Shut-off Valves
General Information on Manual Shut-off Valves

Manual shut-off valves are especially important during maintenance and repairs of refrigeration systems, in order to shut off certain sections and to avoid refrigerant loss.
Manual shut-off valves are offered as straight-way or angle valves with hand wheel or cap. They are available with flare, solder, weld, flange or Rotalock connection.
In terms of function, valves with cone seal, diaphragm valves and ball shut-off valves are differentiated.
The advantage of ball shut-off valves is, on the one hand, the smaller pressure loss and, on the other, the clearly defined valve position (open or closed).
The selection is normally based on the available pipe diameter. However, one should also take the resulting pressure loss into account. It can be easily determined via the K_v value specified in the catalogue (see solenoid valves).

Check Valves
General information on check valves

Check valves allow flow in the direction marked on the valve and block the flow in the opposite direction.
In refrigeration systems, check valves are used for preventing unwanted reverse flow of refrigerant.
Check valves are available as straight-way or angle valves with flare, solder, weld or flange connection.
When installed in pressure lines where pulsating flow is to be expected, only check valves with damping device should be used.
Check valves require a minimum pressure difference in order to keep them open. If the volume flow falls below that corresponding to the minimum pressure difference (e.g. partial load), then strong noise generation (rattling or whistling) may result.

Correct selection of check valves is made with a selection programme. We recommend the programme “DANVEN” by Danfoss.
Incorrect selection of check valves inevitably leads to overly large valves and to the above operational distrubances.

Check Valves
3112 / 3122 / 3132

Features

For all fluorinated refrigerants. For installation in suction lines and liquid lines.
Check valves made of hot-pressed brass with teflon (P.T.F.E)-valve seat. Spring made of stainless steel.

Max. operating pressure: 45 bar
Medium temperature: -40 to +105°C

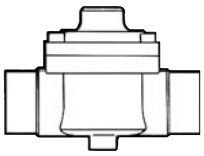
Straight-through check valve 3112/.. with flare connection

Type	EDP-No.	max. operating pressure	Pipe connection	K_V-value	Opening differential pressure	Dimensions	
			Flare			Length	Ø
		[bar]	[UNF]	[m³/h]	[bar]	[mm]	[mm]
3112/2	**243.0931**	45	7/16"	0,40	0,10	56	16
3112/3	**243.0932**	45	5/8"	1,60	0,10	68	20
3112/4	**243.0933**	45	3/4"	1,60	0,10	73	22
3112/5	**243.0934**	45	7/8"	3,30	0,10	85	27
3112/6	**243.0935**	45	1 1/16"	3,30	0,10	98	33

The K_V-value is the water flow rate in m3/h at a pressure drop across the valve of 1 bar. (ρ=1000 kg/m³)

(Installation preferably vertical, arrow pointing upwards)

Straight-through check valve 3122/.. with solder connection

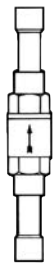


Type	EDP-No.	max. operating pressure	Pipe connection		K_V-value	Opening differential pressure	Dimensions	
			solder	solder			Length	Height
		[bar]	[mm]	[in]	[m³/h]	[bar]	[mm]	[mm]
3122/7	**243.0906**	45	22	7/8"	6,60	0,10	100	84,5
3122/9	**243.0907**	45	28	1 1/8"	8,80	0,10	100	84,5
3122/11	**243.0908**	45		1 3/8"	15,20	0,10	118	101,5
3122/M42	**243.0911**	45	42		25	0,10	141	125,5
3122/17	**243.0912**	45		2 1/8"	40	0,10	173	142

The K_V-value is the water flow rate in m3/h at a pressure drop across the valve of 1 bar. (ρ=1000 kg/m³)

(Installation position only horizontal)

Straight-through check valve 3132/.. with solder connection



Type	EDP-No.	max. operating pressure	Pipe connection		K_V-value	Opening differential pressure	Dimensions	
			solder	solder			Length	Ø
		[bar]	[mm]	[in]	[m³/h]	[bar]	[mm]	[mm]
3132/2	**243.0936**	45		1/4"	0,50	0,10	92	16
3132/M10	**243.0937**	45	10		1,60	0,10	107	20
3132/M12	**243.0938**	45	12		1,80	0,10	132	22
3132/5	**243.0939**	45	16	5/8"	3,30	0,10	139	27
3132/M18	**243.0940**	45	18		3,30	0,10	165	33
3132/7	**243.0941**	45	22	7/8"	3,30	0,10	165	33

The K_V-value is the water flow rate in m3/h at a pressure drop across the valve of 1 bar. (ρ=1000 kg/m³)

(Installation preferably vertical, arrow pointing upwards)

Check Valves
NRV / NRVH

Features

For all fluorinated refrigerants. For installation in suction lines, liquid lines and hot gas lines. Use for installation in the discharge line of multi-compressor refrigeration systems NRVH with reinforced spring. All check valves are equipped with a damping piston.

