

A CATALOGUE FOR MPH HYDRAULIC DIAPHRAGM METERING PUMP

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SIKO PUMP, specialized chemical handing pump manufacturer (www.sikopump.com)
metering pump, magnetic driving pump, diaphragm pump, bellows pump, rotary pump... ..

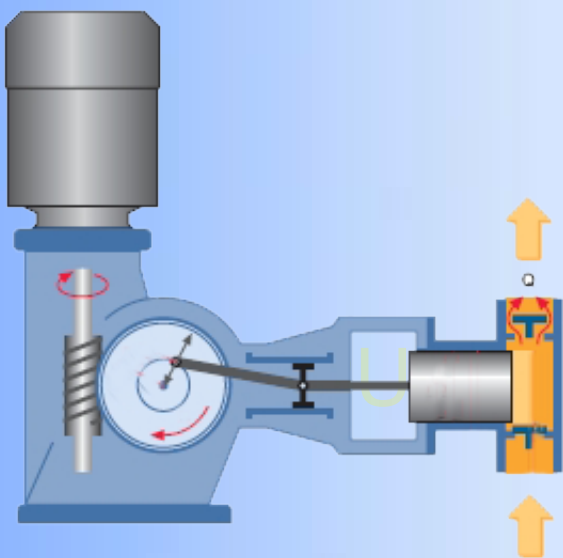
Introduction of Metering Pump

The **metering pump** is a positive displacement chemical dosing device with the ability to vary capacity manually or automatically as process conditions require. It features a high level of repetitive accuracy and is capable of pumping a wide range of chemicals including acids, bases, corrosives or viscous liquids and slurries.

The pumping action is developed by a reciprocating piston which is either in direct contact with the process fluid, or is shielded from the fluid by a diaphragm. Diaphragms are actuated by hydraulic fluid between the piston and the diaphragm.

Metering pumps are generally used in applications where one or more of the following conditions exist:

- Low flow rates in l/hr or GPH are required
- High system pressure exists
- High accuracy feed rate is demanded
- Corrosive, hazardous, or high temperature fluids are handled
- Viscous fluids or slurries need to be pumped



Working Principle of the Metering Pump

Metering pumps normally comprise of a motor, gearbox and pump head. The gear reduces the motor speed and converts the rotary motion into a reciprocating movement of a plunger in the pump head.

The plunger movement generates a stream of liquid utilizing a suction and discharge valve that are opened and closed alternately. Suction and discharge valves are self-acting.

Flow rate of a metering pump is basically defined by the **plunger diameter, stroke length and stroking speed**.



Type of Metering Pump(Liquid end)

Usually the metering pumps are divided into three types, according to the metering pump **Liquid End Structure**:

Piston/plunder Metering Pump--In this type metering pump, the liquid end is just the piston, so the piston will contact the liquid directly. The pump structure is simple, but need packing seal for the piston, and also the piston type pump can reach a high pressure

Mechanical Actuated Diaphragm Metering Pump---In this type pump, the liquid end is changed into a diaphragm. So the liquid is complete separated. It is widely used for Corrosive, hazardous liquid. But this pump pressure can be no very high

Hydraulic Actuated Diaphragm Metering Pump---Similar as the mechanical diaphragm type, the liquid is completely separated, and by apply the hydraulic power, it can get much higher pressure than the mechanical type.

In this catalogue, we will discuss

Hydraulic Actuated Diaphragm Metering Pump

Common Drive Mechanism(Drive mechanism end)

As for the metering pump drive mechanism end, usually they have a similar structure. The worm wheel and worm transfer the motor's rotating movement into piston/plunger's reciprocating movement

MPH Hydraulic diaphragm metering pump features

Seal without leakage

Liquid is completely isolated by the diaphragm, so pump have 100% proof of leakage. It is very good for the viscous, poisonous, corrosive liquid handing.

Long service life

The diaphragm is not directly connected with the piston, the diaphragm will be much more long-lived. And also it allow much higher pressure than the mechanical type

Insides safety valve

For measuring accuracy, each pump will be installed with safety valve, air release valve and surge valve; this is also useful for pump safety, absorbing liquid impact.

Double diaphragm

For safety, pump can be in double diaphragm type with an alarm system, it will stop the pump and give an alarm signal, when one diaphragm breaks.

- ◆ Pump head material(liquid end): SS304,SS316, and SS304 lined PTFE (body is SS304, but all wet part lined PTFE)
- ◆ Pump diaphragm is not directly connected with the piston; a hydraulic device is applied to transfer the piston motion. The diaphragm service time will be longer and the max pressure is also much higher than the mechanical actuated diaphragm metering pump
- ◆ Pump has a the safety valve insides the pump head.

