



## ZHEJIANG HONGSEN MACHINERY CO.,LTD



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# HONGSEN

## REFRIGERATION A/C SYSTEM ACCESSORIES



HONGSEN MACHINERY

ESCORT FOR SAFE REFRIGERATION

HVAC&R SERVICE TOOLS



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# HONGSEN

ESCORT FOR  
SAFE REFRIGERATION

# ABOUT HONGSEN

Hongsen people have the spirit of craftsmanship, with the help of modern high-end equipment and technology, do every product well.

Zhejiang Hongsen Machinery Co., Ltd was founded in 1992, which devotes itself in the R&D and manufacture of various valves in refrigeration and air conditioning system. For 30 years, Hongsen Machinery staffs persistently adhere to open up, keep forging ahead and never rest content with their achievements. They insist on new and high-tech as the guidance in the development and pursue the sustainable development road with high productivity and quality efficiency.

Hongsen Machinery covers a land area of 50,000 square meters. There are over 400 staffs and workers including a specialty team of 30 technicians. Hongsen Machinery has a close cooperation with the professors and experts in Zhejiang University, Shanghai Jiao Tong University and Xian Jiao Tong University and several senior engineers of leading domestic OEMs are invited as the consultants of the company. A number of technical talents are trained in production, development and quality control and grow up in the company. At present, Hongsen Machinery is capable to manufacture multiple categories of refrigeration and A/C accessory parts such as electric expansion valve series, motorized regulating valve series, solenoid valve series, ball valve series, sight glass series, expansion valve series and shut off valve series. Hongsen Machinery becomes one company integrating R&D, production and marketing into one.



### ADVANCED PRODUCTION LINE

Domestic leading technology,  
highly automated production

### SEMI-AUTOMATIC INFRARED ENERGY-SAVING OVEN

Energy efficient,  
convenient operation



### FINISHING CENTER

High-precision machining  
center,  
CNC numerical control



### HELIUM TESTING MACHINE

Accurate and efficient,  
environmentally safe



### HELIUM TESTING MACHINE

Automatic leak detection alarm,  
high detection accuracy

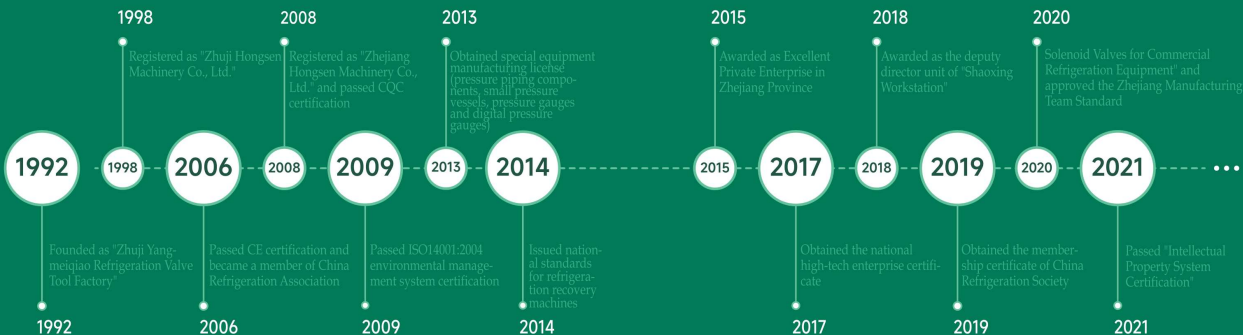
# FOCUS ON REFRIGERATION FOR 30 YEARS

Hongsen has three production divisions: A/C tooling, Refrigeration Control parts and Environmental equipment, with the support more than 300 sets of inspecting equipments and advanced CNC equipments.

# DEVELOPMENT HISTORY

REFRIGERATION & A/C SYSTEM ACCESSORIES

HONGSEN



# GLOBAL BRAND CHANNELS



Hongsen product is well sold in domestic market, like Guangzhou, Shanghai, Beijing, etc... exported mainly to Europe, USA, Australia. With its good quality, Hongsen has built long-term cooperation with famous companies in refrigeration or A/C.

# ELECTRONIC EXPANSION VALVE

*Series*

ESCORT FOR SAFE REFRIGERATION

REFRIGERATION & A/C SYSTEM ACCESSORIES

HONGSEN



DHPT DPS electronic expansion valve is suitable for refrigeration systems such as air conditioners, commercial refrigerators, small refrigeration storage and heat pumps. It can accurately control the refrigerant flow in the system, so that the system can always run in the best state, achieve rapid cooling, and achieve the goal of precise control and energy saving.

## DPF/DPFS

### DPF/DPFS Series electronic expansion valve



DPF series



DPFS series

#### Product Description

DPF/DPFS electronic expansion valve is suitable for refrigeration systems such as air conditioners, commercial refrigerators, small refrigeration storage and heat pumps. It can accurately control the refrigerant flow in the system, so that the system can always

run in the best state, achieve rapid cooling, and achieve the goal of precise control and energy saving.

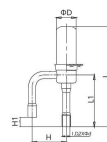
#### Features

- Small size, light weight, stable and reliable performance;
- Fast response and action;
- New structure design of expansion valve, low noise and low failure rate;
- DPF series products apply design of balanced port, and the reverse valve opening pressure is high;
- Suitable for systems with little oil or no oil.

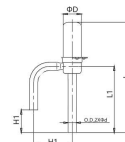
#### Technical Parameters

Applicable refrigerant	R22, R134a, R404A, R407C, R410A
Nominal capacity	2.5~126kW
Medium temperature	-30~+70°C
Environment temperature	-30~+60°C
Environment humidity	under 95%RH
Full open pulse	500PS
Valve opening pulse	32±20
Rated voltage	12V DC (±10%), rectangular wave
Excitation mode	1-2 phase excitation, single pole drive
Excitation speed	30~90pps
Finishing excitation mode keeps	0.1~1.0s
Time cost for whole course	6s (83pps)
Drive current	260mA
Coil resistance	48±3.7Ω/phase
Coil insulation grade	Class E
Protect grade	IP65

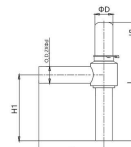
#### Structure



DPF1.3~2.4



DPF3.0~3.2



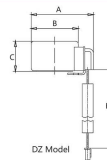
DPFS4.0~6.5

#### Overall dimension

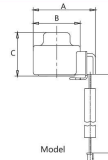
Model	φD	L	L1	H	H1	φd
DPF1.3~2.4	17.3	87	36.8	30	8	6.5
DPF3.0~3.2	17.3	105	41.5	37	21.5	7.94
DPFS4.0~6.5	17.3	114	/	63	64	16

Note: dimension of connecting pipe can be customized according to requirements

#### Coil



DZ Model

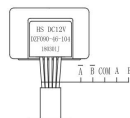


Model

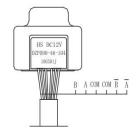
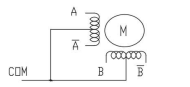
#### Overall dimension

Series	Coil model	A	B	C	H	Connector model
DZ	DZ090-46-□□□□	51	38.5	25	900	XHP-5 XHP-6 XAP-5 XAP-6
	DZ120-46-□□□□	51	38.5	25	1200	
	DZ200-46-□□□□	51	38.5	25	2000	
	DZ300-46-□□□□	51	38.5	25	3000	
DZF	DZF090-46-□□□□	51	38.5	35.5	900	XHP-5 XHP-6 XAP-5 XAP-6
	DZF120-46-□□□□	51	38.5	35.5	1200	
	DZF200-46-□□□□	51	38.5	35.5	2000	
	DZF300-46-□□□□	51	38.5	35.5	3000	

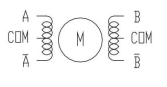
Note: the lead wire length and connector can be customized according to customer's requirements.



Four-phase eight-shot



Four-phase eight-shot

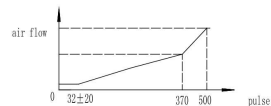
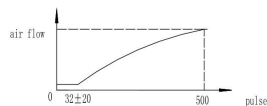
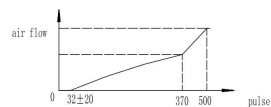
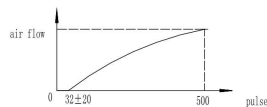


Excitation method								
相号	1	2	3	4	5	6	7	8
A								
B								
Ā								
B̄								

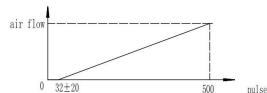
Timing: 1→2→3→4→5→6→7→8 Valve close  
8→7→6→5→4→3→2→1 Valve open

Model selection											
Product series	Full open steps	Diameter [mm]	Kv <sup>①</sup>	Nominal capacity [QW]						Max. working pressure [MPa]	Reverse valve opening pressure difference [MPa]
				R22	R134a	R407C	R404A/R507	R410A			
DPF1.3	500	1.30	0.06	4.36	3.40	4.46	3.08	5.12	4.2	4.2	≥2.1
DPF1.65	500	1.65	0.08	8.01	6.26	8.22	5.65	9.42	4.2	4.2	≥2.1
DPF1.8	500	1.80	0.10	9.11	7.10	9.32	6.44	10.70	4.2	4.2	≥2.1
DPF2.0	500	2.00	0.16	11.25	8.77	11.51	7.95	13.21	4.2	4.2	≥2.1
DPF2.2	500	2.20	0.20	13.61	10.61	13.92	9.61	15.98	4.2	4.2	≥2.1
DPF2.4	500	2.40	0.23	16.20	12.63	16.57	11.44	19.02	4.2	4.2	≥2.1
DPF3.0	500	3.00	0.39	20.20	15.78	20.76	14.24	23.77	4.2	4.2	≥1.47
DPF3.2	500	3.20	0.45	27.85	21.76	28.62	19.63	32.78	4.2	4.2	≥1.47
DPF54.0	500	6.50	0.50	40.37	31.54	41.49	28.45	47.52	4.2	4.2	≥3.5
DPF54.5	500	6.50	0.70	50.48	39.44	51.88	35.58	59.42	4.2	4.2	≥3.5
DPF55.5	500	6.50	0.80	67.30	52.58	69.16	47.44	79.21	4.2	4.2	≥3.5
DPF56.5	500	6.50	1.10	100.96	78.88	103.75	71.16	118.83	4.2	4.2	≥3.5

Nominal condition:  
 • Rated capacity is based on: R407C condensing temperature: +38°C; evaporating temperature: +5°C; super cooling degree: 0 K; super heat degree: 0 K;  
 • Kv value: the pressure difference based on the two sides between water with density 17/m<sup>3</sup> and the valve is equal to the positive flow capacity at 100kPa.



DPFF1.0~DPFF3.2



DPFF54.5~DPFF56.5

Note: the flow curve can be customized according to requirement.



Rated capacity (kW)															
	Condensing temperature °C	DPF1.3							DPF1.65						
		Evaporating temperature(°C)							Evaporating temperature(°C)						
		10	5	0	-5	-10	-20	-30	10	5	0	-5	-10	-20	-30
R410A	30	4.38	4.73	5.02	5.24	5.41	5.63	5.71	8.06	8.72	9.25	9.65	9.96	10.36	10.51
	35	4.72	5.00	5.22	5.41	5.54	5.70	5.73	8.68	9.21	9.63	9.95	10.20	10.49	10.56
	38	4.87	5.12	5.31	5.46	5.58	5.70	5.73	8.95	9.42	9.78	10.06	10.26	10.50	10.54
	40	4.93	5.17	5.36	5.49	5.59	5.70	5.70	9.10	9.53	9.86	10.11	10.29	10.49	10.50
	45	5.07	5.26	5.39	5.49	5.58	5.63	5.61	9.33	9.68	9.93	10.13	10.26	10.38	10.32
R407C	50	5.10	5.24	5.36	5.42	5.48	5.49	5.42	9.39	9.65	9.85	9.99	10.07	10.11	10.00
	30	3.79	4.06	4.28	4.43	4.55	4.66	4.66	6.96	7.47	7.86	8.15	8.36	8.57	8.60
	35	4.12	4.65	4.50	4.61	4.70	4.77	4.75	7.58	7.99	8.28	8.50	8.64	8.76	8.74
	38	4.28	4.46	4.60	4.70	4.77	4.80	4.77	7.88	8.22	8.47	8.65	8.76	8.85	8.78
	40	4.38	4.55	4.66	4.75	4.80	4.83	4.77	8.06	8.36	8.58	8.74	8.83	8.89	8.79
R22	45	4.56	4.68	4.77	4.83	4.85	4.85	4.77	8.39	8.63	8.79	8.89	8.95	8.92	8.76
	50	4.68	4.77	4.82	4.85	4.87	4.82	4.70	8.46	8.78	8.88	8.93	8.95	8.86	8.65
	30	3.63	3.92	4.14	4.31	4.44	4.61	4.68	6.68	7.21	7.63	7.95	8.18	8.49	8.61
	35	3.97	4.21	4.39	4.53	4.63	4.75	4.78	7.32	7.75	8.08	8.33	8.53	8.75	8.81
	38	4.14	4.36	4.51	4.63	4.72	4.82	4.83	7.64	8.01	8.31	8.53	8.70	8.88	8.90
R134a	40	4.26	4.44	4.58	4.70	4.77	4.85	4.87	7.82	8.17	8.43	8.64	8.78	8.93	8.95
	45	4.46	4.61	4.73	4.82	4.87	4.92	4.90	8.22	8.50	8.71	8.86	8.97	9.06	9.03
	50	4.63	4.75	4.83	4.90	4.93	4.95	4.90	8.53	8.74	8.90	9.01	9.08	9.11	9.04
	30	2.89	3.08	3.23	3.33	3.40	3.45	3.41	5.31	5.67	5.93	6.11	6.24	6.33	6.29
	35	3.14	3.30	3.40	3.46	3.52	3.53	3.46	5.79	6.07	6.26	6.39	6.46	6.49	6.39
R404A	38	3.28	3.40	3.48	3.53	3.57	3.57	3.50	6.04	6.26	6.42	6.51	6.57	6.56	6.43
	40	3.35	3.46	3.53	3.58	3.60	3.58	3.50	6.18	6.38	6.51	6.58	6.63	6.58	6.45
	45	3.52	3.58	3.63	3.65	3.65	3.60	3.50	6.46	6.60	6.68	6.72	6.72	6.63	6.43
	50	3.62	3.67	3.68	3.68	3.67	3.58	3.46	6.65	6.74	6.78	6.78	6.75	6.60	6.38
	30	2.70	2.89	3.04	3.13	3.19	3.24	3.21	4.97	5.33	5.58	5.76	5.89	5.97	5.90
R404A	35	2.89	3.03	3.13	3.19	3.23	3.23	3.18	5.32	5.57	5.76	5.88	5.95	5.96	5.83
	38	2.96	3.08	3.14	3.19	3.21	3.19	3.11	5.43	5.65	5.79	5.88	5.92	5.89	5.74
	40	2.97	3.08	3.14	3.18	3.19	3.16	3.06	5.47	5.67	5.78	5.85	5.88	5.82	5.64
	45	3.01	3.08	3.11	3.13	3.11	3.04	2.92	5.45	5.65	5.72	5.74	5.72	5.61	5.39
	50	2.96	2.99	3.01	2.99	2.97	2.87	2.72	5.43	5.51	5.53	5.51	5.46	5.29	5.01

Rated capacity (kW)															
	Condensing temperature [°C]	DPF1.8							DPF2.0						
		Evaporating temperature[°C]							Evaporating temperature[°C]						
		10	5	0	-5	-10	-20	-30	10	5	0	-5	-10	-20	-30
R410A	30	9.15	9.88	10.49	10.95	11.31	11.77	11.93	11.30	12.20	12.95	13.52	13.96	14.52	14.73
	35	9.86	10.45	10.91	11.31	11.58	11.91	11.97	12.18	12.90	13.47	13.96	14.29	14.71	14.78
	38	10.18	10.70	11.10	11.41	11.66	11.91	11.97	12.56	13.21	13.70	14.09	14.40	14.71	14.78
	40	10.30	10.80	11.20	11.47	11.68	11.91	11.91	12.72	13.34	13.83	14.16	14.42	14.71	14.71
	45	10.59	10.99	11.26	11.47	11.66	11.77	11.72	13.08	13.57	13.91	14.16	14.40	14.52	14.47
R407C	50	10.66	10.95	11.20	11.33	11.45	11.47	11.33	13.16	13.52	13.83	13.98	14.14	14.16	13.98
	30	7.92	8.48	8.94	9.26	9.51	9.74	9.74	9.78	10.47	11.04	11.43	11.74	12.02	12.02
	35	8.61	9.72	9.40	9.63	9.82	9.97	9.93	10.63	12.00	11.61	11.89	12.13	12.31	12.25
	38	8.94	9.32	9.61	9.82	9.97	10.03	9.97	11.04	11.51	11.87	12.13	12.31	12.38	12.31
	40	9.15	9.51	9.74	9.93	10.03	10.09	9.97	11.30	11.74	12.02	12.25	12.38	12.46	12.31
R22	45	9.53	9.78	9.97	10.09	10.14	10.14	9.97	11.76	12.07	12.31	12.46	12.51	12.51	12.31
	50	9.78	9.97	10.07	10.14	10.18	10.07	9.82	12.07	12.31	12.44	12.51	12.56	12.44	12.13
	30	7.59	8.19	8.65	9.01	9.28	9.63	9.78	9.36	10.11	10.68	11.12	11.45	11.89	12.07
	35	8.30	8.80	9.17	9.47	9.68	9.93	9.99	10.24	10.86	11.33	11.69	11.94	12.25	12.33
	38	8.65	9.11	9.42	9.68	9.86	10.07	10.09	10.68	11.25	11.64	11.94	12.18	12.44	12.46
RT34a	40	8.90	9.28	9.57	9.82	9.97	10.14	10.18	10.99	11.45	11.82	12.13	12.31	12.51	12.56
	45	9.32	9.63	9.88	10.07	10.18	10.28	10.24	11.51	11.89	12.20	12.44	12.56	12.69	12.64
	50	9.68	9.93	10.09	10.24	10.30	10.34	10.24	11.94	12.25	12.46	12.64	12.72	12.77	12.64
	30	6.04	6.44	6.75	6.96	7.10	7.21	7.13	7.46	7.95	8.33	8.59	8.77	8.90	8.80
	35	6.56	6.90	7.10	7.23	7.36	7.38	7.23	8.10	8.51	8.77	8.93	9.08	9.11	8.93
R404A	38	6.85	7.10	7.27	7.38	7.46	7.46	7.31	8.46	8.77	8.98	9.11	9.21	9.21	9.03
	40	7.00	7.23	7.38	7.48	7.52	7.48	7.31	8.64	8.93	9.11	9.24	9.29	9.24	9.03
	45	7.36	7.48	7.59	7.63	7.63	7.52	7.31	9.08	9.24	9.36	9.42	9.42	9.29	9.03
	50	7.56	7.67	7.69	7.69	7.67	7.48	7.23	9.34	9.47	9.49	9.49	9.47	9.24	8.93
	30	5.64	6.04	6.35	6.54	6.67	6.77	6.71	6.97	7.46	7.84	8.08	8.23	8.36	8.28
R404A	35	6.04	6.33	6.54	6.67	6.75	6.75	6.65	7.46	7.82	8.08	8.23	8.33	8.33	8.20
	38	6.19	6.44	6.56	6.67	6.71	6.67	6.50	7.64	7.95	8.10	8.23	8.28	8.23	8.02
	40	6.21	6.44	6.56	6.65	6.67	6.60	6.39	7.66	7.95	8.10	8.20	8.23	8.15	7.89
	45	6.29	6.44	6.50	6.54	6.50	6.35	6.10	7.77	7.95	8.02	8.08	8.02	7.94	7.53
	50	6.19	6.25	6.29	6.25	6.21	6.00	5.68	7.64	7.71	7.77	7.71	7.66	7.40	7.02

Rated capacity (kW)															
	Condensing temperature [°C]	DPF2.2							DPF2.4						
		Evaporating temperature [°C]							Evaporating temperature [°C]						
		10	5	0	-5	-10	-20	-30	10	5	0	-5	-10	-20	-30
R410A	30	13.67	14.77	15.67	16.36	16.89	17.57	17.82	16.27	17.57	18.65	19.47	20.10	20.92	21.21
	35	14.73	15.61	16.30	16.89	17.29	17.79	17.89	17.53	18.58	19.39	20.10	20.58	21.18	21.29
	38	15.20	15.98	16.58	17.04	17.42	17.79	17.89	18.09	19.02	19.73	20.28	20.73	21.18	21.29
	40	15.39	16.14	16.73	17.14	17.45	17.79	17.79	18.32	19.21	19.91	20.40	20.77	21.18	21.18
	45	15.83	16.42	16.83	17.14	17.42	17.57	17.51	18.84	19.54	20.02	20.40	20.73	20.92	20.84
R407C	30	15.92	16.36	16.73	16.92	17.11	17.14	16.92	18.95	19.47	19.91	20.14	20.36	20.40	20.14
	35	11.83	12.67	13.36	13.83	14.20	14.55	14.55	14.08	15.08	15.90	16.46	16.90	17.31	17.31
	38	12.86	14.52	14.05	14.39	14.67	14.89	14.83	15.31	17.27	16.72	17.13	17.46	17.72	17.65
	40	13.36	13.92	14.36	14.67	14.89	14.98	14.89	15.90	16.57	17.09	17.46	17.72	17.83	17.72
	45	14.67	14.20	14.55	14.83	14.98	15.08	14.89	16.27	16.90	17.31	17.65	17.83	17.94	17.72
R22	30	14.61	14.89	15.08	15.14	15.14	14.89	16.94	17.39	17.72	17.94	18.02	18.02	17.72	
	35	14.61	14.89	15.05	15.14	15.20	15.05	14.67	17.39	17.72	17.91	18.02	18.09	17.91	17.46
	38	11.33	12.24	12.92	13.45	13.86	14.39	14.61	13.49	14.56	15.38	16.01	16.49	17.13	17.39
	40	12.39	13.14	13.70	14.14	14.45	14.83	14.92	14.75	15.64	16.31	16.83	17.20	17.65	17.76
	45	12.92	13.61	14.08	14.45	14.73	15.05	15.08	15.38	16.20	16.75	17.20	17.53	17.91	17.94
R134a	30	13.30	13.86	14.30	14.67	14.89	15.14	15.20	15.83	16.49	17.01	17.46	17.72	18.02	18.09
	35	13.92	14.39	14.77	15.05	15.20	15.36	15.30	16.57	17.13	17.57	17.91	18.09	18.28	18.20
	40	14.45	14.83	15.08	15.30	15.39	15.45	15.30	17.20	17.65	17.94	18.20	18.32	18.39	18.20
	45	9.02	9.61	10.08	10.40	10.61	10.77	10.64	10.74	11.44	12.00	12.37	12.63	12.82	12.67
	50	9.80	10.30	10.61	10.80	10.99	11.02	10.80	11.67	12.26	12.63	12.85	13.08	13.11	12.85
R404A	30	10.24	10.61	10.86	11.02	11.14	11.14	10.93	12.19	12.63	12.93	13.11	13.26	13.26	13.00
	35	10.46	10.80	11.02	11.18	11.24	11.18	10.93	12.45	12.85	13.11	13.30	13.37	13.30	13.00
	40	10.99	11.18	11.33	11.39	11.39	11.24	10.93	13.08	13.30	13.49	13.56	13.56	13.37	13.00
	45	11.30	11.46	11.49	11.49	11.46	11.18	10.80	13.45	13.63	13.67	13.67	13.63	13.30	12.85
	50	8.43	9.02	9.49	9.77	9.96	10.11	10.02	10.03	10.74	11.29	11.63	11.85	12.04	11.93
R404A	30	9.02	9.46	9.77	9.96	10.08	10.08	9.93	10.74	11.26	11.63	11.85	12.00	12.00	11.81
	38	9.24	9.61	9.80	9.96	10.02	9.96	9.71	11.00	11.44	11.67	11.85	11.93	11.85	11.55
	40	9.27	9.61	9.80	9.93	9.96	9.86	9.55	11.03	11.44	11.67	11.81	11.85	11.74	11.37
	45	9.40	9.61	9.71	9.77	9.71	9.49	9.12	11.18	11.44	11.55	11.63	11.55	11.29	10.85
	50	9.24	9.33	9.40	9.33	9.27	8.96	8.49	11.00	11.11	11.11	11.03	10.66	10.10	

Rated capacity (kW)															
	Condensing temperature [°C]	DPF3.0							DPF3.2						
		Evaporating temperature [°C]							Evaporating temperature [°C]						
		10	5	0	-5	-10	-20	-30	10	5	0	-5	-10	-20	-30
R410A	30	20.33	22.02	23.35	24.33	25.18	26.16	26.51	28.04	30.36	32.20	33.55	34.72	36.07	36.55
	35	21.88	23.21	24.33	25.11	25.74	26.44	26.65	30.17	32.01	33.55	34.62	35.49	36.46	36.75
	38	22.58	23.77	24.69	25.39	25.95	26.51	26.58	31.14	32.78	34.04	35.01	35.78	36.55	36.65
	40	23.00	24.06	24.90	25.53	26.02	26.51	26.51	31.72	33.17	34.33	35.20	35.88	36.55	36.55
	45	23.56	24.40	25.11	25.60	25.88	26.16	26.02	32.49	33.65	34.62	35.30	35.68	36.07	35.88
R407C	30	23.70	24.33	24.90	25.18	25.45	25.53	25.24	32.68	33.55	34.33	34.72	35.10	35.20	34.81
	35	17.54	18.86	19.85	20.55	21.04	21.60	21.67	24.18	26.01	27.37	28.33	29.01	29.78	29.88
	38	19.15	20.12	20.90	21.39	21.81	22.09	22.02	26.40	27.75	28.82	29.49	30.07	30.46	30.36
	40	19.85	20.76	21.39	21.81	22.09	22.30	22.09	27.37	28.62	29.49	30.07	30.46	30.75	30.46
	45	20.27	21.11	21.67	22.02	22.30	22.37	22.16	27.95	29.11	29.88	30.36	30.75	30.85	30.56
R22	30	21.18	21.74	22.16	22.44	22.51	22.51	22.09	29.20	29.98	30.56	30.94	31.04	31.04	30.46
	35	21.67	22.09	22.37	22.51	22.58	22.30	21.81	29.88	30.46	30.85	31.04	31.14	30.75	30.07
	38	16.83	18.23	19.28	20.06	20.69	21.46	21.74	23.21	25.14	26.59	27.66	28.53	29.59	29.98
	40	18.44	19.57	20.41	21.04	21.53	22.09	22.23	25.43	26.98	28.14	29.01	29.69	30.46	30.65
	45	19.28	20.20	20.97	21.53	21.95	22.37	22.44	26.59	27.85	28.91	29.69	30.27	30.85	30.94
R134a	30	19.78	20.62	21.32	21.81	22.16	22.58	22.58	27.27	28.43	29.40	30.07	30.56	31.14	31.14
	35	20.76	21.46	22.02	22.37	22.65	22.86	22.79	28.62	29.59	30.36	30.85	31.23	31.52	31.43
	40	21.53	22.09	22.44	22.79	22.93	23.00	22.79	29.69	30.46	30.94	31.43	31.62	31.72	31.43
	45	21.39	21.43	21.50	21.43	21.58	21.59	21.58	28.47	29.73	30.69	31.27	31.76	32.05	21.85
	50	14.66	15.36	15.78	16.13	16.34	16.41	16.13	20.21	21.18	21.76	22.24	22.53	22.63	22.24
R404A	38	15.21	15.78	16.20	16.48	16.55	16.55	16.20	20.98	21.76	22.34	22.72	22.82	22.82	22.34
	40	15.57	16.06	16.41	16.62	16.69	16.55	16.27	21.47	22.14	22.63	22.92	23.01	22.82	22.43
	45	16.34	16.69	16.90	16.97	16.97	16.69	16.27	22.53	23.01	23.30	23.40	23.40	23.01	22.43
	50	16.83	17.04	17.11	17.11	17.04	16.69	16.06	23.21	23.50	23.59	23.59	23.50	23.21	22.14
	55	12.55	13.47	14.10	14.58	14.87	15.08	14.94	17.31	18.57	19.44	20.11	20.50	20.79	20.60
R404A	35	13.39	14.10	14.52	14.87	15.00	15.00	14.73	18.47	19.44	20.02	20.50	20.69	20.69	20.31
	38	13.74	14.24	14.66	14.87	14.94	14.87	14.52	18.95	19.63	20.21	20.50	20.60	20.50	20.02
	40	13.82	14.31	14.58	14.79	14.79	14.66	14.24	19.05	19.73	20.11	20.40	20.40	20.21	19.63
	45	13.95	14.16	14.45	14.52	14.45	14.16	13.60	19.24	19.53	19.92	20.02	19.92	19.53	18.76
	50	13.74	13.89	13.95	13.89	13.82	13.32	12.69	18.95	19.15	19.24	19.15	19.05	18.37	17.50

Rated capacity (kW)																
		Condensing temperature [°C]	DPF4.0							DPF4.5						
			Evaporating temperature [°C]							Evaporating temperature [°C]						
			10	5	0	-5	-10	-20	-30	10	5	0	-5	-10	-20	-30
R410A	30	40.64	44.01	46.67	48.63	50.33	52.28	52.98	50.83	55.03	58.37	60.81	62.93	65.38	66.25	
	35	43.73	46.40	48.63	50.18	51.44	52.85	53.27	54.69	58.02	60.81	62.75	64.33	66.09	66.61	
	38	45.14	47.52	49.34	50.75	51.86	52.98	53.13	56.45	59.42	61.70	63.46	64.86	66.25	66.43	
	40	45.98	48.08	49.76	51.02	52.01	52.98	52.98	57.50	60.13	62.23	63.80	65.04	66.25	66.25	
	45	47.09	48.78	50.18	51.17	51.72	52.28	52.01	58.89	61.00	62.75	63.99	64.67	65.38	65.04	
R407C	30	47.37	48.63	49.76	50.33	50.88	51.02	50.46	59.24	60.81	62.23	62.93	63.62	63.80	63.10	
	35	35.05	37.70	39.67	41.06	42.05	43.17	43.31	43.83	47.15	49.61	51.35	52.58	53.98	54.16	
	38	38.27	40.22	41.78	42.75	43.59	44.15	44.01	47.85	50.30	52.24	53.45	54.51	55.21	55.03	
	40	39.67	41.49	42.75	43.59	44.15	44.57	44.15	49.61	51.88	53.45	54.51	55.21	55.74	55.21	
	45	40.51	42.20	43.31	44.01	44.57	44.72	44.30	50.66	52.77	54.16	55.03	55.74	55.92	55.39	
R22	45	42.33	43.46	44.30	44.85	44.99	44.99	44.15	52.93	54.34	55.39	56.08	56.26	56.26	55.21	
	30	43.31	44.15	44.72	44.99	45.14	44.57	43.59	54.16	55.21	55.92	56.26	56.45	55.74	54.51	
	35	33.64	36.44	38.54	40.09	41.35	42.89	43.46	42.07	45.57	48.20	50.14	51.71	53.64	54.34	
	38	36.86	39.11	40.79	42.05	43.04	44.15	44.43	46.10	48.90	51.01	52.58	53.82	55.21	55.56	
	40	38.54	40.37	41.91	43.04	43.88	44.72	44.85	48.20	50.46	52.40	53.82	54.87	55.92	56.08	
R134a	45	39.53	41.21	42.62	43.59	44.30	45.14	45.14	49.43	51.53	53.29	54.51	55.39	56.45	56.45	
	45	41.49	42.89	44.01	44.72	45.27	45.69	45.56	51.88	53.64	55.03	55.92	56.61	57.13	56.97	
	50	43.04	44.15	44.85	45.56	45.83	45.98	45.56	53.82	55.21	56.08	56.97	57.32	57.50	56.97	
	30	26.77	28.60	29.99	30.83	31.54	31.96	31.67	33.48	35.76	37.50	38.55	39.44	39.97	39.61	
	35	29.29	30.70	31.54	32.24	32.66	32.80	32.24	36.63	38.39	39.44	40.31	40.84	41.02	40.31	
R404A	38	30.41	31.54	32.38	32.93	33.08	33.08	32.38	38.03	39.44	40.49	41.18	41.36	41.36	40.49	
	40	31.12	32.09	32.80	33.22	33.35	33.08	32.51	38.92	40.13	41.02	41.55	41.71	41.36	40.66	
	45	32.66	33.35	33.77	33.92	33.92	33.35	32.51	40.84	41.71	42.23	42.42	42.42	41.71	40.66	
	50	33.64	34.06	34.19	34.19	34.06	33.35	32.09	42.07	42.60	42.76	42.76	42.60	41.71	40.13	
	30	25.09	26.92	28.18	29.15	29.72	30.14	29.86	31.38	33.66	35.24	36.45	37.16	37.68	37.34	
R404A	35	26.77	28.18	29.02	29.72	29.99	29.99	29.44	33.48	35.24	36.29	37.16	37.50	37.50	36.81	
	38	27.47	28.45	29.29	29.72	29.86	29.72	29.02	34.35	35.58	36.63	37.16	37.34	37.16	36.29	
	40	27.61	28.60	29.15	29.57	29.57	29.29	28.45	34.53	35.76	36.45	36.98	36.98	36.63	35.58	
	45	27.89	28.31	28.67	29.02	28.87	28.31	27.19	34.88	35.40	36.11	36.29	36.11	35.40	34.01	
	50	27.47	27.76	27.89	27.76	27.61	26.63	25.37	34.35	34.71	34.88	34.71	34.53	33.30	31.72	