Max. operating pressure: 46 bar
Medium temperature: -50 to +140°C

Straight-through check valve NRV / NRVH with flare connection

Type	EDP-No.	Orig. No.	max. operating pressure	Pipe connection	K_V-value	Opening differential pressure	Dimensions	
				Flare			Length	SW
			[bar]	[UNF]	[m³/h]	[bar]	[mm]	[mm]
NRV 6	**243.0401**	020-1040	46	7/16"	0,56	0,07	56	19
NRV 10	**243.0402**	020-1041	46	5/8"	1,43	0,07	60	20
NRV 12	**243.0403**	020-1042	46	3/4"	2,05	0,05	69	24
NRV 16	**243.0404**	020-1043	46	7/8"	3,60	0,05	80	28
NRV 19	**243.0405**	020-1044	46	1 1/16"	5,50	0,05	95	34

The K_V-value is the water flow rate in m3/h at a pressure drop across the valve of 1 bar. (ρ=1000 kg/m³)

Straight-through check valve NRV / NRVH with solder connection

Type	EDP-No.	Orig. No.	max. operating pressure	Pipe connection		K_V-value	Opening differential pressure	Dimensions	
				solder	solder			Length	Ø
			[bar]	[mm]	[in]	[m³/h]	[bar]	[mm]	[mm]
NRV 6s	**243.0411**	020-1014	46	6		0,56	0,07	92	18
	243.0468	020-1010	46		1/4"				
NRV 6s	**243.0428**	020-1050	46	10		0,56	0,07	92	18
	243.0469	020-1057	46		3/8"				
NRV 10s	**243.0412**	020-1015	46	10		1,43	0,07	109	18
	243.0470	020-1011	46		3/8"				
NRV 10s	**243.0429**	020-1051	46	12		1,43	0,07	109	18
	243.0471	020-1058	46		1/2"				
NRV 12s	**243.0413**	020-1016	46	12		2,05	0,05	131	22
	243.0472	020-1012	46		1/2"				
NRV 12s	**243.0430**	020-1052	46	16	5/8"	2,05	0,05	131	22
NRV 16s	**243.0414**	020-1018	46	16	5/8"	3,60	0,05	138	28
NRV 16s	**243.0431**	020-1053	46	18		3,60	0,05	138	28
NRV 19s	**243.0432**	020-1017	46	18		5,50	0,05	165	34
NRV 19s	**243.0433**	020-1054	46	22	7/8"	5,50	0,05	165	34
reinforced spring (blue marking)									
NRVH 6s	**243.0436**	020-1062	46	10		0,56	0,30	92	18
	243.0476	020-1069	46		3/8"				
NRVH 10s	**243.0421**	020-1036	46	10		1,43	0,30	109	18
	243.0477	020-1046	46		3/8"				
NRVH 10s	**243.0437**	020-1063	46	12		1,43	0,30	109	18
	243.0478	020-1070	46		1/2"				
NRVH 12s	**243.0422**	020-1037	46	12		2,05	0,30	131	22
	243.0479	020-1039	46		1/2"				
NRVH 12s	**243.0438**	020-1064	46	16	5/8"	2,05	0,30	131	22
NRVH 16s	**243.0423**	020-1038	46	16	5/8"	3,60	0,30	138	28
NRVH 16s	**243.0439**	020-1065	46	18		3,60	0,30	138	28
NRVH 19s	**243.0440**	020-1008	46	18		5,50	0,30	165	34
NRVH 19s	**243.0441**	020-1066	46	22	7/8"	5,50	0,30	165	34

The K_V-value is the water flow rate in m3/h at a pressure drop across the valve of 1 bar. (ρ=1000 kg/m³)

