DPF/DPFS 系列电子膨胀阀
DPF/DPFS Series electronic expansion valve



DPF 系列
DPF series



DPFS 系列
DPFS series

产品描述 Product Description

DPF/DPFS型电子膨胀阀适用于空调、商用冷柜、小型冷库和热泵等制冷系统中，精确控制系统中制冷剂流量，使系统始终在最佳状态下运行，达到快速制冷，实现精准控制和节能的目的。

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.

特点 Features

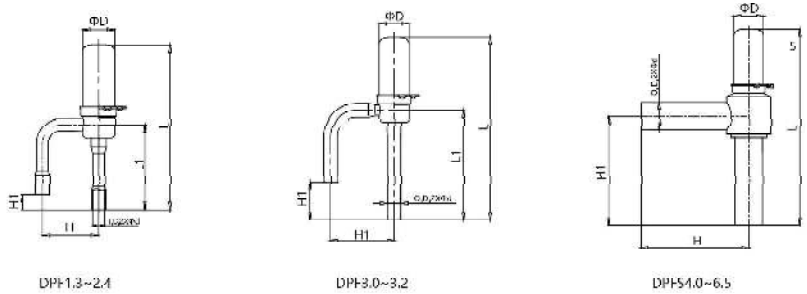
- 体积小、重量轻、性能稳定可靠；
- 反应和动作速度快；
- 膨胀阀新结构设计，噪声低，故障率低；
- DPFS系列产品采用平衡口设计，逆向开阀压力高；
- 适用于少油或无油系统。

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

技术参数 Technical Parameters

适用制冷剂 Applicable refrigerant	R22、R134a、R404A、R407C、R410A
名义容量 Nominal capacity	2.5~126KW
介质温度 Medium temperature	-40~+70℃
环境温度 Environment temperature	-30~+60℃
环境湿度 Environment humidity	95%RH以下
全开脉冲 Full open pulse	500PS
开阀脉冲 Valve opening pulse	32+20
额定电压 Rated voltage	12V DC （+10%），矩形波 rectangular wave
励磁方式 Excitation mode	1-2相励磁，单极驱动 1-2 phase excitation, single pole drive
励磁速度 Excitation speed	30~90pps
结束励磁保持时间 Finishing excitation mode keeps	0.1~1.0s
全程时间 Time cost for whole course	6s（83pps）
驱动电流 Drive current	260mA
线圈电阻 Coil resistance	46±3.7Ω/相
线圈绝缘等级 Coil insulation grade	E级
防护等级 Protect grade	IP65

结构 Structure



DPF1.3~2.4　　DPF3.0~3.2　　DPFS4.0~6.5

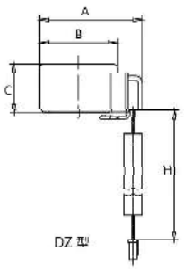
外型尺寸 Overall dimension

型号 Model	外形尺寸 Overall dimension					
	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

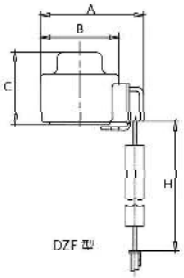
注：接管尺寸可以根据要求定制。

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

线圈 Coil



DZ 型



DZF 型

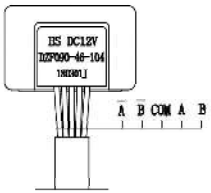
外型尺寸 Overall dimension

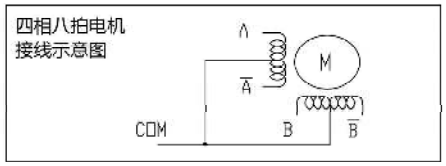
系列 Series	线圈型号 Coil model	A	B	C	H	接插型号 Connector model
DZ	DZ090-4612-□□□	51	38.5	25	900	XHP-5 XHP-6 XAP-5 XAP-6
	DZ120-4612-□□□	51	38.5	25	1200	
	DZ200-4612-□□□	51	38.5	25	2000	
	DZ300-4612-□□□	51	38.5	25	3000	
DZF	DZF090-4612-□□□	51	38.5	35.5	900	
	DZF120-4612-□□□	51	38.5	35.5	1200	
	DZF200-4612-□□□	51	38.5	35.5	2000	
	DZF300-4612-□□□	51	38.5	35.5	3000	

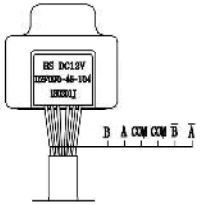
注：导线长度和连接器可根据客户要求定制。

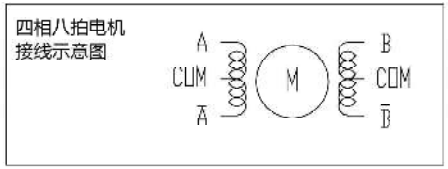
Note: the lead wire length and connector can be customized according to customer's requirements.

