

DPF-TS/S SERIES**ELECTRONIC
EXPANSION VALVE**

TS/S series electronic expansion valves are designed for use in air conditioning and refrigeration systems or in heat pumps. The valve controls the automatic adjustment of refrigerant flow rate and makes the system work under optimized conditions for the purpose of fast cooling or heating, precise temperature control and energy saving. The valve can also be used e.g. for suction line pressure controls. These valves provide bidirectional operation to control the refrigerant flow rate in heating or cooling mode.

**FEATURES**

- APPLICABLE FOR REVERSIBLE SYSTEMS: BIDIRECTIONAL FLOW
- SMALLER INSTALLATION SPACE: LOW HEIGHT, SMALL VOLUME, LIGHT WEIGHT
- OPTIMIZED FLOW PATH DESIGN FOR NOISE REDUCTION
- FAST OPERATION, ENERGY SAVING

GENERAL SPECIFICATIONS

- Applicable for all common HFC, HFO refrigerants such as: R134a, R404A, R407A/F, R407C, R410A, R448A, R449A, R450A, R452A, R513A, R507A
And also for flammable refrigerants like R32, R290, R1234ze(E), R1234yf
- Cooling capacity: 2 to 121 kW (for R410A)
- 500 steps (full stroke); 32 ± 20 opening steps
- Medium temperature TS min./max.: -40°C / $+85^{\circ}\text{C}$ (duty cycle rate below 50%)
- Ambient temperature min./max.: -30°C / $+60^{\circ}\text{C}$ (duty cycle rate below 50%)
- Relative humidity: 0 to 95% RH
- Certifications: UL/CSA and declaration according to LVD or PED
- Suitable with the EN 60335-2-24 / 2-40 / 2-89



ELECTRICAL PARAMETERS

- Rated voltage: 12V DC ($\pm 10\%$), rectangular wave
- Actuating mode: 4-phase 8-step permanent magnet stepping motor of direct-acting type
- Excitation mode: 1 ~ 2 phase excitation, unipolar actuation
- Excitation rate:
 - Seat $\varnothing 1,3$ to 3,2 mm: 30 to 90pps
 - Seat $\varnothing 4,0$ to 6,5 mm: 30 to 40pps
- Activation of self-holding mechanism: Maintain excitation in stop position min. 0,1~1,0 sec.
- Min. motion time from completely open to completely closed:
 - Seat $\varnothing 1,0$ to 3,2 mm: 6s @ 90pps
 - Seat $\varnothing 4,0$ to 6,5 mm: 13s @ 40pps
- Coil current:
 - Seat $\varnothing 1,0$ to 3,2 mm: 260mA/phase (20°C)
 - Seat $\varnothing 4,0$ to 6,5 mm: 375mA/phase (20°C)
- Coil resistance:
 - Seat $\varnothing 1,0$ to 3,2 mm: $46 \pm 3.7 \Omega$ /phase (20°C)
 - Seat $\varnothing 4,0$ to 6,5 mm: $32 \pm 3.2 \Omega$ /phase (20°C)
- Insulation class of coil: E
- Protection class: IP 67
- Compatible with Sanhua controller SEC series

GENERAL CHARACTERISTICS

Valve Model	Part Number ¹⁾	Design Type	Seat Φ (mm)	Kv (m ³ /h)	MOP ²⁾ [Bar]	MOPD Direct ³⁾ [Bar]	MOPD Rev. ⁴⁾ [Bar]
DPF(TS1)1.0C-15	10130391602	n	1,0	0,03	49	35	≥ 25
DPF(TS1)1.0C-16	10130390002	L	1.0	0,03			
DPF(TS1)1.3C-21	10130389302	n	1,3	0,05			
DPF(TS1)1.3C-22	10130392002	L	1,3	0,05			
DPF(TS1)1.65C-36	10130391702	n	1,65	0,08			
DPF(TS1)1.65C-38	10130395102	L	1,65	0,08			
DPF(TS1)1.8C-69	10130391802	n	1,8	0,1			
DPF(TS1)1.8C-68	10130390402	L	1,8	0,1			
DPF(TS1)2.0C-33	10130392402	n	2	0,16			
DPF(TS1)2.0C-40	10130409402	L	2	0,16			
DPF(TS1)2.2C-24	10130392702	n	2,2	0,2			
DPF(TS1)2.2C-38	10130425202	L	2,2	0,2			
DPF(TS1)2.4C-40	10130392602	n	2,4	0,23			
DPF(TS1)2.4C-41	10130404802	L	2,4	0,23			
DPF(TS1)3.0C-29	10130389902	L	3	0,39			≥ 15
DPF(TS1)3.2C-30	10130389502	L	3,2	0,43			
DPF(S03)4.0C-01	10130355702	L	4	0,5		30	≥ 7
DPF(S03)4.5C-01	10130035502	L	4,5	0,7			
DPF(S03)5.5C-01	10130355802	L	5,5	0,9			
DPF(S03)6.5C-02	10130355902	L	6,5	1,1			