Rated capacity (kW)																		
		Condensing temperature [°C]	DPF5.5								DPF6.5							
			Evaporating temperature [°C]								Evaporating temperature [°C]							
			10	5	0	-5	-10	-20	-30	10	5	0	-5	-10	-20	-30		
R410A	30	67.76	73.37	77.81	81.07	83.90	87.16	88.32	101.65	110.06	116.73	121.62	125.86	130.76	132.50			
	35	72.91	77.35	81.07	83.66	85.76	88.11	88.81	109.37	116.04	121.62	125.50	128.65	132.17	133.22			
	38	75.25	79.21	82.26	84.60	86.46	88.32	88.57	112.88	118.83	123.40	126.91	129.71	132.50	132.86			
	40	76.65	80.16	82.96	85.06	86.71	88.32	88.32	114.99	120.24	124.45	127.60	130.07	132.50	132.50			
	45	78.51	81.32	83.66	85.30	86.22	87.16	86.71	117.78	121.98	125.50	127.97	129.34	130.76	130.07			
R407C	30	78.97	81.07	82.96	83.90	84.82	85.06	84.12	118.47	121.62	124.45	125.86	127.24	127.60	126.19			
	35	58.43	62.85	66.14	68.46	70.10	71.96	72.21	87.65	94.29	99.22	102.70	105.16	107.95	108.32			
	38	63.80	67.06	69.64	71.26	72.67	73.61	73.37	95.70	100.60	104.47	106.90	109.01	110.42	110.06			
	40	66.14	69.16	71.26	72.67	73.61	74.31	73.61	99.22	103.75	106.90	109.01	110.42	111.47	110.42			
	45	67.54	70.35	72.21	73.37	74.31	74.55	73.85	101.32	105.53	108.32	110.06	111.47	111.83	110.78			
R22	30	70.56	72.45	73.85	74.77	75.01	75.01	73.61	105.85	108.68	110.78	112.16	112.52	112.52	110.42			
	35	72.21	73.61	74.55	75.01	75.25	74.31	72.67	108.32	110.42	111.83	112.52	112.88	111.47	109.01			
	40	56.09	60.75	64.26	66.84	68.94	71.51	72.45	84.14	91.13	96.39	100.27	103.42	107.27	108.68			
	35	61.45	65.20	68.00	70.10	71.75	73.61	74.07	92.19	97.80	102.01	105.16	107.63	110.42	111.11			
	38	64.26	67.30	69.86	71.75	73.15	74.55	74.77	96.39	100.96	104.80	107.63	109.73	111.83	112.16			
R134a	30	65.90	68.70	71.05	72.67	73.85	75.25	75.25	98.86	103.06	106.58	109.01	110.78	112.88	112.88			
	35	69.16	71.51	73.37	74.55	75.47	76.17	75.95	103.75	107.27	110.06	111.83	113.21	114.26	113.94			
	40	71.75	73.61	74.77	75.95	76.41	76.65	75.95	107.63	110.42	112.16	113.94	114.62	114.99	113.94			
	45	44.63	47.68	50.00	51.40	52.58	53.28	52.80	66.96	71.52	75.00	77.11	78.88	79.93	79.21			
	38	48.84	51.18	52.58	53.74	54.44	54.69	53.74	73.26	76.78	78.88	80.62	81.67	82.04	80.62			
R404A	38	50.70	52.58	53.99	54.90	55.15	55.15	53.99	76.05	78.88	80.98	82.36	82.72	82.72	80.98			
	40	51.88	53.50	54.69	55.39	55.60	55.15	54.20	77.83	80.26	82.04	83.09	83.41	82.72	81.31			
	45	54.44	55.60	56.31	56.55	56.55	55.60	54.20	81.67	83.41	84.46	84.83	84.83	83.41	81.31			
	50	56.09	56.79	57.01	57.01	56.79	55.60	53.50	84.14	85.19	85.52	85.52	85.19	83.41	80.26			
	30	41.83	44.88	46.98	48.60	49.54	50.24	49.78	62.75	67.32	70.47	72.90	74.31	75.37	74.68			
R404A	35	44.63	46.98	48.38	49.54	50.00	50.00	49.08	66.96	70.47	72.57	74.31	75.00	75.00	73.63			
	38	45.79	47.44	48.84	49.54	49.78	49.54	48.38	68.70	71.16	73.26	74.31	74.68	74.31	72.57			
	40	46.04	47.68	48.60	49.30	49.30	48.84	47.44	69.06	71.52	72.90	73.95	73.95	73.26	71.16			
	45	46.49	47.19	48.14	48.38	48.14	47.19	45.33	69.75	70.80	72.21	72.57	72.21	70.80	68.01			
	50	45.79	46.28	46.49	46.28	46.04	44.39	42.29	68.70	69.42	69.75	69.42	69.06	66.59	63.44			

## SPF Series electronic expansion valve



SPF12.5/25



SPF50/100



SPF250/400

### Product Description

SPF series electronic expansion valve is suitable for refrigeration systems such as commercial refrigerators, large refrigeration storages and heat pumps. It can accurately control the refrigerant flow in the system, so that the system can always

run in the best state, achieve rapid cooling, and achieve the goal of precise control and energy saving.

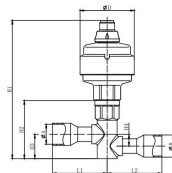
### Features

- Integrated with the function of solenoid valve, expansion valve and sight glass, stable and reliable performance.
- Fast response and action, precise adjustment.
- New structure design of expansion valve, easy to dismantle and clean, low noise.
- SPF series products apply a balanced port design with high reverse valve opening pressure, and have bidirectional cut-off function.
- Suitable for systems with little oil or no oil.

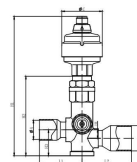
### Technical Parameters

Applicable refrigerant	HFC or HFC
Nominal capacity	43~1936KW
Medium temperature	-40~+65°C
Environment temperature	-40°C~+60°C
Environment humidity	under 95%RH
Full open pulse	2620~3800see model select table for detail
Rated voltage	12V DC (±10%) rectangular wave
Excitation mode	2-2 phase excitation, double pole drive
Excitation speed	250pps/300pps, voltage current
Finishing excitation mode keeps	0.1~1.0s
Drive current	230mA
Coil resistance	52Ω/phase
Coil insulation grade	Glass E
Protect grade	IP65

### Overall dimension

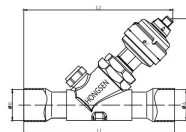


SPF12.5/25

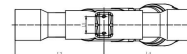


SPF50/100

Model	H1	H2	H3	H4	L1	L2	A	B	C
SPF12.5-5-5	152.5	64	27	13	60.5	60.5	16.1	16.1	60
SPF12.5-7-7	152.5	64	27	13	60.5	60.5	22.3	22.3	60
SPF25-5-5	152.5	64	27	13	60.5	60.5	16.1	16.1	60
SPF25-7-7	152.5	64	27	13	60.5	60.5	22.3	22.3	60
SPF50-7-7	206.3	118	38.5	12.5	56	56	22.3	22.3	60
SPF50-9-9	206.3	118	38.5	12.5	63	63	28.7	28.7	60
SPF50-9-9	206.3	118	38.5	12.5	56	63	22.3	28.7	60
SPF50-9-11	206.3	118	38.5	12.5	63	73	28.7	35.2	60
SPF100-9-9	206.3	118	38.5	12.5	63	63	28.7	28.7	60
SPF100-9-11	206.3	118	38.5	12.5	63	73	28.7	35.2	60

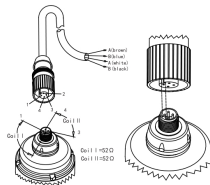


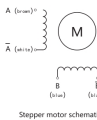
SPF250/400

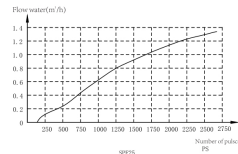
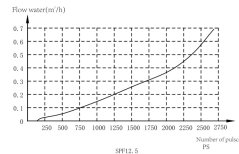


Model	H1	L1	L2	L3	L4	L5	A	B	C
SPF250-9-9	206.3	168.5	184.3	84.3	84.3	24	28.7	28.7	60
SPF250-11-11	206.3	203	189.3	89.3	89.3	24	35.2	35.2	60
SPF400-13-13	206.3	203	201.5	101.5	101.5	24	41.5	41.5	60
SPF400-17-17	206.3	242	221	121	121	24	54.2	54.2	60

Note: dimension of connecting pipe can be customized according to requirements



Phase Timing	1	2	3	4	 Stepper motor schematic	
A (v+)	no	no	off	off		
B (v+)	no	off	off	no		
X (v+)	off	off	no	no		
B (v+)	off	no	no	off		
Valve close: 1 → 2 → 3 → 4						
Valve open: 1 ← 2 ← 3 ← 4						



## Connecting cable assembly

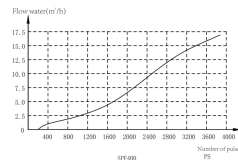
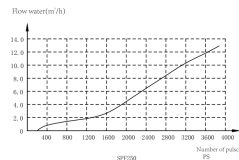
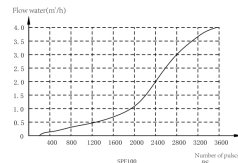
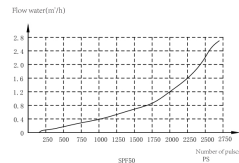
Model	Temperature range	Length	Connector specification	Connecting mode with control	Schematic pic.
M124-Z1MD	-40°C ~ +80°C	1m	M12×1 (water proof)	4×0.18mm²	

## Model selection

Product series	Full open steps	Diameter	KV <sup>①</sup>	Nominal capacity <sup>①</sup>						Max working pressure	Max working pressure difference	Restart valve opening pressure difference <sup>②</sup>
		[mm]	[m³/h]	R22	R134a	R407C <sup>③</sup>	R404A/R507	R410A <sup>④</sup>		[MPa]	[MPa]	[MPa]
SPF12.5	2620	4.50	0.70	57	45	63	43	70	4.5	3.5		≥3.5
SPF25	2620	8.00	1.30	112	89	124	84	139	4.5	3.5		≥3.5
SPF50	2620	11.5	2.30	226	182	265	173.5	274	4.5	3.5		≥3.5
SPF100	3500	16.0	3.90	408	325	455	308	496	4.5	3.5		≥3.5
SPF250	3800	24.0	12.2	1090	860	1203	817	/	3.5	3.0		≥3.0
SPF400	3800	30.0	17.0	1768	1397	1936	1324	/	3.5	3.0		≥3.0

## Nominal condition:

- Rated capacity is based on: R407C condensing temperature Tc: +32°C; evaporating temperature Te: +5°C; liquid temperature before valve Tl: +28°C;
- Kv value: the pressure difference based on the two sides between water with density 1T/m³ and the valve is equal to the positive flow capacity at 100KPa.



Positive flow rated capacity(kW)																	
°C	SPF12.5								SPF25								
	Pressure drop																
	2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16	
R22	-40	39.6	50.6	57.1	61.2	64.1	65.9	67.0	67.6	82.0	105.4	118.5	126.6	133.6	137.0	139.3	140.9
	-30	39.2	50.6	57.3	61.7	64.7	66.7	68.1	68.8	81.8	104.5	119.3	128.7	134.0	139.2	141.5	143.4
	-20	38.5	50.1	57.1	61.7	64.9	67.1	68.6	69.4	80.3	104.3	118.9	128.7	134.8	140.0	143.0	144.7
	-10	37.5	49.2	56.3	61.2	64.5	66.9	68.5	69.5	78.1	102.5	117.0	127.5	134.6	138.5	142.8	144.6
	-5	36.9	48.6	55.8	60.7	64.1	66.5	68.2	69.2	76.9	101.1	116.3	126.2	133.3	138.8	142.2	144.4
	10	34.7	40.3	53.3	58.3	62.0	64.4	66.2	67.4	72.3	96.2	111.3	121.7	129.2	134.4	138.2	140.6
R134a	-40	35.1	42.6	46.1	47.8	48.3	47.9	47.0	45.6	73.1	88.8	95.8	99.7	100.6	99.9	98.0	94.9
	-30	35.3	43.4	47.3	49.3	50.0	49.9	49.2	47.9	73.5	90.4	98.5	102.6	104.2	104.0	102.4	99.9
	-20	35.1	43.7	48.1	50.4	51.3	51.4	50.9	49.9	73.3	91.1	100.2	104.8	107.0	107.2	106.2	104.0
	-10	34.7	43.7	48.4	50.9	52.2	52.5	52.2	51.3	72.3	91.0	100.8	106.2	108.7	109.5	108.9	107.0
	-5	34.3	43.5	48.3	51.0	52.4	52.9	52.6	51.8	71.6	90.6	100.7	106.4	109.3	110.3	109.8	108.2
	10	32.8	42.2	47.4	50.5	52.2	52.9	53.0	52.4	68.3	87.6	98.9	105.1	108.9	110.4	110.5	109.3
R404A	-40	31.4	39.0	42.8	44.5	45.2	45.1	44.4	43.2	65.7	81.4	89.2	93.0	94.3	94.0	92.5	90.0
	-30	31.1	38.9	43.0	45.1	46.0	46.0	45.5	44.4	64.7	81.2	89.7	94.0	95.9	96.1	94.9	92.8
	-20	30.3	38.4	42.7	45.0	46.2	46.4	46.1	45.2	63.0	80.1	89.1	94.0	96.3	96.9	95.1	94.3
	-10	29.1	37.4	41.9	44.4	45.7	46.2	46.0	45.2	60.7	78.0	87.4	92.7	95.4	96.3	95.9	94.4
	-5	28.5	36.8	41.3	44.0	45.3	45.8	45.6	44.9	59.4	76.6	86.1	91.6	94.5	95.5	95.2	93.8
	10	26.1	34.1	38.6	41.3	42.9	43.5	43.5	43.9	54.3	71.0	80.3	86.0	89.2	90.5	90.4	89.3
R407C	-40	41.5	52.0	57.7	61.1	63.0	64.0	64.1	63.7	86.0	108.0	120.2	127.0	131.4	132.8	133.2	132.5
	-30	41.3	52.2	58.3	62.1	64.2	65.3	65.7	65.4	85.5	108.5	121.0	128.9	133.3	135.8	137.1	136.1
	-20	40.6	52.0	58.4	62.5	64.8	66.2	66.8	66.8	84.2	108.0	121.4	129.7	134.8	137.7	138.9	138.8
	-10	39.6	51.2	57.9	62.2	64.9	66.5	67.3	67.4	82.0	106.4	119.9	129.2	134.9	138.7	139.8	140.6
	-5	39.0	50.7	57.5	61.9	64.6	66.3	67.2	67.4	81.3	105.2	120.0	128.4	134.9	138.4	139.7	140.6
	10	36.6	48.2	55.2	59.7	62.8	64.5	65.7	66.1	76.3	100.5	114.5	124.6	130.9	134.2	137.1	137.9
R410A	-40	45.7	58.1	67.1	72.4	76.2	78.7	80.4	81.4	94.9	122.7	139.0	150.6	157.8	163.1	166.6	163.3
	-30	44.5	58.1	66.3	71.9	75.8	78.5	80.4	81.5	91.9	120.7	137.9	149.0	157.1	162.8	165.2	169.3
	-20	43.0	56.6	64.9	70.6	74.7	77.5	79.5	80.8	89.6	117.1	135.4	146.4	154.8	161.0	165.4	167.6
	-10	41.0	54.4	62.8	68.6	72.7	75.7	77.7	79.1	85.5	113.5	131.0	143.1	151.7	157.9	162.2	165.0
	-5	39.9	53.1	61.5	67.3	71.4	74.4	76.5	77.8	83.3	109.7	127.2	139.1	147.9	154.6	158.5	162.5
	10	36.2	48.5	56.5	62.1	66.1	69.1	71.1	72.4	74.9	101.2	116.8	128.5	136.9	143.0	147.3	151.2

	In(°C)	Positive flow rated capacity(KW)															
		SPF50								SPF100							
		Pressure drop															
		2	4	6	8	10	12	14	16	2	4	6	8	10	12	14	16
R22	-40	151.8	194.3	218.1	234.1	245.6	252.1	256.8	258.9	282.1	360.6	406.6	436.7	456.6	469.7	478.0	482.4
	-30	150.0	193.1	218.0	236.0	247.8	255.7	260.2	263.6	279.1	359.8	407.6	439.4	461.2	475.5	485.2	490.4
	-20	147.1	191.7	218.0	236.0	248.6	256.8	262.6	266.3	274.0	356.5	406.4	439.5	462.5	478.4	488.7	494.7
	-10	143.1	187.9	215.1	233.9	246.9	255.9	262.4	265.8	266.8	349.7	401.0	435.3	459.4	477.2	487.9	495.1
	-5	140.9	185.8	213.6	232.0	245.1	254.2	260.9	264.8	262.9	345.9	397.2	432.2	456.4	473.7	485.8	493.4
	10	132.7	176.6	204.0	223.0	236.9	246.8	253.6	257.8	246.6	328.3	379.7	415.5	441.3	458.9	472.0	480.3
R134a	-40	133.1	162.4	175.7	181.8	183.2	182.1	178.8	173.7	247.9	301.7	326.8	338.6	342.0	339.5	332.7	322.9
	-30	135.0	164.9	179.9	187.6	190.0	189.8	187.9	183.6	249.5	306.7	334.7	348.7	353.7	352.9	347.9	339.4
	-20	134.2	167.1	183.8	191.6	195.0	196.2	194.2	190.3	248.5	309.4	340.4	356.5	363.4	364.2	360.7	353.3
	-10	131.9	166.0	184.9	194.8	198.7	199.8	198.7	195.6	245.5	309.2	342.7	360.9	369.2	371.6	369.3	363.3
	-5	130.7	166.1	184.8	194.5	199.6	201.5	201.0	197.6	242.6	307.4	341.9	361.1	370.8	374.1	372.4	367.0
	10	124.8	160.7	181.1	192.5	198.7	201.6	202.2	199.7	231.8	298.5	335.5	357.2	369.3	374.6	374.8	371.1
R404A	-40	119.9	149.3	163.4	169.9	173.2	172.5	169.6	164.9	223.4	276.7	303.3	316.2	320.9	320.4	315.4	306.8
	-30	118.0	148.1	163.9	172.4	175.1	176.3	173.8	168.9	219.7	276.0	304.7	319.7	326.2	326.9	323.2	316.1
	-20	115.5	146.1	162.8	171.9	176.0	177.1	175.9	173.3	214.3	272.4	302.8	319.7	327.6	329.7	328.0	322.0
	-10	110.9	142.2	159.8	169.2	174.7	176.1	175.2	173.4	206.4	265.4	297.5	315.4	324.6	328.2	326.6	322.6
	-5	108.7	139.9	157.1	167.7	173.3	174.8	174.1	172.4	201.8	260.3	292.7	311.4	321.4	325.1	324.2	319.7
	10	99.7	129.9	147.1	157.8	163.2	165.9	165.9	164.9	185.4	241.6	273.9	294.4	304.4	309.1	308.6	305.3
R407C	-40	158.8	199.7	222.5	236.4	243.9	248.6	249.9	248.6	295.6	371.7	413.3	438.7	454.2	462.1	464.9	464.0
	-30	157.8	200.7	224.2	239.2	249.3	253.9	257.1	256.6	293.5	373.4	417.8	445.9	462.7	472.5	477.1	477.5
	-20	155.2	199.8	225.0	241.5	251.1	257.7	260.8	261.2	289.4	371.7	419.0	448.8	468.1	479.5	485.5	486.9
	-10	151.9	196.9	223.2	240.2	251.8	258.8	263.3	264.0	282.6	366.6	414.8	447.8	468.4	481.8	488.8	491.8
	-5	149.2	194.9	222.4	239.1	250.9	258.1	262.7	264.6	278.5	383.0	413.1	445.4	466.9	480.9	488.6	492.4
	10	140.4	186.4	214.1	231.8	244.5	253.2	257.7	255.5	261.9	345.8	397.3	431.3	454.6	469.8	479.2	484.5
R410A	-40	174.4	224.8	254.6	275.8	288.8	299.6	306.4	310.3	324.1	418.7	475.4	513.3	539.1	557.2	569.5	576.8
	-30	169.2	221.9	252.7	273.8	288.2	298.8	305.9	310.6	315.4	411.8	469.8	509.2	536.9	556.1	569.5	577.6
	-20	163.2	215.0	247.9	268.8	284.1	295.5	302.8	308.2	304.4	400.8	459.4	500.8	529.3	549.2	565.8	572.8
	-10	156.0	206.9	239.4	260.5	276.8	289.0	295.9	301.5	290.8	385.4	444.6	485.7	515.7	536.1	555.7	561.0
	-5	151.9	202.0	234.4	259.0	271.8	283.5	291.5	296.7	282.9	373.4	435.6	461.8	505.8	527.0	542.2	552.2
	10	137.3	184.8	214.0	236.1	252.3	262.9	271.8	276.0	256.1	343.5	399.9	439.9	464.3	489.7	503.8	513.9

**HONGSEN** REFRIGERATION A/C SYSTEM ACCESSORIES

— Augustine of Hippo, Christian Philosopher

[illegible]

## DPF/DPFS series electronic expansion valve controller



T0055 (1 carrying 2)



T0056 (1 carrying 3)

### Product Description

Used for super heat degree control and unit control of DPF/DPFS series electronic expansion valve, and suitable for the electronic expansion valve driven by 4 phase stepper motors and controlled by 4 phase 8 beat 1-2 phase excitation driving mode. Ensure the system is operating within a safe range.

Improve the reliability of compressor and system, reduce system power consumption (improve system COP), enhance the refrigerating capacity of system.

### Features

- Analyze the system current running state by collecting temperature information of each part of the system, use fuzzy algorithm, and adopt self-adaptive control;
- Fast response and action, precise adjustment;

- The electronic expansion valve controller can be set according to the system parameters to adapt demands of different equipments and conditions;
- Easy installation of guide rail type

### Technical Parameters

Working environment	temperature -20~55℃, relative humidity ≤90%RH (no condensation)
Storing environment	temperature -40~80℃, relative humidity ≤95%RH (no condensation)
Input power	single phase alternative current 110~220V/50Hz(60Hz)
Electronic expansion valve output	single phase maximum load output 0.5A/12V
Temperature sensor input	5 way (including pressure sensor), temperature sensor B3470/5K; temperature resolution: 0.1℃
Pressure sensor input	1 way; pressure resolution: 0.01Bar
AC input switch	2 way
Relay output	2 way passive switch, load capacity: 5A/220V
Communication interface	1 way, RS485

### Model selection

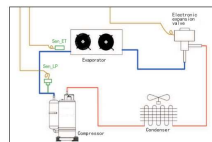
No	Control method	code	Controller model	Adapter model		Quantity	Function description	Set parameter
1	Air return super heat degree control	T0055	PCH-PP2N	Electronic expansion valve	DPF, DPFS series	1	One main way (1 carrying 1) Pic 1	201
				Pressure sensor	HS-P321-30- (-1~12) barG	1		
				Temperature sensor	NTCSK3470	1		
	Air return super heat degree control	T0055	PCH-PP2N	Electronic expansion valve	DPF, DPFS series	2	Two main ways (1 carrying 2) Pic 2	201
				Pressure sensor	HS-P321-30- (-1~12) barG	1		
				Temperature sensor	NTCSK3470	2		
	Air return super heat degree control	T0056	PCH-PP3N	Electronic expansion valve	DPF, DPFS series	3	Three main ways (1 carrying 3) Pic 3	201
				Pressure sensor	HS-P321-30- (-1~12) barG	1		
				Temperature sensor	NTCSK3470	3		
2	Air return super heat degree-liquid injecting cooling	T0055	PCH-SP1L	Electronic expansion valve	DPF, DPFS series	2	One main way, one auxiliary Pic 4	201
				Pressure sensor	HS-P321-30- (-1~12) barG	1		
				Temperature sensor	NTCSK3470	2		



# Model selection

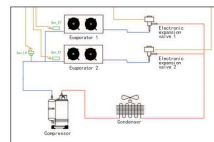
No	Control method	code	Controller model	Adapter model		Quantity	Function description	Set parameter
3	Air return(enhaust) super heat degree+ enhanced vapor injection	T0055	PCH-SD1G	Electronic expansion valve	DPF, DPFS series	2	One main way, one auxiliary Pic 5	201
				Pressure sensor	HS-P321-30- (-1~12) barG	0		
				Temperature sensor	NTCSK3470	5		
4	Air exhaust super heat degree+liquid injecting cooling	T0055	PCH-SD1L	Electronic expansion valve	DPF, DPFS series	2	One main way, one auxiliary Pic 6	201
				Pressure sensor	HS-P321-30- (-1~12) barG	0		
				Temperature sensor	NTCSK3470	3		
5	Air exhaust super degree	T0055	PCH-SD1N	Electronic expansion valve	DPF, DPFS series	1	One main way Pic 7	201
				Pressure sensor	HS-P321-30- (-1~12) barG	0		
				Temperature sensor	NTCSK3470	3		

# Application in system



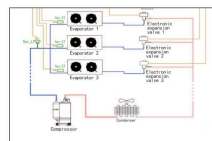
Pic 1

Air return super heat degree control (1 by 1)



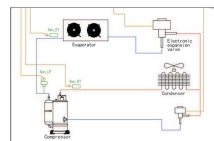
Pic 2

Air return super heat degree control (1 by 2)



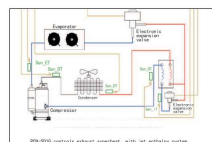
Pic 3

Air return super heat degree control (1 by 3)



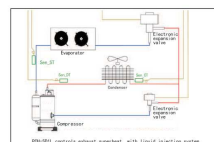
Pic 4

Air return super heat degree+liquid injecting cooling  
(One main way, one auxiliary)



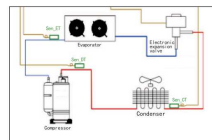
Pic 5

Air return(enhaust) super heat degree+enhanced vapor injection  
(One main way, one auxiliary)



Pic 6

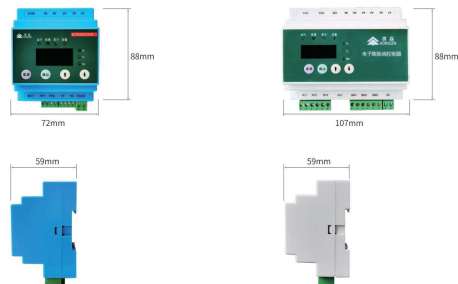
Air exhaust super heat degree+liquid injecting cooling  
(One main way, one auxiliary)



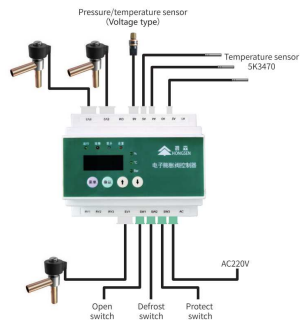
Pic 7

Air exhaust super degree(One main way)

## Overall dimension



## Wiring drawing



Note: Please refer to the instruction for detail unit's controlling wiring method

## Controller for SPF Series electric expansion valve



H5-1702

## Product Description

It is suitable for super heat control of SPF series electronic expansion valves. It is controlled by 2 phase 4 best bipolar excitation mode to improve the refrigerating capacity of the system.

## Features

- More refrigerants available: R22, R134a, R404a, R410a, R507c;
- more kinds of electronic expansion valve: the PID algorithm is applicable to various bipolar electronic expansion valve, and the parameters of the expansion valve can also be customized;
- MOP protection: evaporative pressure overpressure protection;
- LOP protection: evaporative pressure low-pressure protection;
- Alarm output: one way passive relay contact output;
- Centralized monitoring: ON-OFF, parameter setting, data check can be performed through RS485 communication.

Technical Parameters	
control power	DC24V/650mA
using environment	altitude below 2000meters, temperature -10℃ ~ 60℃, humidity: 20% ~ 85%, no condensation (No use in corrosive places with acid, alkali or inflammable and explosive places)
dispose	Accessories: Controller (GEC1702) *1, Normal temp. sensor (NTC-NT05) *2, Pressure sensor (TTCP055)*1, transformer (XBH4825) *1, backup power (GFB300) *1

## Wiring Layout



Technical Parameters	
Test range	-50~60°C
thermistor	B25/B5=3435K±1%, R25=100Ω±1%
cable length	5m
sensor size	φ6 X 50
protection level	IP68

Accessory II: pressure sensor



Technical Parameters	
test range	-1~12bar
Accuracy	0.5% FS( 20~85°C)
working temp.	-40~125°C
Connection thread	7/16-20UNF (female) , with depressor
input power	4~20mA (red/black, current mode)
wire	AWG20, L=3m

### Accessory III:Transformer



KBE4825

Technical Parameters	
input	230VAC, 50/60HZ
output	24V, MAX 10W
withstand voltage	3.5KW

### Accessory IV:Backup power



GFB300

Product Description	
The backup power supply is a super capacitor module, which is connected in series in the power supply circuit, which can ensure the temporary power supply	of the controller in case of power failure, and immediately close the linked electronic expansion valve

Technical Parameters	
input	24V/400mA
output	12V/400mA
capacity	50mA.h

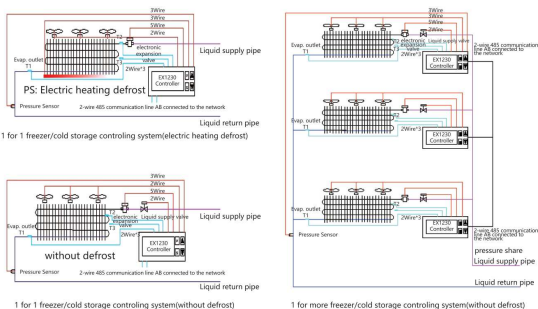
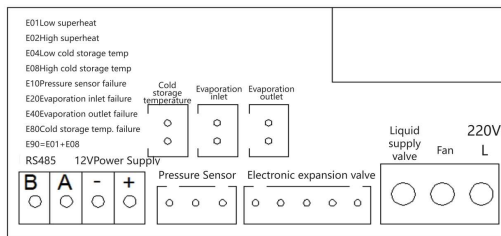
## Ex 1230 electronic expansion valve controller



Product Description	
It is mainly used for super heat control of DPF/DPFS series electronic expansion valves in supermarket refrigerator system. It uses 4-phase 8-beat 1-2 phase	excitation drive method to accurately control refrigerant flow, improve system COP and achieve the purpose of rapid cooling and energy saving.

