

# Solenoid Valve

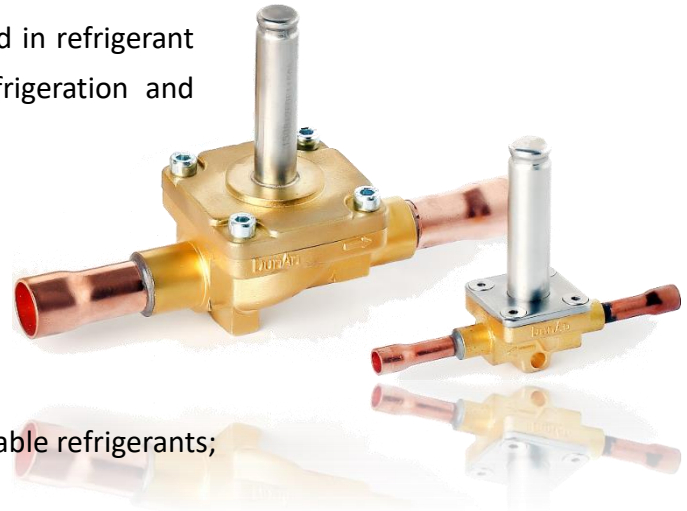
## FDF Series (Commercial)

### 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:  $-30^{\circ}\text{C}\sim+105^{\circ}\text{C}$

Ambient Temperature:  $-20^{\circ}\text{C}\sim+55^{\circ}\text{C}$

Applicable Relative Humidity:  $\leq 95\%$

Max.  $130^{\circ}\text{C}$  during defrosting for max. 2h

# Solenoid Valve

Model	Opening Pressure Difference of Solenoid Valve With Standard Coil		Ps	K <sub>v</sub> <sup>(2)</sup>	Weight
	Min. Pressure Differential Min OPD [MPa]	Max. Pressure Differential [MPa] <sup>(1)</sup>			
		AC	DC	[MPa]	[m <sup>3</sup> /h]
FDF2A	0	3.1	1.8	4.5	0.4
FDF3A					
FDF6A					
FDF10A					
FDF15A	0.02	3.1	1.8	4.2	1.0
FDF20A					
FDF22A					
FDF25A					
FDF32A	0.03	3.1	1.8	4.2	3.0
FDF40A					

<sup>(1)</sup>MOPD for gaseous medium is about 0.1 MPa greater, for liquid medium is about 0.1 MPa lower.

<sup>(2)</sup>The Kv value is the water flow at a differential pressure of 0.1 MPa.

Flow Unit: m<sup>3</sup>/h; Density: 1000 kg/m<sup>3</sup>.

## 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
FDF2A	2.9	2.2	3	3.4	-	-	-	-	1.2	1.2	1.5	1.7
FDF3A	5	3.8	5.1	5.8	-	-	-	-	2	2	2.4	3.0
FDF6A	15	11	15	17	1.3	1.6	1.7	2.2	5.9	6	7.2	8.8
FDF10A	35	27	36	40	3.1	3.9	4	5.3	14	14	17	21
FDF15A	48	37	49	55	4.2	5.3	5.4	7.2	19	20	23	28.6
FDF20A	107	80	109	121	9	12	12	15.4	43	44	52	56.1
FDF22A	138	105	142	160	12	15	15	19	55	56	68	72.9
FDF25A	186	141	189	215	16.3	20.4	21	27.8	73	75	90	110
FDF32A	297	225	303	345	26.1	32.6	33.6	44.7	117	120	144	176
FDF40A	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  $t_e = -10^\circ\text{C}$ , liquid temperature ahead of valve  $t_l = 25^\circ\text{C}$ , pressure drop in valve  $\Delta P = 0.15$  bar.

2) Rated hot gas capacity is based on condensing temperature  $t_c = 40^\circ\text{C}$ , pressure drop in valve  $\Delta P = 0.8$  bar, hot gas temperature  $t_h = 65^\circ\text{C}$ , and subcooling of refrigerant  $\Delta t_{sc} = 4\text{K}$ .

