Axial Piston
High Pressure Pump
For Tap Water

THINKTANK







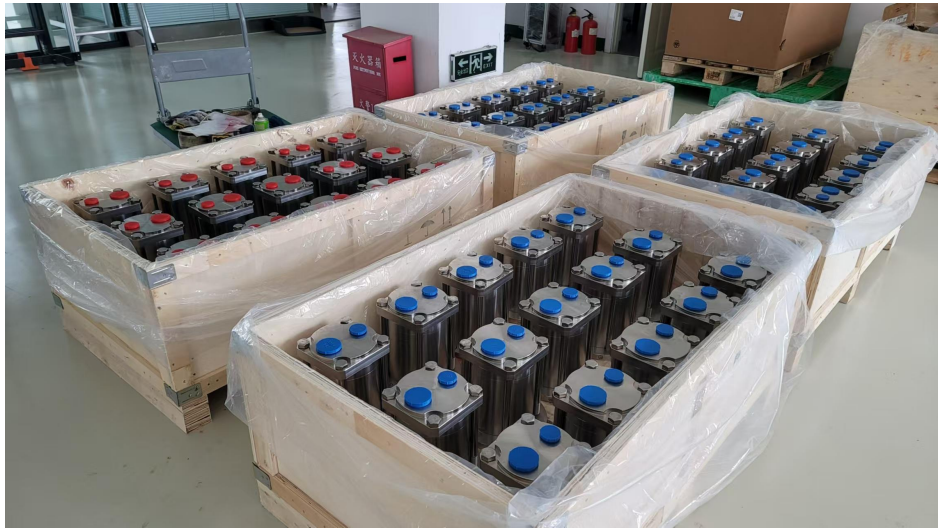
HPH Series

- **HPH 08 ~ 12.5**
- **HPH 20 ~ 40**
- **HPH 50 ~ 100**

Application

HPH Series Pumps Can Be Used in The Following Applications

- Zero wastewater discharge
- High-pressure atomization humidification system
- Fire extinguishing system
- High-pressure flushing and cleaning process
- Fixed and mobile water hydraulic system



Advanced Technology

The HPH series pumps are completely oil-free clean systems, using water as the sole coolant and lubricant, eliminating the potential risk of cross-contamination between oil and water. Originating from advanced British pump technology, the HPH high-pressure water pumps deliver superior performance.

1. Ultra-clean technology with no lubricating oil, preventing cross-contamination
2. Compact design for easy assembly, disassembly, and maintenance
3. Excellent corrosion resistance
4. Multi-plunger design minimizes pulsation
5. Widely used in various ultrapure water treatment applications
6. Longer service life resulting in ultra-low operating costs
7. Outstanding stability

Working Conditons - HPH Series

a

Operating Ambient Temperature Range: -30 to +60° C

If the ambient temperature exceeds this range or the motor installation is above 1000 meters in altitude, the motor's output power may decrease. This is mainly due to reduced air density and poor motor cooling. In such cases, a larger motor model may be required to achieve higher rated output power.

b

Medium Temperature Range: 0 to +50° C

Excessive medium temperatures can cause permanent damage to the pump. If long-term operation at other temperatures is needed, please contact a THINKTANK’s sales representative for appropriate solutions.

c

HPH Series Pumps are Equipped with a Discharge Check Valve and Pressure Relief Valve

If the ambient temperature exceeds this range or the motor installation is above 1000 meters in altitude, the motor's output power may decrease. This is mainly due to reduced air density and poor motor cooling. In such cases, a larger motor model may be required to achieve higher rated output power.



Model Description

HPH	160	P81	W
Type of Pump □ HPH High-Pressure Pump	**Operating Pressure of Pump** □ 30 means 30bar. ⋮ □ 160 menas 160bar.	**Geometric Displacement** □ 06(cc/rev) ⋮ □ 101(cc/rev)	**Suitable Medium** □ **W**:Tap Water

Water Supply Conditions

The HPH pump features a two-port design, mainly used in pump systems. This pump is not designed to self-prime, so the inlet pressure must always remain positive. Failure to ensure this can result in permanent damage to the pump.
The simplest way to ensure proper supply is to disconnect the pump's inlet pipe and measure the flow rate. When the tank level is at its lowest, the water supply flow must be 20% greater than the pump's delivery flow to maintain positive inlet pressure during operation.

 Do not install a filter between the pump and a direct water supply tank unless a pressure switch is installed on the inlet pipe to ensure the pump inlet is not exposed to negative pressure.

 All water entering the tank supplying the pump must be filtered. Use the largest diameter and shortest length possible for the pump's inlet piping.

 Reverse operation is strictly prohibited, as it will cause permanent damage to the pump.

To select the correct motor, power and torque must be verified. The mechanical efficiency of the HPH pump at maximum working pressure is 0.95.

Motor Powertrain:

- Use a standard bell housing and coupling to connect the pump to a B5 motor flange.
- Ensure the parallelism between the two flanges of the bell housing is less than 0.05mm, and the coaxiality is less than 0.1mm (0.05mm per side).
- The pump shaft must not bear any axial or radial load, and a 3mm axial movement space for the shaft must be maintained.
- It is recommended to use a nylon gear coupling.

Performance Requirements

Temperature

The HPH system pumps perform best within a temperature range of 2°C to 50°C. For temperatures below freezing, environmentally friendly antifreeze must be used. It is also possible to operate at temperatures above 50°C; however, the volumetric efficiency of the pump will be affected, and the maximum operating temperature must be specified when ordering.

Filter

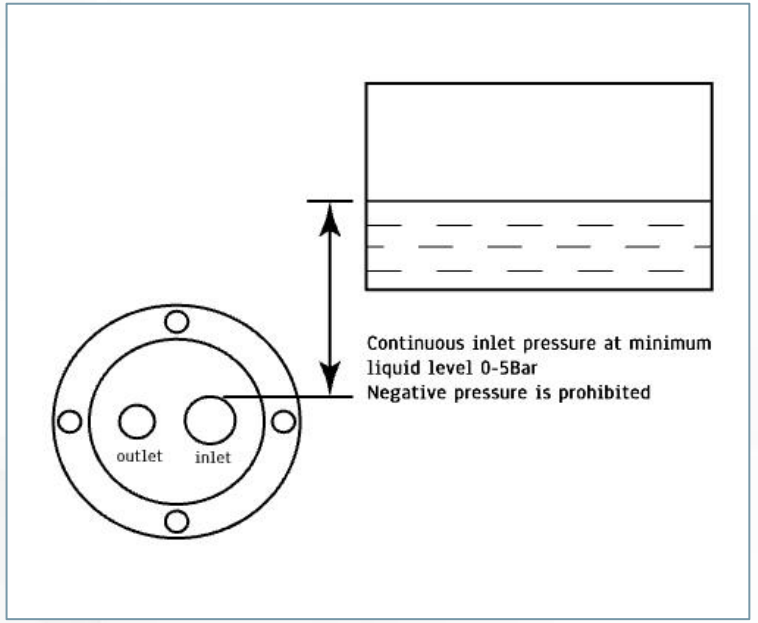
All water entering the pump must be pre-filtered to a nominal rating of 10μm (absolute value of 25μm). In closed-loop systems, return flow filtration is acceptable. High-pressure filtration can also be used, but it is considered a more expensive option.

Fluid

The standard pump operates well with potable water and industrial water, such as distilled water, reverse osmosis water, or demineralized water. Depending on the operating environment, changes to the sealing material or structure may be required. The standard structure is suitable for seawater, but due to the increased corrosion potential, higher-quality materials may be needed for long-term operation.

Air Venting

After installation, before the initial start-up, loosen the air vent bolts located at the highest points on both sides of the mounting flange and vent the air completely from the pump before retightening the bolts. If the pump is fully submerged in a tank, these two vent bolts can be completely removed.



Motor Selection

The required motor power can be calculated using the following formula:

$$P = \frac{n \cdot V \cdot p}{600.000 \cdot \eta}$$

- P: Power (kW)
- M: Torque (Nm)
- η: Mechanical efficiency
- p: Pressure (barg)
- n: Rotational speed (rpm)
- V: Geometric displacement (cc/rev.)

