

# GEO THERMAL HEAT PUMP

## ---Standard Series

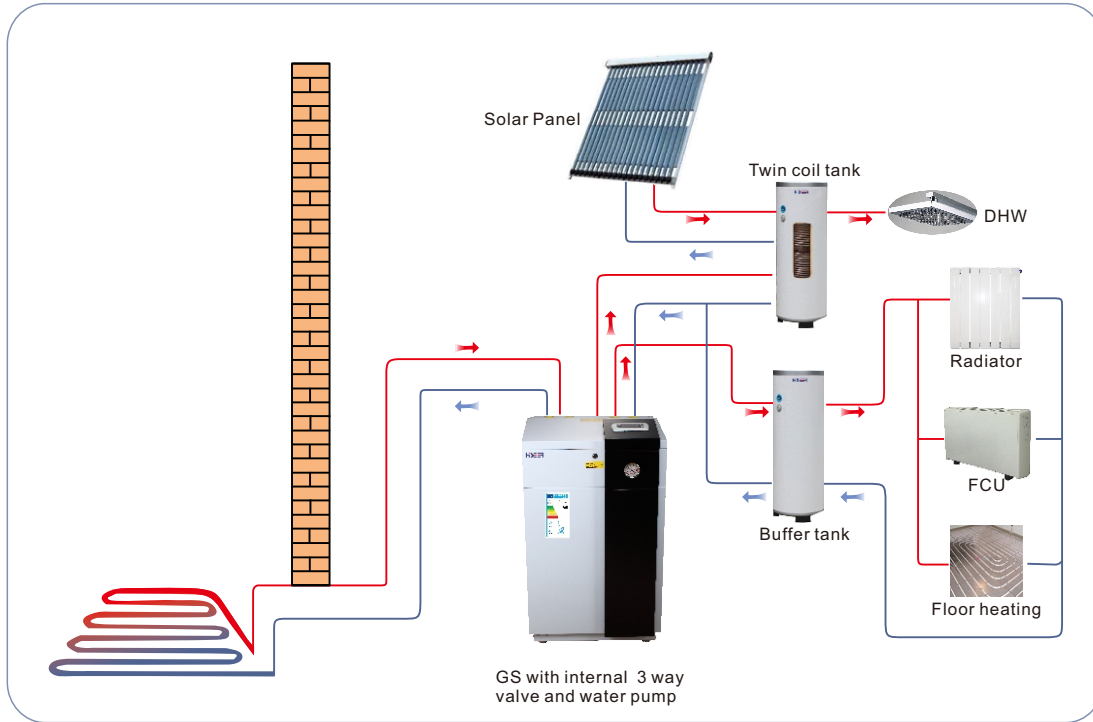


[www.chinaheatpump.com](http://www.chinaheatpump.com)

Guangzhou Hiser Air Conditioning Co. , Ltd

# Application:

## Floor Heating with Domestic Hot Water



# Original and Qualified Components are used to achieve reliability and long service life:

Carel controller CPPB006DS0

- User-friendly
- Intelligent
- Reliable



Compressors



Plate Heat Exchanger



Differential Pressure Flow Switch (option)



Single phase soft-starter



Filter Drier / Expansion valve





## Performance Data

Heating only models:

Heat pump	Type	GS07	GS09	GS12	GS10	GS13	GS15	GS20	GS26	GS30	
Dimensions, weights, connection dimensions											
Dimensions	HxWxD	1040x640X600							1040x640X800		
Weight	kg	105	130	140	130	140	150	160	190	195	
Refrigerant	Type	R410A							R410A		
Filling weight	kg	1.30	1.60	1.70	1.60	1.70	2.10	2.15	2.80	3.30	
Permissible operating pressure	Mpa	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	
Pipe connector-hot side	Inch	G1"	G1 1/4"	G1 1/4"	G1 1/4"	G1 1/4"	G1 1/4"	G1 1/2"	G1 1/2"	G1 1/2"	
Pipe connector-cold side	Inch	G1"	G1 1/4"	G1 1/4"	G1 1/4"	G1 1/4"	G1 1/4"	G1 1/2"	G1 1/2"	G1 1/2"	
Evaporator	Type	Braze plate heat exchanger									
Condenser	Type	Braze plate heat exchanger									
Compressor		1xRotary	1xScroll								
Running current at B0/W35	A	7.73	9.74	13.60	4.93	6.23	7.20	9.35	11.80	16.10	
Starting current compressor (with stalled rotor)	A	49.7	75.5	98.5	49	58	62	80	110	124	
Performance Heat pump											
Heat output	at B0/W35	kW	7.0	8.6	11.5	9.7	12.8	14.8	19.4	27.6	34.2
Power consumption		kW	1.76	2.21	2.93	2.45	3.26	3.75	4.92	7.10	8.76
Performance factor			3.98	3.89	3.92	3.96	3.93	3.95	3.94	3.89	3.9
Indoor side volume flow		m3/h	1.20	1.48	1.98	1.67	2.20	2.55	3.34	4.75	5.88
Indoor side pressure drop		kpa	10	12	15	13	21	22	29	36	39
Outdoor side volume flow		m3/h	1.60	1.83	2.46	2.08	2.73	3.17	4.15	5.88	7.29
Outdoor side pressure drop		kpa	13	14	22	20	23	27	34	40	46
Heat output		at W10/W35	kW	10.2	11.7	15.5	13.0	17.5	19.9	26.0	35.6
Power consumption	kW		1.85	2.17	2.88	2.38	3.20	3.66	4.8	6.6	8.39
Performance factor			5.51	5.39	5.38	5.46	5.47	5.44	5.42	5.39	5.36
Indoor side volume flow	m3/h		1.75	2.01	2.67	2.24	3.01	3.42	4.47	6.12	7.74
Indoor side pressure drop	kpa		14	15	23	19	26	29	38	42	49
Outdoor side volume flow	m3/h		2.53	2.73	3.62	3.04	4.10	4.66	6.08	8.31	10.49
Outdoor side pressure drop	kpa		20	22	29	25	32	37	45	54	61
Power	Type		Single phase with Panasonic compressor	Single phase with Daikin compressor		Triple phase with Hitachi compressor				Triple phase with Copeland compressor	
Sound power level	dB(A)	49	47	48	47	48	48	48	51	52	

The above data is tested by EN14511



## Performance Data

Heating and cooling models:

Heat pump	Type	GS07/B	GS09/B	GS12/B	GS10/B	GS13/B	GS15/B	GS20/B	GS26/B	GS30/B	
Dimensions, weights, connection dimensions											
Dimensions	HxWxD	1040x640X600							1040x640X800		
Weight	kg	107	132	142	132	142	130	162	192	197	
Refrigerant	Type	R410A									
Filling weight	kg	1.60	1.75	1.90	1.80	1.80	2.20	2.75	3.10	3.60	
Permissible operating pressure	Mpa	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	
Pipe connector-hot side	Inch	G1"	G1 <sup>1</sup> / <sub>4</sub> "	G1 <sup>1</sup> / <sub>4</sub> "	G1 <sup>1</sup> / <sub>4</sub> "	G1 <sup>1</sup> / <sub>4</sub> "	G1 <sup>1</sup> / <sub>4</sub> "	G1 <sup>1</sup> / <sub>2</sub> "	G1 <sup>1</sup> / <sub>2</sub> "	G1 <sup>1</sup> / <sub>2</sub> "	
Pipe connector-cold side	Inch	G1"	G1 <sup>1</sup> / <sub>4</sub> "	G1 <sup>1</sup> / <sub>4</sub> "	G1 <sup>1</sup> / <sub>4</sub> "	G1 <sup>1</sup> / <sub>4</sub> "	G1 <sup>1</sup> / <sub>4</sub> "	G1 <sup>1</sup> / <sub>2</sub> "	G1 <sup>1</sup> / <sub>2</sub> "	G1 <sup>1</sup> / <sub>2</sub> "	
Evaporator	Type	Braze plate heat exchanger									
Condenser	Type	Braze plate heat exchanger									
Compressor		1xRotary	1xScroll								
Running current at B0/W35	A	7.73	9.74	13.60	4.93	6.23	7.20	9.35	11.80	16.10	
Starting current compressor (with stalled rotor)	A	26.3	75.5	98.5	49	58	62	80	110	124	
Performance Heat pump											
Heat output	at B0/W35	kW	6.9	8.6	11.4	9.5	12.6	14.7	19.2	27.3	34.0
Power consumption		kW	1.75	2.25	2.96	2.42	3.23	3.80	4.92	7.05	8.80
Performance factor			3.94	3.82	3.85	3.93	3.9	3.87	3.9	3.87	3.86
Indoor side volume flow		m <sup>3</sup> /h	1.19	1.48	1.96	1.63	2.17	2.53	3.30	4.70	5.85
Indoor side pressure drop		kpa	10	12	15	13	21	22	29	36	39
Outdoor side volume flow		m <sup>3</sup> /h	1.48	1.82	2.42	2.03	2.69	3.12	4.09	5.81	7.22
Outdoor side pressure drop		kpa	13	14	22	20	23	27	34	40	46
Heat output	at W10/W35	kW	10.0	11.4	15.2	12.8	17.3	19.8	25.8	35.2	44.7
Power consumption		kW	1.82	2.12	2.85	2.36	3.2	3.72	4.85	6.58	8.38
Performance factor			5.49	5.38	5.33	5.42	5.41	5.32	5.32	5.35	5.33
Indoor side volume flow	m <sup>3</sup> /h	1.72	1.96	2.61	2.20	2.98	3.41	4.44	6.05	7.69	
Outdoor side volume flow	m <sup>3</sup> /h	2.23	2.66	3.54	2.99	4.04	4.61	6.01	8.20	10.41	
Cool output	at W30/W7	kW	7.5	9.3	12.8	10.2	12.9	15.0	20.4	28.1	34.2
Power consumption		kW	1.85	2.32	3.20	2.58	3.28	3.78	5.00	7.08	8.60
Performance factor			4.05	3.99	4.01	3.95	3.92	3.96	4.08	3.97	3.98
Inside volume flow		m <sup>3</sup> /h	1.29	1.59	2.21	1.75	2.21	2.57	3.51	4.83	5.88
Outside volume flow		m <sup>3</sup> /h	1.61	1.99	2.76	2.20	2.78	3.22	4.37	6.05	7.36
Power	Type	Single phase with Panasonic compressor	Single phase with Daikin compressor			Triple phase with Hitachi compressor				Triple phase with Copeland compressor	
Sound power level	dB(A)	49	47	48	47	48	48	48	51	52	