## Ordering

### Flare Connection: NC (normally closed)

Model	SAE Connections		Actuation
	Connection Size	Code No.	
FD2A-2001	1/4	6	Direct
FD3A-2001	1/4	6	
FD3A-2002	3/8	10	
FD6A-2001	3/8	10	Diaphragm
FD6A-2002	1/2	12	
FD10A-2001	1/2	12	
FD10A-2002	5/8	16	
FD15A-2001	5/8	16	
FD15A-2002	7/8	22	

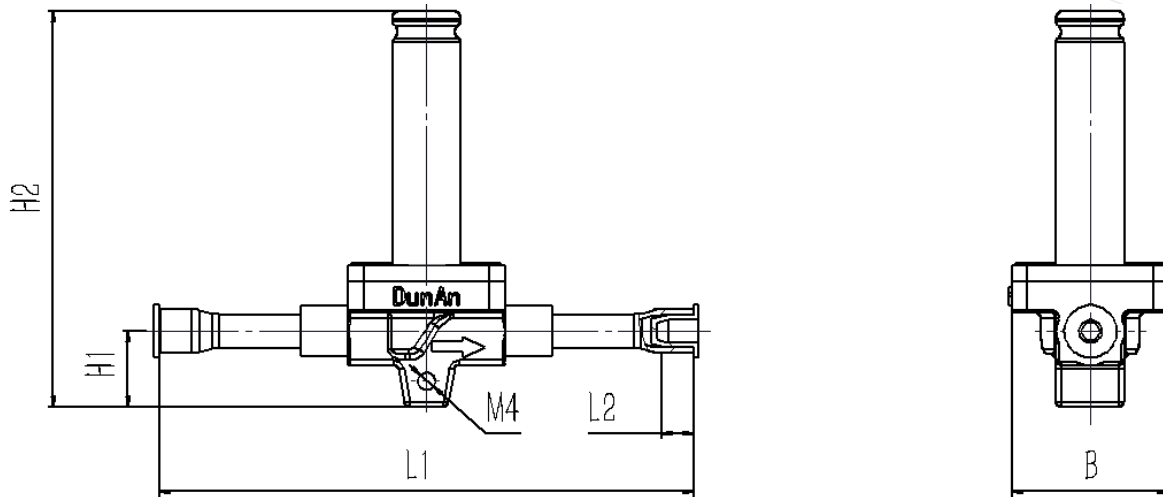
### Solder Connection: NC (normally closed)

ODF Connection						
Model	Connection Size [In.]	Code NO.	Model	Connection Size [mm.]	Code No.	Actuation
FD2A-1001	1/4	320005008100	FD2A-1002	6	320005008300	Direct
FD3A-1001	1/4	320007000100	FD3A-1005	6	320007000500	
FD3A-1002	3/8	320007000200	FD3A-1006	10	320007000700	
FD6A-1001	3/8	320009004900	FD6A-1003	10	320009005100	Diaphragm
FD6A-1002	1/2	320009005000	FD6A-1004	12	320009005200	
FD10A-1001	1/2	320011000300	FD10A-1004	12	320011000900	
FD10A-1002	5/8	320011000400	FD10A-1002	16	320011000400	
FD15A-1003	5/8	320012000200	FD15A-1003	16	320012000200	
FD15A-1004	3/4	320012000400	FD15A-1004	19	320012000400	
FD15A-1005	7/8	320012000500	FD15A-1005	22	320012000500	Piston
FD20A-1001	3/4	320013003800	FD20A-1001	19	320013003800	
FD20A-1002	7/8	320013003900	FD20A-1002	22	320013003900	
FD20A-1003	9/8	320013004000	FD20A-1005	28	320013004300	
FD22A-1001	11/8	320014000100	FD22A-1001	35	320014000100	
FD25A-1001	9/8	320015000300	FD25A-1003	28	320015000500	
FD25A-1002	11/8	320015000400	FD25A-1002	35	320015000400	
FD32A-1001	11/8	320016000100	FD32A-1001	35	320016000100	
FD32A-1002	13/8	320016000200	FD32A-1002	42	320016000200	
FD40A-1001	13/8	320017000600	FD40A-1001	42	320017000600	
FD40A-1002	17/8	320017000700	FD40A-1002	54	320017000700	