Note: 1) Coil is separated

2) MOP = Maximum Operating Pressure

3) MOPD Direct = Maximum Operating Pressure Difference in Direct flow direction

4) MOPD Rev = Maximum Operating Pressure Difference in Reversible flow direction



Valve Model	Max Cooling Capacity @ 5°C/38°C/5K/5K [kW]												
	R134a	R513A	R407C	R404A R507A	R410A	R452A	R32	R290	R1234yf	R1234ze	R454B	R454C	R455A
DPF(TS1)1.0C-15 DPF(TS1)1.0C-16	3.1	2.7	4.3	2.9	4.8	3.1	7.0	4.2	2.3	2.5	5.5	3.6	4.0
DPF(TS1)1.3C-21 DPF(TS1)1.3C-22	4,5	3.8	6.2	4.2	6,9	4.5	9.9	5.8	3.2	3.4	7.6	5.0	5.5
DPF(TS1)1.65C-36 DPF(TS1)1.65C-38	7.6	6.4	10.4	7.1	11.6	7.6	16.7	10.0	5.6	5.9	13.1	8.6	9.5
DPF(TS1)1.8C-69 DPF(TS1)1.8C-68	9	7.7	12.4	8.5	13.8	9.1	19.9	12.0	6.6	7.1	15.7	10.3	11.4
DPF(TS1)2.0C-33 DPF(TS1)2.0C-40	11.1	9.5	15.3	10.5	17.1	11.2	24.6	14.9	8.2	8.8	19.5	12.8	14.1
DPF(TS1)2.2C-24 DPF(TS1)2.2C-38	12	10.2	16.4	11.3	18.3	12	26.4	16.0	8.9	9.4	21.0	13.8	15.2
DPF(TS1)2.4C-40 DPF(TS1)2.4C-41	14.1	12	19.4	13.3	21.6	14.2	31.1	18.8	10.4	11.1	24.6	16.2	17.8
DPF(TS1)3.0C-29	23.3	19.8	32.1	22	35.8	23.5	51.5	31.4	17.4	18.5	41.1	27.0	29.8
DPF(TS1)3.2C-30	25,7	21.8	35,3	24.2	39.4	25.9	56.8	34.4	19.0	20.2	45.0	29.5	32.5
DPF(S03)4.0C-01	42.8	36.3	58.8	40.3	65.5	43.1	94.4	57.2	31.6	33.7	74.9	49.2	54.2
DPF(S03)4.5C-01	57.2	48.6	78.7	63.9	67.7	57.6	126.3	77.1	42.6	45.4	100.9	66.3	73.1
DPF(S03)5.5C-01	66.2	56.3	91	62.4	101.5	66.7	146.2	88.6	49.0	52.2	116.0	76.2	84.0
DPF(S03)6.5C-02	80,5	68.5	110.7	75,9	123.4	81.1	177.9	108.4	59.9	63.8	141.9	93.2	102.7

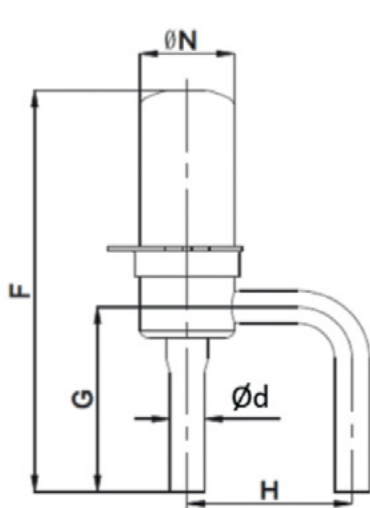
For others running points or others refrigerants, please contact your local support or download our selection software – Quick Finder with the link : <http://www.SanhuaSelector.com>

FLOW CHARACTERISTIC

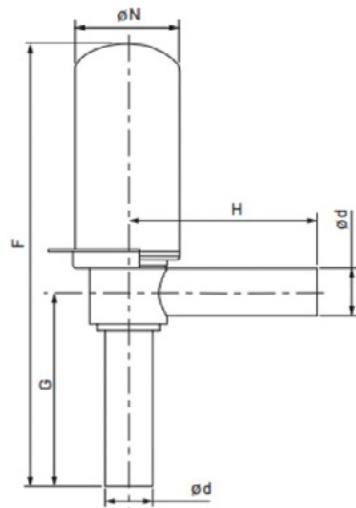




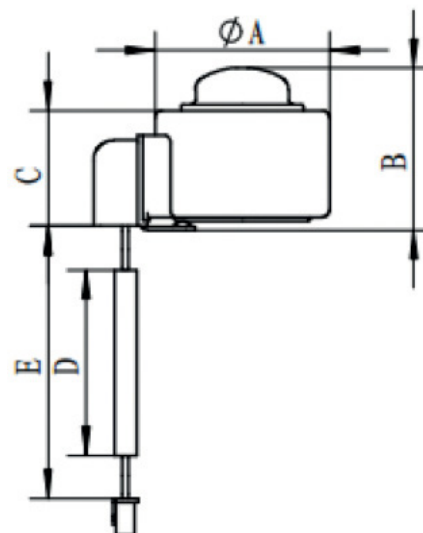
DIMENSIONS



DPF 1.0 ~ 2.4 n Design



DPF 3.0 ~ 6.5 L Design



Valve Model	Dimensions [mm]					Weight [kg]
	F	G	H	Ød	ØN	
DPF 1.0~2.4 n Design	77	36	30	6.35	17.35	0.04
DPF 1.0~2.4 L Design	77	36	36	6.35	17.35	0.04
DPF 3.0~3.2	85	43	53	7.94	17.35	0.05
DPF 4.0~6.5	148	64.7	63.4	15.88	35.3	0.26

Coil Model	Product Number	Valve Model	Dimensions [mm]				Terminal	Weight [kg]
			ØA	B	C	E		
PQ-M10012-004002	10810208802	DPF 1.0~3.2	38.5	35.8	37.6	700	XHP-5	0.12
PQ-M10012-004274	10810231902		38.5	35.8	37.6	1500	XHP-5	0.14
PQ-M10012-004213	10810232402		38.5	35.8	37.6	2000	XHP-5	0.16
PQ-M10012-004035	10810210602		38.5	35.8	37.6	5000	XHP-5	0.30
PQ-M03012-001004	10810141302	DPF 4.0~6.5	67.5	74.4	33.3	2000	XHP-5	0.5
PQ-M03012-001041	10810171302		67.5	74.4	33.3	5000	XHP-5	0.6