Features	
<ul style="list-style-type: none"> <li>Integrated with fan control, de-frost control, feed liquid valve control, expansion valve opening adjustment, taking into account the function of the temperature controller in refrigerator or refrigeration store.</li> <li>The super heat degree is controlled by the pressure corresponding to temperature, whose fluctuation is low, and store temperature keeps more stable.</li> <li>Various built-in programs ensure precise control of the electronic expansion valve, to make sure safe and reliable operation of the refrigeration system.</li> </ul>	<ul style="list-style-type: none"> <li>Control by means of changing super heat algorithm, to make the refrigeration system more efficient.</li> <li>Multiple temperature controls can share one pressure valve control, suitable for the occasion with a host unit carrying several coolers or refrigerators, easy to install and commissioning.</li> <li>Equipped with RS485 communication port, which can be connected with external network.</li> </ul>

Technical Parameters	
Length of sensor	1.5 meters (including probe)
Temperature sensing element	NTC, R25II = 5K, R25/50II = 3470K
Environment temperature	-10~45°C
Working humidity	5~85%RH(wo condensation)
Setting range	-40~120°C
Display range	-90~130°C
Power voltage	185~245VAC, 50/60Hz
Terminal wiring	lead wire no more than 2*1.5mm, or 1*2.5mm
Dimension of whole machine	length78 * width 34.5" depth 71(mm)
Load current	5A, 250VAC (resistive load)
Installing hole	length71 * width 29(mm)
Protection grade	IP65 (front panel)



length 78 \* width 34.5 \* depth 71 (mm)

## Pressure sensor



Current type (P224A)

Voltage type (P321)

## Product Description

Used to check the pressure value of refrigerating system condition

## Features

- EMC/EMI adapts frequency conversion environment application;
- Instantaneous protective voltage: DC16V;
- Compatible with multiple refrigerants, wide application range;
- Power supply reverse connection protection;
- Anti-condensation design for current type pressure sensor

## Technical Parameters

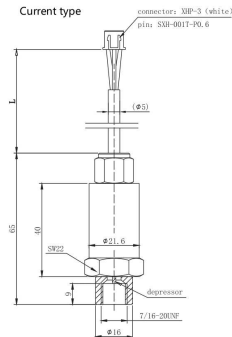
Model	P224A	P321
Working Voltage	24VDC (15~32VDC)	5±0.25VDC
Output Signal	4~20mA	0.5~4.5VDC
Media Temperature	-40°C~125°C	
Service Life	more than 10,000,000 times	
Long-term stability	±0.5%/FS/year	
Protection level	IP66	

## Model selection

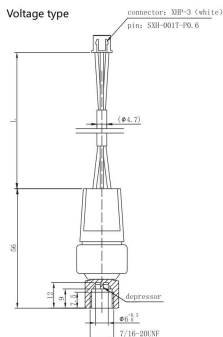
Model	Pressure range	Safety overload	Breaking pressure	Working voltage	Output signal	Comprehensive Precision
HS-P321-30-10barG	0-10bar	30bar	160bar	5VDC	0.5~4.5VDC	±2.5%FS
HS-P321-30-20barG	0-20bar	60bar	160bar	5VDC	0.5~4.5VDC	±2.5%FS
HS-P321-30-30barG	0-30bar	90bar	250bar	5VDC	0.5~4.5VDC	±2.5%FS
HS-P321-30-45barG	0-45bar	90bar	250bar	5VDC	0.5~4.5VDC	±2.5%FS
HS-P321-30-(-1~12)barG	-1~12bar	36bar	160bar	5VDC	0.5~4.5VDC	±2.5%FS
HS-P224A-30-11barG	-1~11bar	60bar	160bar	24VDC(12~23VDC)	4~20mA	±1%FS
HS-P224A-30-18barG	0-18bar	60bar	160bar	24VDC(12~23VDC)	4~20mA	±1%FS
HS-P224A-30-30barG	0-30bar	90bar	250bar	24VDC(12~23VDC)	4~20mA	±1%FS
HS-P224A-30-50barG	0-50bar	90bar	250bar	24VDC(12~23VDC)	4~20mA	±1%FS

## Overall dimension

### Current type

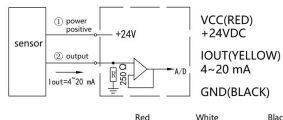


### Voltage type

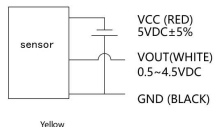


## Wiring drawing

### Current type



### Voltage type



## Temperature sensor



5K3470

## Product Description

Used to check the temperature value of refrigerating system condition

## Features

- Small size, light weight, good protective performance
- Small temperature deviation, high precision

## Model

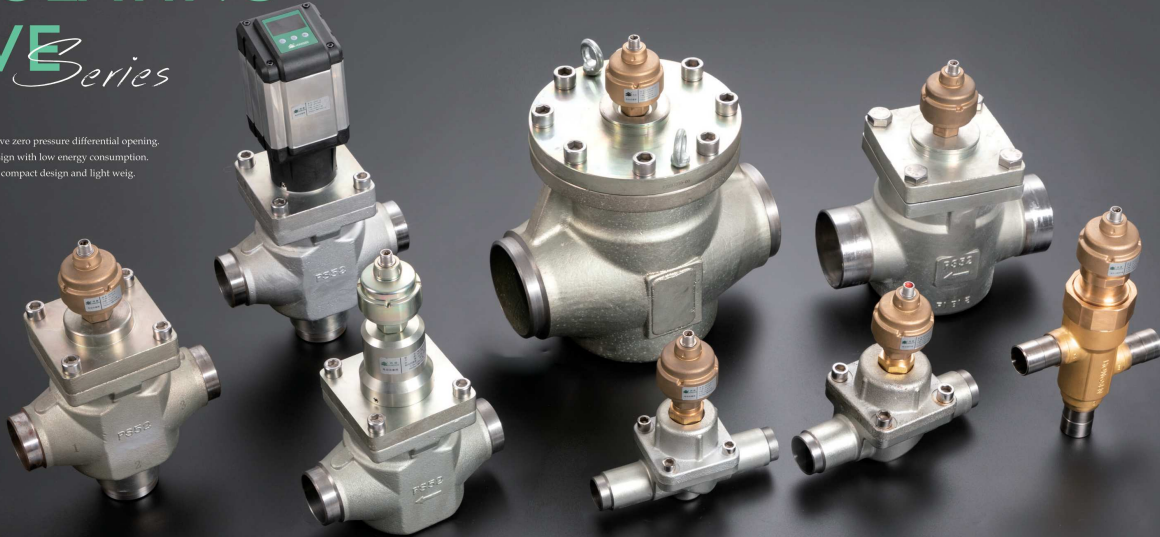
NTC, R25II = 5K, B25/50II = 3470K

# MOTORIZED REGULATING VALVE

*Series*

Unique design to achieve zero pressure differential opening.  
Bistable low power design with low energy consumption.  
Large diameter valves, compact design and light weight.

REFRIGERATION & A/C SYSTEM ACCESSORIES



## Model DHV Motorized Regulating Valve



DHV(D)



DHV(S)

### Product Description

- DHV (S / D) Motorized Regulating Valve is suitable for low pressure difference or zero pressure difference of the system.
- DHV(S/D) Motorized Regulating Valve body structure, less leaking point, more reliable.
- DHV (S / D) Motorized Regulating Valve adjustable opening, driver Control
- DHV (S / D) Motorized Regulating Valve large caliber bistable valve, both normally open valve and normally closed valve.
- DHV (S / D) Motorized Regulating Valve can be supplied either as a controller or as an individual valve.

### Product characteristics

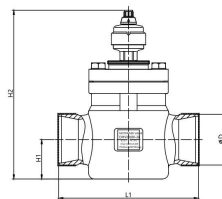
- Designed for industrial applications, maximum working pressure 5.2 MPa.
- Application of new materials, direct welding interface, welding performance is good, good resistance to high and low temperature.
- Large caliber valve, compact design, light weight.
- Bonnet can be installed in any direction without affecting valve function.
- Stepper motor drive, good stability (IP65).
- Bistable design, low energy consumption.
- Large opening valve force, garbage is not easy to jam.
- The piston stroke is large and the working flow is large.
- The controller is equipped with power supply, connected to the standby power supply, and the valve is automatically shut off when the power is cut off.
- Welding connection up to 4.5in.

### Technical Parameters

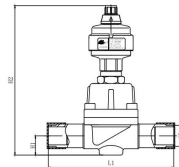
Applicable Refrigerants	HFC/HFO(Customer specified)
Applicable Medium Temperature	-35°C ~ +105°C
Application Ambient Temperature of	-35°C ~ +65°C
Rated power/voltage	6W/DC12V

Model Selection					
Model	Spec Connection	ΔP(bar)		Max Working Pressure(bar)	Kv(m³/h)
		Minimum	MOPO Liquid/MOP		
DHV(S)25-9	28	0	40	52	10
DHV(S)32-11	35				16
DHV(S)40-13	42				25
DHV(S)50-18	57				44
DHV(D)50-18	57				44
DHV(D)65-24	76				70
DHV(D)80-28	89				85
DHV(D)100-34	108				160
DHV(D)100-36	114.3				160
DHV(D)125-44	140.7				223
DHV(D)150-53	168.3				370
1) Kv value: The flow rate (m³/h) of water of density 1t/m³ passing through the valve with the pressure differential of 100 KPa. 2) The MOPD of gaseous medium is about 1 bar higher than that of liquid.					

### Overall Dimension



DHV(D)



DHV(S)

Model	External dimension				Weight (Kg)
	D	L1	H1	H2	
DHV(S)25-9	28	170	26	203.5	2.8
DHV(S)32-11	35	193	29	209.5	3.5
DHV(S)40-13	42	207	32	218	4.9
DHV(S)50-18	57	207	39	236.8	7.3
DHV(D)50-18	57	200	52.5	251.5	10
DHV(D)65-24	76	230	69	294	15.5
DHV(D)80-28	89	245	69	294	16
DHV(D)100-34	108	300	94	365	34.38
DHV(D)100-36	114.3	300	94	365	34.54
DHV(D)125-44	140.7	340	146	495	65
DHV(D)150-53	168.3	445	160	550	118



## MODEL DSV (F/D) Motorized 3-way Regulating Valve



(DSV\_D)



(DSV\_F)

### Product Description

- Model DSV (F/D) Motorized 3-way Regulating Valve can be applied in the liquid, suction and hot gas pipelines of freezing, refrigeration, air conditioning equipment and hot gas defrosting.
- Model DSV (F/D) Motorized 3-way Regulating Valve allows two connection methods: 1 inlet/2 outlets; 2 inlets/1 outlet.
- Model DSV (F/D) Motorized 3-way Regulating Valve can be applied in systems at low pressure differential or even at "0" pressure differential with liquid, suction and hot gas pipelines.
- Model DSV (F/D) Motorized 3-way Regulating Valve can be used to control by adjust the open degree through the drive controller.
- Model DSV (F/D) Motorized 3-way Regulating Valve comes with drive controller, single valve is also available.

### Features

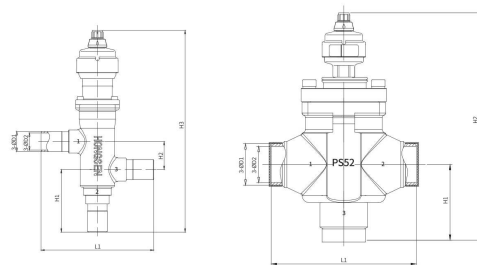
- Specially designed for industrial application.
- Large diameter, compact design, light weight
- The bonnet can be installed in any direction without affecting the valve function
- Stepper motor drive, high stability (IP65)
- Large opening force, effectively prevent stuck
- Large piston stroke enlarges the working flow.

### Technical Parameters

Applicable refrigerant	HCFC, HFC (customization available)
Applicable medium working temperature	-35°C ~ +105°C
Environment temperature	-35°C ~ +65°C
Rated Power/Voltage	12W/DC24V (8W/DC12V)

Model Selection						
Model	Size	-P(bar)			Max Working Pressure(bar)	Kv(m³/h)
	Weld Connection	Min	MOP Liquid/MOP			
DSV(F)16-6T	19	0	21	42	4	
DSV (F) 25-9	28.5				10	
DSV (F) 32-11	35				16	
DSV (F) 40-13	42				25	
DSV (D) 50-17	57				40	
DSV (D) 65-24	76				70	
DSV (D) 80-28	89				85	
<div><div><div>• Kv value: The positive flow capacity of water with density of 1100m³ at the pressure differential of 100Kpa; unit: m³/h</div><div>• The MOP of gaseous media is about 1 bar higher</div></div></div>						

### Dimensions



Model	Size						Weight(Kg)
	D1	D2	L1	H1	H2	H3	
DSV(F)16-6T	23	19	125	66	24	221	1.4
DSV(F)25-9	28.5	25	163	89	40	288	3.5
DSV(F)32-11	35	30	200	118	47	334	4.1
DSV(F)40-13	42	37	200	118	47	334	4.5
DSV(D)50-17	57	50	200	104	/	312	10.2
DSV(D)65-24	76	70	230	69	/	340	18.8
DSV(D)80-28	89	82	240	69	/	341	19.2

# HC-10 PID Controller



## Product Description

HC-10 general type controller adopts PID controlling rules, which is suitable to drive single stage 4 phase stepping motor and bipolar 2 phase stepping motor valve, and

adjust the working conditions of the liquid level, pressure and temperature of the refrigerating system.

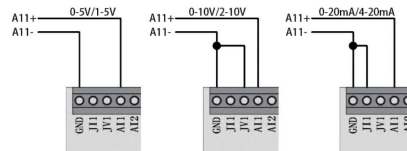
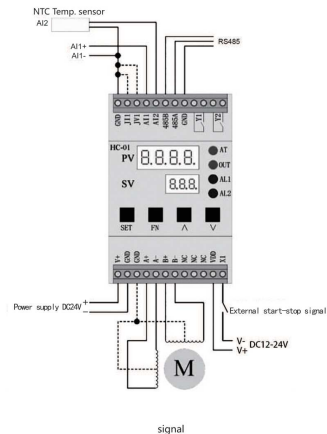
## Features

- 0-5V, 0-10V or 4-20mA standard input signal;
- Adopt PID control algorithm with wide application range and precise control;
- Multiple controlling method like manual, analog quantity control and PID automatic control;
- Equipped with RS485 standard communication port, which can be connected with main machine.

## Technical Parameters

Power voltage	24VDC
Input signal	single way 0-5V (including 1-5V), 0-20mA (including 4-20mA) , 0-10V (including 2-10V)
Output voltage	12VDC, (support 4 wire, 5 wire, 6 wire system stepping motor electronic expansion valve)
RS485	communication protocol (ModbusRTU format) Two way alarm output contact signal

## Wiring drawing



Wiring method for three types of input

# HS888 Controller



HS888-T-2  
(No Power Switch)



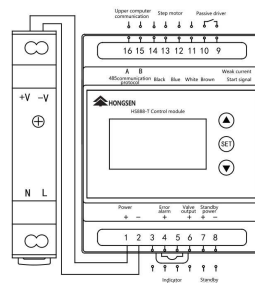
HS888-T

Product Description	
Supply Voltage	AC220V
Backup power (optional)	DC12V/2F
Applicable environmental temp.	-20°C ~ +45°C
Applicable environmental humidity	≤85% No condensation
Bioplasm driver capacity	Maximum output current 1A
Controller drive method	Passive driver

Features	
<ul style="list-style-type: none"> <li>Dedicated module: Special switch Control Module for Hongsen valve, ensure the accurate system control.</li> <li>On/off valve signal input: Passive switch signal to receive the On/Off signal.</li> </ul>	

Product function	
<b>HS888 controller</b> <b>HS888-DC24V controller</b> <ul style="list-style-type: none"> <li>Openness adjustable</li> <li>Pulse adjustable</li> <li>Automatic close when power</li> <li>Power disconnection detection</li> <li>Error alarm</li> </ul>	<b>HS888-2/HS888-3 controller</b> <b>HS888-2-DC24V/HS888-3-DC24V controller</b> <ul style="list-style-type: none"> <li>Openness adjustable</li> <li>Pulse adjustable</li> <li>Automatic close when power</li> <li>Power disconnection detection</li> <li>Error alarm</li> <li>Openness adjustable at firstly opening</li> <li>Time delay adjustable at secondary opening</li> </ul>

## Wiring drawing



Model Selection				
Controller type	Function	Controller Model	Corresponding Motorized regulating valve model	Working voltage
HS888-T	Primary opening	HS888-20/25/32/40	DHVS320, DHVS325, DHVF325, DHVF332, DHVF340	AC220V
		HS888-325	HS888-325	
		HS888-405	HS888-405	
		HS888-505	HS888-505	
		HS888-50	HS888-50	
		HS888-100	HS888-65/80	
	Secondary opening	HS888-125	HS888-125	
		HS888-2-20/25/32/40	DHVS320, DHVS325, DHVF325, DHVF332, DHVF340	
		HS888-2-325	DHVS332	
		HS888-2-405	DHVS40	
		HS888-2-505	DHVS50	
		HS888-2-50	DHVS50	
	Used for Motorized 3-way regulating valve	HS888-2-65/80	DHVS50	
		HS888-2-100	DHVS100	
		HS888-2-125	DHVS125	
		HS888-3-16	DSVP16	
		HS888-3-25	DSVP25	
		HS888-3-32/40	DSVP32, DSVP40	
HS888-T-2 (No Power Switch)	Primary opening	HS888-3-50	DSVD50	DC12V
		HS888-20/25/32/40	DHVS320, DHVS325, DHVF325, DHVF332, DHVF340	
		HS888-325	DHVS32	
		HS888-405	DHVS40	
		HS888-505	DHVS50	
		HS888-50	DHVS50	
	Secondary opening	HS888-65/80	DHVS65, DHVD80	
		HS888-100	DHVS100, DHVD100	
		HS888-125	DHVS125, DHVD125	
		HS888-2-20/25/32/40	DHVS320, DHVS325, DHVF325, DHVF332, DHVF340	
		HS888-2-325	DHVS332	
		HS888-2-405	DHVS40	
	Used for Motorized 3-way regulating valve	HS888-2-505	DHVS50	
		HS888-2-50	DHVS50	
		HS888-2-65/80	DHVS65, DHVD80	
		HS888-2-100	DHVS100, DHVD100	
		HS888-2-125	DHVS125, DHVD125	
		HS888-3-16	DSVP16	
		HS888-3-25	DSVP25	
		HS888-3-32/40	DSVP32, DSVP40	
		HS888-3-50	DSVP50	
		HS888-3-65/80	DSVD65, DSVD80	

# SOLENOID VALVE *Series*

The patent coil has the advantages of low temperature rise, high power and good waterproof performance.

The new material has better heat resistance performance.

With new technology, the valve opening is excellent and the opening pressure is smaller.



## Model HVD Piston Type Solenoid Valve



### Product Description

- Model HVD piston type solenoid valve is a twice open type solenoid valve to be suitable to one-way flow.
- Model HVD piston type solenoid valve is used on the liquid, air suction and hot vapor pipes of the refrigeration, cold storage and air conditioning facilities.
- The coil of various voltages is available for Model HVD piston type solenoid valve with a universal valve body.
- Model HVD piston type solenoid valve could be supplied in whole or in split, that means valve body and coil could be supplied separately.

### Features

- The proprietary coil has perfect waterproof performance (IP65).
- Using new material, it has performance in high and low temperature application.
- The 24W high-power solenoid coil has high capability to open the valve.
- The high flow rate is assured by a big piston stroke.
- Various AC and DC solenoid coils are available for choice.
- 1-5/8 inch is the maximum welded connection size.

### Technical Parameters

Applicable Refrigerants	HCFC or HFC (Customer specified)
Applicable Medium Temperature	-30°C ~ +105°C
Application Ambient Temperature of Solenoid	-40°C ~ +65°C
Standard Voltage of Solenoid	AC 380V/AC 220V/50Hz (Customer design is available)
Allowable Voltage Fluctuation for Solenoid	+10% ~ -15%
Connection of Solenoid	Standard 3-wire insert connector

Model	Size	ΔP(bar)		Max Working Pressure(bar)	Kv(m³/h)
		Weld Connection	Min		
HVD8-3T	3/8ODF	0.05	31	45	0.8
HVD10-4T	1/2ODF	0.05	31	45	1.4
HVD10-5T	5/8ODF	0.05	31	45	1.9
HVD15-6T	3/4ODF	0.05	31	45	2.6
HVD15-7T	7/8 ODF	0.05	31	45	2.8
HVD25-9T	1-1/8ODF	0.2	31	45	10
HVD32-11T	1-5/8ODF	0.2	31	45	16
HVD40-13T	1-5/8ODF	0.2	31	45	25

1) Kv value: The flow rate (m³/h) of water of density 11/m³ passing through the solenoid valve with the pressure differential of 100 KPa.

2) The MOP of gaseous medium is about 1 bar higher than that of liquid.

Model	KWNominal Refrigerating Capacity kW									
	Liquid				Air Suction				Hot Vapor	
	R22/R407C	R134a	R404A/R507	R410A	R22/R407C	R134a	R404A/R507	R410A	R22/R407C	R134a
HVD8-3T	16.10	14.80	11.20	16.08	1.80	1.30	1.60	2.32	7.40	5.90
HVD10-4T	28.18	25.90	19.60	28.14	3.15	2.28	2.80	4.06	12.95	10.33
HVD10-5T	38.24	35.15	26.60	38.19	4.28	3.09	3.80	5.51	17.58	14.01
HVD15-6T	52.33	48.10	36.40	52.26	5.85	4.23	5.20	7.54	24.05	19.18
HVD15-7T	56.35	51.80	39.20	56.28	6.30	4.55	5.60	8.12	25.90	20.65
HVD25-9T	201.25	185.00	140.00	201.00	22.50	16.25	20.00	29.00	92.50	73.75
HVD32-11T	322.00	296.00	224.00	321.60	36.00	26.00	32.00	46.40	148.00	118.00
HVD40-13T	503.13	462.50	350.00	502.50	56.25	40.63	50.00	72.50	231.25	184.38

The working condition the nominal refrigerating capacity of liquid and air suction is as follows:

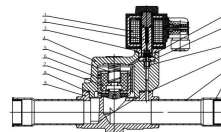
tc = -10°C Evaporation Temperature; te = -10°C;  
 tl = +25°C Liquid Temperature before Valve; tl = +25°C;  
 ΔPa = 15KPa Pressure Drop after Solenoid Valve; ΔP = 15KPa

The working condition the nominal refrigerating capacity of hot vapor is as follows:

Condensation Temperature: tc = +40°C;  
 Pressure Drop after Solenoid Valve: ΔP = 0.8bar;  
 Hot Vapor Temperature: th = +65°C;  
 Liquid Refrigerant Overcooling: Δsub = 4K

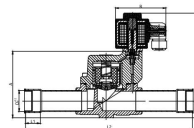
### Structure

- solenoid coil
- core iron
- valve seat
- bonnet
- reset spring
- piston
- piston core
- 8.PTFE gasket
- 9.valve body
- 10.dust cap
- 11 pipe
- 12.O-ring
- 13.valve element
- 14.valve element gasket
- 15.seal ring



### Overall Dimension

Model	Overall Dimension						
	A	B	D	L1	L2	H1	H2
HVD25-9T	103	85	Φ28.7	20	246.5	26.5	139
HVD32-11T	110	85	Φ35.2	25	281.0	28	145
HVD40-13T	119	85	Φ41.5	29	316.0	32	150



## Model HVP Piston Type Solenoid Valve



### Product Description

- Model HVP piston type solenoid valve is a twice open-type solenoid valve to be suitable to one-way flow.
- Model HVP piston type solenoid valve is used on the liquid, air suction and not vapor pipes of the refrigeration, cold storage and air conditioning facilities.
- The coil of varies voltages is available for Model HVP piston type solenoid valve

with a universal valve body.

- Model HVP piston type solenoid valve could be supplied in whole or in split, that means valve body and coil could be supplied separately.

### Features

- The proprietary coil has perfect waterproof performance (IP65).
- Using new material, it has performance in high and low temperature application.
- The 24W high-power solenoid coil has high capability to open the valve.
- The high flow rate is assured by a big piston stroke.
- Various AC and DC solenoid coils are available for choice.
- 2-1/8 inch is the maximum welded connection size.

### Technical Parameters

Applicable Refrigerants	HFC or HFC (Customer specified)
Applicable Medium Temperature	-30°C ~ +105°C
Application Ambient Temperature of Solenoid	-40°C ~ +55°C
Standard Voltage of Solenoid	AC 380V/AC 220V/50Hz (Customer design is available)
Allowable Voltage Fluctuation for Solenoid	+10% ~ -15%
Connection of Solenoid	Standard 3-wire insert connector

Model Selection	Size	ΔP(bar)		Max Working Pressure(bar)	Kv(m³/h)
		Min	MOFQ Liquid/MOP		
HVP25	1-1/8 ODF	0.2	31	45	10
HVP32	1-3/8 ODF	0.2	31	45	16
HVP40	1-5/8 ODF	0.2	31	45	25
HVP54	2-1/8 ODF	0.2	31	45	28

1) Kv value: The flow rate (m³/h) of water of density 10/m³ passing through the solenoid valve with the pressure differential of 100 KPa.

2) The MOP of gaseous medium is about 1 bar higher than that of liquid.

Model	KvNominal Refrigerating Capacity kW									
	Liquid				Air Suction				Hot Vapor	
	R22/R407C	R134a	R404A/R507	R410A	R22/R407C	R134a	R404A/R507	R410A	R22/R407C	R134a
HVP25	201.25	185.00	140.00	201.00	22.50	16.25	20.00	29.00	92.50	73.75
HVP32	322.00	296.00	224.00	321.60	36.00	26.00	32.00	46.40	148.00	118.00
HVP40	503.13	462.50	350.00	502.50	56.25	40.63	50.00	72.50	231.25	184.38
HVP54	563.50	518.00	392.00	562.80	63.00	45.50	56.00	81.20	259.00	206.50

The working condition the nominal refrigerating capacity of liquid and air

suction is as follows:

tc = -40°C Condensation Temperature: tc = -40°C;

ts = -10°C Evaporation Temperature: ts = -10°C;

t1 = +25°C Liquid Temperature before Valve: t1 = +25°C;

ΔP = 15KPa Pressure Drop after Solenoid Valve: ΔP = 15KPa

The working condition the nominal refrigerating capacity of hot vapor is as follows:

tc = +40°C Condensation Temperature: tc = +40°C;

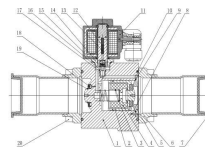
ΔP = 0.8bar Pressure Drop after Solenoid Valve: ΔP = 0.8bar;

th = +65°C Hot Vapor Temperature: th = +65°C;

Δts = 4K Liquid Refrigerant Overcooling: Δts = 4K

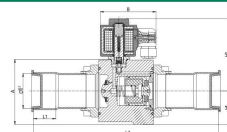
### Structure

- valve body
- piston
- spring
- piston core
- sealing seat
- flange assembly
- dust cap
- dowel pin
- O-ring
- filter gasket
- solenoid coil(24W)
- core iron
- reset spring
- valve seat
- seal ring
- valve element
- valve element gasket
- filter assembly
- retainer ring
- screw



### Overall Dimension

Model	Overall Dimension						
	A	B	D	L1	L2	H1	H2
HVP25	100	85	Φ28.7	20	281.5	51.5	111
HVP32	100	85	Φ35.2	25	281.5	51.5	111
HVP40	100	85	Φ41.5	29	281.5	51.5	111
HVP54	100	85	Φ54.2	34	281.5	51.5	111



### Model HV solenoid valve



### Product Description

- Model HV solenoid valve is a one-step on/off or two-step on/off solenoid valve, which is applicable to one-way flow.
- Model HV solenoid valve is used on the piping of liquid, suction gas or hot air on the freezing, cold storage and air conditioner units.
- The valve seat and seals of Model HV solenoid valve have excellent sealing

performance.

- Model HV solenoid valve could be supplied with coils of varied voltage.
- Model HV solenoid valve could be supplied in assembly or in separate components, that is, the valve body and the coil could be supplied separately.

## Features

- Only NC type solenoid valve is available.
- Coils of various power supply are available for choice.
- For 9W solenoid, MOPD is up to 3.1 MPa.
- For clamping type solenoid valve, it is simple and just need one screwdriver in installation.

