COMPONENTS FOR HEAT PUMP,
AIR CONDITIONING AND COMMERCIAL REFRIGERATION

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LINE COMPONENTS

for Commercial Refrigeration and Air Conditioning

Standard Catalogue for Europe



Contents

4-Way Reversing Valve

DSF Series & DSF(S) Series 1

DSF Series for HP & HT 7

DRVB Series 11

Electronic Expansion Valve

DPF Series 13

Thermostatic Expansion Valve

TCE/TCBE Series 18

TI Series 25

TA Series 29

Solenoid Valve

FDF-H Series (Commercial) 33

FDF Series (Commercial) 36

FDF Series (Residential) 41

Ball Valve

FQ Series 43

Check Valve

FDM Series 46

FDH Series 47

Charge Valve

FJT Series 48

Service Valve

FJ Series 49

CO_2 (R744) Products 51

CO_2 Electronic Expansion Valve

DPF(E) Series 52

CO_2 Solenoid Valve

RDF Series 54

CO_2 Check Valve

FDE Series 55

CO_2 Tube Fin Heat Exchanger 56

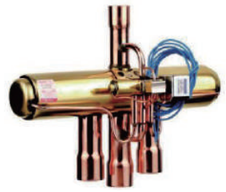
Tube-Fin Heat Exchanger 57

Micro-Channel Heat Exchanger 58

4-WAY REVERSING VALVE

DunAn

DSF Series & DSF(S) Series

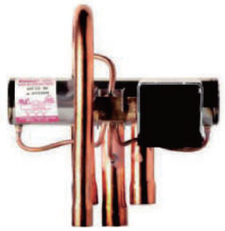


APPLICATION

DSF series electromagnetic 4-way reversing valves are applicable for residential air conditioners, VRVs, module units, unit machines, heat pumps and other refrigeration systems. They can change the flow path of refrigerants by controlling the pilot valve to realize switching cooling and heating mode, and defrosting function for heat pump systems.

FEATURES

- Reliably instantaneous changeover under minimum pressure differential
- Wide range of capacity and connection styles
- Application spectrum has extended into systems under potentially explosive conditions
- DSF(S) stainless steel material usage reduces heat loss and improves efficiency
- Available with special design configuration for systems of heating mode as main function
- Built-in chip energy-saving coil on request



APPROVALS

Declaration according to PED, LVD, IECEx, ATEX and UL

TECHNICAL DATA

- Applicable Refrigerants: R32, R404A, R407C, R410A, R290, R134a, R454B, R513A, R513B, R1234yf, R454A, R454C, R448A, R449A
- Relative Humidity: ⩽95% R.H.
- Medium Temperature: -30°C ~ +135°C
- Ambient Temperature: -30°C ~ +55°C
- Max. Operating Pressure: 4.5 MPa

Brass DSF Series

Model	Part Number	Port	K_v	Connection		Operating Pressure Difference		System Driving Mode
				D	E, S, C	Max.	Min.	
		[mm]	[m^3/h]	[in.]	[in.]	[MPa]	[MPa]	
DSF-4-2203	240005072000	8	1.7	5/16	3/8	3.5	0.25	ON/OFF & Inverter
DSF-9-2230	240009113800	11.1	3.4	3/8	1/2	3.5	0.3	ON/OFF & Inverter
DSF-11B-2230	240011056000	11.5	4.4	1/2	5/8	3.5	0.3	ON/OFF & Inverter
DSF-11E-2201	240011056100	11.5	4.4	3/8	5/8	3.5	0.3	ON/OFF & Inverter
DSF-20-2217	240020093100	17.2	9.5	1/2	3/4	3.5	0.3	ON/OFF & Inverter
DSF-34-2291	240034062900	20.9	18.1	3/4	7/8	3.5	0.3	ON/OFF & Inverter
DSF-34-2218	240034061400	20.9	18.1	7/8	9/8	3.5	0.3	ON/OFF & Inverter
DSF-50-2211	240050020800	24	19.9	7/8	9/8	3.5	0.3	ON/OFF & Inverter
DSF-70-2204	240070015500	28.6	28.5	1	5/4	3.5	0.3	ON/OFF & Inverter
DSF-105-2100	240010003100	34.5	39.1	5/4	3/2	3.5	0.3	ON/OFF & Inverter
DSF-140-2100	240014001900	41	58.5	3/2	7/4	3.5	0.3	ON/OFF & Inverter
DSF-180-2100	240018001500	46.4	70.4	3/2	17/8	3.5	0.3	ON/OFF & Inverter
DSF-210-2100	240021000800	50	80.2	2	21/8	3.5	0.3	ON/OFF & Inverter

Stainless Steel DSF(S) Series

Model	Part Number	Port	K_v	Connection		Operating Pressure Difference		System Driving Mode
				D	E, S, C	Max.	Min.	
		[mm]	[m^3/h]	[in.]	[in.]	[MPa]	[MPa]	
DSF(S)-9-2250M	240009114301	11.1	3.4	3/8	1/2	3.5	0.3	ON/OFF & Inverter
DSF(S)-14H-2252M	240015005500	12.8	6.1	1/2	5/8	3.5	0.3	ON/OFF & Inverter
DSF(S)-20-2001M	240020100804	15	7.7	1/2	3/4	3.5	0.3	ON/OFF & Inverter
DSF(S)-20-2230C	240020095000	17.2	9.5	1/2	3/4	3.5	0.3	ON/OFF & Inverter
DSF(S)-34-2201M	240034070502	18.1	11.3	5/8	7/8	3.5	0.3	ON/OFF & Inverter
DSF(S)-34-2232C	240034063600	21.5	14.3	3/4	7/8	3.5	0.3	ON/OFF & Inverter
DSF(S)-50-2207C	240050018500	24	19.9	7/8	9/8	3.5	0.3	ON/OFF & Inverter
DSF(S)-70-2250C	240070017811	32	35.9	1	5/4	3.5	0.3	ON/OFF & Inverter

Coil

Model	Code No.	Connection Type	Length [mm]	Supply	Nominal Voltage [V]	Frequency [Hz]	Nominal Power [W]	Insulation Class	IP Grade
DXQ-242-ND[2]	244409024217	Spade	-	AC	24	50/60	⩽ 7/5	B	IP54
DXQ-111[2]	244409011103	Wire	250	AC	100	50/60	⩽ 7/5		
DXQ-246[2]	244409024603	Spade	-	AC	115	50/60	⩽ 7/5		
DXQ-957[2]	244409095701	Wire	4000	AC	24	50/60	⩽ 7/5		
DXQ-451[2]	244409045102	Wire	250	AC	100	50/60	⩽ 7/5		
DXQ-280[2]	244409028001	Wire	500	AC	200	50/60	⩽ 7/5		
DXQ-670-EUR[2]	244409067002	Wire	1200	AC	208-240	50/60	⩽ 7/5		
DXQ-822[2]	244409082252	Wire	1000	AC	220-240	50/60	⩽ 7/5		
DXQ-648[2]	244409064811	Wire	1000	DC	24	-	⩽ 9		
DXQ-901	244409090102	Wire	1500	DC	35	-	⩽ 9		
DXQ-717[1][2]	244409071703	Wire	420	AC	100	50/60	⩽ 18		
DXQ-417[1][2]	244409041702	Wire	400	AC	200	50/60	⩽ 18		
DXQ-115[3]	244409011507	Wire	1500	AC	220-240	50/60	⩽ 7/5		
DXQ-1737[3]	244409173700	Wire	1500	AC	208-240	50/60	⩽ 7/5		
DXQ-1738[3]	244409173800	Wire	1500	DC	24	-	⩽ 9		

Note:
[1] Bi-Stable type.
[2] Application under potentially explosive conditions approved.
[3] ATEX explosion-proof certificated

Capacity Table

Model	Capacity [kW]																									
	Pressure Drop △ P [bar]																									
	R134a				R513A				R407C				R454B				R32				R290					
	Cond.1		Cond. 2		Cond.1		Cond. 2		Cond.1		Cond. 2		Cond.1		Cond. 2		Cond.1		Cond. 2		Cond.1		Cond. 2			
	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2		
DSF-4	2.5	3.6	2.4	3.4	2.4	3.4	2.3	3.2	3.1	4.4	2.8	4.0	3.7	5.2	3.3	4.8	5.0	7.1	4.4	6.2	4.0	5.6	3.5	4.9		
DSF-9	5.9	8.3	5.5	7.7	5.4	7.6	5.1	7.2	7.1	10.0	6.5	9.2	8.4	11.9	7.6	10.7	11.5	16.2	10.1	14.3	9.1	12.8	8.0	11.3		
DSF-11	7.1	9.9	6.6	9.2	6.6	9.3	6.2	8.8	8.6	12.0	7.9	11.1	10.2	14.3	9.1	12.9	13.8	19.5	12.3	17.2	10.9	15.4	9.7	13.6		
DSF-20	15.1	21.1	13.9	19.5	14.9	21.1	14.1	20.0	18.2	25.5	16.6	23.5	21.4	32.2	19.5	29.1	29.3	41.3	25.9	36.5	23.2	32.7	20.5	28.9		
DSF-34	22.5	31.8	20.9	29.4	21.7	30.7	20.6	29.1	27.2	38.2	25.0	35.1	32.3	45.3	29.0	41.0	43.9	61.8	39.0	54.6	34.7	48.9	30.9	43.2		
DSF-50	28.5	40.0	26.5	37.2	27.8	39.4	26.4	37.3	34.4	48.3	31.5	44.4	40.8	57.5	36.8	51.7	55.4	78.2	48.9	69.0	43.9	61.9	38.7	54.6		
DSF-70	43.9	61.5	40.5	57.0	41.6	58.9	39.8	56.3	52.8	74.4	48.8	68.2	62.7	88.4	56.3	79.8	85.1	120.3	75.3	106.2	67.4	95.2	59.6	84.1		
DSF-105	63.3	88.5	58.5	82.5	62.3	88.1	59.1	83.5	76.3	107.3	70.0	98.7	90.3	127.3	81.5	114.0	123.0	173.5	108.5	153.0	97.4	137.3	85.9	121.1		
DSF-140	88.5	124.5	81.6	115.2	84.7	119.8	80.2	113.4	106.2	150.3	98.4	138.0	126.4	178.8	114.4	167.9	172.1	243.0	152.0	214.5	136.2	192.3	120.3	169.8		
DSF-180	110.5	155.0	102.8	143.8	107.5	152.1	101.8	144.0	133.0	187.4	122.0	172.1	157.6	222.4	142.5	200.7	215.0	302.9	190.1	267.5	170.1	239.8	150.5	211.7		
DSF-210	133.5	187.5	123.5	174.0	126.0	178.2	119.3	168.7	161.0	226.4	148.0	208.2	190.5	269.4	171.3	242.4	260.1	366.2	228.9	323.5	205.9	289.8	181.2	256.0		

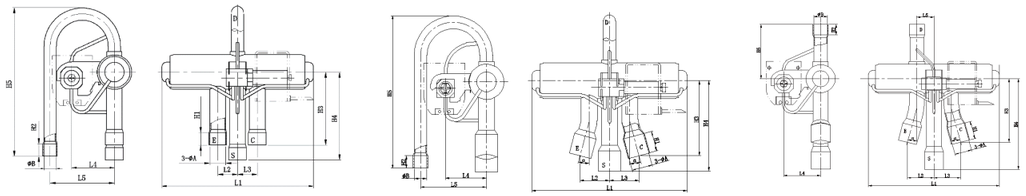
Note: 1) Cond.1: T_C=38°C, T_E=5°C, △T_{sh}=5K, △T_{sc}=0K; 2) Cond.2: T_C=54.4°C, T_E=7.2°C, △T_{sh}=5K , △T_{sc}=5K

Model	Capacity [kW]																									
	Pressure Drop △ P [bar]																									
	R134a				R513A				R407C				R454B				R32				R290					
	Cond.1		Cond. 2		Cond.1		Cond. 2		Cond.1		Cond. 2		Cond.1		Cond. 2		Cond.1		Cond. 2		Cond.1		Cond. 2			
	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2		
DSF(S)-9M	5.9	8.3	5.5	7.7	5.4	7.6	5.1	7.2	7.1	10.0	6.5	9.2	8.4	11.9	7.6	10.7	11.5	16.2	10.1	14.3	9.1	12.8	8.0	11.3		
DSF(S)-14M	9.1	12.9	8.5	12.0	8.8	12.5	8.4	11.8	12.2	17.3	11.0	15.5	13.8	19.4	12.4	17.6	18.2	25.8	17.1	24.2	13.4	19.0	12.3	17.5		
DSF(S)-20M	14.2	19.8	12.7	17.7	14.2	19.8	13.9	19.3	20.1	28.3	17.8	25.1	25.5	36.2	23.1	32.8	28.1	39.6	25.4	35.8	23.2	32.5	20.7	29.0		
DSF(S)-20	15.1	23.7	15.2	21.2	14.9	21.1	14.1	20.0	24.2	34.0	21.5	30.2	28.4	40.0	25.6	36.3	33.8	47.7	30.7	43.2	27.9	38.9	24.9	34.7		
DSF(S)-34M	20.6	28.8	18.5	25.8	16.3	23.7	15.8	21.7	28.4	40.2	24.5	35.7	30.8	43.9	27.9	39.7	40.8	56.2	33.9	48.1	31.0	44.6	29.0	39.9		
DSF(S)-34	22.5	31.8	20.9	29.4	21.7	30.7	20.6	29.1	35.3	49.3	31.4	43.9	32.3	45.3	29.0	41.0	43.9	61.8	39.0	54.6	34.7	48.9	30.9	43.2		
DSF(S)-50	32.3	44.5	26.5	37.2	34.4	44.5	26.4	37.3	45.5	64.6	40.5	57.4	58.4	81.5	36.8	51.7	55.4	78.2	48.9	69.0	43.9	61.9	38.7	54.6		
DSF(S)-70	58.1	80.3	52.1	71.9	43.8	63.6	41.4	58.8	82.3	115.7	73.1	103.0	78.4	105.3	70.3	95.4	105.0	148.8	92.6	131.3	83.8	117.5	76.6	107.3		

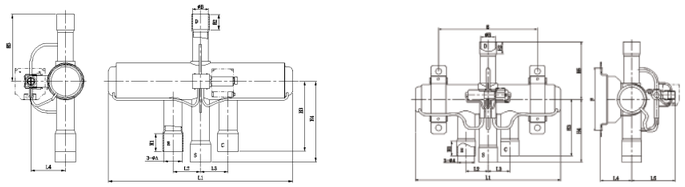
Note: 1) Cond.1: T_C=38°C, T_E=5°C, △T_{sh}=5K, △T_{sc}=0K; 2) Cond.2: T_C=54.4°C, T_E=7.2°C, △T_{sh}=5K, △T_{sc}=5K

Ordering And Dimension

DSF SERIES



A1 A2 A3



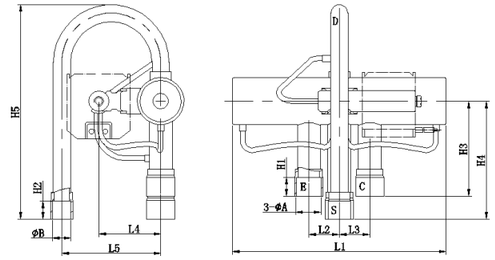
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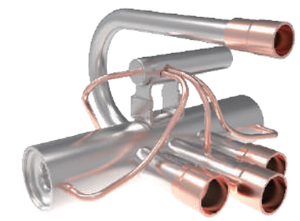
Model	style	A	B	L1	L2	L3	L4	L5	HI	H2	H3	H4	H5	α
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[°]
DSF-4-2203	A1	9.6	8.1	94	12	12	29	42	10	8.5	50	62	104	-
DSF-9-2230	A1	12.8	9.6	117	16	16	32	52	10	10	59	71	119	-
DSF-11B-2230	A3	16.1	12.8	117	25	25	32	16	17	10	62	87	52	15
DSF-11E-2201	A2	16.1	9.6	117	23.5	23.5	32	52	16	10	57	72	119	15
DSF-20-2217	B1	19.2	12.8	186	29	29	36.4	-	19	13	83	95	67	-
DSF-34-2291	B1	22.3	19.2	213	33	33	41.5	-	22	19	86	98.6	82	-
DSF-34-2218	B1	28.73	22.4	213	33	33	41.5	-	23	22	86	98.6	82	
DSF-50-2211	B1	28.8	22.4	245	37	37	41.5	-	25.4	22	94	107	93	

Model	style	A	B	L1	L2	L3	L4	L5	H1	H2	H3	H4	H5	E	F
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
DSF-70-2204	C1	32	25.6	295	46	46	57	90	30	25	116	129	110.5	196	120
DSF-105-2100	C1	38.1	31.8	300	45	45	56	90	30	25	117	130	117	196	120
DSF-140-2100	C1	45	38.1	383	58	58	65	90.4	40	35	147.1	167.1	139.6	230	166
DSF-180-2100	C1	54.2	38.1	383	58	58	65	90.4	40	35	147	211	139.6	230	166
DSF-210-2100	C1	66.96	50	480	71.5	71.5	65	90.4	40	33	147.1	215.6	135.6	262	166

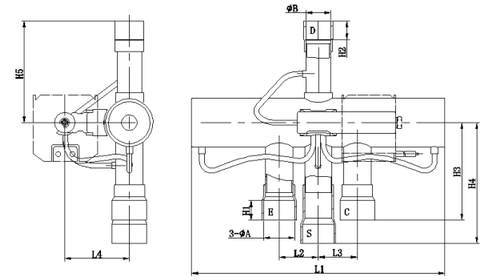
DSF(S) SERIES

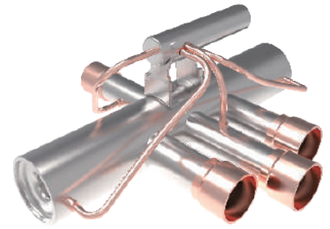
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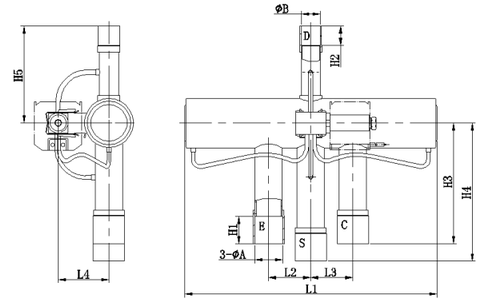


