

4-Way Reversing Valves Type STF, VHV

Technical leaflet

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Introduction

Saginomiya type STF and VHV valves are pilot-operated 4-way reversing valves suitable for applications including unitary, split system, and window-type heat pump air-conditioning systems. These robust valves are engineered to provide power savings and are available in a wide selection of connection sizes and styles for air-conditioning units of various sizes.

Both VHV and STF valve programs include a range of drip-proof resin-encapsulated coils in a variety of voltages.

The 4-way valve allows a reversal of the refrigeration cycle, changing from cooling mode in summer to heating mode in winter. The cycle reversal is initiated by a small pilot solenoid valve that moves a slide, thereby changing the direction of the refrigerant. The pilot valve ensures reliable changeover from cooling to heating mode.



The valve design guarantees a minimum pressure drop and low risk of leaks. The valve is connected to the discharge and suction pipes.

Features

- Low pressure drop across valve
- Instantaneous changeover with minimum pressure differential
- Unique mechanism to prevent partial changeover
- Power-saving design
- Wide range of capacities and connection sizes
- Splash-proof resin-encapsulated coil

Approvals

UL and c-UL recognized
 UL File No. MH12113 (MH19650)
 CE marked

Technical data

Refrigerants:	R22, R407C, R410A, R134a
Temperature of medium:	-5°F to 250°F
VHV 20, 25, 30, 40, 50	-5°F to 265°F
Allowable ambient temperature:	-5°F to 135°F
Maximum working pressure:	600 psig
Operating pressure differential:	43 to 450 psi
Minimum burst pressure:	3,000 psig
Airtight test pressure:	600 psig
Maximum brazing temperature:	250°F

Valve options

STF

Danfoss code	Saginomiya Part No.	Capacity from Minimum to Nominal		Connection (inch) ODF (Standard size in bold)		Configurations available (Standard configuration in bold)*	Box Qty.
		R22 Applicable (Value for reference)	R410A Applicable (Value for reference)	Discharge (D)	E.S.C		
		TR	TR				
061L1200	STF-01U1G3	0.45 - 1.35	0.46 - 1.59	5/16	3/8	A	50
061L1210	STF-02U1G3	0.80 - 2.57	0.88 - 3.03	5/16, 3/8 , 1/2	1/2 , 5/8	A , B, C, D	40
061L1211	STF-02U2G3	0.51 - 2.57	0.57 - 3.03		1/2, 5/8	A, B, C, D	40
061L1212	STF-02U4G3	0.80 - 2.57	0.88 - 3.03		1/2 , 5/8	A, B , C, D	40
061L1213	STF-02U9G3	0.80 - 2.57	0.88 - 3.03		1/2, 5/8	A, B, C, D	40
061L1214	STF-02U8G3	0.80 - 2.57	0.88 - 3.03		1/2, 5/8	A, B, C , D	40
061L1220	STF-03U6G3	1.3 - 3.1	1.5 - 3.7		3/8, 1/2	5/8, 3/4	E
061L1230	STF-04U1G3	2.0 - 5.7	2.4 - 6.7	1/2, 5/8, 3/4	3/4 , 7/8	B	20
061L1231	STF-04U9G3	2.0 - 5.7	2.4 - 6.7		3/4, 7/8	B	20
061L1232	STF-04U20G3	2.0 - 6.5	2.4 - 7.7		B	20	
061L1240	STF-07U19G3	5.1 - 9.7	6.0 - 11.4		1/2, 5/8, 3/4, 7/8	7/8 , 1-1/8	B
061L1243	STF-07U12G3	5.1 - 9.7	6.0 - 11.4	1/2, 5/8, 3/4 , 7/8	B		12

VHV

Danfoss code	Saginomiya Part No.	Capacity from Minimum to Nominal		Connection (inch) ODF (Standard size in bold)		Configurations available (Standard configuration in bold)*	Box Qty.
		R22 Applicable (Value for reference)	R410A Applicable (Value for reference)	Discharge (D)	E.S.C		
		TR	TR				
061L1260	VHV-15U11G3	9.5 - 10.8	11.1 - 12.7	7/8	1-1/8	F	8
061L1261	VHV-20U11G3	9.5 - 13.8	11.1 - 16.3	7/8 , 1-1/8	1-1/8 , 1-3/8	B , F	8
061L1262	VHV-25U1G3	12.8 - 20.8	14.8 - 24.6	1	1-1/4	G	1
061L1263	VHV-30U1G3	15.9 - 29.3	18.4 - 34.7	1-1/4	1-1/2	G	1
061L1264	VHV-40U1G3	28.4 - 41.0	32.7 - 48.4	1-1/2	1-3/4	G	1
061L1265	VHV-50U1G3	35.6 - 51.0	41.2 - 60.3	1-1/2	2-1/8	G	1

