ENGINEERING TOMORROW

Data Sheet

Solenoid valve and coil Type **CSV 2 - CSV 22**

Normally Closed (NC)



CSV is a direct or servo-operated solenoid valve for liquid, suction, and hot gas lines with common fluorinated refrigerants.

CSV valves are for refrigeration, freezing, and air conditioning plants.

CSV valves and coils are sold separately.

Features

- Designed for media temperatures up to 105 °C / 221 °F
- Supplied as normally closed (NC) with de-energized coil
- Wide choice of coils for AC and DC
- Suitable for listed refrigerants, including flammable refrigerants
- Available in flare and solder connection versions Flare connections up to ½ in
- Solder connections up to 1 ⅜ in
- Small encapsulated coils with long life time under extreme conditions.
- Compact construction with small dimensions, low weight for both valve and coil
- Simple and fast mounting of coil - clip-ON / OFF

Media

Table 1: Media features

Features	Description
Refrigerant	R22, R134a, R404A, R507, R407C, R513A, R452A, R1234ze, R600, R600a and R290.
Temperature of medium	-40 – 105 °C / -40 – 221°F (Maximum 130 °C / 265 °F during defrosting)
Maximum working pressure	35 bar / 508 psig

For a complete list of approved refrigerants, visit store.danfoss.com and search for individual code numbers, where refrigerants are listed as part of technical data.

NOTE:
Special note for R1234ze(E), R290, R600 and R600a: Ignition risk is evaluated in accordance to ISO 5149 and IEC 60335. EX range Zone 2(category 3 IIA).

For countries where safety standards are not an indispensable part of the safety system Danfoss recommends the installer gets a third party approval of any system containing flammable refrigerant.

NOTE:
- Please follow specific selection criteria stated in the data sheet for these particular refrigerants.
- CSV is not suitable for oil free application. For detailed informations please contact Danfoss
- Flare connections are only approved for A1 and A2L refrigerants.

Product specification

Rated capacity [KW]

Table 2: Rated capacity [KW] for Liquid

Type	K_v (m^3/h)	R22/R407C	R134a	R404A/R507	R290	R513A	R452A	R600	R600a	R1234ze(E)
CSV 2	0.1	2.01	1.86	1.36	2.24	1.66	1.38	2.53	2.25	1.66
CSV 3	0.3	6.03	5.58	4.09	6.72	4.97	4.15	7.6	6.76	4.99
CSV 6	0.54	10.86	10.05	7.35	12.09	8.95	7.48	13.69	12.18	8.98
CSV 10	1.5	30.17	27.91	20.43	33.59	24.85	20.76	38.02	33.82	24.93
CSV 15	2.6	52.3	48.38	35.41	58.22	43.07	35.99	65.89	58.62	43.22
CSV 20	5	100.57	93.04	68.1	111.96	82.83	69.22	126.72	112.74	83.12
CSV 22	6	120.68	111.65	81.72	NA	99.39	83.06	NA	NA	NA

Table 3: Rated capacity [KW] for Suction

Type	K_v (m^3/h)	R22/R407C	R134a	R404A/R507	R290	R513A	R452A	R600	R600a	R1234ze(E)
CSV 2	0.1	0.22	0.16	0.19	0.27	0.16	0.19	0.13	0.15	0.13
CSV 3	0.3	0.67	0.48	0.58	0.82	0.47	0.56	0.38	0.45	0.39
CSV 6	0.54	1.2	0.87	1.05	1.47	0.84	1	0.68	0.82	0.7
CSV 10	1.5	3.33	2.42	2.91	4.08	2.35	2.78	1.89	2.27	1.95
CSV 15	2.6	5.77	4.2	5.04	7.07	4.07	4.81	3.27	3.93	3.38
CSV 20	5	11.1	8.08	9.69	13.6	7.82	9.26	6.3	7.56	6.49
CSV 22	6	13.32	9.69	11.61	NA	9.38	11.11	NA	NA	NA

Rated liquid and suction vapour capacity is based on:
- evaporating temperature t_e = -10 °C
- liquid temperature ahead of valve t_l = 25 °C
- pressure drop in valve Δp = 0.15 bar