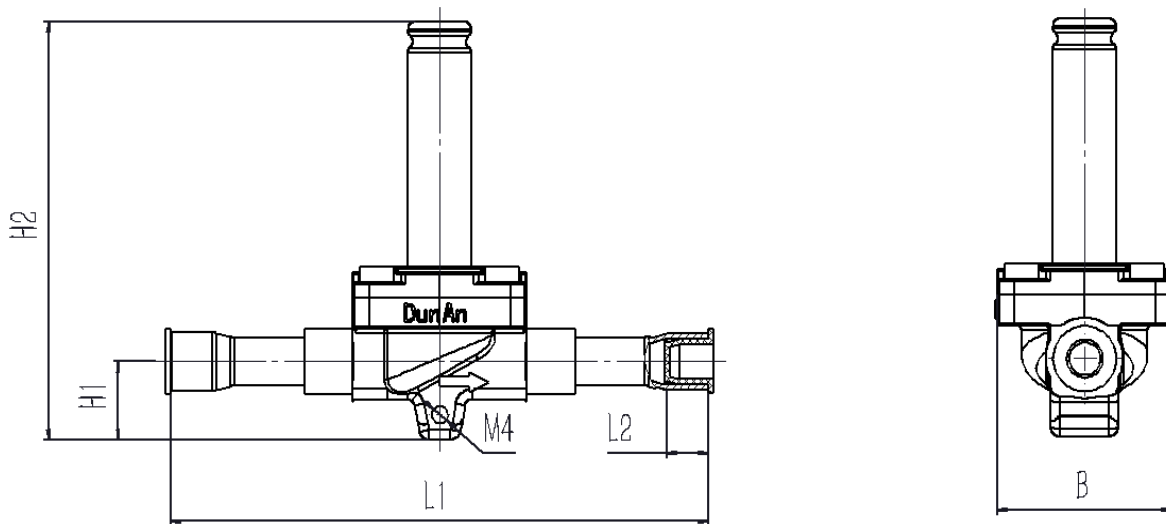
# Solenoid Valve

## Dimensions

### Solder Connection

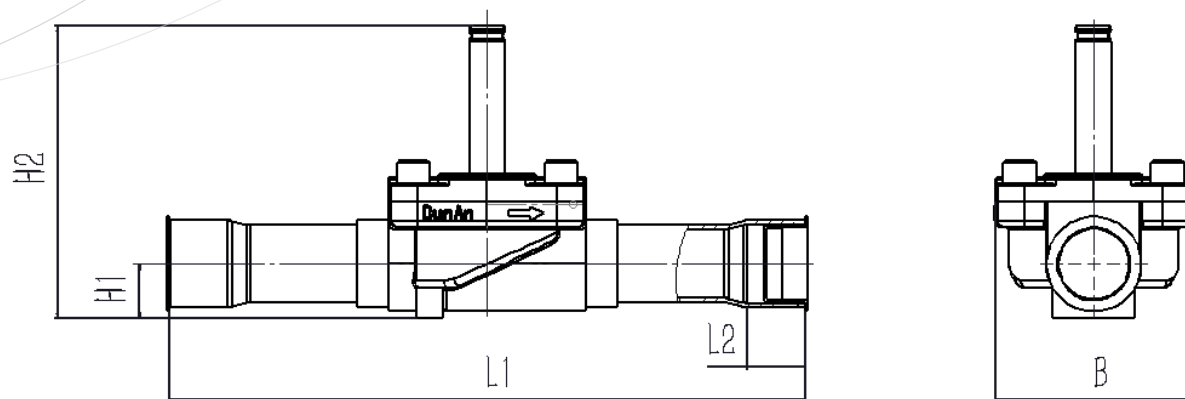


Model	Connection		H1	H2	L1	L2	B
	[in.]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
FD2A	1/4	6	12	76	102	7	30
FD3A	1/4	6	12	76	102	7	30
	3/8	10	12	76	108	9	30