- ◆ Capacity range: 7 L/H to 3200 L/H
- ◆ Pressure range: 1.0 Mpa to 30 Mpa
- ◆ Connection size: 6 mm to 40 mm
- ◆ Power range: 0.37 kw to 7.5 kw
- ◆ Plunger diameter size: 10 mm to 110 mm
- ◆ Viscosity range: 0 to 800mm²/s
- ◆ Media Temperature: -20 to 100 degree
- ◆ Steady state accuracy: +/- 1%
- ◆ Suggested adjustment range: 30% to 100%



Compared with the mechanical metering pump, MPH hydraulic metering pump can reach much higher pressure(max to 30Mpa), while it same keep a seal proof without any leakage. And the diaphragm service life will be much longer. But its structure is complicated than the mechanical type and also the cost is higher.

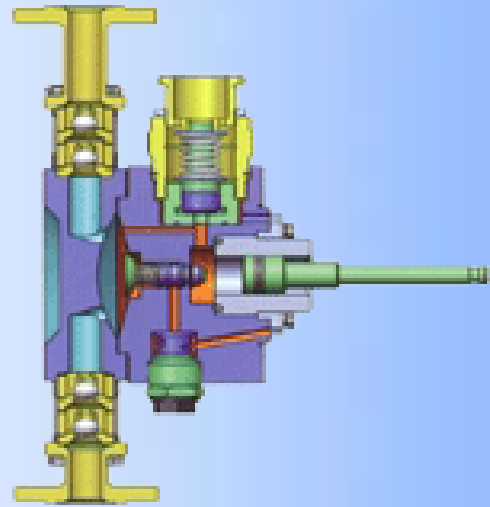
Hydraulic diaphragm metering pump working principles

The hydraulically actuated diaphragm liquid end has a Teflon diaphragm which acts as a barrier between the piston and the process fluid. The piston's pumping motion is applied to hydraulic fluid which causes the diaphragm to flex back and forth as the piston reciprocates.

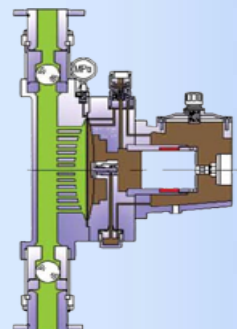
The hydraulically actuated diaphragm operates with equal pressure between the hydraulic and process fluids. This eliminates diaphragm stress, since the pressure is essentially equal on both sides at all times. Two contour plates encase the diaphragm to contain its travel. The hydraulic and process fluids pass through carefully engineered holes in the contour plates in order to come into contact with the diaphragm. Relief and refill valves control the volume of hydraulic fluid. An automatic air bleed valve continuously purges air from the hydraulic fluid.

The diaphragm style pump is sealed. It therefore is an excellent choice for hazardous, toxic, or corrosive chemicals. For extra protection, double diaphragm and leak detection modifications are available, although they are considered redundant since this design is extremely durable.

Because the process fluid must pass through relatively small holes in the contour plate, the disc diaphragm liquid end is not the best choice for slurries, and they are also usually not the best choice when pumping viscous fluids.



Optional device or accessories

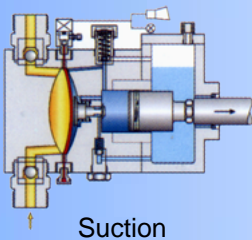


◆ Double diaphragm and alarm system

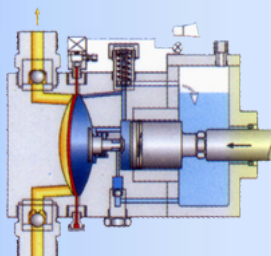
Suitable for delivering viscous, poisonous, corrosive liquid, if one diaphragm broke, pump will stop and send out an alarm.

◆ Remote control system

Outside 4-20mA signal can be inputted into pump to control the pump operation.