- It is suitable to various application in freezing, cold storage and air conditioner units.
  - The sealed coil has a long service life and could be used in adverse circumstances.
- Certification : ISO 9001 • CE (XX-015-00246) • CE UL

### Technical Parameters

Applicable Refrigerants	HFCs, HFC and related medium viscosity s2" E lubricant oil
Applicable Medium Temperature	-30°C ~ +105°C
Application Ambient Temperature of Solenoid	-40°C ~ +65°C
Standard Voltage of Solenoid	AC380V, 220V, 110V, 24V/50, 60Hz, DC12V
Allowable Voltage Fluctuation for Solenoid	±10%~15%
Connection of Solenoid	Standard 3-wire insert connector

Model Selection										
Structure	Model	Connection		ΔP[bar]		Max Working Pressure(bar)	Kv(l/h)			
		Spec	Type	Min.	MOP Liquid MOP					
Direct Operated	HV3-2	1/4	SAE	0.0	31 (close)	45	0.2			
	HV3-2T		OOF							
	HV3-3		SAE							
	HV3-3T	OOF	0.27							
	HVB3T	SAE								
Servo-Operated	HVB3T	1/2	OOF	0.05	31 (close)	45	0.8			
	HVB4T		SAE							
	HVB4T		OOF							
	HV10M4		SAE							
	HV10M4T		OOF							
	HV10M5	SAE	2.2							
	HV10M5T	OOF								
	HV15M5	SAE								
	HV15M5T	OOF								
	HV15M6	SAE								
	HV13M6T	3/4	OOF				0.2			2.6
	HV20M7T	7/8								
	HV25M9T	1-1/8								
										5.7
										10

1) Kv value: The flow rate ( $\text{m}^3/\text{h}$ ) of water of density  $1\text{t}/\text{m}^3$  passing through the solenoid valve with the pressure differential of 100 KPa

- 1) At vapor: The low rate (m<sup>3</sup>/h) of water of density 1000 passing through
- 2) The MOPD of gaseous medium is about 1 bar higher than that of liquid

KWhominal Refrigerating Capacity kW														
Model	Liquid					Air Suction					Hot Vapor			
	R22/R407C	R134a	R404A/R507	R410A		R22/R407C	R134a	R404A/R507	R410A		R22/R407C	R134a	R404A/R507	R410A
HV3-3T	4.03	3.70	2.80	4.02	0.45	0.33	0.40	0.58	1.85	1.48	1.50	1.50	1.50	1.80
HVBM3T	16.10	14.80	11.20	16.08	1.80	1.30	1.60	2.32	7.40	5.80	6.00	6.00	6.00	21.18
HV10M4T														
HV10M4T	38.24	35.15	26.60	38.19	4.28	3.09	3.80	5.51	17.58	14.01	14.25	14.25	14.25	26.55
HV15M5T	52.33	48.10	36.40	52.26	5.85	4.23	5.20	7.54	24.05	19.18	19.50	19.50	19.50	36.34
HV20M5T														
HV20M7T	100.83	92.50	70.00	100.50	11.25	8.13	10.00	14.50	46.25	36.88	37.50	37.50	37.50	69.88
HV25M7T	201.25	185.00	140.00	201.00	22.50	16.25	20.00	29.00	92.50	73.75	75.00	75.00	75.00	139.75

The working condition the nominal refrigerating capacity of liquid and air suction is as follows:

$t_e=10^{\circ}\text{C}$  Evaporation Temperature  $t_s=10^{\circ}\text{C}$

$t_m=32^{\circ}\text{C}$  Liquid Temperature before Valve  $t_l=25^{\circ}\text{C}$

$\Delta P=15\text{KPa}$  Pressure Drop after Solenoid Valve  $-P=15\text{KPa}$

The working condition the nominal refrigerating capacity of hot vapor is as follows:

$t_e=40^{\circ}\text{C}$  Condensation Temperature  $t_s=40^{\circ}\text{C}$

$\Delta P=0.8\text{bar}$  Pressure Drop after Solenoid Valve  $-P=0.8\text{bar}$

$t_m=65^{\circ}\text{C}$  Hot Vapor Temperature  $t_l=65^{\circ}\text{C}$

$\Delta t_{\text{sub}}=4\text{K}$  Liquid Refrigerant Overcooling  $-t_{\text{sub}}=4\text{K}$

Structure

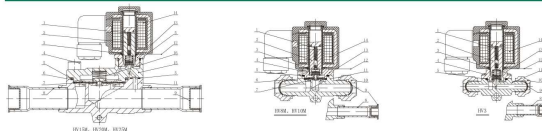
The working condition the nominal refrigerating capacity of liquid and air suction is as follows:

$t_e = -10^\circ\text{C}$  Evaporation Temperature:  $t_e = -10^\circ\text{C}$ ;  
 $t_1 = +25^\circ\text{C}$  Liquid Temperature before Valve:  $t_1 = +25^\circ\text{C}$ ;  
 $\Delta P = 15\text{KPa}$  Pressure Drop after Solenoid Valve:  $\Delta P = 15\text{KPa}$

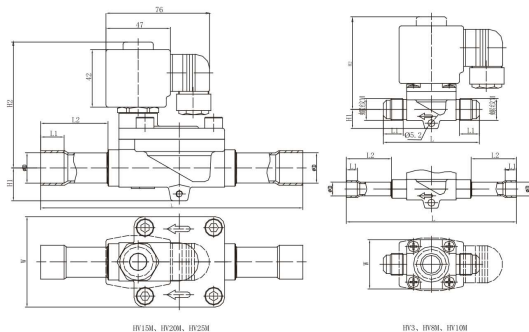
The working condition the nominal refrigerating capacity of hot vapor is as follows:

$t_c = +40^\circ\text{C}$  Condensation Temperature:  $t_c = +40^\circ\text{C}$ ;  
 $\Delta P = 0.8\text{bar}$  Pressure Drop after Solenoid Valve:  $\Delta P = 0.8\text{bar}$ ;  
 $t_2 = +65^\circ\text{C}$  Hot Vapor Temperature:  $t_2 = +65^\circ\text{C}$ ;  
 $\Delta t_{\text{sub}} = 4\text{K}$  Liquid Refrigerant Overcooling:  $t_{\text{sub}} = 4\text{K}$

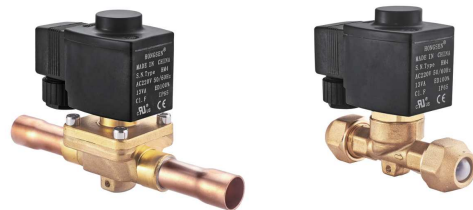
### Structure



1.recovery spring 2.iron core (modified PTEE sealing) 3.oil-resistance rubber 4.fastening screw(4 pieces) 5. PTFE gasket 6.valve core (mobile) (modified PTFE composite diaphragm) 7.flapper 8.copper tube 9. dust cap 10.connection tube nut 11.valve body 12.valve cover 13.solenoidcoils(9W) 14.valve cover 15.big recovery spring



## Model SV Solenoid Valve



### Product Description

- Model SV solenoid valve is a once open-type or twice open-type solenoid valve to be suitable for one-way flow.
- Model SV solenoid valve is used on the liquid, air suction and hot vapor pipes of the refrigeration, cold storage and air conditioning facilities.
- Model SV solenoid valve has perfect sealing on its valve seat and sealing part.
- The coil of various voltages is available for Model SV solenoid valve with a universal valve body.
- Model SV solenoid valve could be supplied in whole or in split, that means the valve body and coil could be supplied separately.

### Features

- The proprietary coil is an entirely sealed design with an effective waterproof performance and a long service life (P65).
- The solenoid coil could be operated properly even under unstable voltage.
- Various AC and DC solenoid coils are available for choice.
- Clip type solenoid coil is convenient in assembly and disassembly.
- It is applicable to various compressors in the refrigeration, cold storage and air conditioning facilities.

### Technical Parameters

Applicable Refrigerants	HCFC, HFC and related medium viscosity ≤2°E lubricant oil
Applicable Medium Temperature	-30°C ~ +105°C
Application Ambient Temperature of Solenoid	-40°C ~ +65°C
Standard Voltage of Solenoid	AC380V, 220V, 110V, 24V/50, 60Hz, DC12V
Allowable Voltage Fluctuation for Solenoid	~10%~15%
Connection of Solenoid	Standard 3-wire insert connector

Model	Overall Dimension							
	H1	H2	W	L	L1	L2	OD	Thread M
HV3-2	14	66	30	78	14.5	—	—	7/16-20UNF
HV3-2T	14	66	30	102	7	27	6.5	—
HV3-3	14	66	30	78	14.5	—	—	5/8-18UNF
HV3-3T	14	66	30	114	8	35	10.1	—
HV8M3	14	67	36	96	16	—	—	5/8-18UNF
HV8M3T	14	67	36	124	8	33	10.1	—
HV8M4	14	67	36	98	17	—	—	3/4-16UNF
HV8M4T	14	67	36	130	10	36	12.8	—
HV10M4	15	77	45	103	18	—	—	3/4-16UNF
HV10M4T	15	77	45	138	10	36	12.8	—
HV10M5	15	77	45	112	20	—	—	7/8-14UNF
HV10M5T	15	77	45	156	14	42	16.1	—
HV15M5	18	88	52	133	19.5	—	—	7/8-14UNF
HV15M5T	18	88	52	165	14	43	16.1	—
HV15M6	18	88	52	133	21	—	—	1-1/16-14UNS
HV15M6T	18	88	52	172	16	46	19.2	—
HV20M7T	24	92	66	191	17	49	22.3	—
HV25M9T	26.5	96	73	246	22	73	28.7	—



Model Selection								
Structure	Model	Connection		-P(bar)		Max Working Pressure(bar)	Kv(m <sup>3</sup> /h)	
		Spec	Type	Minimum	MOPD Liquid/MOP			
Direct Operated	SV20-2	1/4	SAE	0.0	31	45	0.2	
	SV28-2		ODF				0.27	
	SV20-3		SAE					
	SV28-3		ODF					
Servo-Operated	SV64-3	3/8	SAE	0.05			45	0.8
	SV68-3		ODF					
	SV64-4		SAE					
	SV68-4		ODF					
	SV70-5	1/2	SAE			2.6		
	SV78-5		ODF					
	SV70-6		SAE					
	SV78-6		ODF					
	SV98-7	7/8	ODF				0.2	5.7

1) Kv value: When the pressure differential is 100 KPa, the flowrate at m<sup>3</sup>/h of water in density 1 t/m<sup>3</sup> flows the solenoid valve.  
2) The MOPD of gaseous medium is about 1 bar higher than that of liquid.

Model	KW/Nominal Refrigerating Capacity kW									
	Liquid				Air Suction				Hot Vapor	
	R22/R407C	R134a	R404A/R507	R410A	R22/R407C	R134a	R404A/R507	R410A	R22/R407C	R134a
SV20	4.03	3.70	2.80	4.02	0.45	0.33	0.40	0.58	1.85	1.48
SV28	4.03	3.70	2.80	4.02	0.45	0.33	0.40	0.58	1.85	1.48
SV64	16.10	14.80	11.20	16.08	1.80	1.30	1.60	2.32	7.40	5.90
SV70	52.33	48.10	36.40	52.26	5.85	4.23	5.20	7.54	24.05	19.18
SV78	52.33	48.10	36.40	52.26	5.85	4.23	5.20	7.54	24.05	19.18
SV98	114.71	105.45	79.80	114.57	12.83	9.26	11.40	16.53	52.73	42.04

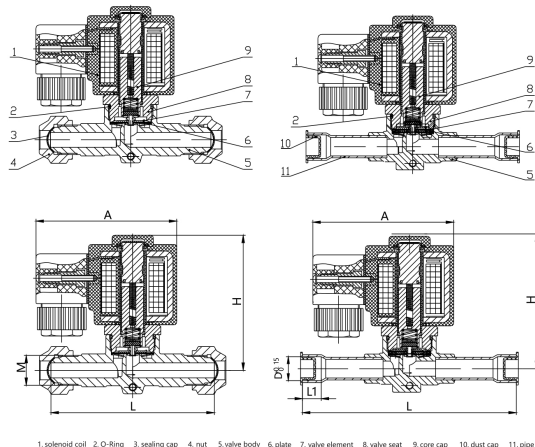
The working condition the nominal refrigerating capacity of liquid and air suction is as follows:

- Evaporation Temperature: t<sub>e</sub> = -10°C;
- Liquid Temperature before Valve: t<sub>l</sub> = +25°C;
- Pressure Drop after Solenoid Valve: ΔP = 15KPa

The working condition the nominal refrigerating capacity of hot vapor is as follows:

- Condensation Temperature: t<sub>c</sub> = +40°C;
- Pressure Drop after Solenoid Valve: ΔP = 80KPa;
- Hot Vapor Temperature: t<sub>h</sub> = +65°C;
- Liquid Refrigerant Overcooling: Δt<sub>sub</sub> = 4K

Structure							
Model	Overall Dimension						
	A	H	L	L1	ΦD	M	
SV20-2	70	65	58	—	—	7/16-20UNF	
SV28-2	70	65	90	7	6.5	—	
SV20-3	70	65	64	—	—	5/8-18UNF	
SV28-3	70	65	104	8	10.1	—	
SV64-3	70	72	81	—	—	5/8-18UNF	
SV68-3	70	72	108	8	10.1	—	
SV64-4	70	72	85	—	—	3/4-16UNF	
SV68-4	70	72	114	10	12.8	—	
SV70-5	70	75	104	—	—	7/8-14UNF	
SV78-5	70	75	152	14	16.1	—	
SV70-6	70	75	104	—	—	1-1/16-14UNS	
SV78-6	70	75	158	16	19.2	—	
SV98-7	70	78	180	17	22.3	—	



## Model 10 Solenoid Valve



### Product Description

- Model 10 solenoid valve is a once open-type or twice open-type solenoid valve to be suitable to one-way flow.
- Model 10 solenoid valve is used on the liquid, air suction and hot vapor pipes of the refrigeration, cold storage and air conditioning facilities.
- Model 10 solenoid valve has perfect sealing on its valve seat and sealing part.
- The coil of varies voltages is available for Model 10 solenoid valve with a universal valve body.
- Model 10 solenoid valve could be supplied in whole or in split, that means the valve body and coil could be supplied separately.

### Features

- Only NC type solenoid valve is available.
- For clamping type solenoid valve, it is simple and just need one screwdriver in installation.
- Coils of various power supply are available for choice.
- It is suitable to various application in freezing, cold storage and air conditioner units.
- For BW solenoid, MOPD is up to 2.5 MPa.
- The sealed coil has a long service life and could be used in adverse circumstances.

### Technical Parameters

Applicable Refrigerants	HFC, HFC and related medium viscosity $\leq 2^\circ \text{E}$ lubricant oil
Applicable Medium Temperature	$-30^\circ\text{C} \rightarrow +105^\circ\text{C}$
Application Ambient Temperature of Solenoid	$-40^\circ\text{C} \rightarrow +65^\circ\text{C}$
Standard Voltage of Solenoid	AC380V, 220V, 110V, 24V/50, 60Hz, DC12V
Allowable Voltage Fluctuation for Solenoid	$\pm 10\% \sim 15\%$
Connection of Solenoid	Standard 3-wire insert connector

Model Selection							
Structure	Model	Connection		-P(bar)		Max Working Pressure(bar)	Kv (m³/h)
		Spec	Type	Minimum	MOPD Liquid/MOP		
Direct Operated	1020-2	1/4	SAE	0.0	25	45	0.2
	1028-2		ODF				0.27
	1020-3		SAE				
	1028-3		ODF				
Servo-Operated	1064-3	3/8	SAE	0.05	25	45	0.8
	1068-3		ODF				
	1064-4		SAE				
	1068-4		ODF				
	1070-5	5/8	SAE				2.6
	1078-5		ODF				
	1070-6	3/4	SAE				
	1078-6		ODF				

1) Kv value: When the pressure differential is 100 kPa, the flowrate at m³/h of water in density 1 t/m³ flows the solenoid valve.  
2) The MOPD of gaseous medium is about 1 bar higher than that of liquid.

Model	KW/Nominal Refrigerating Capacity kW											
	Liquid				Air Suction				Hot Vapor			
	R22/R407C	R134a	R404A/R507	R410A	R22/R407C	R134a	R404A/R507	R410A	R22/R407C	R134a	R404A/R507	R410A
1020	4.03	3.70	2.80	4.02	0.45	0.33	0.40	0.58	1.85	1.48	1.50	2.80
1028	4.03	3.70	2.80	4.02	0.45	0.33	0.40	0.58	1.85	1.48	1.50	2.80
1064	16.10	14.80	11.20	16.08	1.80	1.30	1.60	2.32	7.40	5.90	6.00	11.18
1068	16.10	14.80	11.20	16.08	1.80	1.30	1.60	2.32	7.40	5.90	6.00	11.18
1070	52.33	48.10	36.40	52.26	5.85	4.23	5.20	7.54	24.05	19.18	19.50	36.34
1078	52.33	48.10	36.40	52.26	5.85	4.23	5.20	7.54	24.05	19.18	19.50	36.34

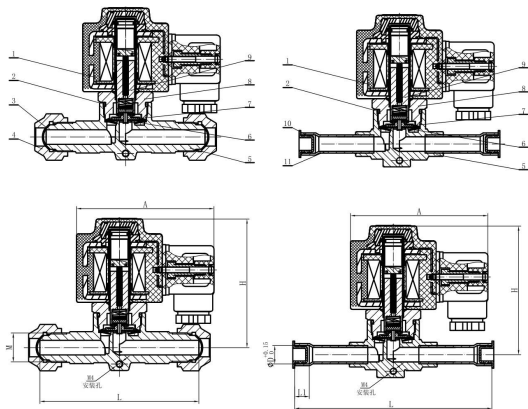
The working condition the nominal refrigerating capacity of liquid and air suction is as follows:

- Evaporation Temperature:  $t_e = -10^\circ\text{C}$ ;
- Liquid Temperature before Valve:  $t_l = +25^\circ\text{C}$ ;
- Pressure Drop after Solenoid Valve:  $\Delta P = 15\text{KPa}$

The working condition the nominal refrigerating capacity of hot vapor is as follows:

- Condensation Temperature:  $t_c = +40^\circ\text{C}$ ;
- Pressure Drop after Solenoid Valve:  $\Delta P = 80\text{KPa}$ ;
- Hot Vapor Temperature:  $t_h = +65^\circ\text{C}$ ;
- Liquid Refrigerant Overcooling:  $\Delta t_{sub} = 4\text{K}$

Structure						
Model	Overall Dimension					
	A	H	L	L1	ΦD	M
1020-2	75	64	58	—	—	7/16-28UNF
1028-2	75	64	90	7	6.5	—
1020-3	75	64	64	—	—	5/8-18UNF
1028-3	75	64	104	8	10.1	—
1064-3	75	71	81	—	—	5/8-18UNF
1068-3	75	71	108	8	10.1	—
1064-4	75	71	85	—	—	3/4-16UNF
1068-4	75	71	114	10	12.8	—
1070-5	75	74	104	—	—	7/8-14UNF
1078-5	75	74	152	14	16.1	—
1070-6	75	74	104	—	—	1-1/16-14UNS
1078-6	75	74	158	16	19.2	—



1. solenoid coil 2. O-Ring 3. sealing cap 4. nut 5. valve body 6. plate 7. valve element 8. valve seat 9. core cap 10. dust cap 11. pipe

## Model HVK normal open solenoid valve



### Product Description

- Model HVK solenoid valve is a one-step on/off or two-step on/off solenoid valve, which is applicable to one-way flow.
- Model HVK solenoid valve is used on the piping of liquid, suction gas or hot air on the freezing, cold storage and air conditioner units.
- The valve seat and seals of Model HVK solenoid valve have excellent sealing performance.
- Model HVK solenoid valve could be supplied with coils of varied voltage.
- Model HVK solenoid valve could be supplied in assembly or in separate components, that is, the valve body and the coil could be supplied separately.

### Features

- Only NO type solenoid valve is available.
- Coils of various power supply are available for choice.
- For 26VIA solenoid, MOIPD is up to 2.1 MPa.
- For clamping type solenoid valve, it is simple and just need one screwdriver in installation.
- It is suitable to various application in freezing, cold storage and air conditioner units.
- The sealed coil has a long service life and could be used in adverse circumstances.
- Certification: ISO 9001 • QS (XX-015-00246) • CE UL

### Technical Parameters

Applicable Refrigerants	HCFC, HFC and related medium viscosity ≤2° E lubricant oil
Applicable Medium Temperature	-30°C~+105°C
Application Ambient Temperature of Solenoid	-40°C~+65°C
Standard Voltage of Solenoid	AC380V, 220V, 110V, 24V/50, 60Hz, DC12V
Allowable Voltage Fluctuation for Solenoid	+10%~-15%
Connection of Solenoid	Standard 3-wire insert connector

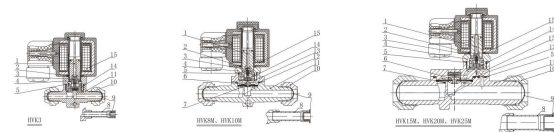
Model Selection							
Structure	Model	Connection		ΔP(bar)		Max Working Pressure(bar)	Kv(m³/h)
		Spec	Type	Min.	MOPD LiquidMOP		
Direct Operated	HVK3-2	1/4	SAE	0.0	21 (open)	45	0.2
	HVK3-2T		ODF				
	HVK3-3	SAE	0.27				
	HVK3-3T	ODF					
Servo-Operated	HVK8M3	3/8	SAE	0.05	21 (open)	45	0.8
	HVK8M3T		ODF				
	HVK8M4		SAE				
	HVK8M4T		ODF				
	HVK10M4		SAE				
	HVK10M4T		ODF				
	HVK10M5	1/2	SAE	0.22			
	HVK10M5T		ODF				
	HVK13M5		SAE				
	HVK15M5	5/8	ODF	0.2	2.6		
	HVK15M5T		SAE				
	HVK15M6	3/4	ODF	2.6			
	HVK15M6T		SAE				
	HVK20M7T	7/8	溝口 ODF	5.7			
HVK25M9T	1-1/8	10					

- 1) Kv value: The flow rate (m<sup>3</sup>/h) of water of density 1t/m<sup>3</sup> passing through the solenoid valve with the pressure differential of 100 KPa.  
 2) The MOFOP of gaseous medium is about 1 bar higher than that of liquid.

Model	KWNominal Refrigerating Capacity kW											
	Liquid				Air Suction				Hot Vapor			
	R22/R407C	R134a	R404A/R507	R410A	R22/R407C	R134a	R404A/R507	R410A	R22/R407C	R134a	R404A/R507	R410A
HVK3-3T	4.03	3.70	2.80	4.02	0.45	0.33	0.40	0.58	1.85	1.48	1.50	2.80
HVK8M3T	16.10	14.80	11.20	16.08	1.80	1.30	1.60	2.32	7.40	5.90	6.00	11.18
HVK10M4T	38.24	35.15	26.60	38.19	4.28	3.09	3.80	5.51	17.58	14.01	14.25	26.55
HVK10M5T	52.33	48.10	36.40	52.26	5.85	4.23	5.20	7.54	24.05	19.18	19.50	36.34
HVK15M7T	100.63	92.50	70.00	100.50	11.25	8.13	10.00	14.50	46.25	36.88	37.50	69.88
HVK25M9T	201.25	185.00	140.00	201.00	22.50	16.25	20.00	29.00	92.50	73.75	75.00	139.75

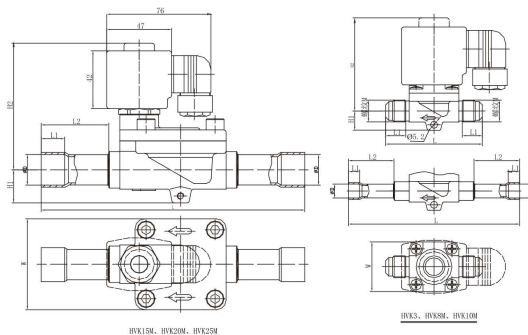
The working condition the nominal refrigerating capacity of liquid and air suction is as follows:  
 Condensation Temperature:  $t_c = +40^\circ\text{C}$ ;  
 Evaporation Temperature:  $t_e = -10^\circ\text{C}$ ;  
 Pressure Drop after Solenoid Valve:  $\Delta P = 0.8\text{ bar}$ ;  
 Liquid Temperature before Valve:  $t_l = +25^\circ\text{C}$ ;  
 Hot Vapor Temperature:  $t_h = +65^\circ\text{C}$ ;  
 Pressure Drop after Solenoid Valve:  $\Delta P = 15\text{ KPa}$ ;  
 Liquid Refrigerant Overcooling:  $t_{\text{sub}} = 4\text{ K}$

Structure



1. drive rod 2. oil-resistance rubber 3. iron core (modified PTEE sealing) 4. valve seat 5. O-Ring 6. value core (mobile) (modified PTFE composite diaphragm)  
 7. flapper 8. copper tube 9. dust cap 10. connection tube nut 11. valve body 12. PTFE gasket 13. valve cover 14. recovery spring 15. solenoid coil

## Overall Dimension



Model	Overall Dimension							Thread M
	H1	H2	W	L	L1	L2	OD	
HVK3-2	12	524	30	58	13	—	—	7/16-20UNF
HVK3-2T	12	524	30	90	7	27	6.5	—
HVK3-3	12	524	30	64	16	—	—	5/8-18UNF
HVK3-3T	12	524	30	104	8	35	10.1	—
HVK8M3	14	67	36	96	16	—	—	5/8-18UNF
HVK8M3T	14	67	36	124	8	33	10.1	—
HVK8M4	14	67	36	98	17	—	—	3/4-16UNF
HVK8M4T	14	67	36	130	10	36	12.8	—
HVK10M4	15	77	45	103	18	—	—	3/4-16UNF
HVK10M4T	15	77	45	138	10	36	12.8	—
HVK10M5	15	77	45	112	20	—	—	7/8-14UNF
HVK10M5T	15	77	45	156	14	42	16.1	—
HVK15M5	18	88	52	133	19.5	—	—	7/8-14UNF
HVK15M5T	18	88	52	165	14	43	16.1	—
HVK15M6	18	88	52	133	21	—	—	1-1/16-14UNF
HVK15M6T	18	88	52	172	16	46	19.2	—
HVK20M7T	24	92	66	191	17	49	22.3	—
HVK25M9T	26.5	96	73	246	22	73	28.7	—

## Model HV Unloading Solenoid Valve



### Product Description

- Model HV unloading solenoid valve is a direct-operated valve, which is applicable to one direction flow.
- Model HV unloading solenoid valve is used on the compressor of the freezer, cold store and air conditioning unit. It will automatically unload in accordance with the decrease of heat so that it could save the compressor energy and extend the service

life of compressor

- The valve seat of Model HV unloading solenoid valve is well sealed with perfect sealing performance.
- Both packed and separated Model HV unloading solenoid valves are available and it means the valve body could supplied separately from the solenoid.

### Features

- Only NC type solenoid valve is available.
- The max. design temperature is 110°C.
- 10W high power solenoid and max. operating pressure differential (MOPD) is 3.0 MPa.
- It is applicable to various compressors in freezer, cold store and air conditioning

unit.

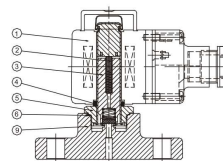
- The clamped joint solenoid is easy to be mounted or dismounted only with one screwdriver.
- The sealed solenoid has a long service life and it can be used even in an adverse circumstance.

### Technical Parameters

Applicable Refrigerants	HCFC, HFC and related medium viscosity $\leq 2^\circ \text{E}$ lubricant oil
Applicable Medium Temperature	-30°C ~ +105°C
Application Ambient Temperature of Solenoid	-40°C ~ +65°C
Standard Voltage of Solenoid	AC220V/50Hz
Allowable Voltage Fluctuation for Solenoid	+10% ~ -15%
Connection of Solenoid	Ip67 with terminal box

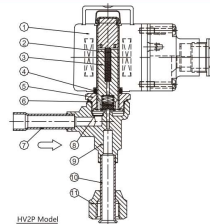
Model	Connection		$\Delta P(\text{bar})$ Pressure Differential to Open Valve		Max Working Pressure(bar)	$K_v(\text{m}^3/\text{h})$
	Inlet	Outlet	Min	MOPD		
HV3.2B	Flanged Connection		0.0	31	45bar	0.27
HV2P	3/8 ODF	3/8 SAE	0.0	31	45bar	0.2

Note:  $K_v$ : The flow rate ( $\text{m}^3/\text{h}$ ) of water of density  $1 \text{ t}/\text{m}^3$  passing through the solenoid valve under the pressure differential of 100 KPa.



HV3.2B Model

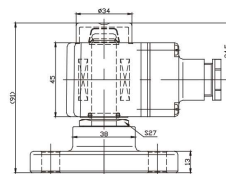
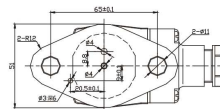
- solenoid(10W)
- return spring
- iron core(modified PTFE sealing and imported stainless magnet steel)
- O-ring
- valve seat
- sealing



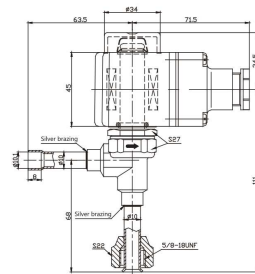
HV2P Model

- suction tube
- filter
- valve body
- outlet tube
- tube nut

### Overall Dimension

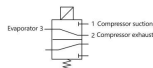


HV3.2B Model



HV2P Model

## Model HVS(R) defrosting solenoid valve



### Product Description

- Model HVS(R) is a solenoid valve specially designed for defrosting in refrigeration system.
- Switch the flow channel by electromagnetically controlling the position of the internal piston.
- When the solenoid coil is powered off: Port 2 will be closed, Port 3 will be connected to Port 1, the evaporator connects to the suction side of the

compressor realize the refrigeration cycle.

- When the solenoid coil is powered on: Port 1 will be closed, Port 2 will be connected to Port 3, hot gas goes through the evaporator in order to realize the defrosting.

This valve can only be connected to the compressor exhaust integrated pipe, **DON'T** connect it to the exhaust main pipe.

### Features

- Specially designed for industrial application;
- Large diameter, compact design, light weight
- Highly integrated piston structure, all internal parts can be cleaned internally

by unscrewing the bonnet screw;

- Refined design to achieve internal leakage under 300m/min

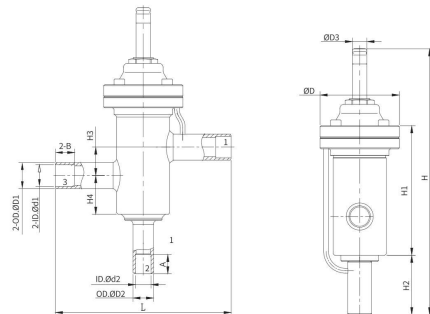
### Technical Parameters

Applicable refrigerant	HFC/C/HFC
Environment temperature	-35~+65°C
Medium temperature	-35~+105°C
Rated voltage	220V±10%±15% / 50HZ
Coil connection	3-wire plug-in standard connector

### Model Selection

Model	Max.OP(bar)	Max.O.PD(bar)	Min. O.PD(bar)	Kv Value(m³/h)	
HVS(R)-27-22	30	21	2.5	Hot gas	7.1
HVS(R)-34-27				Liquid	8.3
				Hot gas	9.6
HVS(R)-43-36				Liquid	13.7
				Hot gas	12.7
HVS(R)-46-42				Liquid	20.2
	Hot gas	12.7			
				Liquid	20.2

### Dimensions



Model	Size															
	H	H1	H2	H3	H4	L	Ø	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9
HVS(R)-27-22	275	134	61.5	29.5	40	382	Ø2	26.9	21.3	15	22.5	36.2	20	20		
HVS(R)-34-27	315	162	72.5	35	47	327	Ø2.5	33.7	26.9	15	28.9	22.5	25	20		
HVS(R)-43-36	351	188	80	47	59	345	Ø3	42.4	33.7	15	35.3	28.9	25	25		
HVS(R)-46-42	351	188	80	47	59	345	Ø3	42.4	33.7	15	35.3	28.9	25	25		

## Model HVDF Piston Type Solenoid Valve



### Product Description

- Model HVDF piston type solenoid valve is a twice open-type solenoid valve to be suitable to one-way flow.
- Model HVDF piston type solenoid valve is used on the liquid, air suction and hot vapor pipes of the refrigeration, cold storage and air conditioning facilities.
- The coil of varies voltages is available for Model HVDF piston type solenoid valve with universal valve body.
- Model HVDF piston type solenoid valve could be supplied in split, that means valve body and coil could be supplied separately.

### Features

- The proprietary coil has perfect waterproof performance (IP65).
- Using new material, it has performance in high and low temperature application.
- The 24W high-power solenoid coil has high capability to open the valve.
- The high flow rate is assured by a big piston stroke.
- Various AC and DC solenoid coils are available for choice.
- 1-5/8 inch is the maximum welded connection size.

### Technical Parameters

Applicable Refrigerants	HCFC or HFC (Customer specified)
Applicable Medium Temperature	-30°C ~ +105°C
Application Ambient Temperature of Solenoid	-40°C ~ +65°C
Standard Voltage of Solenoid	AC 380V/AC 220V/50Hz (Customer design is available)
Allowable Voltage Fluctuation for Solenoid	+10% ~ -15%
Connection of Solenoid	Standard 3-wire insert connector

### Model Selection

Model	Size	$\Delta P$ (bar)		Max Working Pressure(bar)	Kv(c/h)
	Weld Connection	Min	MOP Liquid/MOP		
HVDF25-9	Ø26.2 ODF	0.2	31	45	10
HVDF25-11	Ø33.7 ODF	0.2	31	45	10
HVDF32-13	Ø42.4 ODF	0.2	31	45	16
HVDF40-15	Ø48.3 ODF	0.2	31	45	25
HVDF50-19	Ø59.3 ODF	0.2	31	45	28

- 1) Kv value: The flow rate (m<sup>3</sup>/h) of water of density 1t/m<sup>3</sup> passing through the solenoid valve with the pressure differential of 100 KPa.  
2) The MOP of gaseous medium is about 1 bar higher than that of liquid.

