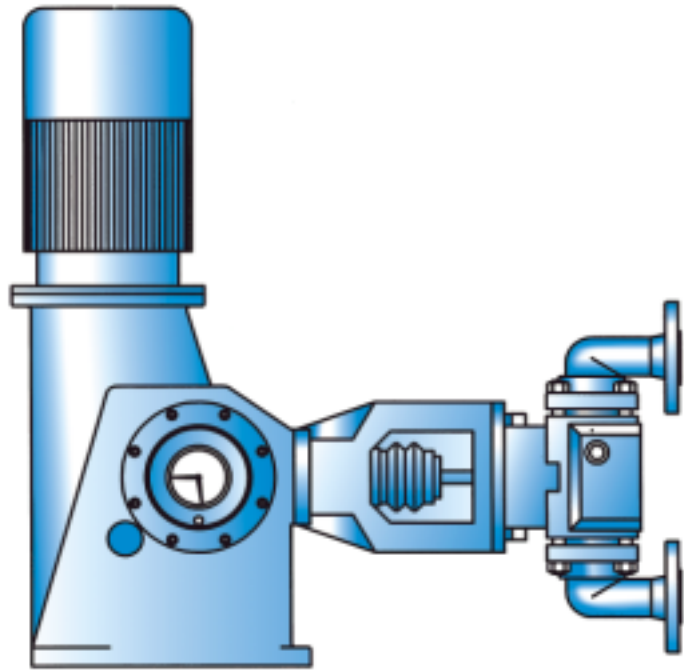
83 - 214 kg



Plunger Metering Pumps Type DS horizontally combinable

Horizontal series

- **Type**
Single-head
plunger metering pump
- **Flow rate**
0...16286 l/h
with standard plunger pump head
0...44385 l/h
with double-acting disc plunger
- **Pressure**
Stainless steel plunger pump head up to
1000 bar (on request),
double-acting disc plunger heads
up to 25 bar.

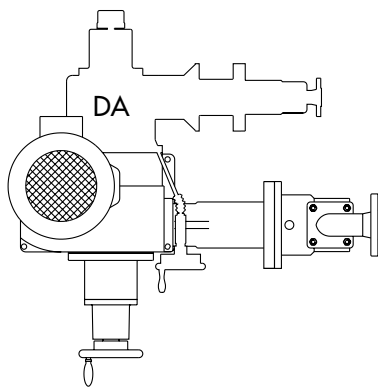


Advantages

- Robust and compact construction
- High volumetric efficiency
- Low investment costs
- Flexible modular design
- High precision gear technology

Combinations

Not combinable, but can be extended with special pump type DA.



Applications

For metering non-hazardous fluids.

Pump head series PL 7 + 9

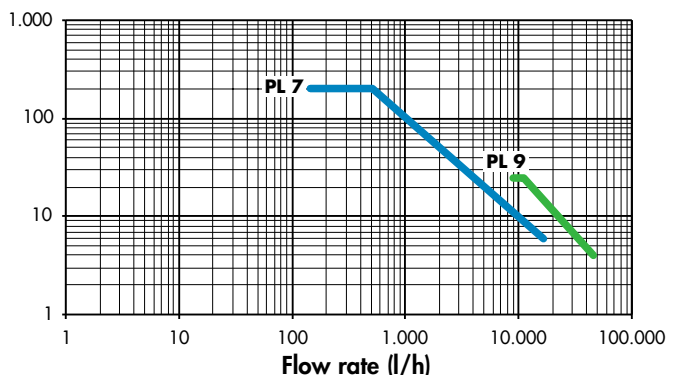
Plunger pump heads

Stainless steel pump heads

- **PL 7** Plunger
- **PL 9** Double-acting disc plunger

Characteristics

Pressure (bar)



Pump head series PL 7 + 9 / Flow rate and pressure

Type	PL 7	PL 9
Plunger material	Stainless steel	Stainless steel
Pump head housing material ^①	1.4571	1.4571
Plunger Ø	Flow rate ^② at 200 strokes min ⁻¹ ^③	max. operating pressure (bar)
mm	l/h	
12	0... 81.43	200
16	0... 145	200
20	0... 226	200
25	0... 353	200
30	0... 509	200
36	0... 733	196
42	0... 997 (1486)	144
50	0... 1414 (2318)	102
56	0... 1773 (3038)	81
62	0... 2174	66
68	0... 2615	55
75	0... 3181 (5853)	45
82	0... 3802 (7096)	38
90	0... 4580 (8652)	32
100	0... 4798 ¹⁾ (10801)	25
110	0... 4912 ²⁾ (13176)	21
125	0... 6343 ²⁾ (17163)	16
150	0... 9134 ²⁾ (17904) ²⁾	11
175	0...12433 ²⁾ (24502) ²⁾	8
200	0...16239 ²⁾ (32114) ²⁾	6
225	0... (35969) ³⁾	-
250	0... (44516) ³⁾	-

