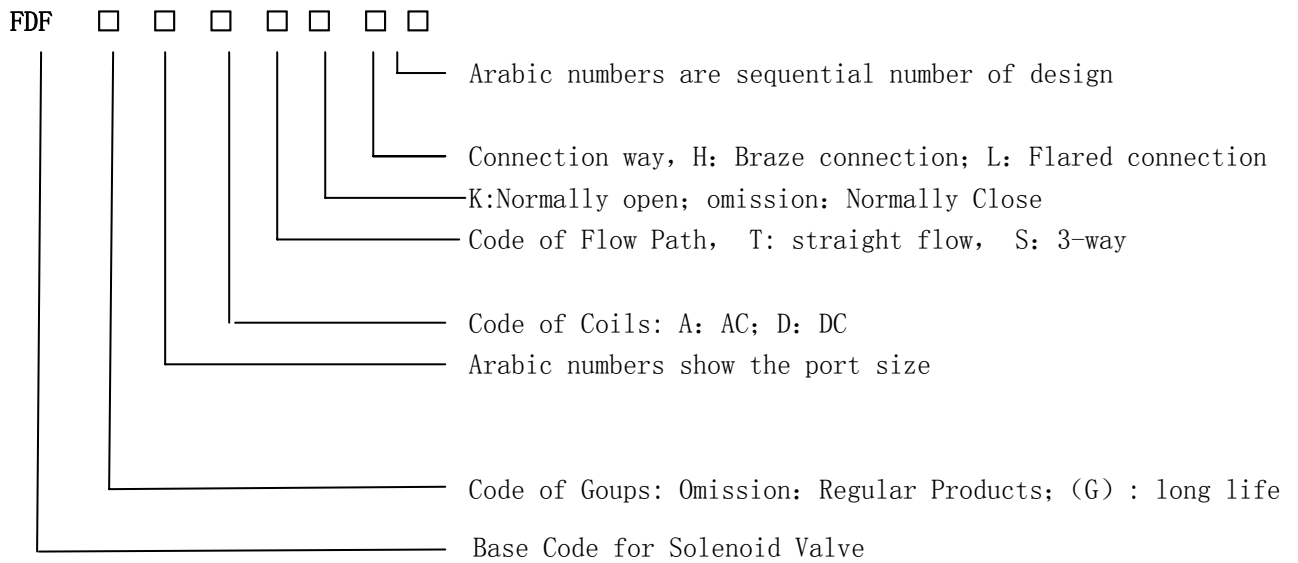


Solenoid Valve

1、Nomenclature



2、Introduction of Solenoid valve

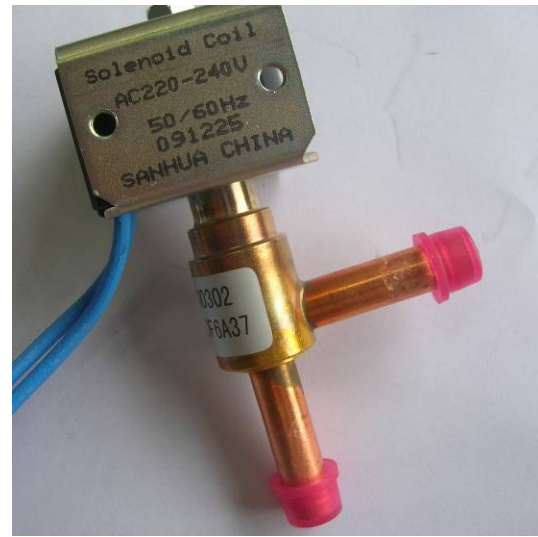
The solenoid valve is applied in air conditioner, dehumidifier, ice machine, refrigeration system in order to automatically open or close the flow of refrigerant and its direction.

The solenoid valve is mainly composed of valve body and solenoid coil. The control of energizing or deenergizing the solenoid coil opens or closes the valve and further applies this operation to refrigerant in the system accordingly

Main Characteristics of solenoid valve: compact design, low power consumption, reliable operation.