Suction



Delivery



MPHS Hydraulic Diaphragm Metering Pump

Capacity range: 7 L/H to 150 L/H, Pressure range: 1.1 Mpa to 20 Mpa

NO.	Model	Capacity	Pressure	Size of piston	stroke	Speed	Power	Inlet/outlet size	Net weight
		L/H	Mpa	Mm	mm	rpm	kw	mm	kg
1	MPHS-7/20	7	20	DN10	25	96	0.55	DN6mm	37
2	MPHS-7/13	7	13		25	96	0.37	DN6mm	37
3	MPHS-11/14	11	14	DN12	25	96	0.55	DN6mm	37
4	MPHS-11/9	11	9		25	96	0.37	DN6mm	37
5	MPHS-16/14	16	14	DN12	25	96	0.55	DN6mm	37
6	MPHS-16/9	16	9		25	96	0.37	DN6mm	37
7	MPHS-20/7.6	20	7.6	DN16	25	96	0.55	DN6mm	37
8	MPHS-20/5.4	20	5.5		25	96	0.37	DN6mm	37
9	MPHS-30/7.6	30	7.6	DN16	25	96	0.55	DN6mm	37
10	MPHS-30/5.4	30	5.4		25	96	0.37	DN6mm	37
11	MPHS-50/3.2	50	3.2	DN25	25	96	0.55	DN10mm	40
12	MPHS-50/2.2	50	2.2		25	96	0.37	DN10mm	40
13	MPHS-75/3.2	75	3.2	DN25	25	96	0.55	DN10mm	40
14	MPHS-75/2.2	75	2.2		25	96	0.37	DN10mm	40
15	MPHS-100/2.0	100	2.0	DN28	25	96	0.55	DN10mm	40
16	MPHS-100/1.3	100	1.3		25	96	0.37	DN10mm	40
17	MPHS-120/2.0	120	2.0	DN32	25	96	0.55	DN10mm	40
18	MPHS-120/1.3	120	1.3		25	96	0.37	DN10mm	40
19	MPHS-150/1.6	150	1.6	DN35	25	96	0.55	DN10mm	40
20	MPHS-150/1.1	150	1.1		25	96	0.37	DN10mm	40

Pump Identification

MP H S - 7/ 20

Pump rated pressure (Mpa)

Pump max capacity (L/H)

Pump base size

T---tiny size, S---Small size, M---Middle size, B---big size
1 or 2 means different sizes in one pump base size level
(Pump base size has close relation with pump capacity)

Metering Pump Type

D---diaphragm metering pump(mechanical type)

P---piston/plunger metering pump

H---hydraulic diaphragm metering pump

Short word for "metering pump"



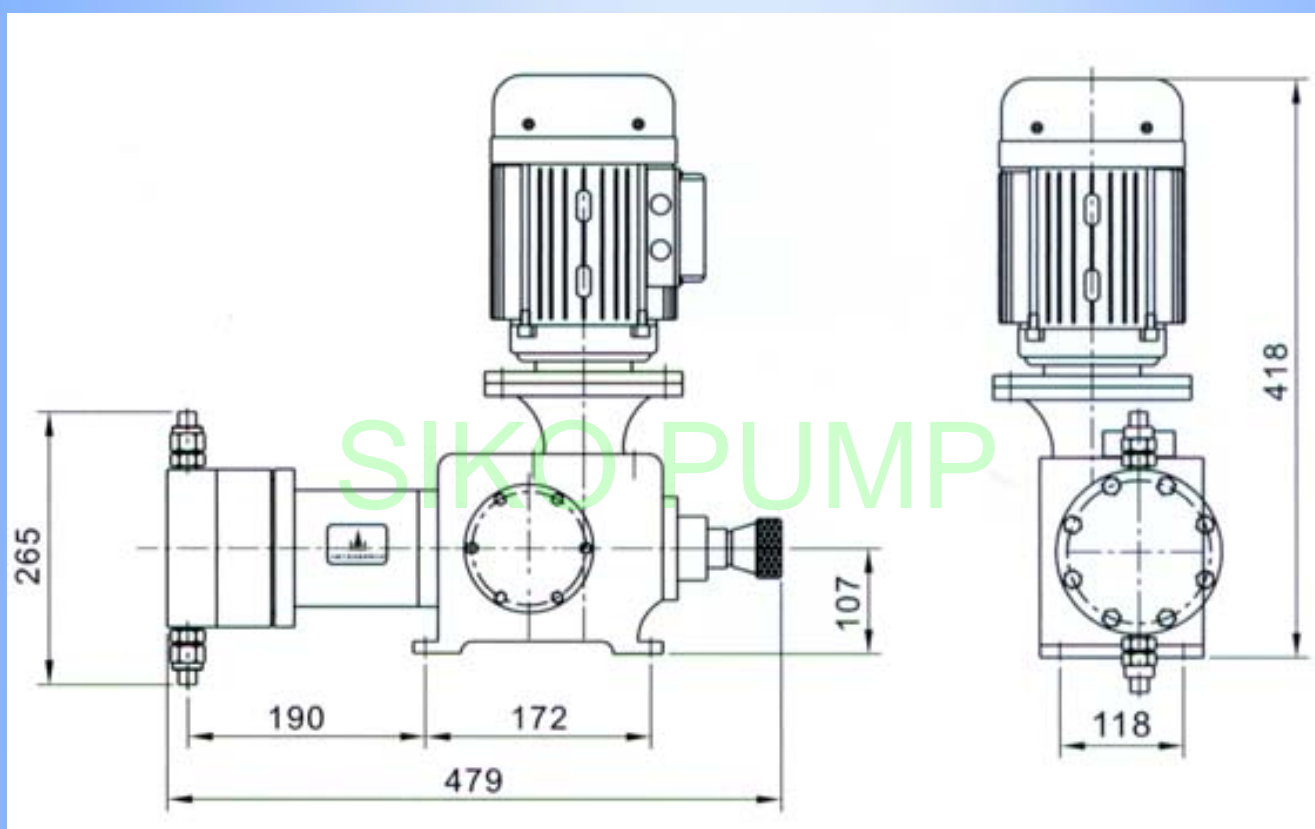
Material

Spare part	Material
Pump Head	SS304,SS316,PTFE lined SS304
Metering Valve	SS304,SS316
Ball valve	Silicon dioxide,SS304,SS316,Ceramic
Diaphragm	Quality PTFE