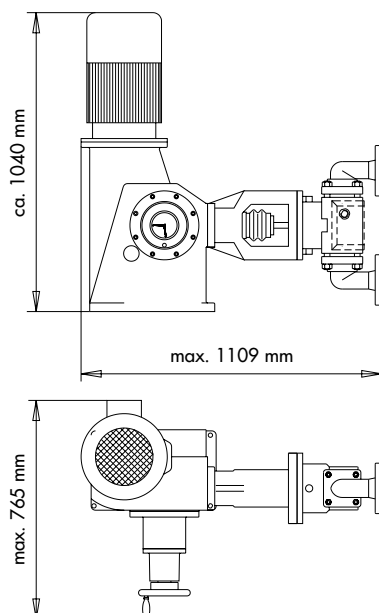
¹⁾ Stroke frequency 170 min⁻¹ ²⁾ Stroke frequency 144 min⁻¹ ³⁾ Stroke frequency 127 min⁻¹ Flow rate in () for double-acting pump head

① Special types available, e.g. ceramic, rubberized.

② Values at 100% efficiency. Allow for liquid transmission losses.

③ Selectable frequencies: 50, 72, 100, 127, 144, 170, 200 min⁻¹. Additional flow charts on page 242.

Dimensions and gear data



Gear type

Integrated worm gear

Reduction ratios (selectable)

28:1, 28:2, 33:2, 39:2, 44:2, 56:1

Resultant stroke frequency depends on motor type and mains frequency

Lubrication

- Oil circulation system

Drive motor

Electric motor to customer specification

- Standard
- Variable speed
- Explosion-proof version

Weight, according to equipment (without motor)

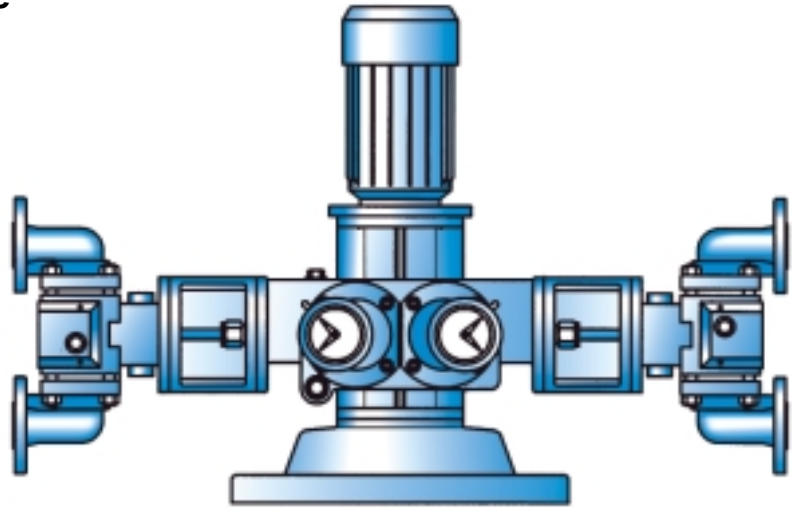
232 - 377 kg



Plunger Metering Pumps Type J vertically combinable

Vertical series

- **Type**
Dual-head
plunger metering pump
- **Flow rate**
0...1590 l/h each pump head
with standard plunger pump head
0...1700 l/h each pump head
with double-acting disc plunger
- **Pressure**
Stainless steel plunger pump heads
up to 1000 bar (on request),
double-acting disc plunger and pla-
stic pump heads up to 10 bar.

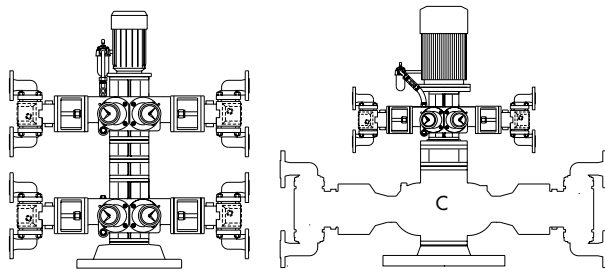


Advantages

- Robust and compact construction
- High volumetric efficiency
- Low investment costs
- High precision gear
- Flexible modular design

Combinations

Vertical type J plunger pumps can be combined with each other and with type C pumps in **vertical** assemblies.