Under ideal conditions, the required torque can be calculated using the following formula:

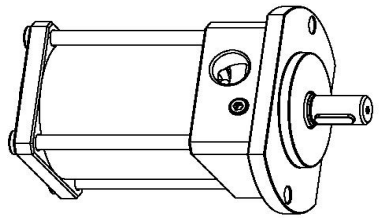
$$M = \frac{V \cdot p}{62.8 \cdot \eta}$$

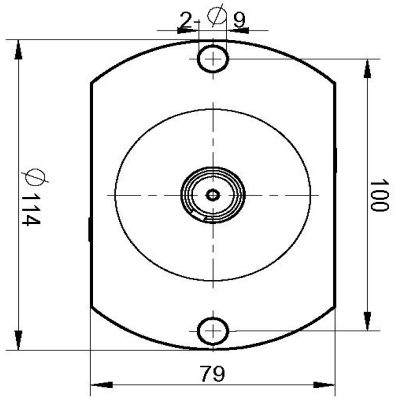
Specification 2.0~6.3

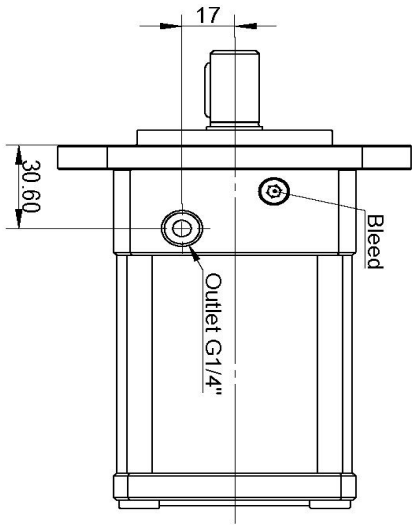
Pumps Model	2.0	3.2	4.0	6.3
Displacement (cc/rev)	2	3.2	4	6.3
Housing Material	ASTM 304			
Min. Outlet Pressure (barg)	30	30	30	30
Max. Outlet Pressure (barg)	140	140	140	140
Inlet Pressure,Continuous (barg)	0-4	0-4	0-4	0-4
Min. Speed,Continuous (rpm)	700	700	700	700
Max. Speed (rpm)	1800	1800	1800	1800
Flow Rate (L/min) (14Mpa,700 rpm)	0.3	1.3	1.9	3.7
Flow Rate (L/min) (14Mpa,1000 rpm)	1.0	2.3	3.2	5.6
Flow Rate (L/min) (14Mpa,1200 rpm)	1.5	2.9	3.7	6.8
Flow Rate (L/min) (14Mpa,1500 rpm)	2.0	3.9	5.2	8.7
Flow Rate (L/min) (14Mpa,1800 rpm)	2.6	4.9	6.4	10.5
Power Consumption (KW) (14Mpa,1500 rpm)	0.9	1.4	1.7	2.6
Min. Media Temperature (°C)	2	2	2	2
Max. Media Temperature(°C)	50	50	50	50
Sound Pressure Level (dB) *	76	76	76	76
Weight (kg)	4.5	4.5	4.5	4.5
Integrated Flush Valve	NO			

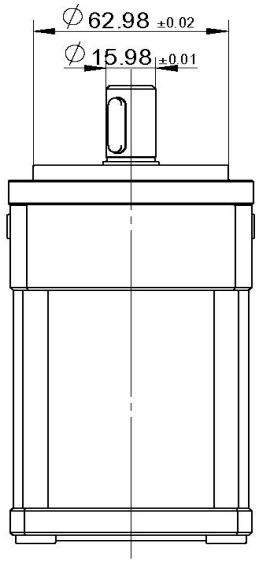
* Sound Pressure Level: Calculated according to EN ISO 3744: 2010 / dB(A) [LPA, 1m], when driven by a motor and operating at maximum working pressure and speed.

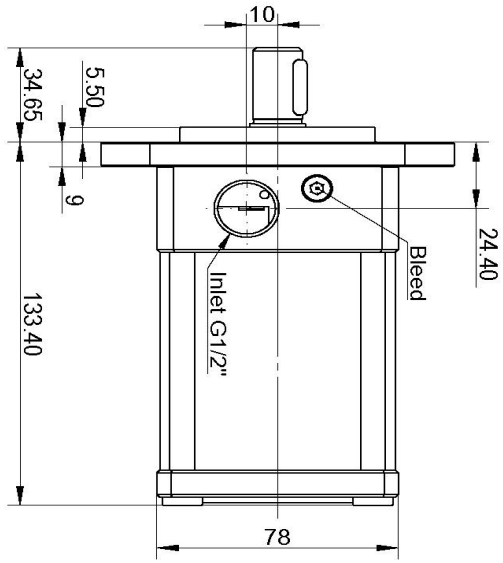
Installation Dimensions (HPH 2.0~6.3)