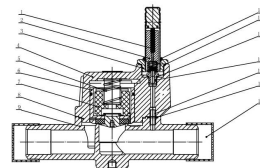
Model	KWh Nominal Refrigerating Capacity kW											
	Liquid						Air Suction			Hot Vapor		
	R22/R407C	R134a	R404A/R507	R410A	R22/R407C	R134a	R404A/R507	R410A	R22/R407C	R134a	R404A/R507	R410A
HVDF25-9	201.25	185.00	140.00	201.00	22.50	16.25	20.00	29.00	92.50	73.75	75.00	139.75
HVDF25-11	201.25	185.00	140.00	201.00	22.50	16.25	20.00	29.00	92.50	73.75	75.00	139.75
HVDF32-13	322.00	296.00	224.00	321.60	36.00	26.00	32.00	46.00	148.00	118.00	120.00	223.60
HVDF40-15	503.13	462.50	350.00	502.50	56.25	40.63	50.00	72.50	231.25	184.38	187.50	349.38
HVDF50-19	563.50	518.00	392.00	562.80	63.00	45.50	56.00	81.20	259.00	206.50	210.00	391.30

The working condition the nominal refrigerating capacity of liquid and air suction is as follows:  
Evaporation Temperature:  $t_e = -10^\circ\text{C}$ ;  
Liquid Temperature before Valve:  $t_l = +25^\circ\text{C}$ ;  
Pressure Drop after Solenoid Valve:  $\Delta P = 15\text{KPa}$

The working condition the nominal refrigerating capacity of hot vapor is as follows:  
Condensation Temperature:  $t_c = +40^\circ\text{C}$ ;  
Pressure Drop after Solenoid Valve:  $\Delta P = 0.8\text{bar}$ ;  
Hot Vapor Temperature:  $t_h = +45^\circ\text{C}$ ;  
Liquid Refrigerant Overcooling:  $-t_{\text{sub}} = 4\text{K}$

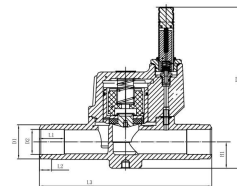
### Structure

1. reset spring
2. core iron
3. valve seal
4. bonnet
5. reset spring
6. piston
7. piston core
8. PTFE gasket
9. valve body
10. dust cap
11. O-ring
12. Hollow pin
13. valve element
14. valve element gasket
15. seal ring
16. O-ring



### Overall Dimension

Model	Overall Dimension						
	D1	D2	L1	L2	L3	H1	H2
HVDF25-9	28.2	24.4	25	12	170	26	159
HVDF25-11	33.7	26	25	12	170	26	159
HVDF32-13	42.4	33	25	12	194	29.5	169
HVDF40-15	48.3	29.5	25	12	208	33	176
HVDF50-19	59.3	51	25	12	207	38	199



## Model HVPF Piston Type Solenoid Valve



### Product Description

- Model HVPF piston type solenoid valve is a twice open type solenoid valve to be suitable to one-way flow.
- Model HVPF piston type solenoid valve is used on the liquid, air suction and hot vapor pipes of the refrigeration, cold storage and air conditioning facilities.
- The coil of varies voltages is available for Model HVPF piston type solenoid valve with a universal valve body.
- Model HVPF piston type solenoid valve could be supplied in split, that means valve body and coil could be supplied separately.

### Features

- The proprietary coil has perfect waterproof performance (IP65).
- Using new material it has performance in high and low temperature application.
- The 24W high-power solenoid coil has high capability to open the valve.
- The high flow rate is assured by a big piston stroke.
- Various AC and DC solenoid coils are available for choice.
- 2-1/8 inch is the maximum welded connection size.

### Technical Parameters

Applicable Refrigerants	HCFC or HFC (Customer specified)
Applicable Medium Temperature	-30°C ~ +105°C
Application Ambient Temperature of Solenoid	-40°C ~ +65°C
Standard Voltage of Solenoid	AC 380V/AC 220V/50Hz (Customer design is available)
Allowable Voltage Fluctuation for Solenoid	+10% ~ -15%
Connection of Solenoid	Standard 3-wire insert connector

### Model Selection

Model	Size	ΔP(bar)		Max Working Pressure(bar)	Kv(m³/h)
		Min.	MOPD LiquidMOP		
HVPF32	Ø38 ODF	0.2	31	45	10
HVPF40	Ø42 ODF	0.2	31	45	16
HVPF45	Ø48.3 ODF	0.2	31	45	25
HVPF54	Ø54.5 ODF	0.2	31	45	28
HVPF60	Ø60.3 ODF	0.2	31	45	30

- 1) Kv value: The flow rate (m³/h) of water of density 1g/cm³ passing through the solenoid valve with the pressure differential of 100 kPa.  
2) The MOPD of gaseous medium is about 1 bar higher than that of liquid.

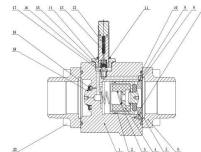
Model	Nominal Refrigerating Capacity kW									
	Liquid				Air Suction			Hot Vapor		
	R22/R407C	R134a	R404A/R507	R410A	R22/R407C	R134a	R404A/R507	R410A	R22/R407C	R134a
HVPF32	201.25	185.00	140.00	201.00	22.50	16.25	20.00	29.00	92.50	73.75
HVPF40	322.00	296.00	224.00	321.60	36.00	26.00	32.00	46.40	148.00	118.00
HVPF45	503.13	462.50	350.00	502.50	56.25	40.63	50.00	72.50	231.25	184.38
HVPF54	563.50	518.00	392.00	562.80	63.00	45.50	56.00	81.20	259.00	206.50
HVPF60	603.75	555.00	420.00	603.00	67.50	48.75	60.00	87.00	277.50	221.25

The working condition the nominal refrigerating capacity of liquid and air suction is as follows:  
Evaporation Temperature:  $t_e = -10^\circ\text{C}$ ;  
Liquid Temperature before Valve:  $t_l = +25^\circ\text{C}$ ;  
Pressure Drop after Solenoid Valve:  $-P = 150\text{KPa}$

The working condition the nominal refrigerating capacity of hot vapor is as follows:  
Condensation Temperature:  $t_c = +40^\circ\text{C}$ ;  
Pressure Drop after Solenoid Valve:  $-P = 0.8\text{bar}$ ;  
Hot Vapor Temperature:  $t_h = +65^\circ\text{C}$ ;  
Liquid Refrigerant Overcoding:  $-t_{sub} = 4\text{K}$

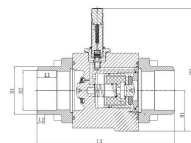
### Structure

- valve body
- piston
- spring
- piston core
- sealing seat
- flange assembly
- dowel pin
- snap ring
- O-ring
- PTE gasket
- O-ring
- core iron
- reset spring
- valve seat
- seal ring
- valve element
- valve element gasket
- filter assembly
- retainer ring
- screw



### Overall Dimension

Model	Overall Dimension						
	D1	D2	L1	L2	L3	H1	H2
HVPF32	35	26	25	10	174.5	51.5	155.5
HVPF40	42	33	25	10	174.5	51.5	155.5
HVPF45	48.3	39.5	25	10	174.5	51.5	155.5
HVPF54	54.5	45	25	10	174.5	51.5	155.5
HVPF60	60.3	50	25	10	174.5	51.5	155.5





# THERMOSTATIC EXPANSION VALVE

*Series*

Using imported diaphragm, linearity is more stable.  
With unique charging technology, can be used in/outside of the cold room.



# TH/ THW Thermostatic Expansion Valve



## Product Description

- T-type expansion valve is a novel thermostatic expansion valve with replaceable valve element.
- T-type expansion valve is used for adjusting the supply quantity of liquid refrigerant in evaporator.

- T-type expansion valve is particularly suitable for supplying liquid refrigerant in dry-type evaporator.
- T-type expansion valve has autocontrol through regulating the superheating degree of refrigerant.

## Features

- Large scope of evaporating temperature.
- be capable of providing MOP function so as not to damage the compressor motor due to overhigh evaporating pressure.
- Have two forms of internal and external equalizer, be capable of removing influence brought by loss of evaporator pressure effectively.
- Have the membrane structure with invention patent, greatly improve the working performance at low temperature.

- The bonnet adopts a secondary sealing structure to reduce the percentage of external leakage.
- With fitting orifice, convenient storage, matching and maintenance
- The temperature wrap has mixed charging technology so as to have the feature of superheating degree within the whole evaporating temperature range.

## Technical Parameters

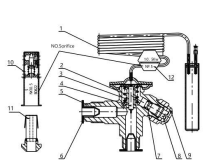
Applicable Refrigerants	R22/R407C, R134a, R404A	<ul style="list-style-type: none"> <li>• Capillary length of T-type thermostatic expansion valve: 5m in standard; under special situation, it can be customized based on clients' requirements.</li> </ul>
Applicable Medium	R22/R407C: -40°C ~ +10°C; R134a: -30°C ~ +10°C; R404A: -40°C ~ +10°C	
Nominal Capacity	2.5KW ~ 15.9KW, 1.8KW ~ 10.9KW, 1.6KW ~ 9.1KW	
Adjustable Range of Superheat	2°C ~ 8°C	
Ex-Works Static Heat Adjustment	3.5°C	
Maximum Working Pressure	2.8MPa	
Maximum Testing Pressure	3.2MPa	

Model Selection														
Refrigerant	Model	Spool	Condensing Temp (°C)	Cooling Capacity (kW) (TR)										
				Evaporator temperature (°C)										
				-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
R22/R407C	TH22/ TH22W	1F	25	1.3/0.37	1.48/0.42	1.69/0.48	1.91/0.55	2.14/0.61	2.36/0.67	2.58/0.74	2.75/0.79	2.86/0.82	2.86/0.82	2.72/0.78
		2F		1.46/0.42	1.69/0.48	1.94/0.55	2.22/0.63	2.52/0.72	2.85/0.81	3.18/0.91	3.49/1	3.75/1.07	3.88/1.11	3.81/1.09
		3F		2.44/0.7	2.83/0.81	3.26/0.93	3.73/1.07	4.24/1.21	4.78/1.37	5.33/1.52	5.85/1.67	6.29/1.8	6.53/1.87	6.46/1.85
		4F		3.52/1.01	4.07/1.16	4.71/1.34	5.42/1.55	6.24/1.78	7.11/2.03	8.02/2.29	8.87/2.53	9.55/2.73	9.88/2.82	9.71/2.77
		5F		4.61/1.31	5.31/1.52	6.14/1.75	7.08/2.02	8.15/2.33	9.34/2.67	10.62/3.03	11.86/3.39	12.91/3.69	13.48/3.85	13.25/3.8
		6F		5.81/1.55	6.26/1.79	7.22/2.06	8.32/2.38	9.56/2.73	10.95/3.13	12.43/3.55	13.91/3.97	15.18/4.34	15.91/4.55	15.71/4.49
	TH22/ TH22W	1F	35	1.34/0.38	1.54/0.44	1.76/0.5	2.03/0.58	2.26/0.65	2.53/0.72	2.8/0.8	3.06/0.87	3.27/0.93	3.4/0.97	3.43/0.98
		2F		1.52/0.43	1.76/0.5	2.03/0.58	2.34/0.67	2.68/0.77	3.06/0.87	3.46/0.99	3.88/1.11	4.29/1.23	4.63/1.32	4.83/1.38
		3F		2.56/0.73	2.97/0.85	3.44/0.98	3.95/1.13	4.52/1.29	5.16/1.47	5.84/1.67	6.55/1.87	7.24/2.07	7.83/2.24	8.2/2.34
		4F		3.77/1.08	4.34/1.24	5.02/1.43	5.81/1.66	6.69/1.91	7.7/2.2	8.8/2.51	9.94/2.84	11.03/3.15	11.92/3.41	12.45/3.56
		5F		4.92/1.41	5.67/1.62	6.54/1.87	7.57/2.16	8.76/2.5	10.13/2.89	11.68/3.34	13.35/3.81	15.04/29	16.4/4.69	17.19/4.91
		6F		5.77/1.65	6.65/1.9	7.66/2.19	8.85/2.53	10.23/2.92	11.82/3.39	13.62/3.89	15.59/4.45	17.57/5.02	19.3/5.51	20.32/5.81
R22/R407C	TH22/ TH22W	1F	45	1.37/0.39	1.58/0.45	1.81/0.52	2.06/0.59	2.33/0.67	2.63/0.75	2.93/0.84	3.24/0.93	3.57/1	3.74/1.07	3.87/1.11
		2F		1.56/0.45	1.81/0.52	2.09/0.6	2.41/0.69	2.77/0.79	3.18/0.91	3.64/1.04	4.13/1.18	4.63/1.32	5.11/1.46	5.48/1.57
		3F		2.64/0.75	3.07/0.88	3.55/1.01	4.09/1.17	4.71/1.35	5.41/1.55	6.18/1.77	7.03/2.01	7.91/2.26	8.75/2.5	9.42/2.69
		4F		3.96/1.13	4.55/1.3	5.24/1.5	6.05/1.73	6.98/1.99	8.05/2.3	9.26/2.65	10.56/3.02	11.9/3.4	13.15/3.76	14.17/4.05
		5F		5.17/1.48	5.94/1.7	6.84/1.95	7.91/2.26	9.16/2.62	10.64/3.04	12.33/3.58	14.28/4.08	16.35/4.67	18.32/5.23	19.87/5.68
		6F		6.04/1.73	6.94/1.98	7.99/2.28	9.22/2.63	10.68/3.05	12.39/3.54	14.38/4.11	16.65/4.76	19.13/5.47	21.57/6.16	23.55/6.73
	TH22/ TH22W	1F	55	1.38/0.39	1.59/0.45	1.82/0.52	2.07/0.59	2.35/0.67	2.66/0.76	2.98/0.85	3.3/0.94	3.61/1.03	3.88/1.11	4.08/1.17
		2F		1.58/0.45	1.83/0.52	2.12/0.61	2.44/0.7	2.81/0.8	3.24/0.93	3.71/1.06	4.24/1.21	4.79/1.37	5.34/1.53	5.81/1.66
		3F		2.68/0.77	3.11/0.89	3.61/1.03	4.16/1.19	4.81/1.37	5.52/1.58	6.34/1.81	7.26/2.07	8.25/2.36	9.24/2.64	10.09/2.88
		4F		4.11/1.17	4.66/1.33	5.38/1.54	6.19/1.77	7.13/2.04	8.21/2.35	9.43/2.69	10.79/3.08	12.23/3.49	13.65/3.9	14.93/4.27
		5F		5.36/1.53	6.14/1.75	7.05/2.01	8.12/2.32	9.38/2.68	10.89/3.11	12.65/3.61	14.67/4.19	16.94/4.83	19.17/5.46	21.13/6.04
		6F		6.24/1.78	7.14/2.04	8.2/2.34	9.44/2.7	10.92/3.12	12.66/3.62	14.73/4.21	17.13/4.89	19.83/5.67	22.64/6.47	25.16/7.19
R134a	TH134/ TH134W	1F	25	0.71/0.20	0.81/0.23	0.93/0.27	1.06/0.31	1.21/0.35	1.29/0.37	1.52/0.43	1.59/0.45	1.68/0.48	1.83/0.52	1.82/0.52
		2F		0.79/0.23	0.89/0.25	1.02/0.29	1.19/0.34	1.43/0.41	1.52/0.43	1.72/0.49	1.82/0.55	2.12/0.61	2.21/0.63	2.19/0.63
		3F		1.31/0.37	1.53/0.44	1.69/0.48	2.02/0.58	2.31/0.66	2.63/0.75	2.91/0.83	3.18/0.91	3.48/1.00	3.71/1.06	3.84/1.10
		4F		1.88/0.54	2.21/0.63	2.52/0.72	2.91/0.83	3.31/0.95	3.69/1.05	4.19/1.20	4.69/1.34	5.58/1.59	5.56/1.59	5.73/1.64
		5F		2.52/0.72	2.93/0.84	3.29/0.94	3.79/1.08	4.35/1.24	4.91/1.40	5.63/1.61	6.15/1.76	6.88/1.95	7.33/2.09	7.51/2.15
		6F		2.99/0.85	3.38/0.97	3.91/1.12	4.51/1.29	5.23/1.49	5.88/1.68	6.72/1.92	7.56/2.16	8.25/2.36	8.76/2.50	8.99/2.57
	TH134/ TH134W	1F	35	0.71/0.20	0.82/0.23	0.98/0.28	1.12/0.32	1.16/0.33	1.39/0.40	1.30/0.37	1.80/0.51	2.02/0.58	2.02/0.58	2.13/0.61
		2F		0.82/0.23	0.93/0.27	1.12/0.32	1.19/0.34	1.42/0.41	1.58/0.45	1.89/0.54	2.12/0.61	2.39/0.68	2.53/0.72	2.81/0.80
		3F		1.39/0.40	1.62/0.46	1.82/0.52	2.13/0.61	2.37/0.68	2.83/0.81	3.09/0.88	3.45/0.99	4.01/1.15	4.51/1.29	4.75/1.36
		4F		2.02/0.58	2.33/0.67	2.63/0.75	3.01/0.86	3.53/1.01	3.99/1.14	4.59/1.31	5.18/1.48	5.95/1.70	6.58/1.86	7.22/2.06
		5F		2.73/0.78	3.01/0.86	3.52/1.01	4.02/1.15	4.62/1.32	5.33/1.52	6.08/1.74	6.91/1.97	7.76/2.22	8.69/2.48	9.41/2.69
		6F		3.18/0.91	3.62/1.03	4.11/1.17	4.85/1.39	5.53/1.58	6.28/1.79	7.22/2.06	8.24/2.35	9.26/2.65	10.31/2.95	11.25/3.21
TH134/ TH134W	1F	45	0.77/0.22	0.83/0.24	0.96/0.27	1.08/0.31	1.34/0.38	1.46/0.42	1.73/0.49	1.92/0.55	2.11/0.60	2.25/0.64	2.53/0.72	
	2F		0.81/0.23	0.92/0.26	1.12/0.32	1.33/0.38	1.52/0.43	1.69/0.48	1.92/0.55	2.23/0.64	2.53/0.72	2.85/0.81	3.16/0.90	
	3F		1.42/0.41	1.66/0.47	1.83/0.52	2.16/0.62	2.49/0.71	2.75/0.79	3.34/0.95	3.71/1.06	4.23/1.21	4.69/1.34	5.32/1.52	
	4F		2.11/0.60	2.42/0.69	2.68/0.77	3.21/0.92	3.58/1.02	4.26/1.22	4.76/1.36	5.61/1.60	6.31/1.80	7.12/2.03	7.85/2.24	
	5F		2.83/0.81	3.15/0.90	3.66/1.05	4.15/1.19	4.86/1.39	5.55/1.59	6.25/1.79	7.28/2.08	8.15/2.33	9.25/2.64	10.29/2.94	
	6F		3.36/0.96	3.72/1.06	4.31/1.23	4.94/1.41	5.62/1.61	6.52/1.96	7.46/2.13	8.63/2.47	9.91/2.83	11/3.20	12.44/3.55	

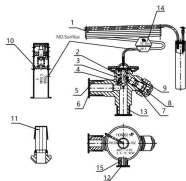
Model Selection										
Refrigerant	Model	Spool	Condensing temp (°C)	Cooling capacity (kW)/(TR)						
				Evaporation temperature (°C)						
				-40	-35	-30	-25	-20	-15	-10
R134a	TH134/ TH134w	55	1F	0.75/0.21	0.82/0.23	0.96/0.27	1.13/0.32	1.32/0.38	1.56/0.45	1.75/0.50
			2F	0.83/0.24	0.95/0.27	1.12/0.32	1.28/0.37	1.49/0.43	1.78/0.51	1.89/0.54
			3F	1.44/0.41	1.62/0.46	1.82/0.52	2.06/0.59	2.38/0.68	2.69/0.77	3.41/0.97
			4F	2.11/0.60	2.42/0.69	2.83/0.81	3.25/0.93	3.65/1.04	4.26/1.22	4.76/1.36
			5F	2.86/0.82	3.21/0.92	3.56/1.02	4.23/1.21	4.91/1.40	5.52/1.58	6.33/1.81
			6F	3.29/0.94	3.74/1.07	4.29/1.23	4.92/1.41	5.62/1.66	6.43/1.84	7.52/2.15
	TH404/ TH404w	25	1F	0.99/0.28	1.18/0.34	1.39/0.4	1.65/0.47	1.83/0.52	1.93/0.55	2.13/0.61
			2F	1.12/0.32	1.34/0.38	1.56/0.45	1.93/0.55	2.21/0.63	2.52/0.72	2.85/0.81
			3F	1.13/0.32	2.22/0.63	2.67/0.76	3.12/0.89	3.71/1.06	4.15/1.19	4.65/1.33
			4F	2.73/0.78	3.21/0.92	3.83/1.09	4.62/1.32	5.44/1.55	6.13/1.75	7.21/2.06
			5F	3.52/1.01	4.23/1.21	5.03/1.44	6.03/1.72	7.21/2.06	8.26/2.36	9.35/2.67
			6F	4.23/1.21	5.02/1.43	6.11/1.75	7.12/2.03	8.36/2.39	9.85/2.81	11.13/3.18
R404A/R507	TH404/ TH404w	35	1F	0.93/0.27	1.16/0.33	1.25/0.36	1.63/0.47	1.82/0.52	1.98/0.57	2.35/0.67
			2F	1.21/0.35	1.25/0.36	1.53/0.44	1.82/0.52	2.13/0.61	2.61/0.75	2.91/0.83
			3F	1.69/0.48	2.11/0.6	2.67/0.76	3.15/0.89	3.65/1.04	4.29/1.23	4.92/1.41
			4F	2.54/0.73	3.06/0.87	3.85/1.1	4.61/1.32	5.51/1.57	6.51/1.86	7.46/2.13
			5F	3.46/0.99	3.99/1.14	4.91/1.4	5.81/1.66	7.12/2.03	8.2/2.34	9.75/2.79
			6F	4.12/1.18	4.76/1.36	5.86/1.67	7.12/2.03	8.33/2.38	10.1/2.89	11.8/3.37
	TH404/ TH404w	45	1F	0.88/0.25	0.98/0.28	1.16/0.33	1.46/0.42	1.72/0.49	1.79/0.51	2.25/0.64
			2F	0.96/0.27	1.22/0.35	1.42/0.41	1.75/0.5	2.03/0.58	2.45/0.7	2.71/0.77
			3F	1.55/0.44	2.05/0.59	2.51/0.72	2.93/0.84	3.51/1	4.23/1.21	4.92/1.41
			4F	2.36/0.67	2.92/0.83	3.66/1.05	4.21/1.2	5.23/1.49	6.21/1.77	7.35/2.1
			5F	3.25/0.93	3.82/1.09	4.53/1.29	5.49/1.57	6.61/1.89	8.12/2.31	9.48/2.71
			6F	3.78/1.08	4.56/1.3	5.51/1.57	6.63/1.89	7.85/2.24	9.72/2.71	11.52/2.93
	TH404/ TH404w	55	1F	0.73/0.21	0.86/0.25	1.15/0.33	1.32/0.38	1.51/0.43	1.75/0.5	2.06/0.59
			2F	0.86/0.25	0.98/0.28	1.23/0.35	1.49/0.43	1.82/0.52	2.1/0.6	2.43/0.69
			3F	1.35/0.39	1.69/0.48	2.21/0.63	2.53/0.72	3.01/0.86	3.63/1.04	4.36/1.25
			4F	2.23/0.64	2.65/0.76	3.12/0.89	3.69/1.05	4.52/1.29	5.51/1.57	6.55/1.87
			5F	2.91/0.83	3.43/0.98	4.06/1.16	4.85/1.39	5.93/1.69	7.25/2.07	8.69/2.48
			6F	3.29/0.94	4.01/1.15	4.75/1.36	5.82/1.66	7.11/2.03	8.39/2.4	10.38/2.97
	TH410/ TH410w	25	1F	1.03/0.29	1.33/0.38	1.68/0.48	1.96/0.56	2.35/0.67	2.69/0.77	3.1/0.89
			2F	1.32/0.38	1.68/0.48	2.05/0.59	2.45/0.7	2.86/0.82	3.25/0.93	3.65/1.04
			3F	2.35/0.67	3.03/0.87	3.62/1.03	4.39/1.25	5.19/1.48	5.93/1.69	6.92/2.05
			4F	3.49/1	4.51/1.29	5.51/1.57	6.51/1.86	7.95/2.27	8.79/2.51	9.99/2.85
			5F	4.36/1.25	5.56/1.59	6.79/1.94	8.31/2.37	9.68/2.77	11.25/3.21	12.58/3.59
			6F	5.39/1.54	6.93/1.98	8.55/2.44	10.32/2.95	12.13/3.46	19.88/5.68	15.92/4.55
	TH410/ TH410w	35	1F	1.1/0.31	1.43/0.41	1.68/0.48	2.01/0.57	2.39/0.68	2.91/0.83	3.21/0.92
			2F	1.32/0.38	1.69/0.48	2.12/0.61	2.5/0.71	2.96/0.85	3.52/1.01	3.96/1.13
			3F	2.25/0.64	3.12/0.89	3.68/1.05	4.51/1.29	5.36/1.53	6.31/1.81	7.22/2.06
			4F	3.39/0.97	4.39/1.25	5.62/1.61	6.67/1.91	8.01/2.29	9.42/2.69	10.81/3.09
			5F	4.39/1.25	5.68/1.62	7.03/2.01	8.46/2.42	10.12/2.89	11.68/3.34	13.43/3.83
			6F	5.61/1.6	7.05/2.01	8.82/2.52	10.59/3.03	15.61/4.46	14.68/4.2	16.65/4.76

Model Selection														
Refrigerant	Model	Spool	Condensing temp (°C)	Cooling capacity (kW)/(TR)										
				Evaporation temperature (°C)										
				-40	-35	-30	-25	-20	-15	-10	-5	0	5	10
R410A	TH410/ TH410W	1#	45	1.06/0.3	1.38/0.39	1.59/0.45	2.01/0.57	2.39/0.68	2.86/0.82	3.19/0.91	3.82/1.09	4.28/1.22	4.31/1.23	4.41/1.26
		2#		1.33/0.38	1.66/0.47	2.06/0.59	2.39/0.68	3.01/0.86	3.51/1	4.06/1.16	4.71/1.35	5.29/1.51	5.29/1.51	5.46/1.56
		3#		2.29/0.65	2.96/0.85	3.68/1.05	4.48/1.28	5.41/1.54	6.28/1.79	7.31/2.09	8.44/2.41	9.63/2.75	9.68/2.77	9.85/2.81
		4#		3.35/0.96	4.38/1.25	5.39/1.54	6.65/1.9	7.89/2.25	9.42/2.69	10.93/11	12.58/3.59	14.55/4.16	14.69/4.22	15.02/4.29
		5#		4.36/1.25	5.58/1.59	6.93/1.98	8.61/2.46	10.12/2.89	11.85/3.39	13.68/3.91	15.99/4.57	18.25/5.21	15.65/4.47	18.91/5.4
		6#		5.44/1.55	6.92/1.98	8.65/2.47	10.49/3	12.56/3.59	14.94/2.36	17.22/4.92	20.01/5.72	22.69/6.46	23.36/6.66	23.75/6.79
	TH410/ TH410W	1#	55	0.96/0.27	1.31/0.37	1.62/0.46	1.95/0.56	2.26/0.65	2.75/0.79	3.15/0.9	3.69/1.05	4.31/1.23	4.28/1.22	4.42/1.26
		2#		1.23/0.35	1.62/0.46	1.88/0.54	2.38/0.68	2.85/0.81	3.29/0.94	3.86/1.1	4.56/1.3	5.21/1.49	5.41/1.55	5.61/1.6
		3#		2.15/0.61	2.79/0.8	3.43/0.98	4.31/1.23	5.06/1.45	6.02/1.72	7.08/2.02	8.15/2.33	9.5/2.71	9.63/2.75	10.1/2.89
		4#		3.15/0.9	4.21/1.2	5.12/1.46	6.29/1.8	7.53/2.15	9.01/2.57	10.42/2.97	12.36/3.53	14.11/4.03	14.68/4.19	15.2/4.34
		5#		4.03/1.15	5.32/1.52	6.39/1.83	7.96/2.27	9.56/2.73	11.36/3.25	13.25/3.79	15.43/4.41	17.69/5.05	18.33/5.24	18.96/5.42
		6#		5.02/1.43	6.48/1.85	8.01/2.29	9.98/2.85	11.95/3.41	14.31/4.09	16.61/4.75	19.38/5.54	22.19/6.34	23.1/6.4	23.68/6.77
<div>• Model of expansion valve should be selected by refrigerating capacity of evaporators.</div> <div>• External equalisation thermostatic expansion valve should be chosen for evaporators with distributors.</div> <div>• Pay attention to the refrigerant when choosing expansion valve.</div>														

## Structure



1. power element; 2. regulating spring; 3. spring seat; 4. transfer bar component; 5. valve body; 6. dust cap; 7. O-type ring; 8. regulating stem; 9. value bonnet; 10. orifice No.18-69; 11. fitting component; 12. orifice packing cover



1. power element; 2. regulating spring; 3. spring seat; 4. transfer bar component; 5. valve body; 6. dust cap; 7. O-type ring; 8. regulating stem; 9. value bonnet; 10. orifice No.14-64; 11. fitting component; 12. dust cap; 13. dust cap; 14. orifice packing cover; 15. external equaliser

## Replaceable element model

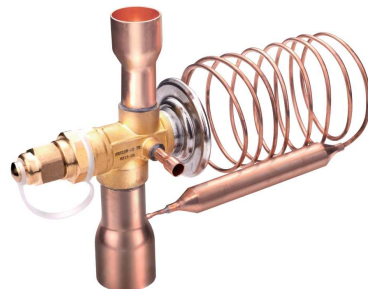
Valve element No.	Nominal refrigerating capacity(TR)				Nominal refrigerating capacity(KW)			
	R22/R407C	R134a	R404A	R410A	R22	R134a	R404A	R410A
No.1	0.7	0.5	0.45	0.92	2.5	1.8	1.6	3.25
No.2	1.0	0.8	0.6	1.55	3.5	2.6	2.1	5.45
No.3	1.5	1.3	1.2	2.5	5.2	4.6	4.2	8.7
No.4	2.3	1.9	1.7	4	8.0	6.7	6.0	14.15
No.5	3.0	2.5	2.2	4.9	10.5	8.6	7.7	17.28
No.6	4.5	3.0	2.6	5.7	15.5	10.5	9.1	19.95

## Model of main value body

Refrigerant	Model	Pressure Equalisation	Thread		
			Inlet	Outlet	External Equaliser
R22/R407C	TH22	Internal Equalisation	3/8 SAE	1/2 SAE	
R22/R407C	TH22W	External Equalisation	3/8 SAE	1/2 SAE	1/4 SAE
R134a	TH134	Internal Equalisation	3/8 SAE	1/2 SAE	
R134a	TH134W	External Equalisation	3/8 SAE	1/2 SAE	1/4 SAE
R404A	TH404	Internal Equalisation	3/8 SAE	1/2 SAE	
R404A	TH404W	External Equalisation	3/8 SAE	1/2 SAE	1/4 SAE
R410A	TH410	Internal Equalisation	3/8 SAE	1/2 SAE	
R410A	TH410W	External Equalisation	3/8 SAE	1/2 SAE	1/4 SAE

• Working Condition of Nominal Refrigerating Capacity: Evaporation Temperature: +5°C; Condensation Temperature: +35°C; Superheat: 3.5°C; Subcooling: 4°C.

