Pump Group

Refer carefully to this manual before operation.

SPG Series

■ **Coding Principle**

SPG- XX - X - XX

→ P=Medium-pressure
→ HP=High-pressure
→ Pump Quantity
→ Flow(m³/hr)
→ Shini Pump Group
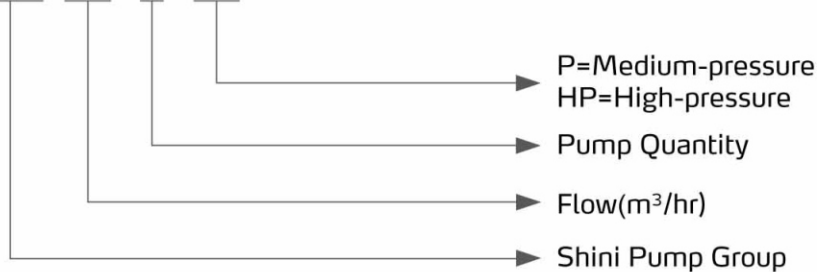
■ **Features**

- Adopt frequency conversion control with obvious energy-saving effect;
- Auto/manual switching function ensures the stability of the water system;
- Independently researched and developed advanced controller and frequency-conversion shift, precisely ensuring constant pressure for water supply according to water consumption variation;
- Equipped with RS485 remote monitoring function;
- When the water pump fails, the system will start the next normal pump operation automatically;
- Non-impact of pipe network pressure supplies constant pressure for water supply;
- Soft-start of water pump circling, stable start and stop prevent power grid from impacting by starting current;
- First-start and first-stop operation achieves organized working of water pump to prolong the service life of the water pump.
- Modular and innovative design concept enables the supplying of independent pump that with two or several pumps to achieve any flow and ensure continuous operation.
- Available to cover all the flows and pressures required by the industrial process;

■ **Application**

It is applicable to centralized constant-pressure water supplying system that is suitable for large power, variable flow and frequent start occasions, which features high-efficient system and obvious energy-saving effect.
It also can be used for reforming the water tank and other forms of water supply.

■ Working Principle

After SPG series of pumping unit start, the pressure sensor detects the outlet pressure to compare the detection value and setting value. If the setting value is greater than the detection value, the controller will select the water pump with shortest frequency-conversion loading time (The single pump of controller has run time cumulative function) for continuous loading. During the process, if the setting value is equal to the detection value, the controlling frequency converter will run at a constant fixed rotation speed with constant water supply. When it loads to full frequency (50HZ), if the setting value is still greater than the detection value, the water pump controlled by frequency-conversion will turn to power-frequency operation. The controller will start next pump with short run time in frequency-conversion via frequency conversion shift function to repeat above loading process till the setting value is equal to the detection value.

