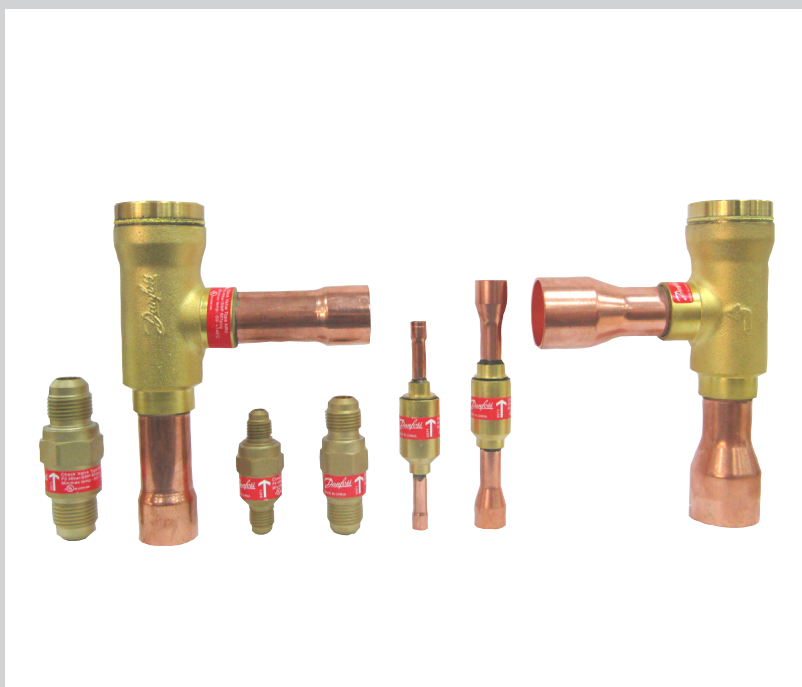# Check valve
Types NRV and NRVH

NRV and NRVH can be used in liquid. suction and hot gas lines in refrigeration and air conditioning plant with HCFC. HFC and HC flammable refrigerants.

The valves ensure the correct flow direction and prevent back-condensation from a warm part of the system to the cold evaporator. A built-in damping piston makes the valves suitable for installation in lines where pulsation can occur. e. g. in the discharge line from the compressor.

Features

- Ensure correct flow direction.
- Available in both straightway and angleway versions.
- Prevents back-condensation from warm to cold system part.
- Solder versions are compliant with ATEX hazard zone 2.

- Built-in damping piston that makes the valves suitable for installation in lines where pulsation can occur. e.g. in the discharge line from the compressor.
- In refrigeration plants with compressors connected in parallel. it is advantageous to use NRVH. since the spring is stronger than in NRV.
- Oversize connections provide flexibility in use.

Data sheet | **Check valve, types NRV and NRVH**

Approvals

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EAC

Technicala data

| Refrigerants	HCFC. HFC and HC flammable refrigerants
Media temperature range	-50 – 140 °C / -58 – 285 °F
Max. working pressure (PS/MWP)	46 bar (667 psig)

Note: *Only solder version. Connection sizes from 6 s to 19 s are allowed for flammable refrigerant.*

Dimensioning and selection

When selecting the right Danfoss check valve the capacity tables on page 4 and 5 should be utilised together with plant requirements concerning piping and connection sizes. The optimum solution should include the highest capacity at lowest pressure drop across the valve before it closes. Further. when dimensioning and selecting Danfoss check valves for mounting into the compressor discharge line. it is important to be aware of the following:
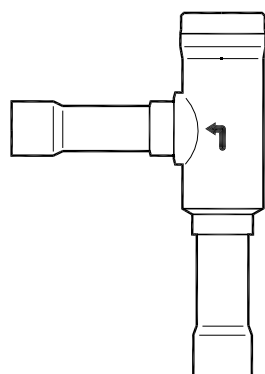
The differential pressure across the valve must always be higher than the given minimum pressure drop at which the valve is completely open. This also applies to lowest capacities for compressor with capacity regulation. In refrigeration plants with compressors connected in parallel. it is advantageous to use NRVH. since the spring is stronger than the one utilised in NRV. Also. resonance problems can be avoided at partial load in the refrigerant plant.

Ordering
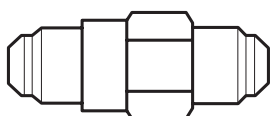
Straightway Flare Version without union

Valve type	Connection type	Connection		Pressure drop across valve Δp [2])		K_v value [3]) (calculated value)	C_v value [3]) (calculated value)	Code no.
		[in.]	[mm]	[bar]	[psi]	[m³/h]	[gal/min]	
NRV 6	Straight-way - flare	1/4	6	0.07	1.01	0.56	0.65	020-1040
NRV 10	Straight-way - flare	3/8	10	0.07	1.01	1.2	1.39	020-1041
NRV 12	Straight-way - flare	1/2	12	0.05	0.72	2.05	2.37	020-1042
NRV 16	Straight-way - flare	5/8	16	0.05	0.72	3.6	4.16	020-1043
NRV 19	Straight-way - flare	3/4	19	0.05	0.72	5.5	6.36	020-1044