J-J combination

J-C combination

The number of pumps which can be combined depends on the operating pressure, the pump head type and the plunger diameter.

Applications

For metering non-hazardous fluids.

Pump head series PL 8 – 10

Plunger pump heads

Stainless steel plunger pump heads

PL 8 Plunger

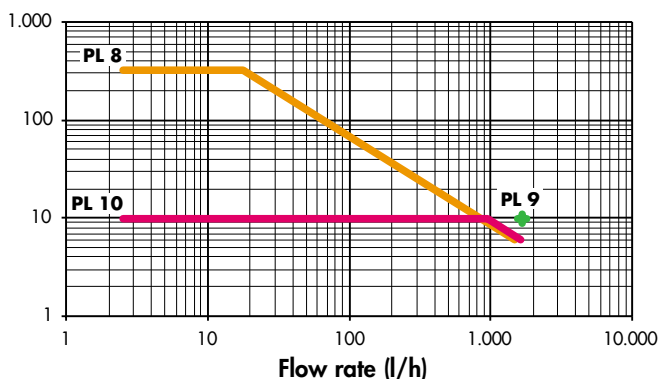
PL 9 Double-acting disc plunger

Plastic plunger pump heads

PL 10 Plunger

Characteristics

Pressure (bar)



Pump head series PL 8 - 10 / Flow rate and pressure

Type	PL 8	PL 9	PL 10
Plunger material	Stainless steel	Stainless steel	Al ₂ O ₃
Pump head housing material ^①	1.4571	1.4571	Plastic
Plunger ∅	Flow rate ^② at 200 strokes min ⁻¹ ③		
mm	l/h		max. operating pressure (bar)
3	0... 2.54	325	–
5	0... 7.07	325	–
6	0... 10.18	325	–
8	0... 18.1	325	–
12	0... 40.7	220	–
16	0... 72.4	124	–
20	0... 113	80	–
25	0... 177	50	–
30	0... 254	35	–
36	0... 366	25	–
42	0... 499	18	–
50	0... 707	13	–
56	0... 887 (1700)	10	10
62	0... 1087	8	–
68	0... 1307	7	–
75	0... 1590	6	–

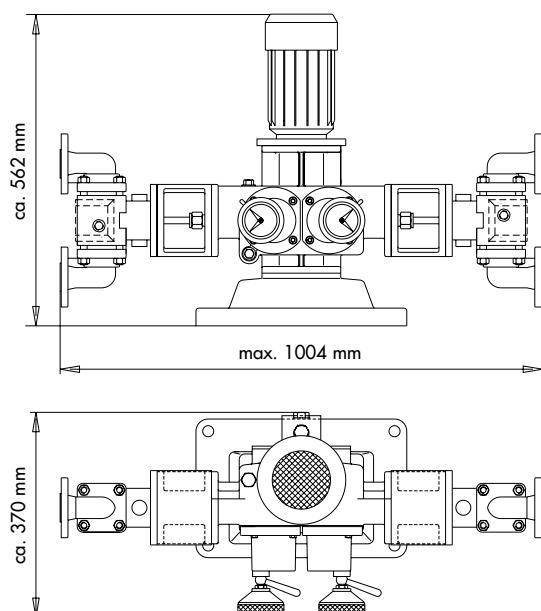
Flow rate in () for double-acting pump heads

① Special types available, e.g. ceramic, rubberized.

② Values at 100% efficiency. Allow for liquid transmission losses.

③ Selectable frequencies: 50, 72, 100, 127, 144, 170, 200 min⁻¹. Additional flow charts on page 240.