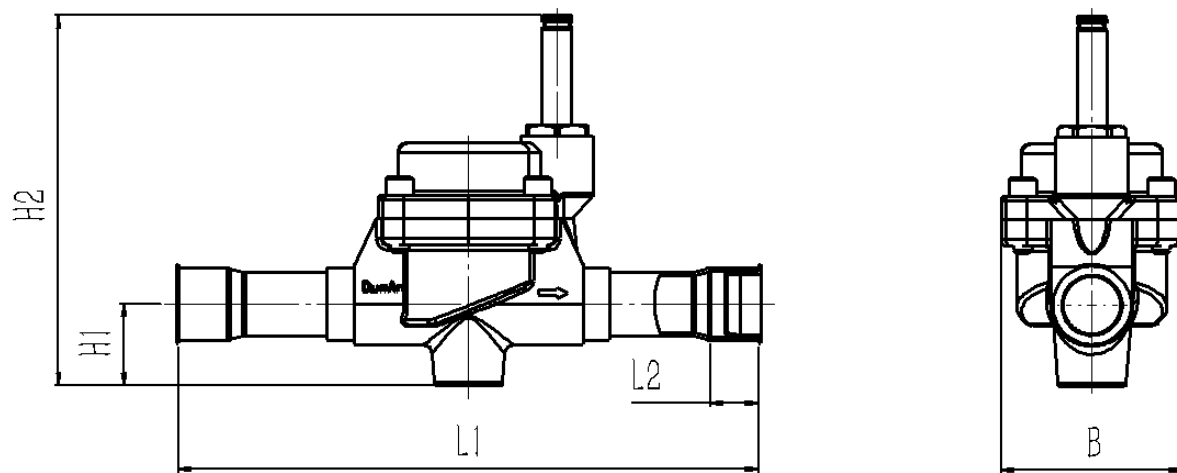


Model	Connection		H1	H2	L1	L2	B
	[in.]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
FD6A	3/8	10	13	80	112	9	36
	1/2	12	13	80	128	10	36
FD10A	1/2	12	17	95	128	10	46
	5/8	16	17	95	156	12	46

## Solenoid Valve

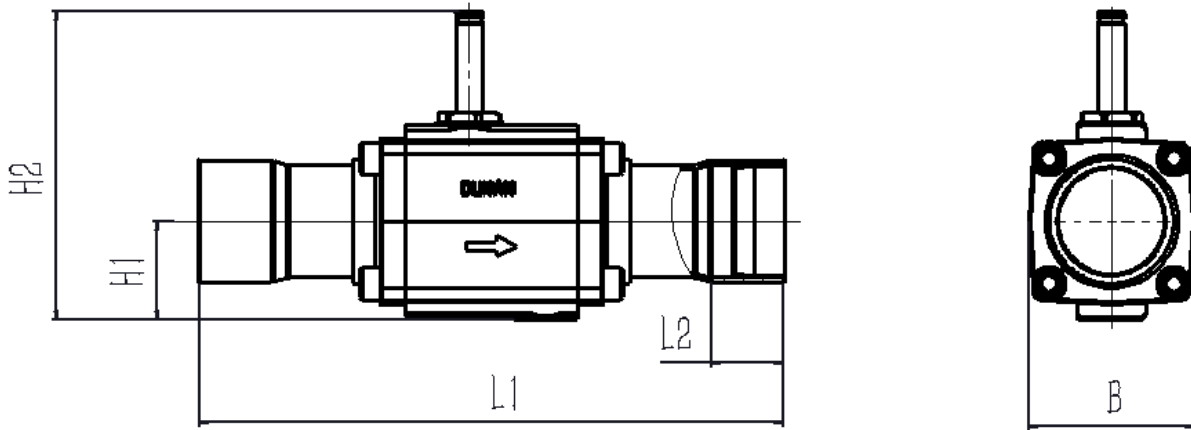


Model	Connection		H1	H2	L1	L2	B
	[in.]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
FDF15A	5/8	16	18	100	166	12	56
	3/4	19	18	100	166	17	56
	7/8	22	18	100	176	17	56
FDF20A	3/4	19	20	107	182	17	72
	7/8	22	20	107	182	17	72
	9/8	28	20	107	232	22	72
FDF22B	11/8	35	20	107	258	25	72



Model	Connection		H1	H2	L1	L2	B
	[in.]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
FDF25A	9/8	28	36	164	256	22	80
	11/8	35	36	164	281	25	80