Groups of solenoid valve: 1)AC normally close solenoid valve, 2) AC normally open solenoid valve, 3) DC normally open valve

Pictures of AC Normally Close Solenoid Valve



1、Specifications for Normally Close Solenoid Valve

Specs and Parameters	Product Number	Operation Way	Port (mm)	Flow Rate	Internal Leak ($\Delta P=2.1\text{MPa}$) (ml/min)	Operation Pressure Difference (MPa)		OD of connection tube (mm)	Refrigerant	Max. Operation Pressure (MPa)	Ambient Temperature
						Max.	Min.				
Specs and Parameters	FDF2A	Open when being energized	$\phi 1.9$	$C_v=0.09$	≤ 300	3.4	0	$\phi 6.35$	R22, R407C, R410A	4.2	-30°C ~ 50°C
	FDF2.5A		$\phi 2.5$	$C_v=0.23$	≤ 300	3.4	0.01	$\phi 6.35$			
	FDF3A		$\phi 3.0$	$C_v=0.3$	≤ 500	3.4	0.01	$\phi 7.94$			
	FDF4A		$\phi 4$	$C_v=0.35$	≤ 500	3.4	0.01	$\phi 6.35$			
	FDF6A		$\phi 5.8$	$C_v=0.65$	≤ 500	3.4	0.01	$\phi 7.94$			
	FDF8A		$\phi 8$	$C_v=1.10$	≤ 500	3.4	0.02	$\phi 9.52$			
	FDF11A		$\phi 11$	$C_v=3.0$	≤ 1000	2.8	0.02	$\phi 12.7$			
	FDF13A		$\phi 13$	$C_v=4.0$	≤ 1000	2.8	0.02	$\phi 15.88$			
Parameters of Key Components	Components	Group	Rated Voltage and frequency								
	Coil	BMC plastic packaged	Rated Voltage: AC220~240V、AC230V、AC220V、AC200V、AC120V、AC100~110V、AC24V								
			Frequency: 50/60Hz								

2、Operation Environment

- 1.Voltage Range: 85%~110% of rated voltage;
- 2.Fluid Temperature: $-30^{\circ}\text{C}\sim 120^{\circ}\text{C}$;
- 3.Ambient Temperature: $-30^{\circ}\text{C}\sim 50^{\circ}\text{C}$;
- 4.Relative Humidity: below 95%.

3、Notes for Application

1. Avoid impact or overload to the valve, or the crack may happen to the valve body which may cause leak of refrigerant;
2. Keep coil away from flammable materials which may cause fire;
3. An excessive impact or overload to the coil may cause crack, damage to the insulation, break of wires which may result in burn, electric shock or abnormal operation of valves;
4. Please do not energize the coil when it is separated from the valve body;
5. Please do not apply power other than specified to coil which may cause burn or abnormal operation of valves;
6. Please do not put coils into thermal retardation which may burn the coil for overheating;
7. Stay from the coil when being energized which may causes skin burn;
8. Keep coil away from condensation/dew, or the insulation performance may drop and cause the coil to burn;
9. Coil shall be dismantled when brazing the valve body which can avoid coil burning for overheating;
10. The valve body shall be cooled under 120°C during brazing in order to avoid internal leak or abnormal operation;
11. During brazing, inert gases (like N_2 , CO_2) shall be connected into the valve body in order to avoid the oxide enter the valve body which can cause internal leak or abnormal operation;
12. When installing coils; please use torque of 2.7N.m to tighten the bolt. A loose bolt can cause noise and vibration.

Pictures of AC Normally Open Solenoid Valve



1、Specifications for Normally Open Solenoid Valve

Specs and Parameters	Product Number	Operation Way	Port (mm)	Flow Rate	Internal Leak ($\Delta P=2.1\text{MPa}$) (ml/min)	Operation Pressure Difference (MPa)	OD of connection tube (mm)	Refrigerant	Max. Operation Pressure (MPa)
	FDF2AK	Closed when being energized	$\phi 1.8$	2.1	$C_v=0.06$	≤ 500	$\phi 6.35$	R22,R407C, R410A	4.2
Parameters of Key Components	Components	Group	Rated Voltage and Frequency						
	Coil	BMC plastic packaged	Rated Voltage: AC220~240V、AC230V、AC220V、AC200V、AC120V、AC24V Frequency: 50/60Hz						

2、Operation Environment

1. Voltage Range: 85%~110% of rated voltage;
2. Fluid Temperature: $-30^{\circ}\text{C}\sim 120^{\circ}\text{C}$;
3. Ambient Temperature: $-30^{\circ}\text{C}\sim 50^{\circ}\text{C}$;
4. Relative Humidity: below 95%.