Working condition

- Envir. temperature: -30 to 60 degree
- Liquid temperature: 0 to 100 degree
- Liquid viscosity: 0.3 to 800mm/s
- Electrical source: 1or 3 phase, 50Hz/60Hz, 220V/380V/440V
- Motor type: IEC, IP45 or IP55(explosion-proof type)
- Adjustment range and accuracy: 10% to 100% at +/- 1%
- Adjust model: by hand or by remote signal
- Self-priming ability: small.

Dimension (mm)



MPHM1 Hydraulic Diaphragm Metering Pump

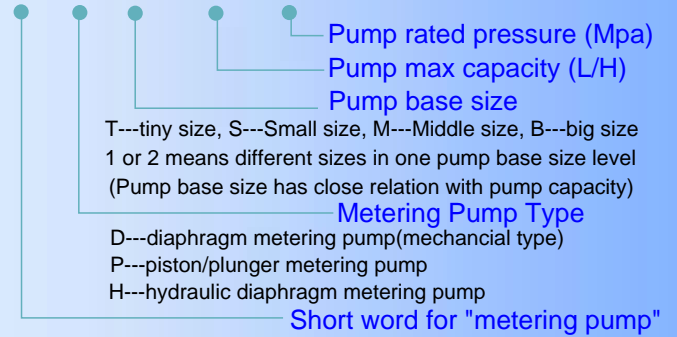
Capacity range: 10 L/H to 400 L/H, Pressure range: 0.8 Mpa to 20 Mpa

NO.	Model	Capacity	Pressure	Size of piston	stroke	Speed	Power	Inlet/outlet size	Net weight
		L/H	Mpa	Mm	mm	rpm	kw	mm	kg
1	MPHM1-10/20	10	20	DN12	25	96	0.75	DN6mm	74
2	MPHM1-10/15	10	15		25	96	0.55	DN6mm	74
3	MPHM1-15/20	15	20	DN12	25	96	0.75	DN6mm	74
4	MPHM1-15/15	15	15		25	96	0.55	DN6mm	74
5	MPHM1-22/10	22	10	DN16	25	96	0.75	DN6mm	74
6	MPHM1-22/8.0	22	8.0		25	96	0.55	DN6mm	74
7	MPHM1-35/10	35	10	DN16	25	96	0.75	DN6mm	74
8	MPHM1-35/8.0	35	8.0		25	96	0.55	DN6mm	74
9	MPHM1-40/7.2	40	7.2	DN20	25	96	0.75	DN10mm	82
10	MPHM1-40/5.4	40	5.4		25	96	0.55	DN10mm	82
11	MPHM1-70/6.0	70	6.0	DN22	25	96	0.75	DN10mm	82
12	MPHM1-70/4.5	70	4.5		25	96	0.55	DN10mm	82
13	MPHM1-90/4.5	90	4.5	DN25	25	96	0.75	DN10mm	82
14	MPHM1-90/3.5	90	3.5		25	96	0.55	DN10mm	82
15	MPHM1-135/3.2	135	3.2	DN30	25	96	0.75	DN10mm	82
16	MPHM1-135/2.4	135	2.4		25	96	0.55	DN10mm	82
17	MPHM1-100/2.8	100	2.8	DN32	25	96	0.75	DN15mm	90
18	MPHM1-100/2.0	100	2.0		25	96	0.55	DN15mm	90
19	MPHM1-150/2.8	150	2.8	DN32	25	96	0.75	DN15mm	90
20	MPHM1-150/2.0	150	2.0		25	96	0.55	DN15mm	90
21	MPHM1-200/2.2	200	2.2	DN36	25	96	0.75	DN15mm	90
22	MPHM1-200/1.6	200	1.6		25	96	0.55	DN15mm	90
23	MPHM1-240/1.8	240	1.8	DN40	25	96	0.75	DN15mm	90
24	MPHM1-240/1.3	240	1.3		25	96	0.55	DN15mm	90
25	MPHM1-300/1.4	300	1.4	DN45	25	96	0.75	DN15mm	90
26	MPHM1-300/1.0	300	1.0		25	96	0.55	DN15mm	90
27	MPHM1-400/1.1	400	1.1	DN50	25	96	0.75	DN15mm	90
28	MPHM1-400/0.8	400	0.8		25	96	0.55	DN15mm	90