Check Valves
NRV / NRVH

Angle check valve NRV / NRVH with solder connection

Type	EDP-No.	Orig. No.	max. operating pressure	Pipe connection		K_V-value	Opening differential pressure	Dimensions	
				solder	solder			Width	Height
			[bar]	[mm]	[in]	[m³/h]	[bar]	[mm]	[mm]
NRV 22s	**243.0415**	020-1020	46	22	7/8"	8,5	0,04	106	141
NRV 22s	**243.0434**	020-1055	46	28		8,5	0,04	106	141
	243.0473	020-1060	46		1 1/8"				
NRV 28s	**243.0416**	020-1025	46	28		19,0	0,04	147	206
	243.0474	020-1021	46		1 1/8"				
NRV 28s	**243.0435**	020-1056	46	35	1 3/8"	19,0	0,04	147	206
NRV 35s	**243.0417**	020-1026	46	35	1 3/8"	29,0	0,04	147	206
NRV 35s	**243.0418**	020-1027	46	42		29,0	0,04	147	206
	143.0475	020-1061	46		1 5/8"				
reinforced spring (blue marking)									
NRVH 22s	**243.0424**	020-1032	46	22	7/8"	8,5	0,30	106	141
NRVH 22s	**243.0442**	020-1067	46	28		8,5	0,30	106	141
	243.0480	020-1072	46		1 1/8"				
NRVH 28s	**243.0425**	020-1033	46	28		19,0	0,30	147	206
	243.0481	020-1029	46		1 1/8"				
NRVH 28s	**243.0443**	020-1068	46	35	1 3/8"	19,0	0,30	147	206
NRVH 35s	**243.0426**	020-1034	46	35	1 3/8"	29,0	0,30	147	206
NRVH 35s	**243.0427**	020-1035	46	42		29,0	0,30	147	206
	243.0482	020-1073	46		1 5/8"				

The K_V-value is the water flow rate in m3/h at a pressure drop across the valve of 1 bar. (ρ=1000 kg/m³)

Check Valves

Features RV/RVL

For all refrigerants, except for NH_3.
Undamped design for installation in suction lines and liquid lines.

Max. operating pressure: 25 bar
Max. Closing differential pressure: 15 bar
Medium temperature: -10 to +120°C

Straight-through check valve RV with flare connection

Type	EDP-No.	max. operating pressure	Pipe connection Flare	K_V-value	Opening differential pressure	Dimensions Length	Dimensions Ø
		[bar]	[UNF]	[m³/h]	[bar]	[mm]	[mm]
RV 10	**243.0801**	25	5/8"	1,30	0,03	59	22
RV 12	**243.0802**	25	3/4"	1,80	0,03	66	26
RV 15/16	**243.0804**	25	7/8"	3,00	0,03	74	32
RV 18	**243.0805**	25	1 1/16"	4,10	0,03	87	SW 32
RV 22	**243.0806**	25	1 1/4"	7,50	0,03	96	42

The K_V-value is the water flow rate in m3/h at a pressure drop across the valve of 1 bar. (ρ=1000 kg/m³)

Straight-through check valve RVL with solder connection

Type	EDP-No.	max. operating pressure	Pipe connection solder	K_V-value	Opening differential pressure	Dimensions Length	Dimensions Ø
		[bar]	[mm]	[m³/h]	[bar]	[mm]	[mm]
RVL 10	**243.0807**	25	10	1,30	0,03	100	22
RVL 12	**243.0808**	25	12	1,80	0,03	116	26
RVL 15	**243.0809**	25	15	3,00	0,03	134	32
RVL 16	**243.0810**	25	16	3,00	0,03	134	32
RVL 18	**243.0811**	25	18	4,10	0,03	167	SW 32
RVL 22	**243.0812**	25	22	7,50	0,03	181	42

The K_V-value is the water flow rate in m3/h at a pressure drop across the valve of 1 bar. (ρ=1000 kg/m³)

Features RDL/REL

For all refrigerants, except for NH_3.
Damped design for installation in suction lines, discharge lines and liquid lines.
Installation position preferably horizontal with flow direction from bottom to top.

Max. operating pressure: 28 bar
Max. Closing differential pressure: 28 bar
Medium temperature: -60 to +140°C

Straight-through check valve RDL with solder connection

Type	EDP-No.	max. operating pressure	Pipe connection solder	K_V-value	Opening differential pressure	Dimensions Length	Dimensions Ø
		[bar]	[mm]	[m³/h]	[bar]	[mm]	[mm]
RDL 12	**243.0851**	28	12	2,00	0,03	131	35
RDL 15	**243.0852**	28	15	3,40	0,03	141	35
RDL 16	**243.0853**	28	16	3,40	0,03	141	35
RDL 18	**243.0854**	28	18	6,00	0,03	174	48
RDL 22	**243.0855**	28	22	8,70	0,03	184	48
RDL 28	**243.0856**	28	28	15	0,03	248	55
RDL 35	**243.0858**	28	35	26	0,03	303	72

The K_V-value is the water flow rate in m3/h at a pressure drop across the valve of 1 bar. (ρ=1000 kg/m³)