Dimensions and gear data



Gear type

Integrated worm gear

Reduction ratios (selectable)

22:1, 28:1, 28:2, 33:2, 39:2

Resultant stroke frequency depends on motor type and mains frequency

Lubrication

- Splash lubrication (single pump)
- Oil circulation system (multiple pump)

Drive motor

Electric motor to customer specification

- Standard
- Variable speed
- Explosion-proof version

Weight, according to equipment (without motor)

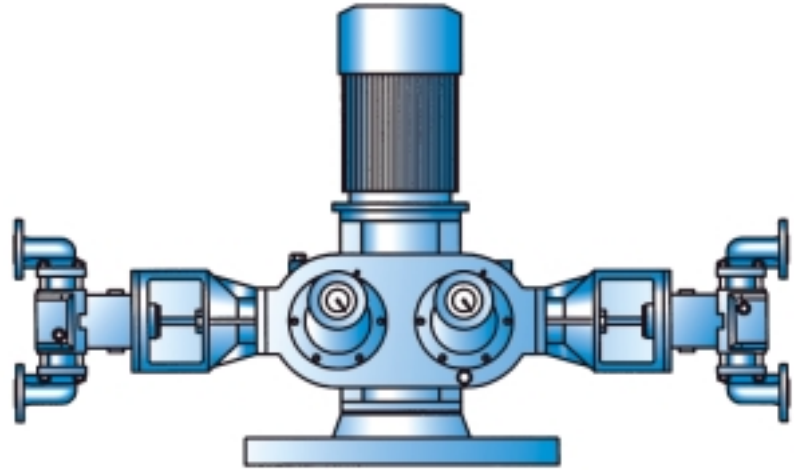
32,5 - 105 kg



Plunger Metering Pumps Type C vertically combinable

Vertical series

- **Type**
Dual-head
plunger metering pump
- **Flow rate**
0...6361 l/h each pump head
with standard plunger pump head
0...24590 l/h each pump head
with double-acting disc plunger
- **Pressure**
Stainless steel plunger pump head up
to 1000 bar (on request), double-
acting disc plunger and plastic pump
heads up to 10 bar.

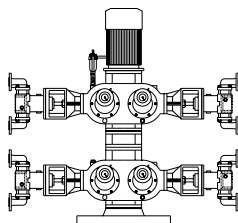


Advantages

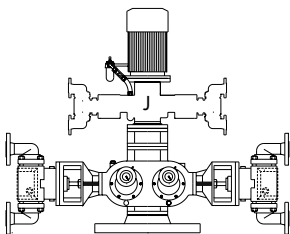
- Robust and compact construction
- High volumetric efficiency
- Low investment costs
- High precision gear
- Flexible modular design

Combinations

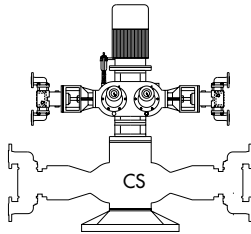
Vertical type C plunger pumps can be combined with each other and with type J and CS pumps in **vertical** assemblies.



C-C- combination



C-J- combination



C-CS- combination

The number of pumps which can be combined depends on the operating pressure, the pump head type and the plunger diameter.

Applications

For metering non-hazardous fluids.

Pump head series PL 8 – 10

Plunger pump heads

Stainless steel plunger pump heads

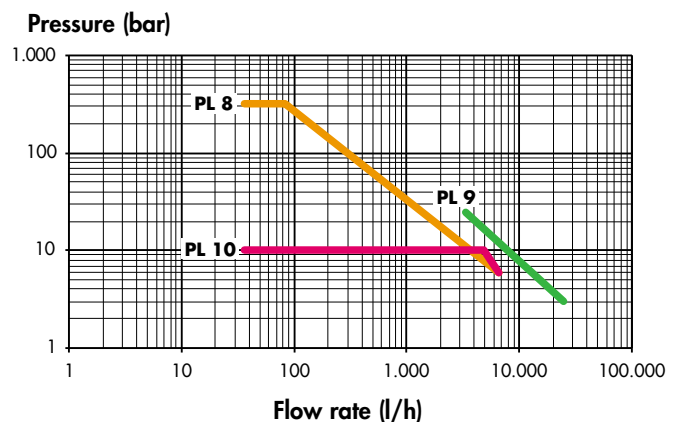
PL 8 Plunger

PL 9 Double-acting disc plunger

Plastic plunger pump heads

PL 10 Plunger

Characteristics



Pump head series PL 8 - 10 / Flow rate and pressure

Type	PL 8	PL 9	PL 10
Plunger material	Stainless steel	Stainless steel	Al ₂ O ₃
Pump head housing material ^①	1.4571	1.4571	Plastic
Plunger Ø	Flow rate ^② at 200 strokes min ⁻¹ ^③		
mm	l/h		max. operating pressure (bar)
8	0... 36.19	325	–
10	0... 56.55	325	–
12	0... 81.43	325	–
16	0... 145	200	–
20	0... 226	200	–
25	0... 353	163	–
30	0... 509	113	–
36	0... 733	79	–
42	0... 997	57	–
50	0... 1414	41	–
56	0... 1773 (3321)	32	25
62	0... 2174	26	–
68	0... 2615	22	–
75	0... 3181 (6136)	18	18
82	0... 3802 (7378)	15	15
90	0... 4580 (8935)	12,5	12,5
100	0... 4798 ¹⁾ (11084)	10	10
110	0... 4912 ²⁾ (13459)	8	8
125	0... 5622 ³⁾ (17445)	6,5	6,5
150	0... (17904) ²⁾	–	4,5
175	0... (24502) ²⁾	–	3