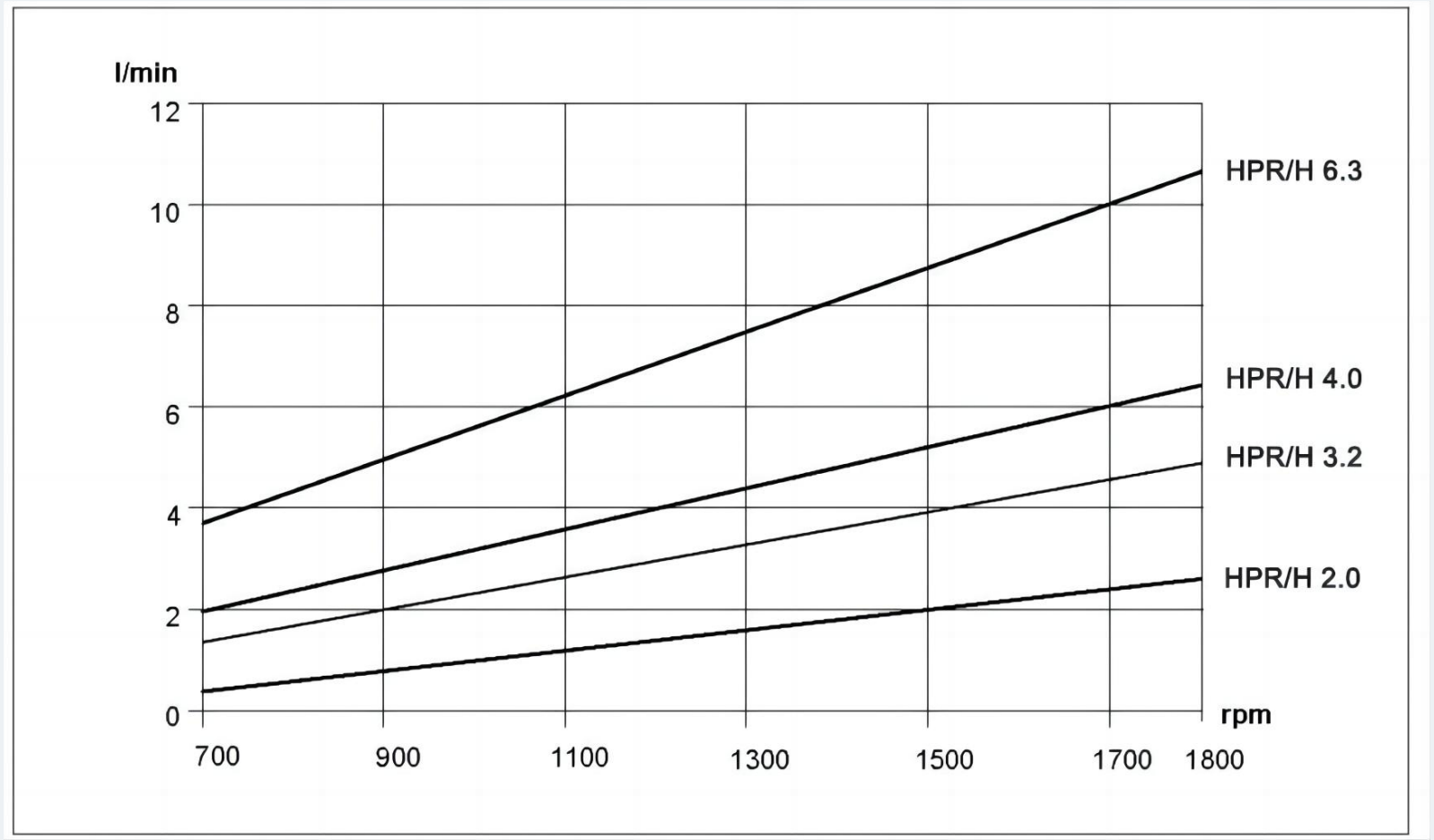




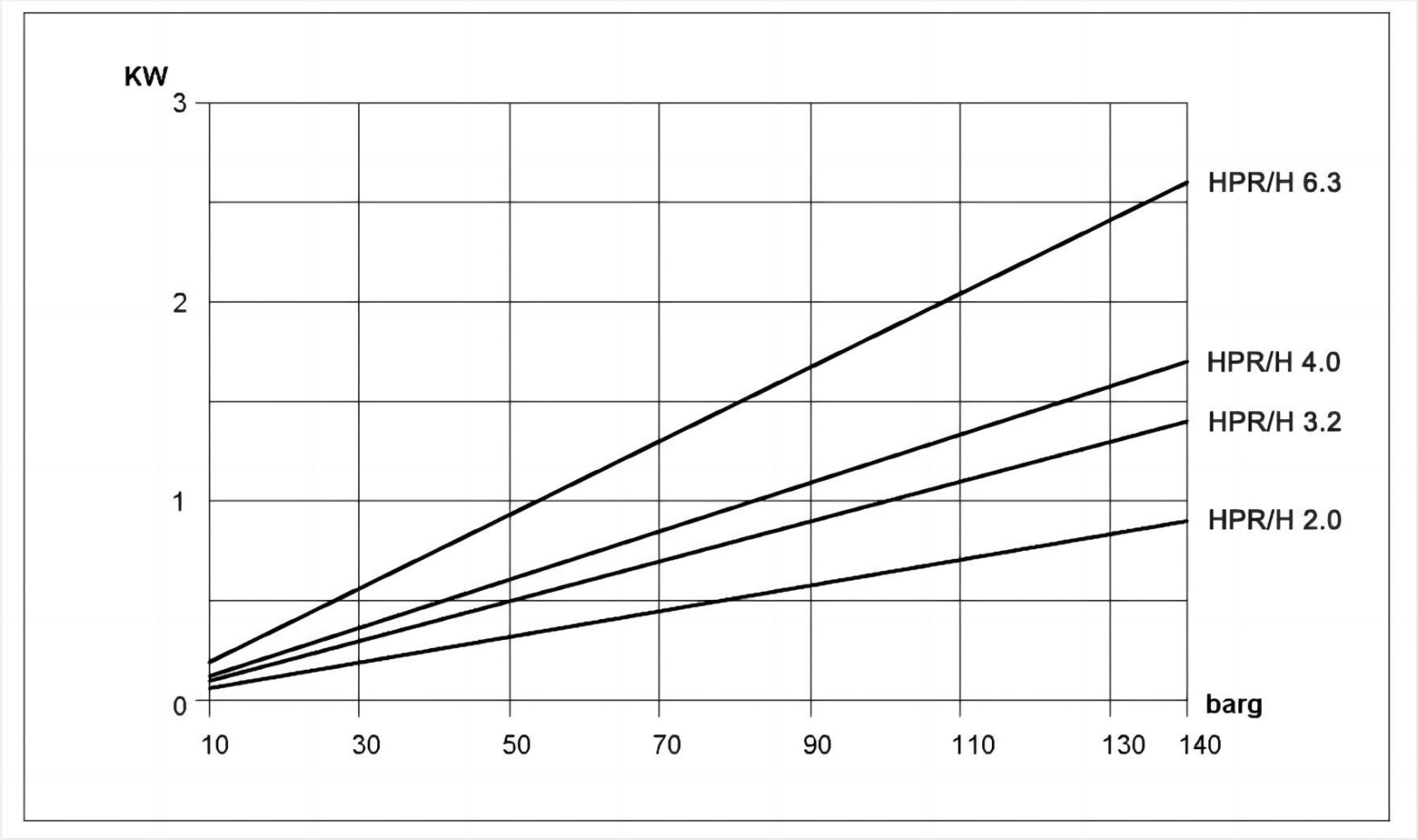


Parallel key	5*5*20（DIN6885）
Bleed	M5*8
Inlet Port	G 1/2”（T Port）
Outlet Port	G 1/4”（P Port）

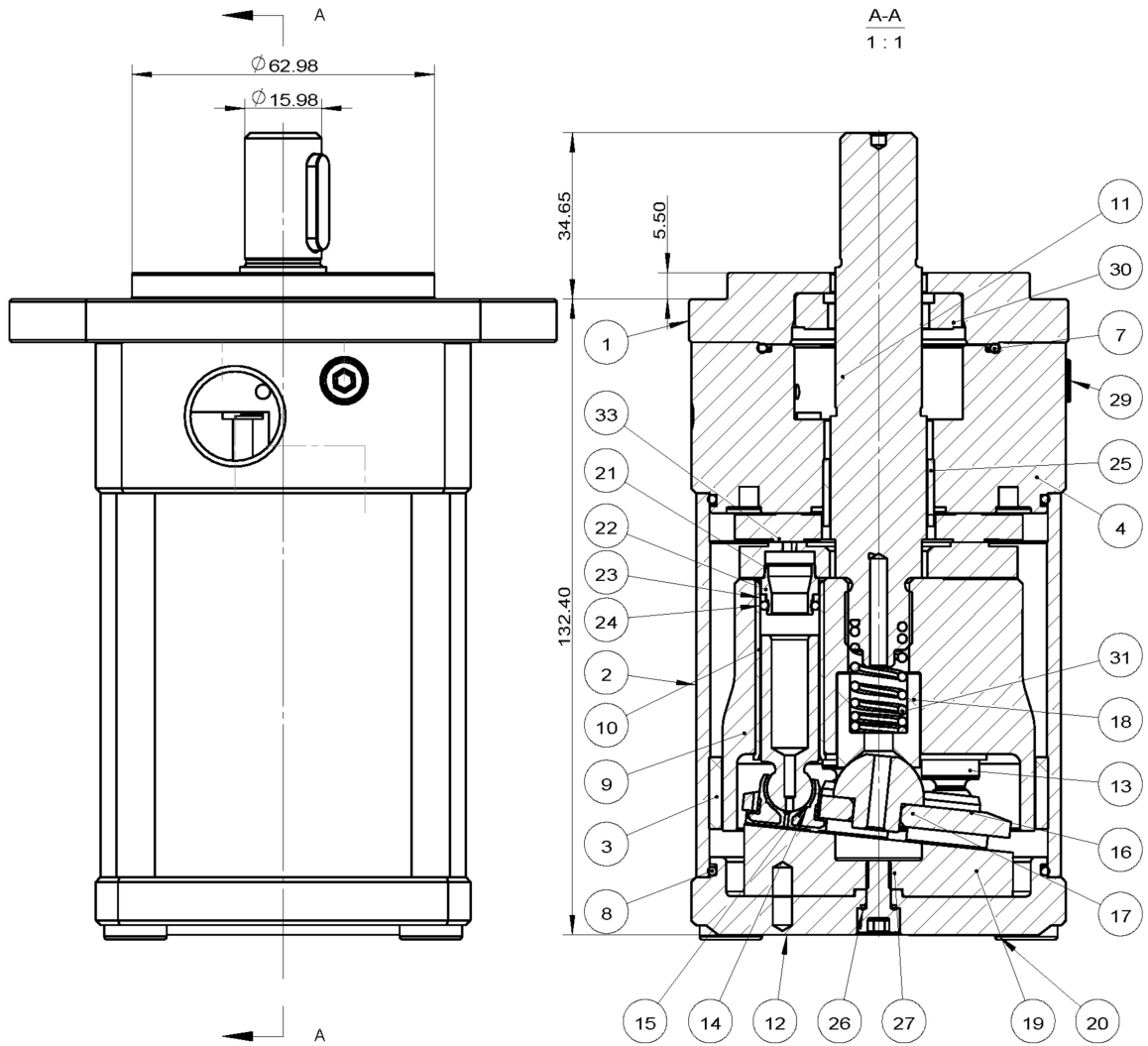
HPH 2.0~6.3 Typical Flow Curve at Maximum Pressure