The above data is tested by EN14511

B0/W35 means heating source brine inlet temp. 0°C, heating flow temp. 35°C

W10/W35 means heating source water inlet temp. 10°C, heating flow temp. 35°C

W30/W7 means Cooling source water inlet temp. 30°C, Cooling flow temp. 7°C

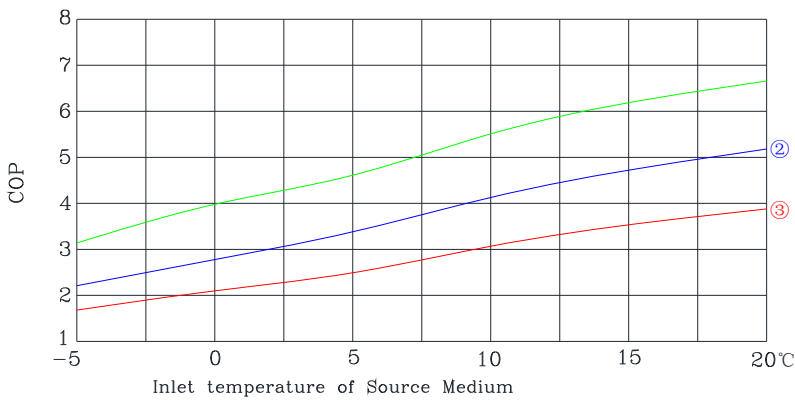
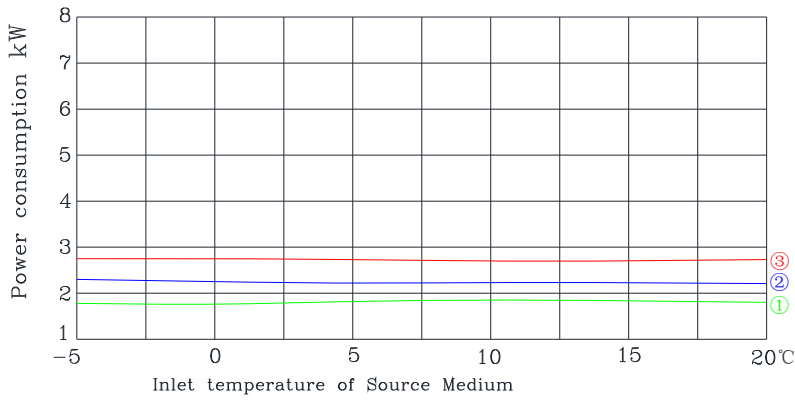
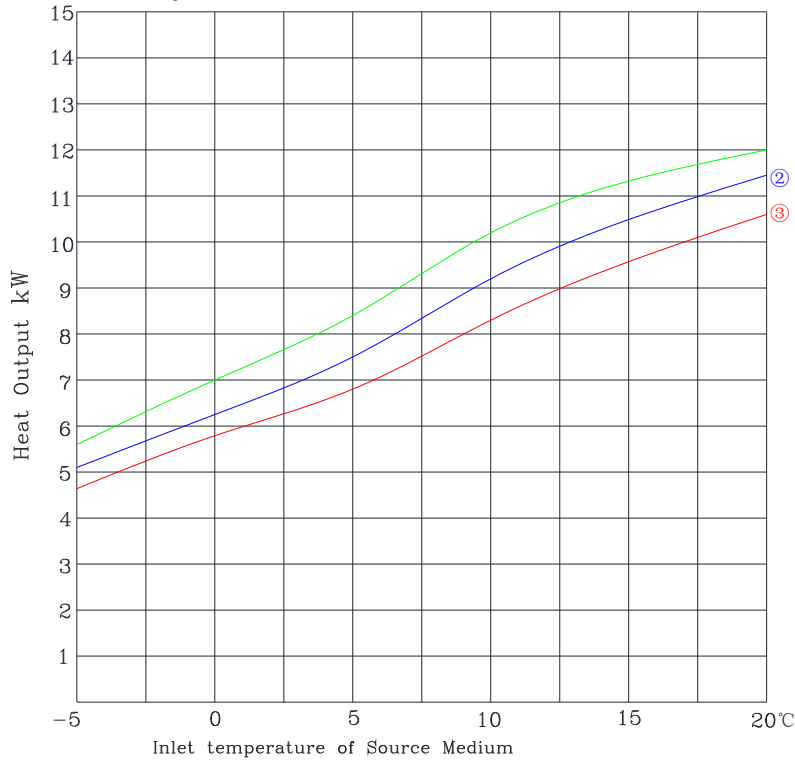


# Heating Curve

Model:GS07

Heating performance curve

- 1=Flow temperature 35 Full load
- 2=Flow temperature 45 Full load
- 3=Flow temperature 55 Full load





# Heating Curve

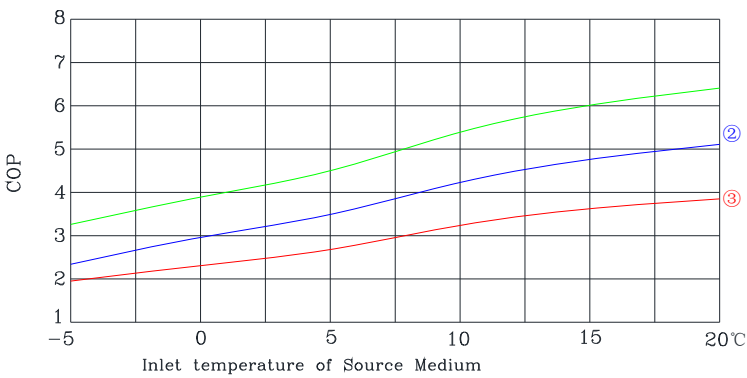
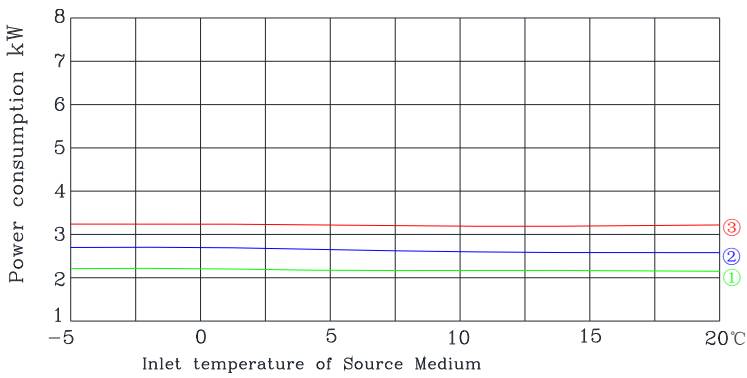
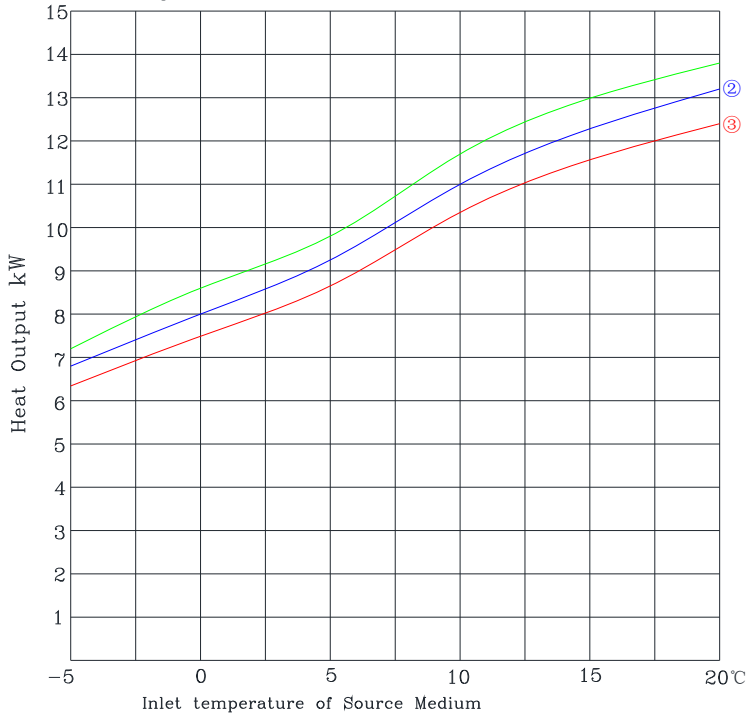
Model:GS09