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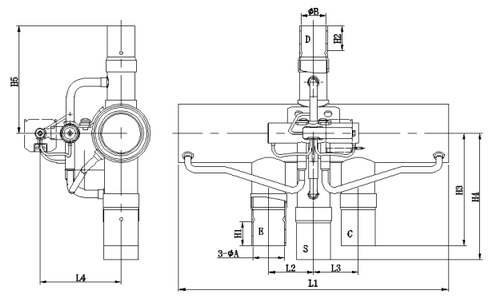


B3





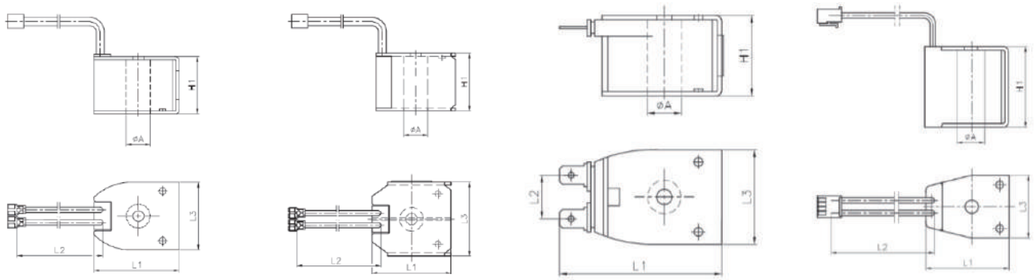
C2





Model	style	A	B	L1	L2	L3	L4	L5	H1	H2	H3	H4	H5
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
DSF(S)-9	A4	12.8	9.6	112	16	16	32.5	52	9.5	9.5	50	62	112.5
DSF(S)-14M	B2	16	12.8	130	20	20	36	-	9.5	9.5	50	62	52
DSF(S)-20M	B2	19.2	12.8	156	24	24	37		17	13	83	95	65
DSF(S)-20	B3	19.2	12.8	174	29	29	36	-	19	13	83	95	67
DSF(S)-34M	B3	22.3	16	174	29	29	36		17	10	83	95	67
DSF(S)-34	B3	22.3	19.2	207	33.5	33.5	41.5	-	23	19	86	98.6	82
DSF(S)-50	B3	28.7	22.3	227	37	37	41.5	-	23	22.3	94	107	93
DSF(S)-70	C2	32	25.6	278	46	46	83		25	25	116	130	110

COIL



A B C D

Model	style	A	L1	L2	L3	H1
		[mm]	[mm]	[mm]	[mm]	[mm]
DXQ-242-ND	C	11.7	53.5	15	33	28.5
DXQ-111	A	11.7	40.5	250	33	27.5
DXQ-246	C	11.7	53.5	15	33	28.5
DXQ-957	A	11.7	40.5	4000	33	27.5
DXQ-451	A	11.7	40.5	250	33	27.5
DXQ 280	A	11.7	40.5	500	33	27.5
DXQ-670-EUR	B	11.7	33.5	1200	32.5	27.5
DXQ-822	B	11.7	33.5	1000	32.5	27.5
DXQ-648	A	11.7	40.5	1000	33	27.5
DXQ-901	A	11.7	40.5	1500	33	27.5
DXQ-717	D	11.6	34.5	420	26	33
DXQ-417	D	11.6	34.5	400	26	33
DXQ-115	B	11.7	32.0	1500	33.7	25.7
DXQ-1737	B	11.7	34.0	1500	33.7	25.7
DXQ-1738	A	11.7	40.5	1500	33	27.5

Note:
wire length can be customized according to customer's requirement.

DSF Series for HP & HT



APPLICATION

DSF series 4-way reversing valve for HT & HP application is a special variant, which meets requirements of new refrigerants, and is suitable for application of all kinds of heat pump systems under more extreme conditions. It changes the flow path of refrigerants reliably by controlling the pilot valve to switch the mode between cooling and heating.

FEATURES

- Reliably instantaneous changeover under minimum pressure differential
- Wide range of capacity and connection styles
- Application spectrum has extended into systems under more extreme conditions
- Available with special design configuration for systems of heating mode as main function
- Built-in chip energy-saving coil on request

APPROVALS

Declaration / Certification according to PED, CE.

TECHNICAL DATA

- Applicable Refrigerants: R32, R404A, R407C, R410A, R290, R134a, R454B, R513A, R513B, R1234yf, R454A, R454C, R448A, R449A
- Relative Humidity: ⩽95% R.H.
- Medium Temperature: -30°C ~ +150°C
- Ambient Temperature: -30°C ~ +55°C
- Max. Operating Pressure: 4.9 MPa

Brass DSF Series For HT & HP Applications

Model	Part Number	Port	K_v	Connection		Operating Pressure Difference		Ps	System Driving Mode
				D	E, S, C	Max.	Min.		
		[mm]	[m^3/h]	[in.]	[in.]	[MPa]	[MPa]	[MPa]	
DSF-4-2261	240005059500	8	1.7	5/16	3/8	3.1	0.25	4.9	ON/OFF & Inverter
DSF-9-2261	240007053700	11.1	3.4	3/8	1/2	3.1	0.3	4.9	ON/OFF & Inverter
DSF-11B-2261	240011050600	11.5	4.4	1/2	5/8	3.1	0.3	4.9	ON/OFF & Inverter
DSF-11E-2261	240011056100	11.5	4.4	3/8	5/8	3.1	0.3	4.9	ON/OFF & Inverter
DSF-20-2263	240020089406	17.2	9.5	1/2	3/4	3.1	0.3	4.9	ON/OFF & Inverter
DSF-34-2262	240034050415	20.9	18.1	3/4	7/8	3.1	0.3	4.9	ON/OFF & Inverter
DSF-50-2262	240050020501	24	19.9	7/8	9/8	3.1	0.3	4.9	ON/OFF & Inverter
DSF-70-2601	240070009100	26	25.7	1	5/4	3.1	0.3	4.9	ON/OFF & Inverter
DSF-105-2601	240010005800	34.5	39.1	5/4	3/2	3.1	0.3	4.9	ON/OFF & Inverter
DSF-140-2601	240014003400	41	58.5	3/2	7/4	3.1	0.3	4.9	ON/OFF & Inverter
DSF-180-2601	240018001900	46.4	70.4	3/2	17/8	3.1	0.3	4.9	ON/OFF & Inverter
DSF-210-2601	240021001500	50	80.2	2	21/8	3.1	0.3	4.9	ON/OFF & Inverter

Coil

Model	Code No.	Connection Type	Length [mm]	Supply	Nominal Voltage [V]	Frequency [Hz]	Nominal Power [W]	Insulation Class	IP Grade
DXQ-242-ND[2]	244409024217	Spade	-	AC	24	50/60	⩽ 7/5	B	IP54
DXQ-111[2]	244409011103	Wire	250	AC	100	50/60	⩽ 7/5		
DXQ-246[2]	244409024603	Spade	-	AC	115	50/60	⩽ 7/5		
DXQ-957[2]	244409095701	Wire	4000	AC	24	50/60	⩽ 7/5		
DXQ-451[2]	244409045102	Wire	250	AC	100	50/60	⩽ 7/5		
DXQ-280[2]	244409028001	Wire	500	AC	200	50/60	⩽ 7/5		
DXQ-670-EUR[2]	244409067002	Wire	1200	AC	208-240	50/60	⩽ 7/5		
DXQ-822[2]	244409082252	Wire	1000	AC	220-240	50/60	⩽ 7/5		
DXQ-648[2]	244409064811	Wire	1000	DC	24	-	⩽ 9		
DXQ-901	244409090102	Wire	1500	DC	35	-	⩽ 9		
DXQ-717[1][2]	244409071703	Wire	420	AC	100	50/60	⩽ 18		
DXQ-417[1][2]	244409041702	Wire	400	AC	200	50/60	⩽ 18		
DXQ-115[3]	244409011507	Wire	1500	AC	220-240	50/60	⩽ 7/5		
DXQ-1737[3]	244409173700	Wire	1500	AC	208-240	50/60	⩽ 7/5		
DXQ-1738[3]	244409173800	Wire	1500	DC	24	-	⩽ 9		

Note:
[1] Bi-Stable type.
[2] Application under potentially explosive conditions approved.
[3] passed ATEX explosion-proof certification.

Capacity table

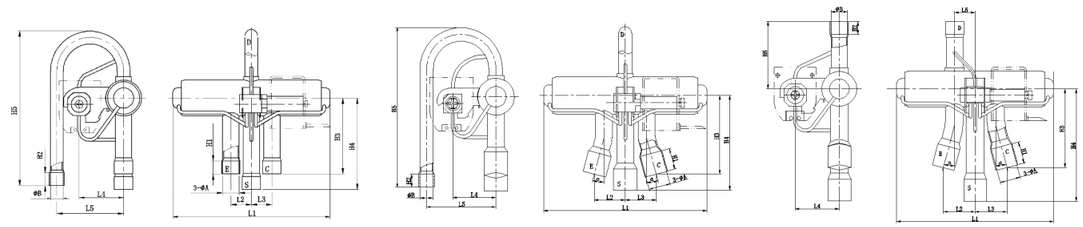
Model	Capacity [kW]																							
	Pressure Drop △ P [bar]																							
	R134a				R404A				R407C				R410A				R32				R290			
	Cond.1		Cond. 2		Cond.1		Cond. 2		Cond.1		Cond. 2		Cond.1		Cond. 2		Cond.1		Cond. 2		Cond.1		Cond. 2	
	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2
DSF-4	2.5	3.6	2.4	3.4	2.7	3.9	2.4	3.4	3.1	4.4	2.8	4.0	3.9	5.5	3.5	5.0	5.0	7.1	4.4	6.2	4.0	5.6	3.5	4.9
DSF-9	5.9	8.3	5.5	7.7	6.4	8.9	5.5	7.7	7.1	10.0	6.5	9.2	8.8	12.5	8.0	11.3	11.5	16.2	10.1	14.3	9.1	12.8	8.0	11.3
DSF-11	7.1	9.9	6.6	9.2	7.6	10.6	6.6	9.2	8.6	12.0	7.9	11.1	10.7	15.0	9.6	13.6	13.8	19.5	12.3	17.2	10.9	15.4	9.7	13.6
DSF-20	15.1	21.1	13.9	19.5	16.0	22.5	13.9	19.6	18.2	25.5	16.6	23.5	22.5	33.9	20.5	30.6	29.3	41.3	25.9	36.5	23.2	32.7	20.5	28.9
DSF-34	22.5	31.8	20.9	29.4	23.9	33.7	20.8	29.4	27.2	38.2	25.0	35.1	34.0	47.7	30.5	43.1	43.9	61.8	39.0	54.6	34.7	48.9	30.9	43.2
DSF-50	28.5	40.0	26.5	37.2	30.2	42.6	26.5	37.1	34.4	48.3	31.5	44.4	42.9	60.5	38.7	54.4	55.4	78.2	48.9	69.0	43.9	61.9	38.7	54.6
DSF-70	43.9	61.5	40.5	57.0	46.5	65.6	40.5	57.1	52.8	74.4	48.8	68.2	66.0	93.0	59.3	84.0	85.1	120.3	75.3	106.2	67.4	95.2	59.6	84.1
DSF-105	63.3	88.5	58.5	82.5	67.1	94.7	58.5	82.3	76.3	107.3	70.0	98.7	95.0	134.0	85.8	120.0	123.0	173.5	108.5	153.0	97.4	137.3	85.9	121.1
DSF-140	88.5	124.5	81.6	115.2	93.9	132.7	82.0	115.4	106.2	150.3	98.4	138.0	133.0	188.2	120.4	176.8	172.1	243.0	152.0	214.5	136.2	192.3	120.3	169.8
DSF-180	110.5	155.0	102.8	143.8	117.0	165.3	102.3	144.0	133.0	187.4	122.0	172.1	165.9	234.1	150.0	211.3	215.0	302.9	190.1	267.5	170.1	239.8	150.5	211.7
DSF-210	133.5	187.5	123.5	174.0	142.0	200.0	123.7	174.0	161.0	226.4	148.0	208.2	200.5	283.6	180.3	255.1	260.1	366.2	228.9	323.5	205.9	289.8	181.2	256.0

Note:
Condition 1 : T_C=38°C, T_E=5°C, $\triangle T_{sc}$=0K, $\triangle T_{sh}$=5K ;
Condition 2 : T_C=54.4°C, T_E=7.2°C, $\triangle T_{sc}$=5K, $\triangle T_{sh}$=5K

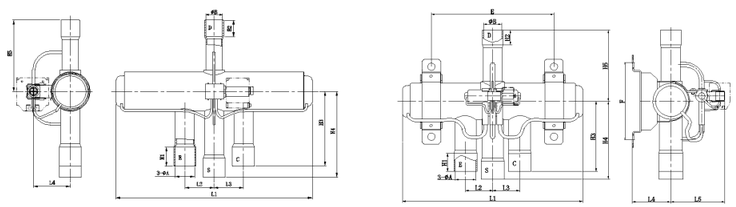
Model	Capacity [kW]																							
	Pressure Drop △ P [bar]																							
	R454B				R1234yf				R513A				R22											
	Cond.1		Cond.2		Cond.1		Cond.2		Cond.1		Cond.2		Cond.1		Cond.2									
	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1									
DSF-4	3.7	5.2	3.3	4.8	2.3	3.3	2.1	2.9	2.4	3.4	2.3	3.2	3.3	4.7	3.1	4.4								
DSF-9	8.4	11.9	7.6	10.7	5.2	7.4	4.7	6.6	5.4	7.6	5.1	7.2	7.6	10.7	7.1	10.0								
DSF-11	10.2	14.3	9.1	12.9	6.3	8.9	5.7	8.0	6.6	9.3	6.2	8.8	11.7	12.8	8.5	12.0								
DSF-20	21.4	32.2	19.5	29.1	14.3	20.3	12.9	18.3	14.9	21.1	14.1	20.0	19.3	27.1	18.1	25.5								
DSF-34	32.3	45.3	29.0	41.0	20.9	29.6	18.8	26.7	21.7	30.7	20.6	29.1	28.9	40.6	27.1	38.1								
DSF-50	40.8	57.5	36.8	51.7	26.8	38.0	24.1	34.1	27.8	39.4	26.4	37.3	36.3	51.3	34.1	48.2								
DSF-70	62.7	88.4	56.3	79.8	40.1	56.8	36.4	51.5	41.6	58.9	39.8	56.3	55.9	79.0	52.8	74.1								
DSF-105	90.3	127.3	81.5	114.0	60.0	84.9	54.0	76.4	62.3	88.1	59.1	83.5	80.9	113.8	76.0	107.0								
DSF-140	126.4	178.8	114.4	168.0	81.6	115.4	73.4	103.8	84.7	119.8	80.2	113.4	113.5	159.4	106.8	149.8								
DSF-180	157.6	222.4	142.5	200.7	103.6	146.5	93.1	131.7	107.5	152.1	101.8	144.0	141.4	198.9	132.9	186.7								
DSF-210	190.5	269.4	171.3	242.4	121.3	171.6	109.2	154.3	126.0	178.2	119.3	168.7	170.9	240.3	160.6	226.1								

Note:
Condition 1 : T_C=38°C, T_E=5°C, $\triangle T_{sc}$=0K, $\triangle T_{sh}$=5K ;
Condition 2 : T_C=54.4°C, T_E=7.2°C, $\triangle T_{sc}$=5K, $\triangle T_{sh}$=5K

Ordering And Dimension



A1 A2 A3

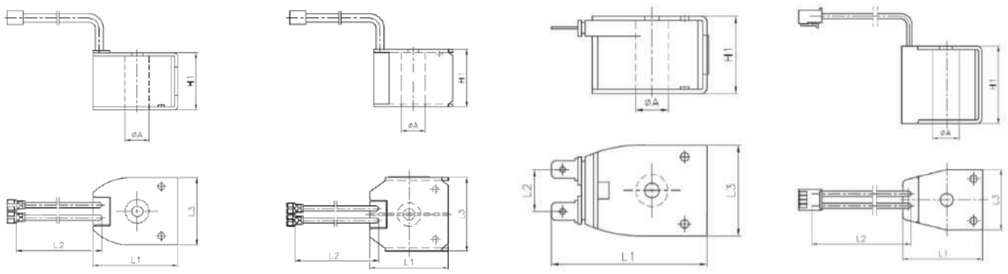


B1 C1

DSF SERIES FOR HT & HP APPLICATIONS

Model	style	A	B	L1	L2	L3	L4	L5	H1	H2	H3	H4	H5	α	E	F
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
DSF-4-2261	A1	9.6	8.1	94	12	12	29	42	10	8.5	50	162	104.5	-	-	-
DSF-9-2261	A1	12.8	9.6	117	16	16	32	52	10	10	59	71	119	-	-	-
DSF-11B-2261	A3	16.1	12.8	117	25	25	32	16	17	10	62	87	52	15	-	-
DSF-11E-2261	A2	16.1	9.6	117	23.5	23.5	32	52-	16	10	57	72	119	15	-	-
DSF-20-2263	B1	19.2	12.8	186	29	29	36	-	19	13	83	95	67	-	-	-
DSF-34-2262	B1	22.3	19.2	213	33	33	41	-	22	19	86	98.6	82	-	-	-
DSF-50-2262	B1	28.6	22.5	245	37	37	41	-	30	25	94	107	93	-	-	-
DSF-70-2601	C1	32	25.6	295	45	45	57	90	30	25	116	129	116.5	-	196	120
DSF-105-2601	C1	38.1	31.8	300	45	45	56	90	30	25	117	130	116.5	-	196	120
DSF-140-2601	C1	45	38.1	383	58	58	65	90.4	40	35	147	167	139.6	-	230	166
DSF-180-2601	C1	54.2	38.1	383	58	58	65	90.4	40	35	147	197	139.6	-	230	166
DSF-210-2601	C1	66.96	50	480	71.5	71.5	65	90.5	40	33	147	215.6	135.6	-	262	166

COIL



A B C D

Model	style	A	L1	L2	L3	H1
		[mm]	[mm]	[mm]	[mm]	[mm]
DXQ-242-ND	C	11.7	53.5	15	33	28.5
DXQ-111	A	11.7	40.5	250	33	27.5
DXQ-246	C	11.7	53.5	15	33	28.5
DXQ-957	A	11.7	40.5	4000	33	27.5
DXQ-451	A	11.7	40.5	250	33	27.5
DXQ 280	A	11.7	40.5	500	33	27.5
DXQ-670-EUR	B	11.7	33.5	1200	32.5	27.5
DXQ-822	B	11.7	33.5	1000	32.5	27.5
DXQ-648	A	11.7	40.5	1000	33	27.5
DXQ-901	A	11.7	40.5	1500	33	27.5
DXQ-717	D	11.6	34.5	420	26	33
DXQ-417	D	11.6	34.5	400	26	33
DXQ-115	B	11.7	32.0	1500	33.7	25.7
DXQ-1737	B	11.7	34.0	1500	33.7	25.7
DXQ-1738	A	11.7	40.5	1500	33	27.5

Note:
wire length can be customized according to customer's requirement.