Angleway Solder ODF Version

Valve type	Connection type	Connection		Pressure drop across valve Δp [2])		K_v value [3]) (calculated value)	C_v value [3]) (calculated value)	Code no.
		[in.]	[mm]	[bar]	[psi]	[m³/h]	[gal/min]	
NRV 22s	Angle-way - solder	7/8	22	0.04	0.58	8.5	9.83	020-1020
NRVH 22s	Angle-way - solder	7/8	22	0.30	4.35	8.5	9.83	020-1032
NRV 22s [1])	Angle-way - solder	1 1/8	-	0.04	0.58	8.5	9.83	020-1060
	Angle-way - solder	-	28	0.04	0.58	8.5	9.83	020-1055
NRVH 22s [1])	Angle-way - solder	1 1/8	-	0.30	4.35	8.5	9.83	020-1072
	Angle-way - solder	-	28	0.30	4.35	8.5	9.83	020-1067
NRV 28s	Angle-way - solder	1 1/8	-	0.04	0.58	16.5	19.07	020-1021
	Angle-way - solder	-	28	0.04	0.58	16.5	19.07	020-1025
NRVH 28s	Angle-way - solder	1 1/8	-	0.30	4.35	16.5	19.07	020-1029
	Angle-way - solder	-	28	0.30	4.35	16.5	19.07	020-1033
NRV 28s [1])	Angle-way - solder	1 3/8	35	0.04	0.58	16.5	19.07	020-1056
NRVH 28s [1])	Angle-way - solder	1 3/8	35	0.30	4.35	16.5	19.07	020-1068
NRV 35s	Angle-way - solder	1 3/8	35	0.04	0.58	29	33.52	020-1026
NRVH 35s	Angle-way - solder	1 3/8	35	0.30	4.35	29	33.52	020-1034
NRV 35s [1])	Angle-way - solder	1 5/8	-	0.04	0.58	29	33.52	020-1061
	Angle-way - solder	-	42	0.04	0.58	29	33.52	020-1027
NRVH 35s [1])	Angle-way - solder	1 5/8	-	0.30	4.35	29	33.52	020-1073
	Angle-way - solder	-	42	0.30	4.35	29	33.52	020-1035

[1]) *Oversize connections.*
[2]) *Δp = the minimum pressure at which the valve is completely open.*
 The NRVH with a stronger spring is used in the discharge line from compressors connected in parallel.
[3]) *The K_v / C_v value is the flow of water in [m³/h – gal/min] at a pressure drop across valve of 1 bar / 14.5 psig.*
 ρ = 1000 kg/m³ - 2205 lbs/G.

Ordering (continued)
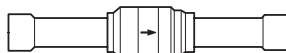
Straightway Solder ODF Version

Valve type	Connection type	Connection		Pressure drop across valve Δp [2])		K_v value [3]) (calculated value)	C_v value [3]) (calculated value)	Code no.
		[in.]	[mm]	[bar]	[psi]	[m³/h]	[gal/min]	
NRV 6s	Straight-way - Solder	$^1/_4$	-	0.07	1.01	0.56	0.65	020-1010
	Straight-way - Solder	-	6	0.07	1.01	0.56	0.65	020-1014
NRV 6s [1])	Straight-way - Solder	$^1/_4$	-	0.07	1.01	0.56	0.65	020-1057
	Straight-way - Solder	-	6	0.07	1.01	0.56	0.65	020-1050
NRVH 6s [1])	Straight-way - Solder	$^3/_8$	-	0.30	4.35	0.56	0.65	020-1069
	Straight-way - Solder	-	10	0.30	4.35	0.56	0.65	020-1062
NRV 10s	Straight-way - Solder	$^3/_8$	-	0.07	1.01	1.2	1.39	020-1011
	Straight-way - Solder	-	10	0.07	1.01	1.2	1.39	020-1015
NRVH 10s	Straight-way - Solder	$^1/_2$	-	0.30	4.35	1.2	1.39	020-1046
	Straight-way - Solder	-	12	0.30	4.35	1.2	1.39	020-1036
NRV 10s [1])	Straight-way - Solder	$^1/_2$	-	0.07	1.01	1.2	1.39	020-1058
	Straight-way - Solder	-	12	0.07	1.01	1.2	1.39	020-1051
NRVH 10s [1])	Straight-way - Solder	$^1/_2$	-	0.30	4.35	1.2	1.39	020-1070
	Straight-way - Solder	-	12	0.30	4.35	1.2	1.39	020-1063
NRV 12s	Straight-way - Solder	$^1/_2$	-	0.05	0.72	2.05	2.37	020-1012
	Straight-way - Solder	-	12	0.05	0.72	2.05	2.37	020-1016
NRVH 12s	Straight-way - Solder	$^1/_2$	-	0.30	4.35	2.05	2.37	020-1039
	Straight-way - Solder	-	12	0.30	4.35	2.05	2.37	020-1037
NRV 12s [1])	Straight-way - Solder	$^5/_8$	16	0.05	0.72	2.05	2.37	020-1052
NRVH 12s [1])	Straight-way - Solder	$^5/_8$	16	0.30	4.35	2.05	2.37	020-1064
NRV 16s	Straight-way - Solder	$^5/_8$	16	0.05	0.72	3.6	4.16	020-1018
NRVH 16s	Straight-way - Solder	$^5/_8$	16	0.30	4.35	3.6	4.16	020-1038
NRV 16s [1])	Straight-way - Solder	-	18	0.05	0.72	3.6	4.16	020-1053
NRVH 16s [1])	Straight-way - Solder	-	18	0.30	4.35	3.6	4.16	020-1065
NRV 16s [1])	Straight-way - Solder	$^3/_4$	19	0.05	0.72	3.6	4.16	020-1059
NRVH 16s [1])	Straight-way - Solder	$^3/_4$	19	0.30	4.35	3.6	4.16	020-1071
NRV 19s	Straight-way - Solder	-	18	0.05	0.72	5.5	6.36	020-1017
NRVH 19s	Straight-way - Solder	-	18	0.30	4.35	5.5	6.36	020-1008
NRV 19s	Straight-way - Solder	$^3/_4$	19	0.05	0.72	5.5	6.36	020-1019
NRVH 19s	Straight-way - Solder	$^3/_4$	19	0.30	4.35	5.5	6.36	020-1023
NRV 19s [1])	Straight-way - Solder	$^7/_8$	22	0.05	0.72	5.5	6.36	020-1054
NRVH 19s [1])	Straight-way - Solder	$^7/_8$	22	0.30	4.35	5.5	6.36	020-1066

[1]) Oversize connections.
[2]) Δp = the minimum pressure at which the valve is completely open.
  The NRVH with a stronger spring is used in the discharge line from compressors connected in parallel.
[3]) The K_v / C_v value is the flow of water in [m³/h – gal/min] at a pressure drop across valve of 1 bar / 14.5 psig.
  ρ = 1000 kg/m³ - 2205 lbs/G.