In constant-pressure water supplying, if the water flow reduces, and the detection value is greater than setting value, the controller will decrease the vibrational frequency of the water pump. When the pump of frequency conversion decreased to one frequency (normally is 30HZ), if the detection value is still greater than the setting value, it stops the pump with longest running time. Then, the frequency converter will re-control the pump frequency till the detection value is equal to the setting value, with constant pressure for water supplying of frequency conversion.
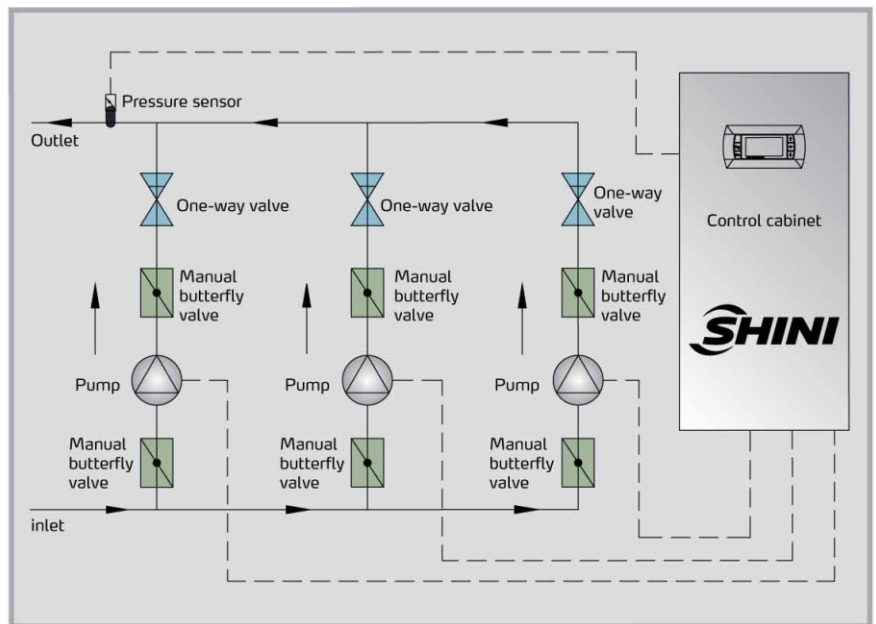
■ Characteristic Relation of Frequency Conversion Control

- - - - - Variation curve of rotational speed after frequency conversion
- ——— Running curve of pump at full speed
- – – – – Variation curve of different rotational speeds
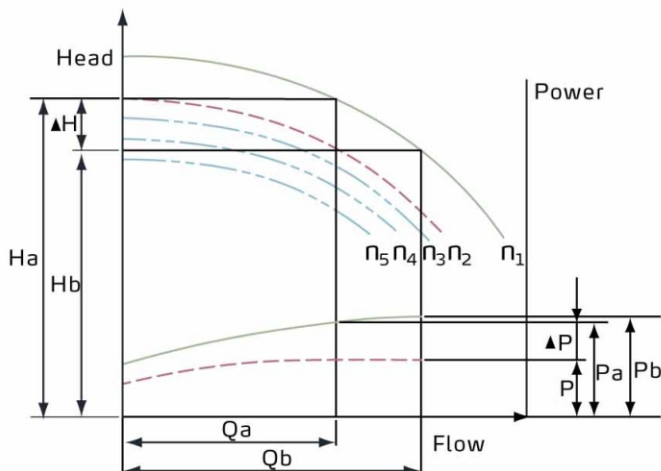
The relation between rotational speed and pump flow, lift and power

$$\frac{Q2}{Q1} = \frac{n_2}{n_1} \qquad \frac{H2}{H1} = (\frac{n_2}{n_1})^2 \qquad \frac{P2}{P1} = (\frac{n_2}{n_1})^3$$

Relation of 90%-80% rotational speed

Rotate speed (%)	Flow (%)	Head (%)	Power (%)
100	100	100	100
90	90	81	73
80	80	64	51

In the Fig., it shows 360°rotation $n1$ and rotational speed $n2$ after frequency conversion, the lift difference is $\triangle H$, and the shaft power Pa-P=$\triangle P$ is greater than Pb-Pa, which indicates the voltage stabilizing and power saving function can be achieved by frequency conversion control.