HPH 2.0~6.3 Motor Power Curve
Different Pressures at Maximum Speed



(▽▽)



NO.	Parts	Material	Qty
33	Distribution Plate	304+PEEK	1
32	Flat Key	AISI 304	1
31	Spring	AISI 304	1
30	Mechanical Seal 560A-18	Ceramics	1
29	Hexagon Socket Bolts M5-08	AISI 304	2
28	M5 Combined Gasket	AISI 304	2
27	Hexagon Socket Bolts M5-10	AISI 304	1
26	O- Ring	NBR	1
25	Bearing For Main Shaft	PEEK	1
24	O- Ring	NBR	5
23	Retaining Ring For Guide Sleeve	PTFE	5
22	Guide Sleeve For Valve Plate	AISI 304	5
21	Valve Plate	AISI 304	1
20	Hexagon Socket Bolts M8-20	AISI 304	4
19	Swash Plate	630	1
18	Ball Joint Block	PEEK	1
17	Ball Joint	AISI 304	1
16	Return Disk	630	1
15	Slipper - Peek	PEEK	5
14	Slipper	AISI 304	5
13	Piston	630	5
12	Botttom Cover	AISI 304	1
11	Main Shaft	630	1
10	Piston Bushing	PEEK	5
9	Piston Cylinder	630	1
8	O-Ring	NBR	2
7	O-Ring	NBR	1
6	Cylindrical Pins	AISI 304	2
5	Cylindrical Pins	2205	4
4	Interface Flange	AISI 304	1
3	Large Bearings	PEEK	1
2	Housing	AISI 304	1
1	Mounted Flange	AISI 304	1

General Tolerances Not Stated For Machining			
>0.5~10	>10~30	>30~150	>150~500
±0.1	±0.2	±0.3	±0.5