Table 4: Rated capacity [KW] for Hot-gas

Type	K_v (m^3/h)	R22/R407C	R134a	R404A/R507	R290	R513A	R452A	R600	R600a	R1234ze(E)
CSV 2	0.1	0.9	0.69	0.74	1.02	0.64	0.76	0.56	0.63	0.56
CSV 3	0.3	2.69	2.08	2.22	3.07	1.93	2.29	1.68	1.89	1.67
CSV 6	0.54	4.85	3.75	3.99	5.53	3.48	4.12	3.03	3.4	3.01
CSV 10	1.5	13.46	10.38	11.05	15.35	9.66	11.44	8.42	9.45	8.37
CSV 15	2.6	23.34	17.99	19.15	26.61	16.75	19.83	14.6	16.38	14.51
CSV 20	5	44.88	34.59	36.83	51.18	32.21	38.13	28.07	31.5	27.91
CSV 22	6	53.86	41.51	44.2	NA	38.65	45.76	NA	NA	NA

Rated hot gas capacity is based on:
- condensing temperature t_c = 40 °C
- pressure drop across valve Δp = 0.8 bar
- hot gas temperature t_h = 65 °C
- subcooling of refrigerant Δt_{sub} = 4 K

Valve selection based on capacity calculation

As for extended capacity calculations and valve selection based on capacities and refrigerants, please refer to Coolselector®2. Rated and extended capacities are calculated with the Coolselector®2 calculation engine to ARI standards with the ASEREP equations based on laboratory measurements of selected valves.

Dimensions and weights - solder connection

Figure 1: CSV 2 – CSV 6

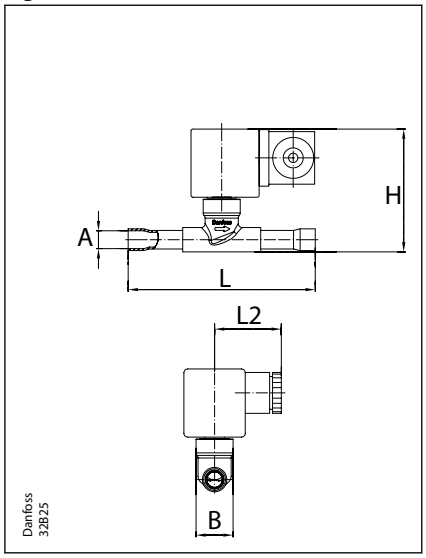


Figure 2: CSV 10 – CSV 15

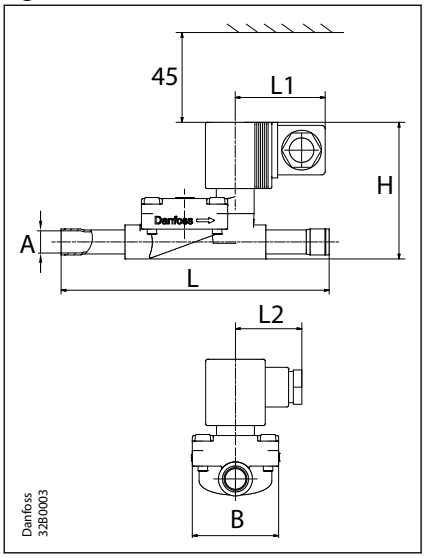


Figure 3: CSV 20 – CSV 22

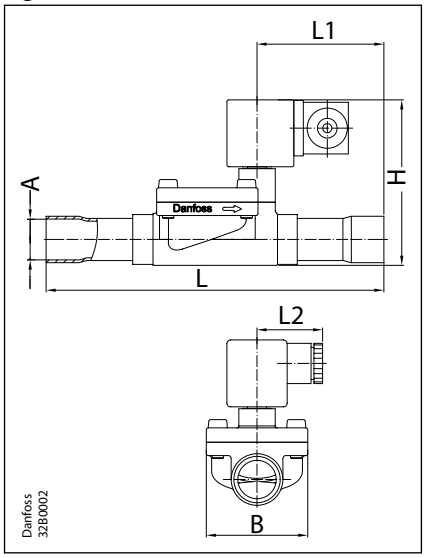


Table 5: Dimensions and weights - solder connection

Type	A Connection (ODF)		B	H	L	L1	L2	Weight
	[in]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[Kg]
CSV 2	¼	6	19	56	82	–	34	0.1
CSV 3	¼	6	19	65	92	–	34	0.1
	⅜	10	19	65	96	–	34	0.1
CSV 6	⅜	10	19	65	96	–	34	0.1
	½	12	19	65	112	–	34	0.1
CSV 10	½	12	46	73	142	50	34	0.2
	⅝	16	46	73	142	50	34	0.2
CSV 15	⅝	16	46	74	167	62	34	0.4
	⅞	22	46	76	167	62	34	0.4
CSV 20	⅞	22	53	82	177	64	34	0.6
	1 ⅛	28	53	84	196	74	34	0.6
CSV 22	1 ⅛	28	62	87	240	91	34	0.9
	1 ⅜	35	62	89	240	91	34	0.9
Coil	–	–	–	–	–	–	–	0.1