Heating performance curve

1=Flow temperature 35 Full load

2=Flow temperature 45 Full load

3=Flow temperature 55 Full load



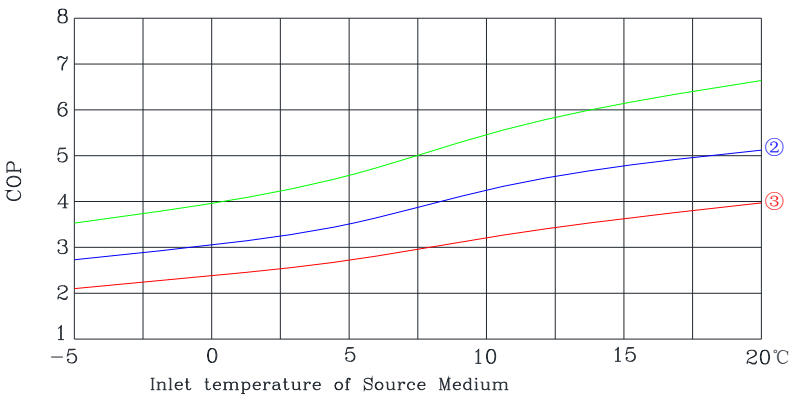
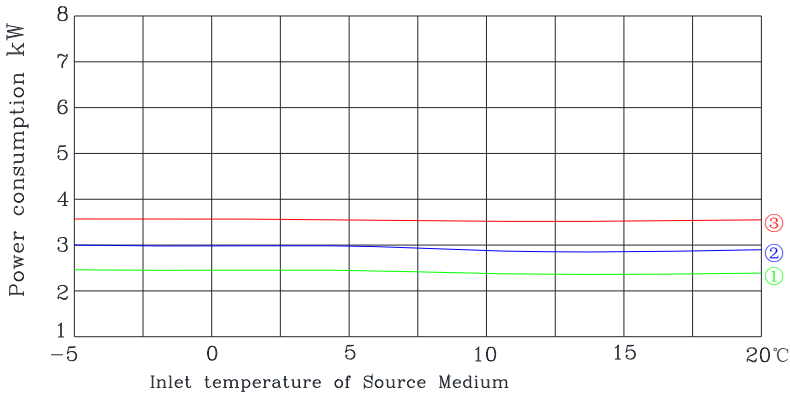
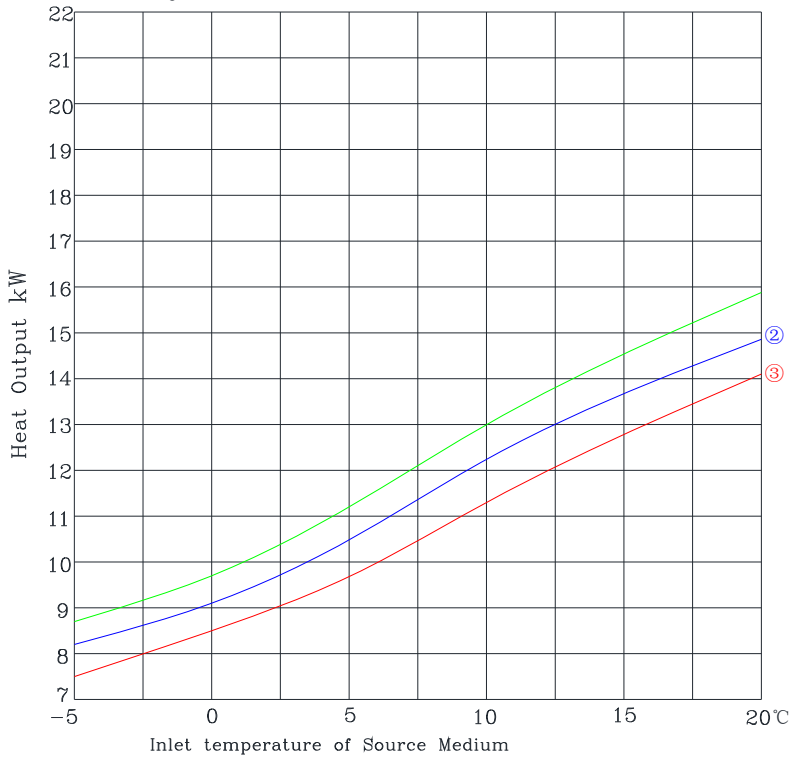


# Heating Curve

Model:GS10

Heating performance curve

- 1=Flow temperature 35 Full load
- 2=Flow temperature 45 Full load
- 3=Flow temperature 55 Full load







# Heating Curve

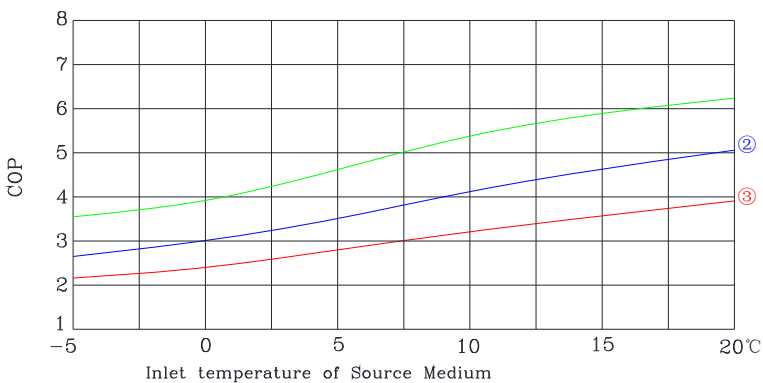
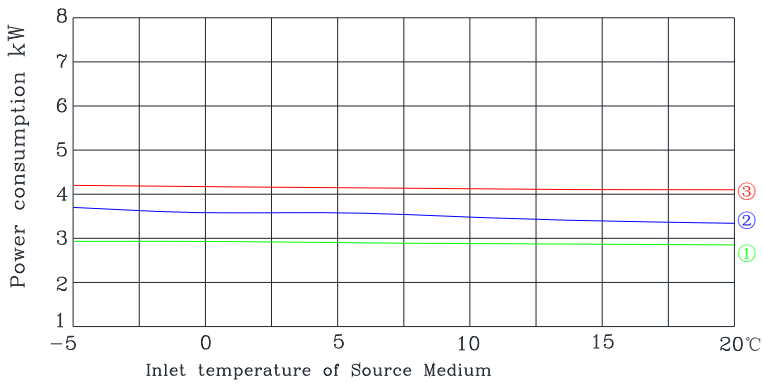
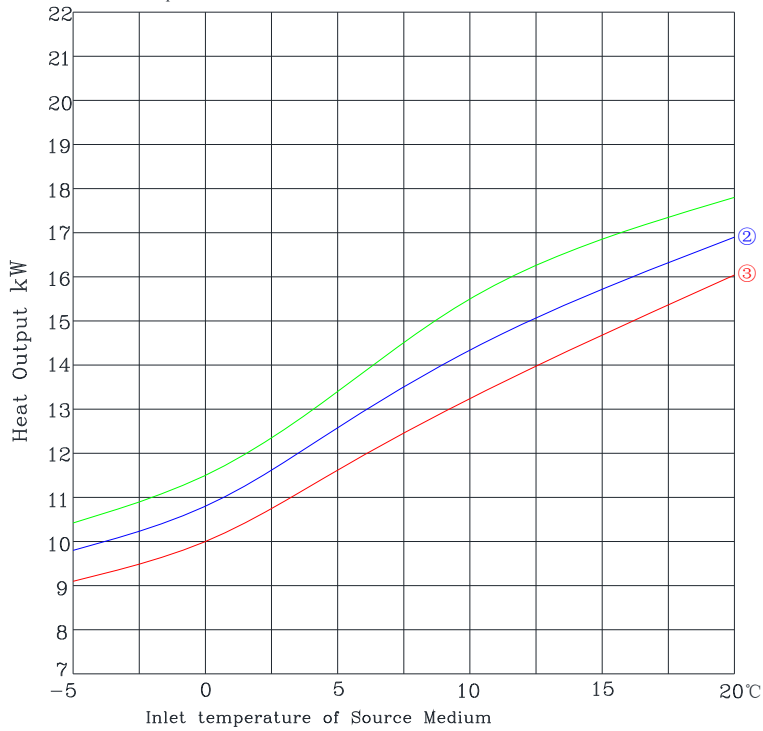
Model:GS12