3、Notes for Application

1. Avoid impact or overload to the valve, or the crack may happen to the valve body which may cause leak of refrigerant.;
2. Keep coil away from flammable materials which may cause fire;

3. An excessive impact or overload to the coil may cause crack, damage to the insulation, break of wires which may result in burn, electric shock or abnormal operation of valves;
4. Please do not energize the coil when it is separated from the valve body;
5. Please do not apply power other than specified to coil which may cause burn or abnormal operation of valves;
6. Please do not put coils into thermal retardation which may burn the coil for overheating;
7. Stay from the coil when being energized which may causes skin burn;
8. Keep coil away from condensation/dew, or the insulation performance may drop and cause the coil to burn;
9. Coil shall be dismantled when brazing the valve body which can avoid coil burning for overheating;
10. The valve body shall be cooled under 120°C during brazing in order to avoid internal leak or abnormal operation;
11. During brazing, inert gases (like N_2 , CO_2) shall be connected into the valve body in order to avoid the oxide enter the valve body which can cause internal leak or abnormal operation;
12. When installing coils; please use torque of 2.7N.m to tighten the bolt. A loose bolt can cause noise and vibration.

Pictures of AC Normally Open Solenoid Valve



1、Specifications for Normally Open Solenoid Valve

DC Normal ly Open Solenoid Valve	Specs and Parameters	Product Number	Operation Way	Port (mm)	Max. Operation Pressure Difference (kPa)	Flow Rate(Air) (P=19.6kPa) (L/min)	Internal Leak(Δ) P=2.1MPa (ml/min)	OD of connec tion tube (mm)	Refrigera nt	Max. Operati on Pressur e (MPa)	Ambient Tempera ture
		FDF6DK	Close	ϕ 6.8	14.7	\geq 150	\leq 500	ϕ 7.94	R22, R407C , R410A	4.2	-30℃ ~+50℃
		FDF8DK	d when being Energ ized	ϕ 8	14.7	\geq 190	\leq 1000	ϕ 9.52			
	Para meters of Key Comp onents	Componen ts	Type	Rated Voltage							
	Coil	BMC Plastic Packaged Epoxy encapsulation	Rated Voltage: DC280V、DC195V、DC178、DC140V、DC89V、DC39V								
DC normal ly Open SO lenoid Valve with Coil	SP ecs and Para meters	Product Number	Operation Way	Port (mm)	Max. Operation Pressure Difference (kPa)	Flow Rate(Air) (P=19.6kPa) (L/min)	Internal Leak(Δ) P=2.1MPa (ml/min)	OD of connec tion tube (mm)	Refrigera nt	Max. Operati on Pressur e (MPa)	Ambient Tempera ture
		FDF6DK	Close	ϕ 6.8	14.7	\geq 150	8.1 \pm 2	ϕ 7.94	R22, R407C , R410A	4.2	-30℃ ~+50℃
		FDF8DK	d when being Energ ized	ϕ 8	14.7	\geq 190	10.2 \pm 2	ϕ 9.52			
	Para meters of Key Coil	Componen ts	Type	Rated Voltage							
	Coil	BMC Plastic Packaged	Rated Voltage: DC280V、DC195V、DC178、DC140V、DC89V、DC39V								

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2、 Operation Environment

- 1.Voltage Range: 85%~110% of rated voltage;
- 2.Fluid Temperature: -30℃~120℃;
- 3.Ambient Temperature: -30℃~50℃;
- 4.Relative Humidity: below 95%.

3、 Notes for Application

1. Avoid impact or overload to the valve, or the crack may happen to the valve body which may cause leak of refrigerant.;
2. Keep coil away from flammable materials which may cause fire;
3. An excessive impact or overload to the coil may cause crack, damage to the insulation, break of wires which may result in burn, electric shock or abnormal operation of valves;
4. Please do not energize the coil when it is separated from the valve body;
- 5.Please do not apply power other than specified to coil which may cause burn or abnormal operation of valves;
6. Please do not put coils into thermal retardation which may burn the coil for overheating;
7. Stay from the coil when being energized which may causes skin burn;
8. Keep coil away from condensation/dew, or the insulation performance may drop and cause the coil to burn;
9. Coil shall be dismantled when brazing the valve body which can avoid coil burning for overheating;
- 10.The valve body shall be cooled under 120℃ during brazing in order to avoid internal leak or abnormal operation;
11. During brazing, inert gases(like N₂, CO₂) shall be connected into the valve body in order to avoid the oxide enter the valve body which can cause internal leak or abnormal operation;
12. When installing coils; please use torque of 2.7N.m to tighten the bolt. A loose bolt can cause noise and vibration.