	Name	Date
Design	Jackie Shih	May 9, 2022
Drawing	Leo Ma	Oct 12, 2022

Scale	View	Paper	Version
1:2		A3	

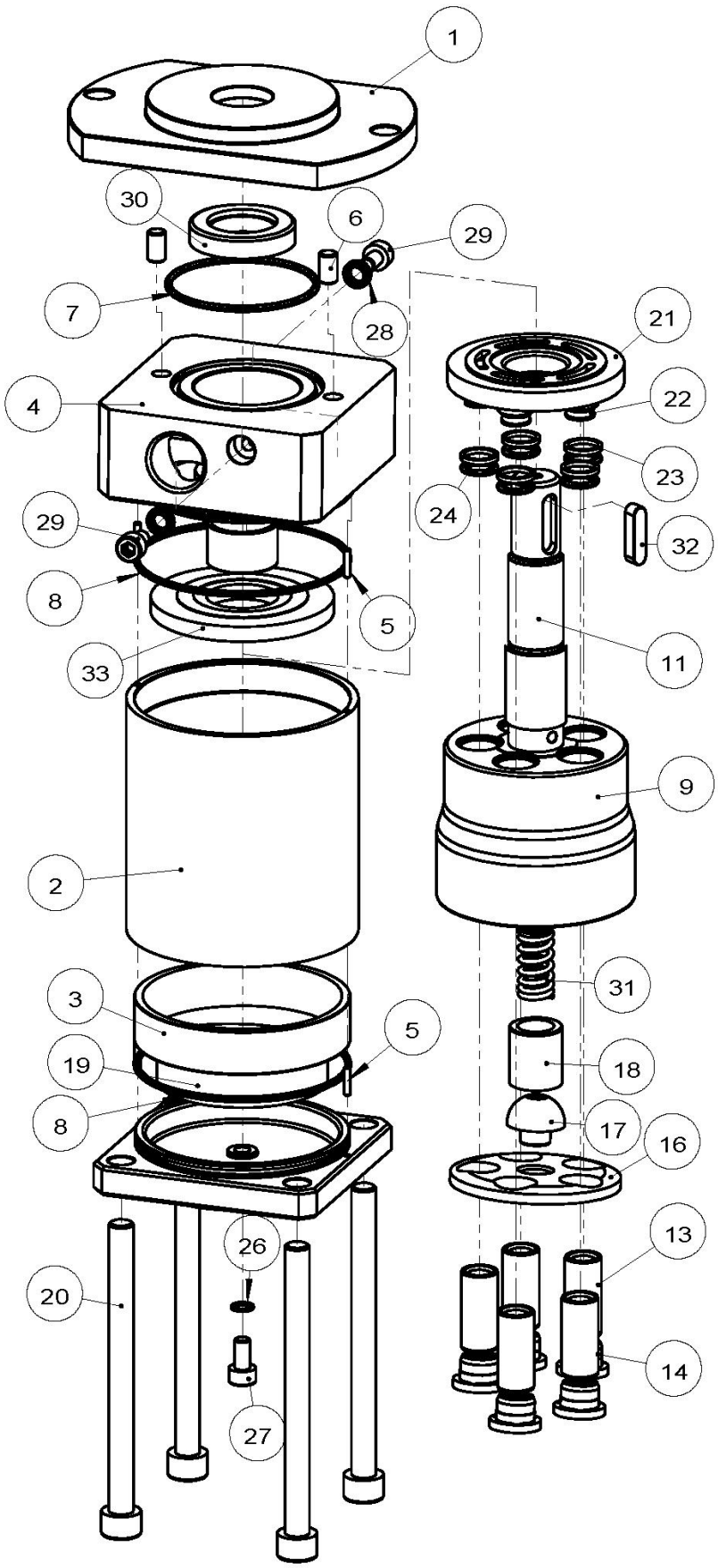
Axial Piston Type High Pressure Pump

Model: HPR/H 2.0~6.3

For Tap Water Conditon

SHANGHAI THINKTANK PROCESS MANAGEMENT CO., LTD

Exploded View HPH 2.0~6.3

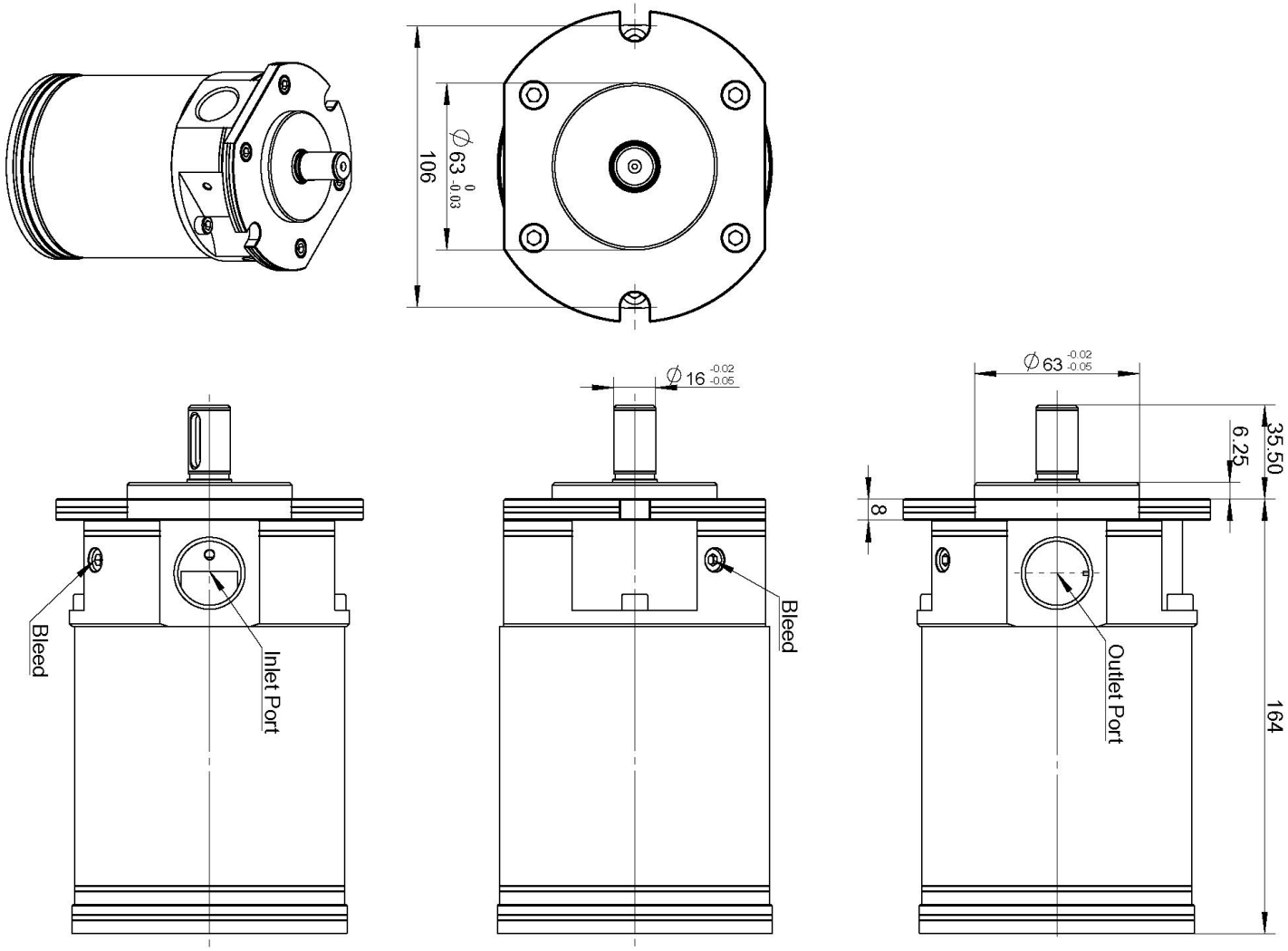


Specification 8~12.5

Pumps Model	8	10	11.5	12.5
Displacement (cc/rev)	8	10	11.5	12.5
Housing Material	ASTM 304			
Min. Outlet Pressure (barg)	30			
Max. Outlet Pressure (barg)	160			
Inlet Pressure,Continuous (barg)	0.1-5			
Min. Speed,Continuous (rpm)	700			
Max. Speed (rpm)	3000	3000	3000	3000
Flow Rate (L/min) (16Mpa,700 rpm)	5	6.3	7.2	7.9
Flow Rate (L/min) (16Mpa,1000 rpm)	7.2	9.1	10.4	11.4
Flow Rate (L/min) (16Mpa,1500 rpm)	11.0	13.8	15.8	17.3
Flow Rate (L/min) (16Mpa,2000 rpm)	14.8	18.6	21.4	23.3
Flow Rate (L/min) (16Mpa,3000 rpm)	22.8	28.5	32.8	35.6
Power Consumption (KW) (16Mpa,1500 rpm)	3.4	4.2	4.9	5.3
Min. Media Temperature (°C)	2			
Max. Media Temperature (°C)	50			
Sound Pressure Level (dB) *	76	76	76	76
Weight (kg)	8.6	8.6	8.6	8.6
Integrated Flush Valve	NO			

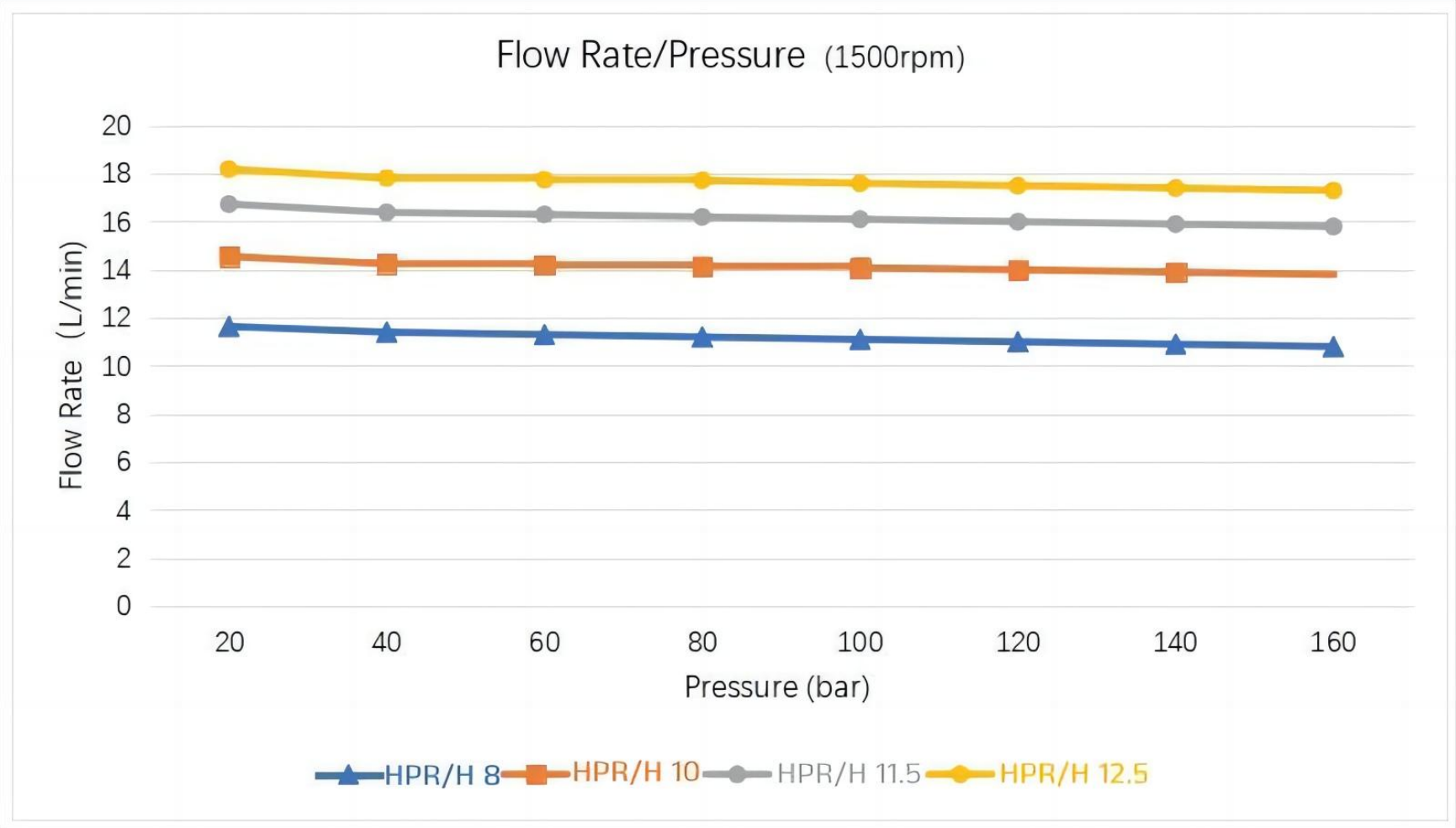
* Sound Pressure Level: Calculated according to EN ISO 3744: 2010 / dB(A) [LPA, 1m], when driven by a motor and operating at maximum working pressure and speed.

Installation Dimensions (HPH 8~12.5)