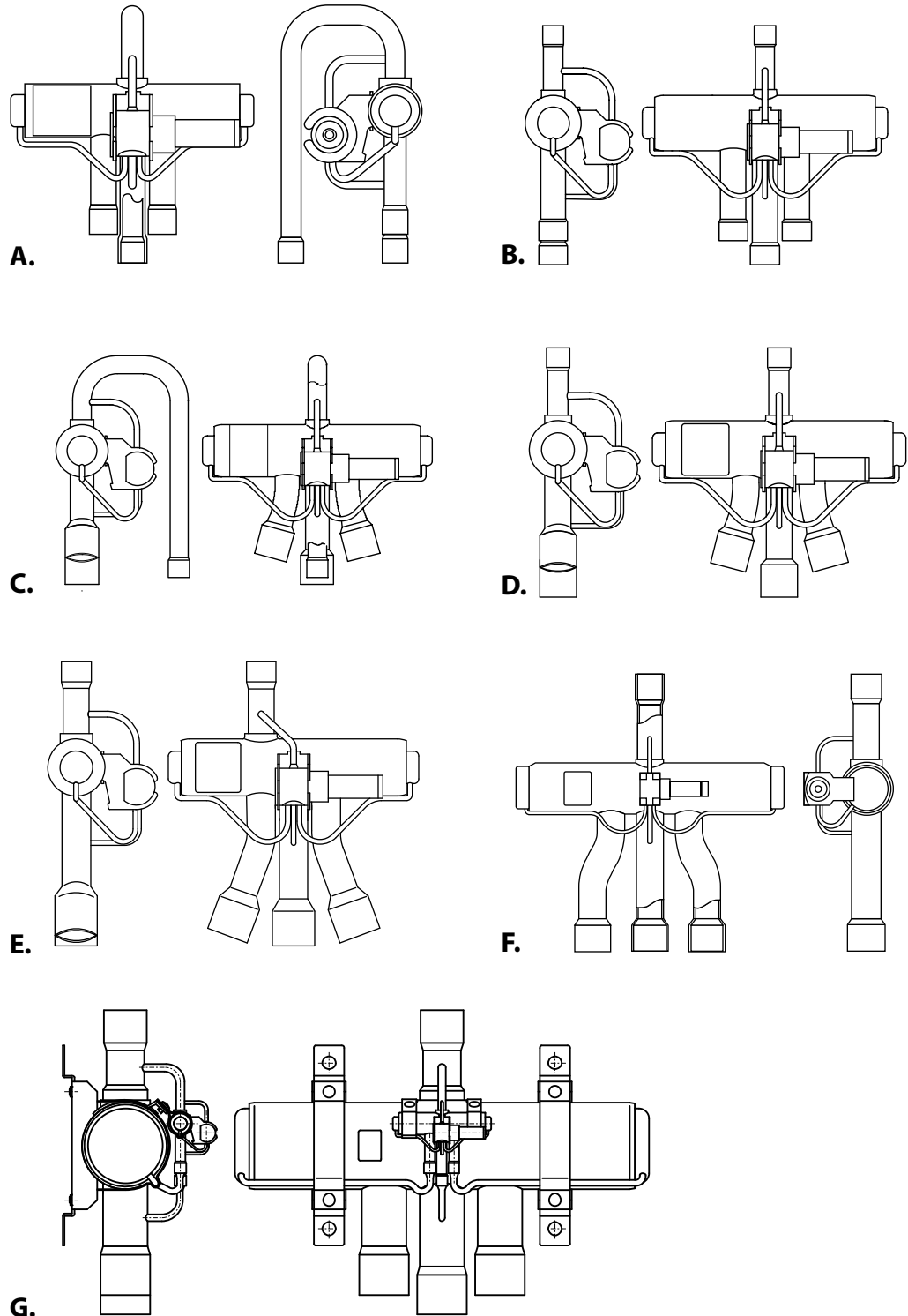
Nominal capacity is based on Pressure Drop = 2.1 psi, condensing temperature = 100°F, evaporating temperature = 41°F and superheat = 9°F