Capacity

Liquid capacity in [kW]

Type	Liquid capacity in [kW] at pressure drop across valve Δp [bar]			
	NRV			NRV/NRVH
	0.05	0.07 [1]	0.14	0.3 [2]
R22				
NRV/NRVH 6	-	7.67	10.8	15.8
NRV/NRVH 10	-	16.4	23.2	34
NRV/NRVH 12	23.7	28	39.7	58
NRV/NRVH 16	41.6	49.3	69	102
NRV/NRVH 19	63	75	106	155
NRV/NRVH 22	98	116	164	241
NRV/NRVH 28	191	225	319	467
NRV/NRVH 35	335	397	561	822
R134a				
NRV/NRVH 6	-	7.14	10.1	14.7
NRV/NRVH 10	-	15.3	21.6	31.6
NRV/NRVH 12	22.1	26.1	36.9	54
NRV/NRVH 16	38.8	45.9	64	95
NRV/NRVH 19	59	70	99	145
NRV/NRVH 22	91	108	153	224
NRV/NRVH 28	177	210	297	435
NRV/NRVH 35	312	369	523	765
R404A/R507				
NRV/NRVH 6	-	5.23	7.39	10.8
NRV/NRVH 10	-	11.2	15.8	23.1
NRV/NRVH 12	16.1	19.1	27.0	39.6
NRV/NRVH 16	28.3	33.6	47.5	69
NRV/NRVH 19	43.3	51	72	106
NRV/NRVH 22	67	79	112	164
NRV/NRVH 28	130	153	217	318
NRV/NRVH 35	228	270	382	560

[1] Rated capacities.
[2] Capacity for NRVH.

Suction vapour capacity in [kW]

Type	Pressure drop across valve Δp [bar]	Suction vapour capacity kW at evaporating temperature t_o [°C]		
		–30	–10 [1]	+5
R22				
NRV/NRVH 6	0.07	0.56	0.86	1.14
NRV/NRVH 10	0.07	1.20	1.84	2.43
NRV/NRVH 12	0.05	2.05	3.15	4.16
NRV/NRVH 16	0.05	3.60	5.53	7.30
NRV/NRVH 19	0.05	5.50	8.45	11.1
NRV/NRVH 22	0.05	8.49	13.0	17.2
NRV/NRVH 28	0.05	16.4	25.3	33.4
NRV/NRVH 35	0.05	28.9	44.5	58
R134a				
NRV/NRVH 6	0.07	0.38	0.64	0.89
NRV/NRVH 10	0.07	0.81	1.37	1.90
NRV/NRVH 12	0.05	1.38	2.33	3.25
NRV/NRVH 16	0.05	2.43	4.10	5.71
NRV/NRVH 19	0.05	3.71	6.26	8.72
NRV/NRVH 22	0.05	5.74	9.68	13.4
NRV/NRVH 28	0.05	11.1	18.7	26.1
NRV/NRVH 35	0.05	19.5	33.0	45.9
R404A/R507				
NRV/NRVH 6	0.07	0.47	0.75	1.02
NRV/NRVH 10	0.07	1.00	1.61	2.18
NRV/NRVH 12	0.05	1.71	2.74	3.73
NRV/NRVH 16	0.05	3.01	4.82	6.55
NRV/NRVH 19	0.05	4.59	7.36	10.0
NRV/NRVH 22	0.05	7.10	11.3	15.4
NRV/NRVH 28	0.05	13.7	22.0	30.0
NRV/NRVH 35	0.05	24.2	38.8	52

[1] Rated capacities.

The suction vapour capacities are based on liquid temperature t_l = 25 °C ahead of the evaporator.
The table values refer to the evaporator capacity.
The capacities are based on dry. saturated vapour ahead of the valve.
Under operating conditions with superheated vapour ahead of the valve. the capacities are reduced by 4% for every 10 K superheat.

Correction factors
When selecting the evaporator capacity is to be multiplied by a correction factor depending on the liquid temperature t_l ahead of the valve/the evaporator. The corrected capacity can then be found from the table.

Correction factors for liquid temperature t_l

t_l [°C]	-10	0	10	15	20	25	30	35	40	45	50
R22	0.76	0.82	0.88	0.92	0.96	1.00	1.05	1.10	1.16	1.22	1.30
R134a	0.73	0.79	0.86	0.90	0.95	1.00	1.06	1.12	1.19	1.27	1.37
R404A/R507	0.67	0.74	0.82	0.87	0.93	1.00	1.08	1.17	1.29	1.43	1.61

Data sheet   **Check valve, types NRV and NRVH**

Capacity (continued)

Liquid capacity in [kW]

Type	Liquid capacity in [kW] at pressure drop across valve Δp [bar]			
	NRV			NRV/NRVH
	0.05	0.07 [1]	0.14	0.3 [2]
R407A				
NRV/NRVH 6	-	6.82	9.65	14.1
NRV/NRVH 10	-	14.6	20.6	30.2
NRV/NRVH 12	21.1	24.9	35.3	51
NRV/NRVH 16	37.0	43.8	62	90
NRV/NRVH 19	56	66	94	138
NRV/NRVH 22	87	103	146	214
NRV/NRVH 28	169	200	284	416
NRV/NRVH 35	298	353	499	731
R407C				
NRV/NRVH 6	-	7.36	10.4	15.2
NRV/NRVH 10	-	15.7	22.3	32.6
NRV/NRVH 12	22.7	26.9	38.0	55
NRV/NRVH 16	39.9	47.3	66	97
NRV/NRVH 19	61	72	102	149
NRV/NRVH 22	94	111	157	231
NRV/NRVH 28	183	216	306	448
NRV/NRVH 35	322	381	538	788
R407F				
NRV/NRVH 6	-	7.47	10.5	15.4
NRV/NRVH 10	-	16.0	22.6	33.1
NRV/NRVH 12	23.1	27.3	38.6	56
NRV/NRVH 16	40.6	48.0	67	99
NRV/NRVH 19	62	73	103	151
NRV/NRVH 22	95	113	160	234
NRV/NRVH 28	186	220	311	455
NRV/NRVH 35	327	387	547	801
R410A				
NRV/NRVH 6	-	7.54	10.6	15.6
NRV/NRVH 10	-	16.1	22.8	33.4
NRV/NRVH 12	23.3	27.5	39.0	57
NRV/NRVH 16	40.9	48.4	68	100
NRV/NRVH 19	62	74	104	153
NRV/NRVH 22	96	114	161	236
NRV/NRVH 28	187	222	314	459
NRV/NRVH 35	329	390	551	808

[1]) Rated capacities.
[2]) Capacity for NRVH.