Dimensions and weights - flare connection

Figure 4: flare connection

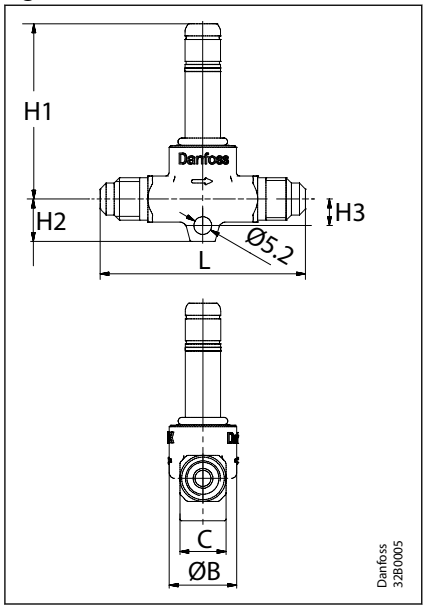


Table 6: Dimensions and weights - flare connection

Type	Connection (flare)		B	H	L	C	H1	H2	H3	Weight
	[in]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[Kg]
CSV 2	¼	6	19	63	58	13	49	12	7.5	0.085
CSV 3	¼	6	19	69	58	13	55	12	7.5	0.096
	⅜	10	19	69	76	15	54	13	8.5	0.128
CSV 6	⅜	10	19	70	76	15	55	13	8.5	0.128
	½	12	19	70	76	15	55	13	8.5	0.137

Ordering

Ordering solder connection

Figure 5: CSV2,3,6

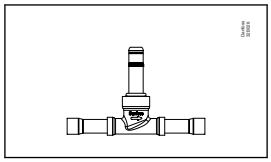


Figure 6: CSV 10,15

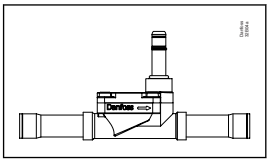


Figure 7: CSV 20, 22

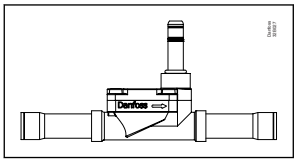


Table 7: Ordering - solder connection

Type	Connection (ODF)		Opening differential pressure with standard coil ΔP [bar]			K_v	Code no.
	[in.]	[mm]	Min.	Max.(=MOPD liquid [1])		m^3/h	
				AC	DC		
CSV 2	1/4	–	0	26	26	0.1	032B2040
	–	6	0	26	26	0.1	032B2000
CSV 3	1/4	–	0.05	26	24	0.3	032B2041
	–	6	0.05	26	24	0.3	032B2001
	3/8	–	0.05	26	24	0.3	032B2042
	–	10	0.05	26	24	0.3	032B2002
CSV 6	3/8	–	0.05	26	26	0.54	032B2043
	–	10	0.05	26	26	0.54	032B2003
	1/2	–	0.05	26	26	0.54	032B2044
	–	12	0.05	26	26	0.54	032B2004
CSV 10	1/2	–	0.05	26	26	1.5	032B2045
	–	12	0.05	26	26	1.5	032B2005
	5/8	16	0.05	26	26	1.5	032B2006
CSV 15	5/8	16	0.05	26	26	2.6	032B2007
	7/8	22	0.05	26	26	2.6	032B2008
CSV 20	7/8	22	0.05	26	26	5.0	032B2009
	1 1/8	–	0.05	26	26	5.0	032B2050
	–	28	0.05	26	26	5.0	032B2010
CSV 22	1 1/8	–	0.05	26	26	6.0	032B2051
	–	28	0.05	26	26	6.0	032B2011
	1 3/8	35	0.05	26	26	6.0	032B2012

[1] For detailed MOPD, for media in gas form, please contact Danfoss.