Heating performance curve

1=Flow temperature 35 Full load

2=Flow temperature 45 Full load

3=Flow temperature 55 Full load





# Heating Curve

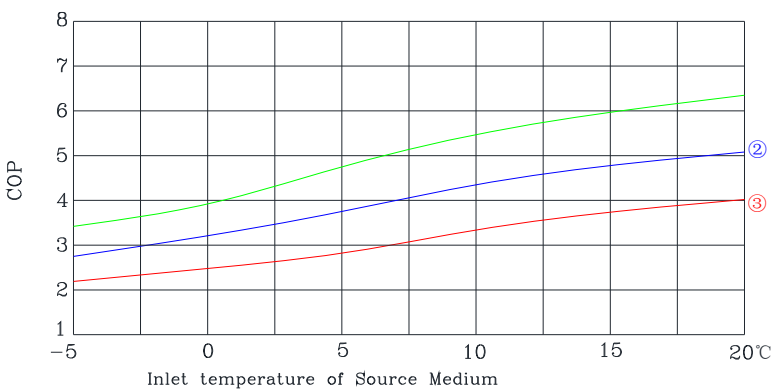
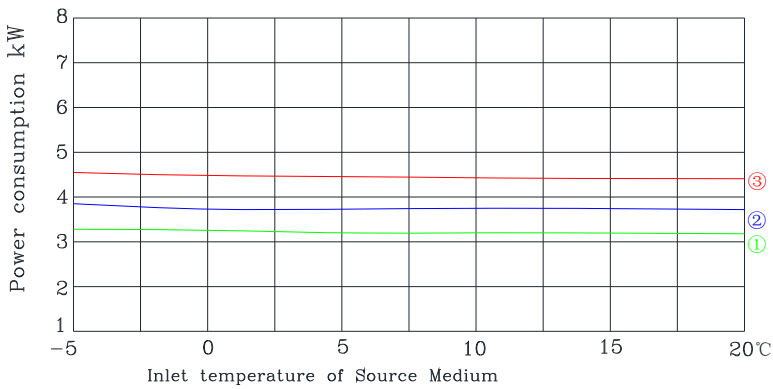
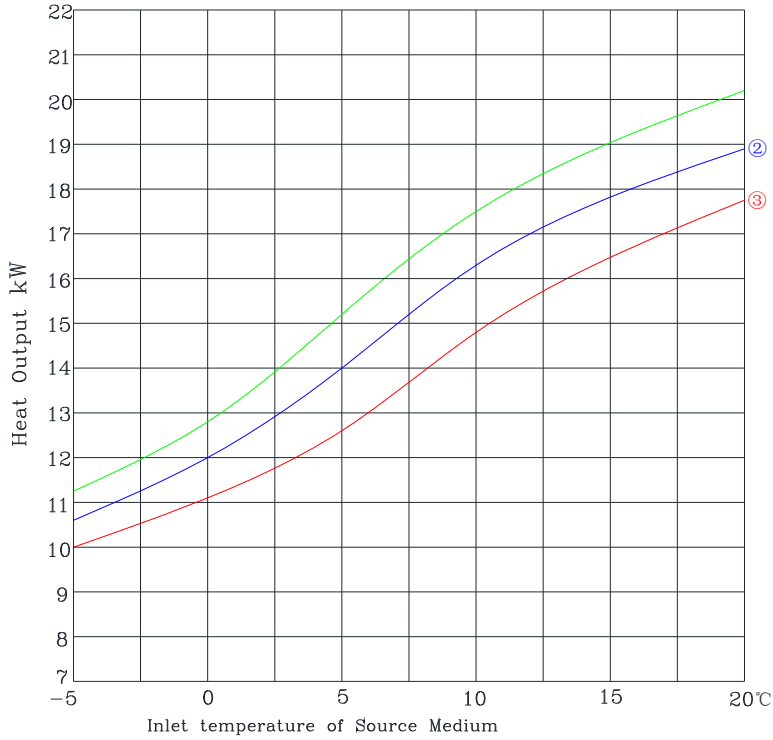
Model:GS13

Heating performance curve

1=Flow temperature 35 Full load

2=Flow temperature 45 Full load

3=Flow temperature 55 Full load



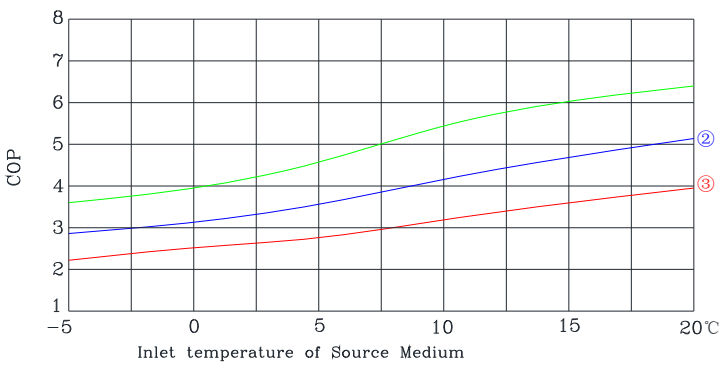
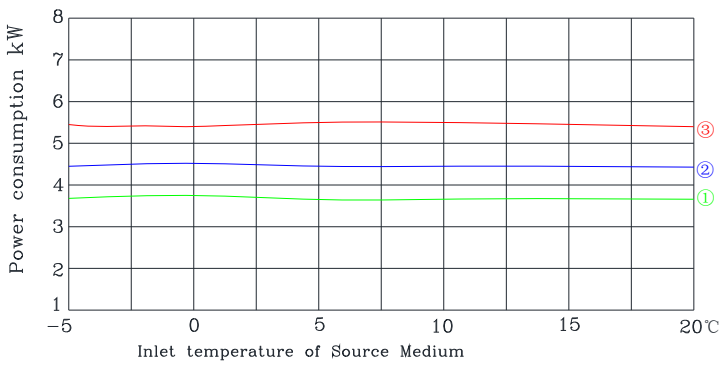
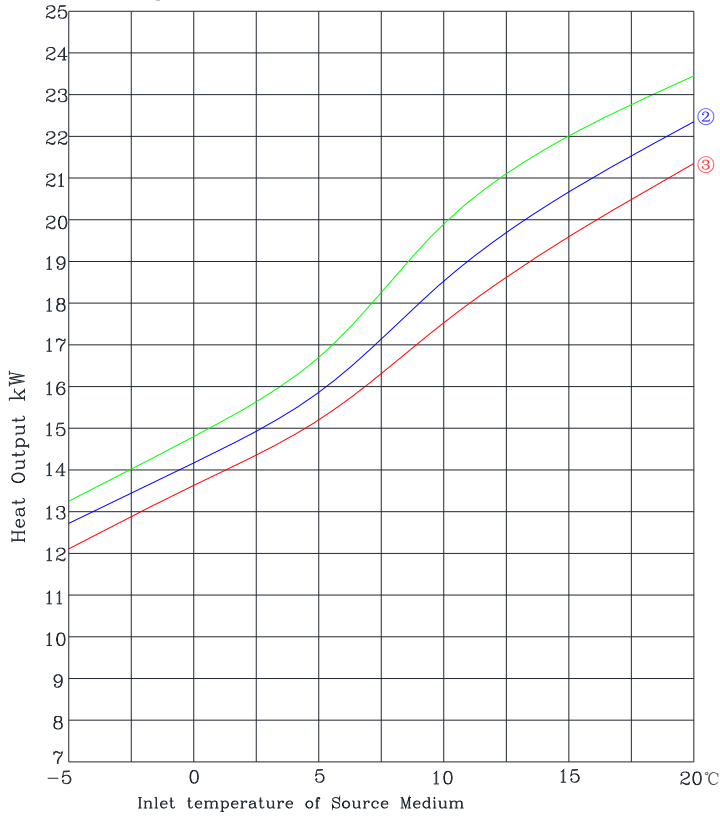


# Heating Curve

Model:GS15

Heating performance curve

- 1=Flow temperature 35 Full load
- 2=Flow temperature 45 Full load
- 3=Flow temperature 55 Full load

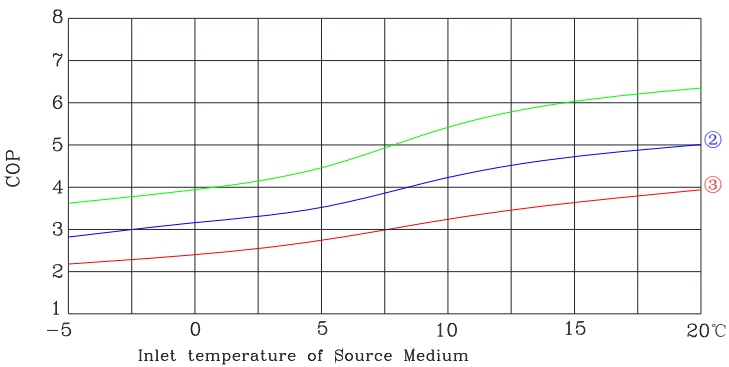
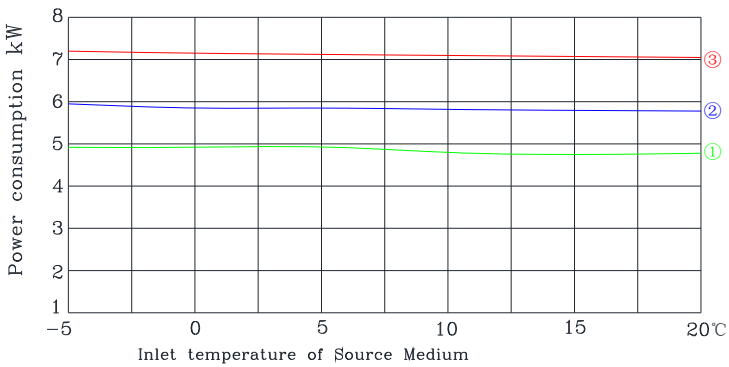
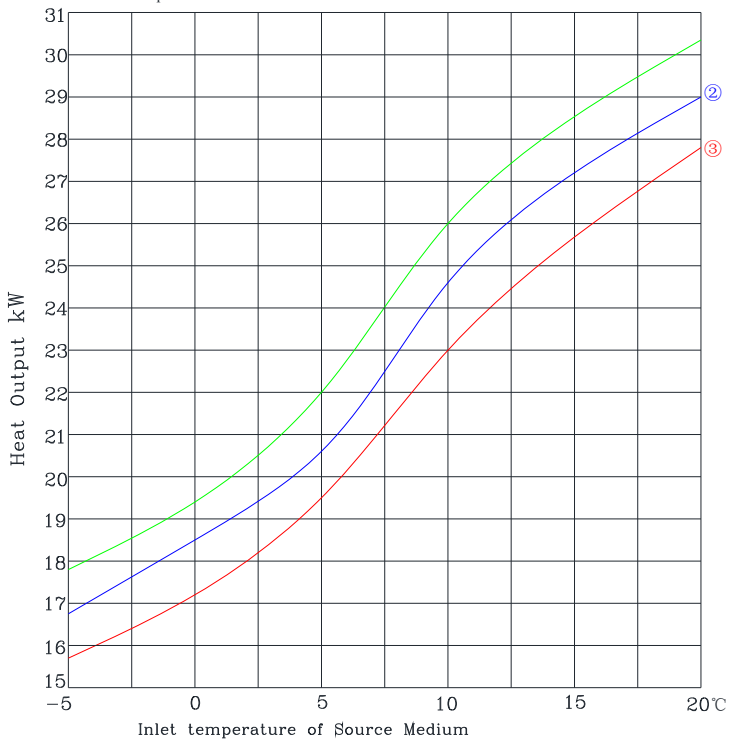