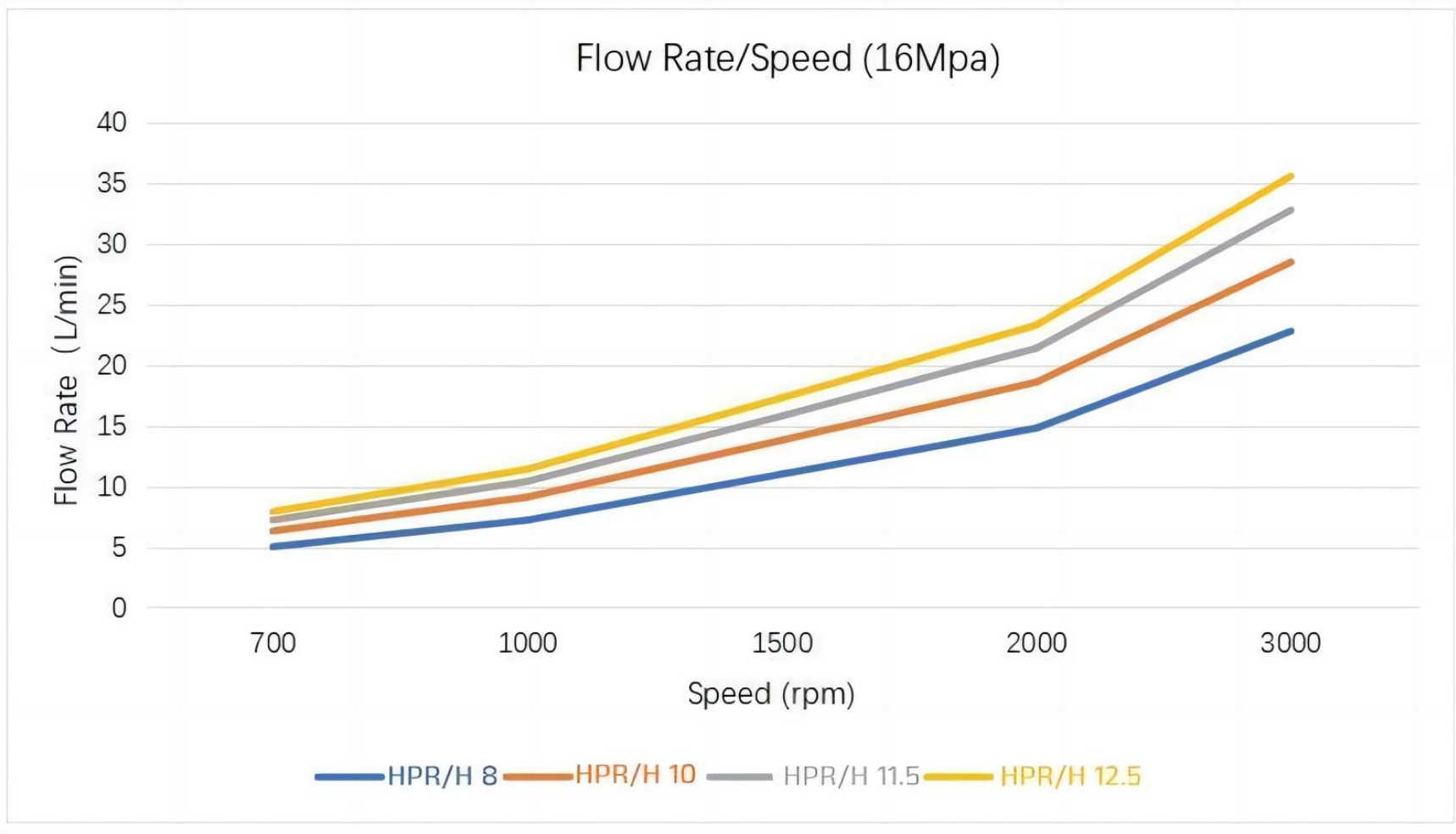


Parallel key	5*5*20（DIN6885）
Bleed	M5*12
Inlet Port	G 3/4”（T Port）
Outlet Port	G 3/4”（P Port）

HPH 8~12.5 Flow Rate/Pressure Curve



HPH 8~12.5 Flow Rate/Speed Curve

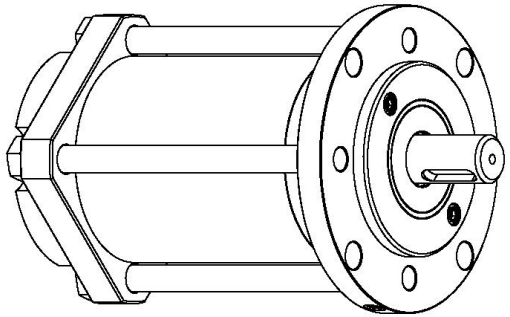


Specification 20~40

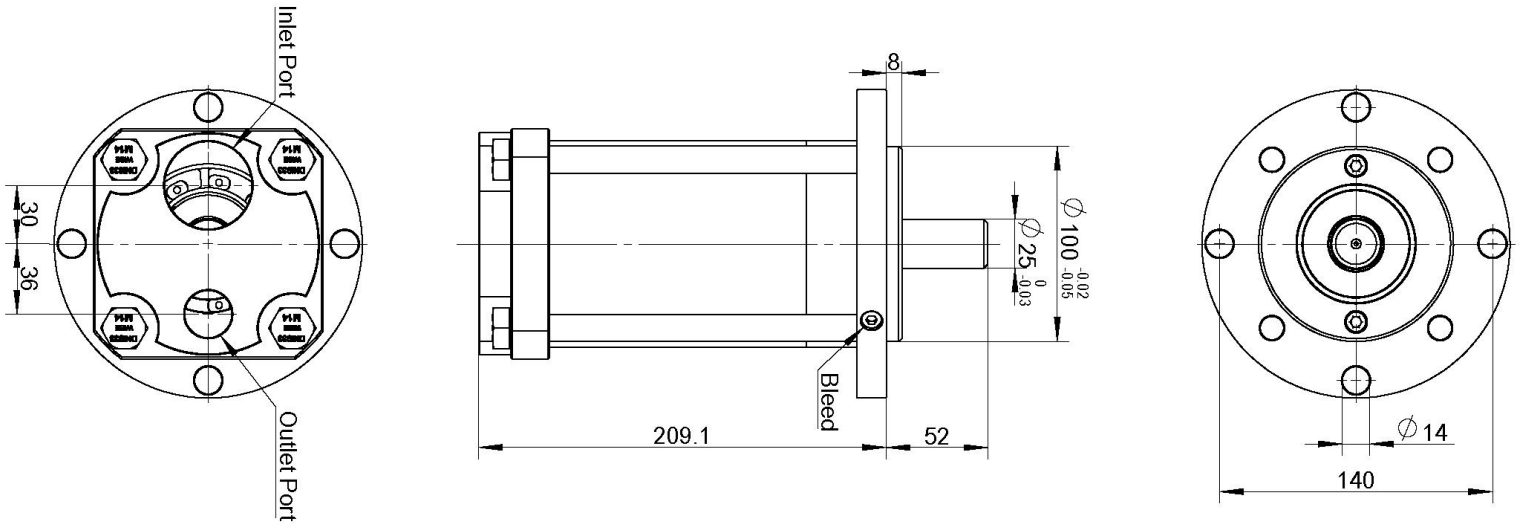
Pumps Model	20	25	32	40
Displacement (cc/rev)	20	25	32	40
Housing Material	ASTM 304			
Min. Outlet Pressure (barg)	30			
Max. Outlet Pressure (barg)	160			
Inlet Pressure,Continuous (barg)	0.1-5			
Min. Speed,Continuous (rpm)	700			
Max. Speed (rpm)	3600	3600	3600	3000
Flow Rate (L/min) (16Mpa,700 rpm)	12.6	15.8	20.2	25.2
Flow Rate (L/min) (16Mpa,1000 rpm)	18.2	22.8	29.1	36.4
Flow Rate (L/min) (16Mpa,1500 rpm)	27.6	34.5	44.2	55.2
Flow Rate (L/min) (16Mpa,2000 rpm)	38.2	46.5	59.5	74.4
Flow Rate (L/min) (16Mpa,3000 rpm)	57.0	71.3	91.2	114
Power Consumption (KW) (16Mpa,1500 rpm)	8.5	10.6	13.6	17
Min. Media Temperature (°C)	2			
Max. Media Temperature (°C)	50			
Sound Pressure Level (dB) *	78	78	78	79
Weight (kg)	14.72	14.72	14.72	14.72
Integrated Flush Valve	NO			

* Sound Pressure Level: Calculated according to EN ISO 3744: 2010 / dB(A) [LPA, 1m], when driven by a motor and operating at maximum working pressure and speed.