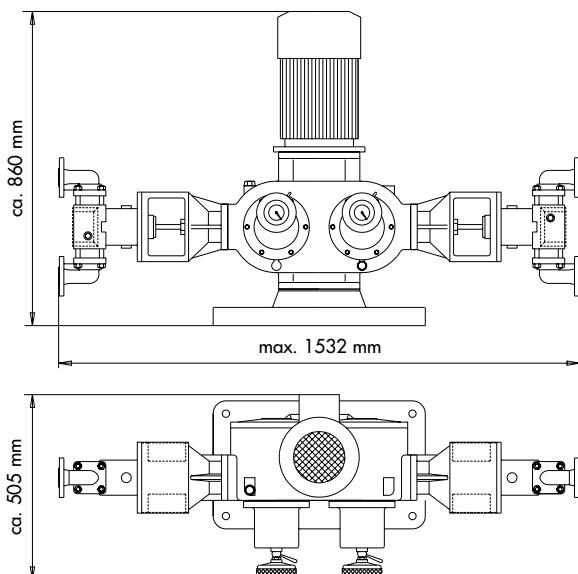
1) Stroke frequency 170 min⁻¹ 2) Stroke frequency 144 min⁻¹ 3) Stroke frequency 127 min⁻¹ Flow rate in () for double-acting pump heads

① Special types available, e.g. ceramic, rubberized.

② Values at 100% efficiency. Allow for liquid transmission losses.

③ Selectable frequencies: 50, 72, 100, 127, 144, 170, 200 min⁻¹. Additional flow charts on page 241.

Dimensions and gear data



Gear type

Integrated worm gear

Reduction ratios (selectable)

33:2, 39:2, 44:2, 56:1, 56:2, 56:4

Resultant stroke frequency depends on motor type and mains frequency

Lubrication

- Splash lubrication (single pump)
- Oil circulation system (multiple pump)

Drive motor

Electric motor to customer specification

- Standard
- Variable speed
- Explosion-proof version

Weight, according to equipment (without motor)

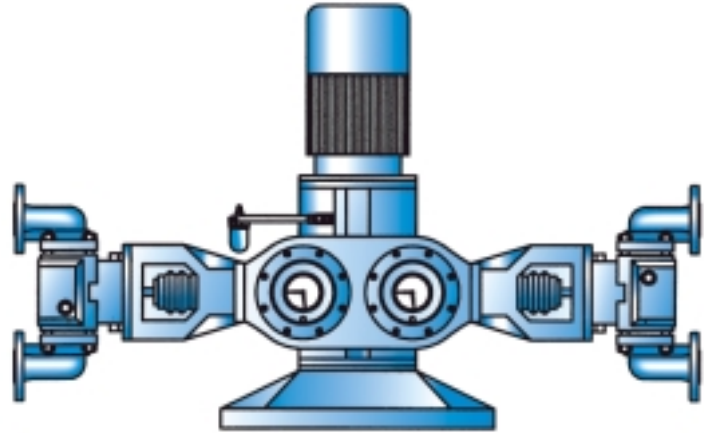
142 - 390 kg



Plunger Metering Pumps Type CS vertically combinable

Vertical series

- **Type**
Dual-head
plunger metering pump
- **Flow rate**
0...16286 l/h each pump head
with standard plunger pump head
0...44385 l/h each pump head
with double-acting disc plunger
- **Pressure**
Stainless steel plunger pump head
up to 1000 bar (on request),
double-acting disc plunger and
plastic pump heads up to 25 bar.