DRVB Series



APPLICATION

DRVB series large capacity cross-type four-way electromagnetic reversing valves are applicable for large-scale heat pump systems and ice machines and other equipment to realize the switching between cooling and heating modes by changing the flow direction of refrigerants, which is realized by the on/off control of the external pilot valve solenoid coil, leading the flow direction of the external high pressure gas in the valve body. As a result, the pressure difference between the both ends of piston is changed so that the piston moves inside the valve body, which changes the location fitting between the piston flow passage and the four connecting pipes outside the valve body.

FEATURES

- X-cross design ensures big flow area and low pressure drop;
- Stability and reliability ensured by adopting a small 4-way valve as pilot valve;
- Built-in self-lubricating bush;
- Special material of seal ring ensures the valve's applicability to all common refrigerants;
- Copper pipeline connection needed for installation

APPROVALS

Declaration / Certification according to PED.

TECHNICAL DATA

- Applicable Refrigerants: R32 / R404A / R407C / R410A / R290 / R134a / R454B /R513A / R513B / R1234yf / R1234ze / R454C / R455A / R454A / R452B / R448 / R22
- Max. Operating Pressure: 4.9 MPa
- Max. Operating Pressure Differential: 3.1 MPa
- Min. Operating Pressure Differential: 0.3~0.4 MPa
- Medium Temperature: -30°C~ +130°C
- Ambient Temperature: -20°C ~ +55°C
- Relative Humidity: ⩽95% RH
- Allowable Voltage Fluctuation: 85%~110%
- Standard Coil: AC 110, AC 220V, AC 24V

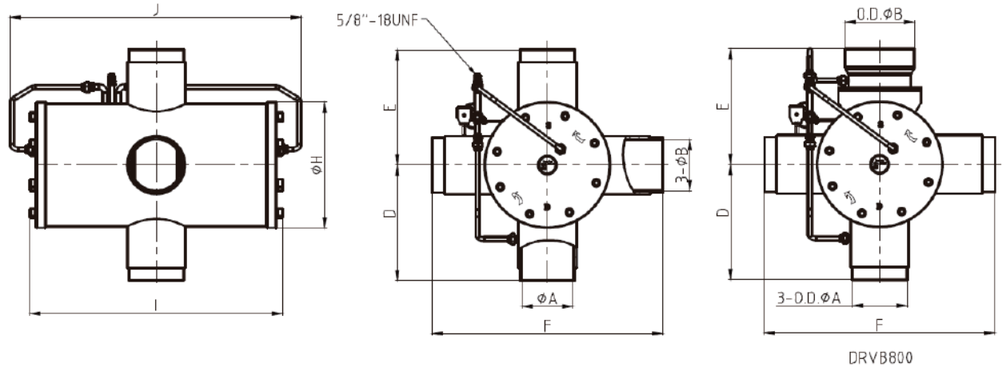
GENERAL PERFORMANCE DATA

Model	Area of High Pressure Side	Area of Low Pressure Side	Inner Leakage Rate[1]	R22	R134a	R32	R407C	R290	R410A	R454A	R452B	R448A
	[mm²]	[mm²]	[⩽L/min]	[kW]								
DRVB150	2142	2300	20	196	149	275	188	199	225	200	240	198
DRVB200	2721	2909	30	264	200	370	253	268	303	270	323	266
DRVB300	3608	4264	45	366	278	513	351	372	420	374	448	369
DRVB350	5200	5867	60	476	362	667	457	484	547	487	583	481
DRVB400	5847	7272	90	527	405	749	513	544	614	546	654	540
DRVB600	7410	10200	120	762	580	1068	730	775	875	779	932	769
DRVB800	10431	13593	200	1074	818	1384	1033	1092	1234	1098	1314	1084

Nominal capacity is based on:
1.Evaporating temperature T_e=3°C; 3.Superheating degree ΔT_{sh}=5K;
2.Condensing temperature T_c=48°C; 4.Low Pressure Drop △p =0.015 MPa;
[1]Inner Leakage Rate：compressed air or nitrogen with pressure difference of 1.0 MPa.

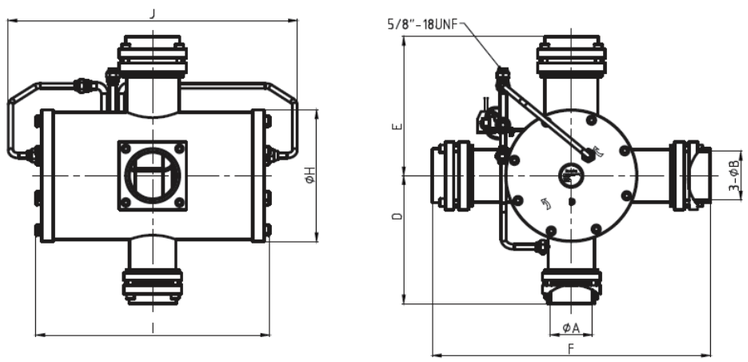
Ordering and Dimensions

WELDED CONNECTION



Model	Code No.	Φ A [mm]	Φ B [mm]	D [mm]	E [mm]	F [mm]	Φ H [mm]	I [mm]	J [mm]	Weight [kg] (N.W.)
DRVB150	340093000143	54	67	133	138	276	140	302	399	24
DRVB200	340092000143	54	67	152	152	304	170	325	417	37
DRVB300	340091000143	67	79	168	180	360	184	386	488	50
DRVB350	340090000143	79	92	195	210	420	224	439	540	80
DRVB400	340088000101	92	105	223	223	446	224	473	574	88
DRVB600	340089002349	105	134	235	235	470	250	546	646	122
DRVB800	340087002601	133	168	279	279	558	278	612	695	155

FLANGE CINNECTION



Model	Code No.	Φ A [mm]	Φ B [mm]	D [mm]	E [mm]	F [mm]	Φ H [mm]	I [mm]	J [mm]	Weight [kg]
DRVB150F	340093001548	54	67	187	201	402	140	302	399	28
DRVB200F	340092000948	54	67	195	195	390	170	325	417	43
DRVB300F	340091000948	67	79	211	228	456	184	386	488	58
DRVB350F	340090000148	79	92	243	264	528	224	439	540	93
DRVB600F	340089002550	108	133	306	306	612	250	546	646	137

ELECTRONIC EXPANSION VALVE

DunAn

DPF Series



APPLICATION

DPF Series electronic expansion valve is mainly composed of step motor and valve needle with magnetic rotor, driven by coil which receives pulse signals from controller. The transmission screw converts the rotary motion of the rotor component into the axial linear motion of the valve needle to regulate the flow area of the valve port, adjusting the refrigerant flow rate.

FEATURES

- Low noise and high control precision
- Bi-directional flow;
- Low power consumption and wide flow regulation range;
- Superior self-lubricating thread transmission;
- Application spectrum has extended into systems under potentially explosive conditions
- Plastic packaging anti-corrosion coil
- Advanced and highly reliable welding
- Good actuating performance
- Lightweight and compact construction

APPROVALS

Declaration according to PED, LVD, IECEx, ATEX and UL

TECHNICAL DATA

- Applicable Refrigerant: R134a, R407C, R404A, R410A, R290 and R32
- Relative Humidity: ⩽95%
- Medium Temperature: -30°C~+70°C (energized rate below 50%)
- Ambient Temperature: -30°C~+60°C (energized rate below 50%)
- Max. Operating Pressure: 4.5 MPa
- Medium Flow Direction: Bi-flow
- Life Cycle: ⩾100,000

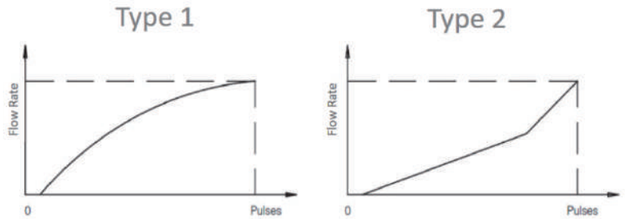
DPF Series Selection Table

Model	Code No.	Style	Orifice Φ	Air Flow [0.1MPa]		Flow Type	Internal Leakage	Reverse OPD	MOPD	Max. Operating Pressure
				250 Pulses	500 Pulses					
			[mm]	[L/min]	[L/min]		[mL/min]	[MPa]	[MPa]	[MPa]
DPF(B)1.0-101	310011101700	A	1.0	9	⩾ 12	1	⩽ 600	⩾ 2.2	3.5	4.5
DPF(B)1.0-103	310011100900	A		6		2				
DPF(B)1.0-105	310011100400	B		9		1				
DPF(B)1.0-106	310011101000	B		6		2				
DPF(B)1.3-101	310012003000	A	1.3	16	⩾ 21	1				
DPF(B)1.3-103	310012009600	A		8.5		2				
DPF(B)1.3-105	310012002900	B		16		1				
DPF(B)1.3-106	310012005700	B		8.5		2				
DPF(B)1.65-101	310001127600	A	1.65	25	⩾ 34	1				
DPF(B)1.65-103	310001129900	A		11		2				
DPF(B)1.65-105	310001116800	B		25		1				
DPF(B)1.65-106	310001120100	B		11		2				
DPF(B)1.8-101	310006114700	A	1.8	31	⩾ 45	1				
DPF(B)1.8-103	310006114800	A		13		2				
DPF(B)1.8-105	310006106400	B		31		1				
DPF(B)1.8-106	310006108600	B		13		2				
DPF(B)2.0-101	310007137200	A	2.0	40	⩾ 50	1				
DPF(B)2.0-103	310007137300	A		16		2				
DPF(B)2.0-105	310007132400	B		40		1				
DPF(B)2.0-106	310007134100	B		16		2				
DPF(B)2.2-101	310002001000	A	2.2	45	⩾ 60	1				
DPF(B)2.2-103	310002005100	A		19		2				
DPF(B)2.2-105	310002003600	B		45		1				
DPF(B)2.2-106	310002001700	B		19		2				
DPF(B)2.4-101	310003207500	A	2.4	55	⩾ 74	1				
DPF(B)2.4-103	310003207600	A		23		2				
DPF(B)2.4-105	310003201900	B		55		1				
DPF(B)2.4-106	310003203500	B		23		2				
DPF(B)2.6-101	310016003100	A	2.6	60	⩾ 82	1				
DPF(B)2.6-103	310016003200	A		28		2				
DPF(B)2.6-105	310016003300	B		60		1				
DPF(B)2.6-106	310016003400	B		28		2				
DPF(B)2.8-101	310008002900	A	2.8	67	⩾ 95	1	⩽ 1000	⩾ 1.5	2.8	
DPF(B)2.8-103	310008003000	A		29		2				
DPF(B)2.8-105	310008000800	B		67		1				
DPF(B)2.8-106	310008003100	B		29		2				
DPF(B)3.0-101	310004003600	A	3.0	79	⩾ 105	1				
DPF(B)3.0-103	310004003700	A		31		2				
DPF(B)3.0-105	310004003800	B		79		1				
DPF(B)3.0-106	310004003900	B		31		2				
DPF(B)3.2-101	310009004300	A	3.2	91	⩾ 115	1				
DPF(B)3.2-103	310009004600	A		33		2				
DPF(B)3.2-105	310009000800	B		91		1				
DPF(B)3.2-106	310009001800	B		33		2				
DPF(B)3.5C-P001	310026000300	B	3.5	95	⩾ 113	1				
DPF(B)4.0C-P001	310017004000	B	4.0	135	⩾ 213	1	⩽ 1500	⩾2.2	3.5	
DPF(B)4.5C-P001	310018001900	B	4.5	180	⩾ 268	1				
DPF(B)5.5C-P001	310020001500	B	5.5	245	⩾ 397	1				
DPF(B)6.5C-P001	310022001200	B	6.5	260	⩾ 483	1				

Coil Parameters

Item	Parameter
Full Stroke	500 pulses
Opening Pulse	30±20
Nominal Voltage	DC 12V±10%, rectangular wave
Actuating Mode	4-phase 8-step permanent magnet stepper motor
Excitation Mode	1～2 phase excitation, monopole actuation
Excitation Rate	30～90 PPS: DPF(B) 1.0 – 2.4 30～40 PPS: DPF(B) 2.6 – 6.5
Insulation Class	E
Resistance	46±3.7Ω (DPF(B)1.0-6.5) (20°C)
Current	260mA/Phase(DPF(B)1.0-6.5) (20°C)
Protection Class	IP67 (DPF(B)1.0-6.5)

Flow Characteristics



Nominal Capacity

Model	Orifice Φ	Nominal Capacity					
		R410A	R134a	R290	R407C	R404A	R32
	[mm]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]
DPF(B)1.0	1.0	3.4	2.3	3.1	2.3	2.1	5.1
DPF(B)1.3	1.3	6.7	4.5	6.0	4.5	4.0	9.9
DPF(B)1.65	1.65	12.0	8.1	10.7	8.0	7.2	17.6
DPF(B)1.8	1.8	14.2	9.6	12.7	9.5	8.6	20.9
DPF(B)2.0	2.0	17.4	11.7	15.5	11.6	10.5	25.6
DPF(B)2.2	2.2	19.0	12.8	16.9	12.6	11.4	27.9
DPF(B)2.4	2.4	22.4	15.0	19.9	14.9	13.5	32.9
DPF(B)2.6	2.6	28.6	19.2	25.4	19.0	17.2	42.0
DPF(B)2.8	2.8	30.1	20.3	26.9	20.1	18.2	44.3
DPF(B)3.0	3.0	37.4	25.1	33.3	24.9	22.5	54.9
DPF(B)3.2	3.2	40.2	27.0	35.8	26.8	24.2	59.1
DPF(B)3.5	3.5	48.7	32.8	43.4	32.5	29.4	71.6
DPF(B)4.0	4.0	77.8	52.3	69.3	51.8	46.9	114.3
DPF(B)4.5	4.5	90.8	61.1	81.0	60.5	54.8	133.5
DPF(B)5.5	5.5	106.3	71.5	94.7	70.8	64.1	156.3
DPF(B)6.5	6.5	126.4	85.0	112.6	84.2	76.2	185.7

The nominal capacity is based on:

1.Valve fully open;
2. Condensing Temperature T_c=45°C;
3. Evaporating Temperature T_e=7°C;
4.Superheat Degree ΔT_{sh}=5K;
5. Subcooling Degree ΔT_{sc}=5K

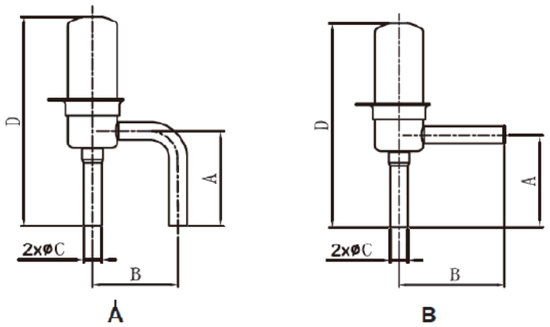
Nominal Capacity

Model	Orifice Φ	Nominal Capacity					
		R410A	R134a	R290	R407C	R404A	R32
	[mm]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]
DPF(B)1.0	1.0	3.5	2.4	3.2	2.3	2.1	5.3
DPF(B)1.3	1.3	6.9	4.7	6.2	4.4	4.1	10.3
DPF(B)1.65	1.65	12.4	8.3	11.0	7.9	7.3	18.4
DPF(B)1.8	1.8	14.6	9.9	13.0	9.4	8.6	21.8
DPF(B)2.0	2.0	18.0	12.1	16.0	11.5	10.6	26.8
DPF(B)2.2	2.2	19.6	13.2	17.4	12.5	11.5	29.2
DPF(B)2.4	2.4	23.1	15.5	20.5	14.7	13.6	34.4
DPF(B)2.6	2.6	29.5	19.8	26.2	18.8	17.4	43.9
DPF(B)2.8	2.8	31.1	20.9	27.7	19.9	18.4	46.4
DPF(B)3.0	3.0	38.5	25.9	34.3	24.6	22.8	57.5
DPF(B)3.2	3.2	41.5	27.9	36.9	26.5	24.5	61.8
DPF(B)3.5	3.5	50.3	33.8	44.7	33.8	29.7	75.0
DPF(B)4.0	4.0	80.2	54.0	71.4	54.0	47.4	119.7
DPF(B)4.5	4.5	93.7	63.0	83.4	63.0	55.4	139.8
DPF(B)5.5	5.5	109.7	73.8	97.6	73.8	64.8	163.6
DPF(B)6.5	6.5	130.4	87.7	116.0	87.7	77.0	194.4

The nominal capacity is based on:

1. Valve fully open;
2. Condensing Temperature T_c=48°C;
3. Evaporating Temperature T_e=3°C;
4. Superheat Degree ΔT_{sh}=5K;
5. Subcooling Degree ΔT_{sc}=5K

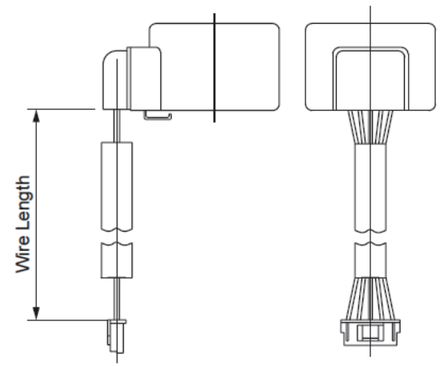
Style



Dimensions

Model	Style	A	B	C	D
		[mm]	[mm]	[in.]	[mm]
DPF(B) 1.0 ～ 2.4	A	35	30	1/4	77
	B	38	38		80
DPF(B) 2.6 ～ 3.2	A	35	36	5/16	77
	B	47	50		89
DPF(B)3.5～6.5	B	45	45	1/2	92

Coils



Coil Model	Code NO	Valve Model	Wire Length[1]	Wire Number	Connector[1]
DPFX07-037[2]	310701138900	DPF(B)1.0-6.5	2000	5	XHP-5
DPFX07-118[2]	310701133500	DPF(B)1.0-6.5	2000	6	XHP-6

Note:

[1] Connector and cable length can be customized

[2] Application under potentially explosive conditions IECEx approved.