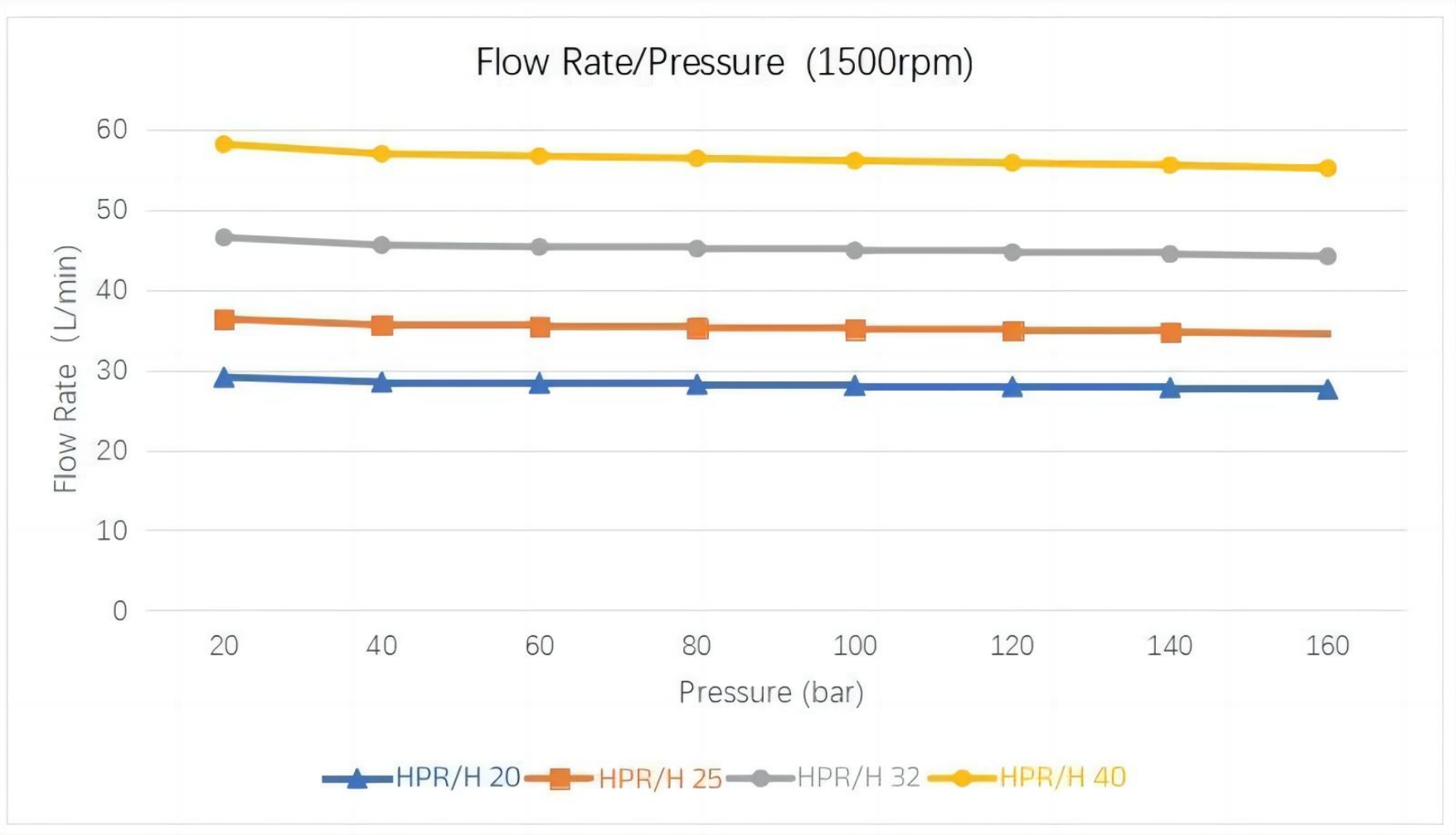
Installation Dimensions (HPH 20~40)



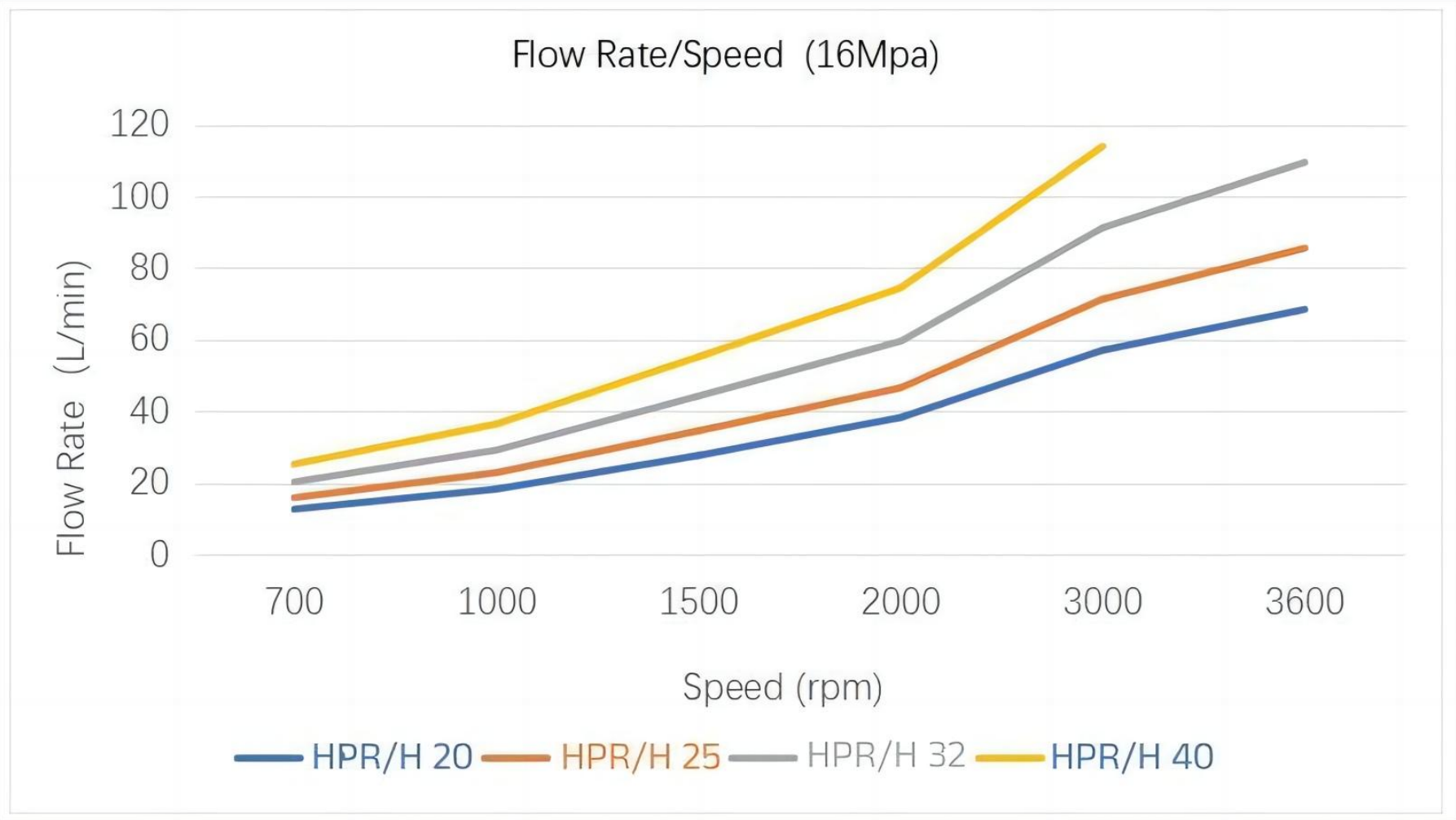
Parallel key	8*7*32（DIN6885）
Bleed	M6*10
Inlet Port	G 1-1/2”（T Port）
Outlet Port	G 3/4” （P Port）