Suction vapour capacity in [kW]

Type	Pressure drop across valve Δp [bar]	Suction vapour capacity kW at evaporating temperature t_o [°C]		
		–30	–10 [1]	+5
R407A				
NRV/NRVH 6	0.07	0.49	0.79	1.08
NRV/NRVH 10	0.07	1.05	1.70	2.31
NRV/NRVH 12	0.05	1.79	2.90	3.95
NRV/NRVH 16	0.05	3.14	5.09	6.94
NRV/NRVH 19	0.05	4.79	7.77	10.6
NRV/NRVH 22	0.05	7.41	12.0	16.3
NRV/NRVH 28	0.05	14.3	23.3	31.8
NRV/NRVH 35	0.05	25.2	40.9	55
R407C				
NRV/NRVH 6	0.07	0.49	0.80	1.09
NRV/NRVH 10	0.07	1.06	1.72	2.34
NRV/NRVH 12	0.05	1.81	2.93	4.00
NRV/NRVH 16	0.05	3.17	5.15	7.02
NRV/NRVH 19	0.05	4.85	7.86	10.7
NRV/NRVH 22	0.05	7.49	12.1	16.5
NRV/NRVH 28	0.05	14.5	23.5	32.1
NRV/NRVH 35	0.05	25.5	41.4	56
R407F				
NRV/NRVH 6	0.07	0.54	0.86	1.16
NRV/NRVH 10	0.07	1.15	1.84	2.49
NRV/NRVH 12	0.05	1.97	3.15	4.26
NRV/NRVH 16	0.05	3.45	5.53	7.48
NRV/NRVH 19	0.05	5.27	8.44	11.4
NRV/NRVH 22	0.05	8.15	13.0	17.6
NRV/NRVH 28	0.05	15.8	25.3	34.3
NRV/NRVH 35	0.05	27.8	44.5	60
R410A				
NRV/NRVH 6	0.07	0.71	1.08	1.42
NRV/NRVH 10	0.07	1.52	2.31	3.04
NRV/NRVH 12	0.05	2.59	3.95	5.19
NRV/NRVH 16	0.05	4.55	6.93	9.12
NRV/NRVH 19	0.05	6.94	10.5	13.9
NRV/NRVH 22	0.05	10.7	16.3	21.5
NRV/NRVH 28	0.05	20.8	31.7	41.8
NRV/NRVH 35	0.05	36.6	55	73

[1]) Rated capacities.

The suction vapour capacities are based on liquid temperature te = 25 °C ahead of the evaporator.
The table values refer to the evaporator capacity.
The capacities are based on dry. saturated vapour ahead of the valve.
Under operating conditions with superheated vapour ahead of the valve. the capacities are reduced by 4% for every 10 K superheat.

Correction factors
When selecting the evaporator capacity is to be multiplied by a correction factor depending on the liquid temperature t_l ahead of the valve/the evaporator. The corrected capacity can then be found from the table.

Correction factors for liquid temperature t_l

t_l [°C]	-10	0	10	15	20	25	30	35	40	45	50
R407A	0.71	0.78	0.85	0.90	0.94	1.00	1.06	1.13	1.22	1.32	1.44
R407C	0.73	0.79	0.86	0.90	0.95	1.00	1.06	1.13	1.20	1.29	1.40
R407F	0.73	0.79	0.86	0.90	0.95	1.00	1.06	1.13	1.20	1.30	1.40
R410A	0.72	0.78	0.85	0.90	0.94	1.00	1.06	1.14	1.22	1.33	1.46

Capacity (continued)

Liquid capacity in [kW]

Type	Liquid capacity in [kW] at pressure drop across valve Δp [bar]			
	NRV			NRV/NRVH
	0.05	0.07 [1]	0.14	0.3 [2]
R32				
NRV/NRVH 6	-	10.7	15.2	22.3
NRV/NRVH 10	-	23.1	32.6	47.8
NRV/NRVH 12	33.3	39.4	55	81
NRV/NRVH 16	58	69	98	143
NRV/NRVH 19	89	105	149	219
NRV/NRVH 22	138	163	231	338
NRV/NRVH 28	268	317	449	657
NRV/NRVH 35	471	558	789	1155
R290				
NRV/NRVH 6	7.28	8.62	12.1	17.8
NRV/NRVH 10	15.6	18.4	26.1	38.2
NRV/NRVH 12	26.6	31.5	44.6	65
NRV/NRVH 16	46.8	55	78	114
NRV/NRVH 19	71	84	119	175
NRV/NRVH 22	110	130	184	270
NRV/NRVH 28	214	253	359	525
NRV/NRVH 35	377	446	631	923
R600				
NRV/NRVH 6	-	9.70	13.7	20.0
NRV/NRVH 10	-	20.7	29.4	43.0
NRV/NRVH 12	30.0	35.5	50	73
NRV/NRVH 16	52	62	88	129
NRV/NRVH 19	80	95	134	197
NRV/NRVH 22	124	147	208	304
NRV/NRVH 28	241	285	404	591
NRV/NRVH 35	424	502	710	1039
R600a				
NRV/NRVH 6	-	8.61	12.1	17.8
NRV/NRVH 10	-	18.4	26.0	38.1
NRV/NRVH 12	26.6	31.5	44.5	65
NRV/NRVH 16	46.7	55	78	114
NRV/NRVH 19	71	84	119	174
NRV/NRVH 22	110	130	184	270
NRV/NRVH 28	214	253	358	524
NRV/NRVH 35	376	445	630	922

[1] Rated capacities.
[2] Capacity for NRVH.