Pump Identification

MP H M1 -10/ 20



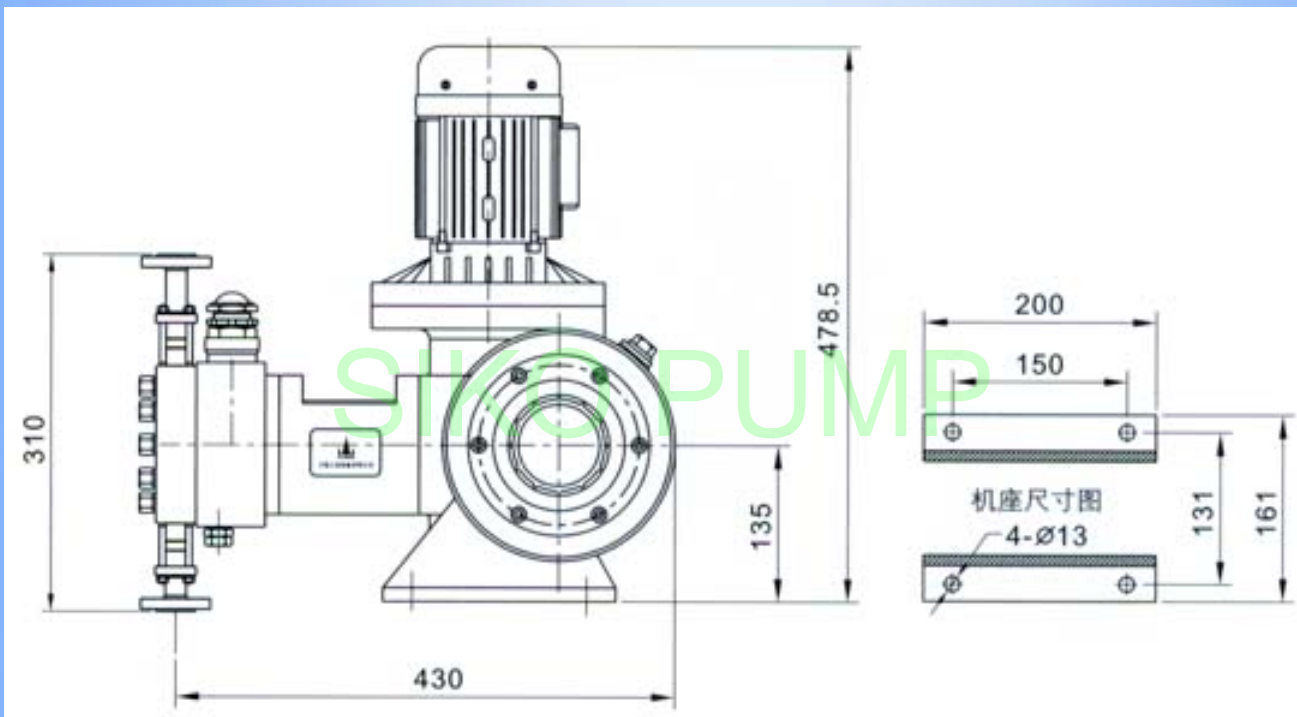
Material

Spare part	Material
Pump Head	SS304,SS316,PTFE lined SS304
Metering Valve	SS304,SS316
Ball valve	Silicon dioxide,SS304,SS316,Ceramic
Diaphragm	Quality PTFE

Working condition

- Envir. temperature: -30 to 60 degree
- Liquid temperature: 0 to 100 degree
- Liquid viscosity: 0.3 to 800mm/s
- Electrical source: 1or 3 phase, 50Hz/60Hz, 220V/380V/440V
- Motor type: IEC, IP45 or IP55(explosion-proof type)
- Adjustment range and accuracy: 10% to 100% at +/- 1%
- Adjust model: by hand or by remote signal
- Self-priming ability: small.