HPH 20~40 Flow Rate/Pressure Curve



HPH 20~40 Flow Rate/Speed Curve

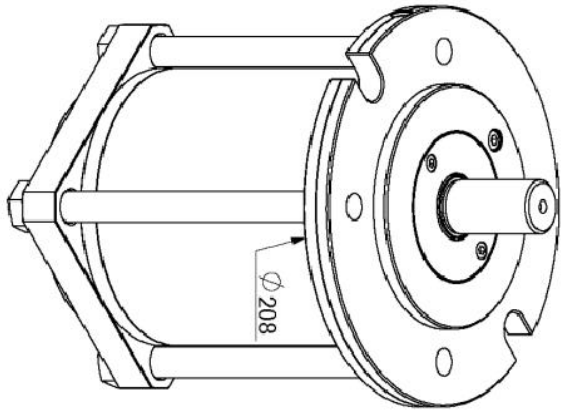


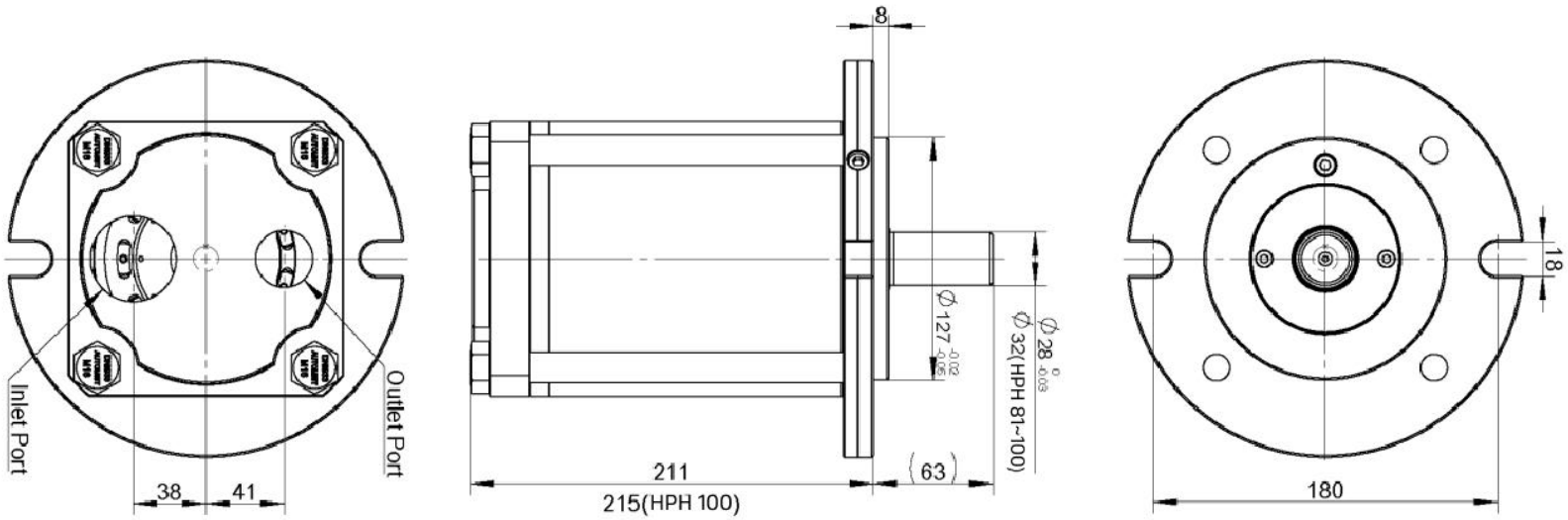
Specification 50~100

Pumps Model	50	65	71	81	100
Displacement (cc/rev)	50	65	71	81	100
Housing Material	ASTM 304				
Min. Outlet Pressure (barg)	30				
Max. Outlet Pressure (barg)	160				
Inlet Pressure,Continuous (barg)	0.1-5				
Min. Speed,Continuous (rpm)	700				
Max. Speed (rpm)	2000	1800	1800	1800	1500
Flow Rate (L/min) (16Mpa,700 rpm)	32.6	42.3	46.2	52.7	65.1
Flow Rate (L/min) (16Mpa,1000 rpm)	46.5	60.5	66.0	75.3	93.0
Flow Rate (L/min) (16Mpa,1500 rpm)	71.3	92.6	101.2	115.4	142.5
Flow Rate (L/min) (16Mpa,2000 rpm)	95.0	-	-	-	-
Flow Rate (L/min) (16Mpa,3000 rpm)	-	-	-	-	-
Power Consumption (KW) (16Mpa,1500 rpm)	21.9	28.5	31.1	35.5	43.8
Min. Media Temperature (°C)	2				
Max. Media Temperature (°C)	50				
Sound Pressure Level (dB) *	80	80	80	80	80
Weight (kg)	24.8	24.8	24.8	24.8	24.8
Integrated Flush Valve	NO				

* Sound Pressure Level: Calculated according to EN ISO 3744: 2010 / dB(A) [LPA, 1m], when driven by a motor and operating at maximum working pressure and speed.

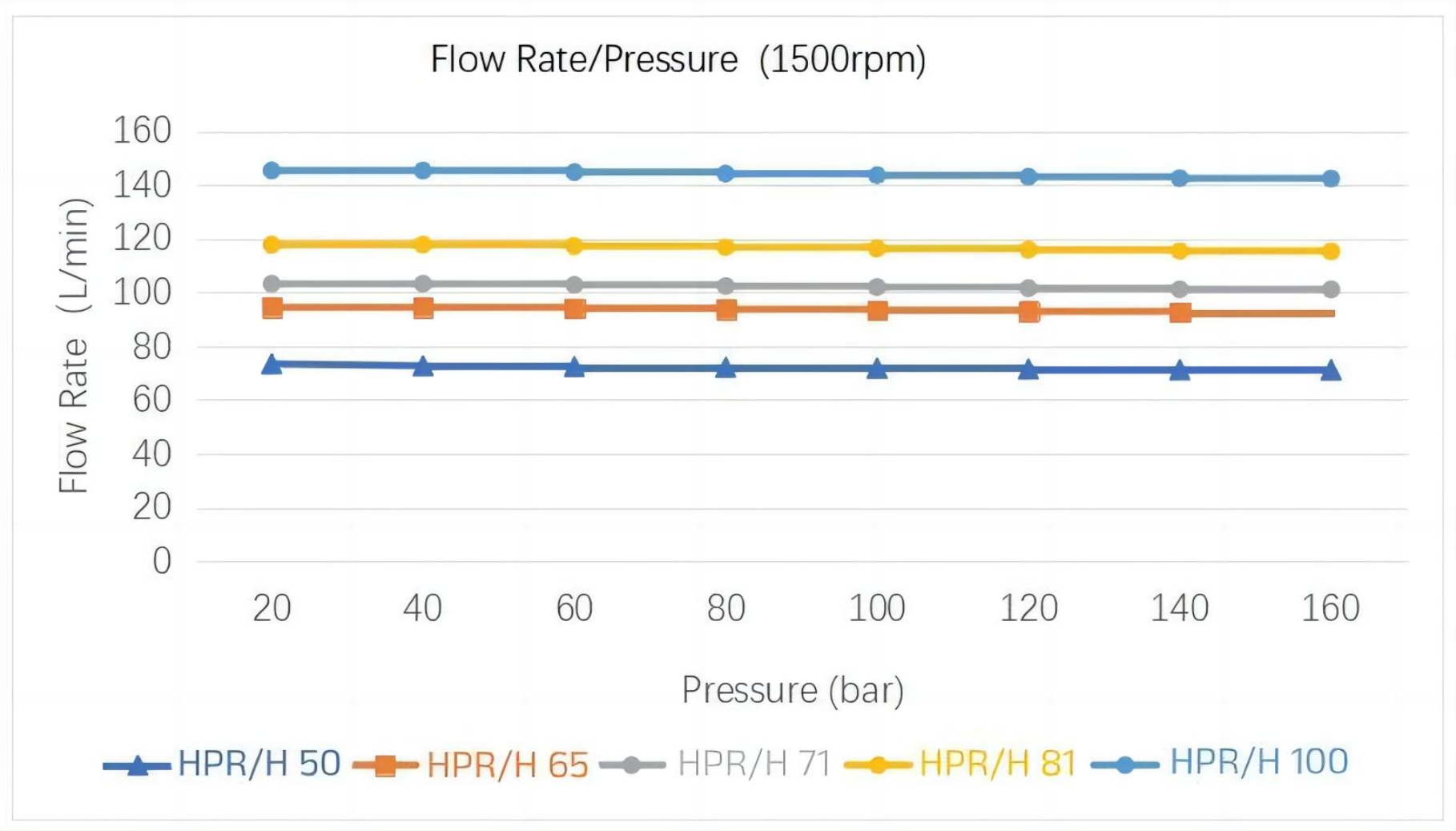
Installation Dimensions (HPH 50~100)





Parallel key	8*7*40（DIN6885）
Bleed	M6*10
Inlet Port	G 1-1/2”（T Port）
Outlet Port	G 1” （HPH50~81） G 1-1/4” （HPH100）

HPH 50~100 Flow Rate/Pressure Curve



HPH 50~100 Flow Rate/Speed Curve





Advanced Technology/Reliable

THINKTANK

PROFESSIONAL | HIGH QUALITY| EXCELLENCE SERVICE

https://rohrepumps.com/

PARTNER