THERMOSTATIC EXPANSION VALVE

DunAn

TCE/TCBE Series





APPLICATION

TCE/TCBE thermostatic expansion valves are used to adjust the supply of refrigerant in evaporator by controlling the superheat. The senor bulb is placed at the outlet of the evaporator. TCE/TCBE thermostatic expansion valves are applicable to large capacity systems, such as bus and central air conditioning system, heat pump, and water chillers.

FEATURES

- Nominal capacity (R410A): 3.5～23TR / 12～79kW
- Straightway design;
- Bleed function;
- Bi-Flow design;
- Adjustable superheat;
- Laser welding of power element, long lifetime of diaphragm;
- Available with MOP;

APPROVALS

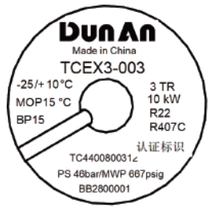
UL, CE

TECHNICAL DATA

- Applicable refrigerants: R134a, R404A/R507, R407C, R410A, R290,and R32 etc
- Max. bulb temperature: 100°C
- Max. valve housing temperature: 110°C
- Medium temperature: -40°C～+70°C
- Ambient temperature: : -30°C～+55°C
- Max. operating pressure: 4.6 MPa
- Max. test pressure: 5.1 MPa
- Relative humidity: below 95%
- Static state superheat adjustment range: 0K～8K
- Static state superheat presetting: 4K
- Equalization Connection:1/4”
- Capillary Tube Length: 1500mm

Identification

EXAMPLE



TCEX3-003	= Type (X=R22)
3 TR	= Nominal Capacity in Tons
10 kW	= Nominal Capacity in kW
R22/R407C	= Refrigerant
-25/+10°C	= Evaporating Temperature Range
MOP 15°C	= Max. Evaporating Pressure
BP15	= Bleed 15%
TC4400800312	= Ordering Code Number
PS 46bar/MWP 667psig	= Max. Working Pressure
BB2800001	= Date Marking

REFRIGERANT

Z: R407C
N: R134a
S: R404A/R507
L: R410A
X: R22/R407C
P: R290
B: R32

MOP Options

Refrigerant	Range N -40°C ~ +10°C	Range K -25°C ~ +10°C MOP 15°C
R404A/R507	(Without MOP)	8.3 bar
R407C	(Without MOP)	6.6 bar
R134a	(Without MOP)	3.9 bar
R410A	(Without MOP)	11.4 bar
R22	(Without MOP)	6.9 bar
R32	(Without MOP)	11.8bar
R290	(Without MOP)	6.3bar

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

Nominal Capacity

Model	Orifice No.	R134a		R404A/R507		R407C		R410A		R32		R290		R22	
		kW	TR	kW	TR	kW	TR	kW	TR	kW	TR	kW	TR	kW	TR
TCE	3.5	6	1.5	7	2	9	2.5	12	3.5	18	5	10	3	10	3
	4.5	8	2.5	9	2.5	13	3.5	16	4.5	24	7	14	4	14	4
	6.5	12	3.5	14	4	19	5	24	6.5	35	10	19	5	20	6
	9	17	4.5	18	5	25	7	32	9	47	13	25	7	27	7.5
	11	20	5.5	21	6	30	8.5	37	11	54	15	32	9	32	9
	13	24	7	26	7.5	36	10	45	13	68	19	36	10	38	11
TCBE	15	29	8	31	9	42	12	54	15	81	23	44	12	43	12
	19	37	10	39	11	53	15	68	19	102	29	54	15	54	15
	23	44	12	45	13	62	18	79	23	120	34	63	18	63	18

Nominal capacity is based on:
1.Evaporating temperature T_e=4.4°C;
2.Condensing temperature T_c=38°C;
3.Refrigerant temperature of valve head T_l=37°C;
4.Static superheat SS=4K;
5.Opening superhear OS=4K.

Ordering

R134a: OPENING SUPERHEAT = 4K, RANGE N

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCEN	3.5	3/8×5/8	1/4	TC4400800200
	3.5	1/2×5/8	1/4	TC4400800201
	4.5	1/2×7/8	1/4	TC4400800202
	6.5	1/2×5/8	1/4	TC4400800203
	6.5	1/2×7/8	1/4	TC4400800204
	6.5	5/8×7/8	1/4	TC4400800205
	9	5/8×7/8	1/4	TC4400800206
	11	5/8×7/8	1/4	TC4400800347
	13	5/8×7/8	1/4	TC4400800207
TCBEN	15	5/8×7/8	1/4	TC4400800210
	15	5/8×1-1/8	1/4	TC4400800211
	19	5/8×1-1/8	1/4	TC4400800212
	19	7/8×1-1/8	1/4	TC4400800213
	23	7/8×1-1/8	1/4	TC4400800214
	23	7/8×1-3/8	1/4	TC4400800215

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

R134a: OPENING SUPERHEAT = 4K, RANGE K

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCEN	3.5	3/8×5/8	1/4	TC4400800216
	3.5	1/2×5/8	1/4	TC4400800217
	4.5	1/2×7/8	1/4	TC4400800218
	6.5	1/2×5/8	1/4	TC4400800219
	6.5	1/2×7/8	1/4	TC4400800220
	6.5	5/8×7/8	1/4	TC4400800221
	9	5/8×7/8	1/4	TC4400800222
	11	5/8×7/8	1/4	TC4400800348
	13	5/8×7/8	1/4	TC4400800223
TCBEN	15	5/8×7/8	1/4	TC4400800226
	15	5/8×1-1/8	1/4	TC4400800227
	19	5/8×1-1/8	1/4	TC4400800228
	19	7/8×1-1/8	1/4	TC4400800229
	23	7/8×1-1/8	1/4	TC4400800230
	23	7/8×1-3/8	1/4	TC4400800231

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

R404A/R507: OPENING SUPERHEAT = 4K, RANGE N

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCES	3.5	3/8×5/8	1/4	TC4400800232
	3.5	1/2×5/8	1/4	TC4400800233
	4.5	1/2×7/8	1/4	TC4400800234
	6.5	1/2×7/8	1/4	TC4400800235
	6.5	1/2×5/8	1/4	TC4400800236
	6.5	5/8×7/8	1/4	TC4400800237
	9	5/8×7/8	1/4	TC4400800239
	11	5/8×7/8	1/4	TC4400800349
	13	5/8×7/8	1/4	TC4400800240
TCBES	15	5/8×7/8	1/4	TC4400800243
	15	5/8×1-1/8	1/4	TC4400800244
	19	5/8×1-1/8	1/4	TC4400800245
	19	7/8×1-1/8	1/4	TC4400800246
	23	7/8×1-1/8	1/4	TC4400800247
	23	7/8×1-3/8	1/4	TC4400800386

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

R404A/R507: OPENING SUPERHEAT = 4K, RANGE K

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCES	3.5	3/8×5/8	1/4	TC4400800248
	3.5	1/2×5/8	1/4	TC4400800249
	4.5	1/2×7/8	1/4	TC4400800250
	6.5	1/2×7/8	1/4	TC4400800251
	6.5	1/2×5/8	1/4	TC4400800252
	6.5	5/8×7/8	1/4	TC4400800253
	9	5/8×7/8	1/4	TC4400800255
	11	5/8×7/8	1/4	TC4400800350
	13	5/8×7/8	1/4	TC4400800256
TCBES	15	5/8×7/8	1/4	TC4400800259
	15	5/8×1-1/8	1/4	TC4400800260
	19	5/8×1-1/8	1/4	TC4400800261
	19	7/8×1-1/8	1/4	TC4400800262
	23	7/8×1-1/8	1/4	TC4400800263
	23	7/8×1-3/8	1/4	TC4400800387

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

R407C: OPENING SUPERHEAT = 4K, RANGE N

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCEZ	3.5	3/8×5/8	1/4	TC4400800264
	3.5	1/2×5/8	1/4	TC4400800265
	4.5	1/2×7/8	1/4	TC4400800266
	6.5	1/2×5/8	1/4	TC4400800267
	6.5	1/2×7/8	1/4	TC4400800268
	6.5	5/8×7/8	1/4	TC4400800269
	9	5/8×7/8	1/4	TC4400800270
	11	5/8×7/8	1/4	TC4400800351
	13	5/8×7/8	1/4	TC4400800271
TCBEZ	15	5/8×7/8	1/4	TC4400800273
	15	5/8×1-1/8	1/4	TC4400800274
	19	5/8×1-1/8	1/4	TC4400800275
	19	7/8×1-1/8	1/4	TC4400800276
	23	7/8×1-1/8	1/4	TC4400800277
	23	7/8×1-3/8	1/4	TC4400800278

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

R407C: OPENING SUPERHEAT = 4K, RANGE K

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCEZ	3.5	3/8×5/8	1/4	TC4400800280
	3.5	1/2×5/8	1/4	TC4400800281
	4.5	1/2×7/8	1/4	TC4400800282
	6.5	1/2×5/8	1/4	TC4400800283
	6.5	1/2×7/8	1/4	TC4400800284
	6.5	5/8×7/8	1/4	TC4400800285
	9	5/8×7/8	1/4	TC4400800286
	11	5/8×7/8	1/4	TC4400800354
	13	5/8×7/8	1/4	TC4400800287
TCBEZ	15	5/8×7/8	1/4	TC4400800289
	15	5/8×1-1/8	1/4	TC4400800290
	19	5/8×1-1/8	1/4	TC4400800291
	19	7/8×1-1/8	1/4	TC4400800292
	23	7/8×1-1/8	1/4	TC4400800293
	23	7/8×1-3/8	1/4	TC4400800294

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

R410A: OPENING SUPERHEAT = 4K, RANGE N

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCEL	3.5	3/8×5/8	1/4	TC4400800295
	3.5	1/2×5/8	1/4	TC4400800296
	4.5	1/2×7/8	1/4	TC4400800297
	6.5	1/2×5/8	1/4	TC4400800298
	6.5	1/2×7/8	1/4	TC4400800299
	6.5	5/8×7/8	1/4	TC4400800300
	9	5/8×7/8	1/4	TC4400800301
	11	5/8×7/8	1/4	TC4400800327
	13	5/8×7/8	1/4	TC4400800302
TCBEL	15	5/8×7/8	1/4	TC4400800305
	15	5/8×1-1/8	1/4	TC4400800306
	19	5/8×1-1/8	1/4	TC4400800307
	19	7/8×1-1/8	1/4	TC4400800308
	23	7/8×1-1/8	1/4	TC4400800309
	23	7/8×1-3/8	1/4	TC4400800310

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

R410A: OPENING SUPERHEAT = 4K, RANGE K

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCEL	3.5	3/8×5/8	1/4	TC4400800311
	3.5	1/2×5/8	1/4	TC4400800312
	4.5	1/2×7/8	1/4	TC4400800313
	6.5	1/2×5/8	1/4	TC4400800314
	6.5	1/2×7/8	1/4	TC4400800315
	6.5	5/8×7/8	1/4	TC4400800316
	9	5/8×7/8	1/4	TC4400800317
	11	5/8×7/8	1/4	TC4400800357
	13	5/8×7/8	1/4	TC4400800318
TCBEL	15	5/8×7/8	1/4	TC4400800320
	15	5/8×1-1/8	1/4	TC4400800321
	19	5/8×1-1/8	1/4	TC4400800322
	19	7/8×1-1/8	1/4	TC4400800323
	23	7/8×1-1/8	1/4	TC4400800324
	23	7/8×1-3/8	1/4	TC4400800325

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

R32: OPENING SUPERHEAT = 4K, RANGE N

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCEB	3.5	3/8×5/8	1/4	TC4400800328
	3.5	1/2×5/8	1/4	TC4400800329
	4.5	1/2×7/8	1/4	TC4400800330
	6.5	1/2×5/8	1/4	TC4400800331
	6.5	1/2×7/8	1/4	TC4400800332
	6.5	5/8×7/8	1/4	TC4400800333
	9	5/8×7/8	1/4	TC4400800335
	11	5/8×7/8	1/4	TC4400800336
	13	5/8×7/8	1/4	TC4400800337
TCBEB	15	5/8×7/8	1/4	TC4400800339

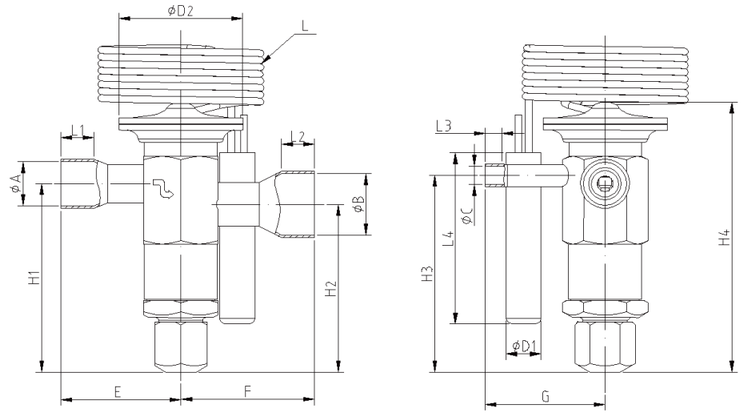
Code numbers listed above refer to standard series. For other requirements, please contact DunAn

R290: OPENING SUPERHEAT = 4K, RANGE N

Model	Orifice No.	Connection Solder		Code No.
		Inlet x Outlet [in.]	Equalization [in.]	
TCEP	6.5	5/8×7/8	1/4	TC4400800340
	13	5/8×7/8	1/4	TC4400800341
TCBEP	15	5/8×7/8	1/4	TC4400800342
	19	7/8×7/8	1/4	TC4400800343
	23	7/8×7/8	1/4	TC4400800344

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

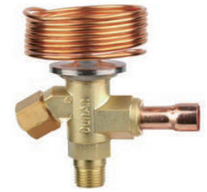
Dimensions



Model	Connection Inlet × Outlet ODF	L	E	F	G	H1	H2	H3	H4	L1	L2	L3	L4	ΦD1	ΦD2	ΦC	Weight
	in.	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Kg
TCE	3/8x5/8	1.5	43.5	43.5	44	68	60.5	71	97.5	12	12	6	62	12.7	45	6.4	0.48
	1/2x5/8	1.5															
	1/2x7/8	1.5	43.5	48.5													
	5/8x7/8	1.5	50.5	56.0							12						
TCBE	5/8x1-1/8	1.5	50.5	60.5	44	72.5	65	78.5	106	12	16	6	76	19	53	6.4	0.62
	7/8x1-1/8	1.5	56.0	60.5													
	7/8x1-3/8	1.5	56.0	65.5							20						

TI Series





APPLICATION

TI/TIE series is replaceable port component type thermostatic expansion valve used to regulate liquid refrigerant flow injecting into evaporator by sensing the superheat degree of evaporator outlet through thermal bulb and external (internal) balance. TI/TIE series is specially applied for refrigeration, ice machines applications, heat pumps as well as air conditioners.

FEATURES

- Nominal capacity (R134a): 0.19～2.87TR / 0.68～10.1kW
- Adjustable superheat degree design
- Available with MOP function
- Interchangeable orifice assembly makes it easy to match capacity and storage;
- Connection available with Flare and Solder
- Power head uses continuous laser welding, which has high welding strength and long diaphragm life

APPROVALS

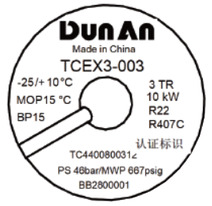
UL, CE

TECHNICAL DATA

- Applicable refrigerants: R22, R134a, R404A/R507, R407C, R410A and R448A/R449A etc.
- Max. bulb temperature: 100°C
- Max. valve housing temperature: 110°C
- Medium temperature: -40°C～+70°C
- Ambient temperature: : -30°C～+55°C
- Max. operating pressure: 4.6 MPa
- Max. test pressure: 5.1 MPa
- Relative humidity: below 95%
- Static state superheat adjustment range: 0K～8K
- Static state superheat presetting: 5K
- Equalization Connection:1/4" (Flare/Solder)
- Capillary Tube Length: 1500mm

Identification

EXAMPLE



TIES-003	= Model (S:R404A)
Rxxx	= Refrigerant
-40/+10°C	= Evaporation
TI4300800088	= Ordering Code Number
MOP15	= Max. Operation Pressure
PS 46 bar/MWP667psig	= Max. Working Pressure
BB2800001	= Date Marking

REFRIGERANT

X: R22
Z: R407C
N: R134a
S: R404A/R507
L: R410A
K: R448A/R449A

MOP Options

Refrigerant	Range N -40°C ~ +10°C
	MOP +15°C
R22/R407C	6.9 bar
R404A/R507	8.3 bar
R407C	6.6 bar
R134a	3.8 bar
R410A	11.5 bar

Note: only the most representative options are present, for other requirements please contact DunAn.