# Heating Curve

Model:GS20

Heating performance curve  
 1=Flow temperature 35 Full load  
 2=Flow temperature 45 Full load  
 3=Flow temperature 55 Full load



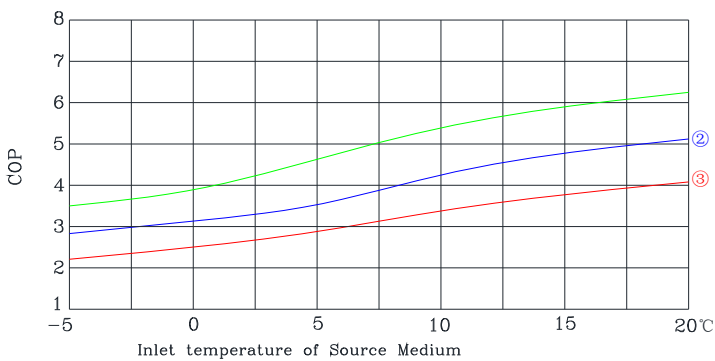
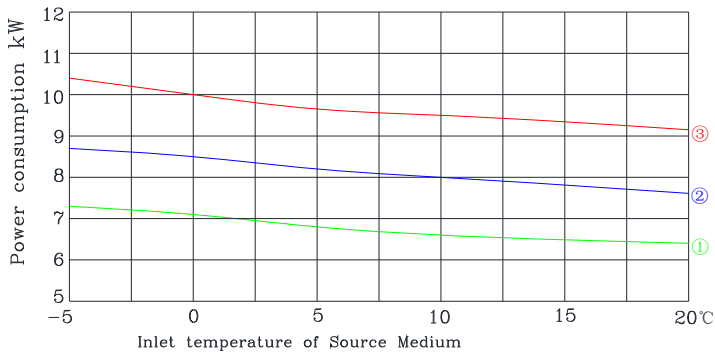
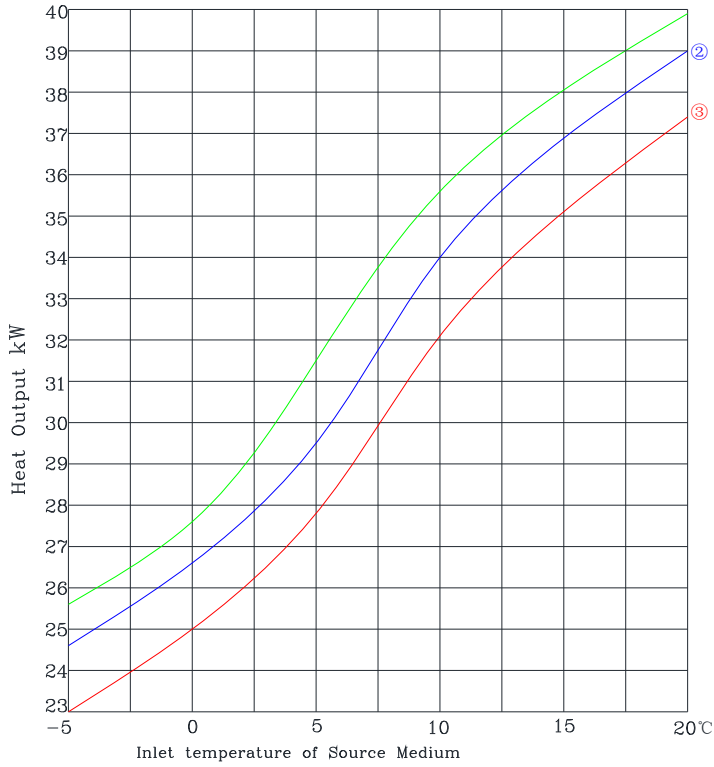


# Heating Curve

Model:GS26

Heating performance curve

- 1=Flow temperature 35 Full load
- 2=Flow temperature 45 Full load
- 3=Flow temperature 55 Full load

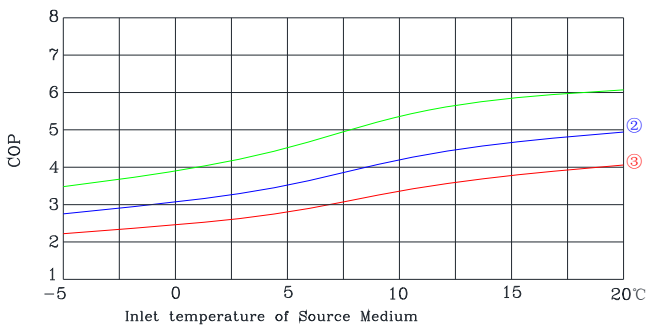
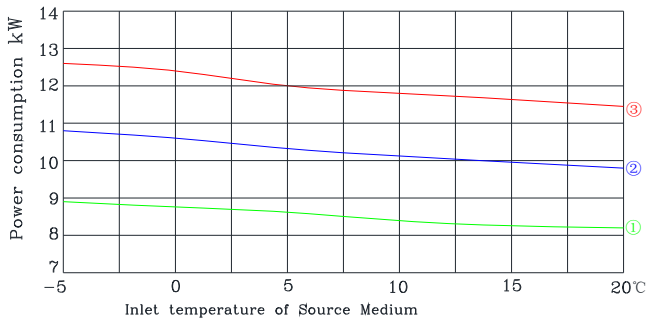
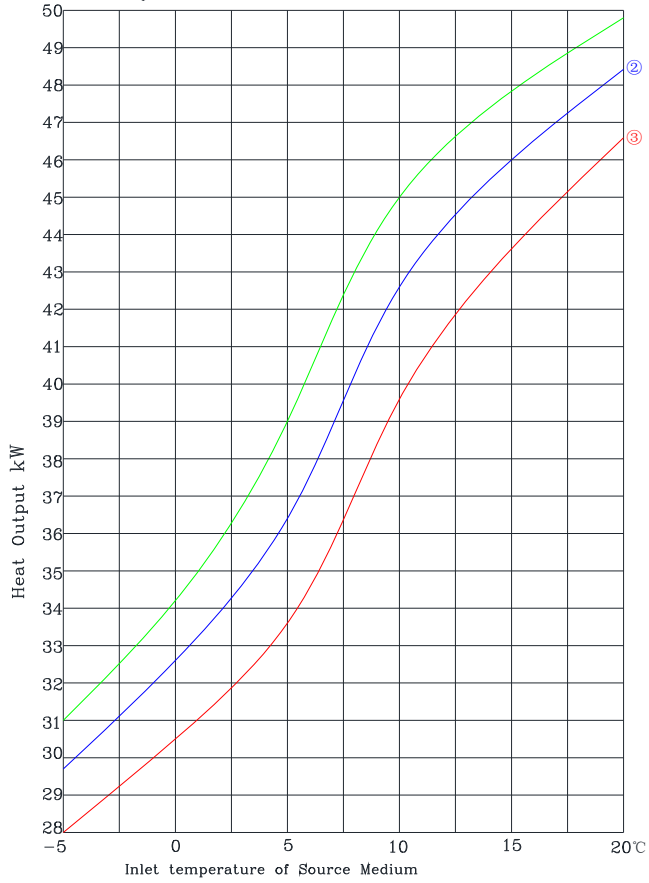




# Heating Curve

Model:GS30

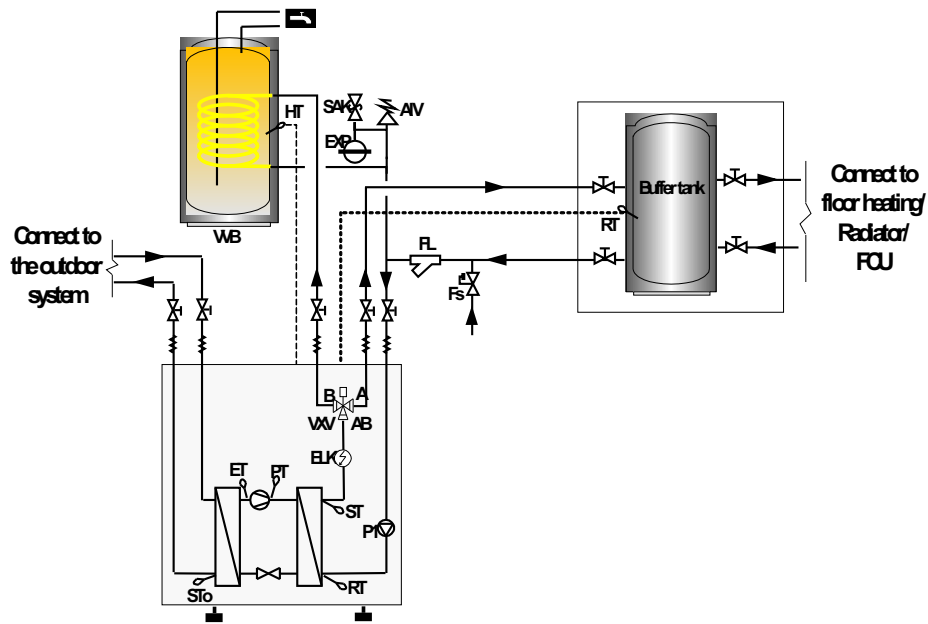
Heating performance curve  
 1=Flow temperature 35 Full load  
 2=Flow temperature 45 Full load  
 3=Flow temperature 55 Full load



## Application:

### Floor Heating with Hot Water

*(Internal water pump ,electric heater and three way valve)*



Name	Description	Location	Name	Description	Location
P1	Indoor side water pump	Internal(Optional)	RT	Indoor side inlet water temperature sensor	Internal
EXP	Expansion tank	External	ST	Indoor side outlet water temperature sensor	Internal
VVB	Three way valve	Internal(Optional)	STo	Outdoor side outlet water temperature sensor	Internal
ELK	Electric heater	Internal (option)	HT	Hot water temp. sensor	Internal
SAK	Safety valve	External	ET	Suction temp. sensor	Internal
FL	Particle filter	External	PT	Exhaust gas temperature sensor	Internal
FS	Automatic water	External			
VVB	Hot water tank	External	AIV	Air vent valve	External

## Application:

### System Overview Floor Heating with Hot Water

*(Internal water pump ,electric heater and three way valve)*

#### 1. Heating Mode Working Principle:

On heating mode, Three way valve (VXV) will open AB-A.