驱动时序 Driving schedule









励磁方式								
相号	1	2	3	4	5	6	7	8
A								
B								
$\bar{A}$								
$\bar{B}$								

动作顺序：1→2→3→4→5→6→7→8 关阀

8→7→6→5→4→3→2→1 开阀

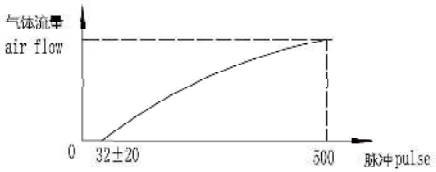
选型表 Model selection

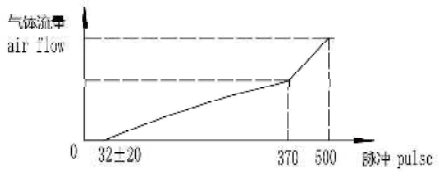
产品系列 Product series	公开步数 Full open steps	通径 Diameter	KV值	名义容量 [KW] Nominal capacity					最大工作压力 Max. working pressure	最大工作压差 Max. working pressure difference	逆向开启压差 Reverse valve opening pressure difference
		[mm]	[m3/h]	R22	R134a	R407C[1]	R404A/R507	R410A[1]	[MPa]	[MPa]	[MPa]
DPF1.3	500	1.30	0.06	3.5	2.7	3.50	2.50	4.20	4.2	4.2	≥2.1
DPF1.65	500	1.65	0.08	5.3	4.1	5.30	3.70	6.35	4.2	4.2	≥2.1
DPF1.8	500	1.80	0.10	7.0	5.4	7.00	4.90	8.40	4.2	4.2	≥2.1
DPF2.0	500	2.00	0.16	8.8	6.7	8.75	6.10	10.5	4.2	4.2	≥2.1
DPF2.2	500	2.20	0.20	10.5	8.1	10.5	7.40	12.6	4.2	4.2	≥2.1
DPF2.4	500	2.40	0.23	17.5	13.5	17.5	12.3	21.0	4.2	4.2	≥2.1
DPF3.0	500	3.00	0.39	21.0	16.2	21.0	14.7	25.2	4.2	4.2	≥1.47
DPF3.2	500	3.20	0.43	28.0	21.4	28.0	19.6	33.6	4.2	4.2	≥1.47
DPFS4.0	500	6.50	0.50	42.0	32.3	42.0	29.4	50.4	4.2	4.2	≥3.5
DPFS4.5	500	6.50	0.70	52.5	40.4	52.0	36.0	63.0	4.2	4.2	≥3.5
DPFS5.5	500	6.50	0.80	70.0	53.9	70.0	49.0	84.0	4.2	4.2	≥3.5
DPFS6.5	500	6.50	1.10	105	80.9	100	73.5	126	4.2	4.2	≥3.5

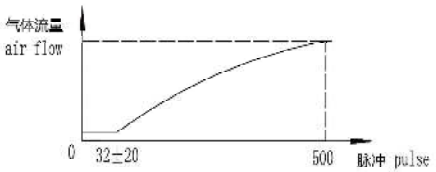
名义工况：
• 额定能力基于：R407C冷凝温度：+38°C； 蒸发温度：+5°C；
过冷度：0 K； 过热度：0 K；
• Kv值：基于吸读为1T/m3的水、阀门两端压差等于100KPa时的正向流动能力。

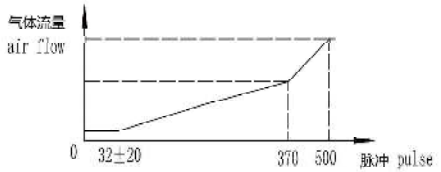
Nominal condition:
• Rated capacity is based on: R407C condensing temperature: +38°C; evaporating temperature: +5°C; super cooling degree: 0 K; super heat degree: 0 K;
• Kv value: the pressure difference based on the two sides between water with density 1T/m3 and the valve is equal to the positive flow capacity at 100Kpa.

流量曲线示意图 Schematic pic. of flow curve

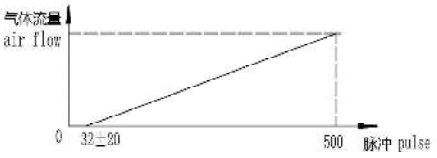








DPF1.0~DPF3.2



DPFS4.5~DPFS6.5

注：流量曲线要求可以根据要求定制。
Note: the flow curve can be customized according to requirement.

额定能力（kW）Rated capacity

	冷凝温度[℃] Condensing temperature	DPF1.3							DPF1.65						
		蒸发温度[℃] Evaporating temperature							蒸发温度[℃] Evaporating temperature						
		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	10.48	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
	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
R407C	30	3.79	4.08	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
	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
R22	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	8.86	8.90
	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
R134a	30	2.89	3.08	3.23	3.33	3.40	3.45	3.41	5.31	5.67	5.95	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
	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
R404A	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
	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	3.06	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	5.53	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	5.45	5.51	5.53	5.51	5.46	5.29	5.01

额定能力（kW）Rated capacity

	冷凝温度[℃] Condensing temperature	DPF1.8							DPF2.0						
		蒸发温度[℃] Evaporating temperature							蒸发温度[℃] Evaporating temperature						
		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	11.66	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
	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
R407C	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	9.22	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
	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
R22	30	7.59	8.19	8.65	9.01	9.28	9.63	9.76	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
	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
R134a	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
	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
R404A	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
	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	6.38	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	7.84	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

额定能力（kW）Rated capacity

	冷凝温度[°C] Condensing temperature	DPF2.2							DPF2.4						
		蒸发温度[°C] Evaporating temperature							蒸发温度[°C] Evaporating temperature						
		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	21.10	21.10
	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
	50	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
R407C	30	11.83	12.67	13.46	13.84	14.20	14.55	14.55	14.08	15.08	15.90	16.46	16.90	17.41	17.41
	35	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
	38	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
	40	13.67	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
	45	14.23	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
	50	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
R22	30	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
	35	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
	38	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
	40	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
	45	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
	50	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
R134a	30	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
	35	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
	38	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
	40	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
	45	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
	50	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
R404A	30	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
	35	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	9.44	9.27	8.96	8.49	11.00	11.11	11.16	11.11	11.04	10.66	10.10