## FRF Thermostatic Expansion Valve



Model FRF (inch ODF)

## Installation and usage requirements

1. welded pipe expansion valve with the system pipe welding, we must pay attention to the following points:

1.1 Pls use a wet cloth or wet cotton gauze to wrap the valve body to prevent the damage of parts in the valve body during welding

1.2 The direction of the flames of the welding gun should be outward at the valve body.

1.3 Low temperature silvirelec trode welding.

2. Expansion valve maintenance should be designated professional staff

## Technical Parameters

Applicable Refrigerants	R22, R134a, R404A
Applicable Medium	R22: -40°C ~ +10°C; R134a: -30°C ~ +10°C; R404A: -40°C ~ +10°C
Adjustable Range of Superheat	2°C ~ 8°C
Maximum Working Pressure	2.8MPa
Maximum Testing Pressure	3.2MPa

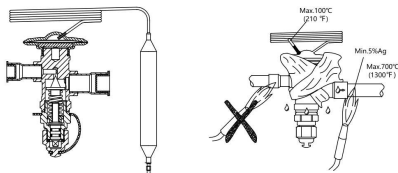
Model Selection											
Refrigerant	Condensing temp (°C)	Model	Cooling capacity(KW)/(TR)								
			Evaporation temperature(°C)								
			-35	-30	-25	-20	-15	-10	-5	0	
R22/R407C	40	RF22W-3-3-5	4.99/1.43	5.69/1.63	6.43/1.84	7.2/2.06	7.98/2.28	8.75/2.5	9.49/2.71	10.17/2.91	10.72/3.06
		RF22W-3-4-5	4.99/1.43	5.69/1.63	6.43/1.84	7.2/2.06	7.98/2.28	8.75/2.5	9.49/2.71	10.17/2.91	10.72/3.06
		RF22W-4-4-7	6.68/1.91	7.63/2.18	8.63/2.47	9.68/2.77	10.75/3.07	11.81/3.37	12.83/3.67	13.76/3.93	14.52/4.15
		RF22W-6-4-5	9.69/2.77	11.1/3.17	12.58/3.59	14.12/4.03	15.7/4.49	17.26/4.93	18.77/5.36	20.12/5.75	21.24/6.07
		RF22W-6-4-7	9.69/2.77	11.1/3.17	12.58/3.59	14.12/4.03	15.7/4.49	17.26/4.93	18.77/5.36	20.12/5.75	21.24/6.07
		RF22W-7.5-5-7	12.00/3.43	13.86/3.96	15.84/4.53	17.89/5.11	19.97/5.71	21.63/6.01	22.98/6.57	25.27/7.35	27.1/7.74
		RF22W-11-5-7	19.44/5.55	22.45/6.41	25.58/7.31	28.73/8.21	31.96/9.14	34.6/9.89	37.07/10.59	38.85/11.1	39.95/11.41
		RF22W-11-5-9	19.44/5.55	22.45/6.41	25.58/7.31	28.73/8.21	31.96/9.14	34.6/9.89	37.07/10.59	38.85/11.1	39.95/11.41
		RF22W-12-5-7	19.86/5.67	22.01/6.29	25.07/7.16	28.26/8.07	31.51/9	34.25/9.79	37.91/10.83	40.11/11.46	42.61/12.17
		RF22W-12-5-9	19.86/5.67	22.01/6.29	25.07/7.16	28.26/8.07	31.51/9	34.25/9.79	37.91/10.83	40.11/11.46	42.61/12.17
		RF22W-15-5-9	22.47/6.42	25.11/7.17	28.3/8.09	31.96/9.13	35.69/10.2	38.86/11.1	41.85/11.96	51.13/14.61	54.25/15.5
		RF22W-15-7-9	22.47/6.42	25.11/7.17	28.3/8.09	31.96/9.13	35.69/10.2	38.86/11.1	41.85/11.96	51.13/14.61	54.25/15.5
		RF22W-18-7-9	25.31/7.23	28.72/8.21	33.17/9.48	38.98/11.14	45.08/12.88	49.37/14.11	53.68/15.34	58.76/16.79	63.22/18.06
		RF22W-18-7-11	25.31/7.23	28.72/8.21	33.17/9.48	38.98/11.14	45.08/12.88	49.37/14.11	53.68/15.34	58.76/16.79	63.22/18.06
		RF22W-26-7-11	36.48/10.42	42.31/12.09	48.76/13.93	55.84/15.95	63.49/18.14	71.61/20.46	79.99/22.85	88.29/25.23	92.02/26.29
		RF22W-26-9-11	36.48/10.42	42.31/12.09	48.76/13.93	55.84/15.95	63.49/18.14	71.61/20.46	79.99/22.85	88.29/25.23	92.02/26.29
		RF22W-30-7-11	41.30/11.80	47.93/13.69	55.26/15.79	63.29/18.08	71.98/20.57	81.2/23.2	90.69/25.91	100.1/28.6	104.8/29.94
		RF22W-30-9-11	41.30/11.80	47.93/13.69	55.26/15.79	63.29/18.08	71.98/20.57	81.2/23.2	90.69/25.91	100.1/28.6	104.8/29.94
		RF22W-38-9-11	48.63/13.89	55.75/15.93	64.95/18.56	75.29/21.51	86.78/24.79	99.3/28.37	111.53/31.86	123.7/35.34	134.7/38.49
R404A/R507	40	RF404W-4-4-5	4.1/1.17	4.71/1.35	5.38/1.54	6.09/1.74	6.84/1.95	7.62/2.18	8.39/2.4	9.11/2.6	9.73/2.78
		RF404W-5-5-7	5.1/1.46	5.71/1.63	6.48/1.85	7.58/2.17	8.84/2.53	9.52/2.72	10.39/2.97	11.36/3.25	12.28/3.51
		RF404W-7.5-5-7	7.55/2.16	8.71/2.49	10.12/2.89	11/3.14	12.94/3.7	14/4	15.55/4.44	16.5/4.71	17.97/5.13
		RF404W-9-5-7	9.57/2.73	10.98/3.14	12.51/3.57	14.14/4.04	15.83/4.52	17.53/5.01	19.18/5.48	20.75/5.91	21.98/6.28
		RF404W-11-5-9	12.07/3.45	13.93/3.98	15.92/4.55	18.02/5.15	20.16/5.76	22.29/6.37	24.28/6.94	25.98/7.42	27.21/7.77
		RF404W-13-7-9	12.93/3.69	15.1/4.31	17.1/4.89	19/5.43	22.1/6.31	25.05/7.16	27.1/7.74	30.55/8.73	32.17/9.19
		RF404W-18-7-11	16.59/4.74	19.54/5.58	22.7/6.36	25.13/7.18	29.03/8.29	32.94/9.41	36.69/10.48	40.27/11.51	43.57/12.45
		RF404W-21-7-11	20.03/4.74	23.79/5.81	27.77/6.65	31.87/8.02	36.19/10.8	40.71/11.38	45.77/13.08	49.21/14.06	52.06/14.87
		RF404W-26-9-11	24.64/7.04	28.58/8.17	33.03/9.44	37.91/10.43	43.18/12.34	48.69/13.91	54.28/15.51	59.71/17.06	64.74/18.5
		RF410W-3-3-5	5.93/1.69	6.73/1.91	7.57/2.15	8.45/2.40	9.35/2.66	10.25/2.92	11.12/3.16	11.91/3.39	12.56/3.57
		RF410W-4-5-7	7.92/2.25	9.0/2.56	10.15/2.89	11.35/3.23	12.58/3.58	13.81/3.93	15.01/4.27	16.10/4.58	17.00/4.84
		RF410W-6-5-4-7	11.48/3.27	13.07/3.72	14.76/4.20	16.51/4.70	18.35/5.21	20.13/5.73	21.88/6.22	23.48/6.68	24.80/7.05
		RF410W-9-5-7	15.36/4.37	17.49/4.97	19.73/5.61	22.06/6.27	24.44/6.95	26.81/7.63	29.08/8.27	31.13/8.85	32.77/9.32
		RF410W-13-5-7	23.1/5.57	26.50/7.54	30.02/8.54	33.57/9.55	37.07/10.54	40.36/11.48	43.27/12.31	45.56/12.96	46.97/13.36
		RF410W-15-5-7	23.01/6.54	26.51/7.54	30.31/8.62	34.40/9.78	38.74/11.02	43.25/12.30	47.80/13.59	52.15/14.83	55.88/15.92
		RF410W-19-5-9	28.36/8.07	32.73/9.31	37.49/10.66	42.64/12.13	48.14/13.69	53.89/15.33	59.72/16.99	65.36/18.59	70.41/20.03
		RF410W-23-7-9	34.47/9.88	39.94/11.36	45.52/12.95	51.47/14.64	57.75/16.42	64.27/18.28	70.84/20.15	77.13/21.94	82.66/23.51
		RF410W-31-7-11	42.32/12.58	51.02/14.51	58.50/16.84	66.71/18.97	75.60/21.50	85.08/24.20	94.91/26.99	104.70/29.78	113.70/32.34
		RF410W-35-7-11	50.06/14.24	57.76/16.43	66.26/18.85	75.58/21.50	85.67/24.37	96.41/27.42	107.50/30.57	118.60/33.73	128.80/36.63
RF410W-46-9-11	61.44/17.07	71.40/20.31	82.66/23.51	95.18/27.07	108.80/30.94	123.00/34.98	137.40/39.08	151.10/42.97	163.10/46.39		
R134A	40	RF134W-3-5-4-5	5.42/1.54	6.16/1.75	6.97/1.98	7.86/2.24	8.81/2.51	9.82/2.79	10.86/3.09	11.89/3.38	12.84/3.65
		RF134W-4-5-5-7	7.19/2.10	8.40/2.39	9.50/2.70	10.70/3.04	11.93/3.41	13.35/3.80	14.74/4.19	16.11/4.58	17.37/4.94
		RF134W-7-5-7	10.85/3.09	12.39/3.52	14.08/4.00	15.91/4.53	17.85/5.08	19.86/5.65	21.85/6.21	23.71/6.74	25.28/7.19
		RF134W-10-7-9									

Model Selection											
Refrigerant	Condensing Temp (°C)	Model	Cooling capacity(KW)/(TR)								
			Evaporation temperature(°C)								
			-35	-30	-25	-20	-15	-10	-5	0	5
R134A	40	FRF134W-8-5-9	11.50/3.27	13.21/3.76	15.14/4.31	17.29/4.92	19.67/5.59	22.26/6.33	25.00/7.11	27.79/7.90	30.49/8.67
		FRF134W-10-7-9	14.34/4.08	16.50/4.69	18.93/5.38	21.66/6.16	24.69/7.02	27.99/7.96	31.50/8.96	35.10/9.98	38.61/10.98
		FRF134W-12-7-11	17.69/5.03	20.34/5.78	23.27/6.62	26.51/7.54	30.04/8.54	33.85/9.63	37.85/10.77	41.91/11.92	45.79/13.02
		FRF134W-17-7-11	23.02/6.55	26.54/7.55	30.53/8.68	35.01/9.96	40.01/11.38	45.50/12.94	51.39/14.62	57.50/16.35	63.54/18.07
		FRF134W-20-9-11	26.17/7.44	30.19/8.59	34.74/9.88	39.85/11.33	45.52/12.96	51.80/14.73	58.51/16.64	65.47/18.62	72.32/20.57
<div>• Model of expansion valve should be selected by refrigerating capacity of evaporators.</div> <div>• External equalisation thermostatic expansion valve should be chosen for evaporators with distributors.</div> <div>• Pay attention to the refrigerant when choosing expansion valve.</div>											
Product Parameters											
Refrigerant	Model	Pressure Equalisation	Thread(Connector Size)				External Equaliser				
			Inlet inch	Outlet inch							
R22	FRF22W-3-3-5	External Equalisation	3/8"ODF	5/8"ODF		1/4" ODF					
	FRF22W-3-4-5		1/2"ODF	5/8"ODF							
	FRF22W-4-4-7		1/2"ODF	7/8"ODF							
	FRF22W-6-4-5		1/2"ODF	5/8"ODF							
	FRF22W-6-4-7		1/2"ODF	7/8"ODF							
	FRF22W-7.5-5-7		5/8"ODF	7/8"ODF							
	FRF22W-11-5-7		5/8"ODF	7/8"ODF							
	FRF22W-11-5-9		5/8"ODF	1-1/8"ODF							
	FRF22W-12-5-7		5/8"ODF	7/8"ODF							
	FRF22W-12-5-9		5/8"ODF	1-1/8"ODF							
	FRF22W-15-5-9		5/8"ODF	1-1/8"ODF							
	FRF22W-15-7-9		7/8"ODF	1-1/8"ODF							
R134a	FRF134W-18-7-9	External Equalisation	7/8"ODF	1-1/8"ODF		1/4" ODF					
	FRF22W-18-7-11		7/8"ODF	1-3/8"ODF							
	FRF22W-26-7-11		7/8"ODF	1-3/8"ODF							
	FRF22W-26-9-11		1-1/8"ODF	1-3/8"ODF							
	FRF22W-30-7-11		7/8"ODF	1-3/8"ODF							
	FRF22W-30-9-11		1-1/8"ODF	1-3/8"ODF							
	FRF22W-38-9-11		1-1/8"ODF	1-3/8"ODF							
	FRF134W-3-5-4-5		1/2" ODF	5/8" ODF							
	FRF134W-4-5-5-7		5/8" ODF	7/8" ODF							
	FRF134W-7-5-7		5/8" ODF	7/8" ODF							
	FRF134W-8-5-9		5/8" ODF	1-1/8" ODF							
	FRF134W-10-7-9		7/8" ODF	1-1/8" ODF							
FRF134W-12-7-11	7/8" ODF	1-3/8" ODF									
FRF134W-17-7-11	7/8" ODF	1-3/8" ODF									
FRF134W-20-9-11	1-1/8" ODF	1-3/8" ODF									

Product Parameters					
Refrigerant	Model	Pressure Equalization	Thread Connection Size		
			Inlet inch	Outlet inch	External Equaliser
R404A	FRF404W-4-4-5	External Equalisation	1/2" ODF	5/8" ODF	1/4" ODF
	FRF404W-5-5-7		5/8" ODF	7/8" ODF	
	FRF404W-7.5-5-7		5/8" ODF	7/8" ODF	
	FRF404W-9-5-7		5/8" ODF	7/8" ODF	
	FRF404W-11-5-9		5/8" ODF	1-1/8" ODF	
	FRF404W-13-7-9		7/8" ODF	1-1/8" ODF	
	FRF404W-18-7-11		7/8" ODF	1-3/8" ODF	
	FRF404W-21-7-11		7/8" ODF	1-3/8" ODF	
	FRF404W-26-9-11		1-1/8" ODF	1-3/8" ODF	
	FRF410W-3.5-3-5		3/8" ODF	5/8" ODF	
R410A	FRF410W-4.5-4-7		1/2" ODF	7/8" ODF	
	FRF410W-6.5-4-7		1/2" ODF	7/8" ODF	
	FRF410W-9-5-7		5/8" ODF	7/8" ODF	
	FRF410W-13-5-7		5/8" ODF	7/8" ODF	
	FRF410W-15-5-7		5/8" ODF	7/8" ODF	
	FRF410W-19-5-9		5/8" ODF	1-1/8" ODF	
	FRF410W-23-7-9		7/8" ODF	1-1/8" ODF	
	FRF410W-31-7-11		7/8" ODF	1-3/8" ODF	
	FRF410W-35-7-11		7/8" ODF	1-3/8" ODF	
	FRF410W-46-9-11		1-1/8" ODF	1-3/8" ODF	
R407C	FRF407W-3.5-4-7		1/2" ODF	7/8" ODF	
	FRF407W-5-4-7		1/2" ODF	7/8" ODF	
	FRF407W-7-5-7		5/8" ODF	7/8" ODF	
	FRF407W-10-5-7		5/8" ODF	7/8" ODF	
	FRF407W-12-5-9		5/8" ODF	1-1/8" ODF	
	FRF407W-15-7-9		7/8" ODF	1-1/8" ODF	
	FRF407W-18-7-11		7/8" ODF	1-3/8" ODF	

• Working Condition of Nominal Refrigerating Capacity: Evaporation Temperature: + 5°C;  
Condensation Temperature: +40°C; Superheat:3.5°C;Subcooling:2°C.

#### Structure



## ERF ERFW Thermostatic Expansion Valve



Model ERF (metric/inch flare)



Model ERFW (inch flare)

#### Product Description

• Model ERF/ERFW thermal expansion valve are used to adjust the liquid refrigerant supply volume to the evaporator and they are suitable to various refrigerants and different charging condition. It meets the requirements of the cold storage facility, ice

maker and dehumidifier as well as the refrigeration and air conditioning requirements under varied evaporation temperature.

#### Features

• The big power head structure with perfect linear performance has a stable adjustment on the degree of superheat.  
• New structure has large scope of evaporation temperature and big work amplitude under low temperature.

• With proprietary technology, the diaphragm movement hysteresis <0.5k and the valve has good stability.  
• The bonnet features food-proofing design to prevent loss and ensure the reliability of sealing.

#### Technical Parameters

Applicable Refrigerants:	R404A, R22, R134a	<ul style="list-style-type: none"> <li>• Model ERF (ERFW) and FRF thermostatic expansion valve have two types of connection: Flare/ODF.</li> <li>• Capillary length of Model ERF (ERFW) and FRF thermostatic expansion valve can be standard 1.5 m. (g10~ 13 is 3m) or customized.</li> </ul>
Applicable Medium Temperature:	-40°C ~ +10°C	
Nominal Capacity:	3.5KW ~ 158KW	
Adjustable Range of Superheat:	2°C ~ 8°C	
Ex-Works Static Heat Adjustment:	3.5°C	
Outer Equilibrium End Leakage:	≤75ml/min	
Maximum Working Pressure:	2.8MPa	
Maximum Testing Pressure:	3.2MPa	

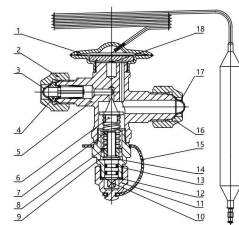
Model Selection											
Refrigerant	Model	Pressure Equalisation	Thread(Connexion Size)						Nominal Refrigerating Capacity		
			Inlet		Outlet		External Equaliser		TR	kW	kcal/h
			metric	inch	metric	inch	metric	inch			
R22/R407C	ERF22-01.0	Internal Equalisation (flange)	M16X1.5		M18X1.5		—	—	1.0	3.5	3024
	ERF22-01.5								1.6	5.6	4840
	ERF22-02.0								2.0	7.0	6048
	ERF22-02.5								2.5	8.8	7560
	ERF22-03.0								3.0	10.5	9072
	ERF22-04.0								5.0	17.6	15120
	ERF22-05.0								6.0	21.0	18144
	ERF22-06.0								7.5	26.0	22680
	ERF22-07.0								8.5	29.9	25704
	ERF22-08.0								12.0	42.2	36288
ERF22-09.0	15.0	52.7	45360								
R134a	ERF134-01.0		M16X1.5		M18X1.5		—	—	0.5	1.75	1510
	ERF134-01.5								0.7	2.5	2116
	ERF134-02.0								1.5	5.2	4500
	ERF134-02.5								1.6	5.6	4838
	ERF134-03.0								2.0	7.0	6048
	ERF134-04.0								3.0	10.5	9072
	ERF134-05.0								5.0	17.6	15120
	ERF134-07.0								6.5	22.9	19656
	ERF134-09.0								11.0	38.7	33264
R22/R407C	ERF22W-01.0	External Equalisation		3/8 SAE	1/2 SAE			1/4 SAE	1.0	3.5	3024
	ERF22W-01.5								1.6	5.6	4840
	ERF22W-02.0								2.0	7.0	6048
	ERF22W-02.5								2.5	8.8	7560
	ERF22W-03.0								3.0	10.5	9072
	ERF22W-04.0								5.0	17.6	15120
	ERF22W-05.0								6.0	21.0	18144
	ERF22W-06.0								7.5	26.5	22680
	ERF22W-07.0								8.5	29.9	25704
	ERF22W-08.0								12.0	42.2	36288
ERF22W-09.0	15.0	52.7	45360								
R134a	ERF134W-01.0		3/8 SAE		1/2 SAE				0.5	1.75	1510
	ERF134W-01.5								0.7	2.5	2116
	ERF134W-02.0								1.5	5.2	4500
	ERF134W-02.5								1.6	5.6	4838
	ERF134W-03.0								2.0	7.0	6048
	ERF134W-04.0								3.0	10.5	9072
	ERF134W-05.0								5.0	17.6	15120
	ERF134W-07.0								6.5	22.9	19656
	ERF134W-09.0								11.0	38.7	33264
• Working Condition of Nominal Refrigerating Capacity: Evaporation Temperature te = + 5°C; Condensation Temperature tk = +40°C; Degree of Superheat 2°C											

• Working Condition of Nominal Refrigerating Capacity: Evaporation Temperature  $t_e = +5^{\circ}\text{C}$ ;  
Condensation Temperature  $t_k = +40^{\circ}\text{C}$ ; Degree of Superheat  $2^{\circ}\text{C}$

## Structure

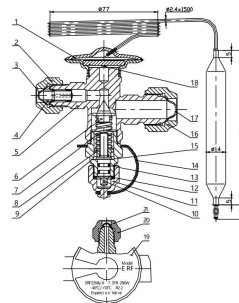
Model ERF(metric flange)

1. power element; 2. nut; 3. seal cap; 4. fitting component; 5. valve body; 6. valve element; 7. adjusting spring; 8. adjusting nut; 9. adjusting seat; 10. valve stem; 11. bonnet; 12. seal ring; 13. O-ring; 14. gasket; 15. security belt; 16. metric nut; 17. seal cap; 18. drive pin



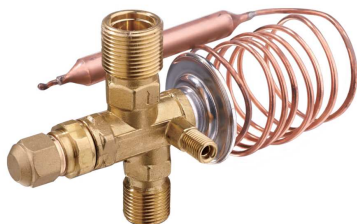
Model ERW(inch flange)

1. power element
2. nut
3. seal cap
4. fitting component
5. valve body
6. valve element
7. adjusting spring
8. adjusting nut
9. adjusting seat
10. valve stem
11. bonnet
12. seal ring
13. O-ring
14. security belt
15. gasket
16. nut
17. seal cap
18. drive pin
19. label
20. nut
21. seal cap





## QRF Thermostatic Expansion Valve



Model QRF (inch flare)

### Product Description

• QRF134W expansion Valve used for regulating the supply of liquid refrigerant in Evaporator.

• QRF134W expansion valve with two-way throttling function is widely used in heat pump, Automotive air conditioning and refrigeration system.

### Features

• The expansion valve diaphragm is made of the same material as the well-known supplier.  
• MOP function can be provided, so that the compressor motor will not be damaged by excessive evaporation pressure.

• The patented membrane structure greatly improves the working performance at low temperature.  
• The valve bonnet adopts secondary sealing structure to ensure zero external leakage.

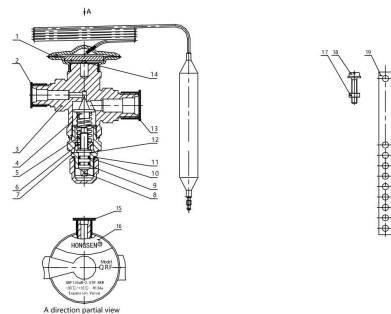
### Technical Parameters

Applicable Refrigerants	R134a
Applicable Medium	-30°C ~ +10°C
Adjustable Range of Superheat	2°C ~ 8°C
Maximum Working Pressure	2.8MPa
Maximum Testing Pressure	3.2MPa

QRF type thermal expansion valve capillary length: standard 1.5m, special circumstances can be according to user demand.

Model Selection							
Refrigerant	Model	Pressure Equalisation	Thread			Nominal Refrigerating Capacity	
			Inlet	Outlet	External Equalisation	TR	KW
R134a	QRF134W-2.5-3-4	External Equalisation	3/8 SAE	1/2 SAE	1/4 SAE	2.5	8
	QRF134W-3.5-3-4		3/8 SAE	1/2 SAE		3.5	12
	QRF134W-4.5-5-6		5/8SAE	3/4SAE		4.5	17
	QRF134W-7-5-6		5/8SAE	3/4SAE		7	24
	QRF134W-10-5-6		5/8SAE	3/4SAE		10	37
• The working condition of nominal refrigerating capacity is: evaporation temperature: 5°C; condensation temperature: 35°C; superheat: 3.5°C; supercooling degree: 4°C.							

### Structure



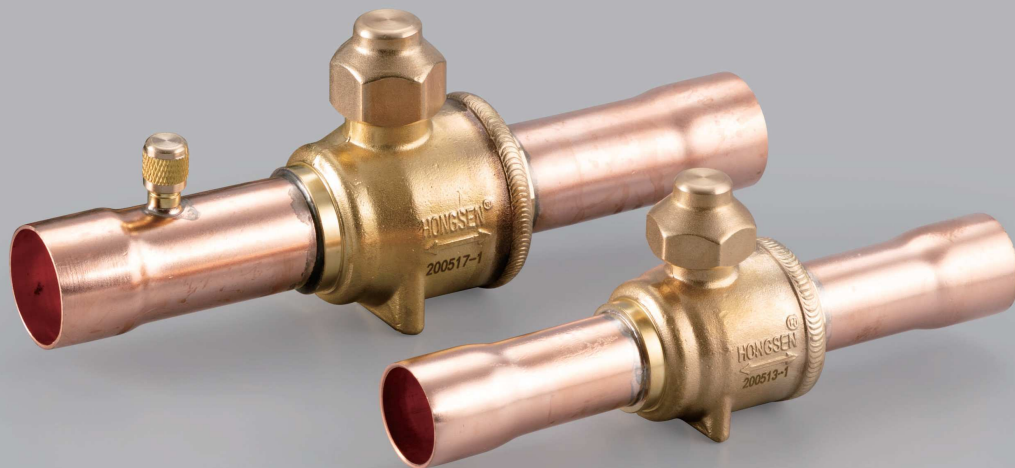
- 1, power element; 2, dust cap; 3, valve body; 4, spool; 5, adjusting spring; 6, adjusting nut; 7, adjusting seat; 8, valve stem; 9, valve bonnet; 10, O-ring; 11, gasket; 12, gasket; 13, dust cap; 14, drive pin; 15, dust cap; 16, label; 17, nut; 18, bolt; 19, hoop



# BALL VALVE

## *Series*

uitable for bidirectional flow, used in refrigeration, refrigeration and air conditioning devices of liquid, heating and heat pipes, seats and seals have good sealing.  
Equipped with a sealed cap with a secondary seal.



## Model HBC Ball Valve



### Product Description

- Model HBC ball valve is a manually regulated shut-off valve, which is applicable to two-direction flow.
- Model HBC ball valve is used on the liquid, air suction and hot vapor piping of the freezer, could store and air conditioning unit.
- The valve seat of Model HBC ball valve is well sealed with perfect sealing performance.

- Model HBC ball valve is a through-type ball valve with maximum flow rate and wide scope of operating temperature.
- Model HBC ball valve is equipped with a secondary sealing cap.

### Features

- No pressure drop in flow.
- Only turn 1/4 circle to make valve full open or full close.
- Turning stop for full open or full close.
- Full Open and Full Close mark on top of valve stem.
- Two-direction flow is available.
- Argon arc welded structure.
- Explosion-proof valve stem design.
- Modified PTFE sealing.
- Inside liquid accumulation is avoided.
- Could be mounted on the control panel.

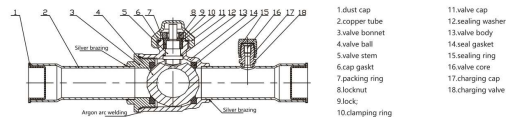
### Technical Parameters

Applicable Refrigerant:	HCFC or HFC(Customer choice)
Applicable Medium Temperature:	-40~+120°C
MAX Working Pressure	4.5MPa
MAX Compression Pressure	6.5MPa
Yearly Leakage of Refrigerant	≤2g R22/a

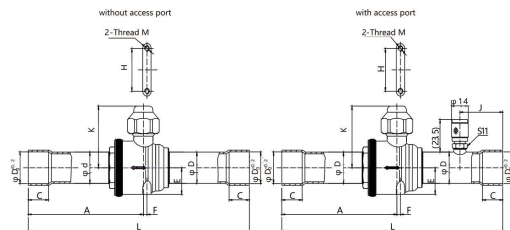
• Two types of Model HBC ball valve are available: one is equipped with the charging and inspection port; the other is not equipped with the charging and inspection port.

Model Selection							
Model	Size	OD(mm)	Kv(m <sup>3</sup> /h)	Model	Size	OD(mm)	Kv(m <sup>3</sup> /h)
HBC-65	1/4(Φ6)	Φ10	2	HBC-28	1-1/8(Φ28)	Φ25	52.0
HBC-105	3/8(Φ10)	Φ10	5.7	HBC-35	1-3/8(Φ35)	Φ31	80
HBC-125	1/2(Φ12)	Φ10	5.7	HBC-42	1-5/8(Φ42)	Φ37	121
HBC-10	3/8(Φ10)	Φ14	5.7	HBC-54	2-1/8(Φ54)	Φ50	200
HBC-12	1/2(Φ12)	Φ14	10.6	HBC-67	2-5/8(Φ67)	Φ50	200
HBC-16	5/8(Φ16)	Φ14	14.1	HBC-79	3-1/8(Φ79)	Φ50	200
HBC-19	3/4(Φ19)	Φ16	20.4	HBC-67A	2-5/8(Φ67)	Φ60.5	310
HBC-22	7/8(Φ22)	Φ19	28.2	HBC-79A	3-1/8(Φ79)	Φ73	700

### Structure

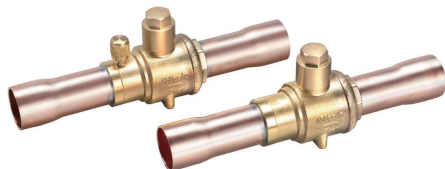


### Overall Dimension



Model	A	C	D	d	E	F	K	M	J	H	L
HBC-65	57	6	6.5	10	14	0	32.5	M4	20	44	110
HBC-105	65	8	10.1	10	14	0	32.5	M4	26	44	126
HBC-125	67	10	12.8	12	14	0	32.5	M4	26	44	130
HBC-10	73	9	10.1	16	14.5	2	38	M4	30	50	138
HBC-12	83	10	12.8	16	14.5	2	38	M4	30	50	159
HBC-16	83	12	16.1	16	14.5	2	38	M4	30	50	159
HBC-19	97	14	19.1	19	16.5	3	42	M4	36	58	185
HBC-22	96	17	22.3	22	19	3	43	M4	36	58	185
HBC-28	108	20	28.7	28	24	4	52.5	M4	44	66	208
HBC-35	130	25	35.2	35	30	5	64	M6	44	80	251
HBC-42	145	29	41.5	41.3	35	6	74	M6	56	87	281
HBC-54	157	35	54.2	54	45.5	9	83.5	M6	56	106	305
HBC-67	157	37	67	54	45.5	9	83.5	M6	63	106	305
HBC-79	157	40	79.6	54	45.5	9	83.5	M6	63	106	305
HBC-67A	171	37	67	66.8	54	16	94	M6	72	117	343
HBC-79A	207	37	79.6	79.4	64	16	104	M6	80	117	413

## Model QFT Ball Valve



### Product Description

Model QFT ball valve is a manually adjusted shut off valve, which is applicable to bidirectional flow, can be applied in the liquid, heating and hot gas pipelines of Refrigeration and A/C equipment. The special design of stem seal and valve ball seal

with special sealing materials ensure the superior performance under common refrigerant working environment.