Angle check valve REL with solder connection

Type	EDP-No.	max. operating pressure	Pipe connection solder	K_V-value	Opening differential pressure	Dimensions Length	Dimensions Height
		[bar]	[mm]	[m³/h]	[bar]	[mm]	[mm]
REL 15	**243.0831**	28	15	2,70	0,03	78	99
REL 16	**243.0832**	28	16	2,70	0,03	78	99
REL 18	**243.0833**	28	18	4,50	0,03	97	121
REL 22	**243.0834**	28	22	6,70	0,03	102	126
RDEL 28	**243.0857**	28	28	12	0,03	134	157

The K_V-value is the water flow rate in m3/h at a pressure drop across the valve of 1 bar. (ρ=1000 kg/m³)

Check Valves

Features RVL/REL and RVS/RES

For all fluorinated refrigerants. RVS/RES also for NH_3
Damped design for installation in suction lines, discharge lines and liquid lines.
Installation position preferably horizontal with flow direction from bottom to top.

Max. operating pressure: 25 bar
Max. Closing differential pressure: 25 bar
Medium temperature: -10 to +120°C
-60 to +120°C with A2 screws

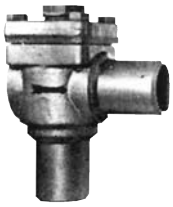
Straight-through check valve RVL with solder connection

Type	EDP-No.	max. operating pressure	Pipe connection solder	K_V-value	Opening differential pressure	Dimensions Length	Dimensions Height
		[bar]	[mm]	[m³/h]	[bar]	[mm]	[mm]
RVL 28	**243.0813**	25	28	7,5	0,04	186	104
RVL 35	**243.0814**	25	35	20	0,04	229	129
RVL 42	**243.0815**	25	42	20	0,04	229	129
RVL 54	**243.0816**	25	54	31	0,04	259	154
RVL 64	**243.0817**	25	64	55	0,04	314	175
RVL 70	**243.0818**	25	70	55	0,04	314	175
RVL 76	**243.0819**	25	76	80	0,04	370	242
RVL 80	**243.0820**	25	80	80	0,04	370	242

The K_V-value is the water flow rate in m3/h at a pressure drop across the valve of 1 bar. (ρ=1000 kg/m³)

Angle check valve REL with solder connection

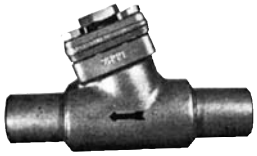
Type	EDP-No.	max. operating pressure	Pipe connection solder	K_V-value	Opening differential pressure	Dimensions Length	Dimensions Height
		[bar]	[mm]	[m³/h]	[bar]	[mm]	[mm]
REL 28	**243.0835**	25	28	9,5	0,04	99	142
REL 35	**243.0836**	25	35	24	0,04	113,5	165
REL 42	**243.0837**	25	42	24	0,04	117	165
REL 54	**243.0838**	25	54	38	0,04	145	195
REL 64	**243.0839**	25	64	65	0,04	202	252
REL 80	**243.0841**	25	80	95	0,04	230	330



The K_V-value is the water flow rate in m3/h at a pressure drop across the valve of 1 bar. (ρ=1000 kg/m³)

Straight-through check valve RVS with weld end

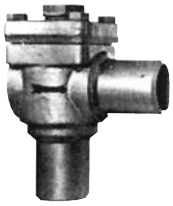
Type	EDP-No.	max. operating pressure	Pipe connection Weld	K_V-value	Opening differential pressure	Dimensions Length	Dimensions Height
		[bar]	[mm]	[m³/h]	[bar]	[mm]	[mm]
RVS 25	**243.0821**	25	25	7,5	0,04	186	104
RVS 32	**243.0822**	25	32	20	0,04	229	129
RVS 40	**243.0823**	25	40	20	0,04	229	129
RVS 50	**243.0824**	25	50	31	0,04	259	154
RVS 65	**243.0825**	25	65	55	0,04	314	175
RVS 80	**243.0826**	25	80	80	0,04	370	242



The K_V-value is the water flow rate in m3/h at a pressure drop across the valve of 1 bar. (ρ=1000 kg/m³)

Angle check valve RES with weld end

Type	EDP-No.	max. operating pressure	Pipe connection Weld	K_V-value	Opening differential pressure	Dimensions Length	Dimensions Height
		[bar]	[mm]	[m³/h]	[bar]	[mm]	[mm]
RES 25	**243.0842**	25	25	9,5	0,04	97,5	142
RES 32	**243.0843**	25	32	24	0,04	112	165
RES 40	**243.0844**	25	40	24	0,04	116	165
RES 50	**243.0845**	25	50	38	0,04	143	195
RES 65	**243.0846**	25	65	65	0,04	202,5	252



The K_V-value is the water flow rate in m3/h at a pressure drop across the valve of 1 bar. (ρ=1000 kg/m³)

Straight-through and angle check valves with flange connection on request.