1.) When SF04 enable compensation=NO:

- a. When the  $RT = RTc - ST04$ , ( $RTc$  is the actual RT value of unit's last stop) the compressor will start to heat until  $ST = ST02$ . Then compressor will stop. The Compressor will start again when  $RT = RTc - ST04$ .
- b. When the outdoor temperature  $OT = ST07$ , compressor has run over 300s and  $ST = ST02 - ST04 - 1$ , the electric heater (ELK) will be activated as heating boost. It will stop heating when  $ST = ST02 - ST04$ .

2.) When SF04 enable compensation=YES:

$ST02$  is replaced by "Set temperature at heating"  $= ST05 + ST06 * (ST05 - OT)$ .  
Refer to page chapter "Heating compensation curve setting".

#### 2. Hot water production working principle:

On hot water mode, Three way valve (VXV) will open AB-B.

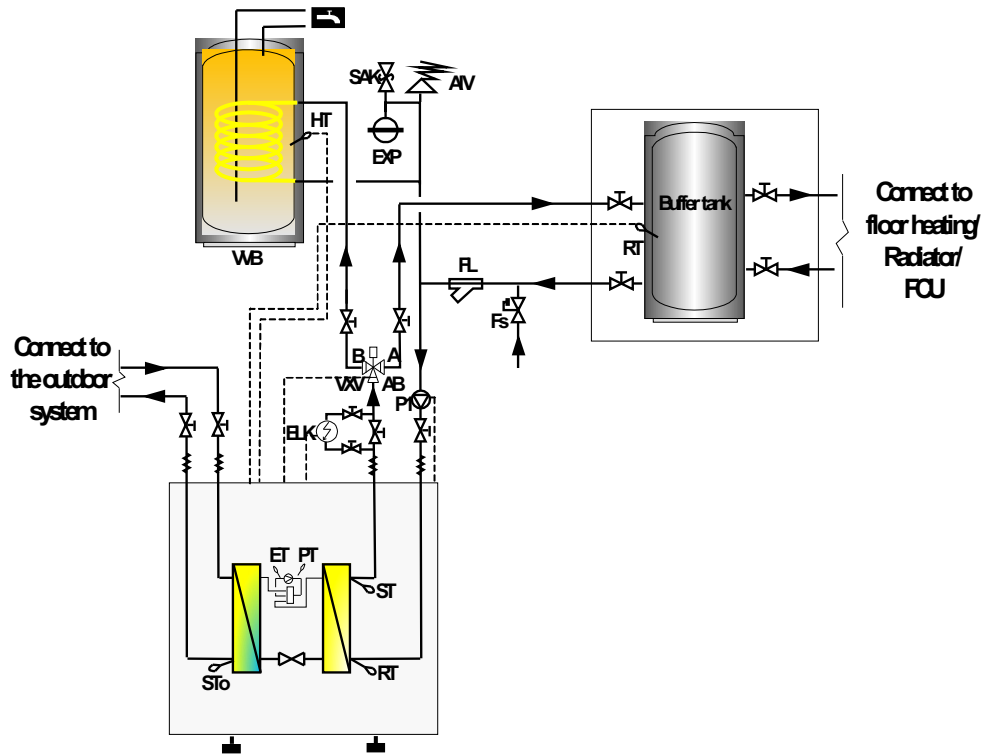
When domestic hot water requirement calls, the three way revert valve (VXV) will have the priority to revert to the hot water tank (VVB). After the domestic hot water reach its set temperature  $ST09$ , the three way revert valve (VXV) return to its floor heating position. After  $HT = ST09 - ST10$ , three way revert valve (VXV) will revert to hot water circuit again.



## Application:

### System Overview 2: Heating ,Cooling& Hot Water

*(External water pump, three way valve and electric heater)*



Name	Description	Location	Name	Description	Location
P1	Indoor side water pump	External	RT	Indoor side inlet water temperature sensor	Internal
ELK	Electric heater/boiler	External	ST	Indoor side outlet water temperature sensor	Internal
EXP	Expansion tank	External	STo	Outdoor side outlet water temperature sensor	Internal
VXV	Three way valve	External	HT	Hot water temperature sensor	Internal
FS	Automatic water supplement valve	External	ET	Suction temperature sensor	Internal
FL	Particle filter	External	PT	Exhaust gas temperature sensor	Internal
SAK	Safety valve	External			
VVB	Hot water cylinder	External	AIV	Air vent valve	External

## Application:

### System Overview Heating Cooling & Hot Water

*(External water pump, three way valve and electric heater)*

#### 1. Heating Mode Working Principle:

On heating mode, Three way valve (VXV) will open AB-A.

1.) When SF04 enable compensation=NO:

- a. When the  $RT = RTc - ST04$ , ( $RTc$  is the actual RT value of unit's last stop) the compressor will start to heat .After  $ST = ST02$ , compressor will stop. The Compressor will start again when  $RT = RTc - ST04$ ,
- b. When the outdoor temperature  $OT = ST07$  ,compressor has run over 300s and  $ST = ST02 - ST04 - 1$ , the electric heater (ELK) will be activated as heating booster. It will stop heating when  $ST = ST02 - ST04$ .

2.) When SF04 enable compensation=YES:

$ST02$  is replaced by "Set temperature at heating"  $= ST05 + ST06 * (ST05 - OT)$ . Refer to chapter "Heating compensation curve setting" ..

#### 2. Cooling Mode Working Principle:

On cooling mode, Three way valve (VXV) will open AB-A.

When the  $RT = MRTc + ST03$  ( $RTc$  is the actual RT value of unit's last stop), the compressor will start to cool until  $ST \wedge ST01$ . Then compressor will stop. The Compressor will start again when  $RT = MRTc + ST3$ .

#### 3. Hot water production working principle:

On hot water mode, Three way valve (VXV) will open AB-B.

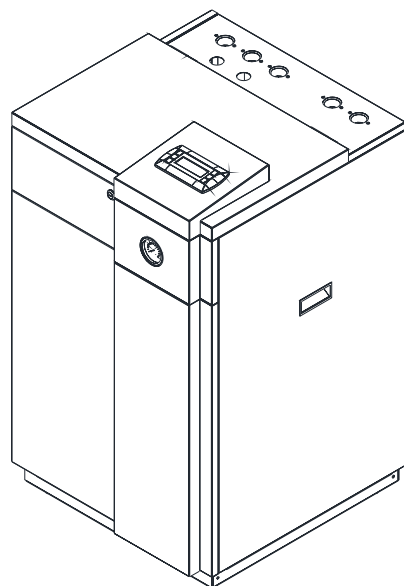
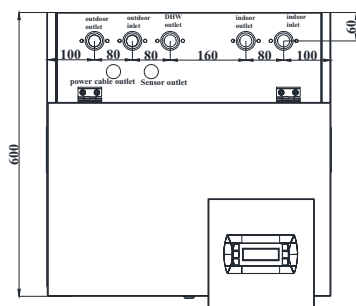
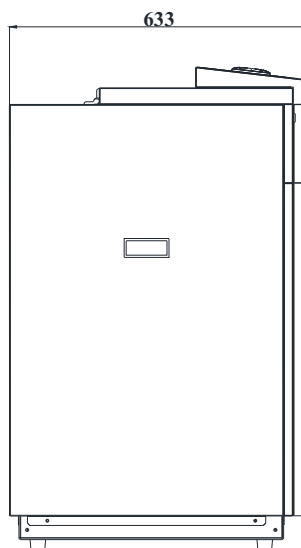
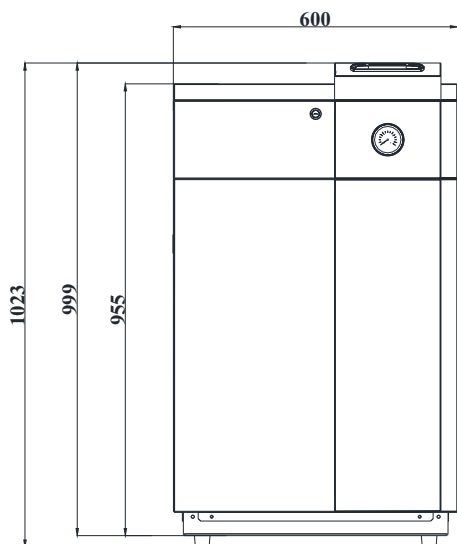
When domestic hot water requirement calls, the three way revert valve (VXV) will have the priority to revert to the hot water tank (VVB). After the domestic hot water reach its set temperature  $ST09$ , the three way revert valve (VXV) return to its heating position. After  $HT = ST09 - ST10$ , three way revert valve (VXV) will revert to hot water circuit again.