SPG Series

■ Outline Drawing
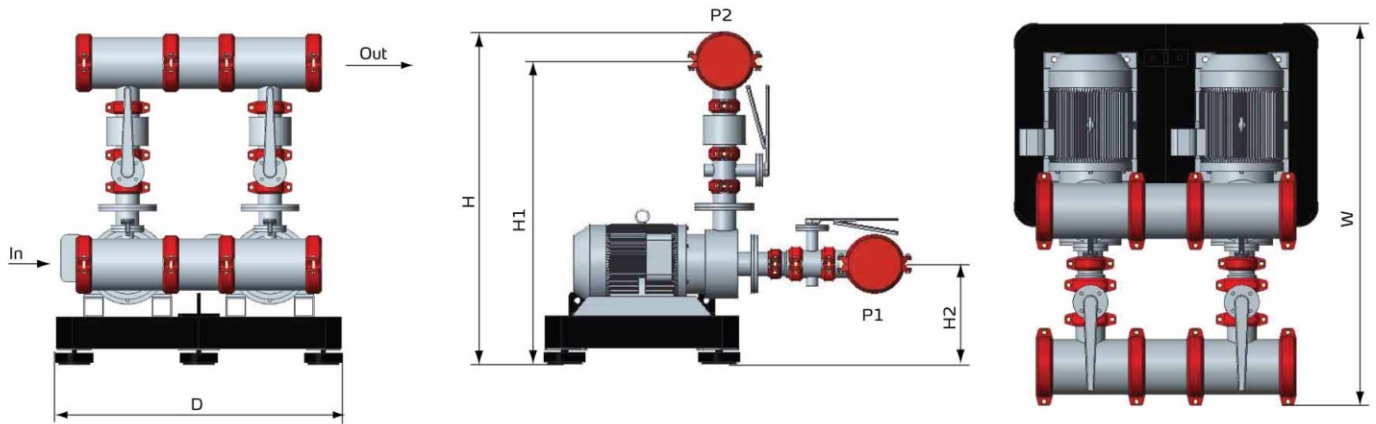
Model Dimension	SPG-25			SPG-45			SPG-90		
	-2	-3	-4	-2	-3	-4	-2	-3	-4
D(mm)	(N-1)×906			(N-1)×1096			(N-1)×1278		
H(mm)	1104			1359			1533		
H1(mm)	1034			1273			1424		
H2(mm)	315			385			405		
W(mm)	1053			1249			1468		
P1	DN125		DN150	DN150		DN200	DN200		DN250
P2	DN125		DN150	DN150		DN200	DN200		DN250
A(mm)	2110			2110			2110		
B(mm)	1880			1880			1880		
C(mm)	700			700			700		
D(mm)	400			400			400		
Weight (kg)	N×175			N×261			N×340		

Note:The weight does not contain the weight of electrical control cabinet, N stands for the number of pumps.

Specification

Item \ Parameter	Model	SPG-25			SPG-45			SPG-90		
		-2	-3	-4	-2	-3	-4	-2	-3	-4
Pump Qty.		2	3	4	2	3	4	2	3	4
Rated Flow (m³/hr)		25×2	25×3	25×4	45×2	45×3	45×4	90×2	90×3	90×4
Rated Pressure (bar)		P=3.4/HP=5.0			P=3.2/HP=5.6			P=3.5/HP=5.1		
Power	-P(KW)	5.5×2	5.5×3	5.5×4	7.5×2	7.5×3	7.5×4	15×2	15×3	15×4
	-HP(KW)	7.5×2	7.5×3	7.5×4	15×2	15×3	15×4	22×2	22×3	22×4
Pipe Dia.	Water Inlet (DN)	DN125		DN150	DN150		DN200	DN200		DN250
	Water Outlet (DN)	DN125		DN150	DN150		DN200	DN200		DN250
Protector	Pump	Overload relay,low pressure/high pressure protection								
	Water Loop	Water shortage protection *								
Noise dB(A)		75/80			80/85			85/90		
Power		3Φ，400VAC,50HZ								

Notes：
1) Customation is available.
2) The allowable deviation of pressure and flow is 5%.
3) *Water shortage protection, the flow switch should be equipped in system by the customer, and the point location is only reserved in the control box.
4) Water temp.：2~70℃
5) The flow and pressure will be different when it uses the ethylene glycol. Please contact our sales person for confirmation.
6) As to improve the performance and reliability, it is recommended to equip the water pump units, such as one factory needs 90m³/h and working pressure is XXbar, which should select SPG-45-3-X or SPG-90-2-X.

We reserve the right to change specifications without prior notice.

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