Dimension (mm)



MPHM2 Hydraulic Diaphragm Metering Pump

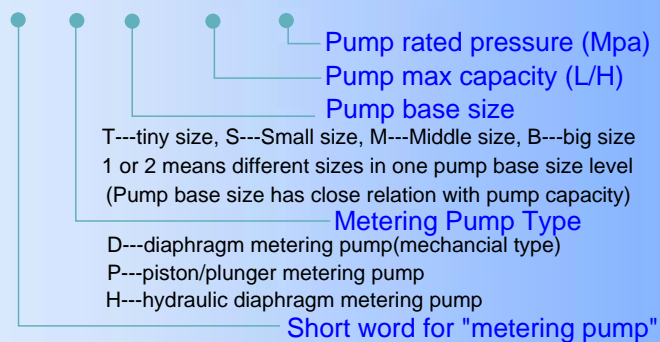
Capacity range: 28 L/H to 750 L/H, Pressure range: 1.0 Mpa to 22 Mpa

NO.	Model	Capacity	Pressure	Size of piston	stroke	Speed	Power	Inlet/outlet size	Net weight
		L/H	Mpa	Mm	mm	rpm	kw	mm	kg
1	MPHM2-28/22	28	22	DN16	30	96	1.5	DN10mm	140
2	MPHM2-28/16	28	16		30	96	1.1	DN10mm	140
3	MPHM2-45/14	45	14	DN20	30	96	1.5	DN10mm	140
4	MPHM2-45/10	45	10		30	96	1.1	DN10mm	140
5	MPHM2-110/9.0	110	9.0	DN25	30	144	1.5	DN10mm	140
6	MPHM2-110/6.3	110	6.3		30	144	1.1	DN10mm	140
7	MPHM2-125/6.5	125	6.5	DN32	30	96	1.5	DN15mm	155
8	MPHM2-125/4.5	125	4.5		30	96	1.1	DN15mm	155
9	MPHM2-160/4.5	160	4.5	DN36	30	96	1.5	DN15mm	155
10	MPHM2-160/3.2	160	3.2		30	96	1.1	DN15mm	155
11	MPHM2-200/3.6	200	3.6	DN40	30	96	1.5	DN15mm	155
12	MPHM2-200/2.6	200	2.6		30	96	1.1	DN15mm	155
13	MPHM2-250/2.8	250	2.8	DN45	30	96	1.5	DN20mm	162
14	MPHM2-250/2.0	250	2.0		30	96	1.1	DN20mm	162
15	MPHM2-320/2.3	320	2.3	DN50	30	96	1.5	DN20mm	162
16	MPHM2-320/1.6	320	1.6		30	96	1.1	DN20mm	162
17	MPHM2-380/1.8	380	1.8	DN55	30	96	1.5	DN20mm	162
18	MPHM2-380/1.4	380	1.4		30	96	1.1	DN20mm	162
19	MPHM2-460/1.6	460	1.6	DN60	30	96	1.5	DN20mm	162
20	MPHM2-460/1.2	460	1.2		30	96	1.1	DN20mm	162
21	MPHM2-500/1.4	500	1.4	DN63	30	96	1.5	DN20mm	162
22	MPHM2-500/1.0	500	1.0		30	96	1.1	DN20mm	162
23	MPHM2-750/1.4	750	1.4	DN63	30	144	1.5	DN20mm	162
24	MPHM2-750/1.0	750	1.0		30	144	1.1	DN20mm	162