Nominal Capacity

Orifice No.	R407C		R134a		R404A/R507		R410A		R448A/R449A	
	[kW]	[TR]	[kW]	[TR]	[kW]	[TR]	[kW]	[TR]	[kW]	[TR]
0X	0.96	0.27	0.68	0.19	0.65	0.18	1.05	0.29	0.87	0.25
00	1.87	0.53	1.2	0.34	1.3	0.37	2.08	0.6	1.67	0.5
01	3.67	1.04	2.08	0.59	2.64	0.75	4.07	1.16	3.43	0.95
02	4.96	1.41	2.55	0.73	3.7	1.05	5.52	1.57	4.60	1.3
03	8.45	2.4	4.30	1.22	6.29	1.79	9.37	2.66	7.92	2.29
04	12.9	3.67	6.40	1.82	9.97	2.83	14.27	4.04	12.05	3.5
05	17.1	4.86	8.43	2.4	13.1	3.71	19.66	5.57	15.7	4.5
06	20.5	5.82	10.1	2.87	15.6	4.42	23.05	6.55	19.05	5.5

Nominal capacity is based on:

1.Evaporating temperature T_e=4.4°C;
2.Condensing temperature T_c=38°C;
3.Refrigerant temperature of valve head T_l=37°C;
4.Superheating degree ΔT_{sh}=6K.

Ordering

Refrigerant	Model	Connection					Code No.
		Inlet [in.]	Outlet [in.]		Equalization [in.]		Range N = -40 ~ +10°C
		Flare	Flare	Solder	Flare	Solder	Without MOP
R134a	TIN	3/8	1/2	—	—	—	TI4300800070
	TIEN	3/8	1/2	—	1/4	—	TI4300800071
	TIN	3/8	—	1/2	—	—	TI4300800072
	TIEN	3/8	—	1/2	—	1/4	TI4300800073
R404A/ R507	TIS	3/8	1/2	—	—	—	TI4300800074
	TIES	3/8	1/2	—	1/4	—	TI4300800075
	TIS	3/8	—	1/2	—	—	TI4300800076
	TIES	3/8	—	1/2	—	1/4	TI4300800077
R410A	TIL	3/8	1/2	—	—	—	TI4300800078
	TIEL	3/8	1/2	—	1/4	—	TI4300800079
	TIL	3/8	—	1/2	—	—	TI4300800080
	TIEL	3/8	—	1/2	—	1/4	TI4300800081
R407C	TIZ	3/8	1/2	—	—	—	TI4300800066
	TIEZ	3/8	1/2	—	1/4	—	TI4300800067
	TIZ	3/8	—	1/2	—	—	TI4300800068
	TIEZ	3/8	—	1/2	—	1/4	TI4300800069
R448A/R449A	TIK	3/8	1/2	—	—	—	TI4300800059
	TIEK	3/8	1/2	—	1/4	—	TI4300800082
	TIK	3/8	—	1/2	—	—	TI4300800043
	TIEK	3/8	—	1/2	—	1/4	TI4300800039
R22	TIX	3/8	1/2	—	—	—	TI4300800060
	TIEX	3/8	1/2	—	1/4	—	TI4300800063
	TIX	3/8	—	1/2	—	—	TI4300800064
	TIEX	3/8	—	1/2	—	1/4	TI4300800065

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

Refrigerant	Model	Connection					Code No.
		Inlet [in.]	Outlet [in.]		Equalization [in.]		-40°C～+10°C
		Flare	Flare	Solder	Flare	Solder	With MOP
R134a	TIN	3/8	1/2	—	—	—	TI4300800083
	TIEN	3/8	1/2	—	1/4	—	TI4300800084
	TIN	3/8	—	1/2	—	—	TI4300800085
	TIEN	3/8	—	1/2	—	1/4	TI4300800086
R404A/ R507	TIS	3/8	1/2	—	—	—	TI4300800087
	TIES	3/8	1/2	—	1/4	—	TI4300800088
	TIS	3/8	—	1/2	—	—	TI4300800089
	TIES	3/8	—	1/2	—	1/4	TI4300800090
R448A/R449A	TIK	3/8	1/2	—	—	—	TI4300800091
	TIEK	3/8	1/2	—	1/4	—	TI4300800092
	TIK	3/8	—	1/2	—	—	TI4300800093
	TIEK	3/8	—	1/2	—	1/4	TI4300800094

Code numbers listed above refer to standard series. For other requirements, please contact DunAn

CONNECTION NUT



Connection [in.]	Code No.
1/4	TI-702-25-04
3/8	TI-702-25-08
1/2	TI-702-25-10

ORIFICE ASSEMBLY WITH FILTER



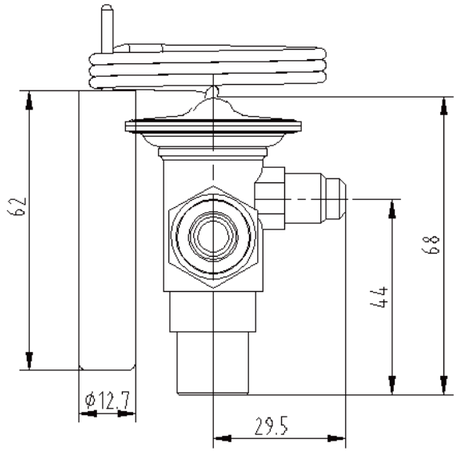
Orifice No.	Code No.
0x	TI-602-00
00	TI-604-00
01	TI-606-00
02	TI-608-00
03	TI-610-00
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05	TI-614-00
06	TI-616-00

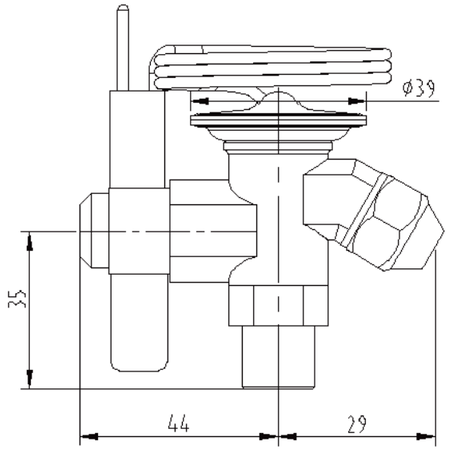
INLET ADAPTOR



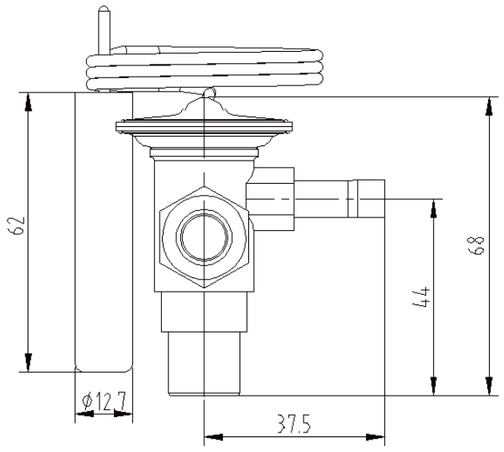
Connection ODF Solder	Code No.
3/8 in.	TI-804-00

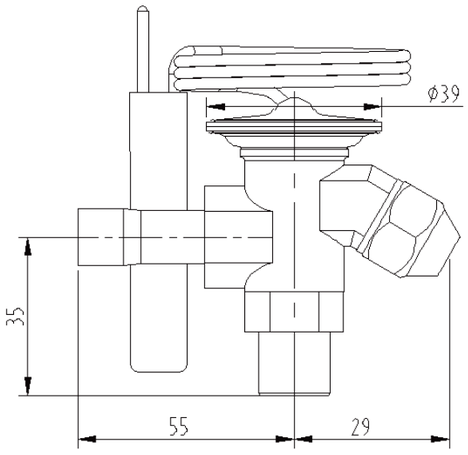
Dimensions and Weight





Connection: flare / flare / flare
Weight Approx.: 0.35kg





Connection: flare / solder / solder
Weight Approx.: 0.35kg

TA Series





APPLICATION

TA/TAE series are used to regulate liquid refrigerant flow into evaporators with small and medium size in refrigeration, ice maker, heat pump, and air conditioning systems by sensing the the superheat degree of evaporator outlet through thermal bulb and external (internal) balance tube.

FEATURES

- Nominal capacity (R134a): 0.11～3TR / 0.4～10.5kW
- Fixed (angleway type) and adjustable (straightway type) superheat can be supplied;
- Available with strainer in inlet tube;
- Versions with and without external equalization, with and without bleed;
- Available with universal charge, range N or with MOP charge;
- Power head uses continuous laser welding, which has high welding strength and long diaphragm life

APPROVALS

UL, CE

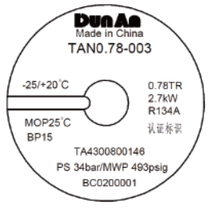
TECHNICAL DATA

Applicable refrigerants: R134a, R404A, R507, R290, R407C, and R448A/R449A etc.

Max. bulb temperature: 100°C	Static state superheat adjustment range: 0K～8K
Max. valve housing temperature: 110°C	Static state superheat presetting: 4K
Medium temperature: -40°C～+70°C	Equalization Connection:1/4" (solder ODF)
Ambient temperature: : -30°C～+55°C	Capillary Tube Length: 750mm
Max. operating pressure: 3.4 MPa	Bleed: 15% / 30%
Max. test pressure: 3.75 MPa	Connection: 1/4", 3/8" inlet；3/8",1/2" outlet.
Relative humidity: below 95%	

Identification

EXAMPLE



TAN0.78-003	= Model (N=R134a)
0.78TR	= Nominal Capacity in Tons
2.7kW	= Nominal Capacity in kW
R134a	= Refrigerant
-25/+20	= Evaporating Temperature Range
MOP 25	= Max. Evaporating Pressure
BP15	= Bleed 15%
TA4300800146	= Ordering Code Number
PS 34bar/MWP 493psig	= Max. Working Pressure
BC0200001	= Date Marking

REFRIGERANT

X: R22
Z: R407C
N: R134a
S: R404A/R507
P: R290

Nominal Capacity

Model	R134a		R407C		R404A/R507		R290		R448A/449A	
	TR	kW	TR	kW	TR	kW	TR	kW	TR	kW
TA/TAE 0	0.11	0.4	0.16	0.5	0.11	0.38	0.17	0.6	0.15	0.5
TA/TAE 1	0.25	0.9	0.3	1.1	0.21	0.7	0.32	1.2	0.3	1.0
TA/TAE 2	0.5	1.8	0.8	2.7	0.45	1.6	0.74	2.6	0.7	2.5
TA/TAE 3	0.78	2.7	1.1	3.8	0.6	2.1	1.1	3.9	1.0	3.5
TA/TAE 4	1.3	4.6	1.6	5.6	1.2	4.2	1.6	5.6	1.5	5.2
TA/TAE 5	1.9	6.7	2.5	8.6	1.7	6.0	2.4	8.4	2.3	8.0
TA/TAE 6	2.5	8.6	3.2	11.3	2.2	7.7	3.2	11.2	3.0	10.5
TA/TAE 7	3.0	10.5	4.9	16.7	2.6	9.1	4.7	16.5	4.5	15.5

Nominal capacity is based on:

1.Evaporating temperature T_e=5°C;
2.Condensing temperature T_c=32°C;
3.Refrigerant temperature of valve head T_l=28°C;
4.Static superheat SS=4K;
5.Opening superhear OS=4K.

Ordering

Refrigerant	Range N -40 ~ +10°C	Range HP -25 ~ +20°C MOP +25°C	Range K -25 ~ +10°C MOP +15°C	Range AC -25 ~ +15°C MOP +20°C
R134a	(Without MOP)	5.6bar	3.9 bar	4.7 bar
R404A/R507	(Without MOP)	11.4bar	8.3 bar	9.9 bar
R290	(Without MOP)	8.51bar	6.3 bar	7.4 bar
R407C	(Without MOP)	9.2bar	6.6 bar	7.8 bar

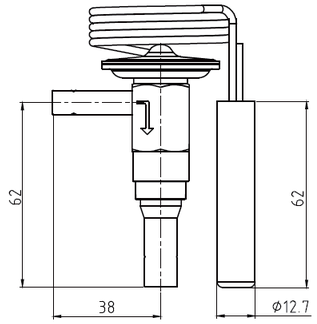
Note: only the most representative options are present, for other requirements please contact DunAn.

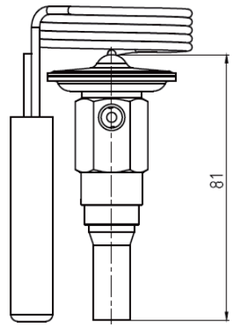
Ordering

Refrigerant	Model	Connection Solder	Code No.	
			Range N = -40 ~ +10°C	
		Inlet X Outlet [in.]	Angleway Internal Equalization	Straightway Internal Equalization
R134a	TAN/TAEN 0	1/4x3/8	TA4300800143	TA4300800151
	TAN/TAEN 1	1/4x3/8	TA4300800144	TA4300800032
	TAN/TAEN 2	1/4x3/8	TA4300800145	TA4300800152
	TAN/TAEN 3	1/4x3/8	TA4300800146	TA4300800154
	TAN/TAEN 4	1/4x3/8	TA4300800147	TA4300800155
	TAN/TAEN 5	3/8x1/2	TA4300800148	TA4300800156
	TAN/TAEN 6	3/8x1/2	TA4300800149	TA4300800157
	TAN/TAEN 7	3/8x1/2	TA4300800150	TA4300800158
R407C	TAZ/TAEZ 0	1/4x3/8	TA4300800095	TA4300800103
	TAZ/TAEZ 1	1/4x3/8	TA4300800096	TA4300800104
	TAZ/TAEZ 2	1/4x3/8	TA4300800097	TA4300800105
	TAZ/TAEZ 3	1/4x3/8	TA4300800098	TA4300800106
	TAZ/TAEZ 4	1/4x3/8	TA4300800058	TA4300800107
	TAZ/TAEZ 5	3/8x1/2	TA4300800100	TA4300800108
	TAZ/TAEZ 6	3/8x1/2	TA4300800101	TA4300800109
	TAZ/TAEZ 7	3/8x1/2	TA4300800102	TA4300800110
R404A/R507	TAS/TAES 0	1/4x3/8	TA4300800126	TA4300800135
	TAS/TAES 1	1/4x3/8	TA4300800128	TA4300800136
	TAS/TAES 2	1/4x3/8	TA4300800129	TA4300800137
	TAS/TAES 3	1/4x3/8	TA4300800130	TA4300800138
	TAS/TAES 4	1/4x3/8	TA4300800131	TA4300800139
	TAS/TAES 5	3/8x1/2	TA4300800132	TA4300800140
	TAS/TAES 6	3/8x1/2	TA4300800133	TA4300800141
	TAS/TAES 7	3/8x1/2	TA4300800134	TA4300800142
R290	TAP/TAEP 0	1/4x3/8	TA4300800159	TA4300800164
	TAP/TAEP 1	1/4x3/8	TA4300800016	TA4300800029
	TAP/TAEP 2	1/4x3/8	TA4300800017	TA4300800031
	TAP/TAEP 3	1/4x3/8	TA4300800018	TA4300800041
	TAP/TAEP 4	1/4x3/8	TA4300800160	TA4300800042
	TAP/TAEP 5	3/8x1/2	TA4300800161	TA4300800165
	TAP/TAEP 6	3/8x1/2	TA4300800162	TA4300800166
	TAP/TAEP 7	3/8x1/2	TA4300800163	TA4300800167

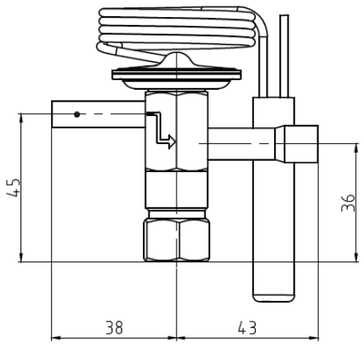
Code numbers listed above refer to standard series. For other requirements, please contact DunAn

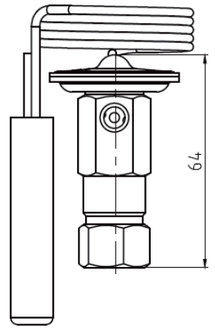
Dimensions and Weight



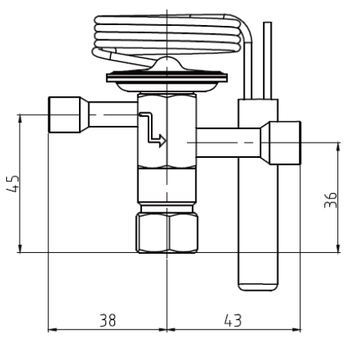


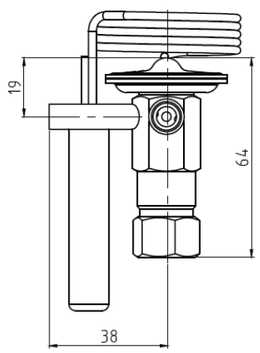
Angleway, Internal Equalization, Non-Adjustable
Weight Approx.: 0.19 kg





Straightway, Internal Equalization, Adjustable
Weight Approx.: 0.21kg





Straightway, External Equalization, Adjustable
Weight Approx.: 0.21kg

SOLENOID VALVE

DunAn

FDF-H Series (Commercial)



APPLICATION

FDF-H series solenoid valves are new developed products with extended pressure and temperature ranges, which meet requirements of new refrigerants, and are suitable for refrigerant controls inheat pumps, air conditioning refrigeration and freezing systems.

FEATURES

- Applied in liquid, suction, and hot gas pipe lines;
- Widened operation temperature and pressure range can fulfill challenges of new refrigerants;
- High reliability, lifetime ⩾ 3 000 000 times
- very low leakage ⩽ 10ml/min
- Direct operated and piston pilot operated
- NC (normally closed).