Suction vapour capacity in [kW]

Type	Pressure drop across valve Δp [bar]	Suction vapour capacity kW at evaporating temperature t_o [°C]		
		−30	−10 [1]	+5
R32				
NRV/NRVH 6	0.07	0.92	1.38	1.78
NRV/NRVH 10	0.07	1.98	2.95	3.82
NRV/NRVH 12	0.05	3.38	5.04	6.53
NRV/NRVH 16	0.05	5.94	8.85	11.4
NRV/NRVH 19	0.05	9.08	13.5	17.5
NRV/NRVH 22	0.05	14.0	20.9	27.0
NRV/NRVH 28	0.05	27.2	40.5	52
NRV/NRVH 35	0.05	47.8	71	92
R290				
NRV/NRVH 6	0.07	0.69	1.06	1.41
NRV/NRVH 10	0.07	1.47	2.27	3.02
NRV/NRVH 12	0.05	2.51	3.88	5.15
NRV/NRVH 16	0.05	4.41	6.81	9.05
NRV/NRVH 19	0.05	6.74	10.4	13.8
NRV/NRVH 22	0.05	10.4	16.0	21.3
NRV/NRVH 28	0.05	20.2	31.2	41.4
NRV/NRVH 35	0.05	35.5	54	72
R600				
NRV/NRVH 6	0.07	0.28	0.52	0.76
NRV/NRVH 10	0.07	0.60	1.12	1.62
NRV/NRVH 12	0.05	1.03	1.92	2.77
NRV/NRVH 16	0.05	1.81	3.37	4.86
NRV/NRVH 19	0.05	2.76	5.14	7.42
NRV/NRVH 22	0.05	4.27	7.95	11.4
NRV/NRVH 28	0.05	8.29	15.4	22.2
NRV/NRVH 35	0.05	14.5	27.1	39.1
R600a				
NRV/NRVH 6	0.07	0.35	0.61	0.86
NRV/NRVH 10	0.07	0.75	1.31	1.84
NRV/NRVH 12	0.05	1.29	2.23	3.14
NRV/NRVH 16	0.05	2.26	3.92	5.52
NRV/NRVH 19	0.05	3.46	5.99	8.43
NRV/NRVH 22	0.05	5.34	9.26	13.0
NRV/NRVH 28	0.05	10.3	17.9	25.3
NRV/NRVH 35	0.05	18.2	31.6	44.4

[1] Rated capacities.

The suction vapour capacities are based on liquid temperature t_l = 25 °C ahead of the evaporator.
The table values refer to the evaporator capacity.
The capacities are based on dry. saturated vapour ahead of the valve.
Under operating conditions with superheated vapour ahead of the valve. the capacities are reduced by 4% for every 10 K superheat.

Correction factors
When selecting the evaporator capacity is to be multiplied by a correction factor depending on the liquid temperature t_l ahead of the valve/the evaporator. The corrected capacity can then be found from the table.

Correction factors for liquid temperature t_l

t_l [°C]	-10	0	10	15	20	25	30	35	40	45	50
R32	0.76	0.82	0.88	0.92	0.96	1.00	1.05	1.11	1.17	1.24	1.33
R290	0.73	0.79	0.86	0.90	0.95	1.00	1.06	1.12	1.19	1.28	1.38
R600	0.77	0.82	0.88	0.92	0.96	1.00	1.05	1.10	1.16	1.22	1.29
R600a	0.75	0.81	0.87	0.91	0.95	1.00	1.05	1.11	1.17	1.25	1.33

Data sheet   **Check valve, types NRV and NRVH**

Capacity

Hot gas capacity in [kW]

Type	Liquid capacity in [kW] at pressure drop across valve Δp [bar]			
	NRV			NRV/NRVH
	0.05	0.07 [1]	0.14	0.3 [2]
R22				
NRV/NRVH 6	-	1.45	2.04	2.97
NRV/NRVH 10	-	3.10	4.38	6.36
NRV/NRVH 12	4.49	5.30	7.48	10.8
NRV/NRVH 16	7.88	9.31	13.1	19.0
NRV/NRVH 19	12.0	14.2	20.0	29.1
NRV/NRVH 22	18.6	21.9	31.0	45.0
NRV/NRVH 28	36.1	42.6	60	87
NRV/NRVH 35	63	75	105	153
R134a				
NRV/NRVH 6	-	1.16	1.63	2.35
NRV/NRVH 10	-	2.48	3.48	5.03
NRV/NRVH 12	3.58	4.23	5.95	8.60
NRV/NRVH 16	6.29	7.43	10.4	15.1
NRV/NRVH 19	9.61	11.3	15.9	23.0
NRV/NRVH 22	14.8	17.5	24.6	35.6
NRV/NRVH 28	28.8	34.0	47.8	69
NRV/NRVH 35	50	59	84	121
R404A/R507				
NRV/NRVH 6	-	1.26	1.78	2.58
NRV/NRVH 10	-	2.70	3.81	5.54
NRV/NRVH 12	3.90	4.61	6.50	9.46
NRV/NRVH 16	6.85	8.10	11.4	16.6
NRV/NRVH 19	10.4	12.3	17.4	25.3
NRV/NRVH 22	16.1	19.1	26.9	39.2
NRV/NRVH 28	31.4	37.1	52	76
NRV/NRVH 35	55	65	92	133

[1] The hot gas capacities are based on condensing temp.

- Condensor temperature, t_c = 30 °C.
- Subcooling t_{sub} = 5 K.
- Evaporating temperature, t_e = -10 °C.
- Hot gas temperature, t_h = 60 °C ahead of valve.

[2] Rated capacities.
[3] Capacity for NRVH.