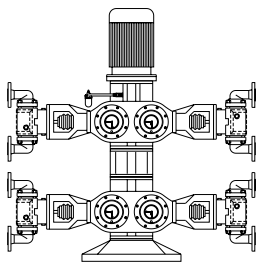


Advantages

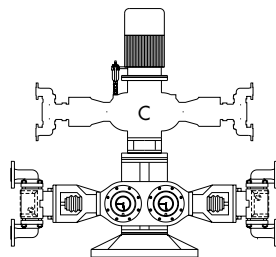
- Robust and compact construction
- High volumetric efficiency
- Low investment costs
- High precision gear
- Flexible modular design

Combinations

Vertical type CS plunger pumps can be combined with each other and with type C pumps in vertical assemblies.



CS-CS- combination



CS-C- combination

The number of pumps which can be combined depends on the operating pressure, the pump head type and the plunger diameter.

Applications

For metering non-hazardous fluids.

Pump head series PL 7 + 9

Plunger pump heads

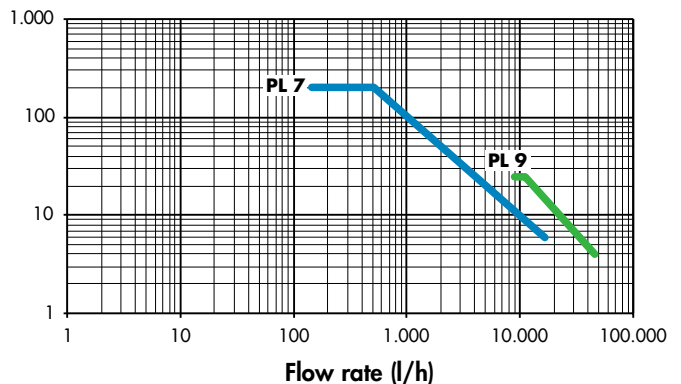
Stainless steel plunger pump heads

PL 7 Plunger

PL 9 Double-acting disc plunger

Characteristics

Pressure (bar)



Pump head series PL 7 + 9 / Flow rate and pressure

Type	PL 7	PL 9
Plunger material	Stainless steel	Stainless steel
Pump head housing material ^①	1.4571	1.4571
Plunger Ø		
Flow rate ^② at 200 strokes min ⁻¹ ^③		
mm	max. operating pressure (bar)	
12	200	-
16	200	-
20	200	-
25	200	-
30	200	-
36	196	-
42	144	-
50	102	-
56	81	-
62	66	-
68	55	-
75	45	-
82	38	-
90	32	25
100	25	25
110	21	21
125	16	16
150	11	11
175	8	8
200	6	6
225	-	5
250	-	4

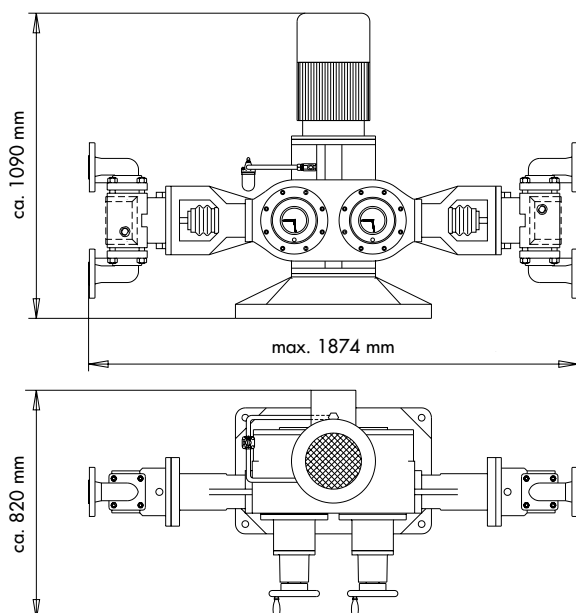
¹⁾ Stroke frequency 170 min⁻¹ ²⁾ Stroke frequency 144 min⁻¹ ³⁾ Stroke frequency 127 min⁻¹ Flow rate in () for double-acting pump head

^① Special types available, e.g. ceramic, rubberized.

^② Values at 100% efficiency. Allow for liquid transmission losses.

^③ Selectable frequencies: 50, 72, 100, 127, 144, 170, 200 min⁻¹. Additional flow charts on page 242.

Dimensions and gear data



Gear type

Integrated worm gear

Reduction ratios (selectable)

28:1, 28:2, 33:2, 39:2, 44:2, 56:1

Resultant stroke frequency depends on motor type and mains frequency

Lubrication

- Oil circulation system

Drive motor

Electric motor to customer specification

- Standard
- Variable speed
- Explosion-proof version

Weight, according to equipment (without motor)

300 - 615 kg