APPROVALS

TÜV, declaration according to LVD or PED

TECHNICAL DATA

- Applicable Refrigerants: R32, R134a, R290, R407C, R410A, R404A, R507, R513A, R454B, and R448A
- Media Temperature: -40°C~+140°C
- Ambient Temperature: -30°C~+60°C
- Applicable Relative Humidity: ⩽95%

Model	Opening Pressure Difference of Solenoid Valve With Standard Coil			Ps	K_v (2)
	Min. Pressure Differential Min OPD [MPa]	Max. Pressure Differential [MPa] (1)			
		AC	DC	[MPa]	[m^3/h]
FDF3H	0	3.8	2.8	5	0.27
FDF6H	0.05				0.8
FDF10H					1.9
FDF15H					2.6
FDF20H					4.0
FDF22H					5.0

(1) MOPD for gaseous medium is about 0.1 MPa greater, for liquid medium is about 0.1 MPa lower.
(2) The K_v value is the water flow at a differential pressure of 0.1 MPa.
Flow Unit: m^3/h; Density: 1000 kg/m^3 .

Ordering

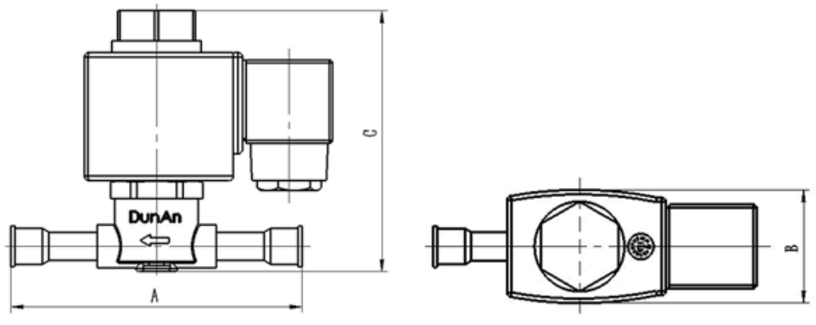
SOLDER CONNECTION: NC (NORMALLY CLOSED)

ODF Connection					
Model	Connection Size[In.]	Connection Size[mm.]	Port size [mm]	Code NO.	Code NO.
FDF3H-1001	-	6	3	320007002000	Direct
FDF3H-1002	1/4	-	3	320007002100	
FDF6H-1001	-	10	6	320007002200	Piston
FDF6H-1002	3/8	-	6	320007002300	
FDF6H-1003	1/2	-	6	320007002400	
FDF6H-1051[*]	3/8	-	6	320007002500	
FDF6H-1052[*]	-	10	6	320007002600	
FDF6H-1053[*]	1/2	-	6	320007002700	
FDF10H-1001	1/2	-	10	320007002800	
FDF10H-1002	-	16	10	320007002001	
FDF10H-1003	1/2	-	10	320007002900	
FDF15H-1001	-	16	13.5	320007002002	
FDF20H-1001	7/8	-	19	320007002003	
FDF22H-1001	7/8	-	19.5	320007002004	

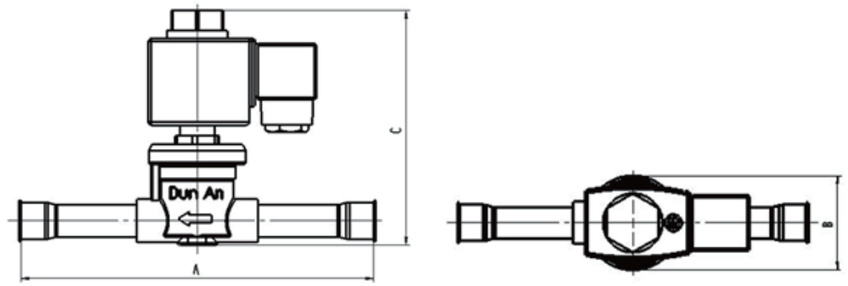
[*] compatible with small coil FDFX02-0335

Dimensions

SOLDER CONNECTION



Model	Connection		A	B	C	Weight
	[in.]	[mm]	[mm]	[mm]	[mm]	[g]
FDF3H-1001	-	6	91	29	84	142
FDF3H-1002	1/4	-	91	29	84	142
FDF6H-1001	-	10	95	31	88	165
FDF6H-1002	3/8	-	95	31	88	162
FDF6H-1003	1/2	-	120	31	88	169
FDF6H-1051	3/8	-	95	31	58	156
FDF6H-1052	-	10	95	31	58	156
FDF6H-1053	1/2	-	120	31	58	164
FDF10H-1001	1/2	-	109	34	95	247
FDF10H-1002	-	16	156	34	95	266
FDF10H-1003	1/2	-	127	34	95	252



Model	Connection		A	B	C	Weight
	[in.]	[mm]	[mm]	[mm]	[mm]	[g]
FDF15H-1001	-	16	175	48	177	477
FDF20H-1001	7/8	-	157	48	124	796
FDF22H-1001	7/8	-	181	48	124	800

Coils

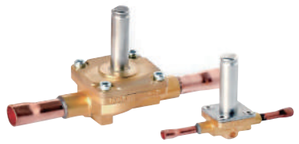
PARAMETERS

- Ambient Temperature:-30°C~+55°C
- Applicable Relative Humidity: ⩽95%
- Allowable Voltage Range: AC: 85%~110%,
- Protection Class: IP65

Model	[in.]	[mm]	[mm]	[mm]	Code
FDFX01-1001	AC 110	50/60	16VA	DIN	321010000100
FDFX01-1002	AC 220	50/60	16VA	DIN	321010000200
FDFX01-1009	AC 220	50/60	16VA	Cable	321010000300
FDFX02-0335[*]	AC 24	50/60	7/5W	Cable	321010000400
FDFXD01-1001	DC 12	/	20W	DIN	321010000500
FDFXD01-1002	DC 24	/	20W	DIN	321010000600
FDFXD01-1003	DC 48	/	20W	Cable	321010000700
FDFXD01-1004	DC 48	/	20W	DIN	321010000800
FDFXD01-1005	DC 110	/	20W	DIN	321010000900

[*] protection class: IP54

FDF Series (Commercial)



APPLICATION

By switching the electromagnetic coil to cut off or activate the refrigerant flow, FDF series solenoid valves are used in refrigerant control of heat pumps, air conditioning, and refrigeration and freezing systems.

FEATURES

- Applied in liquid, suction, and hot gas pipe lines;
- Suitable for all fluorinated refrigerants and flammable refrigerants;
- Special seal gasket;
- NC (normally closed).

APPROVALS

TUV, declaration according to LVD or PED

TECHNICAL DATA

- Applicable Refrigerants: R134a, R290, R407C, R410A, R404A, and R507
- Media Temperature: -30°C~+105°C (FDF2-22); -30°C~+130°C (FDF25-40);
- Ambient Temperature: -30°C~+55°C
- Applicable Relative Humidity: ⩽95%
- Max. 130°C during defrosting for max. 2h

Model	Opening Pressure Difference of Solenoid Valve With Standard Coil			Ps	K_v[2]	Weight
	Min. Pressure Differential Min OPD	Max. Pressure Differential [MPa][1]				
	[MPa]	AC	DC	[MPa]	[m³/h]	[kg]
FDF2	0	3.1	1.8	4.5	0.16	0.4
FDF3					0.27	
FDF6	0.02				0.8	0.6
FDF10					1.9	0.7
FDF15				4.2	2.6	1.0
FDF20					6.0	1.5
FDF22	0.03				8.0	1.5
FDF25					10.0	3.0
FDF32					16.0	4.3
FDF40					25.0	4.3

(1) MOPD for gaseous medium is about 0.1 MPa greater, for liquid medium is about 0.1 MPa lower.
(2) The K_v value is the water flow at a differential pressure of 0.1 MPa.
Flow Unit: m³/h; Density: 1000 kg/m³.

Nominal Capacity

Model	Rated Capacity [kW]											
	Liquid Line				Suction Gas				Hot Gas			
	R134a	R404A / R507	R407C	R410A	R134a	R404A / R507	R407C	R410A	R134a	R404A / R507	R407C	R410A
FDF2	2.9	2.2	3	3.4	-	-	-	-	1.2	1.2	1.5	1.7
FDF3	5	3.8	5.1	5.8	-	-	-	-	2	2	2.4	3.0
FDF6	15	11	15	17	1.3	1.6	1.7	2.2	5.9	6	7.2	8.8
FDF10	35	27	36	40	3.1	3.9	4	5.3	14	14	17	21
FDF15	48	37	49	55	4.2	5.3	5.4	7.2	19	20	23	28.6
FDF20	107	80	109	121	9	12	12	15.4	43	44	52	56.1
FDF22	138	105	142	160	12	15	15	19	55	56	68	72.9
FDF25	186	141	189	215	16.3	20.4	21	27.8	73	75	90	110
FDF32	297	225	303	345	26.1	32.6	33.6	44.7	117	120	144	176
FDF40	464	351	473	535	40.8	51	52.4	69	183	188	224	275

(1)Rated liquid and suction vapor capacity is based on evaporating temperature t_e =-10°C, liquid temperature ahead of valve t_l=25°C, pressure drop in valve △P=0.15 bar.
(2)Rated hot gas capacity is based on condensing temperature t_c =40°C, pressure drop in valve △P=0.8 bar, hot gas temperature t_h =65°C, and subcooling of refrigerant $\triangle t_{sub}$=4K.

Ordering

FLARE CONNECTION: NC (NORMALLY CLOSED)

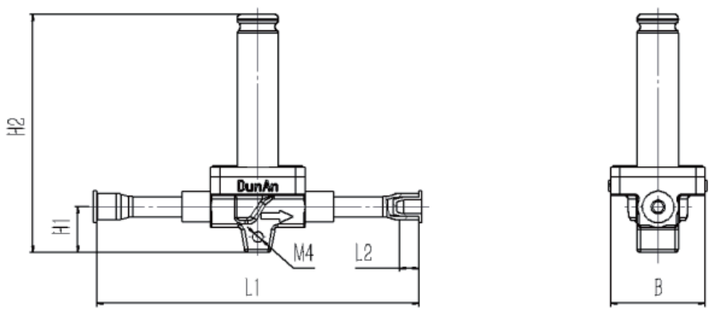
Model	SAE Connections			Actuation
	Connection Size		Code NO.	
FDF2-2001	1/4	6	320005008400	Direct
FDF3-2001	1/4	6	320007000800	
FDF3-2002	3/8	10	320007000900	
FDF6-2001	3/8	10	320009005300	Diaphragm
FDF6-2002	1/2	12	320009005400	
FDF10-2001	1/2	12	320011001000	
FDF10-2002	5/8	16	320011001100	
FDF15-2001	5/8	16	320012001000	
FDF15-2002	7/8	22	320012001100	

SOLDER CONNECTION: NC (NORMALLY CLOSED)

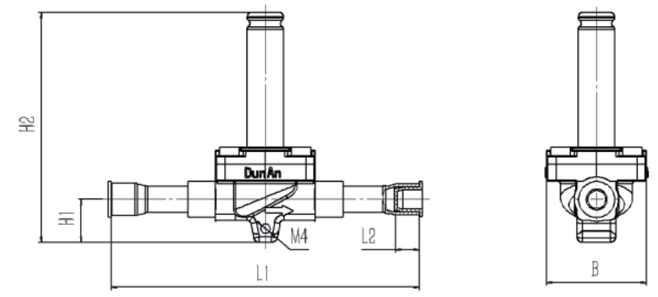
Model	ODF Connection					
	Connection Size[In.]	Code NO.	Model	Connection Size[mm.]	Code NO.	Actuation
FDF2-1001	1/4	320005008100	FDF2-1002	6	320005008300	Direct
FDF3-1001	1/4	320007000100	FDF3-1005	6	320007000500	
FDF3-1002	3/8	320007000200	FDF3-1006	10	320007000700	
FDF6-1001	3/8	320009004900	FDF6-1003	10	320009005100	
FDF6-1002	1/2	320009005000	FDF6-1004	12	320009005200	
FDF10-1001	1/2	320011000300	FDF10-1004	12	320011000900	
FDF10-1002	5/8	320011000400	FDF10-1002	16	320011000400	
FDF15-1003	5/8	320012000200	FDF15-1003	16	320012000200	
FDF15-1004	3/4	320012000400	FDF15-1004	19	320012000400	Diaphragm
FDF15-1005	7/8	320012000500	FDF15-1005	22	320012000500	
FDF20-1001	3/4	320013003800	FDF20-1001	19	320013003800	
FDF20-1002	7/8	320013003900	FDF20-1002	22	320013003900	
FDF20-1003	9/8	320013004000	FDF20-1005	28	320013004300	
FDF22-1001	11/8	320014000100	FDF22-1001	35	320014000100	
FDF25-1001	9/8	320015000300	FDF25-1003	28	320015000500	Piston
FDF25-1002	11/8	320015000400	FDF25-1002	35	320015000400	
FDF32-1001	11/8	320016000100	FDF32-1001	35	320016000100	
FDF32-1002	13/8	320016000200	FDF32-1002	42	320016000200	
FDF40-1001	13/8	320017000600	FDF40-1001	42	320017000600	
FDF40-1002	17/8	320017000700	FDF40-1002	54	320017000700	

Dimensions

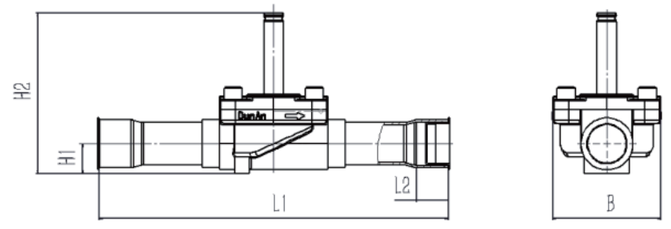
SOLDER CONNECTION



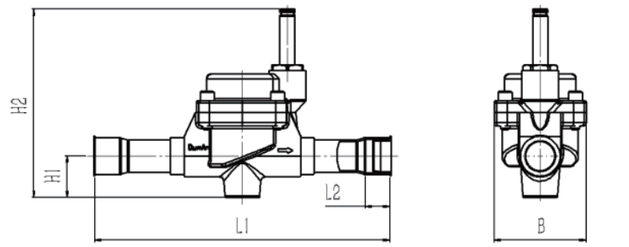
Model	Connection		H1	H2	L1	L2	B
	[in.]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
FDF2	1/4	6	12	76	102	7	30
FDF3	1/4	6	12	76	102	7	30
	3/8	10	12	76	108	9	30



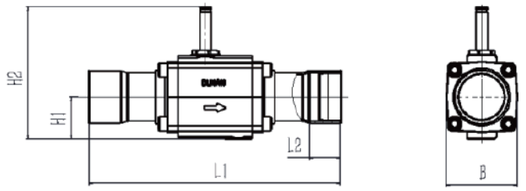
Model	Connection		H1	H2	L1	L2	B
	[in.]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
FDF6	3/8	10	13	80	112	9	36
	1/2	12	13	80	128	10	36
FDF10	1/2	12	17	95	128	10	46
	5/8	16	17	95	156	12	46



Model	Connection		H1	H2	L1	L2	B
	[in.]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
FDF15	5/8	16	18	100	166	12	56
	3/4	19	18	100	166	17	56
	7/8	22	18	100	176	17	56
FDF20	3/4	19	20	107	182	17	72
	7/8	22	20	107	182	17	72
	9/8	28	20	107	232	22	72
FDF22	11/8	35	20	107	258	25	72

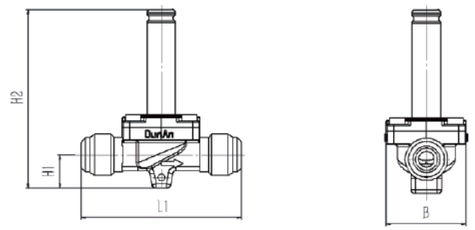


Model	Connection		H1	H2	L1	L2	B
	[in.]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
FDF25	9/8	28	36	164	256	22	80
	11/8	35	36	164	281	25	80



Model	Connection		H1	H2	L1	L2	B
	[in.]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
FDF32	11/8	35	47.5	148	281	25	80
	13/8	42	47.5	148	281	28	80
FDF40	13/8	42	47.5	148	281	28	80
	17/8	54	47.5	148	281	35	80

FLARE CONNECTION



Model	Connection		H1	H2	L1	B
	[in.]	[mm]	[mm]	[mm]	[mm]	[mm]
FDF2	1/4	6	12	76	58	30
FDF3	1/4	6	12	76	58	30
	3/8	10	12	76	64	30
FDF6	3/8	10	13	80	70	36
	1/2	12	13	80	74	36
FDF10	1/2	12	17	95	86	46
	5/8	16	17	95	92	46
FDF15	5/8	16	18	100	106	56
	7/8	22	18	100	106	56

Coils

PARAMETERS

- Ambient Temperature: -30°C~+55°C
- Applicable Relative Humidity: ⩽95%
- Allowable Voltage Range: AC: 85%~110%,
- Protection Class: IP65

Model	Voltage [V]	Frequency [Hz]	Rated Power	Connection	Code
FDFX01-1001	AC 110	50/60	16VA	DIN	321010000100
FDFX01-1002	AC 220	50/60	16VA	DIN	321010000200
FDFX01-1009	AC 220	50/60	16VA	Cable	321010000300
FDFXD01-1001	DC 12	-	20W	DIN	321010000500
FDFXD01-1002	DC 24	-	20W	DIN	321010000600
FDFXD01-1003	DC 48	-	20W	Cable	321010000700
FDFXD01-1004	DC 48	-	20W	DIN	321010000800
FDFXD01-1005	DC 110	-	20W	DIN	321010000900

FDF Series (Residential)



APPLICATION

FDF series solenoid valves for application in residential units include direct-driven and pilot operated types, and are mainly used in liquid, suction and hot gas line of heat pumps, air conditioning, and refrigeration and freezing systems.

FEATURES

- Application spectrum has extended into systems under potentially explosive conditions
- Superior tightness ensured by high quality synthetic seal gasket material
- For application at higher temperature, please contact DunAn.