Ordering flare connection

Figure 8: flare connection

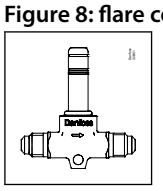


Table 8: Ordering - flare connection

Type	Connection (flare)		Opening differential pressure with standard coil Δp [bar]		K_v	Code no.
	[in.]	[mm]	Min.	Max.(=MOPD liquid[1])	m^3/h	
CSV 2	1/4	–	0	26	0.1	032B2030
CSV 3	1/4	–	0.05	26	0.3	032B2031
	3/8	–	0.05	26	0.3	032B2032
CSV 6	3/8	–	0.05	26	0.54	032B2033
	1/2	–	0.05	26	0.54	032B2034

[1] For detailed MOPD, for media in gas form, please contact Danfoss.

Ordering solenoid coil with DIN Terminal box IP65

NOTE:
For use with R290, the Coil with DIN Plug (code 034Z2014) is validated in accordance to ISO 5149, IEC 60335 (ref. IEC/EN 60079-15). Ignition risk is evaluated in accordance to ISO 5149 and IEC 60335 (ref. IEC/EN 60079-15).

- Please make sure that there is no spark, arc on the spade connection during the application.
- If coils are below IPx5, they must be protected against ultraviolet, moisture and major impact, especially the connection of coils.
- Always install a fuse ahead of the coil to avoid short circuit.
- The coil should be used in area of not more than pollution degree 2.
- Use of socket cable with suitable mechanical lock function to connect with coils.
- Follow the installation guide to mount the coil correctly.

NOTE:
Please follow specific selection criteria stated in the data sheet for this particular refrigerants.

Ordering coil with DIN Plug

Figure 9: Coil with DIN Plug

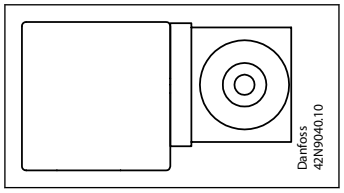


Table 9: Ordering - Coil with DIN Plug

Type	Power consumption	Frequency	Voltage[V]	Code no.
	[W]	[Hz]	[AC]	
CSV 2 – CSV 22	6	50/60	220	034Z2014[1]

[1] The 034Z2014 is exclusively for China market, coil and din plug are included, IP65. Spare parts of the coil for other region and DIN plug are available on request.

Ordering coil with DIN spade connection

Figure 10: Coil with DIN spade connection

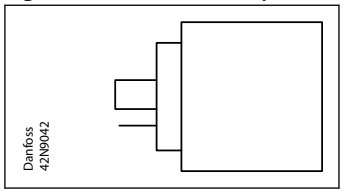


Table 10: Ordering Coil - DIN spade connection

Type	Voltage[V]	Frequency	Power consumption	Code No.	
	[AC]	[Hz]		Industrial Pack	single pack
CSV2-22	24	50/60	Holding: 6W 12VA Inrush: 26VA	–	042N7608
	230	50/60		–	042N7601
	240	50/60		–	042N7602
	12	DC	14W	042N8686	–
	24	DC	14W	042N8687	042N7687

Ordering coil cable connection

Figure 11: Coil cable connection

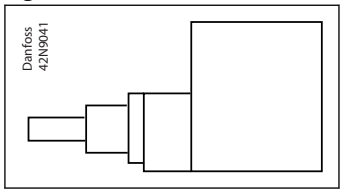


Table 11: Coil cable connection

Type	Voltage[V]	Frequency	Power consumption	Code No.	
	[AC]	[Hz]		Industrial Pack	single pack
CSV2-22	115	50/60	Holding: 6W 12VA Inrush: 26VA	–	042N7662
	230	50/60		042N8651	042N7651
	240	50/60		042N8652	–

Accessories

Figure 12: DIN Plug with sealing ring

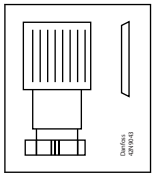


Table 12: Accessories

Description	Code no.
DIN Plug (EN175301-803 type A)	042N0156

Certificates, declarations, and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

Table 13: Certificates, declarations, and approvals

Document name	Document type	Document topic	Approval authority
032B9610	Manufacturers Declaration	PED/RoHS	Danfoss
033F4006	Manufacturers Declaration	China RoHS	Danfoss

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