Pump Identification

MP H M2 - 28/ 22



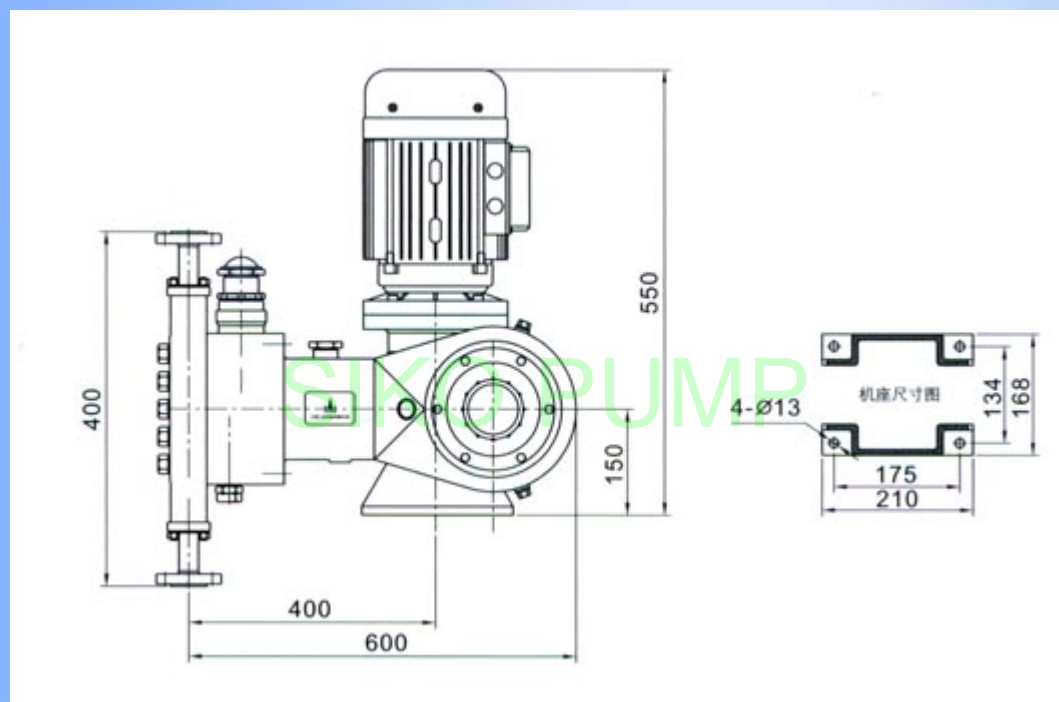
Material

Spare part	Material
Pump Head	SS304,SS316,PTFE lined SS304
Metering Valve	SS304,SS316
Ball valve	Silicon dioxide,SS304,SS316,Ceramic
Diaphragm	Quality PTFE

Working condition

- Envir. temperature: -30 to 60 degree
- Liquid temperature: 0 to 100 degree
- Liquid viscosity: 0.3 to 800mm/s
- Electrical source: 1or 3 phase, 50Hz/60Hz, 220V/380V/440V
- Motor type: IEC, IP45 or IP55(explosion-proof type)
- Adjustment range and accuracy: 10% to 100% at +/- 1%
- Adjust model: by hand or by remote signal
- Self-priming ability: small.

Dimension (mm)



MPHB Hydraulic Diaphragm Metering Pump

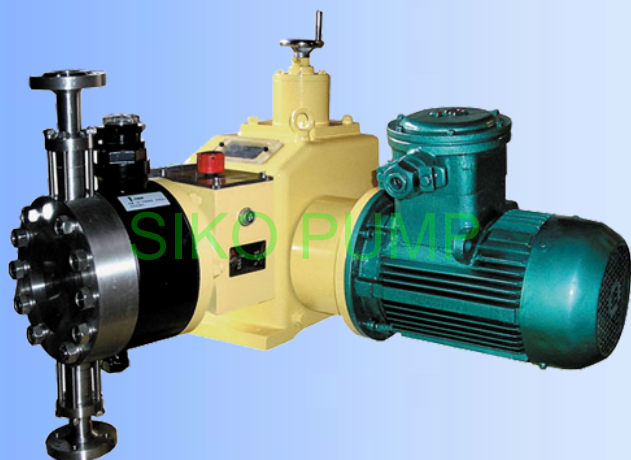
Capacity range: 40 L/H to 1800 L/H, Pressure range: 1.2 Mpa to 40 Mpa

NO.	Model	Capacity	Pressure	Size of piston	stroke	Speed	Power	Inlet/outlet size	Net weight
		L/H	Mpa	Mm	mm	rpm	kw	mm	kg
1	MPHB-40/40	40	40	DN16	40	96	4	DN10mm	200
2	MPHB-40/30	40	30		40	96	3	DN10mm	200
3	MPHB-65/28	65	28	DN20	40	96	4	DN10mm	200
4	MPHB-65/20	65	20		40	96	3	DN10mm	200
5	MPHB-100/28	100	28	DN20	40	96	4	DN10mm	200
6	MPHB-100/20	100	20		40	96	3	DN10mm	200
7	MPHB-160/18	160	18	DN25	40	96	4	DN15mm	210
8	MPHB-160/13	160	13		40	96	3	DN15mm	210
9	MPHB-265/11	265	11	DN32	40	96	4	DN15mm	210
10	MPHB-265/8	265	8		40	96	3	DN15mm	210
11	MPHB-340/8.5	340	8.5	DN36	40	96	4	DN15mm	210
12	MPHB-340/6.5	340	6.5		40	96	3	DN15mm	210
13	MPHB-420/6.8	420	6.8	DN40	40	96	4	DN20mm	220
14	MPHB-420/5.4	420	5.4		40	96	3	DN20mm	220
15	MPHB-540/5.6	540	5.6	DN45	40	96	4	DN20mm	220
16	MPHB-540/4.2	540	4.2		40	96	3	DN20mm	220
17	MPHB-670/4.5	670	4.5	DN50	40	96	4	DN20mm	220
18	MPHB-670/3.5	670	3.5		40	96	3	DN20mm	220
19	MPHB-820/3.8	820	3.8	DN55	40	96	4	DN20mm	220
20	MPHB-820/2.8	820	2.8		40	96	3	DN20mm	220
21	MPHB-985/3.2	985	3.2	DN60	40	96	4	DN25mm	240
22	MPHB-985/2.4	985	2.4		40	96	3	DN25mm	240
23	MPHB-1160/2.6	1160	2.6	DN65	40	96	4	DN25mm	240
24	MPHB-1160/2.0	1160	2.0		40	96	3	DN25mm	240
25	MPHB-1350/2.3	1350	2.3	DN70	40	96	4	DN25mm	240
26	MPHB-1350/1.6	1350	1.6		40	96	3	DN25mm	240
27	MPHB-1550/2.0	1550	2.0	DN75	40	96	4	DN32mm	256
28	MPHB-1550/1.4	1550	1.4		40	96	3	DN32mm	256
29	MPHB-1800/1.8	1800	1.8	DN80	40	96	4	DN32mm	256
30	MPHB-1800/1.2	1800	1.2		40	96	3	DN32mm	256