### Features

- Bi-flow direction, can be installed arbitrarily.
- Precision forged high-quality copper valve body.
- Small pressure drop from medium refrigerants.
- Explosion-proof stem design.
- Sealing rings applicable for
- rotary-limit design for fully open/closed
- Secondary reliable sealing structure on the valve stem.
- Can be installed on the control board for easy fixation.

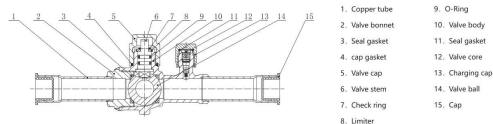
### Technical Parameters

MAX. working pressure	650PSI/45BAR
Applicable refrigerant	R22, R134a, R404A, R407C, R410A, etc.
Applicable medium working temperature	-40°C ~ +120°C

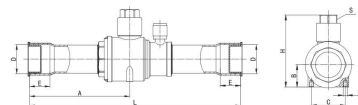
### Model Selection

Model	Size
	ID (mm)
QFT-6V/QFT-14	ø6.50 1/2"
QFT-12V/QFT-10	ø10.10 3/4"
QFT-12V/QFT-12	ø12.80 1"
QFT-18V/QFT-16	ø16.10 5/8"
QFT-18V/QFT-19	ø19.20 3/4"
QFT-22V/QFT-22	ø22.30 7/8"
QFT-28V/QFT-28	ø28.70 1 1/8"
QFT-35V/QFT-35	ø35.20 1 3/8"
QFT-42V/QFT-42	ø41.50 1 7/8"
QFT-54V/QFT-54	ø54.20 2 1/8"

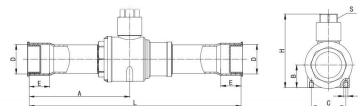
### Structure



### Dimensions



QFT-V with Charging port



QFT without Charging port

Model	Overall Dimension									
	D	L	E	H	A	B	C	M	S	
QFT-6V/QFT-6	ø6.50 1/2"	120	7	45.2	51.1	14	16	M4	512	
QFT-10V/QFT-10	ø10.10 3/4"	140	9	45.2	60.9	14	16	M4	512	
QFT-12V/QFT-12	ø12.80 1"	140	10	45.2	60.9	14	16	M4	512	
QFT-18V/QFT-16	ø16.10 5/8"	150	14	53.3	70.8	17	16	M4	514	
QFT-18V/QFT-19	ø19.20 3/4"	160	16	54.2	76.5	16.5	22	M4	514	
QFT-22V/QFT-22	ø22.30 7/8"	186	17	57.0	96.5	18	24.8	M4	514	
QFT-28V/QFT-28	ø28.70 1 1/8"	208	20	70.4	98.8	22	34	M4	517	
QFT-35V/QFT-35	ø35.20 1 3/8"	251	25	80.0	119.2	27	38	M4	517	
QFT-42V/QFT-42	ø41.50 1 7/8"	280	29	100.1	137.1	33	48	M6	524	
QFT-54V/QFT-54	ø54.20 2 1/8"	305	34	115.2	150.6	40.5	62	M6	524	

## Model QF-CO2 Ball Valve



### Product Description

- Model QF-CO2 ball valve is applicable to two-direction flow, can be installed freely.
- Precision cast body with stainless steel.
- No pressure drop due to the full bore structure.
- Explosion-proof stem design.
- Special seals compatible with CO2 operating environment.
- Rotation limit for both full open and close.
- Reliable structure with a secondary seal at valve stem.

### Features

- No pressure drop in flow.
- Only turn 1/4 circle to make valve full open or full close.
- Turning step for full open or full close.
- Full Open and Full Close mark on top of valve stem.
- Two-direction flow is available.
- Argon arc welded structure.
- Explosion-proof valve stem design.
- Modified PTFE sealing.
- Inside liquid accumulation is avoided.
- Could be mounted on the control panel.

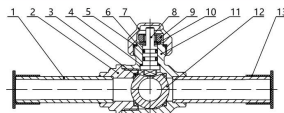
### Technical Parameters

Working temperature:	-50°C ~ +150°C
MAX Working Pressure:	12MPa

Model Selection			
Model	Size	OD(mm)	Kv(m3/h)
	OD (mm)		
QF12-CO2	12	10	10
QF16-CO2	16	14	14
QF19-CO2	19	15	20
QF22-CO2	22.3	18.2	28
QF28-CO2	28.6	24.4	52
QF35-CO2	35	29	80
QF42-CO2	41.3	35	121
QF54-CO2	56.3	48	200

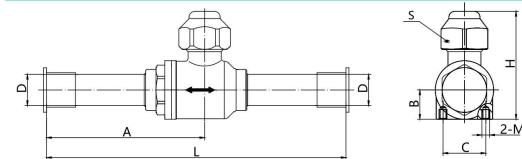
1) Kv value: the flow of water with density of 1 ton/ m<sup>3</sup> when passing through the solenoid valve under 100KPa differential pressure  
2) MOPD of gaseous medium is about 0.1MPa.

### Structure



- copper tube
- valve bonnet
- seal gasket
- A seal
- cap gasket
- Seal ring
- valve cap
- valve stem
- locknut
- Limiter
- valve body
- valve ball
- dust cap

### Overall Dimension



Model	Overall Dimension							
	D	L	H	A	B	C	M	S
QF12-CO2	φ12	131.5	50.4	68	13.2	/	M5	524
QF16-CO2	φ16	154	55.8	81.3	15	22	M5	524
QF19-CO2	φ19	168	63	89.8	19	30	M5	524
QF22-CO2	φ22.3	193.5	63	102.6	19	30	M5	524
QF28-CO2	φ28.6	213	82.8	112.3	30	30	M5	528
QF35-CO2	φ35	232.6	98.7	125	29.8	48	M6	532
QF42-CO2	φ41.3	245.3	108.5	127.1	34	55	M6	532
QF54-CO2	φ56.3	304	129.9	163	45.5	74	M6	536

# SAFETY VALVE

## *Series*

It is spring direct loaded, valve will open when the thrust exceeds the reaction force of the spring on the closure.



## Model FS/FL Safety Valve



### Product Description

The Hongsen safety valve is spring direct loaded, valve will open when the thrust exceeds the reaction force of the spring on the closure. The valve is used to installed on civil and industrial refrigeration and regulatory equipment, such as evaporator, condenser, volume compressor, liquid receiver, liquid energy

storage, heat exchanger, oil separator, pipeline and simple unbusted pressure Containers and other equipments. This valve is to avoid these equipments from possible overpressure effects due to the special design.

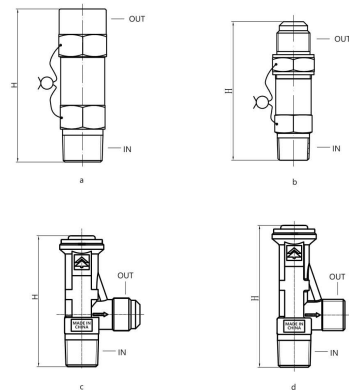
### Technical Parameters

Applicative refrigerants	CFC, HCFC, HFC
Running temperature	-50°C~150°C
Set-pressure	Hongsen standard, customization applicable

### Standard

- The volume < 50L, the safety valve connection is 3/8" -18NPT;
- The volume > 50L & < 500L, the safety valve connection is 1/2" -14NPT;
- The volume > 50L & < 1000L, the safety valve connection is 3/4" -14NPT;
- The volume > 1000L, the safety valve connection is 1" -11.5NPT.

### Overall Dimension

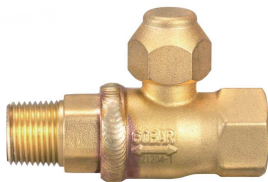


Model	Throat Diameter (Flow diameter) (mm)	H (mm)	Valve body six angle size	A Inlet form	B Outlet form	Fig.
DN25 FS-A8N8	Φ18	117	S46	1"NPT	1"NPT	a
DN20 FS-A6N6	Φ11	102	S31	3/4"NPT	3/4"NPT	a
DN15 FS-A4B5	Φ7.5	93	S25	1/2"NPT	5/8SAE	b
DN15 FS-A4B4	Φ7.5	89	S25	1/2"NPT	1/2SAE	b
DN10 FS-A3B3	Φ7	86	S25	3/8"NPT	3/8SAE	b
DN8 FS-A2B3	Φ6	84	S25	1/4"NPT	3/8SAE	b
DN15 FL-A4B5	Φ7.5	89	S25	1/2"NPT	5/8SAE	c
DN15 FL-A4B4	Φ7.5	89	S25	1/2"NPT	1/2SAE	c
DN10 FL-A3B4	Φ7	84	S25	3/8"NPT	1/2SAE	c
DN10 FL-A3B3	Φ7	84	S25	3/8"NPT	3/8SAE	c
DN8 FL-A2B3	Φ6	82	S25	1/4"NPT	3/8SAE	c
DN15 FL-A4G4	Φ7.5	96	S25	1/2"NPT	G1/2	d
DN10 FL-A3G4	Φ7.5	90	S25	3/8"NPT	G1/2	d

Hongsen standard set-pressure:

1, 2.0MPa 2, 2.4MPa 3, 2.8MPa 4, 3.1MPa 5, 3.4MPa

## Model NPT Ball Valve



### Product Description

Model NPT ball valve is a manually adjusted shut off valve, which is applicable to bidirectional flow can be applied in the liquid, heating and hot gas pipe lines of refrigeration and A/C equipment.

The special design of stem and valve ball seal with special materials ensure the superior performance under common refrigerant working environment.

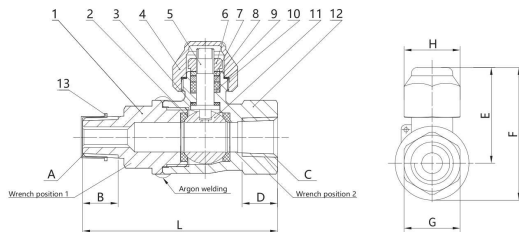
### Features

- Bi flow direction can be installed arbitrarily
- Precision forged high-quality copper valve body
- Explosion-proof stem design.
- Rotary limit design for full open/closed.
- Secondary reliable sealing structure on the valve stem
- Can be used in most kinds of common refrigerants

### Technical Parameters

MAX.Working Pressure	870PSI/60BAR
Applicable Refrigerant	R22, R134a, R404A, R407C, R410A
Applicable Medium Temperature	-40°C ~ 120°C

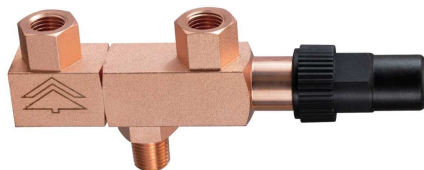
### Structure



- 1, valve bonnet
- 2, cap gasket
- 3, sealing gasket
- 4, valve cap
- 5, valve stem
- 6, lock nut
- 7, lock
- 8, clamping ring
- 9, cap gasket
- 10, Packing ring
- 11, Steel ball
- 12, Valve body
- 13, Dust cap

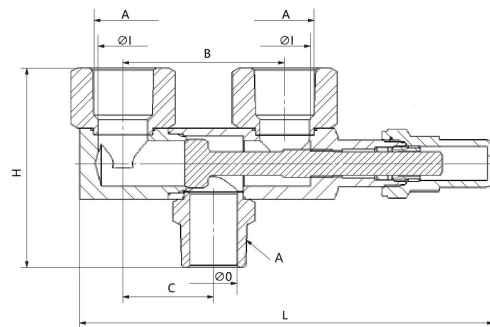
Connection Thread	A	B	C	D	E	F	G	H	L
NPT 1/4	NPT 1/4	12	NPT 1/4	12	32.4	45	S19	S19	66
NPT 3/8	NPT 3/8	13.5	NPT 3/8	13	32.4	45	S19	S19	68
NPT 1/2	NPT 1/2	18	NPT 1/2	15	39.5	55	S23	S24	79
NPT 3/4	NPT 3/4	16.5	NPT 3/4	16	41.7	59	S29	S24	90
NPT 1	NPT 1	17.5	NPT 1	17	43.4	63	S34	S24	98

## TWO-OUTLET PRESSURE RELIEF VALVE



Technical Parameters	
MAX Working Pressure	4.2Mpa
MAX Compression Pressure	6.3Mpa
Applicable MEDIUM Temperature	-40℃~150℃
Applicable Refrigerant	R22, R134a, R410A, R507A, R448A, R449A, R404A

Dimensions



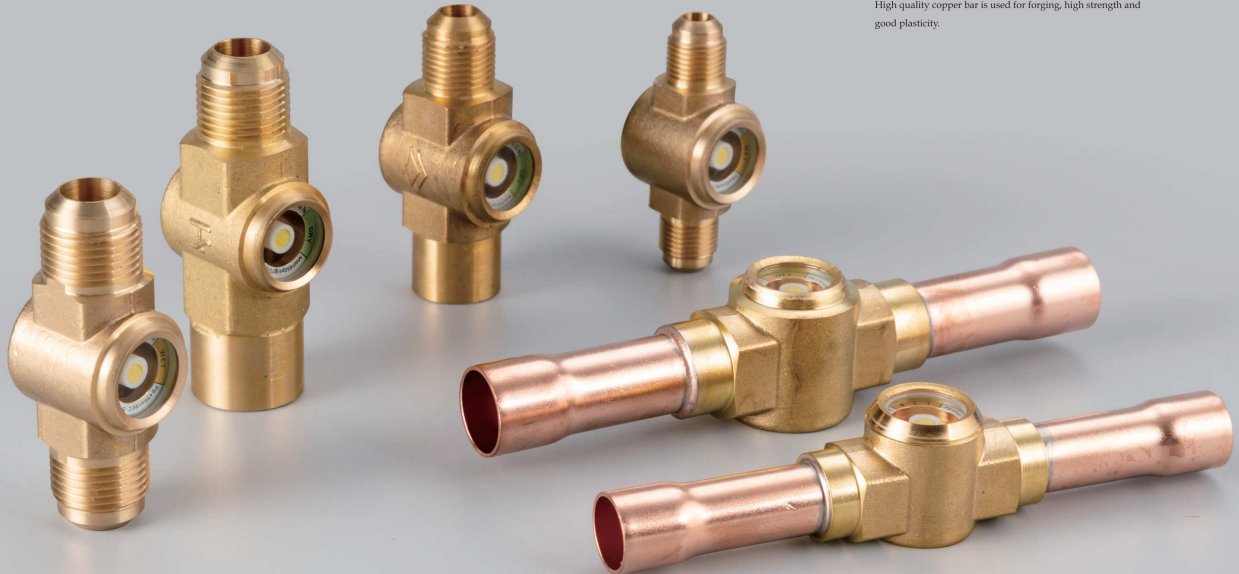
Model	Valve body	A	Ø1	Ø0	B	C	H	L
HS-2F-NPT1/4	□22	NPT1/4"-18	Ø8.5	Ø8.5	55	31.5	58	145
HS-2F-NPT3/8	□22	NPT3/8"-18	Ø11.5	Ø11	55	31.5	64	146
HS-2F-NPT1/2	□22	NPT1/2"-14	Ø13	Ø13	55	31.5	71.5	146
HS-2F-NPT3/4	□30	NPT3/4"-14	Ø19	Ø19	66	38	81	170
HS-2F-NPT1	□36	NPT1"-11.5	Ø25	Ø24	82	46	101	215



# SIGHT GLASS

## Series

The modified PTEE seal material is suitable for various refrigerants and refrigerant oils. It also has good sealing performance. The explosion-proof structure is adopted, and the observation window is clear and safe. High quality copper bar is used for forging, high strength and good plasticity.



## Model SGN Sight Glass



### Product Description

- Both Model SGN sight glass is used on the liquid piping of the refrigeration and air conditioning unit to indicate the flow condition of the refrigerant, water out of the refrigerant and lubricant oil flow condition of the oil return piping on the oil separator.
- Model SGN sight glass and is equipped with one moisture indicator which will change color to indicate the water cut in the refrigerant.

- Model SGR sight glass is used to indicate the level of the refrigerant in the liquid drum and the lubricant oil level in the compressor crankcase.
- The modified PTFE sealing is used in both Model SGN sight glass and Model SGR sight glass, which is applicable to various refrigerants and oils with perfect sealing performance. The structure of both Model SGN sight glass and Model SGR sight glass is an explosion-proof press fit and the viewing glass is clear and safety.

### Technical Parameters

Applicable Refrigerant:	H2CFC and HFC
Applicable Medium Temperature:	-40°C ~ +80°C
MAX Working Pressure	4.5MPa
MAX. Compression Pressure	6.8MPa
Yearly Leakage of Refrigerant	≤2g R22/a

Note: For the fully enclosed compressor, generally the allowable water cut is in a range 30~75ppm, but for other types of compressor, the water cut will be higher slightly. For an effective protection, it is necessary to monitor the indicator carefully and replace the drier immediately if the color is changed into yellow.

### Features

#### Model SGN

- Be applicable to HCFC/HFC refrigerants.
- Indicate high water cut in system if any.
- Indicate no overcooling in refrigerant liquid.
- Indicate insufficient charging of refrigerant if any.
- Both welded and threaded connections are available.

#### Model SGR

- Be applicable to HCFC/HFC refrigerants.
- Indicate the liquid level in the liquid drum.
- Indicate the oil level in the compressor crankcase.
- NPT threaded connection.

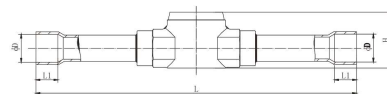
### Model Selection

Model of Welded Connection	Size	Model of Threaded Connection	Size
SGN-1/4 ODF	1/4(Φ6)	SGN-1/4 SAE	1/4 SAE
SGN-3/8 ODF	3/8(Φ10)	SGN-3/8 SAE	3/8 SAE
SGN-1/2 ODF	1/2(Φ12)	SGN-1/2 SAE	1/2 SAE
SGN-5/8 ODF	5/8(Φ16)	SGN-5/8 SAE	5/8 SAE
SGN-3/4 ODF	3/4(Φ19)	SGN-3/4 SAE	3/4 SAE
SGN-7/8 ODF	7/8(Φ22)	SGN-3/4NPT	3/4NPT
SGN-1 1/2 ODF	1 1/2(Φ28)	SGR-G3/4	G3/4

### Correlation between Water Cut and Color

	Water Cut(ppm)					
	25°C	25°C	25°C	43°C	43°C	43°C
	Green/DRY	Medium Color	Yellow/WET	Green/DRY	Medium Color	Yellow/WET
R22/R502	<30	30~120	>120	<50	50~200	>200
HFC-134a	<30	30~100	>100	<45	45~170	>170
R404a	<20	20~70	>70	<25	25~100	>100
R407c	<30	30~140	>140	<60	60~225	>225
R507	<15	15~60	>60	<30	30~110	>110

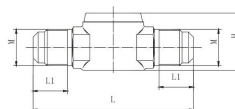
### Structure



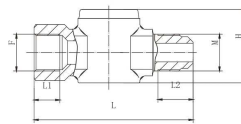
Soldering type sight glass

Model	L	L1	D	H
SGN-1/4 ODF	102	7	6.5	21.5
SGN-3/8 ODF	119	8	10.1	22.5
SGN-1/2 ODF	146	10	12.8	26.5
SGN-5/8 ODF	152	14	16.1	29.5

Model	L	L1	D	H
SGN-3/4 ODF	167	16	19.2	35
SGN-7/8 ODF	173	17	22.2	39
SGN-1 1/8 ODF	216	20	28.7	44.5



Flare type sight glass



M/F flare type sight glass

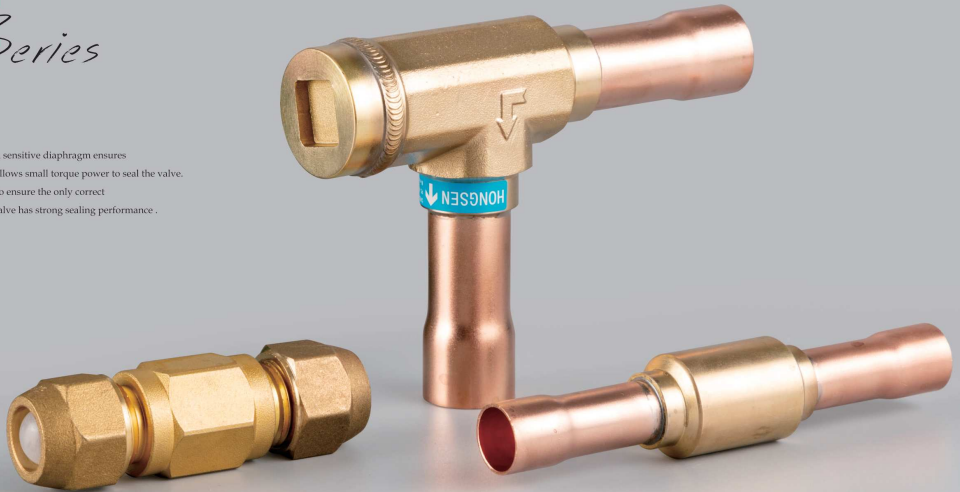
Model	L	L1	H	Thread M
SGN-1/4 SAE	64	13	21.5	7/16-20UNF
SGN-3/8 SAE	70	15	25	5/8-18UNF
SGN-1/2 SAE	75	16	26.5	3/4-16UNF
SGN-5/8 SAE	80	18	29.5	7/8-14UNF
SGN-3/4 SAE	90	20.5	35	1-1/16-14UNS

Model	L	L1	L2	H	Thread F/M
SGN-1/4-MF	60	8.5	12	25	7/16-20UNF
SGN-3/8-MF	68	11	15	31.5	5/8-18UNF
SGN-1/2-MF	70	11.5	16	34.5	3/4-16UNF
SGN-5/8-MF	78	13	18	38	7/8-14UNF

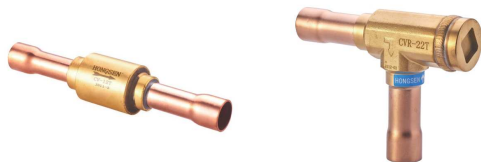
# CHECK VALVE/ SHUT OFF VALVE

*Series*

(Hand valve) High sensitive diaphragm ensures good sealing, and allows small torque power to seal the valve.  
One-way Valve) To ensure the only correct direction of flow, valve has strong sealing performance .



## Model CV Check Valve



### Product Description

- Model CV check valve is used on the piping of liquid, suction gas or hot air on the freezing, cold storage and air conditioner units.
- The valve seat and seals of Model CV check valve have excellent sealing

- performance.
- For Model CV check valve, both threaded and welded connections are available.

### Features

- Ensure one flow direction and avoid reversal
- With the built-in damper and could be mounted on the piping with pressure pulsation.
- Prevent refrigerant back flow from high temperature evaporator to low temperature

- evaporator.
- Applicable to the refrigeration unit in parallel with compressor.
- Both direct flow type and right-angle type are available.

### Technical Parameters

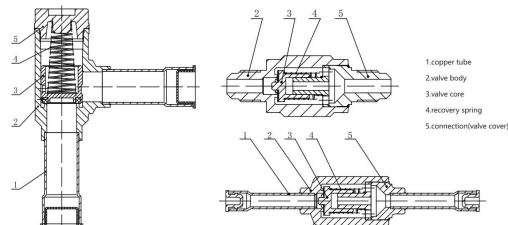
Applicable Refrigerant:	HCFC or HFC(Customer specified)
Applicable Medium Temperature:	-50°C ~ +140°C
MAX Working Pressure	46bar
Maximum Test Pressure	60bar

### Model Selection

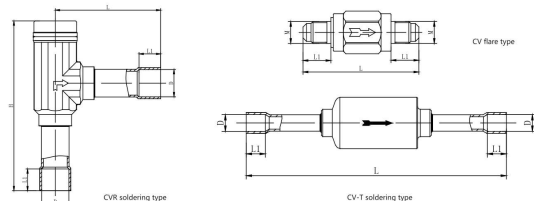
Model	Type	Spas		LD (mm)	Kv(m <sup>3</sup> /h)
		Flare	Welded		
CV-6	Straight-through type	1/4 SAE	/	4.8	0.56
CV-6T	Straight-through type	/	1/4 ODF	4.8	0.56
CV-10	Straight-through type	3/8 SAE	/	8	1.43
CV-10GT	Straight-through type	/	3/8 ODF	8	1.43
CV-12	Straight-through type	1/2 SAE	/	10	2.05
CV-12T	Straight-through type	/	1/2 ODF	10	2.05
CV-16	Straight-through type	5/8 SAE	/	13	3.60
CV-16T	Straight-through type	/	5/8 ODF	13	3.60
CV-19	Straight-through type	3/4 SAE	/	16	5.50
CV-19T	Straight-through type	/	3/4 ODF	16	5.50
CV-22	Right angle type	7/8 ODF	/	19	8.50
CVRH-28	Right angle type	/	1-1/8 ODF	26	19.0
CVRH-35	Right angle type	/	1-3/8 ODF	31	29.0
CVRH-42	Right angle type	/	1-5/8 ODF	31	30.0

1) Kv value: When the pressure differential is 100KPa, the flowrate at m<sup>3</sup>/h water in density 1 t/m<sup>3</sup> flows through the solenoid valve.

### Structure



### Overall Dimension



Model	Overall Dimension				
	L	M	L1	S	
CV-6	58	7/16-20UNF	14	19	
CV-10	62	5/8-18UNF	16	21	
CV-12	68	3/4-16UNF	18	24	
CV-16	78	7/8-14UNF	21	27	
CV-19	90	1-1/16-14UNF	24	32	
CV-21	L	D	L		
CV-21	95	φ6.5 <sup>±0.15</sup>	7		
CV-10GT	109	φ10.5 <sup>±0.15</sup>	8		
CV-12T	119	φ12.8 <sup>±0.15</sup>	10		
CV-16T	138	φ16.1 <sup>±0.15</sup>	14		
CV-19T	150	φ19.2 <sup>±0.15</sup>	16		
CV-22	84	φ23.2 <sup>±0.15</sup>	L1	11	
CVRH-28	113	φ28.7 <sup>±0.15</sup>	17	136.5	
CVRH-35	126	φ35.2 <sup>±0.15</sup>	25	184	
CVRH-42	126	φ41.5 <sup>±0.15</sup>	29	197	

Nite(1) Nut is excluded from above mentioned weight. (2) Nut weight:1/4-18g,3/8-30g,1/2-33g,5/8-50g and 3/4-93g.

## Model KM Diaphragm Hand Valve



### Product Description

- Model KM hand valve is a manually operated diaphragm stop valve for one-way flow control.
- Model KM hand valve is mounted on the liquid, air suction and hot air piping in the refrigeration, cold storage and air conditioner.
- Two types of connection are available for Model KM hand valve, that is,

threaded connection (SAE) with threading size 1/4 SAE to 3/4 SAE and welded connection both ODF, structure hand valves have connection size 1/4" to 7/8" .

- All Model KM hand valves are equipped with mounting hole for the installation on the instrument panel.

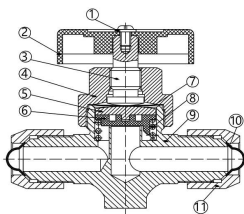
### Features

- There are 2 pieces of stainless steel diaphragm to prevent the hand valve from leakage during the whole service life of the hand valve.
- The elastic sealing is used on the valve port so that the hand valve could be shut off by small torque.
- The special valve bonnet design is used to prevent the hand valve from water or dust penetration.
- The hand valve is easy to be operated for full open or half open just by turning the valve stem for one and half turn.

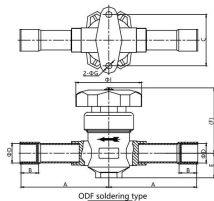
### Technical Parameters

Applicable Refrigerant:	HCFC, HFC
Applicable Medium Temperature:	-25°C~+100°C
MAX Working Pressure	3.0MPa
Scope of Operating Pressure	-0.1MPa~2.1MPa
Maximum Hydrostatic Test Pressure	4.5MPa

### Structure



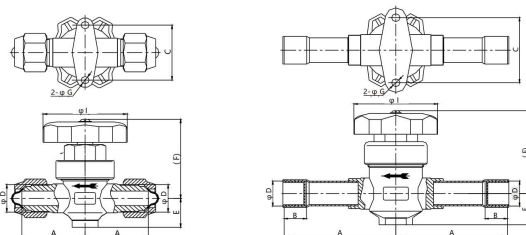
- screw
- hand wheel
- valve stem
- valve bonnet
- copper sheet
- valve element
- diaphragm
- spring
- valve body
- nut (piping nut)



### Model Selection

Model	Flare	Welded(with copper tube)	Kv(m³/h)
KM-1/4	1/4 SAE	1/4 ODF	0.25
KM-3/8	3/8 SAE	3/8 ODF	0.30
KM-1/2	1/2 SAE	1/2 ODF	1.30
KM-5/8	5/8 SAE	5/8 ODF	1.80
KM-3/4	3/4 SAE	3/4 ODF	3.65
KM-7/8	—	7/8 ODF	3.65

### Overall Dimension



Model	Overall Dimension										
	A	B	C	ΦD	E	(F)	ΦG	ΦI	S	N	Thread M
1/4 SAE	28.5	—	—	—	—	—	—	—	—	S17	7/16-20UNF
1/4 ODF	51	7	36	6.5	14	(53)	Φ4.5	—	S18	—	—
3/8 SAE	31	—	—	—	—	—	—	—	—	S22	5/8-18UNF
3/8 ODF	59	8	—	9.7	—	—	—	—	—	—	—
1/2 SAE	39	—	—	—	—	—	—	—	—	S24	3/4-16UNF
1/2 ODF	66	10	38	12.8	19	(57)	Φ5	—	S22	—	—
5/8 SAE	39	—	—	—	—	—	—	—	—	S27	7/8-14UNF
5/8 ODF	74	14	—	16.1	—	—	—	—	—	—	—
3/4 SAE	50	—	—	—	—	—	—	—	—	S32	1-1/16-14UNS
3/4 ODF	80	16	50	19.1	24	(64)	Φ6	Φ60	S27	—	—
7/8 ODF	80	17	—	22.3	—	—	—	Φ71	—	—	—

# VIBRATION RESISTANT CORRUGATED METAL HOSE

*Series*

The hose can be moderately bent and has good fatigue resistance.

Suitable for all refrigerants, Trinity welding joint, mesh, ring with argon arc welding, with safety, high strength, corrosion resistance, heat resistance.

It has good shock absorption and compensation thermal displacement.



## VAFX Type vibration Eliminator



### Product Description

- VAFX Type vibration Eliminator is designed to be assembled in refrigeration or air conditioning system to lower the vibration from compressors.

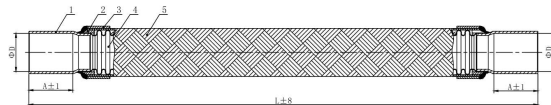
### Features

- SUS316L corrugated pipe supports with high corrosion resistance
- Trinity Argon Arc welding of wire sleeve, pipe connector and clamping ring makes the vibration eliminator stronger and more safety.
- Perfect vibration resistance and good compensation for the heat displacement.