APPROVALS

IECEx, LVD or PED

TECHNICAL DATA

- Applicable Refrigerants: R134a, R290, R407C, R410A, R404A, and R507
- Medium Temperature: -30°C~+120°C
- Ambient Temperature: -30°C~+50°C
- Applicable Relative Humidity: ⩽ 95%

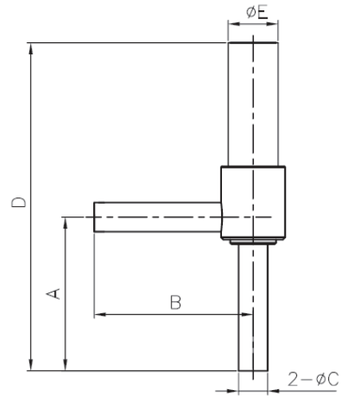
Model	Version	Actuation	Port Size	K_v	Ps	OPD	
						Max	Min
			[mm]	[m³/h]	[MPa]	[MPa]	[MPa]
FDF2A-010	N.C	Direct	2.0	0.08	4.2	3.4	0
FDF2.2A-010			2.2	0.13		2.1	
FDF2.5A-010			2.5	0.16		2.1	
FDF6A-010		Pilot	5.8	0.55		3.4	0.01

Nominal Capacity

Model	Rated Capacity [kW]														
						Suction Gas					Hot Gas				
	R134a	R290	R404A / R507	R407C	R410A	R134a	R290	R404A /R507	R407C	R410A	R134a	R290	R404A /R507	R407C	R410A
FDF2A-010	1.5	3.2	1.1	1.5	1.7	0.1	0.2	0.2	0.2	0.2	0.6	0.9	0.6	0.7	0.9
FDF2.2A-010	2.4	5.0	1.8	2.4	2.7	0.2	0.4	0.3	0.3	0.4	0.9	1.4	1	1.2	1.4
FDF2.5A-010	3.7	7.8	2.8	3.7	4.2	0.3	0.5	0.4	0.4	0.5	1.5	2.2	1.5	1.8	2.1
FDF6A-010	10.3	21.9	7.8	10.5	11.8	0.9	1.5	1.1	1.2	1.5	4.1	6.2	4.2	5	6

(1) The working condition of liquid and suction gas Nominal cooling capacity: Evaporating Temp. T_e=-10°C; Liquid Temp. Before Valve: T_l=25°C; Pressure Drop After the Valve ΔP=0.015 MPa.
(2) The working condition of hot gas Nominal cooling capacity: Condensing Temp. T_c=40°C; Pressure Drop Across the Valve ΔP=0.08 MPa; Hot Gas Temp. T_h=65°C; Subcooling ΔT_{sc}=4K

Ordering & Dimensions



Model	Code	Connection ΦC	Dimensions			
			E	D	A	B
		[mm]	[mm]	[mm]	[mm]	[mm]
FDF2A-010	320005003800	6.35	10.9	72	33	35
FDF2.2A-010	320005003900	6.35	10.9	72	33	35
FDF2.5A-010	320006000500	6.35	11.3	72	33	35
FDF6A-010	320009003400	7.94	11.3	80	34.5	35.6

Coils

Model	Voltage	Frequency	Protection	Connection	Code	Valve
FDFX02-0046	AC 100	50/60Hz	IP54	Cable with 0.6m	321013006700	FDF2A-010
FDFX02-0047	AC 110				321005011700	FDF2.2A-010
FDFX02-0048	AC 200				321013006800	F2.5A-010
FDFX02-0049	AC 220				321005009600	FDF6A-010
FDFX02-0050	AC 230				321009000600	

Note: wire terminal, sheath, and length can be customized as per customer' s requirement

BALL VALVE

DunAn

FQ Series



APPLICATION

FQ series ball valves are used in liquid line, suction line, and hot gas line in refrigeration and air conditioning systems to manually open or close refrigerant flow. The access port type is also supplied.

FEATURES

- Applicable to large commercial, central air-conditioning and refrigeration equipment;
- Open cavity is of a straight through type with large flow and little resistance;
- Modified polymer to ensure the tightness, and long lifetime;
- Bi-directional flow with low pressure drop;
- Small installation space required,

APPROVALS

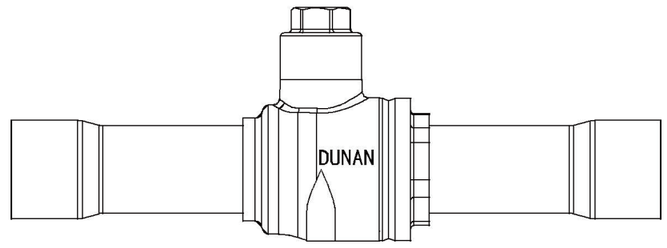
UL, Declaration according to PED.

TECHNICAL DATA

- Applicable Refrigerants: R134a, R407C, R410A, R404A, R32 and R290
- Medium Temperature: -30°C~+120°C
- Ambient Temperature: -30°C~ +70°C
- Max. Operating Pressure: 4.9 MPa (DN4~DN20)
- Max. Operating Pressure: 4.5 MPa (DN25~DN75)
- Applicable Relative Humidity: 95%
- Max. Leakage Rate ＜2.83g/year

Ordering

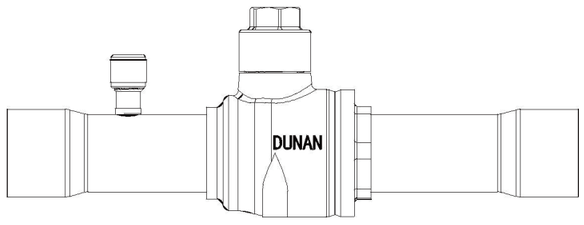
WITHOUT ACCESS PORT



ODF Connection					K_v Value(1) [m^3/h]
Model	Port Size [in.]	Code No.	Port Size [mm]	Code No.	
FQ-110-DN4	1/4	380004011000	6	380004011200	1.66
FQ-110-DN8	3/8	380008011000	10	380008011200	4.68
FQ-110-DN10	1/2	380010011000	12	380010011200	6.73
FQ-110-DN13	5/8	380013011000	16	380013011200	10.4
FQ-110-DN15	3/4	380015011000	19	380015011200	15.7
FQ-110-DN20	7/8	380020011000	22	380020011200	23.6
FQ-110-DN25	9/8	380025011000	28	380025011200	43.8
FQ-110-DN32	11/8	380032011000	35	380032011200	76.8
FQ-112-DN40	13/8	380040011200	42	380040011200	98.5
FQ-110-DN50	17/8	380050011000	54	380050011200	210.3
FQ-110-DN65	21/8	380065011000	67	380065011200	346.6
FQ-110-DN75	25/8	380075011000	79	380075011200	477.6

(1)K_v factor is defined as the cold-water flow in m^3/h under a pressure drop of 1 bar and valve completely open.

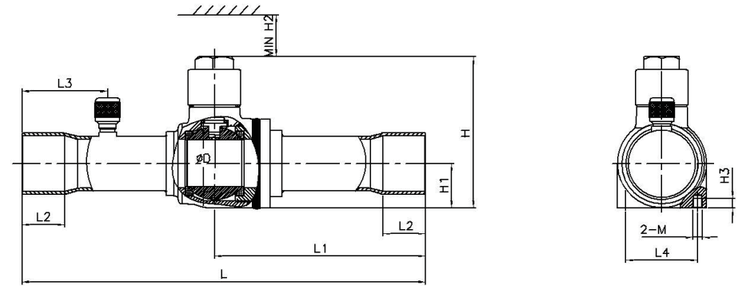
WITH ACCESS PORT



ODF Connection					K_v Value(1) [m^3/h]
Model	Port Size [in.]	Code No.	Port Size [mm]	Code No.	
FQ-116-DN4	1/4	380004011600	/	/	1.66
FQ-116-DN8	3/8	380008011600	10	380008011800	4.68
FQ-116-DN10	1/2	380010011600	12	380010011800	6.73
FQ-116-DN13	5/8	380013011600	16	380013011800	10.4
FQ-116-DN15	3/4	380015011600	19	380015011800	15.7
FQ-116-DN20	7/8	380020011600	22	380020011800	23.6
FQ-116-DN25	9/8	380025011600	28	380025011800	43.8
FQ-116-DN32	11/8	380032011600	35	380032011800	76.8
FQ-118-DN40	13/8	380040011800	42	380040011800	98.5
FQ-116-DN50	17/8	380050011600	54	380050011800	210.3
FQ-116-DN65	21/8	380065011600	67	380065011800	346.6
FQ-116-DN75	25/8	380075011600	79	380075011800	477.6

(1)K_v factor is defined as the cold-water flow in m^3/h under a pressure drop of 1 bar and valve completely open.

Dimensions



WITHOUT ACCESS PORT

Model	Connection Size		D	L	L1	L2	L3	L4	H	H1	H2	H3	Screw M
	[in]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
DN4	1/4	6	10	155.1	82.9	8	-	16	52	16.5	21	5	M5×0.8
DN8	3/8	10	10	138.5	74.6	10	-	16	52	16.5	21	5	M5×0.8
DN10	1/2	12	10	138.5	74.6	10	-	16	52	16.5	21	5	M5×0.8
DN13	5/8	-	12.5	160	85	12.5	-	19	53	16	21	5	M5×0.8
DN15	3/4	-	15	160.5	84.6	17	-	23.5	55	17	24	5	M5×08
DN20	7/8	-	19	184.5	97	17	-	29.5	66	19.3	24	5	M5×0.8
DN25	9/8	28	24	208	109	22	-	37	78	23	24	5	M5×0.8
DN32	11/8	-	38	251.5	132.7	25	-	43	91.6	30	28	5	M6×1.0
DN40	13/8	42	38	280	146	28	-	58	105.7	35	28	10	M6×1.0
DN50	17/8	-	50	305	157.5	35	-	78	125	45	28	10	M6×1.0
DN65	21/8	-	63	343.5	177.5	37	-	89	146.5	55	32	15	M10×1.0
DN75	25/8	-	74	408	208	42	-	114	177	67	32	15	M10×1.0

WITH ACCESS PORT

Model	Connection Size		D	L	L1	L2	L3	L4	H	H1	H2	H3	Screw M
	[in]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
DN8	3/8	10	10	138.5	74.6	10	29	16	52	16.5	21	5	M5×0.8
DN10	1/2	12	10	138.5	74.6	10	29	16	52	16.5	21	5	M5×0.8
DN13	5/8	-	12.5	160	85	12.5	31	19	53	16	21	5	M5×0.8
DN15	3/4	-	15	160.5	84.8	17	34	23.5	55	17	24	5	M5×08
DN20	7/8	-	19	184.5	97	17	37	29.5	66	19.3	24	5	M5×0.8
DN25	9/8	28	24	208	109	22	44	37	78	23	24	5	M5×0.8
DN32	11/8	-	32	251.5	132.7	25	52	43	91.6	30	28	5	M6×1.0
DN40	13/8	42	38	280	146	28	57	58	105.7	35	28	10	M6×1.0
DN50	17/8	-	50	305	157.5	35	61	78	125	45	28	10	M6×1.0
DN65	21/8	-	63	343.5	177.5	37	72	89	146.5	55	32	15	M10×1.0
DN75	25/8	-	74	408	208	42	79	114	177	67	32	15	M10×1.0

CHECK VALVE

DunAn

FDM Series



APPLICATION

FDM series check valves use magnetic diaphragm design with metal sealing structure, built-in guiding device, and self-closing structure, allowing installation angles in all directions without any limit.

FEATURES

- Self-closing structure ensures the installation angles in all directions without any limit;
- Low internal leakage

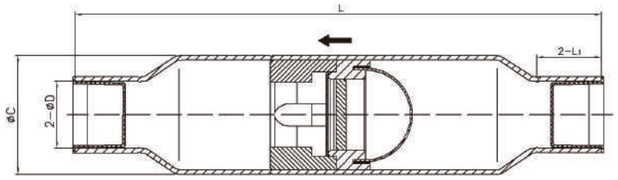
APPROVALS

UL, Declaration according to PED

TECHNICAL DATA

- Applicable Refrigerants: R134a, R407C, R410A, R404A, and R290;
- Medium Temperature: -30°C~+120°C

Ordering and Dimensions



Model	Code No.	Connection	Dimensions			Max. Operating Pressure [MPa]	Pressure Drop Across Valve △P[MPa]	K_v [m^3/h]
		[in.]	C [mm]	L [mm]	L1 [mm]			
FFDM1006-0001	260510000101	1/4	22.3	102	10	5	10.01	0.65
FDM1010-0001	260511000101	3/8	22.3	100	10	5	0.01	1.29
FDM1613-0001	260512000101	1/2	28,5	127	14	5	0.01	2.49
FDM1616-0001	260513000101	5/8	28,5	127	15.5	5	0.01	2.83
FDM1619-0001	260514000101	3/4	28,5	127	14	4.5	0.01	3.17
FDM1622-0001	260523000101	7/8	28,5	127	18	4.5	0.01	3.51
FDM1822-0001	260515000101	7/8	35	178	15	4.5	0.01	3.77
FDM2519-0001	260524000101	3/4	41	178	18	4.5	0.02	4.54
FDM2522-0001	260533000101	7/8	41	178	21	4.5	0.02	7.2
FDM2529-0001	260516000101	9/8	41	206	18	4.5	0.02	13.11
FDM3229-0001	260517000101	9/8	54	213	25.5	4.5	0.02	14.48
FDM3835-0001	260518000101	11/8	67	238	26	3.5	0.02	19.02
FDM4842-0001	260519000101	13/8	80	267	28	3.5	0.03	31.96
FDM5754-0001	260520000101	17/8	92	305	34	3.5	0.05	56.04
FDM6567-0001	260521000101	21/8	105	330	38	3.5	0.05	65.04
FDM6580-0001	260522000101	25/8	105	330	38	3.5	0.05	74.98

FDH Series



APPLICATION

FDH series check valve with built-in piston is designed to control the correct flow direction, can be used in liquid, suction and hot gas lines in commercial refrigeration system and air conditioning systems.

FEATURES

- The valve ensures only correct flow direction;
- Damping spring design makes the free installation;
- Reinforced spring type designed for compressor discharge pipes in single or multi compressor system.

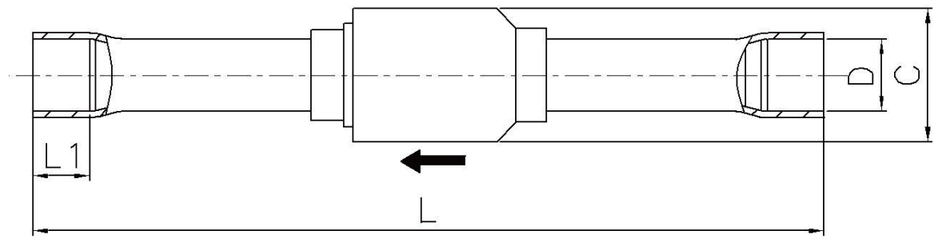
APPROVALS

UL, Declaration according to PED

TECHNICAL DATA

- Applicable Refrigerant: R134a, R407C, R410A, R404A, R290, and R32;
- Max. Operating Pressure: 4.9 MPa
- Medium Temperature: -40°C~+150°C

Ordering and Dimensions



Model	Code No.	Dimensions				Max. Operating Pressure [MPa]	Pressure Drop Across Valve △P[MPa]	K_v [m^3/h]
		C [mm]	D [mm]	L [mm]	L1 [mm]			
FFDH1013-0001	260610000501	22	12.75	131	10	4.6	0.005	2.06
FDH1316-0001	260527000101	28	16.1	139	12	4.6	0.005	3.60
FDH1619-0001	260610001801	34	19.25	165	15	4.6	0.005	5.48

The K_v value is the water flow at a differential pressure of 0.1 MPa.
Flow Unit: m^3/h; Density: 1000 kg/m^3.

CHARGE VALVE

FJT Series



APPLICATION

Charge valves are used to charge refrigerant and check the pressure of refrigerating and air-conditioning system.

FEATURES

- Combination of soft seal and hard seal ensures airtightness

APPROVALS

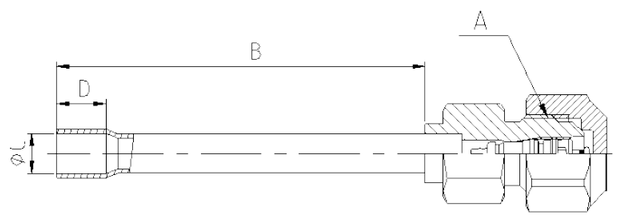
Declaration according to PED

TECHNICAL DATA

- Applicable Refrigerant: R134a, R407C, R410A, R32, and R404A, R290
- Applicable Relative Humidity: ⩽95%
- Medium Temperature: -30°C~+120°C
- Ambient Temperature: -30°C~+70°C
- Max. Operating Pressure: 4.5 MPa

Ordering and Dimensions

Model	Code No.	Connections			Dimensions			Applicable Refrigerant
		Solder ODFΦ D		Flare A	B	Φ C	D	
		[mm]	[in.]	[in.]	[mm]	[mm]	[mm]	
FJT-8881-DG4	280004888100	6.35	1/4	1/2-20 UNF	60	8.5	3	R32, R410A, R290 R407C, R134a, R404A
FJT-8883-DG4	280004888300	6.35	1/4	7/16-20 UNF	60	8.5	3	



Model	Code No.	Connections			Dimensions		Applicable Refrigerant
		Solder ODFΦ C		Flare A	B	D	
		[mm]	[in.]	[in.]	[mm]	[mm]	
FJT-8884-DG4	280004888400	6.5	1/4	1/2-20 UNF	60	8	R32, R410A, R290 R407C, R134a, R404A
FJT-8886-DG4	280004888600	6.5	1/4	7/16-20 UNF	60	8	

SERVICE VALVE

DunAn

FJ Series



APPLICATION

Service valves are used to connect indoor and outdoor units, close or open the refrigerant circuit, and evacuate the refrigerant or charge refrigerant into split air conditioner system.