Hot gas capacity in [kg/s]

Type	Press. drop across valve Δp [bar]	Suction vapour capacity kW at evaporating temperature t_o [°C]		
		−30	−10 [1]	+5
R22				
NRV/NRVH 6	-	0.00848	0.01195	0.01736
NRV/NRVH 10	-	0.01816	0.02560	0.03720
NRV/NRVH 12	0.02625	0.03103	0.04374	0.06354
NRV/NRVH 16	0.04610	0.05449	0.07681	0.11159
NRV/NRVH 19	0.07043	0.08325	0.11735	0.17048
NRV/NRVH 22	0.10884	0.12866	0.18135	0.26347
NRV/NRVH 28	0.21128	0.24975	0.35204	0.51144
NRV/NRVH 35	0.37134	0.43896	0.61874	0.89890
R134a				
NRV/NRVH 6	-	0.00731	0.01028	0.01485
NRV/NRVH 10	-	0.01566	0.02203	0.03183
NRV/NRVH 12	0.02265	0.02676	0.03763	0.05438
NRV/NRVH 16	0.03978	0.04699	0.06608	0.09549
NRV/NRVH 19	0.06077	0.07179	0.10096	0.14588
NRV/NRVH 22	0.09392	0.11095	0.15603	0.22546
NRV/NRVH 28	0.18231	0.21537	0.30287	0.43765
NRV/NRVH 35	0.32043	0.37853	0.53232	0.76921
R404A/R507				
NRV/NRVH 6	-	0.01013	0.01429	0.02078
NRV/NRVH 10	-	0.02171	0.03062	0.04452
NRV/NRVH 12	0.03137	0.03709	0.05230	0.07606
NRV/NRVH 16	0.05509	0.06514	0.09185	0.13357
NRV/NRVH 19	0.08417	0.09951	0.14033	0.20407
NRV/NRVH 22	0.13008	0.15379	0.21687	0.31538
NRV/NRVH 28	0.25252	0.29854	0.42098	0.61220
NRV/NRVH 35	0.44381	0.52470	0.73991	1.07599

An increase of the hot gas temperature of 10 K will reduce the valve capacity approx. 2% and vice versa.

Capacity (continued)

Hot gas capacity in [kW]

Type	Liquid capacity in [kW] at pressure drop across valve Δp [bar]			
	NRV			NRV/NRVH
	0.05	0.07 [1]	0.14	0.3 [2]
R407A				
NRV/NRVH 6	-	1.47	2.08	3.02
NRV/NRVH 10	-	3.15	4.45	6.47
NRV/NRVH 12	4.56	5.39	7.60	11.0
NRV/NRVH 16	8.00	9.46	13.3	19.4
NRV/NRVH 19	12.2	14.4	20.3	29.6
NRV/NRVH 22	18.8	22.3	31.5	45.8
NRV/NRVH 28	36.6	43.3	61	88
NRV/NRVH 35	64	76	107	156
R407C				
NRV/NRVH 6	-	1.51	2.13	3.10
NRV/NRVH 10	-	3.24	4.56	6.64
NRV/NRVH 12	4.68	5.53	7.80	11.3
NRV/NRVH 16	8.21	9.71	13.6	19.9
NRV/NRVH 19	12.5	14.8	20.9	30.4
NRV/NRVH 22	19.4	22.9	32.3	47
NRV/NRVH 28	37.6	44.5	62	91
NRV/NRVH 35	66	78	110	160
R407F				
NRV/NRVH 6	-	1.59	2.25	3.27
NRV/NRVH 10	-	3.42	4.82	7.01
NRV/NRVH 12	4.94	5.84	8.23	11.9
NRV/NRVH 16	8.67	10.2	14.4	21.0
NRV/NRVH 19	13.2	15.6	22.0	32.1
NRV/NRVH 22	20.4	24.2	34.1	49.6
NRV/NRVH 28	39.7	46.9	66	96
NRV/NRVH 35	69	82	116	169
R410A				
NRV/NRVH 6	-	1.80	2.54	3.70
NRV/NRVH 10	-	3.85	5.44	7.92
NRV/NRVH 12	5.57	6.58	9.29	13.5
NRV/NRVH 16	9.77	11.5	16.3	23.7
NRV/NRVH 19	14.9	17.6	24.9	36.3
NRV/NRVH 22	23.0	27.2	38.5	56
NRV/NRVH 28	44.8	52	74	108
NRV/NRVH 35	78	93	131	191

Hot gas capacity in [kg/s]

Type	Press. drop across valve Δp [bar]	Suction vapour capacity kW at evaporating temperature t_o [°C]		
		−30	−10 [1]	+5
R407A				
NRV/NRVH 6	-	0.00949	0.01339	0.01947
NRV/NRVH 10	-	0.02034	0.02869	0.04172
NRV/NRVH 12	0.02940	0.03476	0.04901	0.07128
NRV/NRVH 16	0.05163	0.06103	0.08607	0.12517
NRV/NRVH 19	0.07887	0.09325	0.13150	0.19123
NRV/NRVH 22	0.12189	0.14411	0.20322	0.29554
NRV/NRVH 28	0.23662	0.27974	0.39449	0.57370
NRV/NRVH 35	0.41587	0.49167	0.69334	1.00833
R407C				
NRV/NRVH 6	-	0.00900	0.01270	0.01846
NRV/NRVH 10	-	0.01930	0.02721	0.03955
NRV/NRVH 12	0.02788	0.03296	0.04648	0.06757
NRV/NRVH 16	0.04897	0.05789	0.08162	0.11866
NRV/NRVH 19	0.07481	0.08844	0.12470	0.18129
NRV/NRVH 22	0.11562	0.13668	0.19272	0.28017
NRV/NRVH 28	0.22443	0.26532	0.37410	0.54387
NRV/NRVH 35	0.39446	0.46633	0.65751	0.95589
R407F				
NRV/NRVH 6	-	0.00927	0.01308	0.01903
NRV/NRVH 10	-	0.01987	0.02802	0.04077
NRV/NRVH 12	0.02871	0.03394	0.04787	0.06965
NRV/NRVH 16	0.05042	0.05961	0.08407	0.12231
NRV/NRVH 19	0.07702	0.09107	0.12844	0.18687
NRV/NRVH 22	0.11904	0.14074	0.19850	0.28880
NRV/NRVH 28	0.23107	0.27320	0.38533	0.56061
NRV/NRVH 35	0.40612	0.48016	0.67724	0.98531
R410A				
NRV/NRVH 6	-	0.01009	0.01425	0.02076
NRV/NRVH 10	-	0.02163	0.03053	0.04449
NRV/NRVH 12	0.03125	0.03695	0.05215	0.07600
NRV/NRVH 16	0.05487	0.06489	0.09159	0.13346
NRV/NRVH 19	0.08383	0.09914	0.13993	0.20390
NRV/NRVH 22	0.12956	0.15321	0.21625	0.31512
NRV/NRVH 28	0.25150	0.29741	0.41978	0.61171
NRV/NRVH 35	0.44204	0.52273	0.73779	1.07513

[1]) The hot gas capacities are based on condensing temp.
• Condensor temperature, t_c = 30 °C.
• Subcooling t_{sub} = 5 K.
• Evaporating temperature, t_e = -10 °C.
• Hot gas temperature, t_h = 60 °C ahead of valve.