Pump Identification

MP H B - 40/ 40

- Pump rated pressure (Mpa)
- Pump max capacity (L/H)
- Pump base size
- T---tiny size, S---Small size, M---Middle size, B---big size
- 1 or 2 means different sizes in one pump base size level
(Pump base size has close relation with pump capacity)
- Metering Pump Type**
- D---diaphragm metering pump(mechanical type)
- P---piston/plunger metering pump
- H---hydraulic diaphragm metering pump
- Short word for "metering pump"**



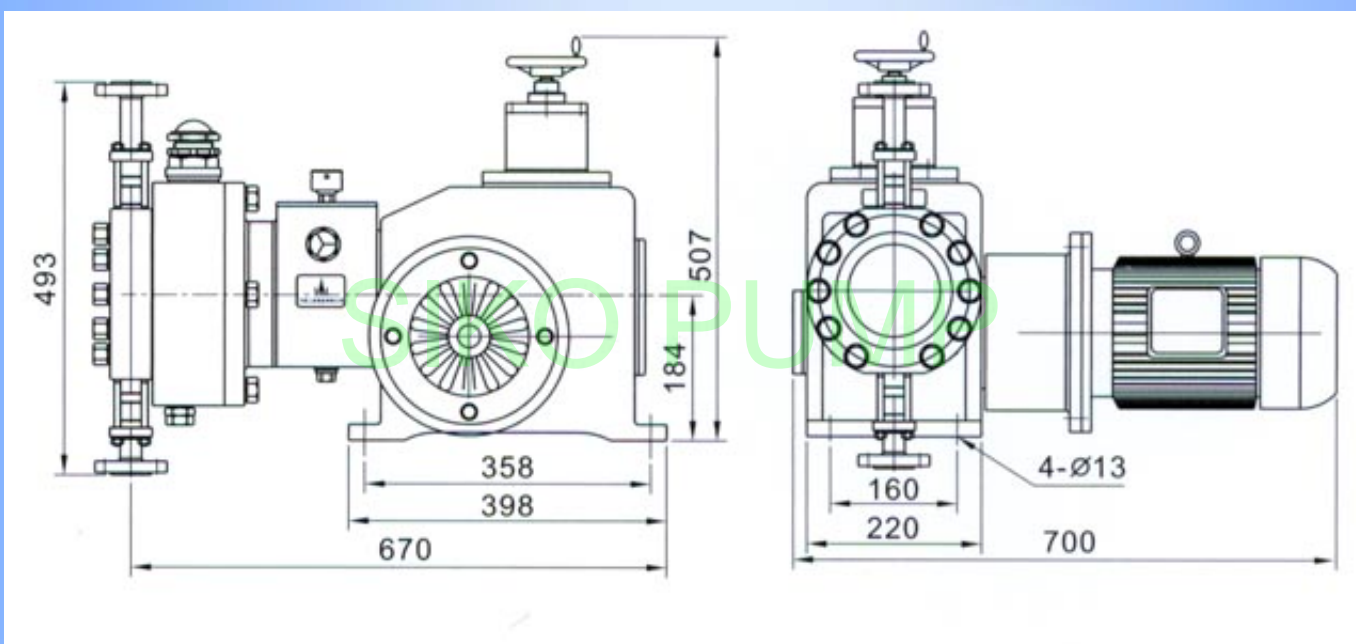
Material

Spare part	Material
Pump Head	SS304,SS316,PTFE lined SS304
Metering Valve	SS304,SS316
Ball valve	Silicon dioxide,SS304,SS316,Ceramic
Diaphragm	Quality PTFE

Working condition

- Envir. temperature: -30 to 60 degree
- Liquid temperature: 0 to 100 degree
- Liquid viscosity: 0.3 to 800mm/s
- Electrical source: 1or 3 phase, 50Hz/60Hz, 220V/380V/440V
- Motor type: IEC, IP45 or IP55(explosion-proof type)
- Adjustment range and accuracy: 10% to 100% at +/- 1%
- Adjust model: by hand or by remote signal
- Self-priming ability: small.

Dimension (mm)





SIKO PUMP, specialized chemical handing pump manufacturer.

Metering pump, magnetic driving pump, diaphragm pump, bellows pump, rotary pump and so on

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The company reserves the right to make alteration from time to time and equipment will maybe differ from that detailed in this brochure.