FEATURES

- Combination of soft seal and hard seal ensures airtightness

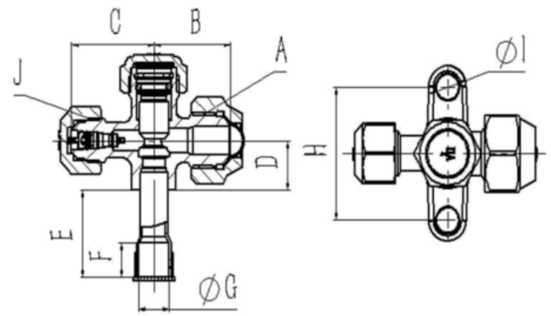
APPROVALS

Declaration according to PED

TECHNICAL DATA

- Applicable Medium: R134a, R407C, R410A, R32, R404A and R290
- Applicable Relative Humidity: ⩽95%
- Medium Temperature: -30°C~+120°C
- Ambient Temperature: -30°C~+70°C
- Max. Operating Pressure: 4.5 MPa

Ordering and Dimensions



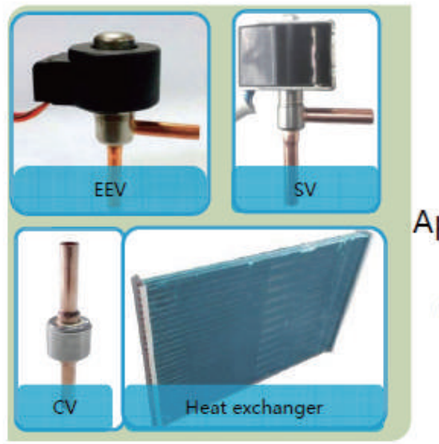
Model	Code No.	Port [mm]	A	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	Applicable Refrigerant
FJ04	FJ2800048800	4.8	7/16-20UNF	22.5	-	13	25	8	6.5	R410A R32 R290
FJ08	FJ2800088800	7	5/8-18UNF	24.5	26.5	14		10	9.7	
FJ10	FJ2800108800	10	3/4-16UNF	27.5	27	15		10	12.9	
FJ13	FJ2800138800	13	7/8-14UNF	33.5	28.5	17		10	16.1	
FJ16	FJ2800168800	16	17/16-14UNS	38.5	30	21		10	19.2	
FJ04	FJ2800048800	4.8	7/16-20UNF	22.5	-	13	25	8	6.5	R407C R134a R404A
FJ08	FJ2800088802	7	5/8-18UNF	24.5	26.5	14		10	9.7	
FJ10	FJ2800108802	10	3/4-16UNF	27.5	27	15		10	12.9	
FJ13	FJ2800138802	13	7/8-14UNF	33.5	28.5	17		10	16.1	
FJ16	FJ2800168802	16	17/16-14UNS	38.5	30	21		10	19.2	

(CONTINUED)

Model	Code No.	H [mm]	I [mm]	J	K_v [m^3/h]		Applicable Refrigerant
					Connection tube Nut side inlet	Connection cooper tube side inlet	
FJ04	FJ2800048800	38	7.2	/	0.45	0.50	R410A R32 R290
FJ08	FJ2800088800	38	7.2	1/2-20UNF	1.30	1.47	
FJ10	FJ2800108800	38	7.2		2.36	2.78	
FJ13	FJ2800138800	38	7.2		3.38	4.01	
FJ16	FJ2800168800	44	7.2		7.12	7.26	
FJ04	FJ2800048800	38	7.2	/	0.45	0.50	R407C R134a R404A
FJ08	FJ2800088802	38	7.2	7/16-20UNF	1.30	1.47	
FJ10	FJ2800108802	38	7.2		2.36	2.78	
FJ13	FJ2800138802	38	7.2		3.38	4.01	
FJ16	FJ2800168802	44	7.2		7.12	7.26	

CO_2 (R744) PRODUCTS

DunAn



Application



Heat pump



Vending machines



Frozen storage

Dunan--CO_2 special high pressure accessories :

- Can meet the requirements of different fields
- Applicable in subcritical and transcritical systems
- New developments for CO2 system



CO_2 ELECTRONIC EXPANSION VALVE

DunAn

DPF(E) Series



APPLICATION

DPF(E) Series electronic expansion valve is designed for application CO_2 systems, such as HP water heater, freezing and refrigerating systems. Thanks to precise control and automatic regulation of refrigerant flow, rapid response to cooling or heating can be achieved, efficiency of system in turn could be significantly improved.

FEATURES

- Compact and lightweight design;
- Advanced laser welding technology ensures reliability at high operating pressure level;
- Lower refrigerant running noise;
- New material provides good corrosion resistance.

TECHNICAL DATA

- Applicable Medium: R744 (CO_2) + PAG oil
- Relative Humidity: 95%
- Medium Temperature: -30°C~+70°C (energized rate below 50%)
- Ambient Temperature: -30°C~+70°C (energized rate below 50%)
- Max. Operating Pressure: 14.0 MPa
- Internal Leakage: ⩽600mL/min (except EEV without shut off function)
- Uni-directional flow
- Life Cycle: ⩾ 50,000

Specification

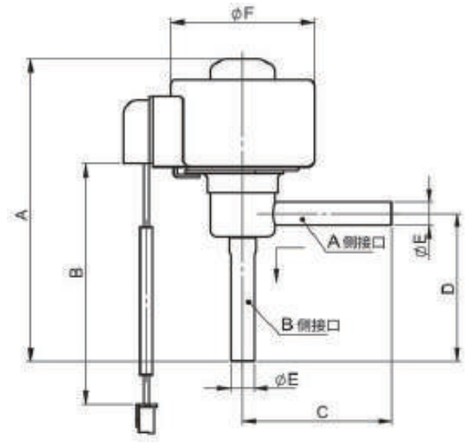
Model	Orifice Φ [mm]	Nominal Capacity [kW]	Max. Operating Pressure [MPa]	MOPD [MPa]	Connection [mm]	Code No.
DPF(E)1.0D	1.0	5.0	14	10	6.35	990000000723
DPF(E)1.2D	1.2	6.9				990000000788
DPF(E)1.4D	1.4	9.0				990000000800
DPF(E)1.8D	1.8	15.5				990000000801
DPF(E)2.0D	2.0	20.2				990000000802

Normal capacities are based on:
(1). Gas cooler outlet temperature T_c=22°C;
(2). Gas cooler outlet pressure P_c=10MPa;
(3). Evaporating Temperature T_e=6°C;
(4). Superheating $\triangle T_{sh}$=0K
The above specifications can be bulk supply, and can be customized according to customers' requirements

Coil Parameters

Model	DPFX07-007	DPFX07-383
Full Stroke	500 pulses	
Opening Pulse	32±20 (except EEV without shut off function)	
Nominal Voltage	DC 12V±10%, rectangular wave	
Actuating Mode	4-phase 8-step permanent magnet stepper motor	
Excitation Mode	1 ～ 2 phase excitation, monopole actuation	
Excitation Rate	30 ～ 90 PPS	
Insulation Class	E	
Resistance	46±3.7 Ω (20°C)	
Current	260mA/phase (20°C)	
Protection Class	IP54	
Wire Number	6	5
Code No.	317101006700	317106003600

Dimensions



Model	A	B	C	D	E	F
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
DPF(E)1.0D – 2.0D	80	700	37	37	6.35	38

Note:
Valve dimensions could be customized.

CO_2 SOLENOID VALVE

DunAn

RDF Series



APPLICATION

By switching the electromagnetic coil to cut off or activate the refrigerant flow, RDFA series solenoid valves are designed for operating in liquid, suction and hot gas lines of CO_2 systems, such as HP water heater, freezing and refrigerating systems.

FEATURES

- Material promotion, longer service life, excellent corrosion resistance;
- Performance Optimization, can work under high temperature condition and in a variety of refrigerants;
- Compact structure and shape;

TECHNICAL DATA

- Applicable Medium: R744 (CO_2) + PAG oil
- Relative Humidity: 95%
- Medium Temperature: -30°C~+120°C
- Ambient Temperature: -30°C~+55°C
- Max. Operating Pressure: 14.0 MPa
- Internal Leakage: ⩽50mL/min
- NC (normally closed), angleway, uni-directional flow
- Life Cycle: ⩾100,000

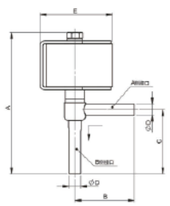
Specification

Model	Orifice Φ [mm]	Min. OPD [MPa]	MOPD [MPa]	Max. Operating Pressure [MPa]	K_v [m^3/h]	Connection [mm]	Code No.
RDFA1.0S	1.0	0	10	14	0.024	6.35	990000000760
RDFA1.2S	1.2				0.033		990000000736

Coil

Model	Nominal Voltage [V]	Voltage range	Frequency [Hz]	Power [W]	Insulation Class	Protection Class	Connection Type	Code No.
DXQ-620	AC 220/240	85% - 110%	50/60	7/5	B	IP67	wire	241509062001

Dimensions



Model	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
RDFA1.0S / 1.2S	80	35	36	6.35	41

Note:
Valve dimensions could be customized.

CO_2 CHECK VALVE

DunAn

FDE Series



APPLICATION

The main function of FDE check valve is to ensure refrigerant flowing in correct direction, and to guarantee trans-critical system operating under high pressure level without any malfunction.

FEATURES

- Stainless steel shell ensures to operate reliably under high pressure level;
- Built-in sliding piston can open under small differential pressure;
- Better tightness thanks to the new soft sealing structure
- Beautiful and compact appearance.

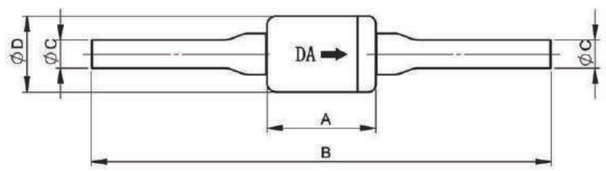
TECHNICAL DATA

- Applicable Medium: R744 (CO_2) + PAG oil
- Relative Humidity: 95%
- Medium Temperature: -30°C~+120°C
- Ambient Temperature: -30°C~+120°C
- Max. Operating Pressure: 14.0 MPa
- Internal Leakage: ⩽100mL/min
- Straightway
- Life Cycle: ⩾50,000

Specification

Model	Orifice Φ [mm]	Min. OPD [MPa]	Max. Operating Pressure [MPa]	MOPD [MPa]	Burst Pressure [MPa]	K_v [m^3/h]	Connection [mm]	Code No.
FDE 6	4.0	0.04	14	10	42	0.40	6.35	990000000803
FDE 8	5.5					0.66	7.94	990000000804
FDE 10	7.0					1.04	9.52	990000000805

Dimensions

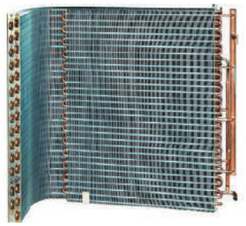


Model	A [mm]	B [mm]	C [mm]	D [mm]
FDE 6	25	105	6.35	17.3
FDE 8			7.94	
FDE 10			9.52	18.4

Note:
Valve dimensions could be customized.

CO_2 TUBE FIN HEAT EXCHANGER

DunAn



APPLICATION

Newly developed air-cooled fin-tube heat exchanger is specially designed for application in refrigeration and heat pump systems of CO_2, which could work either in heating or cooling mode. Inner grooved tubes of diameter Φ 5mm, Φ7mm as well as Φ 9.52mm are highlights of this innovated product, which are mainly for residential and light commercial units respectively.

FEATURES

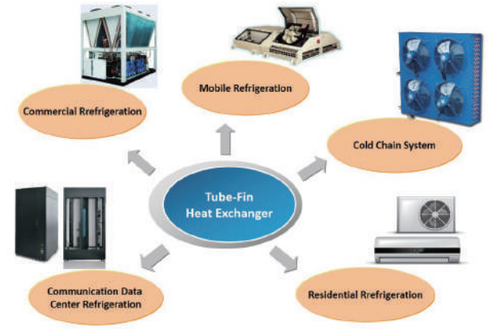
- Φ 5mm, Φ7mm and Φ 9.52mm inner micro-grooved copper tubes specially for CO_2 application;
- Diversity of fin patterns meets various requirements (for details refer to mould information of tube-fin heat exchanger)
- Owing to the small tube size, miniaturization of heat exchanger construction can be achieved, which gives rise to a significant reduction of refrigerant charge as well as material saving;
- High pressure strength.
- Hydrophilic coating and the best drainage performance.

TECHNICAL DATA

- Applicable Medium: R744 (CO_2) + PAG oil
- Relative Humidity: 95%
- Medium Temperature: -30°C~+120°C
- Ambient Temperature: -30°C~+70°C
- Max. Operating Pressure:≤9.0 MPa

TUBE-FIN HEAT EXCHANGER

DunAn



Item No.	Tube Diameter [mm]	Tube Vertical Spacing [mm]	Tube Horizontal Spacing [mm]	Fin Pattern	Fin Pitch
1	Φ 5	19.05	16.5	Sine Corrugated, Corrugated, Flat, Louver	1.2 ~ 3.5
2	Φ 5	19.5	11.6	Flat, Sine Corrugated, Corrugated, Lanced, Louver	1.2 ~ 2.2
3	Φ 7	21	12.7	Lanced, Louver, Flat	1.2 ~ 2.2
4	Φ 7	21	18.2	Louver, Corrugated, Flat	1.2 ~ 3.0
5	Φ 7	25	21.65	Corrugated, Louver, Flat	1.2 ~ 3.0
6	Φ 7	19.05	16.5	Corrugated, Flat, Lanced, 60° Inclined Cut	1.3 ~ 4.0
7	Φ 7	25	12.5	Corrugated, Flat, Louver, 45° Inclined Cut	1.2 ~ 3.5
8	Φ 7.94	22	19.05	Sine Corrugated, Corrugated, Flat, Louver	1.2 ~ 4.2
9	Φ 7.94	25.4	12	Corrugated, Flat ,43° Inclined Cut	1.5 ~ 3.8
10	Φ 7.94	25.4	15.88	Sine Corrugated, Corrugated, Louver, Lanced, Flat	1.2 ~ 4.0
11	Φ 9.52	25	12.5	Corrugated, Flat, Louver	1.5 ~ 3.0
12	Φ 9.52	25	21.65	Corrugated, Louver, Flat	1.2 ~ 3.5
13	Φ 9.52	25	21.65	Sine Corrugated, Corrugated, Flat, 60° Inclined Cut	3.0 ~ 5.8
14	Φ 9.52	25	25	Louver, Corrugated, Flat	1.5 ~ 4.5
15	Φ 9.52	25.4	15.88	Sine Corrugated, Corrugated, Flat, Louver	1.2 ~ 4.0
16	Φ 9.52	25.4	22	Corrugated, Louver, Flat	1.2 ~ 2.5
17	Φ 9.52	25.4	22	Corrugated, Louver, Flat	1.2 ~ 3.0
18	Φ 9.52	25.4	22	Sine Corrugated, Corrugated, Flat, 60° Inclined Cut	3.0 ~ 5.8
19	Φ 9.52	25.4	22	Corrugated, Flat (could be semicircle at edge)	3.0 ~ 6.5
20	Φ 9.52	31.75	27.5	Corrugated, Flat (could be semicircle at 3rd and 5th row)	3.5 ~ 6.5
21	Φ 9.52	31.75	27.5	Louver, Sine Corrugated, Corrugated, Flat	1.2 ~ 4.2
22	Φ 9.52	30	26	Louver, Sine Corrugated, Corrugated, Flat	1.2 ~ 4.5
23	Φ 12	30	26	Louver, Sine Corrugated, Corrugated, Flat	1.2 ~ 4.5
24	Φ 12.7	31.75	27.5	Sine Corrugated, Corrugated, Flat	2.2 ~ 4.5
25	Φ 12.7	31.75	27.5	Sine Corrugated, Corrugated, Flat	5.0 ~ 8.3
26	Φ 12.7	37.5	32.45	Corrugated, Louver, Flat	1.3 ~ 4.5
27	Φ 12.7	38	33	Sine Corrugated	4.5 ~ 9.0
28	Φ 15.88	38	33	Corrugated, Flat	2.0 ~ 4.0
29	Φ 15.88	38	33	Sine Corrugated, Corrugated, Flat	4.5 ~ 9.0
30	Φ 15.88	52	45	Sine Corrugated	4.5 ~ 9.0

MICRO-CHANNEL HEAT EXCHANGER

DunAn



Header OD × Thickness [mm]	Tube Width × Height [mm]	Fin Height [mm]	Pitch [mm]	Remarks
16×1.2	12×1.4	8	1.1, 1.2, 1.3	
17.5×1.2	13.85×1.2	7.86	1.0,1.1,1.2,1.3	
	13.85×1.9			
20×1.5	16×1.3	8.08	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9	
	16×1.3	11.4	1.1, 1.2, 1.3	
	16×1.4	8	1.1, 1.2, 1.3, 1.4, 1.5, 1.6	
	16×2	8	1.1, 1.2, 1.3, 1.4, 1.5, 1.6	
	16×1.8	8	1.1, 1.2, 1.3, 1.4	
	16×1.8	6.8	1.3, 1.4, 1.5	
	16×1.8	-	-	Heat Pump Water Heater (without fins)
	25.4×2	-	-	Heat Pump Water Heater (without fins)
20×1.2	16×1.3	5.2	1.1, 1.2, 1.3	
20×2.05	25.4×2	-	-	Heat Pump Water Heater (without fins)
23×1.7	18×1.3	11.4	1.1, 1.2, 1.3	
25×1.5	20×2	8.1	1.1, 1.2, 1.3, 1.5, 1.6, 1.7	
26×1.9	16×1.3	8.08	1.1, 1.2, 1.3	
	16×1.3	8.1	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9	
	20.6×1.3	8.1	1.1, 1.2, 1.3	
32×2.5	25.4×1.3	8.1	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9	
	25.4×1.3	7.62	1.1, 1.2, 1.3	
	25.4×2	8.08	1.1, 1.2, 1.25	
	25.4×2	8.1	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9	
	20.6×1.3	8.1	1.7, 1.8, 1.9	
	18×1.3	7.62	1.1, 1.2, 1.3	
32×2.3	25.4×1.3	6.5	1.2, 1.3, 1.4	
38×2.5	32×2	8.1	1.2, 1.3, 1.4	
	25.4×2	8.1	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9	
38×2.2	32×1.3	6.5	1.2, 1.3, 1.4	
	32×1.3	8.1	1.2, 1.3, 1.4	
	25.4×1.3	8.1	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9	
43.5×2.85	32×1.3	8.1	1.2, 1.3, 1.4	
45×2.85	38×1.8	9	1.2, 1.3	