*See diagrams on page 5 for body configurations

**For non-standard configurations, please contact Danfoss Inc.
Not all connection size combinations are available.**

Configurations

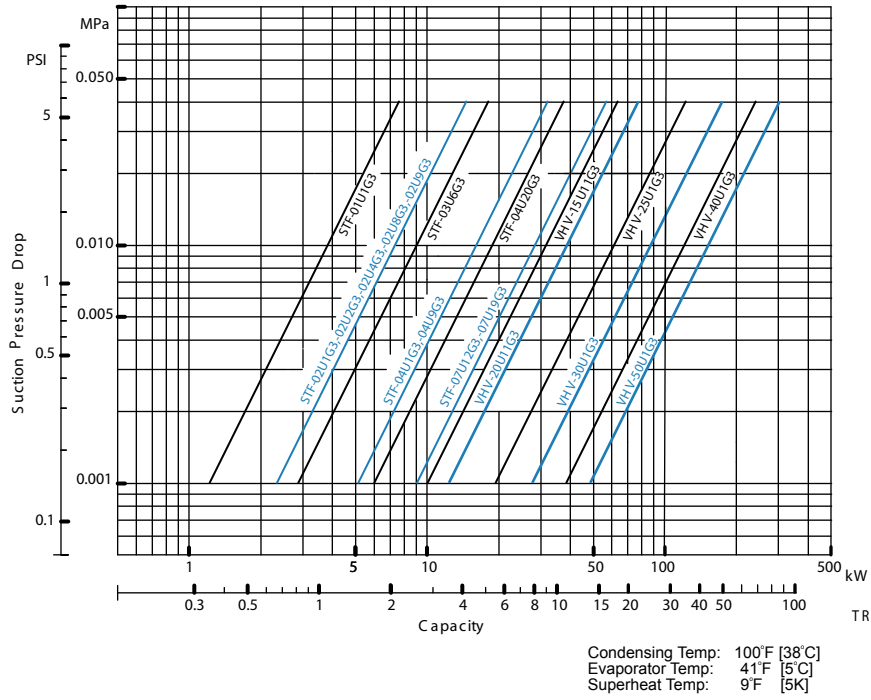
- A = Candy cane x Straight
- B = Straight x Straight
- C = Candy cane x Flare
- D = Straight x Flare
- E = Offset x Flare
- F = Straight x Flare
- G = Straight x Straight (for large capacity)



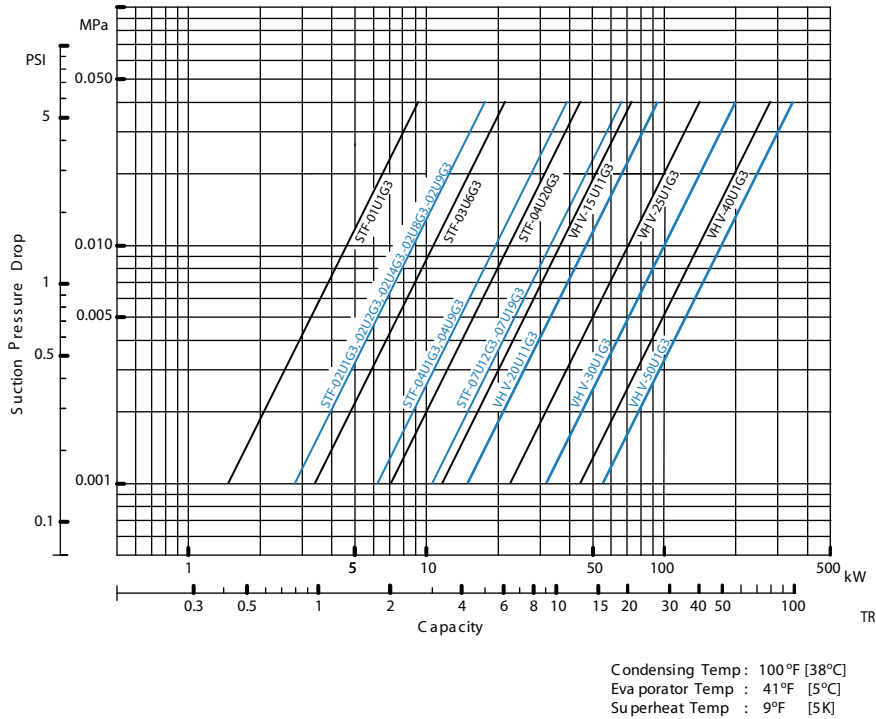
Model VHV-25U1G3 does not have a bracket.

Capacity

R22 / R407C



R410A



Coil program

Coils are available in two options: with two lead wires or with spade terminals and operate over a range of -15% to +10% of rated voltage. Coils are encapsulated in epoxy resin to protect the winding from liquids. Standard electrical ratings for coils are available for 24VAC, 115VAC and 230V AC. Other voltage options are available. Please contact Danfoss for details.