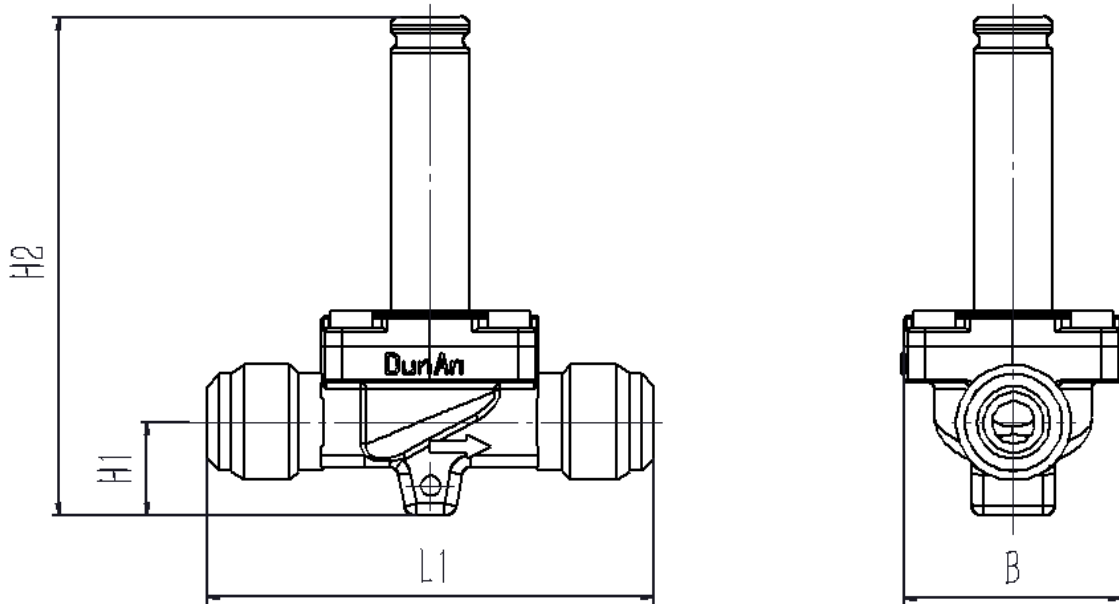
# Solenoid Valve



Model	Connection		H1	H2	L1	L2	B
	[in.]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
FDF32A	1 1/8	35	47.5	148	281	25	80
	1 3/8	42	47.5	148	281	28	80
FDF40A	1 3/8	42	47.5	148	281	28	80
	1 7/8	54	47.5	148	281	35	80

# Solenoid Valve

## Flare Connection



Model	Connection		H1	H2	L1	B
	[in.]	[mm]	[mm]	[mm]	[mm]	[mm]
FDF2A	1/4	6	12	76	58	30
FDF3A	1/4	6	12	76	58	30
	3/8	10	12	76	64	30
FDF6A	3/8	10	13	80	70	36
	1/2	12	13	80	74	36
FDF10A	1/2	12	17	95	86	46
	5/8	16	17	95	92	46
FDF15A	5/8	16	18	100	106	56
	7/8	22	18.0	100	106	56

# Solenoid Valve

## 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]	Protection	Connection	Code
FDFX01-1003	380AC	50/60	IP65	DIN	335101000104
FDFX01-1002	220AC	50/60	IP65	DIN	335101000204
FDFX01-1001	110AC	50/60	IP65	DIN	335101000304
FDFX01-1004	24AC	50/60	IP65	DIN	335101000504
FDFX01-1009	220AC	50/60	IP65	with Cable	335101010204
FDFX01-1007	110AC	50/60	IP65	DIN	335101001104
FDFX01-1005	265AC	50/60	IP65	with Cable	335101011004
FDFX01-1006	36AC	50/60	IP65	DIN	335101000404
FDFX01-1011	265AC	50/60	IP65	DIN	335101001004
FDFX03-1001	12DC		IP65	DIN	335101010204
FDFX03-1002	24DC		IP65	DIN	335101000903
FDFX01-1003C	380AC	50/60	IP65	DIN	335101000101
FDFX01-1002C	220AC	50/60	IP65	DIN	335101000201
FDFX01-1001C	110AC	50/60	IP65	DIN	335101000301
FDFX01-1004C	24AC	50/60	IP65	DIN	335101000501
FDFX01-1009C	220AC	50/60	IP65	with Cable	335101010201
FDFX01-1007C	110AC	50/60	IP65	DIN	335101001101
FDFX01-1005C	265AC	50/60	IP65	with Cable	335101011001
FDFX01-1006C	36AC	50/60	IP65	DIN	335101000401
FDFX01-1011C	265AC	50/60	IP65	DIN	335101000802
FDFX03-1001C	12DC		IP65	DIN	335101000802
FDFX03-1002C	24DC		IP65	DIN	335101000902