[2]) Rated capacities.
[3]) Capacity for NRVH.

Note: For capacity calculation of other refrigerants, please contact Danfoss.

An increase of the hot gas temperature of 10 K will reduce the valve capacity approx. 2% and vice versa.

**Capacity
(continued)**

Hot gas capacity in [kW]

Type	Liquid capacity in [kW] at pressure drop across valve Δp [bar]			
	NRV			NRV/NRVH
	0.05	0.07 [1]	0.14	0.3 [2]
R32				
NRV/NRVH 6	-	2.30	3.25	4.73
NRV/NRVH 10	-	4.93	6.95	10.1
NRV/NRVH 12	7.12	8.42	11.8	17.3
NRV/NRVH 16	12.5	14.7	20.8	30.4
NRV/NRVH 19	19.0	22.5	31.8	46.4
NRV/NRVH 22	29.5	34.8	49.2	71
NRV/NRVH 28	57.2	67	95	139
NRV/NRVH 35	100	119	168	244
R290				
NRV/H 6	-	1.72	2.43	3.52
NRV/H 10	-	3.69	5.20	7.55
NRV/H 12	5.34	6.31	8.88	12.8
NRV/H 16	9.37	11.0	15.6	22.6
NRV/H 19	14.3	16.9	23.8	34.5
NRV/H 22	22.1	26.1	36.8	53
NRV/H 28	42.9	50	71	103
NRV/H 35	75	89	125	182
R600				
NRV/H 6	-	1.00	1.40	1.97
NRV/H 10	-	2.15	2.99	4.21
NRV/H 12	3.12	3.67	5.11	7.20
NRV/H 16	5.47	6.45	8.97	12.6
NRV/H 19	8.36	9.85	13.7	19.3
NRV/H 22	12.9	15.2	21.1	29.8
NRV/H 28	25.0	29.5	41.1	57
NRV/H 35	44.1	51	72	101
R600a				
NRV/H 6	-	1.10	1.54	2.19
NRV/H 10	-	2.36	3.30	4.70
NRV/H 12	3.42	4.03	5.63	8.03
NRV/H 16	6.00	7.07	9.89	14.1
NRV/H 19	9.16	10.8	15.1	21.5
NRV/H 22	14.1	16.7	23.3	33.3
NRV/H 28	27.4	32.4	45.3	64
NRV/H 35	48.3	56	79	113

[1] *The hot gas capacities are based on condensing temp.*
- *Condensor temperature, t_c = 30 °C.*
- *Subcooling t_{sub} = 5 K.*
- *Evaporating temperature, t_e = -10 °C.*
- *Hot gas temperature, t_h = 60 °C ahead of valve.*

[2] *Rated capacities.*
[3] *Capacity for NRVH.*

Note: For capacity calculation of other refrigerants, please contact Danfoss.

Hot gas capacity in [kg/s]

Type	Press. drop across valve Δp [bar]	Suction vapour capacity kW at evaporating temperature t_o [°C]		
		−30	−10 [1]	+5
R32				
NRV/NRVH 6	-	0.00860	0.01213	0.01769
NRV/NRVH 10	-	0.01842	0.02600	0.03791
NRV/NRVH 12	0.02661	0.03147	0.04442	0.06476
NRV/NRVH 16	0.04673	0.05526	0.07801	0.11372
NRV/NRVH 19	0.07139	0.08442	0.11918	0.17374
NRV/NRVH 22	0.11033	0.13047	0.18419	0.26851
NRV/NRVH 28	0.21416	0.25327	0.35754	0.52123
NRV/NRVH 35	0.37641	0.44514	0.62840	0.91610
R290				
NRV/H 6	-	0.00577	0.00813	0.01179
NRV/H 10	-	0.01237	0.01742	0.02527
NRV/H 12	0.01787	0.02112	0.02976	0.04317
NRV/H 16	0.03139	0.03710	0.05226	0.07581
NRV/H 19	0.04795	0.05667	0.07984	0.11583
NRV/H 22	0.07411	0.08759	0.12338	0.17901
NRV/H 28	0.14385	0.17002	0.23951	0.34748
NRV/H 35	0.25283	0.29882	0.42096	0.61073
R600				
NRV/H 6	-	0.00322	0.00448	0.00631
NRV/H 10	-	0.00690	0.00959	0.01351
NRV/H 12	0.01000	0.01178	0.01639	0.02309
NRV/H 16	0.01757	0.02069	0.02878	0.04054
NRV/H 19	0.02684	0.03161	0.04398	0.06194
NRV/H 22	0.04148	0.04885	0.06796	0.09573
NRV/H 28	0.08051	0.09483	0.13193	0.18583
NRV/H 35	0.14151	0.16666	0.23187	0.32661
R600a				
NRV/H 6	-	0.00390	0.00546	0.00778
NRV/H 10	-	0.00836	0.01169	0.01667
NRV/H 12	0.01211	0.01429	0.01998	0.02848
NRV/H 16	0.02127	0.02509	0.03508	0.05002
NRV/H 19	0.03250	0.03833	0.05359	0.07642
NRV/H 22	0.05022	0.05923	0.08283	0.11810
NRV/H 28	0.09749	0.11498	0.16078	0.22925
NRV/H 35	0.17134	0.20209	0.28258	0.40293

An increase of the hot gas temperature of 10 K will reduce the valve capacity approx. 2% and vice versa.