Coil for Type STF Reversing valves

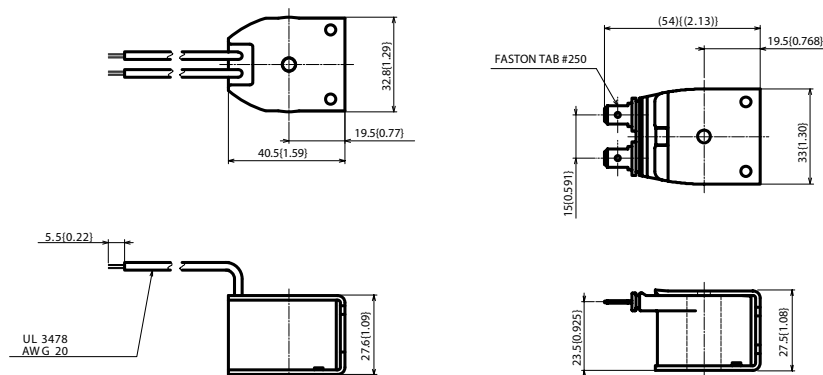
Danfoss Code No.	Saginomiya Coil Part No.	Voltage (VAC)	Cycle (Hz)	Watts (W)	Allowable Voltage Variation	Class of insulation	Lead Wire	Connecting style	Applicable Valve Body
061L2200	STF-01AB060UA1	24	50/60	6/5	50Hz: +10%, -15% 60Hz: +/- 10%	Class B Molded	UL3478 AWG20 257°F	With Spade Terminal	STF-01U** STF-02U** STF-03U** STF-04U** STF-07U**
061L2201	STF-01AB520UA1	24						With 51.2" (1,300mm) Lead Wire	
061L2202	STF-01AE060UA1	115 to 120						With Spade Terminal	
061L2203	STF-01AE511UA1	115 to 120						With 51.2" (1,300mm) Lead Wire (Insulation thickness: 2/64")	
061L2204	STF-01AI054UA1	230						With Spade Terminal	
061L2205	STF-01AI519UA1	230						With 51.2" (1,300mm) Lead Wire (Insulation thickness: 2/64")	

Coil for Type VHV Reversing valves

Danfoss Code No.	Coil Part No.	Voltage (VAC)	Cycle (Hz)	Watts (W)	Allowable Voltage Variation	Class of insulation	Lead Wire	Connecting style	Applicable Valve Body
061L2206	VHV-01AB060UA1	24	50/60	6/5	50Hz: +10%, -15% 60Hz: +/- 10%	Class B Molded	UL3478 AWG20 257°F	With Spade Terminal	VHV-15U** VHV-20U** VHV-25U** VHV-30U** VHV-40U** VHV-50U**
061L2207	VHV-01AB520UA1	24						With 51.2" (1,300mm) Lead Wire	
061L2208	VHV-01AE060UA1	115 to 120						With Spade Terminal	
061L2209	VHV-01AE511UA1	115 to 120						With 51.2" (1,300mm) Lead Wire (Insulation thickness: 2/64")	
061L2210	VHV-01AI054UA1	230						With Spade Terminal	
061L2211	VHV-01AI519UA1	230						With 51.2" (1,300mm) Lead Wire (Insulation thickness: 2/64")	

Coil dimensions

mm(inch)



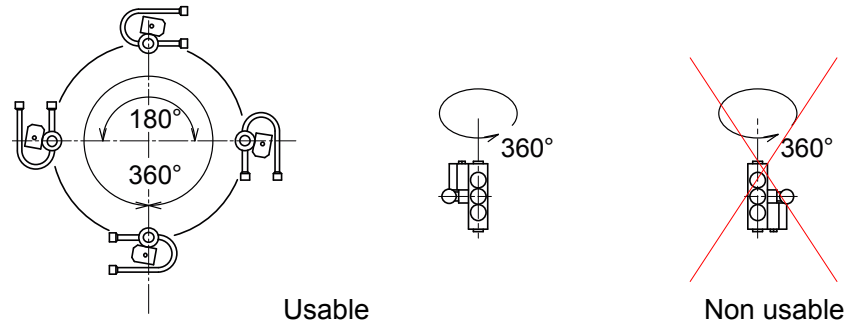
Coil with lead wire

Coil with spade terminals

For optimum performance of STF and VHV 4-way reversing valves, observe the following installation recommendations and guidelines:

Installation

1. Mounting Position – Always Install the 4-way valve with the coil stem position mounted vertically upward. The valves can be installed in any orientation as long as the coil stem position is up. Valves with G style configuration: 180° maximum as show in the sketch.



2. Before installing the 4-way valve, thoroughly clean the refrigeration tubing to prevent dust or dirt particles from entering the valve. If the system contains excess dirt particles, installation of an 80 to 100 mesh strainer ahead of the valve is recommended.

3. Do not heat the valve body to a temperature more than 250°F during installation. Wet wrapping the valve is recommended during brazing or soldering. The solenoid coil must be removed during brazing or soldering.

4. Do not suspend the valve from the solenoid coil wire leads.

For mounting of the solenoid coil

1. Make sure the supply voltage is the same as the voltage marked on the solenoid coil
2. Insert and tighten the supplied coil retaining screw after the coil is in place
3. When wiring the solenoid coil, leave enough slack to ensure that no stresses are applied to the supply wires and coil connection.
4. Always turn off power to the solenoid coil when removing the coil from the valve
5. Do not insulate the solenoid coil. This could cause the coil to overheat and burnout