### Technical Parameters

Applicable Refrigerants	HCFC/RFC
Applicable Medium Temp	-40°C ~ +150°C
MAX Working Pressure	See Model Selection table
Maximum Proof Pressure	1.5 time of the M.W.P.

### Configuration



1.Copper bush; 2.Pipe Connector; 3.Clamping Ring.; 4.Corrugated Pipe; 5.Wire Sleeveing

Model Selection							
Type	Size	Outline Dimension (mm)			Max.Working Pressure (MPa)	Min.Bending Radius (mm)	
		A	L	D		Static(R <sub>l</sub> )	Dynamic(R <sub>d</sub> )
VAFX-038-10	3/8	16	210	9.70 <sup>+0.15</sup> <sub>-0.15</sub>	4.5	80	180
VAFX-012-12	1/2	18	230	12.80 <sup>+0.2</sup> <sub>-0.2</sub>		95	215
VAFX-058-16	5/8	20	250	16.10 <sup>+0.2</sup> <sub>-0.2</sub>		120	270
VAFX-034-19	3/4	22	260	19.10 <sup>+0.2</sup> <sub>-0.2</sub>		145	325
VAFX-078-22	7/8	26	300	22.30 <sup>+0.2</sup> <sub>-0.2</sub>		160	360
VAFX-100-25	1	32	330	25.60 <sup>+0.2</sup> <sub>-0.2</sub>		175	400
VAFX-118-28	1-1/8	30	330	28.70 <sup>+0.2</sup> <sub>-0.2</sub>	4.2	175	400
VAFX-114-32	1-1/4	50	400	32.10 <sup>+0.2</sup> <sub>-0.2</sub>		225	510
VAFX-138-35	1-3/8	35	400	35.20 <sup>+0.2</sup> <sub>-0.2</sub>		225	510
VAFX-158-42	1-5/8	42	400	41.50 <sup>+0.20</sup> <sub>-0.20</sub>	3.0	280	640

## VAF Type Vibration Eliminator



### Product Description

- VAF Type vibration Eliminator is designed to be assembled in refrigeration or air conditioning system to lower the vibration from compressors.

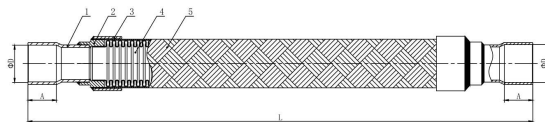
### Features

- SUS316L corrugated pipe supports with high corrosion resistance
- Wide application range (can be also adopted in automotive A/C)
- Trinity Argon Arc welding of wire sleeve, pipe connector and clamping ring makes the vibration eliminator stronger and more safety
- Perfect vibration resistance and good compensation for the heat displacement.
- Furnace brazing between the connector and the corrugated pipe
- VAF Type vibration Eliminator has been proved by UL.
- provides steady welding quality.

### Technical Parameters

Applicable Refrigerants	HFC/C/HFC
Applicable Medium Temp	-40°C ~ +150°C
MAX Working Pressure	See Model Selection table
Maximum Proof Pressure	1.5 time of the M.W.P.

### Configuration



1.Copper bush; 2.Pipe Connector; 3.Clamping Ring.; 4.Corrugated Pipe.; 5.Wire Sleeveing

### Model Selection

Type	Size	Outline Dimension (mm)			Max. Working Pressure (MPa)	Min. Bending Radius (mm)	
		A	L	D		Static(R)	Dynamic(Rd)
VAF-038-18	3/8	16	230	9.70 <sup>+0.10</sup> <sub>-0.10</sub>	6.0	80	180
VAF-012-12	1/2	10	250	12.80 <sup>+0.1</sup> <sub>-0.1</sub>		95	215
VAF-058-16	5/8	12	270	16.10 <sup>+0.1</sup> <sub>-0.1</sub>		120	270
VAF-034-19	3/4	14	290	19.10 <sup>+0.1</sup> <sub>-0.1</sub>		145	325
VAF-078-22	7/8	17	300	22.30 <sup>+0.1</sup> <sub>-0.1</sub>		160	360
VAF-100-25	1	20	330	25.60 <sup>+0.1</sup> <sub>-0.1</sub>	5.0	175	400
VAF-118-28	1-1/8	20	330	28.70 <sup>+0.1</sup> <sub>-0.1</sub>		175	400
VAF-114-32	1-1/4	38	380	32.10 <sup>+0.1</sup> <sub>-0.1</sub>		225	510
VAF-138-35	1-3/8	25	380	35.20 <sup>+0.1</sup> <sub>-0.1</sub>		225	510
VAF-158-42	1-5/8	30	430	41.50 <sup>+0.15</sup> <sub>-0.15</sub>	4.5	280	640
VAF-218-54	2-1/8	65	520	54.20 <sup>+0.15</sup> <sub>-0.15</sub>	2.3	350	800
VAF-258-67	2-5/8	75	610	66.80 <sup>+0.15</sup> <sub>-0.15</sub>		390	845
VAF-318-79	3-1/8	80	680	79.60 <sup>+0.15</sup> <sub>-0.15</sub>		480	1000



# DRY FILTER

## Series



100% 3A filter cartridge with powerful drying capacity, not mutual mobile, avoid the powder production

With a filter fineness of 25  $\mu\text{m}$ . Corrosion resistant powder coating finish is applicable to various environments. Threaded connection and welded connection is normal design and customer design is available. Could be mounted in any desirable direction.

## BFK Bidirectional Dry Filter

### Product Description

- BFK bidirectional dry filter is used on the liquid piping of refrigeration and air conditioning unit to dry refrigerant (absorb water from system) and filter the solid from system in order to protect the refrigeration and air conditioning system for an efficient and safety operation.
- Model BFK bidirectional dry filter is composed of 80% 3A molecular sieve & 20% active aluminum with 25um filter cartridge.
- The filter core of 80% molecular sieve & 20% active aluminum can be used be for HFC and HCFC refrigerants and synthesized polyester oil (POE or PAG) system.



### Features

- Filter cartridge of 80% 3A molecular sieve and 20% active aluminum filter cartridge presents powerful drying capacity and powerful deacidification capacity.
- With a filter fineness of 25 µm. Corrosion resistant powder coating finish is

applicable to various environments. Threaded connection and welded connection is normal design and customer design is available. Could be mounted in any desirable direction.

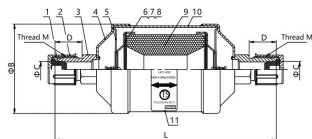
### Configuration

- Thread:
- 1.rubber plug
  - 2.thread cap
  - 3.steel connector
  - 4.end cap
  - 5.circuit change valve
  - 6.filter net
  - 7.fine filter
  - 8.filter pad
  - 9.solid filter cartridge
  - 10.barrel
  - 11.label

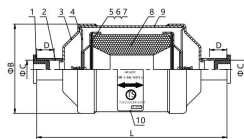
- Soldering:
- 1.rubber plug
  - 2.welding pipe
  - 3.end cap
  - 4.circuit change valve
  - 5.filter net
  - 6.fine filter
  - 7.filter pad
  - 8.solid filter cartridge
  - 9.barrel
  - 10.label

### Technical Parameters

Applicable Refrigerant:	HCFC, HFC
Applicable Medium Temperature:	-40℃--120℃
Maximum Working Pressure	4.5MPa
Maximum Test Pressure	6.75MPa



Thread



Product Model			
Thread			
Model			Size
BFK-083	BFK-163	BFK-303	3/8 SAE
BFK-084	BFK-164	BFK-304	1/2 SAE
BFK-085	BFK-165	BFK-305	5/8 SAE
---	---	BFK-306	3/4 SAE
---	---	---	---
---	---	---	---

Product Model			
Soldering			
Model			Size
BFK-083S	BFK-163S	BFK-303S	3/8 ODF
BFK-084S	BFK-164S	BFK-304S	1/2 ODF
BFK-085S	BFK-165S	BFK-305S	5/8 ODF
---	---	BFK-306S	3/4 ODF
---	---	BFK-307S	7/8 ODF
---	---	BFK-309S	1-1/8 ODF

### SAE Flare connection

型号 Model	接口 Connection	ΦB	ΦC	D	L	S	螺纹 Thread M
BFK-083	3/8 SAE	Φ66.5	Φ8	17	158	16	5/8-18UNF
BFK-084	1/2 SAE	Φ66.5	Φ10	19	165	19	3/4-18UNF
BFK-085	5/8 SAE	Φ66.5	Φ13	23.5	176	22	7/8-14UNF
BFK-163	3/8 SAE	Φ79	Φ8	17	170	16	5/8-18UNF
BFK-164	1/2 SAE	Φ79	Φ10	19	179	19	3/4-18UNF
BFK-165	5/8 SAE	Φ79	Φ13	23.5	186	22	7/8-14UNF
BFK-303	3/8 SAE	Φ79	Φ8	17	245	16	5/8-18UNF
BFK-304	1/2 SAE	Φ79	Φ10	19	254	19	3/4-18UNF
BFK-305	5/8 SAE	Φ79	Φ13	23.5	261	22	7/8-14UNF
BFK-306	3/4 SAE	Φ79	Φ16	25	265	27	1-1/16-14UNS

### ODF Welding connection

型号 Model	接口 Connection	ΦB	ΦC	D	L
BFK-083S	3/8 ODF	Φ66.5	Φ9.7	9	141
BFK-084S	1/2 ODF	Φ66.5	Φ12.8	11	149
BFK-085S	5/8 ODF	Φ66.5	Φ16.1	11	149
BFK-163S	3/8 ODF	Φ79	Φ9.7	9	153
BFK-164S	1/2 ODF	Φ79	Φ12.8	11	161
BFK-165S	5/8 ODF	Φ79	Φ16.1	11	161
BFK-303S	3/8 ODF	Φ79	Φ9.7	9	228
BFK-304S	1/2 ODF	Φ79	Φ12.8	11	236
BFK-305S	5/8 ODF	Φ79	Φ16.1	11	236
BFK-306S	3/4 ODF	Φ79	Φ19.1	12	241
BFK-307S	7/8 ODF	Φ79	Φ22.3	15	247
BFK-309S	1-1/8 ODF	Φ79	Φ28.7	16	256

# Model DFS Dry Filter

## Product Description

- Model DFS dry filter is used on the liquid piping of refrigeration and air conditioning unit to dry refrigerant (absorb water from system) and filter the solid from system in order to protect the refrigeration and air conditioning system for an efficient and safety operation.
- Model DFS dry filter is composed of 100% 3A molecular sieve and 25um filter cartridge.
- Model DFS dry filter's molecular sieve is 100% 3A solid filter cartridge. This solid filter is used for HFC and HCFC refrigerants and synthesized polyester oil (POE or PAG) system.



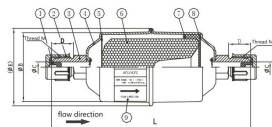
## Features

- 100% 3A filter cartridge with powerful drying capacity, not mutual mobile, avoid the powder production.
- With a filter fineness of 25 µm. Corrosion resistant powder coating

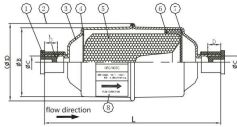
finish is applicable to various environments. Threaded connection and welded connection is normal design and customer design is available. Could be mounted in any desirable direction.

## Configuration

- Thread:
- 1.rubber plug
  - 2.thread cap
  - 3.steel connector
  - 4.steel cup
  - 5.barrier
  - 6.solid filter cartridge
  - 7.filter pad
  - 8.filter net
  - 9.label
- Soldering:
- 1.rubber plug hat
  - 2.welding pipe
  - 3.steel cup
  - 4.barrier
  - 5.solid filter cartridge
  - 6.filter pad
  - 7.filter net
  - 8.label



Flare



Welding

## Technical Parameters

Applicable Refrigerant:	HFC, HFC
Applicable Medium Temperature:	-40°C~+120°C
Maximum Working Pressure	4.5MPa
Maximum Test Pressure	6.75MPa

Product Model					
Flare					
Model				Size	
DFS-052	---	---	---	1/4 SAE	
DFS-053	DFS-083	DFS-163	---	3/8 SAE	
---	DFS-084	DFS-164	DFS-304	1/2 SAE	
---	DFS-085	DFS-165	DFS-305	5/8 SAE	
---	---	---	DFS-306	3/4 SAE	
---	---	---	---	---	

Product Model					
Welding					
Model				Size	
DFS-052S	-----	-----	-----	1/4ODF	
DFS-053S	DFS-083S	DFS-163S	-----	3/8ODF	
-----	DFS-084S	DFS-164S	DFS-304S	1/2ODF	
-----	DFS-085S	DFS-165S	DFS-305S	5/8ODF	
-----	-----	-----	DFS-306S	3/4ODF	
-----	-----	-----	DFS-307S	7/8ODF	
-----	-----	-----	DFS-309S	1-1/8ODF	

## SAE Flare connection

型号 Model	接口Connection	ΦB	ΦC	D	ΦE	L	S	螺纹 Thread M
DFS-032	1/4 SAE	Φ43	Φ4.8	14	Φ46	110	14	7/16-20UNF
DFS-033	3/8 SAE	Φ43	Φ8	17	Φ46	119	16	5/8-18UNF
DFS-052	1/4 SAE	Φ54	Φ4.8	14	Φ57	118	14	7/16-20UNF
DFS-053	3/8 SAE	Φ54	Φ8	17	Φ57	127	16	5/8-18UNF
DFS-083	3/8 SAE	Φ54	Φ8	17	Φ57	152	16	5/8-18UNF
DFS-084	1/2 SAE	Φ54	Φ10	19	Φ57	159	19	3/4-16UNF
DFS-085	5/8 SAE	Φ54	Φ13	23.5	Φ57	170	22	7/8-14UNF
DFS-163	3/8 SAE	Φ75	Φ8	17	Φ79	159	16	5/8-18UNF
DFS-164	1/2 SAE	Φ75	Φ10	19	Φ79	166	19	3/4-16UNF
DFS-165	5/8 SAE	Φ75	Φ13	23.5	Φ79	177	22	7/8-14UNF
DFS-304	1/2 SAE	Φ79	Φ10	19	Φ79	256	19	3/4-16UNF
DFS-305	5/8 SAE	Φ79	Φ13	23.5	Φ79	267	22	7/8-14UNF
DFS-306	3/4 SAE	Φ79	Φ16	25	Φ79	268	27	1-1/8-UNS

## ODF Welding connection

型号 Model	接口 Connection	ΦB	ΦC	D	ΦE	L
DFS-032S	1/4 ODF	Φ43	Φ6.5	8	Φ46	99
DFS-033S	3/8 ODF	Φ43	Φ9.7	9	Φ46	101
DFS-052S	1/4 ODF	Φ54	Φ6.5	8	Φ57	107
DFS-053S	3/8 ODF	Φ54	Φ9.7	9	Φ57	109
DFS-083S	3/8 ODF	Φ54	Φ9.7	9	Φ57	134
DFS-084S	1/2 ODF	Φ54	Φ12.8	11	Φ57	142
DFS-085S	5/8 ODF	Φ54	Φ16.1	11	Φ57	142
DFS-163S	3/8 ODF	Φ75	Φ9.7	9	Φ79	142
DFS-164S	1/2 ODF	Φ75	Φ12.8	11	Φ79	150
DFS-165S	5/8 ODF	Φ75	Φ16.1	11	Φ79	150
DFS-304S	1/2 ODF	Φ79	Φ12.8	11	Φ79	239
DFS-305S	5/8 ODF	Φ79	Φ16.1	11	Φ79	239
DFS-306S	3/4 ODF	Φ79	Φ19.1	12	Φ79	244
DFS-307S	7/8 ODF	Φ79	Φ22.3	15	Φ79	250
DFS-309S	1-1/8 ODF	Φ79	Φ28.7	16	Φ79	259

## Model DFS Replaceable Dry Filter Cartridge



### Product Description

• Model DFS dry filter cartridge is installed on the liquid and vapor piping, which could effectively remove any residual contaminant to protect compressor for a longer service life.

• The filter element of Model DFS dry filter cartridge is replaceable and it is capable to absorb large amount of water in the system in case the compressor motor burns up.

### Features

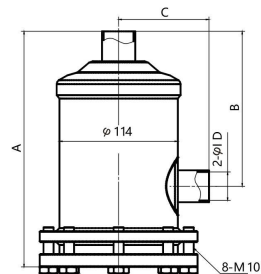
- Removable structure for convenient installation and maintenance;
- 100 mesh outlet filter screen;
- Full pass through design to minimize pressure drop;
- Steel casing, copper pipe welded connection, high frequency welding

- Flanging structure to improve welding reliability;
- Modified Teflon new material to ensure perfect sealing;
- Outer surface applies epoxy resin coating protection.

### Technical Parameters

Suitable Refrigerants	HCFC, HFC, CFC
Suitable Medium Temperature	-35°C~+70°C
Maximum Working Pressure	4.2MPa
Maximum Test Pressure	6.3MPa

Model Selection						
Type	Connections To solder ID (inch)	Number of cores	Filtering surface(㎡)	Dimensions (mm)		
				A	B	C
DFS-4855	5/8ODF	1	420	234	153	85
DFS-4865	3/4ODF			234	153	85
DFS-4875	7/8ODF			234	153	85
DFS-4895	1-1/8ODF			236	155	87
DFS-48115	1-3/8ODF			240	159	91
DFS-48135	1-5/8ODF			242	161	93
DFS-48175	2-1/8ODF			246	160	99
DFS-48215	2-5/8ODF			244	158	106
DFS-9675	7/8ODF	2	840	376	295	85
DFS-9695	1-1/8ODF			378	297	87
DFS-96115	1-3/8ODF			382	301	91
DFS-96135	1-5/8ODF			384	303	93
DFS-96175	2-1/8ODF			388	302	99
DFS-96215	2-5/8ODF			386	300	106
DFS-14495	1-1/8ODF	3	1260	520	439	87
DFS-144115	1-3/8ODF			524	443	91
DFS-144135	1-5/8ODF			526	445	93
DFS-144175	2-1/8ODF			530	444	99
DFS-144215	2-5/8ODF			528	442	106





# YL TYPE OIL FLOW SWITCH

*Series*

REFRIGERATION & A/C SYSTEM ACCESSORIES

- No need for external power supply;
- Apply world-renowned reed switch, high reliability;
- Silicone rubber lead wire, good oil resistance;
- With brazing joints for pipeline welding;



HONGSEN

## YL type oil flow switch



### Product Description

• The magnetic piston compresses the spring under the action of the fluid thrust, the reed switch will be turned on when the fluid flow reaches the set value, then electrical circuit output signal will be formed to control the valve.

When the fluid flow decreases, the reed switch will be turned off and the electrical signal will be off. Mainly applied for flow monitoring of water and oil media.

### Features

• No need for external power supply;  
• Apply world-renowned reed switch , high reliability;

• Silicone rubber lead wire, good oil resistance;  
• With brazing joints for pipeline welding;

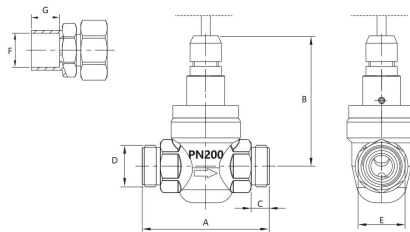
### Technical Parameters

Applicable media	water; oil	<p>• Capillary length of T-type thermostatic expansion valve: 5m in standard; under special situation, it can be customized based on clients' requirements.</p>
Ambient temperature	-20~+70°C	
Medium temperature	-20~+110°C	
Switch form	Normal open	
Rated voltage	AC 220V	
Current	Max.1A	
Contact rating	70W / 50W	
Protection level	IP65	
Cable length	1M	

### Model Selection

Model	Working pressure	MAX. Flow (L/min) <sup>1/2</sup>	Cut-off value (L/min)	Weight (Kg)
YL15-040-16	200	15	4±0.3	0.7
YL15-060-19			6±0.3	
YL15-100-22		20	10±0.3	

### Dimensions



Model	A	B	C	D	E	F	G
YL15-040-16	77	78	11	1"-14UN3	29	ø16.2	16
YL15-060-19	77	78	11	1"-14UN3	29	ø19.2	16
YL15-100-22	77	78	11	1"-14UN3	29	ø22.3	16

# FITTING *Series*

High class pressure gauge,  
complete accessories arrange,  
quality sealing material,  
available for more refrigerants.

REFRIGERATION & A/C SYSTEM ACCESSORIES

HONGSEN





## Oil-filled(vacuum)Pressure Gauge



**242# (Y63)**  
(-5°C ~ +120°C)

**128# (ZY63)**  
(-40°C ~ +120°C)

**191# (ZY63)**  
(-40°C ~ +120°C)

### Product Description

- The pressure gauge is a vibration-proof pressure gauge with oil filled inside for refrigeration use only.
- The oil-filled pressure gauge is used on freezer, cold store and air-conditioning unit.
- The oil-filled pressure gauge is convenient in application as it features one gauge for multiple refrigerants.
- The oil-filled pressure gauge has full stainless steel casing and wider beryllium bronze spring tube.
- The oil-filled pressure gauge is an axial pressure gauge with edges for flange joint.

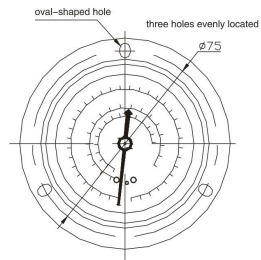
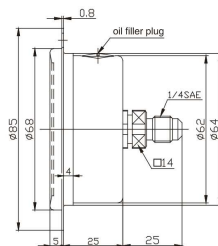
### Features

- The inside filled oil functions damping to the high frequency vibration of machinery.
- The damping oil cup prevents gauge pointer from quick jumping.
- The flanged edge is for convenient mounting.
- Over-pressure limit stop is equipped.
- Zero error is ensured with strengthening overpressure measures.
- Rational oil seal design and no oil leakage worry.
- Pressure versus Temperature readings for easy use.
- Extra long service life.

### Technical Parameters

Applicable Refrigerant	HCTC and HFC
Applicable Medium Temperature	-5°C ~ +120°C (-40°C ~ +120°C)
Connection Size	1/4SAE
Structure	Axial concentrically-embedded
Casing Nominal Diameter	2.5 in(Φ63.5)
Accuracy Class	class 1.6

### Overall Dimension



model	Oil-filled (vacuum) pressure Gauge		
Technical Parameters	Code Number: 242#	Code Number: 128#	Code Number: 191#
	Connector: 1/4SAE (ZY63)	Connector: 1/4SAE (ZY63)	Connector: 1/4SAE (ZY63)
	Application: R22 R134a R404A R407C	Application: R410A	Application: R22 R134a R404A R407C
Features	<ul style="list-style-type: none"> <li>Imported high precision gauge internal</li> <li>Special overpressure limiting device</li> <li>Micro-adjustable zero</li> </ul>		

## Charging valve



### Product Description

- The charging valve is an one-way service valve with valve inside.
- The charging valve is used on the freezer, cold store and air-conditioning unit.

### Features

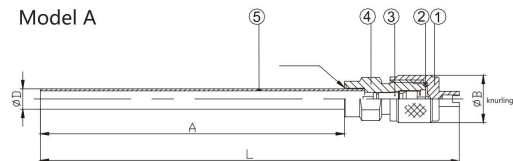
- Equipped with imported valve inside of reliable performance.
- Double sealing ensure leak-tight.
- Copper tube of various lengths and hardness are available.
- Valve bonnet is knurled for easy handling.

### Technical Parameters

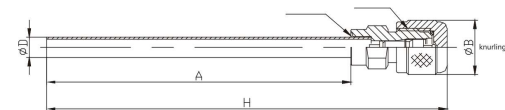
Applicable Refrigerant	HCFC and HFC
Applicable Medium Temperature	-25°C ~ +120°C
Max. Operating Pressure	3.0MPa
Max. Allowable Pressure	4.5MPa

### Configuration

Model A



Model B



1. valve bonnet  
2. O-ring  
3. valve core  
4. valve body  
5. copper tube

### Model Selection

Type	Connection	Size	Overall Dimension					Hexagonal S	Thread M	Weight(g)
			A	B	ØD	H	L			
Type A	1/4SAE	1/8	60	14	3.17	---	94	11	7/16-20UNF	22
	1/4SAE	3/16	60	14	4.76	---	94	11	7/16-20UNF	23
	1/4SAE	1/4	90	14	6.35	---	124	11	7/16-20UNF	28
Type B	1/4SAE	1/4	90	14	6.35	118	---	12	7/16-20UNF	30
	1/2SAE	1/4	90	16	6.35	118	---	14	1/2-20UNF	39
	1/2SAE	1/4	90	16	6.35	118	---	14	1/2-16UNF	40

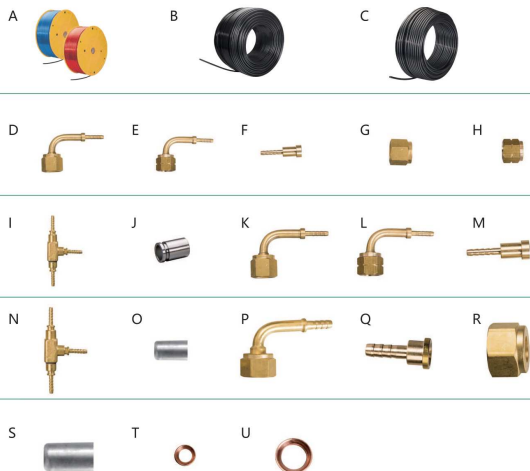
Note: A, H, L can be customized

## Type HMG High Pressure Hose and Fittings

### Product Description

• Type HMG hose is a flexible connection piece and it is mainly used as compressor suction and/or exhaust tube in the refrigeration, cold storage and air conditioning facilities.

### Model Selection



### Features

• Made of high quality nylon and polyester. High pressure resistance, high temperature resistance and high ageing resistance. Small flow resistance due to its smooth internal wall.

Eliminate the shortcomings of copper tube such as soldering failure, leakage, noise and difficult service. Selectable length at ease and short the connection operation time, improve the technical reliability obviously.

### Technical Parameters

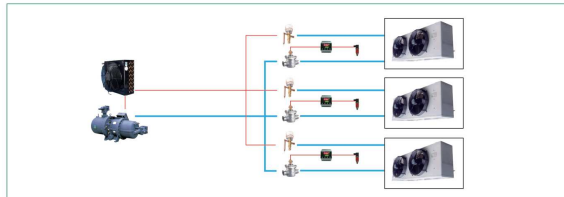
Applicable Refrigerant	HCFE and HFC
Applicable Medium Temperature	-40°C ~ +100°C

### Model Selection

Code	Type	Description	ID	OD	Max. Working Pressure MPa	Blasting Test Pressure MPa
A	HS-HMG-2	high pressure hose Φ2	Φ2.5	Φ5.6	5.5	30
B	HS-HMG-4	high pressure hose Φ4	Φ3.4	Φ7.8	5.5	30
C	HS-HMG-8	high pressure hose Φ8	Φ6.2	Φ10.5	4.2	20
D	Φ2.6×1/4"	90° bend core with 1/4" nut 1/4"	Φ1.0	Φ2.6		
E	Φ2.6×Dg4	Dg4 90° bend core with Dg4 nut	Φ1.0	Φ2.6		
F	Φ2.6	straight core	Φ1.0	Φ2.6		
G	1/4"	1/4" nut				
H	Dg4	Dg4 nut				
I	Φ2.6	Tee	Φ1.0	Φ2.6		
J	Φ5.9×12.3	aluminum sleeve	Φ5.9	Φ8		
K	Φ3.5×1/4"	90° bend core with 1/4" nut	Φ1.7	Φ3.5		
L	Φ3.5×Dg4	90° bend core with Dg4 nut	Φ1.7	Φ3.5		
M	Φ3.5	straight core	Φ1.7	Φ3.5		
N	Φ3.5	Tee	Φ1.7	Φ3.5		
O	Φ8×18	Aluminium sleeve	Φ8	Φ11		
P	Φ6.3×3/8"	90° bend core with 3/8" nut	Φ3.2	Φ6.3		
Q	Φ6.3	straight core	Φ3.2	Φ6.3		
R	3/8"	3/8" nut				
S	Φ10.8×18	Aluminium sleeve	Φ10.8	Φ13.1		
T	1/4"	copper seal ring				
U	3/8"	copper seal ring				

## Evaporation pressure control

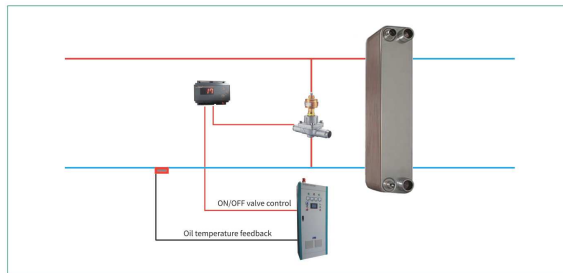
Project case: Multi-temperature variable temperature cold storage(+10℃~0℃, -5℃~-15℃, -18℃~-25℃)



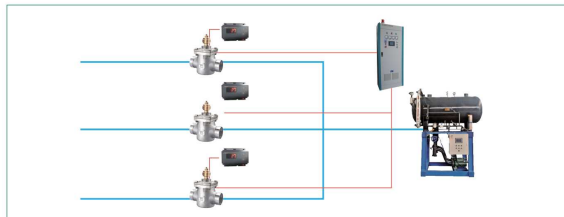
### Features

- For multi-temperature cold rooms within one single system
- For stable and adjustable temperature in cold room

## Constant temperature control: Oil temperature $\pm 1^{\circ}\text{C}$



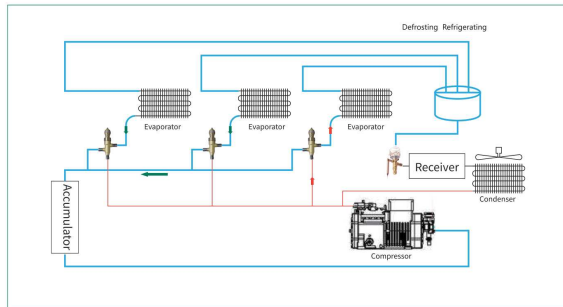
## Liquid supplement in barrel pump system



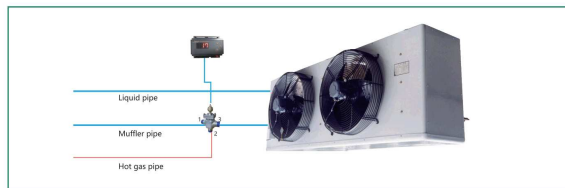
### Features

- Work at  $\Delta P=0$
- Avoid liquid hammer
- Average the flow by adjust the open degree
- Step open

## 3-way regulating valve applied for defrosting control



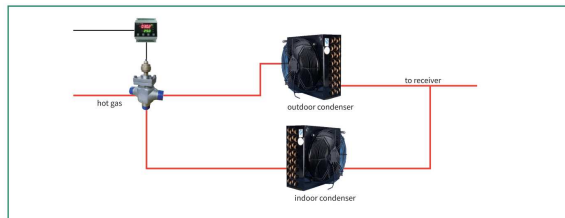
### 3-way regulating valve applied for defrosting control



#### Features

- Two step open, avoid liquid hammer
- 3-way, reduce valves by replacing solenoid valve and defrosting valve
- Energy efficient and reliable

### 3 way motorized regulating valve applied in heat pump dryer



#### Features

- More efficient by shorten drying time
- Energy efficiency

### Application in refrigeration system