Data sheet   **Check valve, types NRV and NRVH**
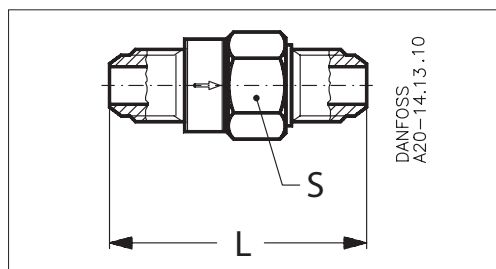
Dimensions and weights

NRV 6 – 19

Flare straightway connection - SI Units

Type	Size		L	Spanner flats S	Net weight
	[in.]	[mm]	[mm]	[mm]	[kg]
NRV 6	$^1/_4$	6	55	19	0.07
NRV 10	$^3/_8$	10	60	19	0.08
NRV 12	$^1/_2$	12	70	24	0.14
NRV 16	$^5/_8$	16	81	28	0.20
NRV 19	$^3/_4$	19	95	34	0.34

Flare straightway connection - US Units

Type	Size	L	Spanner flats S	Net weight
	[in.]	[in.]	[in.]	[lbs.]
NRV 6	$^1/_4$	2.17	0.75	0.15
NRV 10	$^3/_8$	2.36	0.75	0.19
NRV 12	$^1/_2$	2.76	0.94	0.30
NRV 16	$^5/_8$	3.19	1.10	0.45
NRV 19	$^3/_4$	3.74	1.34	0.75

Dimensions and weights

NRV 6s – 19s / NRVH 6s – 19s

Solder straightway connection - SI Units

Type	Size		L	L₁	øD	Net weight
	[in.]	[mm]	[mm]	[mm]	[mm]	[kg]
NRV/NRVH 6s	¹/₄	6	92	7	18	0.06
NRV/NRVH 6s ¹)	³/₈	10	95	9	18	0.07
NRV/NRVH 10s	³/₈	10	109	9	18	0.06
NRV/NRVH 10s ¹)	¹/₂	12	109	10	18	0.07
NRV/NRVH 12s	¹/₂	12	131	10	22	0.10
NRV/NRVH 12s ¹)	⁵/₈	16	131	12	22	0.11
NRV/NRVH 16s	⁵/₈	16	139	12	28	0.17
NRV/NRVH 16s ¹)	-	18	139	14	28	0.19
NRV/NRVH 19s	-	18	165	14	34	0.28
NRV/NRVH 16s ¹)	³/₄	19	139	14	28	0.19
NRV/NRVH 19s	³/₄	19	165	14	34	0.29
NRV/NRVH 19s ¹)	⁷/₈	22	165	17	34	0.29

Solder straightway connection - US Units

Type	Size	L	L₁	øD	Net weight
	[in.]	[in.]	[in.]	[in.]	[lbs]
NRV/NRVH 6s	¹/₄	3.62	0.28	0.71	0.14
NRV/NRVH 6s ¹)	³/₈	3.74	0.35	0.71	0.16
NRV/NRVH 10s	³/₈	4.29	0.35	0.71	0.14
NRV/NRVH 10s ¹)	¹/₂	4.29	0.39	0.71	0.16
NRV/NRVH 12s	¹/₂	5.16	0.39	0.87	0.22
NRV/NRVH 12s ¹)	⁵/₈	5.16	0.47	0.87	0.24
NRV/NRVH 16s	⁵/₈	5.47	0.47	1.10	0.39
NRV/NRVH 16s ¹)	³/₄	5.47	0.55	1.10	0.43
NRV/NRVH 19s	³/₄	6.50	0.55	1.34	0.64
NRV/NRVH 19s ¹)	⁷/₈	6.50	0.67	1.34	0.64

¹) Oversize connections.

Data sheet   **Check valve, types NRV and NRVH**

Dimensions and weights

NRV 22s – 35s / NRVH 22s – 35s
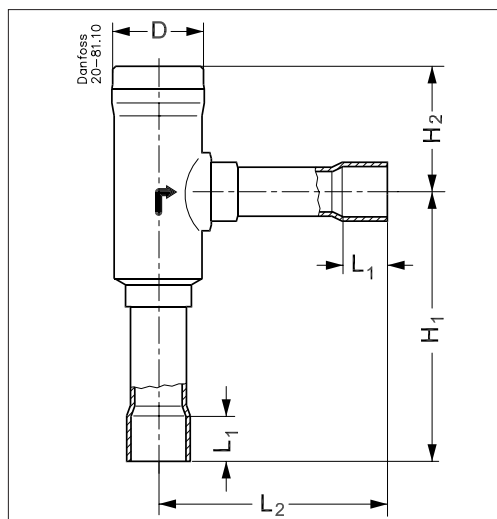
Solder angleway connection - SI Units

Type	Size		H₁ [mm]	H₂ [mm]	L₁ [mm]	L₂ [mm]	øD [mm]	Net weight [Kg]
	[in.]	[mm]						
NRV/NRVH 22s	⁷/₈	22	94	48	17	87	37	0.58
NRV/NRVH 22s ¹⁾	1 ¹/₈	28	94	48	22	87	37	0.61
NRV/NRVH 28s	1 ¹/₈	28	141	67	20	123	49	1.33
NRV/NRVH 28s ¹⁾	1 ³/₈	35	141	67	25	123	49	1.47
NRV/NRVH 35s	1 ³/₈	35	141	67	25	123	49	1.40
NRV/NRVH 35s ¹⁾	1 ⁵/₈	42	141	67	29	123	49	1.38

Solder angleway connection - US Units

Type	Size	H₁ [in.]	H₂ [in.]	L₁ [in.]	L₂ [in.]	øD [in.]	Net weight [lbs.]
	[in.]						
NRV/NRVH 22s	⁷/₈	3.70	1.89	0.67	3.43	1.46	1.28
NRV/NRVH 22s ¹⁾	1 ¹/₈	3.70	1.89	0.87	3.43	1.46	1.35
NRV/NRVH 28s	1 ¹/₈	5.55	2.64	0.79	4.84	1.93	2.93
NRV/NRVH 28s ¹⁾	1 ³/₈	5.55	2.64	0.98	4.84	1.93	3.26
NRV/NRVH 35s	1 ³/₈	5.55	2.64	0.98	4.84	1.93	3.08
NRV/NRVH 35s ¹⁾	1 ⁵/₈	5.55	2.64	1.14	4.84	1.93	3.06

¹⁾ Oversize connections.