# Dimension

GS07 - GS20

Unit:mm

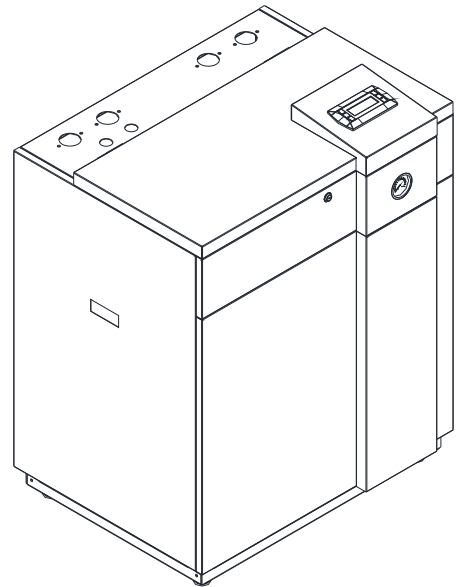
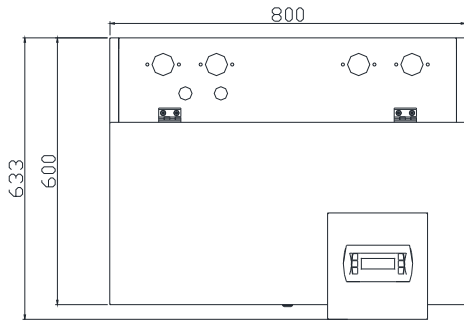
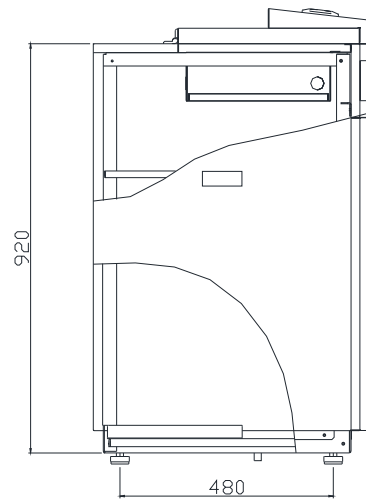
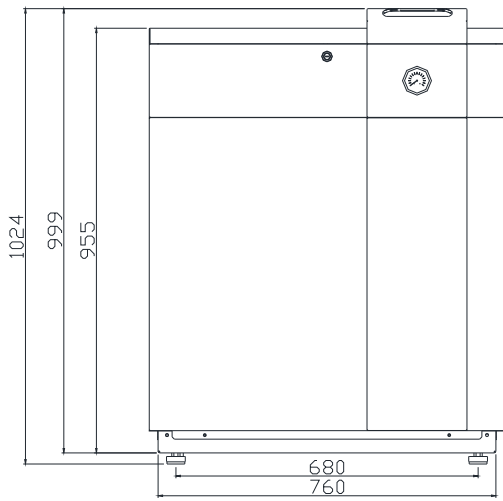




# Dimension

GS26 - GS30

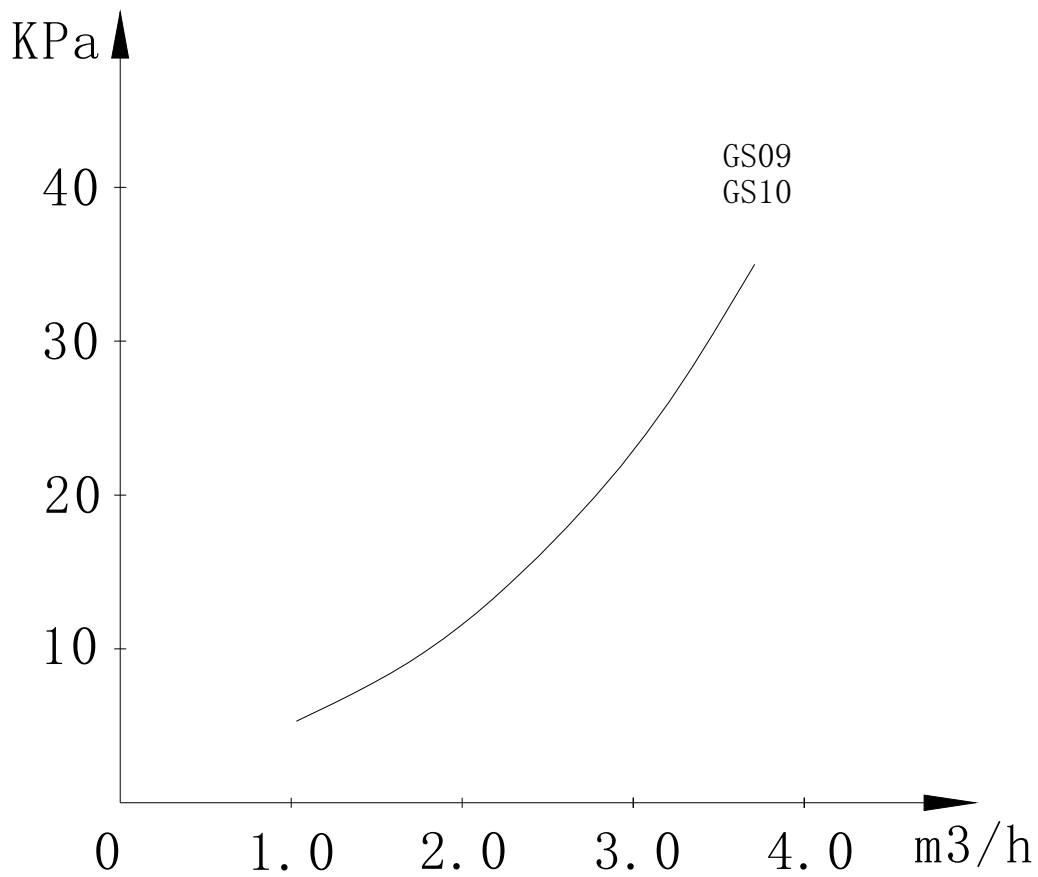
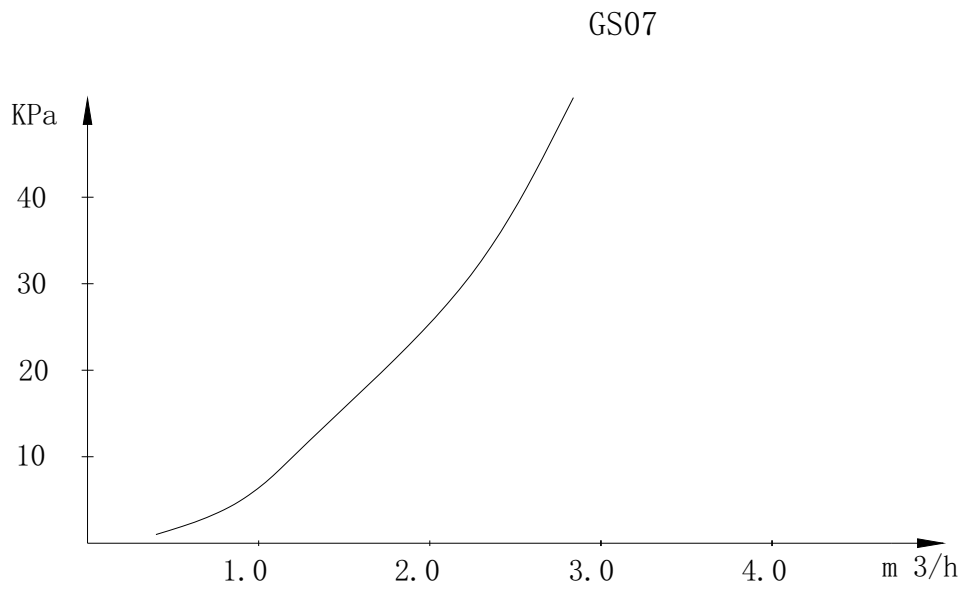
Unit:mm





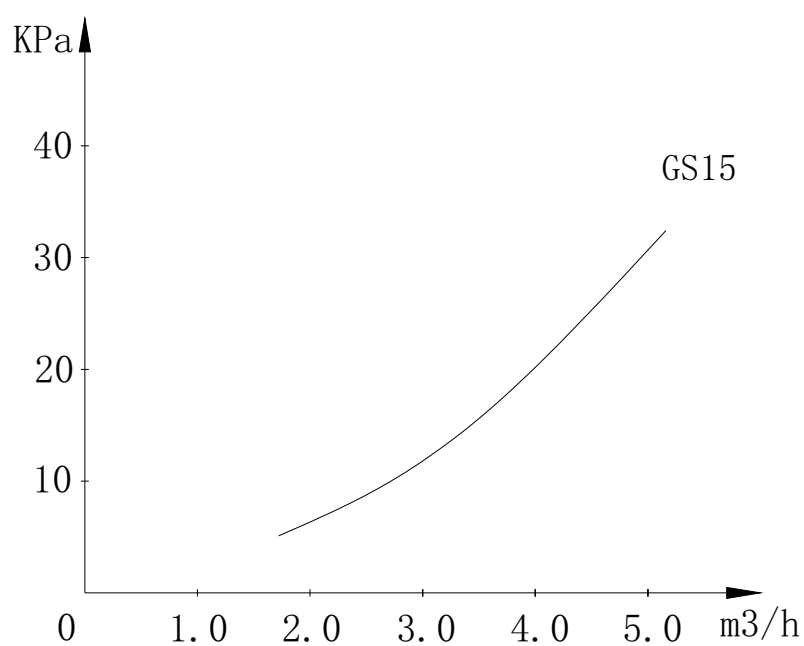
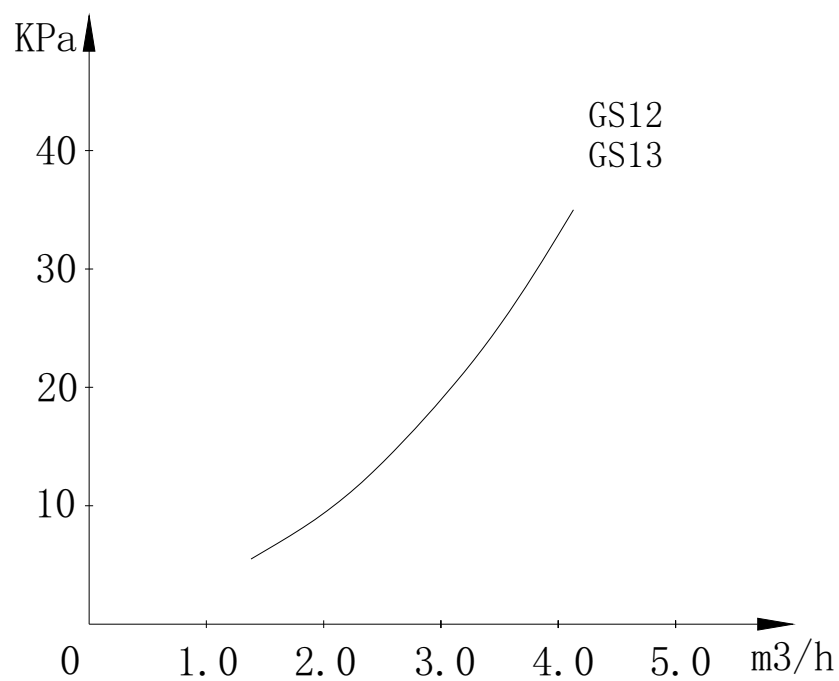
## Heat pump water pressure drop

GS07-GS30 Indoor and Outdoor side is same type exchanger



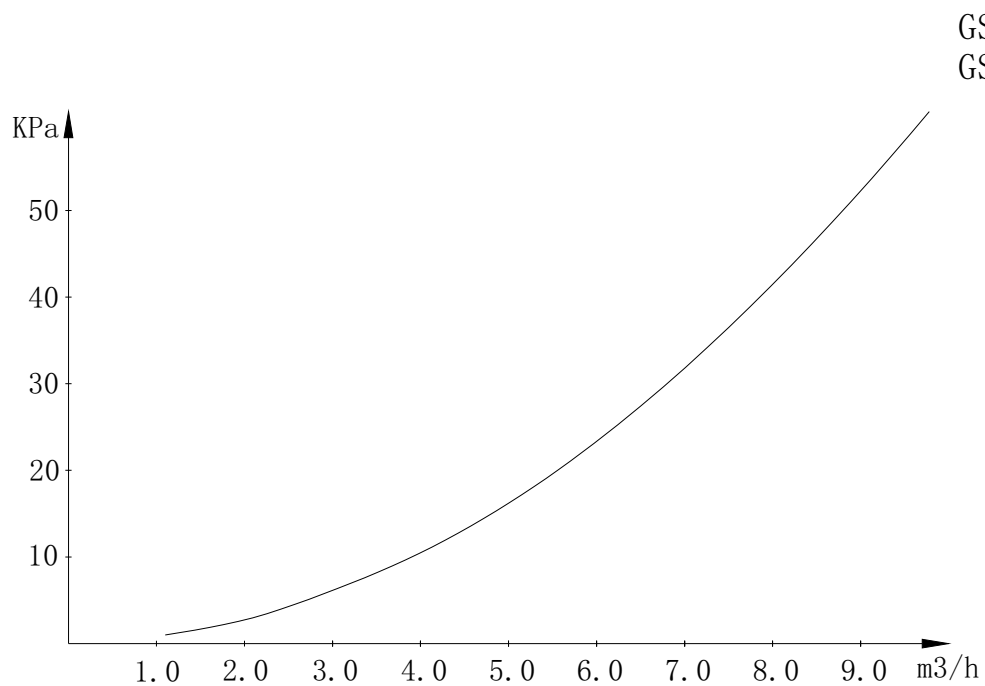
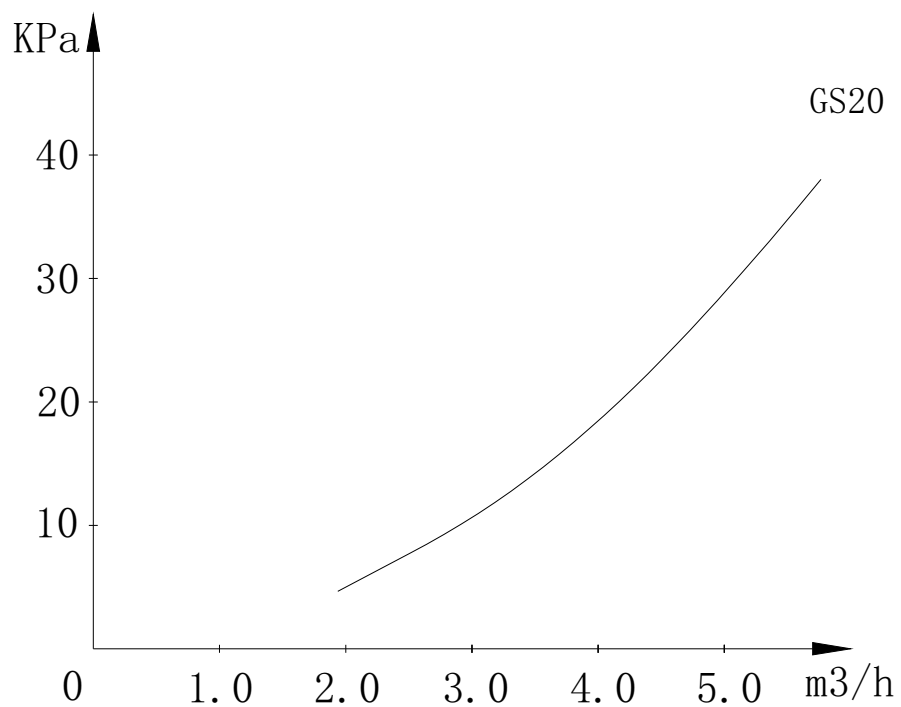


## Heat pump water pressure drop



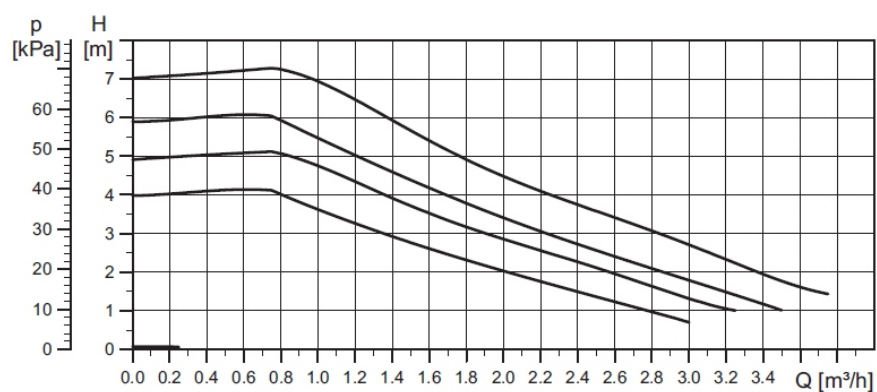


## Heat pump water pressure drop



## Optional water pump curve (GS07 GS09 GS10)

UPM3 FLEX AS 25-70 130

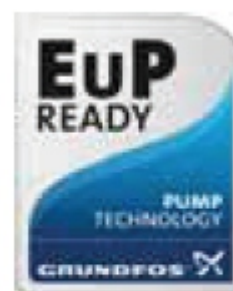
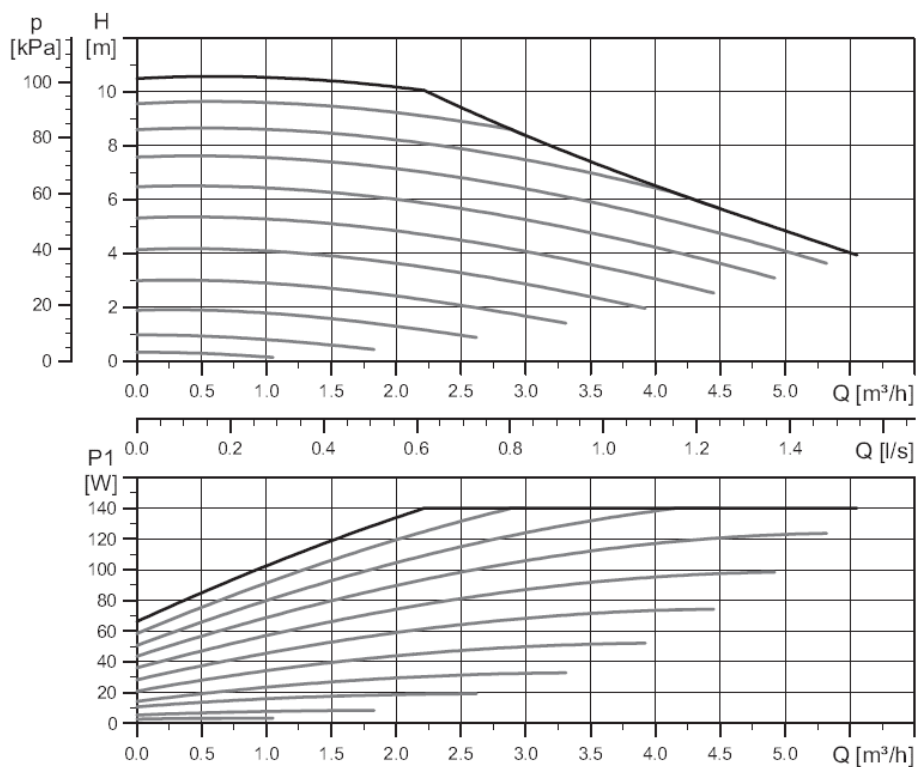


High efficiency

Ready for Ecodesign  
2015

## Optional water pump curve (GS12 GS13 GS15)

UPML 25-105 130 PWM, 1 x 230 V, 50/60 Hz



EEl ≤ 0.23